

**SR 45 (Nebraska Avenue)
from
Kennedy Boulevard
to
Hillsborough Avenue**

**FPN: 255853-1-52-01
Hillsborough County, Florida**

**Prepared For:
Florida Department of Transportation**

September 20, 2004

Williams Project No.: C378576E



**W I L L I A M S
E A R T H S C I E N C E S I N C.**

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September 20, 2004

FDOT, District Seven
11201 North McKinley Drive, MS 7-800
Tampa, Florida 33612

Attention: Mr. Scott Arnold, P.E.
Project Manager

Subject: Task Assignment #5
FPN: 404580-1-32-02, Contract No.: C-8576
District Seven Districtwide
SR 45 (Nebraska Avenue) from Kennedy Boulevard
to Hillsborough Avenue
FPN: 255853-1-52-01
Hillsborough County, Florida
Williams Project No.: C378576E

Dear Mr. Arnold:

Williams Earth Sciences, Inc. (Williams) is please to present the results of thirty-six auger borings and three corrosion tests performed at SR 45 (Nebraska Avenue) from Kennedy Boulevard to Hillsborough Avenue in Hillsborough County, Florida. This report is referred to as the second of two phases for the current task assignment. This second phase of the project consisted of performing thirty-six auger borings to approximate depths of eight feet. The results of this exploration are to be used for the drainage structures design.

The stations and offsets for the borings were estimated based on the drainage structure location plan sheets provided by the Department, and measuring distances using a survey tape and estimating right angles. No additional survey was performed. SR 45 is a four-lane undivided roadway approximately 41 feet to 50 feet in width, gradually changing width around Station 198+60. The area can be categorized as highly urbanized with characteristics such as narrow sidewalks, one to three story business buildings and moderate pedestrian traffic.

Accessibility was predominately not complicated. The auger borings were located as close as possible to the proposed drainage structure locations. Only five out of the thirty-six augers were performed using a drill rig. Hand augers were performed where site conditions prohibited the use of a drill rig. The boring locations, offsets, and corresponding baseline of survey are shown in the table in the next page.



Table 1. Boring Locations and Offsets

Auger Boring	Performed Location		Reference Baseline of Survey	Auger Boring	Performed Location		Reference Baseline of Survey
	Station	Offset (ft)			Station	Offset (ft)	
AB-1	101+30	30' L	BLSR45	AB-20	190+95	40' L	BLSR45
AB-2	101+25	35' R	BLSR45	AB-21	192+40	30' R	BLSR45
AB-3	106+40	35' R	BLSR45	AB-22	198+80	40' R	BLSR45
AB-4	110+80	25' R	BLSR45	AB-23	205+70	40' L	BLSR45
AB-5	114+20	25' L	BLSR45	AB-24	209+80	40' R	BLSR45
AB-6	129+65	40' L	BLSR45	AB-25	216+00	30' L	BLSR45
AB-7	136+30	25' L	BLSR45	AB-26	218+90	40' R	BLSR45
AB-8	137+60	30' R	BLSR45	AB-27	222+90	40' R	BLSR45
AB-9	138+30	30' L	BLSR45	AB-28	225+50	30' L	BLSR45
AB-10	141+80	70' L	BLSR45	AB-29	228+45	30' L	BLSR45
AB-11	146+80	30' R	BLSR45	AB-30	235+80	45' R	BLSR45
AB-12	149+25	25' L	BLSR45	AB-31	Not performed		
AB-13	154+10	30' R	BLSR45	AB-32	241+60	40' L	BLSR45
AB-14	159+50	35' R	BLSR45	AB-33	243+85	30' R	BLSR45
AB-15	166+00	25' R	BLSR45	AB-34	250+80	25' R	BLSR45
AB-16	173+10	35' R	BLSR45	AB-35	252+50	25' R	BLSR45
AB-17	173+70	30' L	BLSR45	AB-36	258+65	30' L	BLSR45
AB-18	180+90	25' R	BLSR45	AB-37	262+30	35' L	BLSR45
AB-19	185+90	40' R	BLSR45				

Fine sands were found in all auger borings except boring AB-8 (Station 137+60) where silty sands were encountered. Boring AB-35 was planned to take place at Station 239 but it could not be performed due to lack of exposed ground surface. However, during our previous exploration two Standard Penetration Test (SPT) borings were performed at the northeast and southwest corners of the intersection of SR 45 (Nebraska Avenue) and Osbourne Avenue (around Station 239). Clean fine sandy soils were found in the upper 10-ft.

Groundwater levels ranged from 3½-ft to 2-ft for approximately the first third of mile of the project. After boring AB-8, groundwater was not encountered in any of the 8-ft deep auger borings. At the 10-ft deep auger boring AB-16 (Station 173+10), groundwater was found at a depth of 8-ft. The groundwater levels should be expected to vary during climatic and seasonal changes. It is possible that some dewatering may be required at some locations depending upon the local rainfall conditions. However, it should be noted that these augers were performed during a period of relatively heavy rainfall.

Sandy soils are expected to provide a satisfactory bearing capacity to the drainage structure foundations due to their immediate settlement nature, high permeability, and considerable friction angles. Based on the soils encountered, we would not anticipate that unacceptable settlements would be expected provided that the Department Standard Specifications' are followed.

The environmental classifications for substructures defined in Section 1.3.1 of the Structures Design Guidelines (FDOT 2004) are slightly aggressive, moderately aggressive and extremely aggressive. All three corrosion samples taken along the project were classified as slightly aggressive according to the Department's Design Guidelines. The resulting environmental classifications are summarized in Table 2 and the 'Corrosion Test Results' are included in the Appendices.

Table 2. Summary of Environmental Classifications

Sample ID	Location	Depth (ft)		Environmental Classification
		From	To	
CRS-AB4	Sta. 110+80, 30' R	6	7	Slightly Aggressive
CRS-AB11	Sta. 146+80, 32' R	5	6	Slightly Aggressive
CRS-AB35	Sta. 252+50, 27' R	4	5	Slightly Aggressive


The soil descriptions were based on visual observation and classification of the materials. Index property laboratory testing was performed to confirm the visual soil identification.

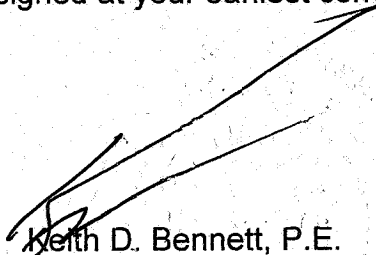
A site location map, Soil Survey Sheet, and Report of Auger Borings are included in the Appendix of this report.

Williams appreciates the opportunity to provide these services to the Florida Department of Transportation. If you have any questions regarding the data supplied please feel free to contact either of the undersigned at your earliest convenience.

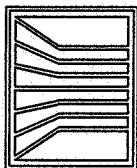
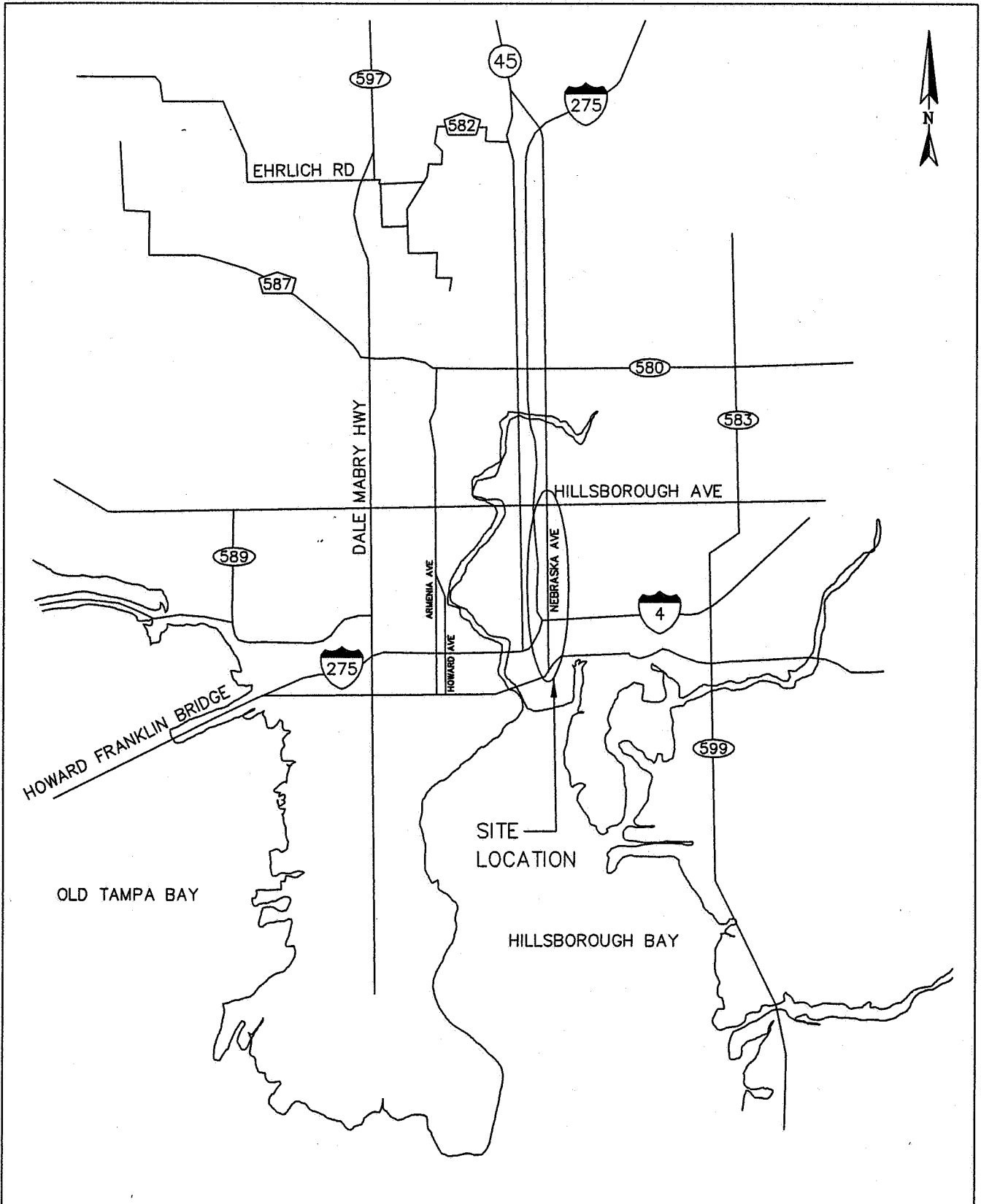
Sincerely,

