Date: November 29, 2023

Prepared by: **GCME, Inc.**

TO: AECOM
110 East Broward Boulevard, Suite #700
Fort Lauderdale, FL 33301

Attention: **Mr. Jenn L. King, P.E.**
Associate Vice President; Transportation/Planning

SUBJECT: **Geotechnical Services Report – Final**
PD&E Studies – I-95 from Miami Garden Drive to Broward County Line
Miami-Dade County, Florida
FPID No.: 414964-1-22-01
GCME Project No.: 2000-01-21007

Dear Ms. King,

GCME, Inc. has completed the Geotechnical Services Report in connection with the subject project. This report also incorporates the comments made in reference to the previous report dated September 8, 2023. The purpose of this report is to provide geotechnical information to the roadway and structure engineers for preparation of the PD&E documents for the above mentioned PD&E studies. The following report includes the methods of study, evaluations and recommendations concerning geotechnical aspects of the proposed improvements.

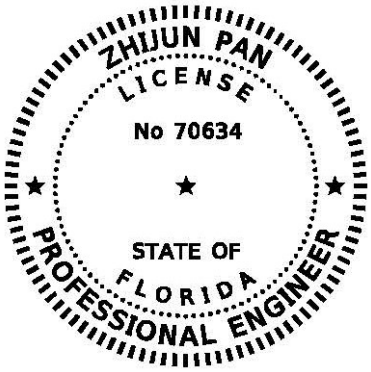
The work was completed following our contract with your firm and followed the basic guidelines of the Florida Department of Transportation (FDOT) Soils and Foundations Handbook, 2020. This report is written using English units.

-oo0oo-

We are pleased to be of continued service to AECOM and the Florida Department of Transportation (FDOT). If you have any questions or comments regarding the contents of the following report, please call.

Very truly yours,

GCME, INC.



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Zhijun Pan, P.E.
Senior Project Engineer
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Principal Engineer
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This item has been electronically signed and sealed by Zhijun Pan, PE using a Digital Signature. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

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1.0 INTRODUCTION

This roadway project entails potentially providing additional express and/or general use lanes on I-95/SR 9A from south of SR 860/Miami Gardens Drive to the Broward County Line and implementing interchange improvements at SR 860/Miami Gardens Drive and Ives Dairy Road within Miami-Dade County.

The improvements proposed as part of the project stem from the Refined Build Concept that was developed as part of the Interstate 95 Corridor Planning Study, conducted by the FDOT in May 2019, that assessed enhancements along the length of the I-95/SR 9A corridor within Miami-Dade County from US 1/SR 5 (Mile Post 0.000) to the Broward County Line. As such, this project is part of a larger effort to improve the I-95/SR 9A corridor within Miami-Dade County and regionally within Broward and Palm Beach Counties. The proposed concept is recommended for further consideration in the Project Development phase as it provides additional capacity while minimizing modifications to programmed/planned improvements pertaining to other projects along the I-95/SR 9A corridor, as well as reduces right-of-way acquisition/impacts and construction costs. General design parameters for the corridor include minimum 11-foot wide travel lanes, 10-foot wide express lane inside shoulders, and 4-foot wide buffers with express lane markers between the express lanes and general purpose lanes; 12-foot lanes are generally provided in segments that include more extensive reconstruction/widening, and 11-foot lanes are utilized in areas where modifications are less extensive or needed to match the existing/programmed/planned geometry.

The entire project site is located in Miami-Dade County. Land in the project vicinity is urban. Terrain in the area is relatively flat except approach embankments.

The purpose of this study was to compile all the subsurface conditions within the general vicinity of the project corridor in order to catalog the general subsurface stratigraphy and provide geotechnical information from very limited scope of field explorations negotiated for this phase of the studies. Based on available information and field exploration performed, we have prepared an engineering report summarizing all available information and our field and laboratory testing, the subsurface soil and groundwater conditions encountered and preliminary evaluation for this PD&E Studies.

2.0 USDA, SCS SOIL SURVEY

Research of the U.S. Department of Agriculture (USDA), Soil Conservation Service (SCS) Soil Survey of the Miami-Dade County area indicates the presence of different soil map units along the roadway sections. The soil map units present along the project corridor are described in details in Appendix – A.

A segment of the USDA Soils Map showing the proposed roadway section and the surrounding areas is presented in Appendix – A.

3.0 EXISTING GEOTECHNICAL INFORMATION

We have reviewed the existing information (within the proposed project corridor) provided by your office and FDOT.

After reviewing the existing/available field and laboratory data for this PD&E Studies, we believe that the project alignment is generally suitable for the planned construction when viewed from a geotechnical engineering perspective. The subsurface conditions of the roadway alignment and bridge structures are not expected to impose any significant constraints or limitations on the design or construction of the planned project from a soil mechanics, foundation engineering or engineering geology standpoint. The position of the groundwater table must also be generally considered during final design phase and construction.

The existing soils along the majority of the project alignments should have modest subgrade strength for pavement support.

In reference to our experience with similar projects along the Interstate I-95 corridor, precast pre-stressed concrete piles and drilled shafts are probably the feasible foundation systems for support of the proposed bridge replacement and/or new bridge.

The existing/available information are presented in Appendix – B.

4.0 FIELD INVESTIGATION

In reference to our negotiation, the field exploration included drilling two (2) Standard Penetration Test (SPT) borings on land at approximate locations of the proposed bridge structures as mentioned below. The borings were generally located at the proposed locations of the bridge bents. The borings were extended to 100 feet below existing grade.

The numbering schedule and locations of the borings drilled for the proposed bridge structures are as follows:

- Ives Dairy Road (SR-854) Bridge over I-95: One (1) borings, numbered B-101.

- Ramp 5B2-3 Flyover Bridge over I-95: One (1) borings, numbered B-201.
  (Connecting Miami Garden Drive to I-95 SB On Ramp)

The locations of the bridge borings are presented in Plates 1 and 2 titled ‘Approximate Boring Location Plan’. The station, offset and elevation information at the boring locations are provided by the project surveyor.

The subsurface geologic profiles encountered at the boring location along with the SPT results, are presented in Figure 1 and 2 for bridge borings. The soil profiles are drawn with reference to elevation.

The SPT borings were advanced using mud rotary procedures. The borings were drilled to depth of 100 feet below grade. Samples of the in-place materials were recovered with a standard split

barrel advanced with a 140-pound hammer falling 30 inches (the SPT after ASTM D 1586). Soil samples were field classified, placed in sealed containers and transported to our laboratory for further analysis by a soils engineer. Classification of the subsoils found in the borings followed the Unified Soil Classification System (ASTM D 2487). The borehole was filled with cement grout at the completion of the drilling activities.

The above subsurface description is a generalized nature provided to highlight the major soil strata encountered. The records of subsurface exploration included in the boring logs should be reviewed for specific information as to individual boring locations. The stratifications shown on the records of subsurface exploration represent the conditions only at the actual boring location. The stratifications represent the proximate boundary between subsurface materials and the transition may be gradual.

5.0 SUBSURFACE CONDITIONS

5.1 Stratigraphy – Bridge Structures

The borings drilled along the project alignment generally indicated the site to be underlain with interlayering of sands and limestone.

The SPT results (N-value) for the borings drilled proximate to the existing bridge indicate that the subsoils are generally loose to medium dense sands followed by weakly to well cemented limestone to the termination depth of the borings. There is approximate 15 feet thick of shallow limestone layer encountered at Boring B-101.

Details regarding the interlayering of the subsoil layers are shown on the soil profile sheets titled "Report of Core Borings", which is presented in Figure 1.

5.2 Groundwater

The depths of groundwater tables were measured at the locations of the structural borings drilled.

In the bridge borings drilled on land, groundwater was encountered at the depth of 7.4 and 16.4 feet below existing ground surface in boring B-101 and B-201, i.e., groundwater elevation varied from +0.9 to +1.2 feet (NAVD). Fluctuations of the groundwater should be anticipated. The groundwater table levels measured are shown on the "Report of Core Borings" sheets, Figure 1 adjacent to the boring logs.

Groundwater condition will vary with environmental variation and seasonal condition, such as the frequency and magnitude of rainfall patterns, as well as man-made influences, such as existing swales, drainage ponds, and under drains. We recommend that the contractor determine the actual groundwater levels at the time of the construction to determine groundwater impact on his or her construction procedure.

5.3 Laboratory Test Results

Index property tests such as moisture content, organic content and grain size distribution are being performed on representative samples from the bridge borings. All the available laboratory

test results are presented in Table – 1.

The corrosion parameters of pH, resistivity, sulfates and chlorides were measured for soil samples from the borings. The test results were compared with FDOT criteria for corrosivity to enable the materials to be classified accordingly. Corrosion series tests results are presented in Table – 2. Please note that groundwater samples were not collected and tested for corrosion parameters, due to groundwater depth in Boring B-201 and groundwater mixed with shallow limestone in Boring B-101. We would recommend that during final design phase, groundwater samples will be collected along the project corridor and tested accordingly.

6.0 BRIDGE STRUCTURE FOUNDATION ALTERNATIVES

6.1 Foundation Alternatives for Bridge Structure

The borings generally indicated that the project site was underlain by thin to thick deposits of loose to medium dense sands, followed by weakly to well cemented limestone to the termination depth. Foundation alternatives for the project considered the results of our field study and the location of the proposed bridge improvements. Based on our experience with similar projects, we initially considered the following foundation alternatives:

i. Shallow Foundations
ii. Precast Pre-stressed Concrete Piles
iii. Steel Piles, Including Pipe and H Sections
iv. Straight Sided Drilled Shafts
v. Auger Cast Piles

Each of these foundation alternatives will be discussed individually.

i. Shallow Foundations

Where appropriate, the use of shallow foundations is typically the most cost effective. With this foundation system, the structure loads are transmitted to the subsoil at a pressure suited for the properties of the soil. These properties are typically governed by the allowable soil pressure and the total and differential settlement criteria. The surficial soils throughout the project site will most likely require replacement (due to organic deposits found) and densification to achieve an adequate bearing resistance. This soil replacement will require excavation with sheet piling, dewatering and densification techniques, which will impact the economy of this foundation system tremendously.

Maintenance of traffic impacts, prolonged construction timing and staging requirements for construction adjacent to existing traffic usually interfere with the efficiencies of this soil replacement and densification process. In addition bridge foundation (intermediate bents) in water cannot be supported on shallow foundation. Based on these difficulties and resultant high costs, shallow foundations will not be considered for these bridge structures.

ii. Precast Pre-stressed Concrete Piles

Pre-stressed concrete (PSC) piles are a feasible foundation alternative. They are a widely used

and proven foundation system in South Florida. Precast pre-stressed piles are readily available and generally have a lower cost per ton of capacity than other pile types. Limestone layers are found from approximately 6 feet to 100 feet below grade at all the boring locations. It is our opinion that driving of the piles to the recommended depths may be difficult, and induce high driving stresses which could potentially damage the piles. However, these concerns of driving through dense soils can be minimized through the use of pre-drilled pile holes or jetting to achieve the recommended penetration.

The minimum size for pre-stressed concrete piles should be 18 inches as referenced in the Structures Design Guidelines. A disadvantage of the precast pre-stressed concrete piles is the potential impact the driving operation may have on nearby structures.

iii. Steel Piles

Steel pile types include pipe piles and H-sections. Previous experience has shown that steel piles are generally more expensive per linear foot than precast pre-stressed concrete piles. Steel piles are well suited to conditions with high variability in anticipated penetration depths where frequent splicing is expected. In some instances, steel piles may be easier to penetrate dense layers if necessary to achieve a desired penetration depth. In general, the cost of steel pile is relatively higher than concrete pile for the same required design capacity. Steel H-sections are inappropriate for this project because of inferior capacities compared to pipe piles at similar costs. Steel piles although structurally viable, are susceptible to corrosion in aggressive environments. A disadvantage of the steel pipe piles is the potential impact the driving operation may have on existing nearby structures. Based on these difficulties and resultant high costs, steel piles will not be considered for these bridge structures.

iv. Drilled Shafts

Drilled cast-in place straight sided concrete shafts are a feasible foundation alternative. Drilled shafts have the advantage of being able to develop high axial and lateral capacities in a single unit. However, the quality control of drilled shaft installation requires more engineering judgement and precaution compared with driven piles to ensure that the specifications are complied. This type of foundation system may become a favorite alternative for sites where limestone or very dense bearing strata are present at a relatively shallow depth. Significant concrete volume overruns may also occur during construction as evidenced by loss of drilling fluid. As a result, the temporary casing method of installation should be used. Shafts could be drilled and socketed into the limestone stratum (if applicable).

v. Auger Cast Piles

Auger Cast Piles (ACP) are a feasible foundation alternative. However, please note as per SDG 3.5.20, use of Auger Cast Piles (ACP) for bridges requires authorization of the State Structures Design Engineer (SSDE). Auger Cast Piles differ from conventional drilled shafts or bored piles, and exhibit both advantages and disadvantages over conventional drilled shafts. The main difference is that the use of casing or slurry to temporarily support the hole is avoided. Drilling the hole in one continuous process is faster than drilling a shaft excavation, an operation that requires lowering the drilling bit multiple times to complete the excavation. In contrast, the torque requirement to install the continuous auger is high compared with a conventional drilled

shaft of similar diameter; therefore, the diameter and length of Auger Cast Piles are generally less than drilled shafts. The use of a continuous auger for installation also limits Auger Cast Piles to soil or very weak rock profiles, while drilled shafts are often socketed into rock or other very hard bearing materials. The minimum size for Auger Cast Piles should be 24 inches as referenced in the Structures Design Guidelines.

During final design phase, based on comprehensive subsoil information of the project corridor and loading information, feasibility of using Auger Cast Piles should be evaluated and coordinated with the SSDE.

7.0 BRIDGE STRUCTURE FOUNDATION EVALUATIONS

7.1 Precast Concrete Driven Piles

7.1.1. Axial Capacity of Precast Concrete Piles

We have considered 18-inch and 24-inch square, precast concrete piles of various lengths in order to provide a range of design compressive capacities. The capacities were estimated from a computer-generated analysis based on a method to predict Davisson vertical pile capacity versus depth in sand. Computer program "FB-Deep Version 2.06" developed by Florida Bridge Software Institute, University of Florida was utilized to perform the axial capacity analysis of the driven concrete piles. The analysis was done for each individual boring drilled at the project site. The capacities (program outputs) for 18-inch and 24-inch square piles with reference to pile tip elevations at the boring locations for the bridge site are presented in Appendix – C. The corresponding FB-Deep output graphs are presented in Appendix – D.

The preliminary vertical capacity analysis at the bridge location was completed with ground set approximately at the elevation of the boring locations, i.e., ground elevations for borings B-101 and B-201 drilled on land.

We recommend using a resistance factor (Φ) equal to 0.65 for Load Resistance Factor Design (LRFD) for driven precast piles assuming PDA monitoring will be used in the test pile program. However, in order to reduce vibration impact, 100% dynamic testing (Φ = 0.75) and preforming should be taken into consideration during final design. Please note that the pile tip elevations mentioned in Appendix – C are based on ground elevations at the boring locations.

We recommend that the piles in a group be driven such that the center-to-center spacing between adjacent piles is at least 3 times the butt width. We recommend that the ultimate capacity of a pile group be determined by summing the single pile capacities in that group.

7.1.2 Construction Considerations

We recommend the piles be installed according to the latest edition of Standard Specifications for Road and Bridge Construction. Precast, concrete pile foundations are

common in South Florida and can be constructed by local contractors. However, we believe that the driven pile option should involve monitoring of test piles using the Pile Driving Analyzer, with associated wave equation studies. The test program would confirm design capacities, required penetration, and driving criteria.

Vibrations resulting from pile driving at the project location should be carefully monitored to limit the impact of ground motion on existing structures. A precondition survey is often prudent to evaluate existing conditions (if any) before pile driving operations. Also, during pile driving operation, vibration resulting from the operation and its impact on the existing structures (if any) should be monitored constantly in order to limit/avoid any impact of ground motion on the existing structures.

During driving operations, records should be kept for each pile that detail pertinent information such as the pile type, length, date driven and blows count per foot. The capacity of each pile should be reviewed based on its final tip elevation and driving record. We recommend that pile-driving operations be continuously monitored by experienced technical personnel working under the direct supervision of a professional geotechnical engineer.

Temporary and/or permanent sheet pile wall (if applicable) proposed during construction of bridge foundation should strictly adhere to the following guidelines.

Construction of 'Temporary' and/or 'Permanent' sheet pile walls less than five (5) times the size of the pile measured from the near face of the pile, and the ratio of sheet pile walls embedment depth to pile embedment depth greater than 0.5, should be notified to us prior to the test pile program and construction of the production pile. This is due to the fact that such sheet pile wall will interfere with the capacity of the proposed pile foundations and we need to evaluate the proposed impact during the test pile program and recommend driving criteria accordingly. [Reference: FDOT Research Documents & Publications, <Effect of Proximity of Sheet Pile Walls on the Approximate Capacity of Driven Displacement Piles: Final Report>, 08-2018]

7.2 Drilled Shafts

7.2.1. Axial Capacity of Drilled Shaft Foundations

Drilled cast-in-place straight-sided concrete shafts are also a technically feasible foundation alternative for the project. Installation procedures for drilled shafts in cohesionless soils normally involve helical auger drilling in combination with bentonite slurry and sometimes steel casing for stabilization of borehole walls. Drilled shaft diameter 4, 5 and 6 feet were considered for our analysis. Vertical (axial) capacity of drilled shafts is normally obtained through a combination of side shear and end bearing.

The ultimate vertical capacities were calculated by utilizing the computer program "FB-Deep, Version 2.06" developed by Florida Bridge Software Institute, University of Florida. The analysis was done using SPT N-values and subsoil information developed from each individual boring drilled at the proposed bridge site and with varying shaft lengths in order to provide a range of design compressive capacities. Please note, layers

of limestone are encountered at various depths (approximately from 6 feet to 100 feet below grade) and hence, are modeled as dense sand in this preliminary analysis.

The vertical shaft capacities for 48-inch, 60-inch and 72-inch diameter shafts are computed allowing 0.5 inch settlement (i.e. 1.04% for 48-inch diameter shafts, 0.83% for 60-inch diameter shafts, and 0.69% for 72-inch diameter shafts). The vertical capacities reported equals to side friction plus end bearing. The FB-Deep program computer outputs showing vertical capacities considering 0.5 inch settlement and ultimate capacities (i.e., ultimate capacity = ultimate skin friction + fully mobilized ultimate end bearing) are presented in Appendix – E. The ultimate capacities for 48-inch, 60-inch and 72-inch diameter drilled shafts are graphically presented in Appendix – F. The drilled shaft length mentioned in our analysis results indicates shaft length embedded in the ground at the respective bridge boring location.