WILLIAMS EARTH SCIENCES, INC.


Ivan Sokolic, E. I.
Geotechnical Engineer


Keith D. Bennett, P.E.
Principal Geotechnical Engineer
Florida Registration No. 33075

Distribution: (3) Addressee
(1) File



WILLIAMS EARTH SCIENCES, INC.

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Panama City:	(850) 747-9419	FAX: (850) 763-2454
Fl. Lauderdale:	(954) 524-2525	FAX: (954) 522-5489

**SR 45 (NEBRASKA AVE) FROM KENNEDY BLVD TO HILLSBOROUGH AVE MAST ARMS & STRAIN POLES
HILLSBOROUGH COUNTY, FLORIDA**

SITE LOCATION MAP

Drawn By:	TEJ	Date:	9/15/2004	Scale:	N.T.S.
Checked By:	IS	Report No.:	C378576E	Figure No.:	1

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

DATE OF SURVEY: 9/2004
SURVEY MADE BY: I. SOKOLIC
SUBMITTED BY: WILLIAMS EARTH SCIENCES, INC.

DISTRICT: SEVEN
ROAD NO.: 45
COUNTY: HILLSBOROUGH

PROJECT No.: 404580-1-32-02
CROSS SECTION SOIL SURVEY

SURVEY BEGINS STA. 101+30

SURVEY ENDS STA. 262+30

STRATUM NO.	MOISTURE CONTENT		ORGANIC CONTENT		SIEVE ANALYSIS RESULTS						ATTERBERG LIMITS (%)		L.B.R. TEST		CORROSION TEST RESULTS								
	NO. OF TESTS	%	NO. OF TESTS	%	NO. OF TESTS	4 MESH	10 MESH	40 MESH	60 MESH	100 MESH	200 MESH	NO. OF TESTS	LIQUID LIMIT	PLASTIC INDEX	AASHTO GROUP	NO. OF TESTS	LB VALUE	DESCRIPTION	NO. OF TESTS	RESISTIVITY Ohms cm ³	CHLORIDE ppm	SO ₄ ppm	pH
1	11	4-12	1	1	11	-	100	92-98	69-89	33-45	3-8	0	-	-	A-3	0	-	LIGHT BROWN, BROWN, DARK BROWN, TAN, LIGHT GRAY, GRAY AND BROWN, MOTTLED TAN AND BROWN, FINE SAND, FINE SANDS WITH SMALL ROOTS	3	>10,000	90-105	64-71	7.2-8.1
2	2	18	0	-	2	-	100	99	98	89	17-34	0	NP	NP	A-2-4	0	-	LIGHT BROWN SILTY FINE SAND	0	-	-	-	-

EMBANKMENT AND SUBGRADE MATERIAL

STRATA BOUNDARIES ARE APPROXIMATE MAKE FINAL CHECK AFTER GRADING.

NOTE #1 - THE MATERIAL FROM STRATUM NUMBER 1 APPEARS SATISFACTORY FOR USE IN THE EMBANKMENT WHEN UTILIZED IN ACCORDANCE WITH INDEX 505 AND FOR PIPE WHEN UTILIZED IN ACCORDANCE WITH STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION SECTION 125-4.4.

NOTE #2 - THE MATERIAL FROM STRATUM NUMBER 1 APPEARS SATISFACTORY FOR USE IN THE EMBANKMENT WHEN UTILIZED IN ACCORDANCE WITH INDEX 505 AND FOR PIPE WHEN UTILIZED IN ACCORDANCE WITH STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION SECTION 125-4.4. HOWEVER, THIS MATERIAL IS LIKELY TO RETAIN MOISTURE AND MAY BE DIFFICULT TO DRY AND COMPACT. IT SHOULD BE USED IN THE EMBANKMENT ABOVE WATER LEVEL EXISTING AT THE TIME OF CONSTRUCTION.

NOTES: Soil strata descriptions are ONLY for soil samples taken from the borings shown in these plans and are not to be considered as a guarantee of soil conditions other than at the EXACT LOCATIONS of those borings. All test values were obtained from samples taken from one or more of the borings and are NOT intended to guarantee any test values other than an approximation at the locations of the borings. Test values shown as a range of values may not include the high and/or low values for a specific stratum. During the process of the work, THE CONTRACTOR MIGHT ENCOUNTER SOILS HAVING TEST VALUES WHICH ARE HIGHER OR LOWER THAN THOSE TEST VALUES ABOVE. If there are any questions concerning the prevailing subsurface conditions, or any of the test values for any soil stratum, IT IS THE RESPONSIBILITY OF THE INDIVIDUAL RAISING THE QUESTION TO PERFORM HIS OWN SUBSURFACE INVESTIGATION.

Boring logs may be seen at the MATERIALS OFFICE in Bartow. Arrangements must be made in advance of such inspections.

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

REVISIONS

DATE	BY	DESCRIPTION

DESIGNED BY: IFS
CHECKED BY: IFS
DATE: 9-04

DRAWN BY: TEJ
DATE: 9-04

NAME: KEITH D. BENNETT, P.E.
P.E. #13075

APPROVED BY: [Signature]
DATE: 9-04

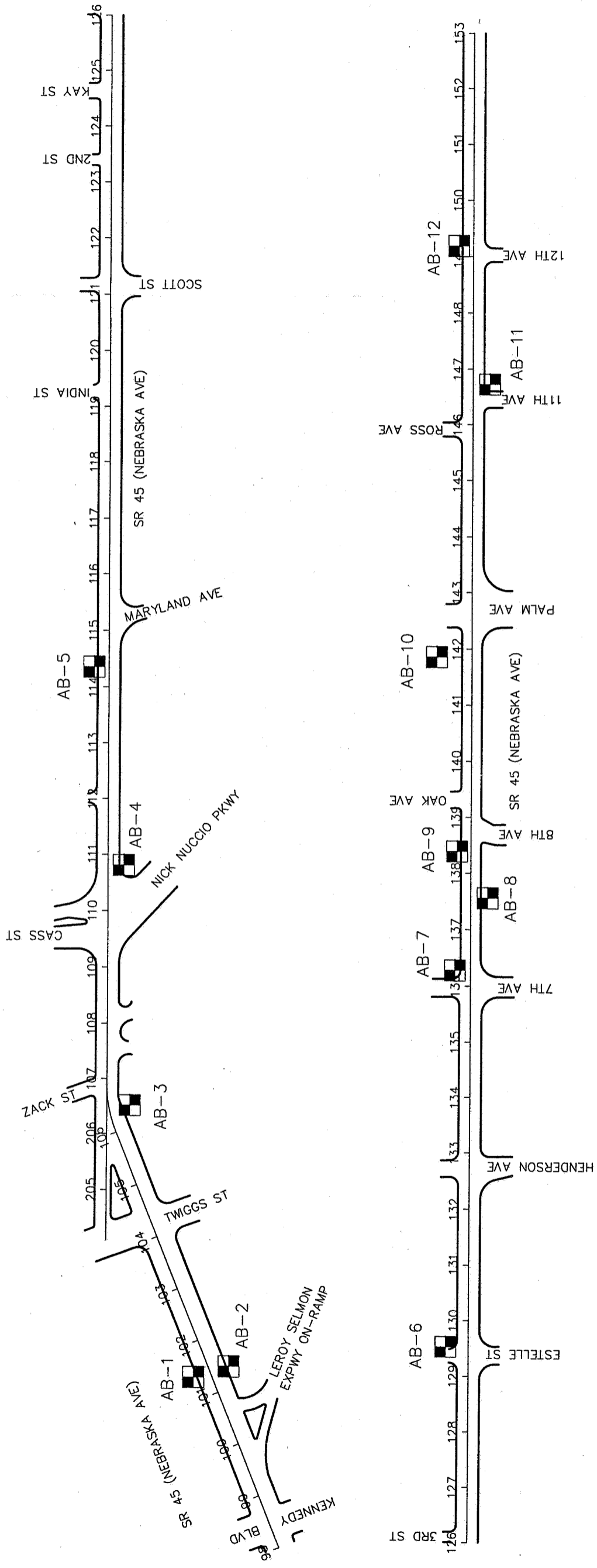
FLORIDA DEPARTMENT OF TRANSPORTATION

W. I. L. L. I. A. M. S.
EARTH SCIENCES, INC.

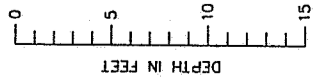
ROADWAY SOILS SURVEY



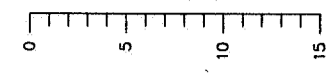
SCALE 1" = 200'