7.2.2 Construction Considerations – Drilled Shafts

Review of the soil profiles from the borings drilled for this project indicates that the subsoils at the location of the bridge piers are generally underlain by thin to thick deposits of loose to medium dense sands, followed by weakly to well cemented limestone to the termination depth. The subsoils would lend themselves to excavation utilizing conventional drilled shaft construction equipment. We anticipate sidewall caving during drilled shaft construction and, therefore, anticipate the use of a steel casing for stabilization purposes during construction. We anticipate that the casing may not be sealed into an impermeable stratum. The shaft hole should be drilled, the reinforcing steel cage set, and the foundation concrete poured by tremie and/or pump methods. The casing must then be pulled only after fresh concrete, free of soil cuttings, flows out the top of the casing. For any temporary or permanent casing used during construction of the drilled shafts, we would recommend non-vibratory method of casing installation and removal to reduce vibration and any possible scenario of destabilizing the existing bridge. The shafts should be installed in accordance with the latest FDOT Specification 455.

8.0 LIMITATIONS OF STUDY

The geotechnical engineer warrants that the findings, recommendations, specifications, or professional advice contained herein for PD&E Study have been presented after being prepared following generally accepted professional engineering practice in the fields of foundation engineering, soil mechanics and engineering geology. This company is not responsible for the conclusion, opinion, or recommendations made by others based on this data. No other warranties are expressed or implied.

This report is prepared based on information received from your office via telephone conversations and emails, and are mentioned in the report. If any of this information is not correct, or if the location of the proposed structure is changed, or if the loads or foundation type change, please contact us so that the recommendation provided in the report may be reviewed for continued applicability.

The scope of the investigation was intended to evaluate soil conditions within the influence of foundation and does not include an evaluation of potential deep soil problems such as sinkholes. The analysis and recommendations submitted in this report are based upon the data obtained from the soil borings performed at the locations indicated. If any subsoil variations become evident during the course of this project, a re-evaluation of the recommendations contained in this report will be necessary after we have had an opportunity to observe the characteristics of the conditions encountered. This report is prepared for the PD&E Study Phase of the project corridor, and hence final alignment of the proposed roadway, design details and additional design consideration are not available at this phase of the project. We understand that during the final design phase, based on final proposed alignment of the project corridor, roadway auger borings should be drilled at close intervals (spacing) and laboratory tests performed in order to evaluate the suitability of the existing subsoils and delineate the horizontal and vertical extents of the unsuitable soils (if any). Also during the final design phase, bridge and structure borings will be required based on final alignment of the bridge widenings/replacements and other structures, and final analysis and design of bridge and other structure foundations has to be performed. The applicability of the report should also be reviewed in the event significant changes occur in the design, nature, or location of the proposed roadway and structures.

The scope of our services does not include any environmental assessment or investigation for the presence or absence of hazardous or toxic materials in the soil, groundwater, or surface water within or beyond the site studied. Any statements in the report regarding odors, staining of soils, or other unusual conditions observed are strictly for the information of our client.

TABLE - 1

SUMMARY OF LABORATORY TESTING RESULTS [FPID #: 414964-1-22-01]

Project: PD&E Studies – I-95 from Miami Garden Drive to Broward County Line

Boring No.	Sample Depth (ft)	USCS Symbol	Natural Moisture Content (%)	Organic Content (%)	Atterberg Limits			Sieve Analysis								
					LL (%)	PL (%)	PI (%)	3/4"	3/8"	#4	#10	#20	#40	#60	#100	#200
B-101	26.0 - 28.0	SP	24.1					100.0	100.0	100.0	100.0	98.3	80.0	35.3	5.8	2.0
B-101	36.0 - 37.0	SM	30.9					93.1	86.2	74.2	66.3	60.9	54.0	43.5	37.2	36.5
B-101	66.0 - 68.0	SP-SM	22.2					100.0	83.9	75.9	71.3	69.7	68.1	56.4	21.2	7.1
B-201	12.0 - 13.5	SP	18.4					100.0	100.0	100.0	100.0	99.4	31.1	26.8	4.7	3.1
B-201	53.0 - 55.0	SP-SM	27.7					100.0	97.8	91.1	86.7	85.7	84.5	79.3	31.6	6.1
B-201	91.0 - 93.0	SP	20.4					100.0	100.0	100.0	99.6	80.7	35.6	12.9	5.8	3.4

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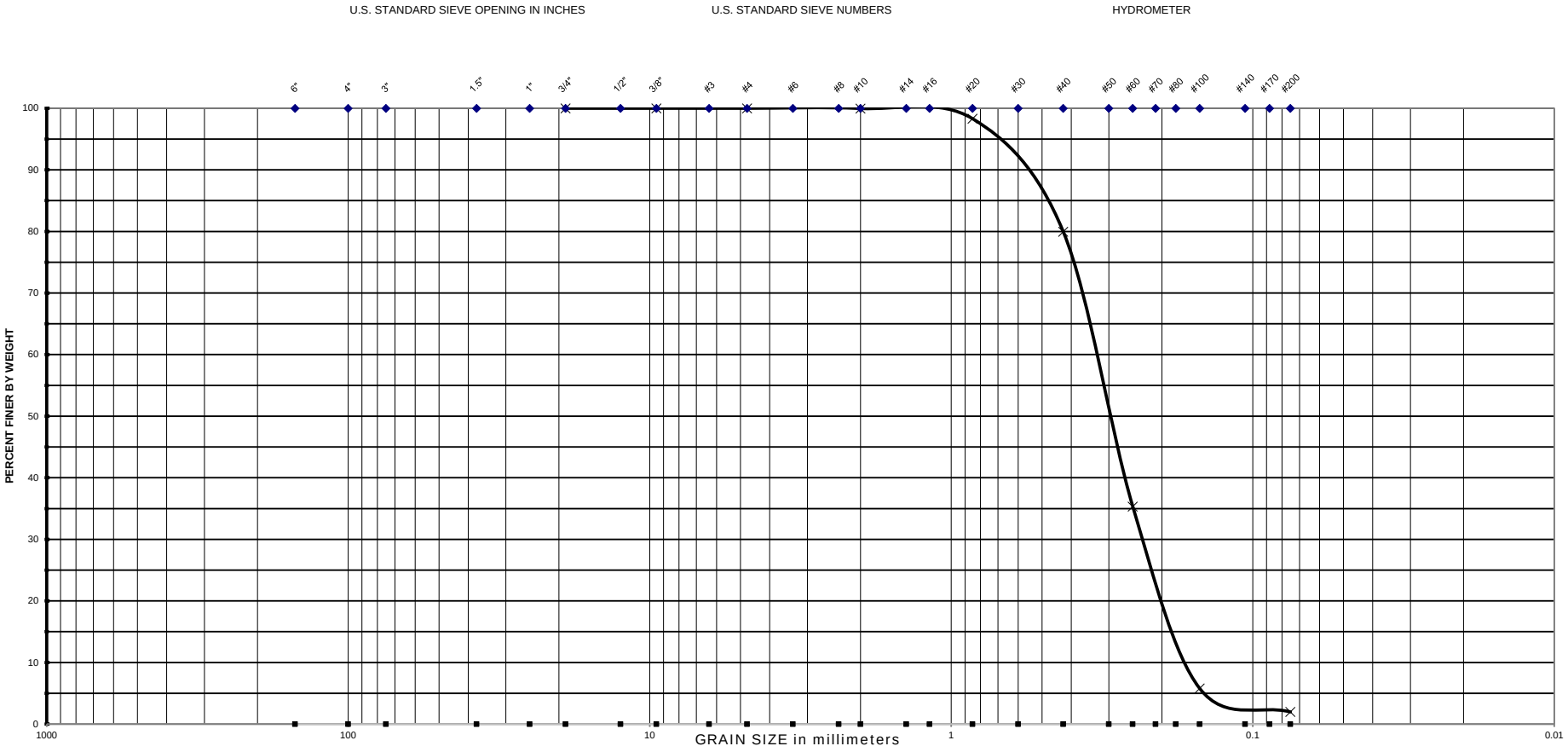

Project Name : PD&E Studies – I-95 from Miami Garden Drive to Broward County Line [FPID #: 414964-1-22-01]

Project No. : 2000-01-21007 **Date :** 8/29/2023

BORING NO.	DEPTH INTERVAL [FT]	SOIL DESCRIPTION	MC	OC
B-101	26.0 - 28.0	SP	24.1	

Note : MC - Moisture Content (%)
OC - Organic Content (%)

U.S SIEVE NO.	CUMM. % PASSING
3/4"	100.0
3/8"	100.0
#4	100.0
#10	100.0
#20	98.3
#40	80.0
#60	35.3
#100	5.8
#200	2.0

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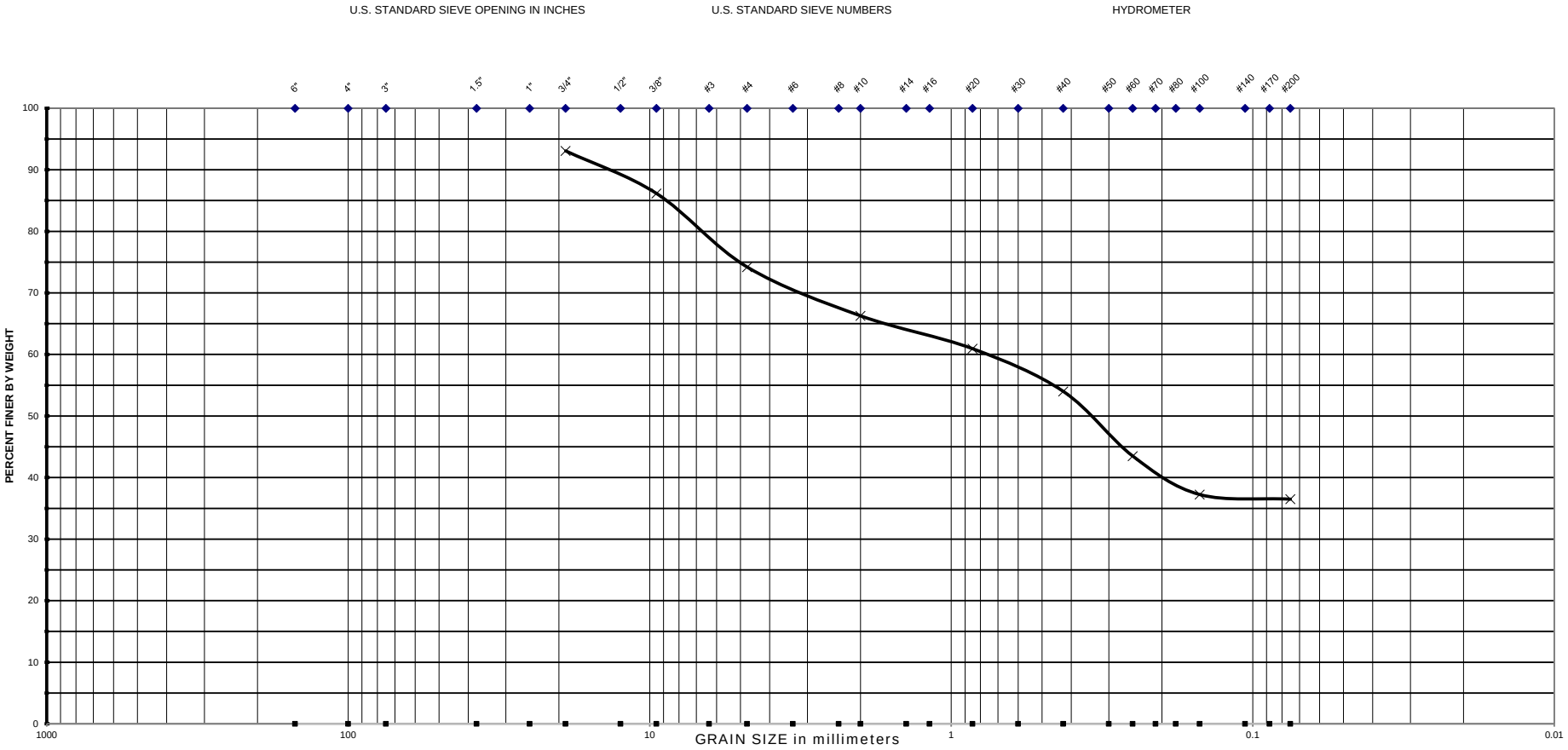
Geotechnical - Consulting - Engineering - Testing



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BORING NO.	DEPTH INTERVAL [FT]	SOIL DESCRIPTION	MC	OC
B-101	36.0 - 37.0	SM	30.9	

Note : MC - Moisture Content (%)
OC - Organic Content (%)

U.S SIEVE NO.	CUMM. % PASSING
3/4"	93.1
3/8"	86.2
#4	74.2
#10	66.3
#20	60.9
#40	54.0
#60	43.5
#100	37.2
#200	36.5

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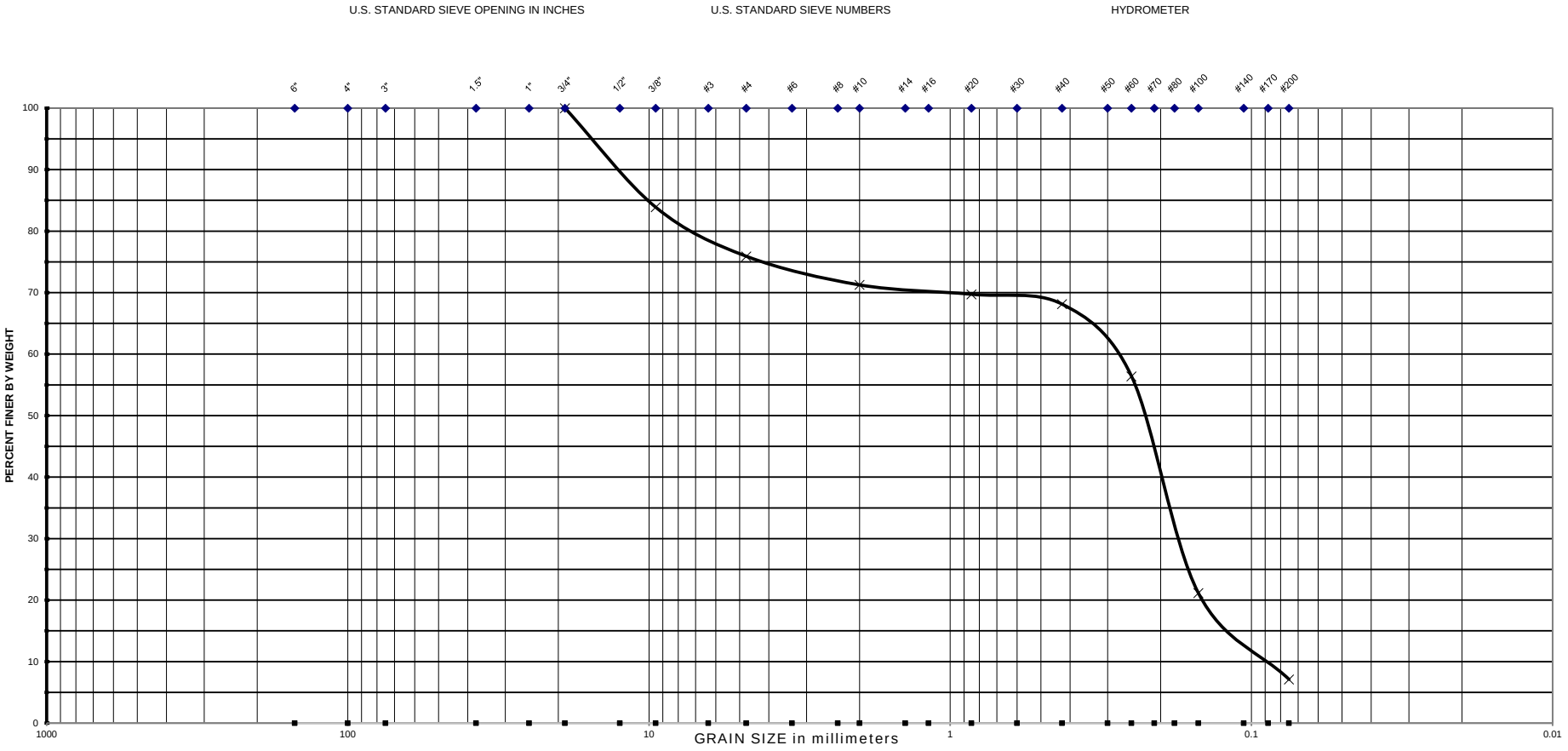
Geotechnical - Consulting - Engineering - Testing



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BORING NO.	DEPTH INTERVAL [FT]	SOIL DESCRIPTION	MC	OC
B-101	66.0 - 68.0	SP-SM	22.2	

Note : MC - Moisture Content (%)
OC - Organic Content (%)