BORING NO.	STA.	OFFSET	DATE	BORING NO.	STA.	OFFSET	DATE	BORING NO.	STA.	OFFSET	DATE	BORING NO.	STA.	OFFSET	DATE
AB-1	101+30	30' LT BL SR 45	9/9/2004	AB-7	137	30' RT BL SR 45	9/8/2004	AB-13	143	30' RT BL SR 45	9/8/2004	AB-19	149	30' RT BL SR 45	9/8/2004
AB-2	101+25	35' RT BL SR 45	9/9/2004	AB-8	138	40' LT BL SR 45	9/8/2004	AB-14	144	30' RT BL SR 45	9/8/2004	AB-20	150	30' RT BL SR 45	9/8/2004
AB-3	106+40	35' RT BL SR 45	9/8/2004	AB-9	138	25' LT BL SR 45	9/8/2004	AB-15	145	30' RT BL SR 45	9/8/2004	AB-21	151	30' RT BL SR 45	9/8/2004
AB-4	110+80	25' RT BL SR 45	9/8/2004	AB-10	142	30' RT BL SR 45	9/8/2004	AB-16	146	30' RT BL SR 45	9/8/2004	AB-22	152	30' RT BL SR 45	9/8/2004
AB-5	144+20	40' LT BL SR 45	9/8/2004	AB-11	147	30' LT BL SR 45	9/8/2004	AB-17	148	70' LT BL SR 45	9/8/2004	AB-23	153	25' LT BL SR 45	9/8/2004
AB-6	110+80	25' RT BL SR 45	9/8/2004	AB-12	148	30' RT BL SR 45	9/8/2004	AB-18	149	30' RT BL SR 45	9/8/2004				



BORING NO.	DEPTH (FEET)	TERMINATION	GROUNDWATER ENCOUNTERED
AB-1	8.0	TERMINATED	NOT ENCOUNTERED
AB-2	8.0	TERMINATED	NOT ENCOUNTERED
AB-3	8.0	TERMINATED	NOT ENCOUNTERED
AB-4	10.0	TERMINATED	NOT ENCOUNTERED
AB-5	8.0	TERMINATED	NOT ENCOUNTERED
AB-6	8.0	TERMINATED	NOT ENCOUNTERED
AB-7	8.0	TERMINATED	NOT ENCOUNTERED
AB-8	8.0	TERMINATED	NOT ENCOUNTERED
AB-9	8.0	TERMINATED	NOT ENCOUNTERED
AB-10	8.0	TERMINATED	NOT ENCOUNTERED
AB-11	8.0	TERMINATED	NOT ENCOUNTERED
AB-12	8.0	TERMINATED	NOT ENCOUNTERED



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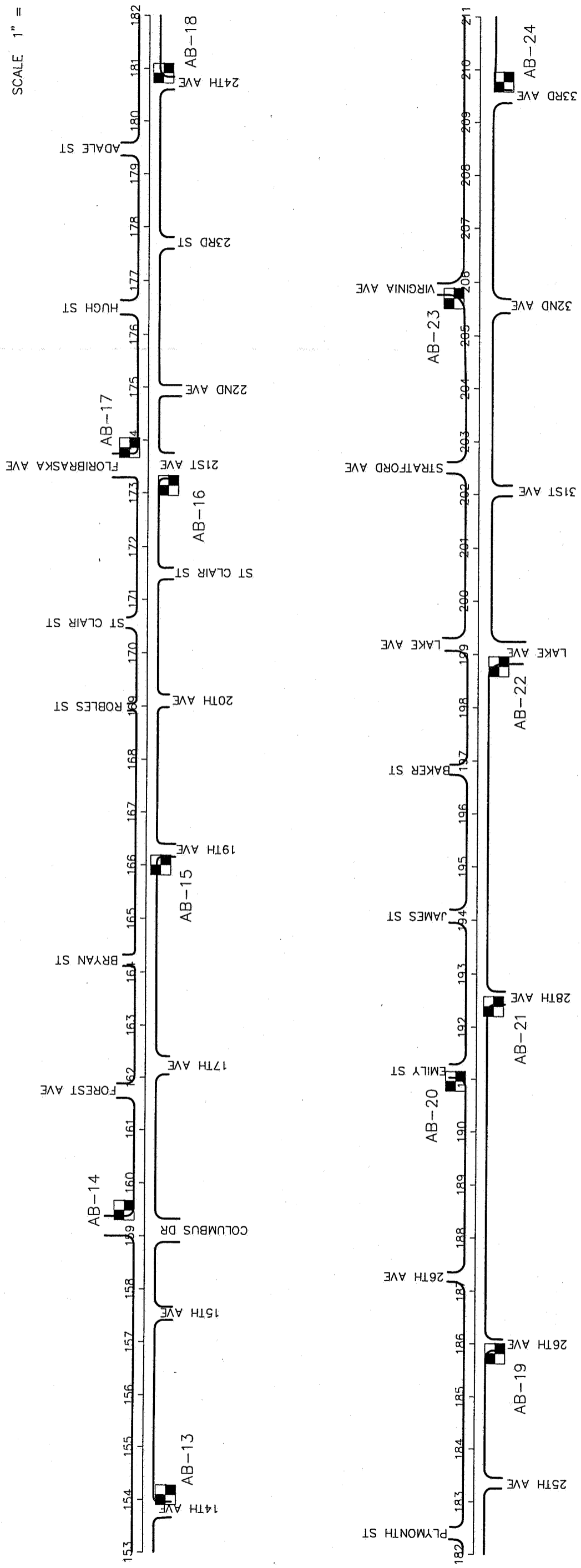
KEITH D. BENNETT, P.E. #33075

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No.	By	Date	By	Date	Description		

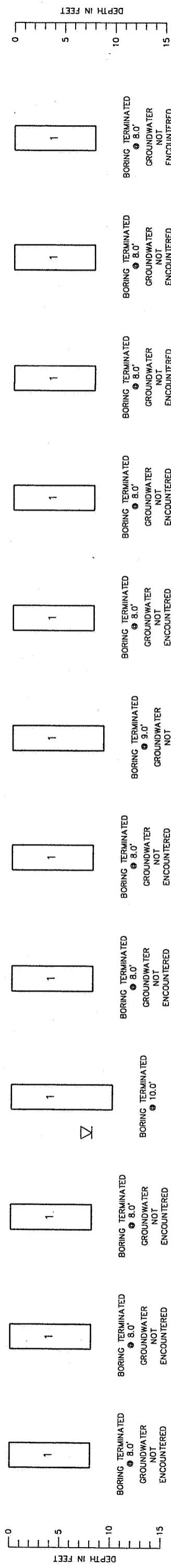
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SCALE 1" = 200'



BORING NO.	STATION	DATE	OFFSET	SR	DATE	TERMINATED	DEPTH	GROUNDWATER	ENCOUNTERED
AB-13	154+10	9/9/2004	35'	RT BL	9/9/2004	8.0'	1	NOT ENCOUNTERED	
AB-14	159+50	9/9/2004	35'	RT BL	9/9/2004	8.0'	1	NOT ENCOUNTERED	
AB-15	166+00	9/8/2004	25'	RT BL	9/8/2004	8.0'	1	NOT ENCOUNTERED	
AB-16	173+10	9/9/2004	35'	RT BL	9/9/2004	10.0'	1	NOT ENCOUNTERED	
AB-17	173+70	9/8/2004	30'	LT BL	9/8/2004	8.0'	1	NOT ENCOUNTERED	
AB-18	180+90	9/8/2004	25'	RT BL	9/8/2004	8.0'	1	NOT ENCOUNTERED	
AB-19	185+50	9/9/2004	35'	RT BL	9/9/2004	8.0'	1	NOT ENCOUNTERED	
AB-20	190+95	9/8/2004	40'	LT BL	9/8/2004	8.0'	1	NOT ENCOUNTERED	
AB-21	192+40	9/8/2004	30'	RT BL	9/8/2004	8.0'	1	NOT ENCOUNTERED	
AB-22	198+90	9/8/2004	40'	RT BL	9/8/2004	9.0'	1	NOT ENCOUNTERED	
AB-23	198+80	9/8/2004	40'	LT BL	9/8/2004	8.0'	1	NOT ENCOUNTERED	
AB-24	209+80	9/8/2004	40'	RT BL	9/8/2004	8.0'	1	NOT ENCOUNTERED	