U.S SIEVE NO.	CUMM. % PASSING
3/4"	100.0
3/8"	83.9
#4	75.9
#10	71.3
#20	69.7
#40	68.1
#60	56.4
#100	21.2
#200	7.1

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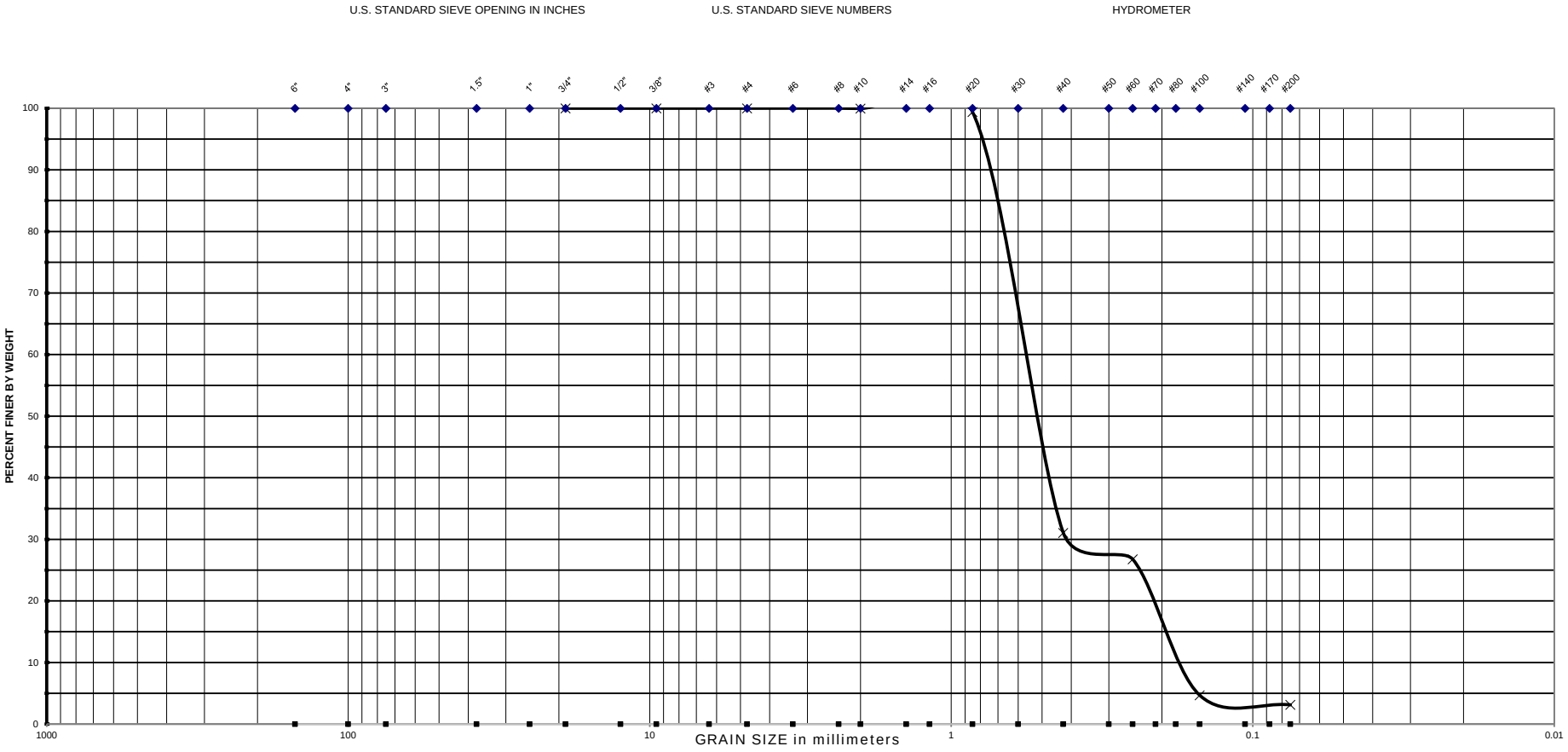
Geotechnical - Consulting - Engineering - Testing



Project Name : PD&E Studies – I-95 from Miami Garden Drive to Broward County Line [FPID #: 414964-1-22-01]

Project No. : 2000-01-21007 **Date :** 8/29/2023

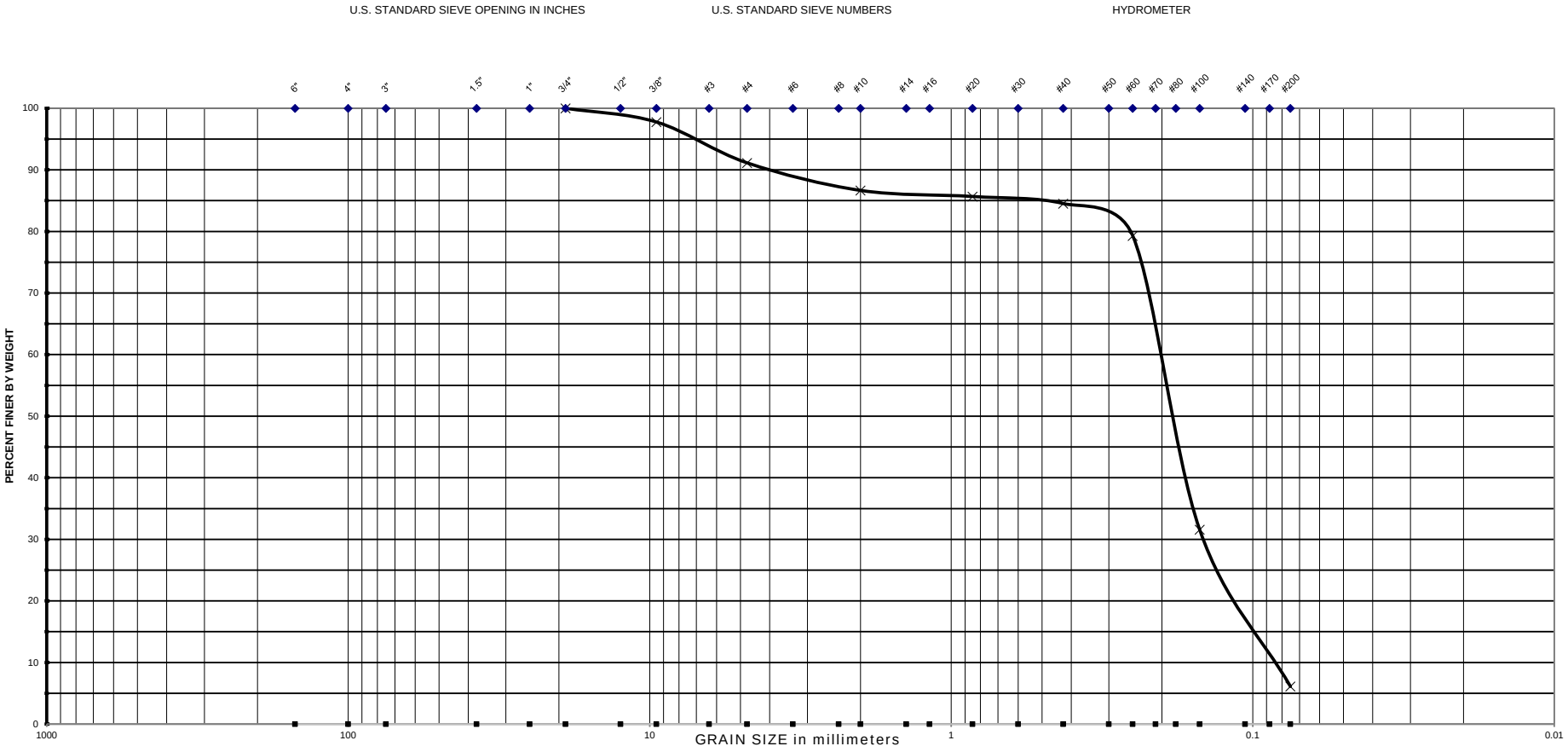
BORING NO.	DEPTH INTERVAL [FT]	SOIL DESCRIPTION	MC	OC
B-201	12.0 - 13.5	SP	18.4	

Note : MC - Moisture Content (%)
OC - Organic Content (%)

U.S SIEVE NO.	CUMM. % PASSING
3/4"	100.0
3/8"	100.0
#4	100.0
#10	100.0
#20	99.4
#40	31.1
#60	26.8
#100	4.7
#200	3.1

GCME

Geotechnical - Consulting - Engineering - Testing



Project Name : PD&E Studies – I-95 from Miami Garden Drive to Broward County Line [FPID #: 414964-1-22-01]

Project No. : 2000-01-21007 **Date :** 8/29/2023

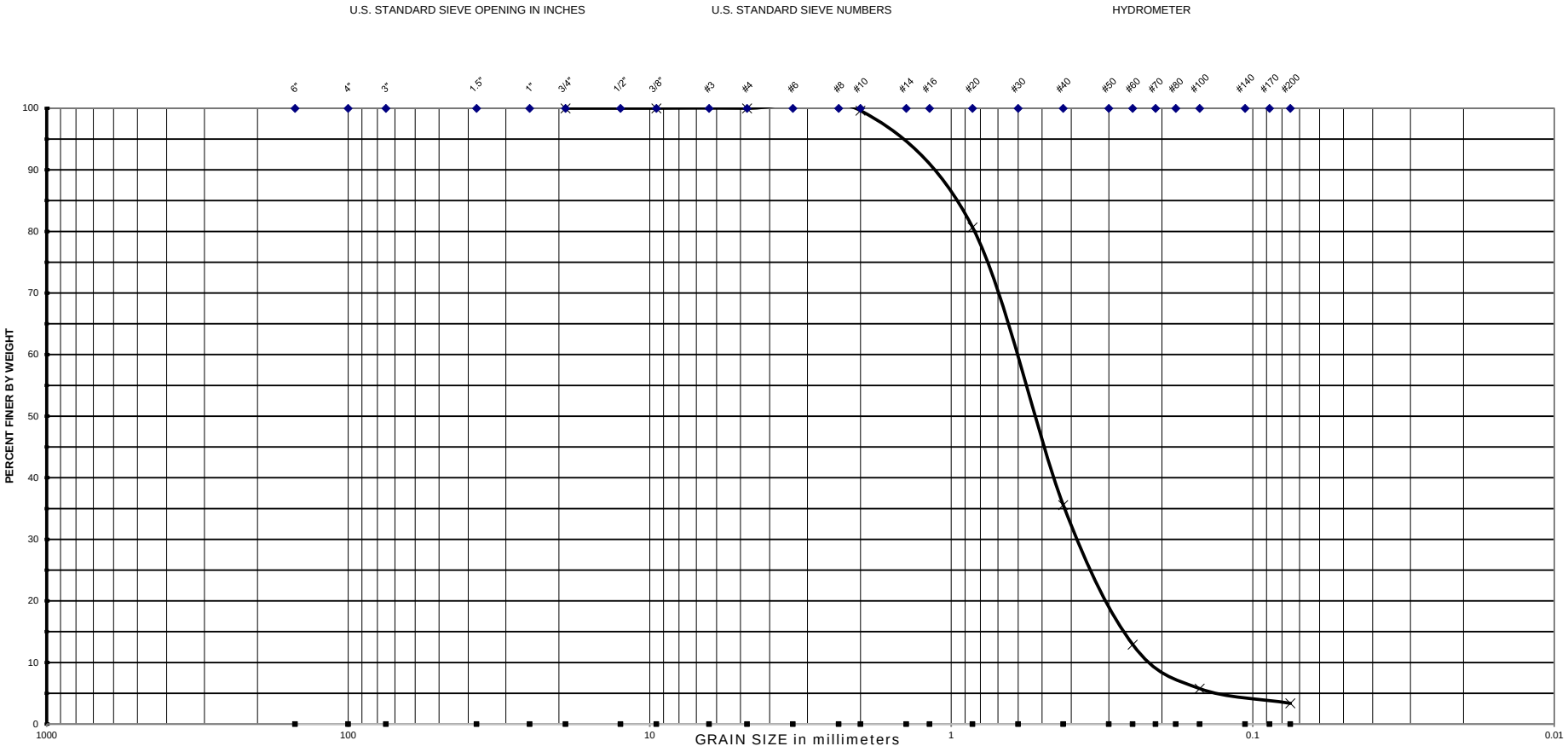
BORING NO.	DEPTH INTERVAL [FT]	SOIL DESCRIPTION	MC	OC
B-201	53.0 - 55.0	SP-SM	27.7	

Note : MC - Moisture Content (%)
OC - Organic Content (%)

U.S SIEVE NO.	CUMM. % PASSING
3/4"	100.0
3/8"	97.8
#4	91.1
#10	86.7
#20	85.7
#40	84.5
#60	79.3
#100	31.6
#200	6.1

GCME

Geotechnical - Consulting - Engineering - Testing



Project Name : PD&E Studies – I-95 from Miami Garden Drive to Broward County Line [FPID #: 414964-1-22-01]

Project No. : 2000-01-21007 **Date :** 8/29/2023

BORING NO.	DEPTH INTERVAL [FT]	SOIL DESCRIPTION	MC	OC
B-201	91.0 - 93.0	SP	20.4	

Note : MC - Moisture Content (%)
OC - Organic Content (%)

U.S SIEVE NO.	CUMM. % PASSING
3/4"	100.0
3/8"	100.0
#4	100.0
#10	99.6
#20	80.7
#40	35.6
#60	12.9
#100	5.8
#200	3.4

TABLE - 2

SUMMARY OF CORROSION TEST RESULTS [FPID #: 414964-1-22-01]

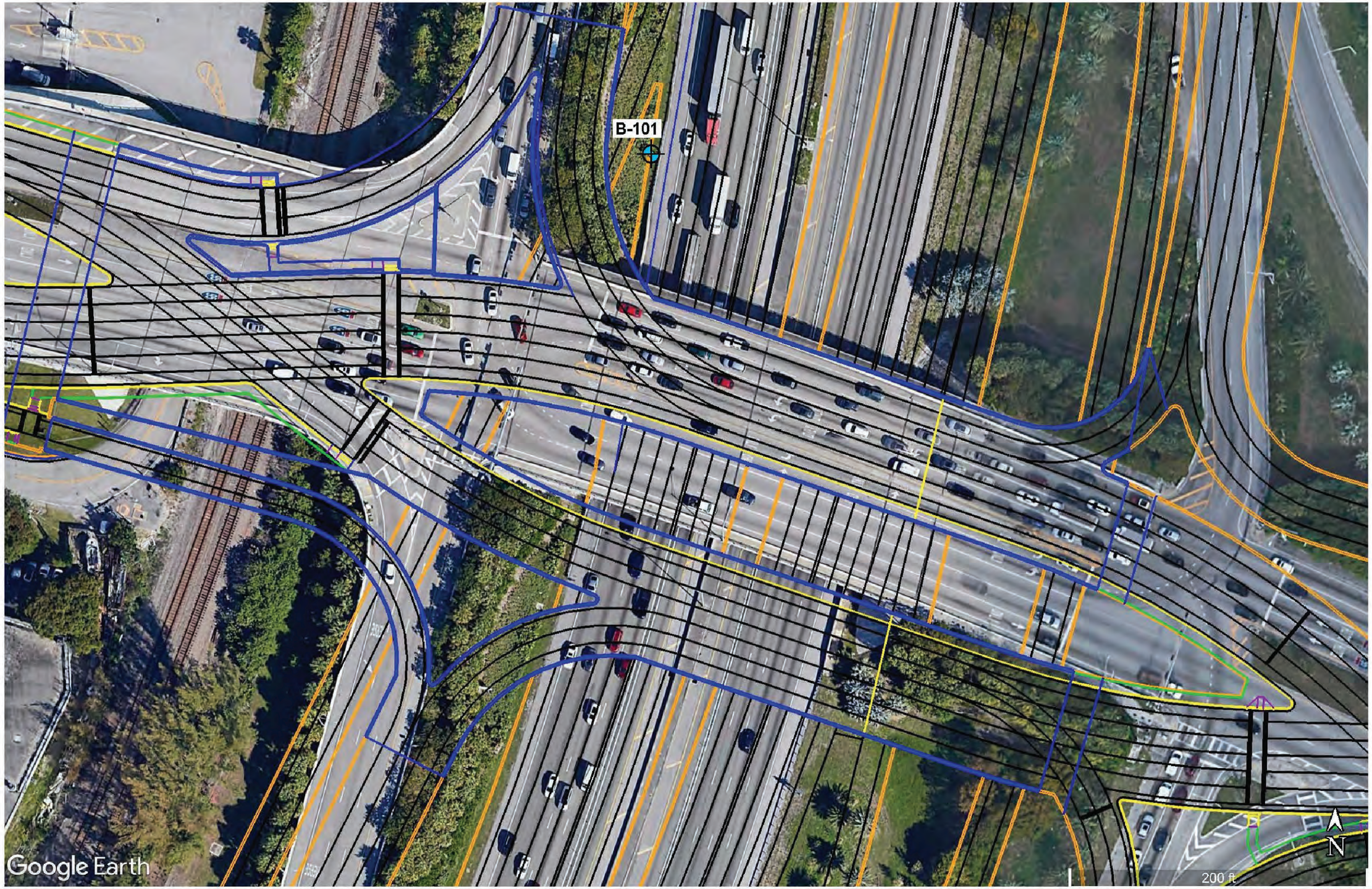
Project: PD&E Studies – I-95 from Miami Garden Drive to Broward County Line

Boring No.	Latitude	Longitude	Soil Type	Sample	Depth Interval	pH	Resistivity (ohm-cm)	Chloride (ppm)	Sulfate (ppm)	Environmental Classification (Substructure)	
										Steel	Concrete
B-101	25.964525°	-80.165919°	SP & Limestone	Soil	4.0 - 8.0	8.7	23900	5.0	4.4	Slightly Aggressive	Slightly Aggressive
B-201	25.943336°	-80.187103°	SP	Soil	13.5 - 15.0	9.4	10200	5.5	18.0	Slightly Aggressive	Slightly Aggressive

Table 1.3.2-1 Criteria for Substructure Environmental Classifications

Classification	Environmental Condition	Units	Steel		Concrete	
			Water	Soil	Water	Soil
Extremely Aggressive (If any of these conditions exist)	pH		< 6.0		< 5.0	
	Cl	ppm	> 2000		> 2000	
	SO_4	ppm	N.A.		> 1500	> 2000
	Resistivity	Ohm-cm	< 1000		< 500	
Slightly Aggressive (If all of these conditions exist)	pH		> 7.0		> 6.0	
	Cl	ppm	<500		< 500	
	SO_4	ppm	N.A.		< 150	< 1000
	Resistivity	Ohm-cm	> 5000		> 3000	
Moderately Aggressive	This classification must be used at all sites not meeting requirements for either slightly aggressive or extremely aggressive environments.					

pH = acidity ($-\log_{10}H^+$; potential of Hydrogen), Cl = chloride content, SO_4 = Sulfate content.



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
					LEGEND: B-# - Bridge Boring

ENGINEER OF RECORD:
PARTHA GHOSH, P.E. LICENSE NO. 51377
GCME, INC.
1730 W. 10TH STREET
RIVIERA BEACH, FLORIDA 33404
CERTIFICATE OF AUTHORIZATION NO. 9076

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 9A	MIAMI-DADE	414964-1-22-01

APPROXIMATE BORING LOCATION PLAN
PLATE-1

SHEET NO.

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
					LEGEND: B-# - Bridge Boring

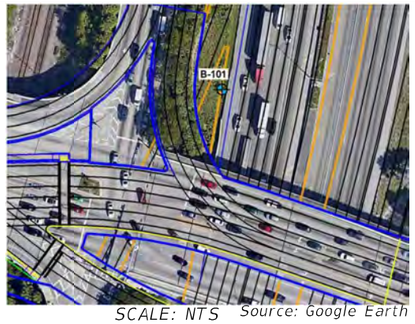
ENGINEER OF RECORD:
PARTHA GHOSH, P.E. LICENSE NO. 51377
GCME, INC.
1730 W. 10TH STREET
RIVIERA BEACH, FLORIDA 33404
CERTIFICATE OF AUTHORIZATION NO. 9076

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

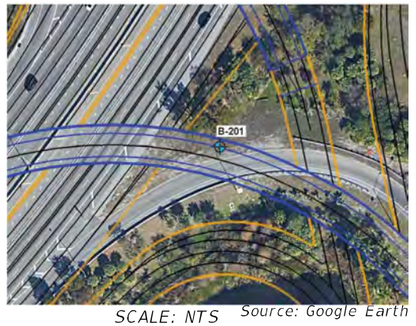
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 9A	MIAMI-DADE	414964-1-22-01

APPROXIMATE BORING LOCATION PLAN
PLATE-2

SHEET NO.