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KEITH D. BENNETT, P.E. #33075

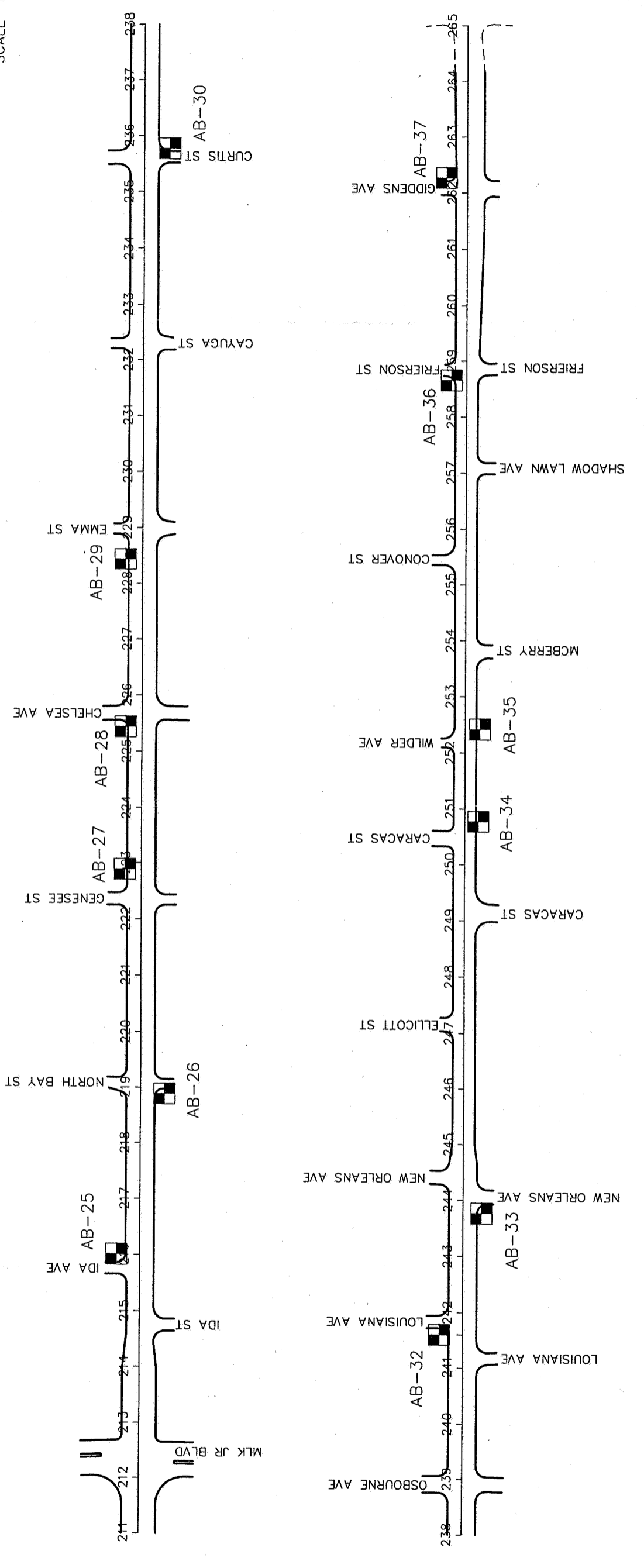
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Date	By	Date	By	Date	By

ENGINEER OF RECORD:		ENGINEER OF RECORD:	
Drawn by	TEJ	9/04	9/04
Checked by	IFS	9/04	9/04
Designed by	IFS	9/04	9/04
Checked by	KOB	9/04	9/04
Approved by	KEITH D. BENNETT, P.E.		

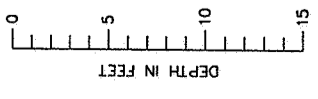
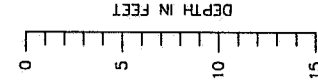
FLORIDA DEPARTMENT OF TRANSPORTATION		SHEET TITLE:	
ROAD NO.	COUNTY	PROJECT NAME:	
SR 45	HILLSBOROUGH	SR 45 (NEBRASKA AVE) FROM KENNEDY BLVD TO HILLSBOROUGH AVE MAST ARMS & STRAIN POLES	
FINANCIAL PROJECT ID.		PROJECT NO.	
255853-1-52-01		SR 45	



SCALE 1" = 200'



BORING NO.	STA.	OFFSET	DATE	DEPTH (FEET)	GROUNDWATER ENCOUNTERED	NOT ENCOUNTERED	ENCOUNTERED	ENCOUNTERED
AB-25	216+00	30' LT BL SR 45	9/8/2004	8.0'	GROUNDWATER NOT ENCOUNTERED	GROUNDWATER NOT ENCOUNTERED	GROUNDWATER NOT ENCOUNTERED	GROUNDWATER NOT ENCOUNTERED
AB-26	218+90	40' RT BL SR 45	9/8/2004	8.0'	GROUNDWATER NOT ENCOUNTERED	GROUNDWATER NOT ENCOUNTERED	GROUNDWATER NOT ENCOUNTERED	GROUNDWATER NOT ENCOUNTERED
AB-27	222+90	40' RT BL SR 45	9/8/2004	8.0'	GROUNDWATER NOT ENCOUNTERED	GROUNDWATER NOT ENCOUNTERED	GROUNDWATER NOT ENCOUNTERED	GROUNDWATER NOT ENCOUNTERED
AB-28	225+80	45' RT BL SR 45	9/9/2004	8.0'	GROUNDWATER NOT ENCOUNTERED	GROUNDWATER NOT ENCOUNTERED	GROUNDWATER NOT ENCOUNTERED	GROUNDWATER NOT ENCOUNTERED
AB-29	228+45	30' LT BL SR 45	9/8/2004	9.0'	GROUNDWATER NOT ENCOUNTERED	GROUNDWATER NOT ENCOUNTERED	GROUNDWATER NOT ENCOUNTERED	GROUNDWATER NOT ENCOUNTERED
AB-30	235+80	45' RT BL SR 45	9/8/2004	8.0'	GROUNDWATER NOT ENCOUNTERED	GROUNDWATER NOT ENCOUNTERED	GROUNDWATER NOT ENCOUNTERED	GROUNDWATER NOT ENCOUNTERED
AB-31	235+80	45' RT BL SR 45	9/8/2004	8.0'	GROUNDWATER NOT ENCOUNTERED	GROUNDWATER NOT ENCOUNTERED	GROUNDWATER NOT ENCOUNTERED	GROUNDWATER NOT ENCOUNTERED
AB-32	241+60	40' LT BL SR 45	9/9/2004	8.0'	GROUNDWATER NOT ENCOUNTERED	GROUNDWATER NOT ENCOUNTERED	GROUNDWATER NOT ENCOUNTERED	GROUNDWATER NOT ENCOUNTERED
AB-33	243+80	40' RT BL SR 45	9/8/2004	8.0'	GROUNDWATER NOT ENCOUNTERED	GROUNDWATER NOT ENCOUNTERED	GROUNDWATER NOT ENCOUNTERED	GROUNDWATER NOT ENCOUNTERED
AB-34	250+80	25' RT BL SR 45	9/8/2004	8.0'	GROUNDWATER NOT ENCOUNTERED	GROUNDWATER NOT ENCOUNTERED	GROUNDWATER NOT ENCOUNTERED	GROUNDWATER NOT ENCOUNTERED
AB-35	241+60	40' LT BL SR 45	9/9/2004	8.0'	GROUNDWATER NOT ENCOUNTERED	GROUNDWATER NOT ENCOUNTERED	GROUNDWATER NOT ENCOUNTERED	GROUNDWATER NOT ENCOUNTERED
AB-36	252+80	25' RT BL SR 45	9/8/2004	8.0'	GROUNDWATER NOT ENCOUNTERED	GROUNDWATER NOT ENCOUNTERED	GROUNDWATER NOT ENCOUNTERED	GROUNDWATER NOT ENCOUNTERED
AB-37	258+85	30' LT BL SR 45	9/9/2004	8.0'	GROUNDWATER NOT ENCOUNTERED	GROUNDWATER NOT ENCOUNTERED	GROUNDWATER NOT ENCOUNTERED	GROUNDWATER NOT ENCOUNTERED
AB-37	262+30	35' LT BL SR 45	9/9/2004	8.0'	GROUNDWATER NOT ENCOUNTERED	GROUNDWATER NOT ENCOUNTERED	GROUNDWATER NOT ENCOUNTERED	GROUNDWATER NOT ENCOUNTERED



C378576E HANDAUC3

KEITH D. BENNETT, P.E. #33075

REVISIONS		REVISED BY		DATE		DESCRIPTION	
Date	By	Date	By	Date	By	Date	Description

ENGINEER OF RECORD		FLORIDA DEPARTMENT OF TRANSPORTATION		SHEET TITLE	
WILLIAMS EARTH SCIENCES, INC. 10600 Endeavour Way Largo, Florida 33777 EB-0006378		SR 45 HILLSBOROUGH COUNTY 255853-1-52-01		REPORT OF AUGER BORINGS	
APPROVED BY		PROJECT NAME		SHEET NO.	
KEITH D. BENNETT, P.E.		SR 45 (NEBRASKA AVE) FROM KENNEDY BLVD TO HILLSBOROUGH AVE MAST ARMS & STRAIN POLES			

REPORT OF AUGER BORINGS

WILLIAMS EARTH SCIENCES, INC.