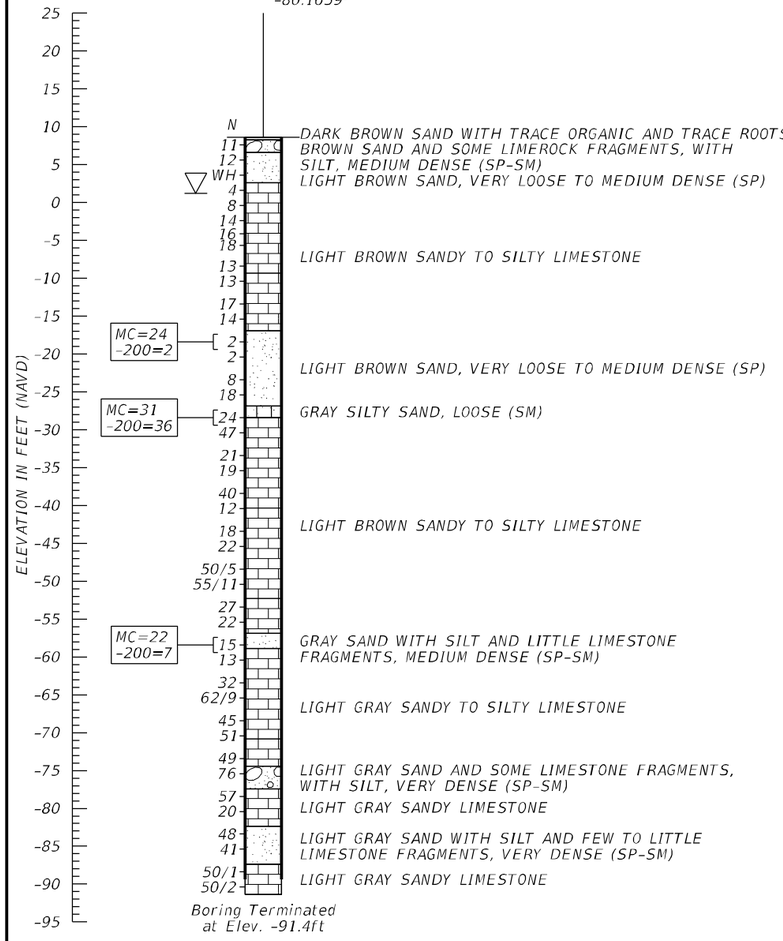


SCALE: NTS Source: Google Earth



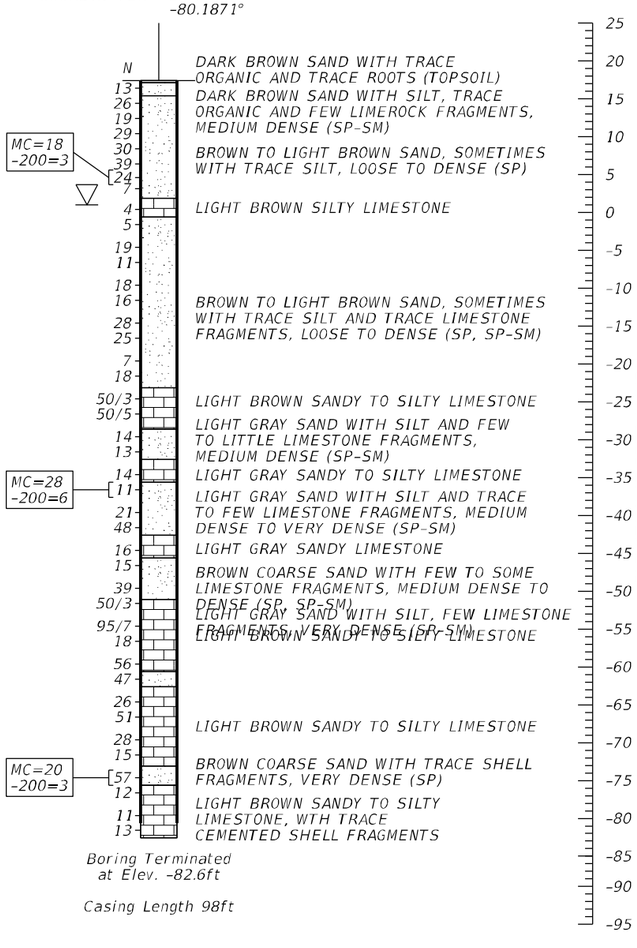
SCALE: NTS Source: Google Earth

BOR # B-101
STA. 685+50
OFF. 97.1' LT
ELEV. +8.6'
DATE 8/25/23
DRILLER FAUSTINO
HAMMER Auto
RIG B-57
COORDINATES 25.9645°
-80.1659°



Casing Length 98ft

BOR # B-201
STA. 578+32
OFF. 157.1' RT
ELEV. +17.4'
DATE 8/22/23
DRILLER ALEXANDER MILAN
HAMMER Auto
RIG CME-45
COORDINATES 25.9433°
-80.1871°



Casing Length 98ft

SCALE: 1"=20'V

LEGEND

(SP)	UNIFIED SOIL CLASSIFICATION SYSTEM SYMBOL
N	STANDARD PENETRATION RESISTANCE IN BLOWS PER 12 inches UNLESS OTHERWISE NOTED. 50/3 INDICATES (50) BLOWS REQUIRED TO DRIVE A SAMPLING SPOON 3 INCHES.
▽ 8/22/23	WATER LEVEL WITH DATE OF READING
→	LOSS OF CIRCULATION
WR	SAMPLER DROPPED DUE TO WEIGHT OF ROD
WH	SAMPLER DROPPED DUE TO WEIGHT OF HAMMER
HA	DRILLED WITH A HAND AUGER IN ORDER TO CLEAR LOCATION FROM UNDERGROUND UTILITIES
NR	NO RECOVERY- NO SOIL/ROCK WAS RECOVERED IN THE SAMPLING SPOON
	STATION / OFFSET / ELEVATION / COORDINATE INFORMATION ARE PROVIDED BY SURVEYORS.
	MC= NATURAL MOISTURE CONTENT (%) -200= FINES PASSING #200 SIEVE (%) OC= ORGANIC CONTENT (%) LL= LIQUID LIMIT (%) PI= PLASTICITY INDEX (%) NP= INDICATES NON-PLASTIC
NOTES:	STRATA BOUNDARIES ARE APPROXIMATE AND MAY VARY BETWEEN OR AWAY FROM BORING LOCATIONS.
	DRILLER: FAUSTINO / ALEXANDER MILAN

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 inches
SPOON OUTSIDE DIA.	2.0 inches
AVG. HAMMER DROP	30.0 inches
HAMMER WEIGHT	140.0 pounds

SPT CONSISTENCY CHART

SILTS AND CLAYS- CONSISTENCY	SAFETY HAMMER SPT (BLOWS/1.0 ft)	AUTOMATIC HAMMER SPT (BLOWS/1.0 ft)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 - 4	1 - 3
FIRM	4 - 8	3 - 6
STIFF	8 - 15	6 - 12
VERY STIFF	15 - 30	12- 24
HARD	GREATER THAN 30	GREATER THAN 24

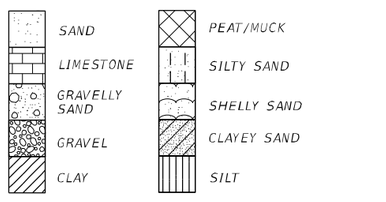
SPT DENSITY CHART

GRANULAR MATERIALS- RELATIVE DENSITY	SAFETY HAMMER SPT (BLOWS/1.0 ft)	AUTOMATIC HAMMER SPT (BLOWS/1.0 ft)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 - 10	3 - 8
MEDIUM DENSE	10 - 30	8 - 24
DENSE	30 - 50	24 - 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40

ENVIRONMENTAL CLASSIFICATION:

SUBSTRUCTURE:	SLIGHTLY AGGRESSIVE (CONCRETE) SLIGHTLY AGGRESSIVE (STEEL)
SUPERSTRUCTURE:	SLIGHTLY AGGRESSIVE

SOIL TYPE SYMBOLS:



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

ENGINEER OF RECORD:
PARTHA GHOSH, P.E. LICENSE NO. 51377
GCME, INC.
1730 W. 10TH STREET
RIVIERA BEACH, FLORIDA 33404

DRAWN BY: FP 08-23
CHECKED BY: ZP 08-23
DESIGNED BY: XXX MM-YY
CHECKED BY: XXX MM-YY

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 9A	MIAMI-DADE	414964-1-22-01

SHEET TITLE: REPORT OF CORE BORINGS

PROJECT NAME: PD&E STUDIES - I-95 FROM MIAMI GARDEN DRIVE TO BROWARD COUNTY LINE

REF. DWG. NO.

SHEET NO.

GCME PROJECT NO. 2000-01-21007

NOTICE: THE OFFICAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C

FIGURE: B-1

fpier 11/27/2023 3:58:49 PM X:\CADD\MicroStation Drawing\2021\21007\Bridge\B1Boring_B-101&201.dgn

APPENDIX – A

USDA, SCS SOIL INFORMATION

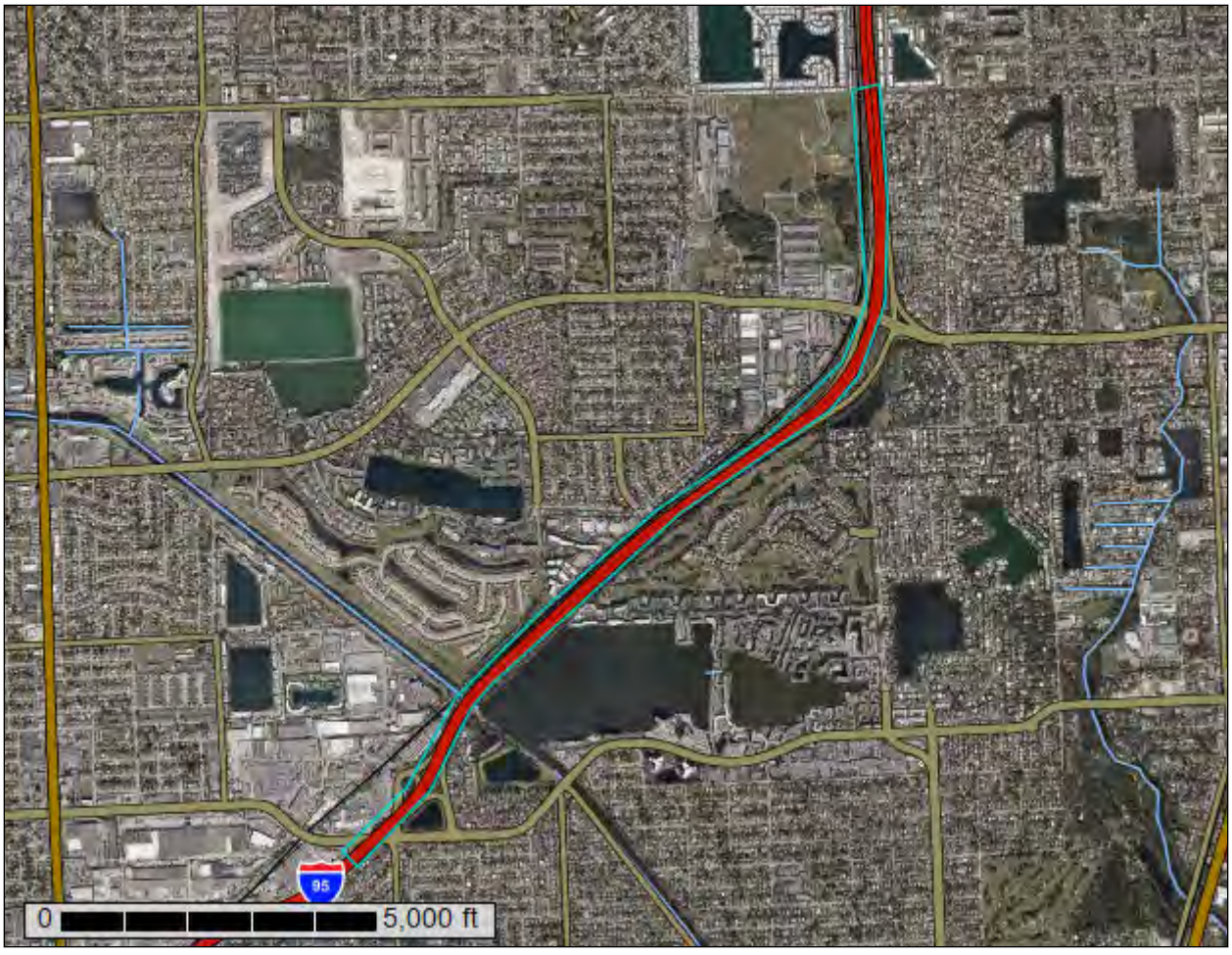
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Broward County, Florida, East Part; and Miami-Dade County Area, Florida



November 25, 2020

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

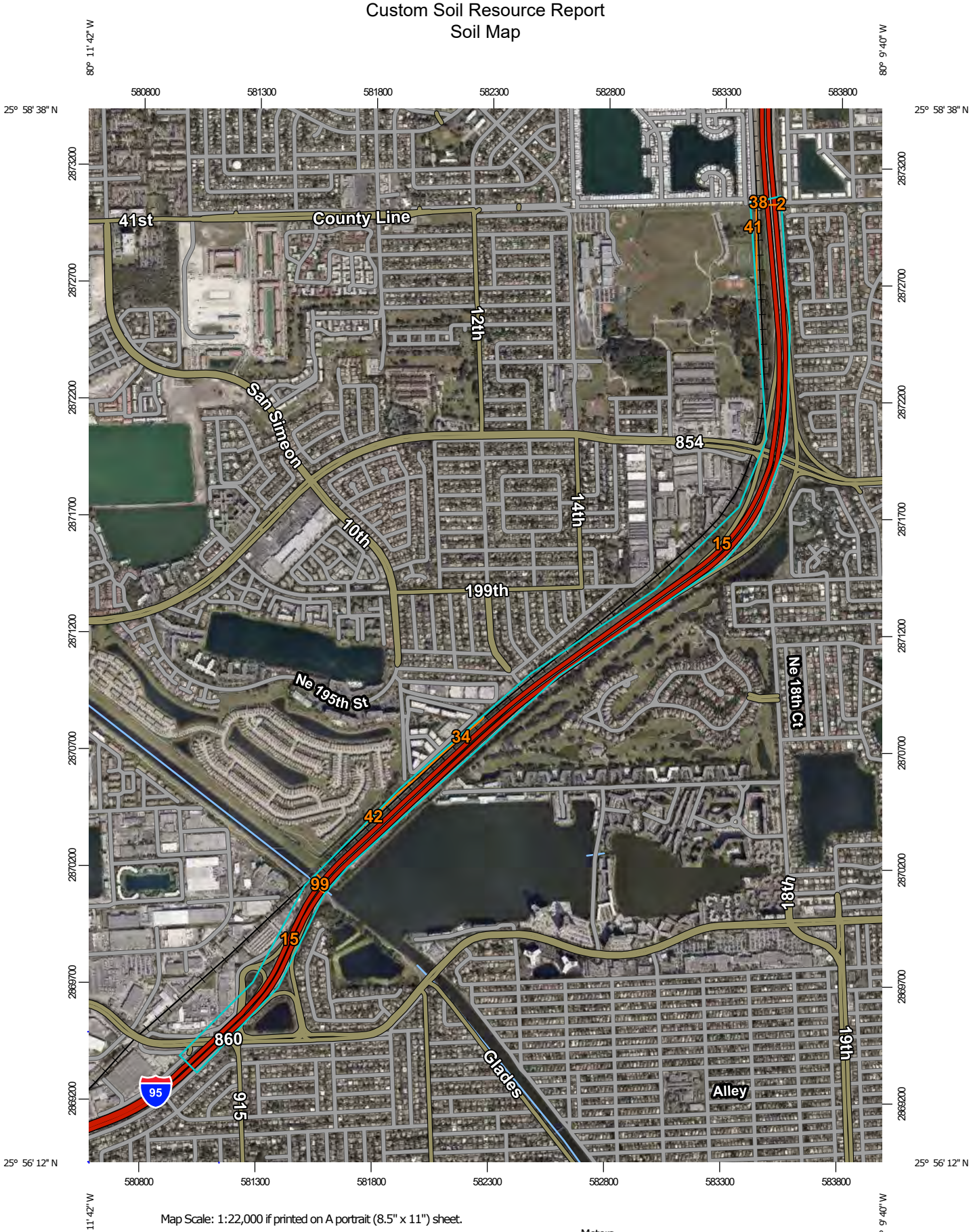
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:22,000 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 300 600 1200 1800

Feet: 0 1000 2000 4000 6000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at scales ranging from 1:20,000 to 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Broward County, Florida, East Part
Survey Area Data: Version 16, Jun 8, 2020

Soil Survey Area: Miami-Dade County Area, Florida
Survey Area Data: Version 12, Jun 9, 2020

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 2, 2019—Mar 26, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
2	Arents-Urban land complex	0.0	0.0%
38	Udorthents, shaped	0.7	0.6%
40	Urban land, 0 to 2 percent slopes	0.1	0.1%
Subtotals for Soil Survey Area		**0.7**	**0.6%**
Totals for Area of Interest		**116.7**	**100.0%**

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
15	Urban land, 0 to 2 percent slopes	112.4	96.3%
34	Hallandale fine sand, 0 to 2 percent slopes	1.0	0.9%
41	Dade fine sand	1.2	1.0%
42	Udorthents, limestone substratum, 0 to 5 percent slopes	0.5	0.4%
99	Water	0.8	0.7%
Subtotals for Soil Survey Area		**116.0**	**99.4%**
Totals for Area of Interest		**116.7**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties

and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Broward County, Florida, East Part

2—Arents-Urban land complex

Map Unit Setting

National map unit symbol: 1hn8f
Elevation: 0 to 210 feet
Mean annual precipitation: 60 to 68 inches
Mean annual air temperature: 72 to 79 degrees F
Frost-free period: 358 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Arents and similar soils: 55 percent
Urban land: 40 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Arents

Setting

Landform: Rises on marine terraces
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Altered marine deposits

Typical profile

A - 0 to 4 inches: cobbly sand
C1 - 4 to 9 inches: cobbly sand
C2 - 9 to 32 inches: sand
2C - 32 to 60 inches: sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water capacity: Very low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A/D
Forage suitability group: Forage suitability group not assigned (G156AC999FL)
Other vegetative classification: Forage suitability group not assigned (G156AC999FL)
Hydric soil rating: No

Description of Urban Land

Setting

Landform: Marine terraces
Landform position (three-dimensional): Interfluve, talf
Down-slope shape: Linear
Across-slope shape: Linear

Interpretive groups

Land capability classification (irrigated): None specified
Forage suitability group: Forage suitability group not assigned (G156AC999FL)
Other vegetative classification: Forage suitability group not assigned (G156AC999FL)
Hydric soil rating: Unranked

Minor Components

Arents, organic substratum

Percent of map unit: 3 percent
Landform: Rises on marine terraces
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Forage suitability group not assigned (G156AC999FL)
Hydric soil rating: No

Udorthents, marly substratum

Percent of map unit: 2 percent
Landform: Marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Forage suitability group not assigned (G156AC999FL)
Hydric soil rating: No

38—Udorthents, shaped

Map Unit Setting

National map unit symbol: 1hn9l
Elevation: 0 to 50 feet
Mean annual precipitation: 60 to 68 inches
Mean annual air temperature: 72 to 79 degrees F
Frost-free period: 358 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents, shaped and similar soils: 90 percent

Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents, Shaped

Setting

Landform: Marine terraces
Landform position (three-dimensional): Interfluve, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Altered marine deposits

Typical profile

C1 - 0 to 30 inches: gravelly sand
C2 - 30 to 50 inches: sand
2R - 50 to 54 inches: weathered bedrock

Properties and qualities

Slope: 0 to 45 percent
Depth to restrictive feature: 40 to 72 inches to paralithic bedrock
Drainage class: Somewhat poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (1.98 to 19.98 in/hr)
Depth to water table: About 24 to 48 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water capacity: Very low (about 2.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Forage suitability group: Forage suitability group not assigned (G156AC999FL)
Other vegetative classification: Forage suitability group not assigned (G156AC999FL)
Hydric soil rating: No

Minor Components

Udorthents

Percent of map unit: 10 percent
Landform: Marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Forage suitability group not assigned (G156AC999FL)
Hydric soil rating: No

40—Urban land, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2x9fc
Elevation: 0 to 200 feet
Mean annual precipitation: 40 to 68 inches
Mean annual air temperature: 68 to 79 degrees F
Frost-free period: 345 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Landform: Hills on marine terraces, ridges on marine terraces, knolls on marine terraces, rises on marine terraces, flatwoods on marine terraces
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Interfluve, side slope, riser, rise, talf
Down-slope shape: Linear, convex
Across-slope shape: Linear
Parent material: No parent material

Interpretive groups

Land capability classification (irrigated): None specified
Forage suitability group: Forage suitability group not assigned (G155XB999FL)
Other vegetative classification: Forage suitability group not assigned (G155XB999FL)
Hydric soil rating: Unranked

Minor Components

Matlacha

Percent of map unit: 3 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Convex, linear
Across-slope shape: Linear
Other vegetative classification: Forage suitability group not assigned (G155XB999FL)
Hydric soil rating: No

St. augustine

Percent of map unit: 3 percent
Landform: Marine terraces
Landform position (three-dimensional): Tread, rise
Down-slope shape: Linear

Across-slope shape: Convex
Other vegetative classification: Forage suitability group not assigned (G155XB999FL)
Hydric soil rating: No

Pomello

Percent of map unit: 1 percent
Landform: Ridges on marine terraces, knolls on marine terraces
Landform position (two-dimensional): Backslope, summit
Landform position (three-dimensional): Side slope, interfluve, riser
Down-slope shape: Linear, convex
Across-slope shape: Linear
Other vegetative classification: Sand Pine Scrub (R155XY001FL), Sandy soils on rises and knolls of mesic uplands (G155XB131FL)
Hydric soil rating: No

Myakka

Percent of map unit: 1 percent
Landform: Drainageways on flatwoods on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Linear, concave
Other vegetative classification: South Florida Flatwoods (R155XY003FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: No

Immokalee

Percent of map unit: 1 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Riser, talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: No

Boca

Percent of map unit: 1 percent
Landform: Flats on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Convex, linear
Across-slope shape: Linear, concave
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: Yes

Adamsville

Percent of map unit: 1 percent
Landform: Rises on marine terraces, knolls on marine terraces
Landform position (three-dimensional): Tread, rise
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Sandy soils on rises and knolls of mesic uplands (G155XB131FL), Upland Hardwood Hammock (R155XY008FL)
Hydric soil rating: No

Apopka

Percent of map unit: 1 percent
Landform: Hills on marine terraces, ridges on marine terraces
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Interfluve, side slope, riser
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Sandy soils on ridges and dunes of xeric uplands (G155XB111FL), Longleaf Pine-Turkey Oak Hills (R155XY002FL)
Hydric soil rating: No

Hallandale

Percent of map unit: 1 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: Yes

Eaugallie

Percent of map unit: 1 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: No

Paola

Percent of map unit: 1 percent
Landform: Ridges on marine terraces, knolls on marine terraces
Landform position (two-dimensional): Backslope, summit
Landform position (three-dimensional): Side slope, interfluve, riser
Down-slope shape: Linear, convex
Across-slope shape: Linear
Other vegetative classification: Sandy soils on ridges and dunes of xeric uplands (G155XB111FL), Sand Pine Scrub (R155XY001FL)
Hydric soil rating: No

Miami-Dade County Area, Florida

15—Urban land, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2x9fc
Elevation: 0 to 200 feet
Mean annual precipitation: 40 to 68 inches
Mean annual air temperature: 68 to 79 degrees F
Frost-free period: 345 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Landform: Knolls on marine terraces, rises on marine terraces, ridges on marine terraces, flatwoods on marine terraces, hills on marine terraces
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Side slope, interfluve, riser, rise, talf
Down-slope shape: Convex, linear
Across-slope shape: Linear
Parent material: No parent material

Interpretive groups

Land capability classification (irrigated): None specified
Forage suitability group: Forage suitability group not assigned (G155XB999FL)
Other vegetative classification: Forage suitability group not assigned (G155XB999FL)
Hydric soil rating: Unranked

Minor Components

Matlacha

Percent of map unit: 3 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear, convex
Across-slope shape: Linear
Other vegetative classification: Forage suitability group not assigned (G155XB999FL)
Hydric soil rating: No

St. augustine

Percent of map unit: 3 percent
Landform: Marine terraces
Landform position (three-dimensional): Tread, rise
Down-slope shape: Linear
Across-slope shape: Convex
Other vegetative classification: Forage suitability group not assigned (G155XB999FL)

Hydric soil rating: No

Eaugallie

Percent of map unit: 1 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Immokalee

Percent of map unit: 1 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Riser, talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Pomello

Percent of map unit: 1 percent
Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (two-dimensional): Backslope, summit
Landform position (three-dimensional): Interfluve, side slope, riser
Down-slope shape: Convex, linear
Across-slope shape: Linear
Other vegetative classification: Sandy soils on rises and knolls of mesic uplands (G155XB131FL), Sand Pine Scrub (R155XY001FL)
Hydric soil rating: No

Boca

Percent of map unit: 1 percent
Landform: Drainageways on marine terraces, flats on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear, convex
Across-slope shape: Linear, concave
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: Yes

Myakka

Percent of map unit: 1 percent
Landform: Drainageways on flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Linear
Across-slope shape: Linear, concave
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Paola

Percent of map unit: 1 percent
Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (two-dimensional): Backslope, summit

Landform position (three-dimensional): Interfluve, side slope, riser
Down-slope shape: Convex, linear
Across-slope shape: Linear
Other vegetative classification: Sandy soils on ridges and dunes of xeric uplands (G155XB111FL), Sand Pine Scrub (R155XY001FL)
Hydric soil rating: No

Hallandale

Percent of map unit: 1 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: Yes

Adamsville

Percent of map unit: 1 percent
Landform: Knolls on marine terraces, rises on marine terraces
Landform position (three-dimensional): Tread, rise
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Sandy soils on rises and knolls of mesic uplands (G155XB131FL), Upland Hardwood Hammock (R155XY008FL)
Hydric soil rating: No

Apopka

Percent of map unit: 1 percent
Landform: Ridges on marine terraces, hills on marine terraces
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Side slope, interfluve, riser
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Sandy soils on ridges and dunes of xeric uplands (G155XB111FL), Longleaf Pine-Turkey Oak Hills (R155XY002FL)
Hydric soil rating: No

34—Hallandale fine sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2tzx4
Elevation: 0 to 70 feet
Mean annual precipitation: 60 to 70 inches
Mean annual air temperature: 72 to 79 degrees F
Frost-free period: 360 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Hallandale and similar soils: 90 percent

Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hallandale

Setting
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy marine deposits over limestone

Typical profile
A - 0 to 2 inches: fine sand
Eg - 2 to 7 inches: fine sand
Bw - 7 to 12 inches: fine sand
2R - 12 to 22 inches: bedrock

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: 2 to 20 inches to lithic bedrock
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 5.95 in/hr)
Depth to water table: About 3 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water capacity: Very low (about 0.9 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: B/D
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: Yes

Minor Components

Plantation
Percent of map unit: 5 percent
Landform: Flatwoods on marine terraces, depressions on marine terraces
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Linear
Across-slope shape: Concave
Other vegetative classification: Organic soils in depressions and on flood plains (G156AC645FL)
Hydric soil rating: Yes

Dania
Percent of map unit: 5 percent
Landform: Marshes on marine terraces

Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Organic soils in depressions and on flood plains (G156AC645FL), Freshwater Marshes and Ponds (R156AY010FL)
Hydric soil rating: Yes

41—Dade fine sand

Map Unit Setting

National map unit symbol: p678
Mean annual precipitation: 62 to 70 inches
Mean annual air temperature: 73 to 81 degrees F
Frost-free period: 358 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Dade and similar soils: 99 percent
Minor components: 1 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dade

Setting

Landform: Ridges on marine terraces
Landform position (three-dimensional): Interfluve, rise
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits over soft limestone

Typical profile

A - 0 to 6 inches: fine sand
E - 6 to 24 inches: fine sand
Bh - 24 to 27 inches: fine sand
2Cr - 27 to 31 inches: weathered bedrock

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (1.98 to 19.98 in/hr)
Depth to water table: About 60 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water capacity: Very low (about 0.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Forage suitability group: Shallow or moderately deep, sandy or loamy soils on rises and ridges of mesic uplands (G156AC521FL)
Other vegetative classification: Shallow or moderately deep, sandy or loamy soils on rises and ridges of mesic uplands (G156AC521FL)
Hydric soil rating: No

Minor Components

Pomello

Percent of map unit: 1 percent
Landform: Ridges on marine terraces, knolls on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Sandy soils on rises and knolls of mesic uplands (G156AC131FL)
Hydric soil rating: No

42—Udorthents, limestone substratum, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: p679
Mean annual precipitation: 62 to 70 inches
Mean annual air temperature: 73 to 81 degrees F
Frost-free period: 358 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents

Setting

Landform: Marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Altered marine deposits

Typical profile

C - 0 to 30 inches: gravelly sand
2R - 30 to 34 inches: unweathered bedrock

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: 30 to 50 inches to lithic bedrock
Drainage class: Moderately well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (1.98 to 19.98 in/hr)
Depth to water table: About 24 to 48 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water capacity: Very low (about 1.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Forage suitability group: Forage suitability group not assigned (G156AC999FL)
Other vegetative classification: Forage suitability group not assigned (G156AC999FL)
Hydric soil rating: No

Minor Components

Urban land

Percent of map unit: 10 percent
Other vegetative classification: Forage suitability group not assigned (G156AC999FL)
Hydric soil rating: Unranked

99—Water

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Water

Interpretive groups

Land capability classification (irrigated): None specified
Forage suitability group: Forage suitability group not assigned (G156AC999FL)
Other vegetative classification: Forage suitability group not assigned (G156AC999FL)
Hydric soil rating: Unranked

Soil Information for All Uses

Soil Reports

The Soil Reports section includes various formatted tabular and narrative reports (tables) containing data for each selected soil map unit and each component of each unit. No aggregation of data has occurred as is done in reports in the Soil Properties and Qualities and Suitabilities and Limitations sections.

The reports contain soil interpretive information as well as basic soil properties and qualities. A description of each report (table) is included.

Soil Physical Properties

This folder contains a collection of tabular reports that present soil physical properties. The reports (tables) include all selected map units and components for each map unit. Soil physical properties are measured or inferred from direct observations in the field or laboratory. Examples of soil physical properties include percent clay, organic matter, saturated hydraulic conductivity, available water capacity, and bulk density.

Engineering Properties

This table gives the engineering classifications and the range of engineering properties for the layers of each soil in the survey area.

Hydrologic soil group is a group of soils having similar runoff potential under similar storm and cover conditions. The criteria for determining Hydrologic soil group is found in the National Engineering Handbook, Chapter 7 issued May 2007(http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.wba). Listing HSGs by soil map unit component and not by soil series is a new concept for the engineers. Past engineering references contained lists of HSGs by soil series. Soil series are continually being defined and redefined, and the list of soil series names changes so frequently as to make the task of maintaining a single national list virtually impossible. Therefore, the criteria is now used to calculate the HSG using the component soil properties and no such national series lists will be maintained. All such references are obsolete and their use should be discontinued. Soil properties that influence runoff potential are those that influence the minimum rate of infiltration for a bare soil after prolonged wetting and when not frozen. These properties are depth to a seasonal high water table, saturated hydraulic conductivity after prolonged wetting, and depth to a layer with a very slow water transmission

rate. Changes in soil properties caused by land management or climate changes also cause the hydrologic soil group to change. The influence of ground cover is treated independently. There are four hydrologic soil groups, A, B, C, and D, and three dual groups, A/D, B/D, and C/D. In the dual groups, the first letter is for drained areas and the second letter is for undrained areas.

The four hydrologic soil groups are described in the following paragraphs:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Depth to the upper and lower boundaries of each layer is indicated.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly."

Classification of the soils is determined according to the Unified soil classification system (ASTM, 2005) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2004).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group

index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Percentage of rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

References:

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Absence of an entry indicates that the data were not estimated. The asterisk '*' denotes the representative texture; other possible textures follow the dash. The criteria for determining the hydrologic soil group for individual soil components is found in the National Engineering Handbook, Chapter 7 issued May 2007(http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.wba). Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Engineering Properties–Broward County, Florida, East Part														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			In				*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*
2—Arents-Urban land complex														
Arents	55	A/D	0-4	Cobbly sand	SP, SP-SM	A-1-b, A-2-4, A-3	—	0- 0- 0	75-90-95	60-73-85	40-47-60	2- 8- 12	0-7 -14	NP
			4-9	Cobbly sand	SP, SP-SM	A-1-b, A-2-4, A-3	—	0- 0- 0	75-90-95	60-73-85	40-47-60	2- 8- 12	0-7 -14	NP
			9-32	Sand, fine sand	SP, SP-SM	A-2-4, A-3	0- 0- 0	0- 0- 0	100-100-100	100-100-100	80-88-95	2- 7- 12	0-7 -14	NP
			32-60	Sand, fine sand	SP, SP-SM	A-2-4, A-3	0- 0- 0	0- 0- 0	100-100-100	100-100-100	80-88-95	2- 7- 12	0-7 -14	NP
38—Udorthents, shaped														
Udorthents, shaped	90	A	0-30	Gravelly sand	SP, SP-SM, GP-GM	A-1-b, A-2-4, A-3	0- 1- 2	10-15-40	50-65-80	40-55-70	30-45-60	2- 7- 12	0-7 -14	NP
			30-50	Sand, fine sand	SP, SP-SM	A-2-4, A-3	0- 0- 0	0- 0- 0	100-100-100	100-100-100	80-88-95	2- 7- 12	0-7 -14	NP
			50-54	Weathered bedrock	—	—	—	—	—	—	—	—	—	—

Engineering Properties–Miami-Dade County Area, Florida														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			In				*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*
34—Hallandale fine sand, 0 to 2 percent slopes														
Hallandale	90	B/D	0-2	Fine sand	SM, SP-SM	A-2-4	0- 0- 0	0- 0- 0	100-100-100	100-100-100	89-94-100	11-14-19	0-0 -0	NP
			2-7	Fine sand, sand	SM, SP-SM	A-3, A-2-4	0- 0- 0	0- 0- 0	100-100-100	100-100-100	88-94-100	10-13-19	0-0 -0	NP
			7-12	Fine sand, sand	SM, SP-SM	A-2-4	0- 0- 0	0- 0- 0	100-100-100	100-100-100	89-94-100	11-14-19	0-0 -0	NP
			12-22	Bedrock	—	—	—	—	—	—	—	—	—	—
41—Dade fine sand														
Dade	99	A	0-6	Fine sand	SP, SP-SM	A-3	0- 0- 0	0- 0- 0	100-100-100	100-100-100	90-95-100	1- 4- 6	0-7 -14	NP-0 -7
			6-24	Fine sand	SP, SP-SM	A-3	0- 0- 0	0- 0- 0	100-100-100	100-100-100	90-95-100	1- 4- 6	0-7 -14	NP-0 -7
			24-27	Fine sand, sand	SP, SP-SM	A-3	0- 0- 0	0- 0- 0	100-100-100	100-100-100	90-95-100	2- 5- 8	0-7 -14	NP-0 -7
			27-31	Weathered bedrock	—	—	—	—	—	—	—	—	—	—
42—Udorthents, limestone substratum, 0 to 5 percent slopes														
Udorthents	90	A	0-30	Gravelly sand	GP, GP-GM, SP, SP-SM	A-1-b, A-2-4, A-3	0- 0- 0	10-25-40	50-65-80	40-55-70	30-45-60	2- 7- 12	0-7 -14	NP-0 -7
			30-34	Unweathered bedrock	—	—	—	—	—	—	—	—	—	—

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

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United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

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APPENDIX – B

EXISTING GEOTECHNICAL INFORMATION

The existing/available geotechnical information are included in Appendix – B as follows.

1. Appendix – B1
    - Project: I-95 / SR 9 over Miami Gardens Drive (Year: 1963, by others)
    - Project #: 87270-3403
    - 9 SPT borings (drilled in 1963), depth from 25’ to 40’
    - Soil Profiles only, Boring Location Plans not available.
    - Received File Name: 8703523D6C4aDOT.09011968.1.pdf
    - *** NOTE:** These boring locations are shown in the google earth (KMZ) file.

2. Appendix – B2
    - Project: I-95 and Ives Dairy Road (Year: 1990, by others)
    - Project #: 87270-3523
    - 3 SPT borings (drilled in 1990), depth from 56.5’ to 66.5’
    - Attached Soil Profiles & Boring Location Plan.
    - Received File Name: 8727033D6C4aDOT.03151990.1.pdf
    - *** NOTE:** These boring locations are shown in the google earth (KMZ) file.