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 Pompano Beach (954) 972-7570 Fax: (954) 972-6608
 Jacksonville (904) 262-8852 Fax: (904) 262-8864
 Panama City (850) 747-9419 Fax: (850) 763-2454

Client: C378576E

Project: SR 45 (Nebraska Avenue) from Kennedy Boulevard to Hillsborough Avenue

Project No: C378576E

Boring ID	Station	Offset (ft)	Depth (ft) From - To	ASSHTO Classification	Groundwater Depth (ft)	Stratum Number	Soil Description	Date Performed
AB-1	101+30	30' L	0.0 - 7.0	A-3	3.0	1	Brown fine SAND	9/8/04
			7.0 - 8.0	A-3		1	Tan and brown fine SAND	
AB-2	101+25	35' R	0.0 - 1.0	A-3	3.0	1	Brown and gray fine SAND	9/9/04
			1.0 - 6.0	A-3		1	Gray and dark brown fine SAND	
			6.0 - 8.0	A-3		1	Light brown fine SAND	
AB-3	106+40	35' R	0.0 - 1.0	A-3	3.5	1	Brown fine SAND	9/8/04
			1.0 - 3.5	A-3		1	Tan fine SAND with minor roots	
			3.5 - 5.0	A-3		1	Light tan fine SAND	
			5.0 - 8.0	A-3		1	Tan fine SAND	
AB-4	110+80	25' R	0.0 - 4.0	A-3	2.0	1	Gray and brown fine SAND	9/8/04
			4.0 - 7.5	A-3		1	Brown fine SAND	
			7.5 - 8.0	A-3		1	Light brown fine SAND	
AB-5	114+20	25' L	0.0 - 1.5	A-3	2.0	1	Dark brown fine SAND with minor roots	9/8/04
			1.5 - 3.0	A-3		1	Gray and light brown fine SAND	
			3.0 - 6.0	A-3		1	Mottled tan and brown fine SAND	
			6.0 - 7.5	A-3		1	Light tan fine SAND	
			7.5 - 10.0	A-3		1	Light Gray fine SAND	
AB-6	129+65	40' L	0.0 - 3.5	A-3	N.E.	1	Brown fine SAND	9/8/04
			3.5 - 6.5	A-3		1	Mottled tan and brown fine SAND	
			6.5 - 8.0	A-3		1	Dark brown fine SAND	
AB-7	136+30	25' L	0.0 - 2.5	A-3	N.E.	1	Brown fine SAND	9/8/04
			2.5 - 7.0	A-3		1	Light brown fine SAND with minor roots	
			7.0 - 8.0	A-3		1	Tannish brown fine SAND	

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REPORT OF AUGER BORINGS

Client: C378576E

Project: SR 45 (Nebraska Avenue) from Kennedy Boulevard to Hillsborough Avenue

Project No: C378576E

Boring ID	Station	Offset (ft)	Depth (ft) From - To	ASSHTO Classification	Groundwater Depth (ft)	Stratum Number	Soil Description	Date Performed
AB-8	137+60	30' R	0.0 - 2.0	A-3	N.E.	1	Dark gray fine SAND with limerock fill	9/8/04
			2.0 - 3.0	A-3		1	Gray and brown fine SAND	
			3.0 - 6.0	A-3		1	Light brown fine SAND	
			6.0 - 7.0	A-2-4		2	Light brown slightly clayey silty fine SAND	
			7.0 - 8.0	A-2-4		2	Light brown slightly clayey silty fine SAND	
AB-9	138+30	30' L	0.0 - 2.5	A-3	N.E.	1	Brown fine SAND	9/8/04
			2.5 - 6.0	A-3		1	Tan fine SAND	
			6.0 - 7.0	A-3		1	Mottled tan and brown fine SAND	
			7.0 - 8.0	A-3		1	Dark brown fine SAND	
			0.0 - 2.0	A-3		1	Gray and dark brown fine SAND with limerock fill	
AB-10	141+80	70' L	2.0 - 3.5	A-3		1	Dark gray fine SAND	9/8/04
			3.5 - 7.0	A-3		1	Light brown fine SAND	
			7.0 - 8.0	A-3		1	Dark brown fine SAND	
			0.0 - 2.0	A-3		1	Gray and dark brown fine SAND	
			2.0 - 4.5	A-3		1	Gray and brown fine SAND	
AB-11	146+80	30' R	4.5 - 6.5	A-3		1	Tan fine SAND	9/8/04
			6.5 - 8.0	A-3		1	Dark brown fine SAND	
			0.0 - 3.5	A-3	N.E.	1	Gray and dark brown fine SAND	
			3.5 - 7.0	A-3		1	Mottled tan and brown fine SAND	
			7.0 - 8.0	A-3		1	Light brown fine SAND	
AB-12	149+25	25' L	0.0 - 1.0	A-3	N.E.	1	Dark brown slightly silty fine SAND	9/9/04
			1.0 - 5.0	A-3		1	Light brown fine SAND	
			5.0 - 8.0	A-3		1	Tan fine SAND	

REPORT OF AUGER BORINGS

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Client: C378576E

Project: SR 45 (Nebraska Avenue) from Kennedy Boulevard to Hillsborough Avenue

Project No: C378576E

Boring ID	Station	Offset (ft)	Depth (ft) From - To	ASSHTO Classification	Groundwater Depth (ft)	Stratum Number	Soil Description	Date Performed
AB-14	159+50	35' R	0.0 - 4.0	A-3	N.E.	1	Brown fine SAND	9/9/04
			4.0 - 5.0	A-3		1	Light brown fine SAND	
			5.0 - 8.0	A-3		1	Brown fine SAND	
AB-15	166+00	25' R	0.0 - 2.5	A-3	N.E.	1	Dark brown fine SAND with minor roots	9/8/04
			2.5 - 6.0	A-3		1	Light brown fine SAND	
			6.0 - 8.0	A-3		1	Brown fine SAND	
AB-16	173+10	35' R	0.0 - 2.0	A-3	8.0	1	Brown fine SAND	9/9/04
			2.0 - 4.0	A-3		1	Mottled tan and brown fine SAND	
			4.0 - 10.0	A-3		1	Brown fine SAND	
AB-17	173+70	30' L	0.0 - 5.5	A-3	N.E.	1	Mottled tan and brown fine SAND	9/9/04
			5.5 - 7.0	A-3		1	Tan fine SAND	
			7.0 - 8.0	A-3		1	Orange and tan fine SAND	
AB-18	180+90	25' R	0.0 - 3.5	A-3	N.E.	1	Gray and dark brown fine SAND	9/9/04
			3.5 - 4.0	A-3		1	Gray and brown fine SAND	
			4.0 - 6.0	A-3		1	Tan fine SAND	
			6.0 - 7.0	A-3		1	Mottled tan and brown fine SAND	
			7.0 - 8.0	A-3		1	Brown fine SAND	
AB-19	185+90	40' R	0.0 - 2.5	A-3	N.E.	1	Dark brown fine SAND	9/9/04
			2.5 - 4.0	A-3		1	Light brown fine SAND	
			4.0 - 6.5	A-3		1	Tan fine SAND	
			6.5 - 9.0	A-3		1	Brown fine SAND	