3. Appendix – B3
    - Project: Ives Dairy Road over I-95 (Year: 1968, by others)
    - Project #: 87270-3404 & 86070-3413
    - 5 SPT borings (drilled in 1968), depth from 32.5’ to 41.0’
    - Attached Soil Profiles & Boring Location Plan.
    - Received File Name: 8727034D6C4aDOT.09011968.1.pdf
    - *** NOTE:** These borings are shown in the google earth (KMZ) file.

4. Appendix – B4
    - Project: Geotechnical Report of Mast Arm Boring (Year: 2015, by others)
    - FPID #: 425216-2-52-01
    - 1 SPT borings (drilled in 2015), depth 25’
    - Attached Soil Profiles & Boring Location Plan.
    - Received File Name: 215148 I-95 and Miami Gardens Drive Mast Arm Report-TWO 99.pdf
    - *** NOTE:** This boring is shown in the google earth (KMZ) file.

5. Appendix – B5
    - Project: Report of Roadway Soils Survey, Pavement Coring, Borehole Exfiltration Testing, and Resilient Modulus Testing (Year: 2015, by others)
    - FPID #: 425216-2-52-01
    - 3 SPT roadway borings (A-1 thru. A-3, drilled in 2015), depth 6’
    - 11 pavement cores
    - 3 BHP tests at one location with 3 different depth (10’, 15’ & 20’)
    - 3 MR samples
    - Attached Soil Profiles & Boring Location Plans.
    - Received File Name: 425216-2 - SR 9 (I95) Ramps at Miami Gardens Drive Roadway Impro.pdf

* **NOTE:** These borings are shown in the google earth (KMZ) file.

6. Appendix – B6
    - Project: Report of Roadway Soils Survey (Year: 2009, by others)
    - FPID #: 425216-1-52-01
    - 5 SPT roadway borings (B-1 thru. B-5, drilled in 2009), depth 10'
    - 2 pavement cores, 5 MR samples
    - Attached Soil Profiles & Boring Location Plans.
    - Received File Name: 42521615201 I-95 SB Off-Ramp - Report of Roadway Soils Survey - 12-29-09.pdf
    * **NOTE:** These borings are **NOT** shown in the google earth (KMZ) file.

7. Appendix – B7
    - Project: Geotechnical Engineering Report for Bridges and Associated Walls – I-95 Express Lanes in Broward and Miami-Dade Counties (Year: 2013, by others)
    - FPID #: 422796-1-52-01 & 422796-2-52-01
    - 4 SPT bridge borings (BSC-1/2/4/5, drilled in 2013), depth 85'
    - Attached Soil Profiles & Boring Location Plans.
    - Received File Name: Geotechnical Report for Bridges and Associated Walls (Rev 3-25-13).pdf
    * **NOTE:** These borings are shown in the google earth (KMZ) file.

8. Appendix – B8
    - Project: Roadway Soil Survey Report (Year: 2012, by others)
    - FPID #: 422796-1-52-01 & 422796-2-52-01
    - Roadway auger borings (AB-67 thru. AB-207), depth from 5' to 15'
    - Attached Soil Profiles & Boring Location Plans & Lab Data.
    - Received File Name: Roadway Soil Survey Report (3.29.2012).pdf
    * **NOTE:** These borings are shown in the google earth (KMZ) file.

*** NOTE:**

- A google earth (KMZ) file (name: FM_Along_Project_FDOT.kmz) was received from your office in May 2023. We have reviewed the KMZ file and the available documents, and if we have found the above referenced borings located on the KMZ file, we have indicated as mentioned above.
- A PDF copy of the google earth (KMZ) file is also provided in **Appendix – B9**.
- The following structure borings are shown in the google earth (KMZ) file and located within the project limit. However, we did not find the corresponding soil profiles in the documents provided to our office.
    - SB-08 through SB-33
    - 027-CCTV through 030-CCTV, 023A-CCTV, CCTV-93
    - RW-1, RW-2
    - 080-CS, 081-CS
    - NW-12, NW-13
    - Some other boring locations without boring number or name shown in KMZ file.

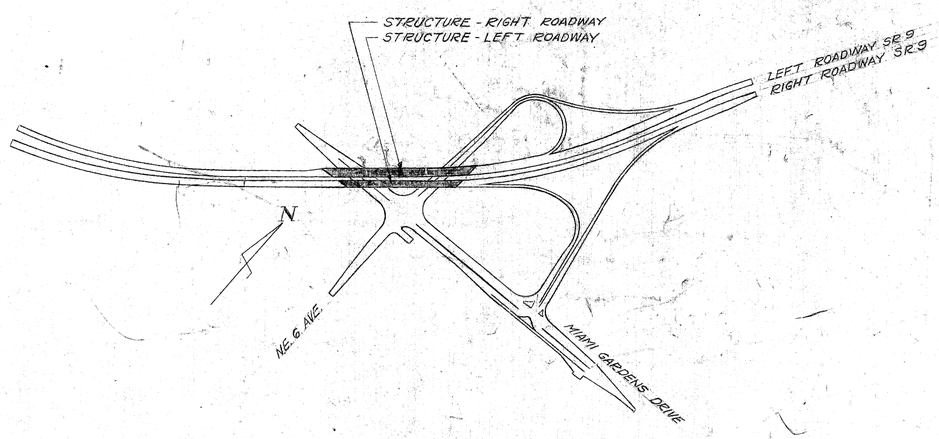
APPENDIX – B1

EXISTING GEOTECHNICAL INFORMATION

Revised 8-8-63

FED. ROAD DIV. No.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.
3	FLA.	I-95-1(59)14	63	1

870352



LAYOUT OF STRUCTURES - SR 9 & MIAMI GARDENS DRIVE

SUMMARY OF ESTIMATED BRIDGE QUANTITIES

ITEM NO.	ITEM	UNIT	QUANTITY Lt. STRUCTURE	Rt. STRUCTURE	TOTAL
300-1 B	CLASS A CONCRETE (BRIDGE)	CU. YD.	2293.9	1529.1	3823.0
310-1 B	REINFORCING STEEL	POUND	414,600	269,300	683,900
(1) 320-1	STRUCTURAL STEEL (SHOE ASSEMBLIES)	L.S.	-	-	1
401-1 A	PRESTRESSED BEAMS (TYPE III ~ 12-0)	LIN. FT.	167	80	247
401-1 B	PRESTRESSED BEAMS (TYPE III ~ 12-6)	LIN. FT.	52	110	162
401-1 C	PRESTRESSED BEAMS (TYPE III ~ 14-6)	LIN. FT.	58		58
401-1 D	PRESTRESSED BEAMS (TYPE III ~ 16-0)	LIN. FT.	94	95	189
401-1 E	PRESTRESSED BEAMS (TYPE III ~ 16-6)	LIN. FT.		125	125
401-1 F	PRESTRESSED BEAMS (TYPE III ~ 18-6)	LIN. FT.	126		126
401-1 G	PRESTRESSED BEAMS (TYPE III ~ 18-8)	LIN. FT.	214	160	374
401-1 H	PRESTRESSED BEAMS (TYPE III ~ 20-6)	LIN. FT.	396	246	642
401-1 J	PRESTRESSED BEAMS (TYPE III ~ 22-6)	LIN. FT.	143	422	565
401-1 K	PRESTRESSED BEAMS (TYPE III ~ 22-8)	LIN. FT.	3252	1011	4263
401-1 L	PRESTRESSED BEAMS (TYPE IV ~ 16-8)	LIN. FT.	132	192	324
401-1 M	PRESTRESSED BEAMS (TYPE IV ~ 18-0)	LIN. FT.	38	65	103
401-1 N	PRESTRESSED BEAMS (TYPE IV ~ 20-0)	LIN. FT.	107	107	214
401-1 P	PRESTRESSED BEAMS (TYPE IV ~ 22-8)	LIN. FT.	951	541	1492
401-1 Q	PRESTRESSED BEAMS (TYPE IV ~ 32-10)	LIN. FT.	1538	1176	2714
403-3 B	PRECAST CONCRETE PILING FURNISHED (14"□ PRESTRESSED)	LIN. FT.	5000	3200	8200
403-3 C	PRECAST CONCRETE PILING FURNISHED (18"□ PRESTRESSED)	LIN. FT.	1700	1400	3100
403-4 B	PRECAST CONCRETE PILING DRIVEN (14"□)	LIN. FT.	5000	3200	8200
403-4 C	PRECAST CONCRETE PILING DRIVEN (18"□)	LIN. FT.	1700	1400	3100
403-9 B	UNLOADED TEST PILES (14"□ PRESTRESSED)	LIN. FT.	90	90	180
403-9 C	UNLOADED TEST PILES (18"□ PRESTRESSED)	LIN. FT.	100	100	200
403-10 B	TEST LOADS (90 TON)	EACH	1	1	2
Alt. No. 1 407-1	ALUMINUM HANDRAIL	LIN. FT.	1628	1315	2943
Alt. No. 2 320-20	STEEL HANDRAIL	LIN. FT.	1628	1315	2943
451-4	CONCRETE SLOPE PAVEMENT (4" THICK)	SQ. YD.			2160

(1) ESTIMATED WEIGHT OF STRUCTURAL STEEL (SHOE ASSEMBLIES) = 63,218

(2) SEE SPECIAL PROVISIONS

THE NUMBER OF TEST LOADS MAY BE INCREASED OR DECREASED AS DIRECTED BY THE ENGINEER.

INDEX OF BRIDGE SHEETS

1	LAYOUT AND SUMMARY OF ESTIMATED BRIDGE QUANTITIES
M 1	PLAN & ELEVATION
M 2	BORINGS
M 3	LAYOUT FOR PILES
M 4	PRECAST CONCRETE PILES
M 5 & 6	END BENT 1-R
M 7 & 8	END BENT 1-L
M 9	BILL OF REINFORCING FOR END BENT 1-R & 1L
M 10 & 11	END BENT 2-R
M 12 & 13	END BENT 2-L
M 14	BILL OF REINFORCING FOR END BENT 2-R & 2-L
M 15 THRU 22	PIERS FOR RIGHT ROADWAY
M 23 THRU 32	PIERS FOR LEFT ROADWAY
M 33 THRU 41	SUPERSTRUCTURE FOR RIGHT ROADWAY
M 42 THRU 52	SUPERSTRUCTURE FOR LEFT ROADWAY
M 53	TYPICAL DETAILS & SLOPE PAVEMENT DETAILS
M 54 & 55	LAYOUT OF CURVED PORTION OF BRIDGE
M 56	BEARING SHOE ASSEMBLIES
M 57	BLANK
M 58 THRU 75	TYPE III GIRDER DETAILS
M 76 THRU 84	TYPE IV GIRDER DETAILS
M 85	HANDRAIL DETAILS
M 85 A & M 85 B	CONSTRUCTION DATA

LAYOUT AND SUMMARY OF ESTIMATED BRIDGE QUANTITIES

STATE ROAD DEPARTMENT OF FLORIDA
BRIDGE DIVISION

I-95 (STATE ROAD NO. 9) OVER MIAMI GARDEN; DRIVE

REVISIONS Dates	Descriptions

ROAD NO.	COUNTY	PROJECT NO.
9	DADE	8720-3403

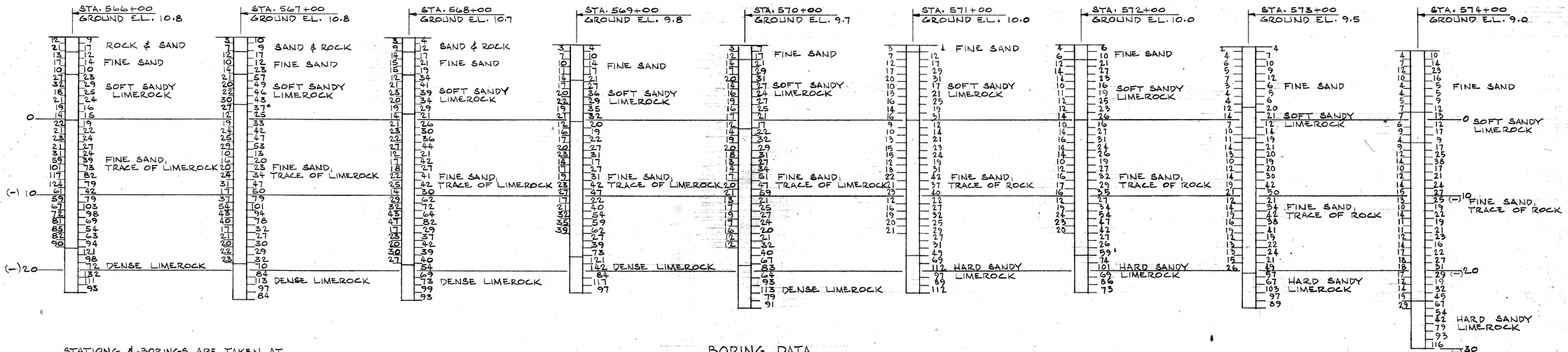
	Names	Dates
Detailed by	D.J.A.	5-63
Checked by		
Quantities by	D.J.A.	5-63
Checked by		
Traced by		

APPROVED BY

T. W. Stevinson
Assistant State Highway Engineer

Drawing No. 1 of 1 | Index No. 7851

FED. ROAD DIV. No.	STATE	PROJECT NO.
3	FLA.	



STATIONS & BORINGS ARE TAKEN AT
℄ SURVEY STATE ROAD No. 9.
NUMBERS AT LEFT OF BORING COLUMNS ARE BLOWS PER FOOT ON THE CASING.
NUMBERS AT RIGHT OF BORING COLUMNS ARE BLOWS PER FOOT ON THE SPOON.

BORING DATA

TYPE OF RIG 2 JOY

	CASING	SPOON
INSIDE DIAMETER	3"	2"
OUTSIDE DIAMETER	3½"	2½"
WEIGHT OF HAMMER	192 LBS	140 LBS.
AVERAGE DROP OF HAMMER	30"	30"

BORINGS

STATE ROAD DEPARTMENT OF FLORIDA
BRIDGE DIVISION

STATE ROAD NO. 9 OVER MIAMI GARDENS DRIVE

REVISIONS		ROAD NO.	COUNTY	PROJECT NO.
Dates	Descriptions	9	DADE	87270-3403

	Names	Dates
Detailed by	D.T.S.	5-63
Checked by		
Quantities by		
Checked by		
Traced by		

APPROVED BY

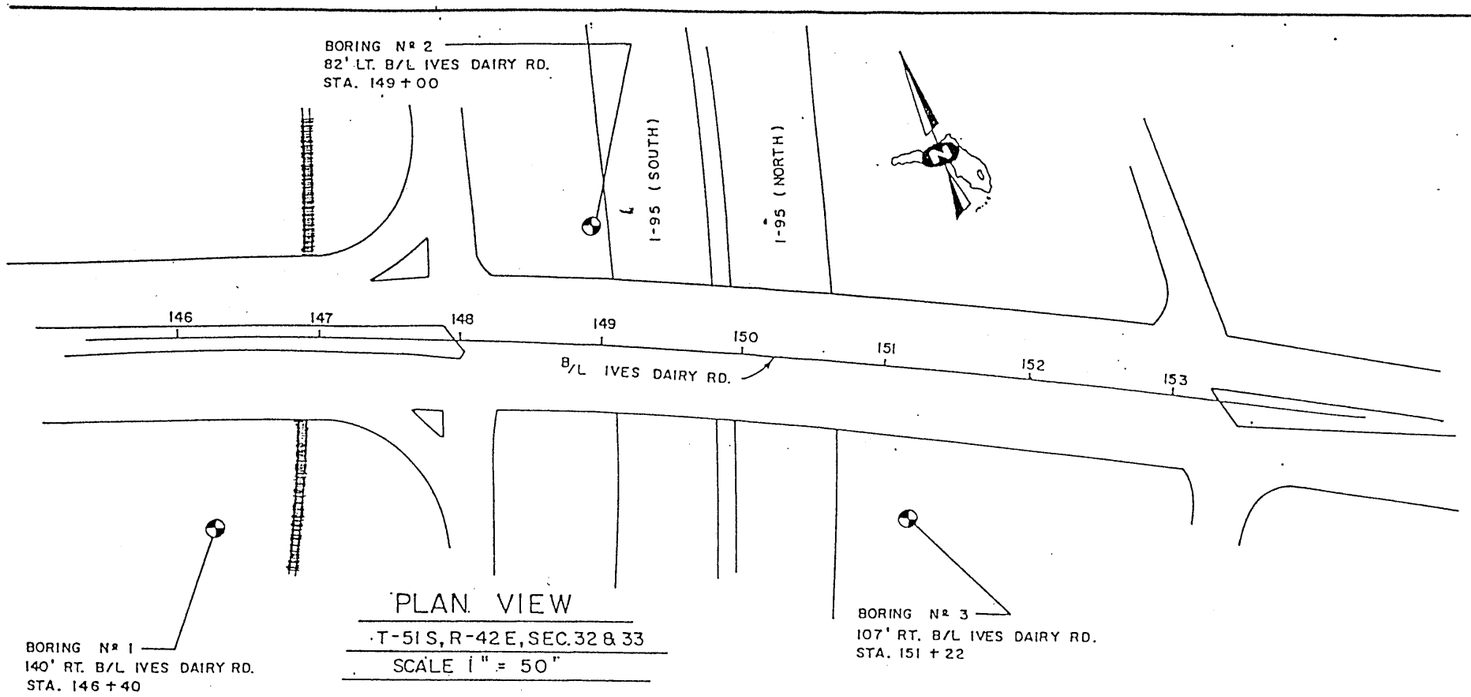
Assistant State Highway Engineer

Drawing No.	Index No.
20F 85	7852

APPENDIX – B2

EXISTING GEOTECHNICAL INFORMATION

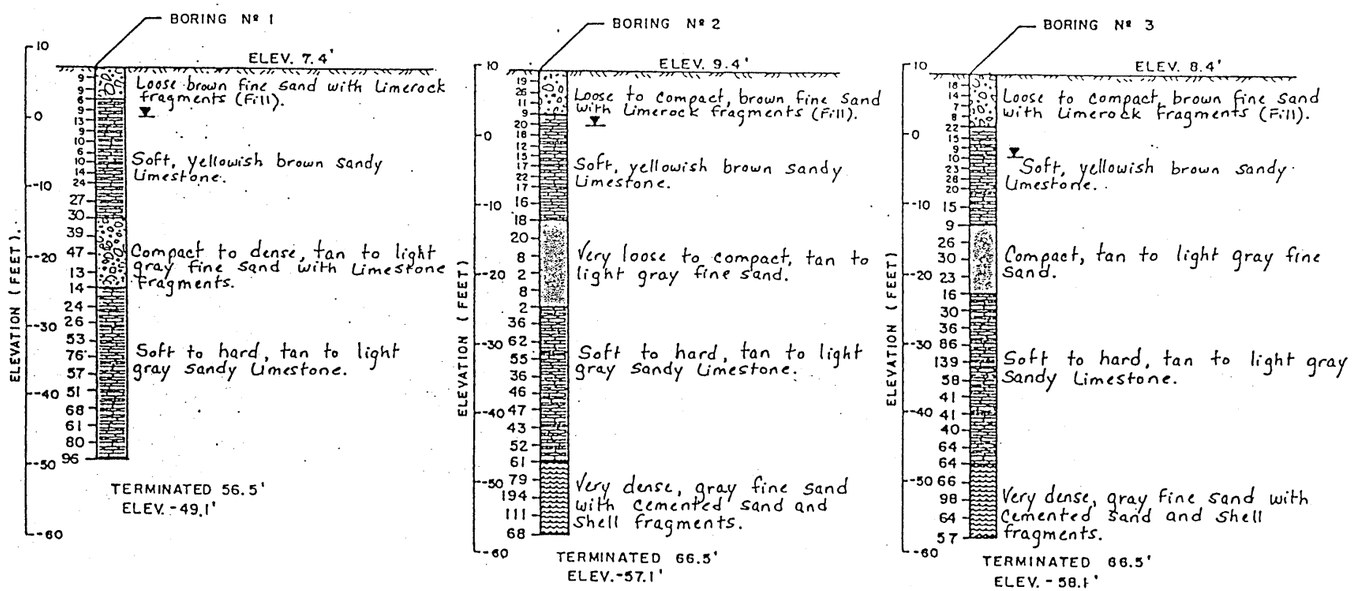
DIST.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.
6	FLA.			A-13



PLAN VIEW

T-51S, R-42E, SEC. 32 & 33

SCALE 1" = 50'



SCALE 1" = 10' VERT.

GENERAL NOTES

ALL DEPTHS GIVEN IN DISTANCE BELOW EXISTING GROUND AT BORING LOCATIONS.

BORINGS WERE DONE AS PER A.S.T.M. TEST PROCEDURES D-1586-67.

SPOON:
INSIDE DIAMETER: 1 3/8"
OUTSIDE DIAMETER: 2"

HAMMER:
WEIGHT: 140 #
DROP: 30"

THE SOIL STRATIFICATION IS REPRESENTATIVE OF THE CONDITIONS AT THE LOCATION WHERE THE BORING WAS MADE BUT CONDITIONS MAY VARY AT ADJACENT LOCATIONS.

ENVIRONMENT:
SUBSTRUCTURE: NON-CORROSIVE (MODERATELY AGGRESSIVE).
SUPERSTRUCTURE: NON-CORROSIVE (SLIGHTLY AGGRESSIVE).

LEGEND

- Fine sand.
- Fine sand and Limestone fragments.
- Soft to hard, sandy Limestone.
- Fine Sand with cemented sand and shell fragments.
- Water table.

I certify that ... to the best of my knowledge, the "as-built" ... conform to this plan sheet is an accurate ... and reviewed by me for the items installed, as measured ... project.

... Pembroke Pines, FL 33122

12/4/95

DAVID C. MIRO, P.E.
REGISTRATION Nº 16689

3/29/90

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
REPORT OF CORE BORINGS FOR STRUCTURES

I-95 AND IVES DAIRY ROAD.

PROJ. NO.: 87270-3532
ROAD NO.: S.R. 9 (I-95)
COUNTY: DADE

BORING DATE: 3-12 / 3-15-90
BORINGS BY: J. RESCIGNO
SUBMITTED BY: R.I. RASKIN

APPROVED BY: L.L. Morgado

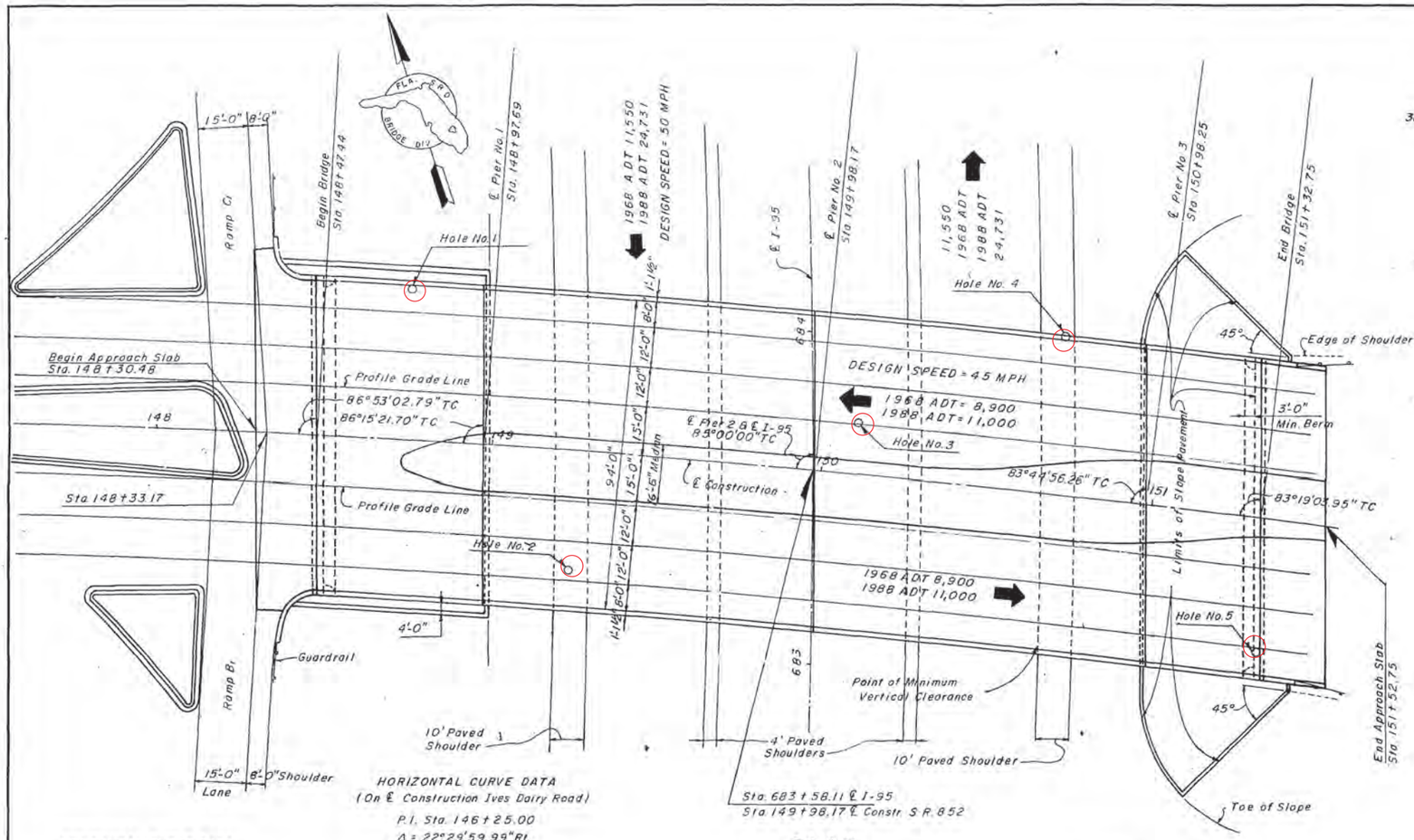
DRAWING NO.

INDEX NO.

APPENDIX – B3

EXISTING GEOTECHNICAL INFORMATION

FED. ROAD DIV. No.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.
3	FLA.	I-95-1(17)15	68	D-1



PLAN

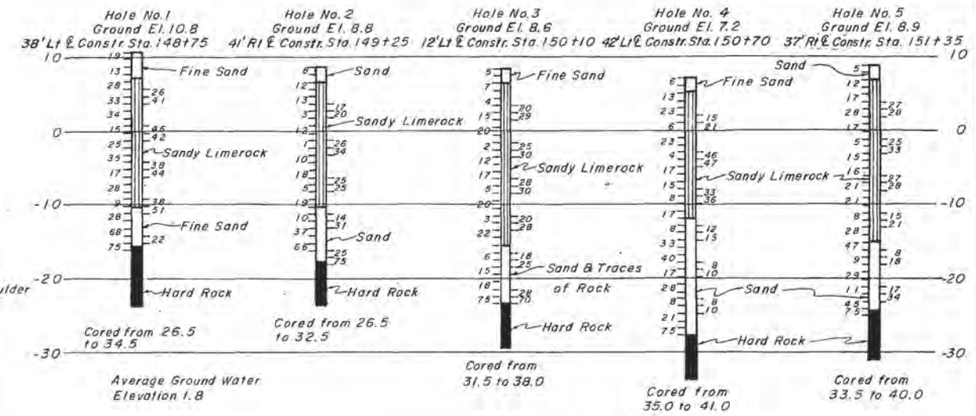
HORIZONTAL CURVE DATA
(℄ Construction I-95)

PI Sta. 675+23.60
Δ = 46°16'11.93" Lt.
D = 2°07'11.20"
T = 1,154.84'
L = 2,182.77'
R = 2,702.91'
e = 0.044 ft/ft

HORIZONTAL CURVE DATA
(On ℄ Construction Ives Dairy Road)

PI. Sta. 146+25.00
Δ = 22°29'59.99" Rt.
D = 1°15'00"
T = 911.75'
L = 1,800.00'
R = 4,583.70'

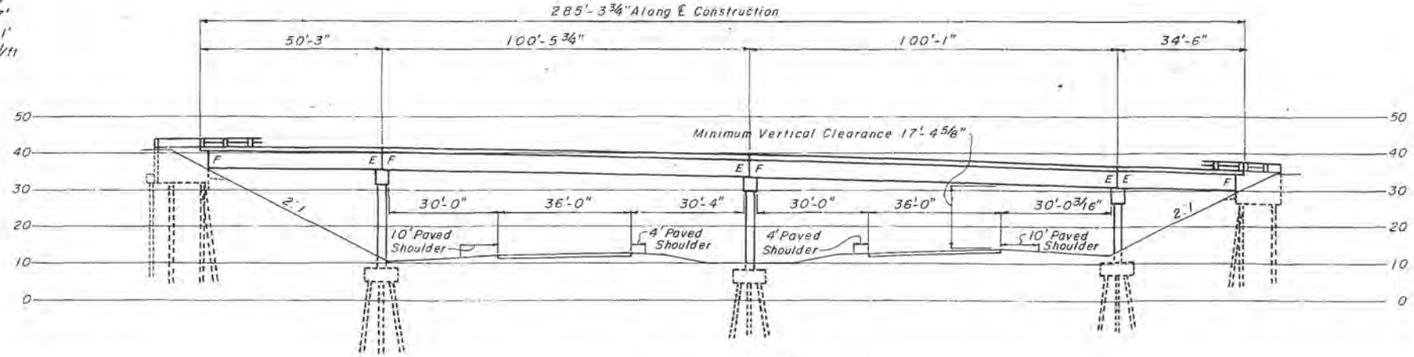
NOTE: For Details of Slope Pavement see Sheet No. A-1
Curbs and Handrail shall be constructed along Arcs of Curves.



	Casing	Spoon
Inside Diameter	3"	2"
Outside Diameter	3½"	2½"
Weight of Hammer	200 Lbs.	140 Lbs.
Average Hammer Drop	30"	30"

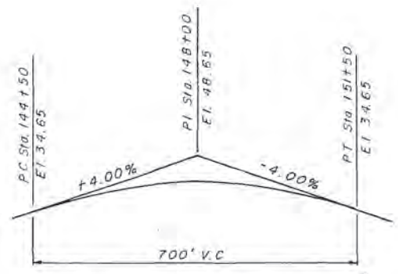
BORING DATA

NOTE: Numbers at Left of Boring Columns are blows per ft. on the Casing at elevations shown.
Numbers at Right of Boring Columns are blows per ft. on the Spoon at elevations shown.



ELEVATION

NOTE: Drive One Unloaded Test Pile (18"ø) 55 feet long in the position of a permanent Plumb Pile in End Bent 2, 30 feet long in Pier 1, 35 feet long in Pier 2 and, 40 feet long in Pier 3 located as directed by the Engineer.



VERTICAL CURVE DATA
(On Profile Grade Lines)

PLAN AND ELEVATION AND BORING DATA

STATE ROAD DEPARTMENT OF FLORIDA
STRUCTURES DIVISION

IVES DAIRY ROAD OVER I-95

REVISIONS		ROAD NO.	COUNTY	PROJECT NO.
Dates	Descriptions	852	DADE & BROWARD	87270-3404 86070-3413

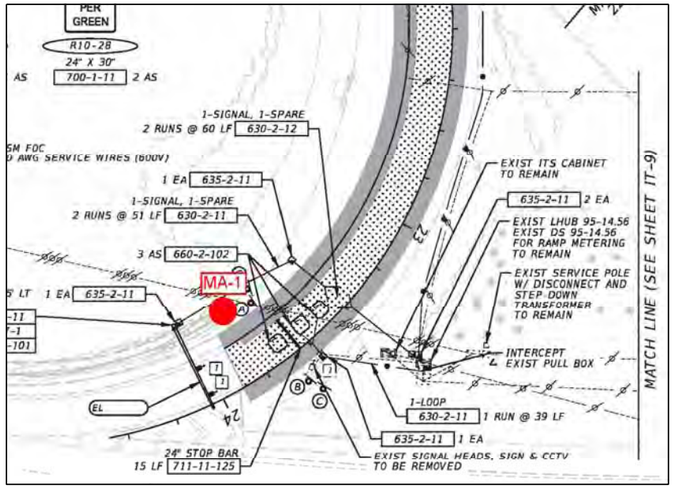
	Names	Dates	APPROVED BY
Detailed by	LHD	9-68	
Checked by	[illegible]	2-69	
Quantities by			
Checked by			
Traced by	LHD	9-68	

DIVISION OF STRUCTURES

Drawing No.	Index No.
1 of 28	10,003

APPENDIX – B4

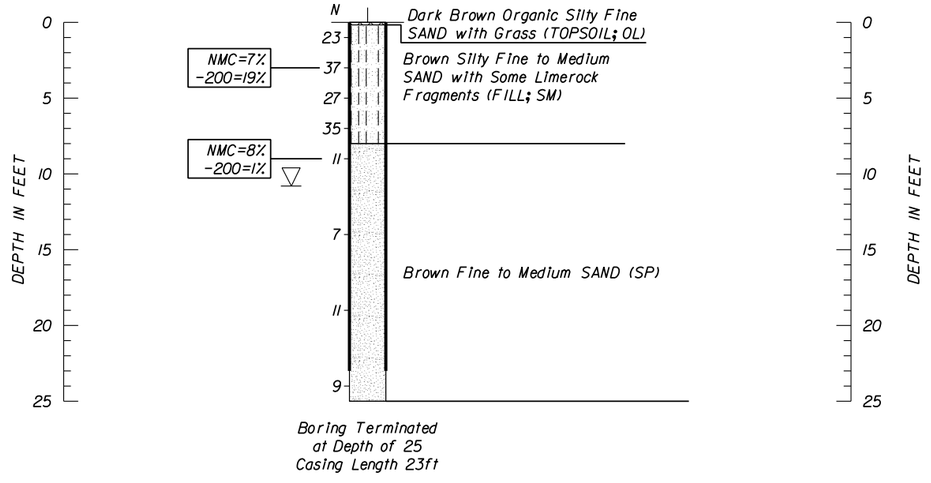
EXISTING GEOTECHNICAL INFORMATION



N.T.S.

BORING LOCATION PLAN

BOR #	MA-1
STATION	23+80 B/L SURVEY I-95 SB ON-RAMP
OFFSET	30'RT
ELEV.	N/A
DATE	7/16/2015
DRILLER	R. Morales - GEOSOL, Inc.
HAMMER	Auto
RIG	B-53
NORTHING	586110
EASTING	923098



0 2 10
Feet
Vertifcal Scale
Horizontal N.T.S.

LEGEND

- TOPSOIL
- SILTY SAND (FILL; SM)
- SAND (SP)

NOTES:

1) SPT BORINGS PERFORMED PER ASTM D-1586 WITH A HAMMER WEIGHT OF 140 LBS FALLING 30 INCHES.
- ▽ WATER TABLE AT TIME OF DRILLING
- || CASING USED
- ● APPROXIMATE MAST ARM SPT BORING LOCATION
- N NUMBERS TO THE LEFT OF BORING INDICATE SPT VALUE FOR 12" PENETRATION (UNLESS OTHERWISE NOTED)
- NMC NATURAL MOISTURE CONTENT (%)
- -200 PERCENT PASSING #200 SIEVE (%)

NOTE FOR DRILLED SHAFT CONSTRUCTION:

1) THE CONTRACTOR IS ADVISED THAT CAVING SOILS AND/OR DENSE TO VERY DENSE SOILS MAY BE ENCOUNTERED DURING THE EXCAVATION FOR THE INSTALLATION OF THE DRILLED SHAFTS.