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REPORT OF AUGER BORINGS

Client: C378576E

Project: SR 45 (Nebraska Avenue) from Kennedy Boulevard to Hillsborough Avenue

Project No: C378576E

Boring ID	Station	Offset (ft)	Depth (ft) From - To	ASSHTO Classification	Groundwater Depth (ft)	Stratum Number	Soil Description	Date Performed
AB-20	190+95	40' L	0.0 - 1.0	A-3	N.E.	1	Dark brown slightly silty fine SAND	9/9/04
			1.0 - 5.0	A-3		1	Light brown fine SAND	
			5.0 - 8.0	A-3		1	Brown fine SAND	
AB-21	192+40	30' R	0.0 - 3.5	A-3	N.E.	1	Brown fine SAND	9/9/04
			3.5 - 7.0	A-3		1	Tan fine SAND	
			7.0 - 8.0	A-3		1	Brown fine SAND	
AB-22	198+80	40' R	0.0 - 1.5	A-3	N.E.	1	Light brown fine SAND with minor roots	9/9/04
			1.5 - 4.5	A-3		1	Brown fine SAND	
			4.5 - 6.0	A-3		1	Tan and gray fine SAND	
			6.0 - 8.0	A-3		1	Tan fine SAND	
AB-23	205+70	40' L	0.0 - 2.0	A-3	N.E.	1	Brown fine SAND	9/9/04
			2.0 - 2.5	A-3		1	Light brown fine SAND	
			2.5 - 7.0	A-3		1	Tan fine SAND	
			7.0 - 8.0	A-3		1	Brown fine SAND	
AB-24	209+80	40' R	0.0 - 2.5	A-3	N.E.	1	Gray and dark brown fine SAND	9/9/04
			2.5 - 5.0	A-3		1	Light brown fine SAND	
			5.0 - 6.0	A-3		1	Tan fine SAND	
			6.0 - 8.0	A-3		1	Brown fine SAND	
AB-25	216+00	30' L	0.0 - 2.5	A-3	N.E.	1	Brown fine SAND with limerock fill	9/9/04
			2.5 - 3.5	A-3		1	Gray and dark brown fine SAND	
			3.5 - 6.5	A-3		1	Light brown fine SAND	
			6.5 - 7.0	A-3		1	Brown fine SAND	
			7.0 - 8.0	A-3		1	Dark brown fine SAND	

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REPORT OF AUGER BORINGS

Client: C378576E

Project: SR 45 (Nebraska Avenue) from Kennedy Boulevard to Hillsborough Avenue

Project No: C378576E

Boring ID	Station	Offset (ft)	Depth (ft) From - To	ASSHTO Classification	Groundwater Depth (ft)	Stratum Number	Soil Description	Date Performed
AB-26	218+90	40' R	0.0 - 3.0	A-3	N.E.	1	Mottled tan and brown fine SAND	9/9/04
			3.0 - 4.5	A-3		1	Tan fine SAND	
			4.5 - 6.0	A-3		1	Tan fine SAND	
			6.0 - 8.0	A-3		1	Dark brown fine SAND	
AB-27	222+90	40' R	0.0 - 2.5	A-3	N.E.	1	Gray and dark brown fine SAND	9/9/04
			2.5 - 7.0	A-3		1	Light brown fine SAND	
			7.0 - 8.0	A-3		1	Brown fine SAND	
AB-28	225+50	30' L	0.0 - 2.5	A-3	N.E.	1	Dark brown fine SAND	9/9/04
			2.5 - 6.0	A-3		1	Tan fine SAND	
AB-29	228+45	30' L	0.0 - 8.0	A-3		1	Brown fine SAND	9/9/04
			0.0 - 4.0	A-3	N.E.	1	Dark brown fine SAND	
			4.0 - 6.0	A-3		1	Tan fine SAND	
AB-30	235+80	45' R	6.0 - 8.0	A-3		1	Gray brown fine SAND	9/9/04
			8.0 - 8.5	A-3		1	Brown fine SAND	
			8.5 - 9.0	A-3		1	Dark brown fine SAND	
			0.0 - 2.5	A-3	N.E.	1	Light gray fine SAND	
AB-32	241+60	40' L	2.5 - 7.0	A-3		1	White fine SAND	9/9/04
			7.0 - 8.0	A-3		1	Mottled white and brown fine SAND	
			0.0 - 2.5	A-3	N.E.	1	Dark brown fine SAND	
			2.5 - 3.5	A-3		1	Brown fine SAND	
			3.5 - 6.0	A-3		1	Tan fine SAND	
			6.0 - 8.0	A-3		1	Gray and tan fine SAND	

REPORT OF AUGER BORINGS

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Client: C378576E

Project: SR 45 (Nebraska Avenue) from Kennedy Boulevard to Hillsborough Avenue

Project No: C378576E

Boring ID	Station	Offset (ft)	Depth (ft) From - To	ASSHTO Classification	Groundwater Depth (ft)	Stratum Number	Soil Description	Date Performed
AB-33	243+85	30' R	0.0 - 2.5	A-3	N.E.	1	Dark brown fine SAND	9/9/04
			2.5 - 7.0	A-3		1	Gray and brown fine SAND	
			7.0 - 8.0	A-3		1	Tan fine SAND	
AB-34	250+80	25' R	0.0 - 1.0	A-3	N.E.	1	Gray and dark brown fine SAND	9/9/04
			1.0 - 2.0	A-3		1	Light brown fine SAND with limerock fill	
			2.0 - 7.0	A-3		1	Light brown fine SAND	
AB-35	252+50	25' R	7.0 - 8.0	A-3		1	Tan fine SAND	
			0.0 - 2.5	A-3	N.E.	1	Dark brown fine SAND	9/9/04
			2.5 - 7.0	A-3		1	Brown fine SAND	
AB-36	258+65	30' L	7.0 - 8.0	A-3		1	Tan fine SAND	
			0.0 - 2.5	A-3	N.E.	1	Brown fine SAND	9/9/04
			2.5 - 3.0	A-3		1	Light brown fine SAND	
			3.0 - 5.5	A-3		1	Tan fine SAND	
			5.5 - 8.0	A-3		1	Dark brown fine SAND	
AB-37	262+30	35' L	0.0 - 2.5	A-3	N.E.	1	Brown fine SAND with limerock fill	9/9/04
			2.5 - 8.0	A-3		1	Tan fine SAND	

F:\Projects\LARGO DIST WIDESIC37xxxx D-7 WIDE CURRENT\C378576E SR45 Strain poles\DRNG STRCTS\RAB c378576E sep04.XLS\RAB

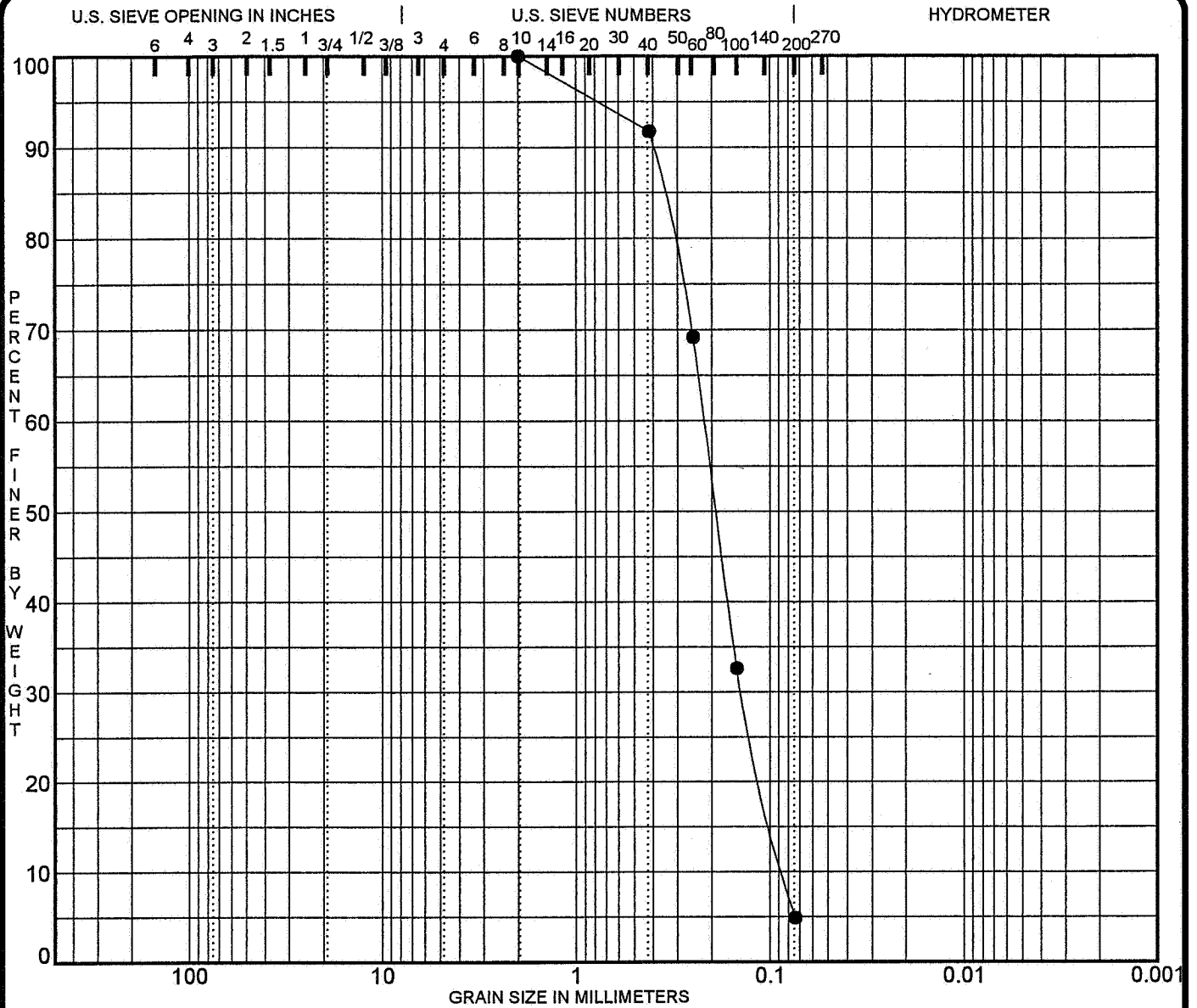
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SUMMARY OF LABORATORY TESTING

Client: Florida Department of Transportation - District 7
Project: SR 45 (Nebraska Avenue) from Kennedy Boulevard to Hillsborough Avenue
Project No.: C378576E

Boring Number	Sample Depth (ft)		Soil Description	AASHTO CLASS.	STRATUM NO.	Sieve Analysis (Percent Passing)								Natural Moisture (%)		Atterberg Limits (%)		Organic Content (%)
	From	To				1"	3/4"	1/2"	3/8"	#4	#10	#40	#60	#100	#200	LL	PI	
AB-2	1.0	6.0	Gray and dark brown fine SAND	A-3	1					100	92	69	33	5	4			
AB-6	6.5	8.0	Dark brown fine SAND	A-3	1									5	9			
AB-8	6.0	7.0	Light brown slightly clayey silty fine SAND	A-2-4	2									17	18	NP	NP	
AB-8	7.0	8.0	Light brown slightly clayey silty fine SAND	A-2-4	2					100	99	98	89	34	18			
AB-16	4.0	10.0	Brown fine SAND	A-3	1					100	97	86	45	7	11			
AB-17	5.5	7.0	Tan fine SAND	A-3	1					100	98	89	55	7	7			
AB-18	7.0	8.0	Brown fine SAND	A-3	1									8	12			
AB-19	2.5	4.0	Light brown fine SAND	A-3	1									4	11			
AB-25	7.0	8.0	Dark brown fine SAND	A-3	1									3	8			1
AB-26	4.5	6.0	Tan fine SAND	A-3	1									4	9			
AB-29	8.5	9.0	Dark brown fine SAND	A-3	1									5	10			
AB-33	2.5	7.0	Gray and brown fine SAND	A-3	1									4	8			
AB-36	3.0	5.5	Tan fine SAND	A-3	1									6	6			

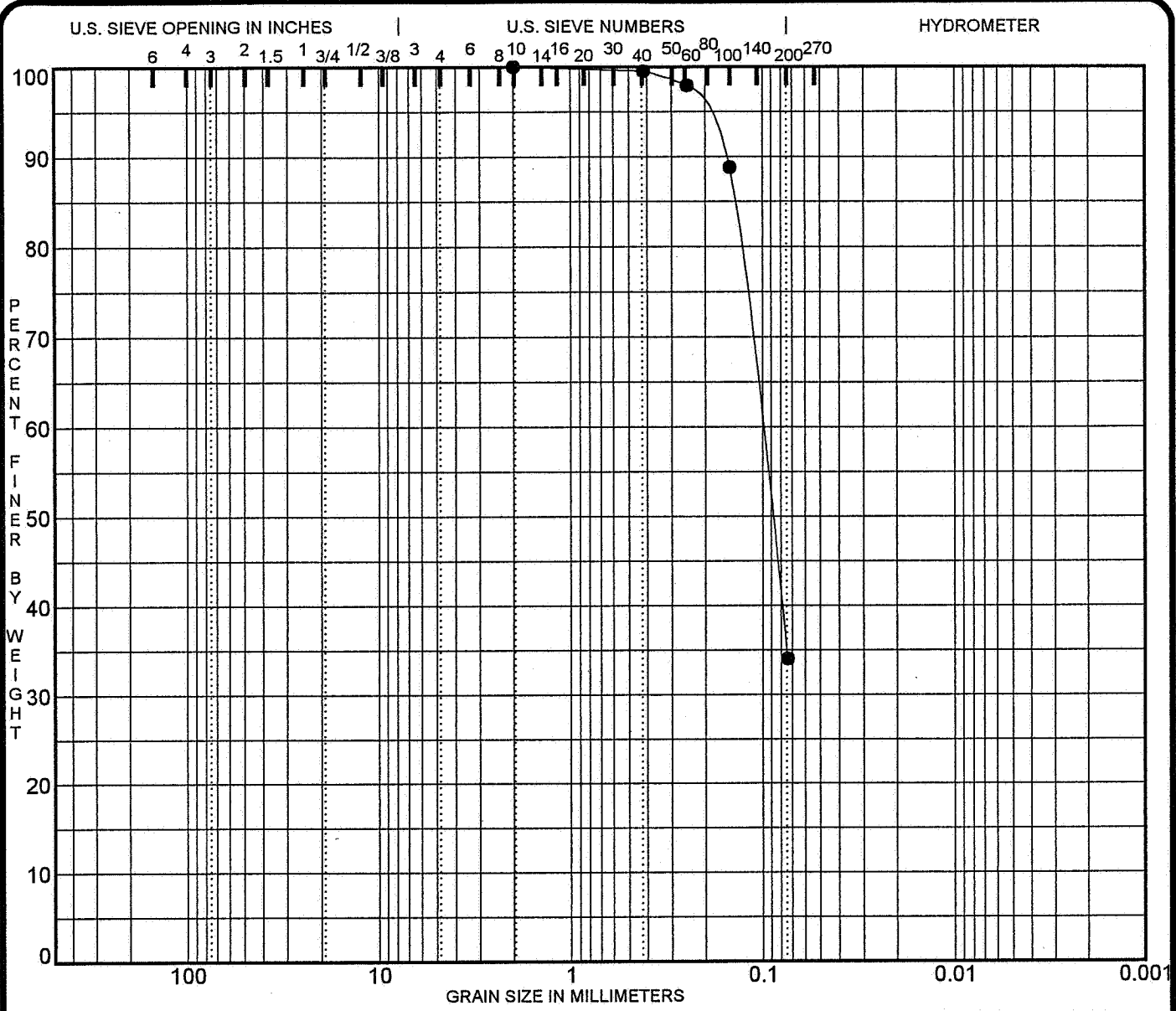


COBBLES	GRAVEL		SAND			SILT	CLAY
	coarse	fine	coarse	medium	fine		

Specimen Identification	Classification				MC%	LL	PL	PI	Cc	Cu
● AB-2	GRAY AND DARK BROWN FINE SAND									
	(A-3) STRATUM 1									
1.0' - 6.0'										
Organics (%)	D100	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay		
	2.00	0.191	0.140	0.084	0	95	5			
Dry Unit Weight										

PROJECT SR 45 (NEBRASKA AVE) FROM KENNEDY BLVD TO HILLSBOROUGH AVE JOB NO. C378576E

GRADATION CURVES
Williams Earth Sciences, Inc.



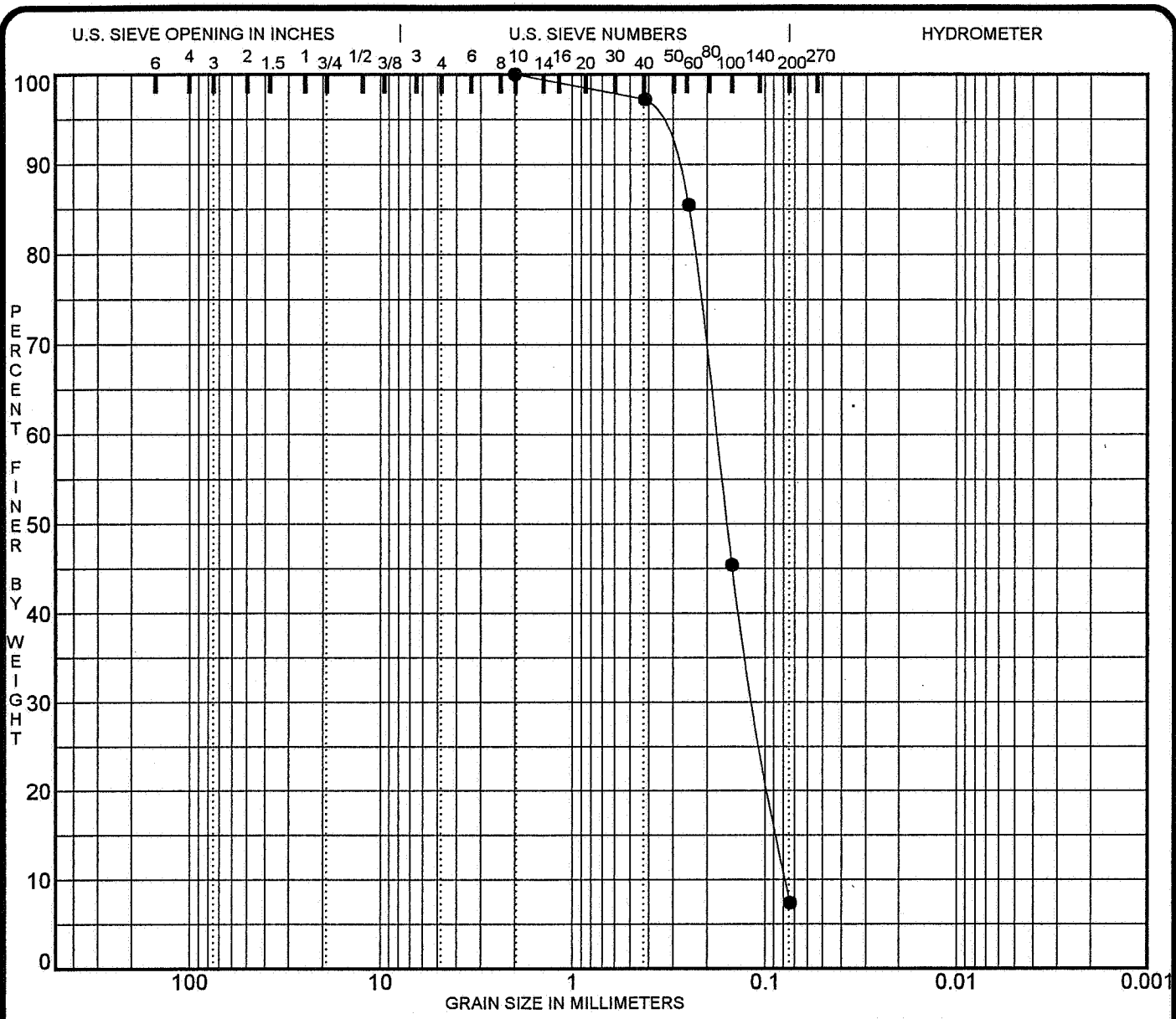
COBBLES	GRAVEL		SAND			SILT	CLAY
	coarse	fine	coarse	medium	fine		

Specimen Identification	Classification				MC%	LL	PL	PI	Cc	Cu
● AB-8	LIGHT BROWN SILTY FINE SAND					NP	NP	NP		
	(A-2-4) STRATUM 2									
7.0' - 8.0'										

Organics (%)	D100	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay
	2.00	0.091			0	66	34	
Dry Unit Weight								

PROJECT SR 45 (NEBRASKA AVE) FROM KENNEDY BLVD TO HILLSBOROUGH AVE JOB NO. C378576E

GRADATION CURVES
Williams Earth Sciences, Inc.

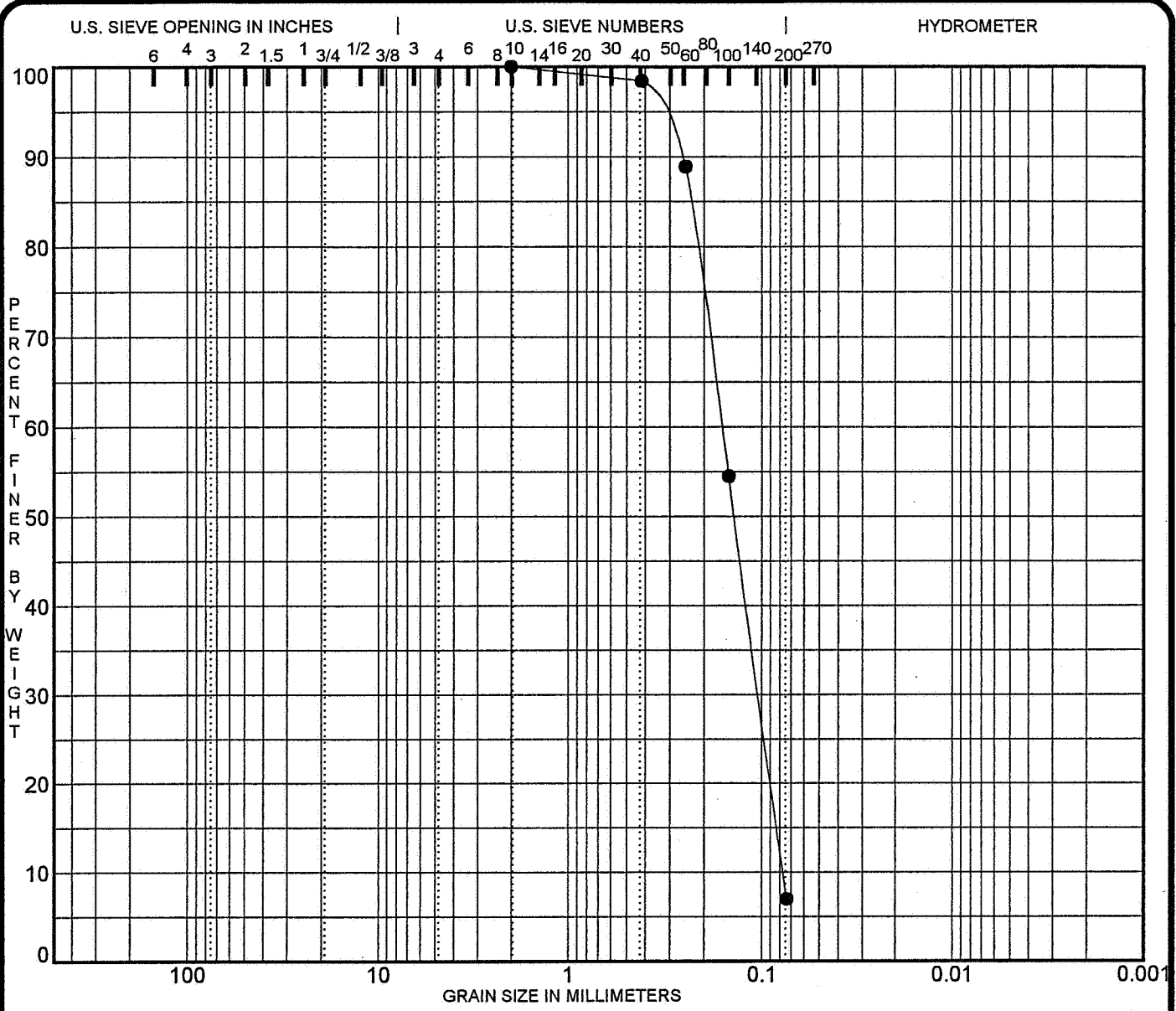


COBBLES	GRAVEL		SAND			SILT	CLAY
	coarse	fine	coarse	medium	fine		

Specimen Identification	Classification				MC%	LL	PL	PI	Cc	Cu
● AB-16	BROWN FINE SAND (A-3) STRATUM 1									
4.0' - 10.0'										
Organics (%)	D100	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay		
	2.00	0.158	0.112	0.078	0	93	7			
Dry Unit Weight										

PROJECT **SR 45 (NEBRASKA AVE) FROM KENNEDY BLVD TO HILLSBOROUGH AVE** JOB NO. **C378576E**

GRADATION CURVES
Williams Earth Sciences, Inc.



COBBLES	GRAVEL		SAND			SILT	CLAY
	coarse	fine	coarse	medium	fine		

Specimen Identification	Classification				MC%	LL	PL	PI	Cc	Cu
● AB-17	TAN FINE SAND (A-3) STRATUM 1									
5.5' - 7.0'										
Organics (%)	D100	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay		
	2.00	0.139	0.104	0.077	0	93	7			
Dry Unit Weight										

PROJECT SR 45 (NEBRASKA AVE) FROM KENNEDY BLVD TO HILLSBOROUGH AVE JOB NO. C378576E

GRADATION CURVES
Williams Earth Sciences, Inc.

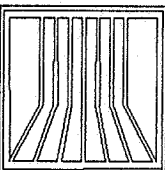
CORROSION TEST RESULTS

Client: Florida Department of Transportation - District 7

Project: SR 45 (Nebraska Avenue) from Kennedy Boulevard to Hillsborough Avenue

Project No: C378576E

Tested by: Frank Dyer



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Sample ID	Sample Date	Sample Location	Sample Type	Sample Depth (ft)	pH	Chlorides ppm	Sulphates ppm	Resistivity ohm-cm	FDOT Classification *
CRS-AB4	09/08/04	Sta. 110+80, 30' R, BLSR 45	Soil	6 - 7	8.1	90	71.1	> 10,000	Slightly Aggressive
CRS-AB11	09/08/04	Sta. 146+80, 32' R, BLSR 45	Soil	5 - 6	7.2	105	63.6	> 10,000	Slightly Aggressive
CRS-AB35	09/09/04	Sta. 252+50, 27' R, BLSR 45	Soil	4 - 5	7.2	90	71.0	> 10,000	Slightly Aggressive

***S - Slightly Aggressive *M - Moderately Aggressive *E - Extremely Aggressive**