GRANULAR MATERIALS- RELATIVE DENSITY	AUTOMATIC SPT HAMMER (BLOWS PER FOOT)
VERY LOOSE	LESS THAN 3
LOOSE	3-8
MEDIUM DENSE	8-24
DENSE	24-40
VERY DENSE	GREATER THAN 40
SILTS AND CLAYS CONSISTANCY	**AUTOMATIC SPT HAMMER (BLOWS PER FOOT)**
VERY SOFT	LESS THAN 1
SOFT	1-3
FIRM	3-6
STIFF	6-12
VERY STIFF	12-24
HARD	GREATER THAN 24

NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 61G15-23.003, F.A.C.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

ENGINEER OF RECORD:
GEOSOL, INC.
ORACIO RICCOBONO, P.E.
PE LICENSE No. 49324
5795-A NW 151ST STREET
MIAMI LAKES, FL 33014
PHONE: (305) 828-4367
CERTIFICATE OF AUTHORIZATION 8530

DRAWN BY:	JG 07-15
CHECKED BY:	ZS 07-15
DESIGNED BY:	AI 07-15
CHECKED BY:	OR 07-15

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9	MIAMI-DADE	425216-2-52-01

SHEET TITLE: REPORT OF CORE BORING

REF. DWG. NO.:

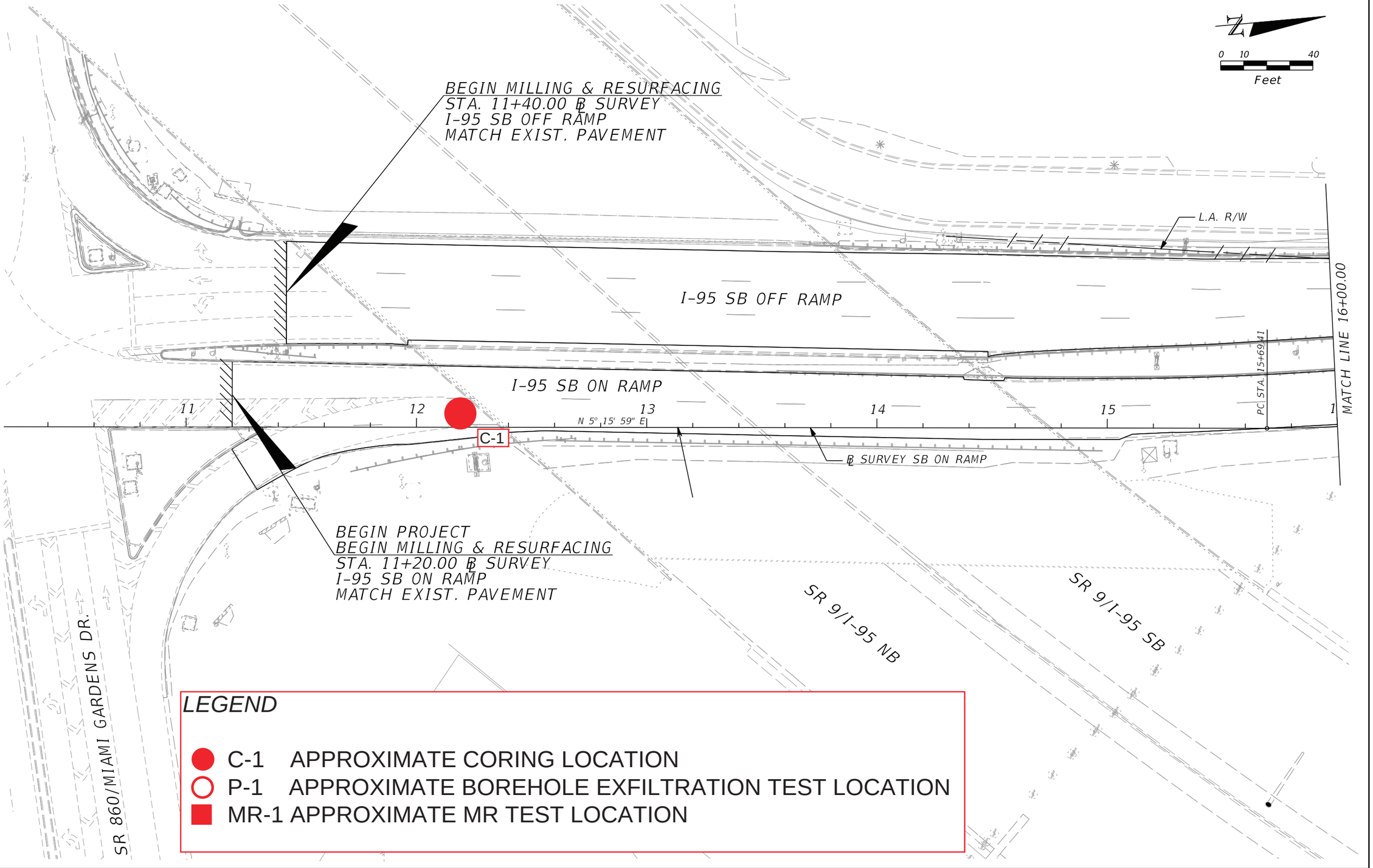
PROJECT NAME: PROPOSED MAST ARM STRUCTURE ALONG SR9/I95 RAMPS AT SR 860/MIAMI GARDENS DRIVE

SHEET NO.: 5

Eddie 7/24/2015 10:18:09 AM \\Master\v8\2015\215148\BORINGO1.dgn

APPENDIX – B5

EXISTING GEOTECHNICAL INFORMATION



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ALLAN B. SEQUEIRA, P.E.
P.E. License No. 60737
AES ENGINEERING, INC
13500 S.W. 88th STREET, SUITE 265
MIAMI, FLORIDA 33186
TEL. (305) 303-8477
Certificate of Authorization No. 29369

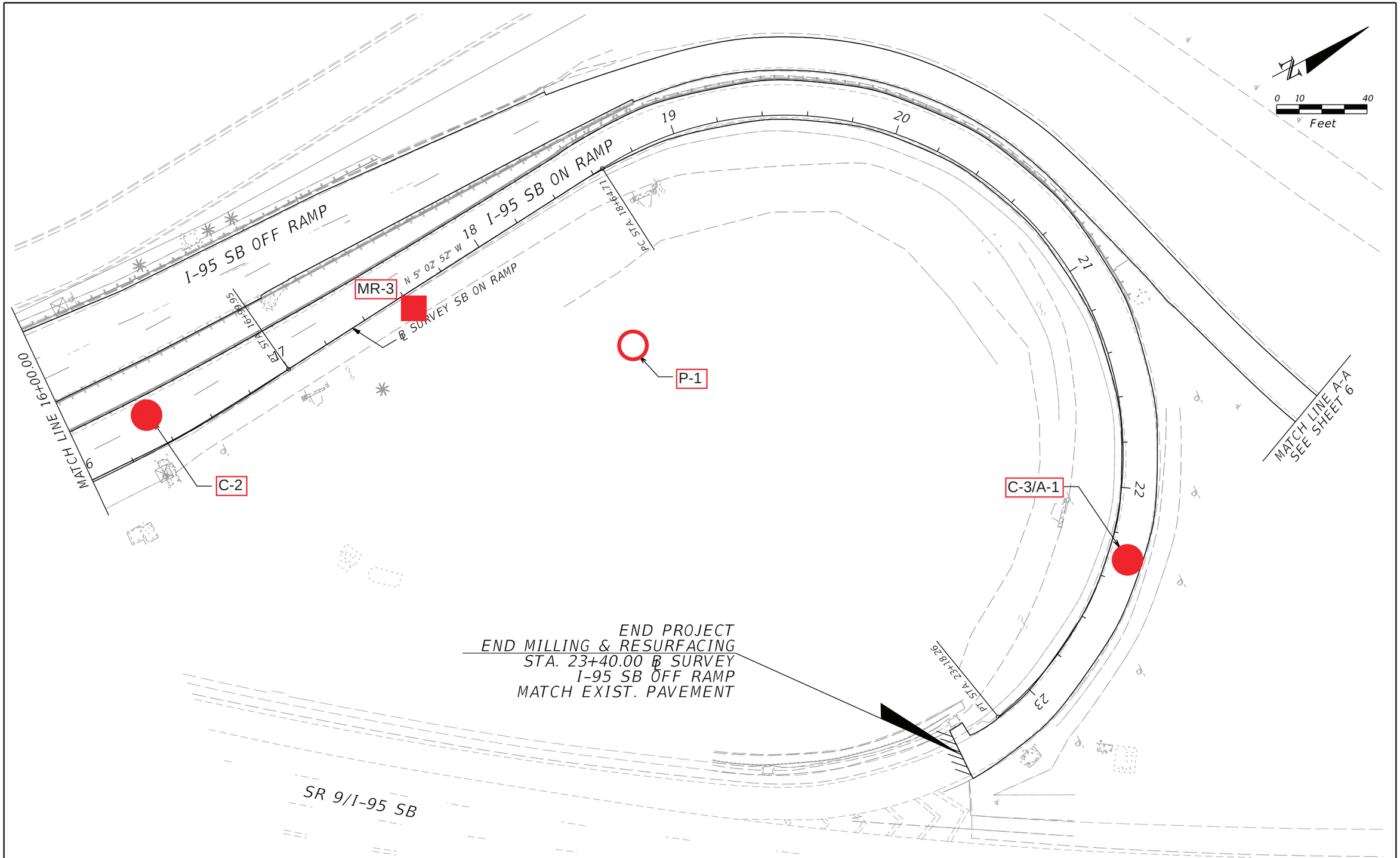
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9	MIAMI-DADE	425216-2-52-01

TEST LOCATION PLANS

SHEET NO. 3

Allan 12/9/2014 9:40:12 AM L:\e\42521625201\roadway\planrd01.dgn



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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

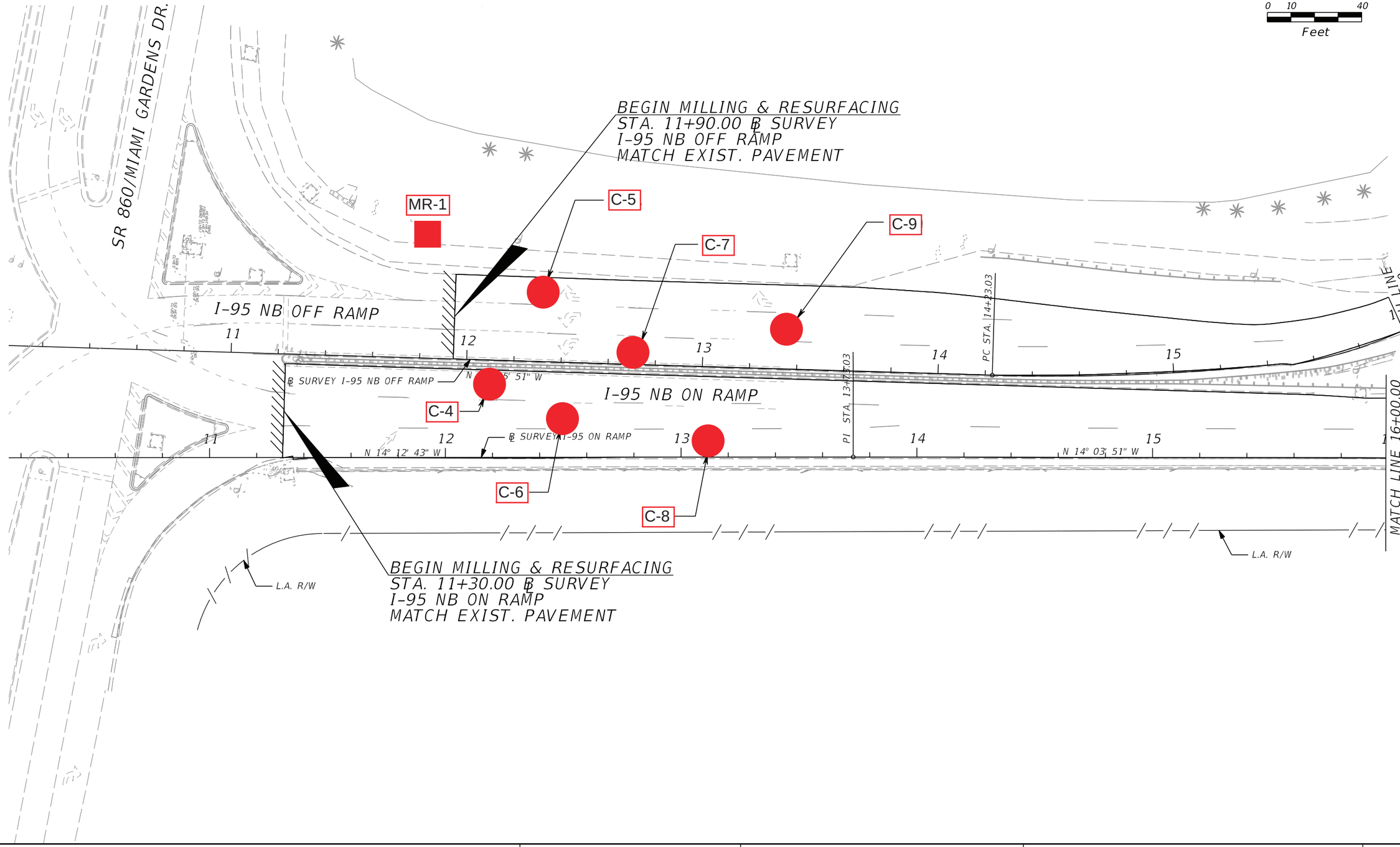
ALLAN B. SEQUEIRA, P.E.
P.E. License No. 60737
AES ENGINEERING, INC
13500 S.W. 88th STREET, SUITE 265
MIAMI, FLORIDA 33186
TEL. (305) 303-8477
Certificate of Authorization No. 29369

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9	MIAMI-DADE	425216-2-52-01

TEST LOCATION PLANS

SHEET NO. 4



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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ALLAN B. SEQUEIRA, P.E.
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AES ENGINEERING, INC
13500 S.W. 88th STREET, SUITE 265
MIAMI, FLORIDA 33186
TEL. (305) 303-8477
Certificate of Authorization No. 29369

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9	MIAMI-DADE	425216-2-52-01

TEST LOCATION PLANS

SHEET NO. 5

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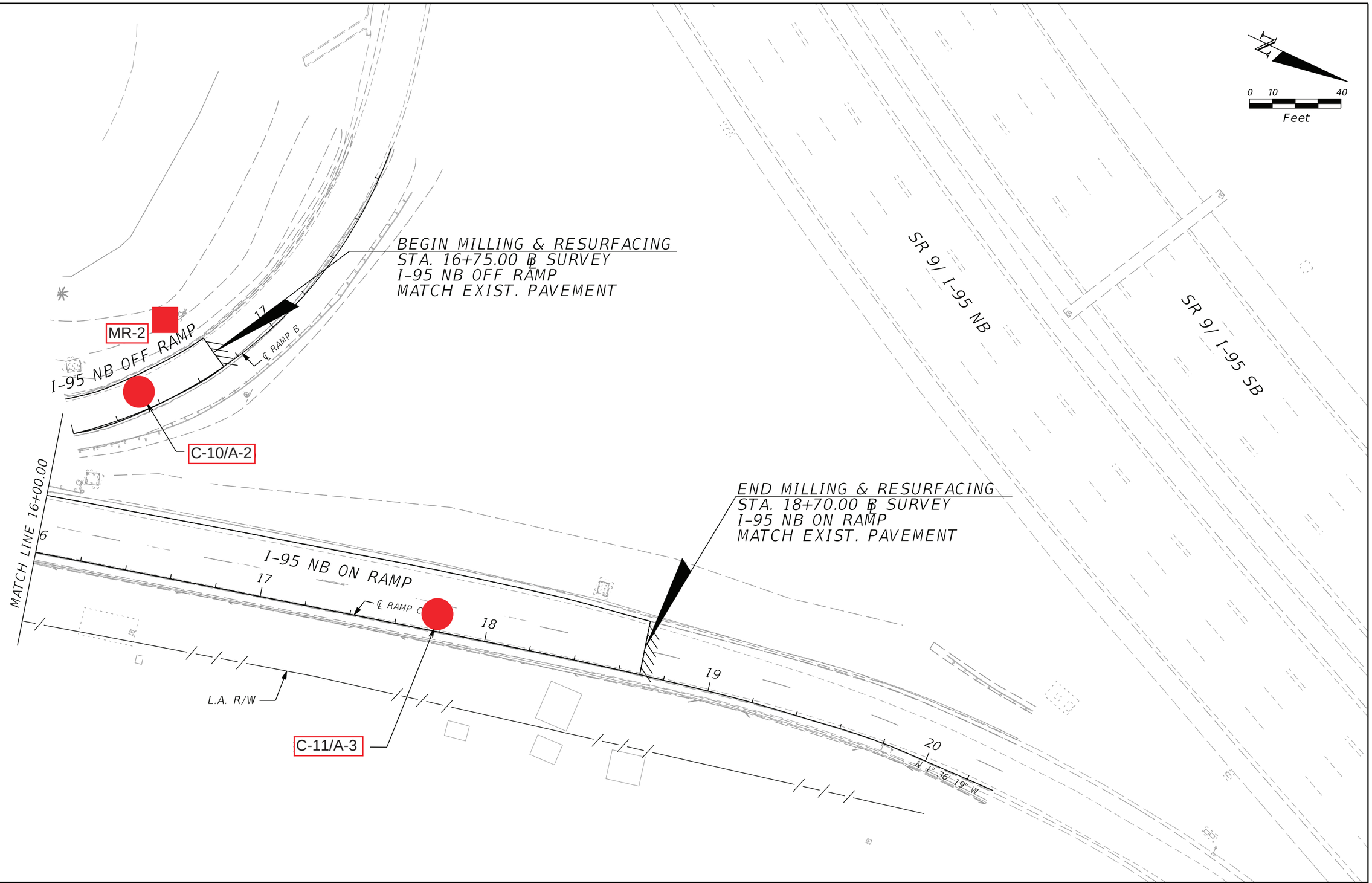

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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ALLAN B. SEQUEIRA, P.E.
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AES ENGINEERING, INC
13500 S.W. 88th STREET, SUITE 265
MIAMI, FLORIDA 33186
TEL. (305) 303-8477
Certificate of Authorization No. 29369

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9	MIAMI-DADE	425216-2-52-01

TEST LOCATION PLANS

SHEET NO. 6

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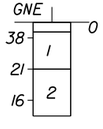
LEGEND

0) Asphalt Pavement/Concrete

1) Brown Slightly Silty to Silty Fine to Coarse SAND with Some Limerock Fragments (FILL; A-1-b)

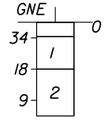
2) Brown Fine to Medium SAND (FILL; A-3)

BOR # A-1
ELEV. N/A
STA. 22+30 B/L SURVEY I-95 SB ON RAMP
OFF. 10' LT
DATE 1/9/2015
DRILLER R. Morales - GEOSOL, Inc.
HAMMER Auto
RIG B-53



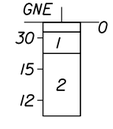
Boring Terminated at Depth of 6ft

BOR # A-2
ELEV. N/A
STA. 16+35 B/L SURVEY I-95 NB OFF RAMP
OFF. 10' LT
DATE 1/8/2015
DRILLER R. Morales - GEOSOL, Inc.
HAMMER Auto
RIG B-53



Boring Terminated at Depth of 6ft

BOR # A-3
ELEV. N/A
STA. 17+75 B/L SURVEY I-95 NB ON RAMP
OFF. 5' LT
DATE 1/9/2015
DRILLER R. Morales - GEOSOL, Inc.
HAMMER Auto
RIG B-53



Boring Terminated at Depth of 6ft

NOTES:

1) SPT BORINGS PERFORMED PER ASTM D-1586 WITH A HAMMER WEIGHT OF 140 LBS FALLING 30 INCHES.

N NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12" PENETRATION (UNLESS OTHER WISE NOTED).

GNE GROUNDWATER NOT ENCOUNTERED

2) ENVIRONMENTAL CLASSIFICATION:

STEEL:
SUPERSTRUCTURE: SLIGHTLY AGGRESSIVE
SUBSTRUCTURE: MODERATELY AGGRESSIVE

CONCRETE:
SUPERSTRUCTURE: SLIGHTLY AGGRESSIVE
SUBSTRUCTURE: SLIGHTLY AGGRESSIVE

WATER:

pH:	7.6
CHLORIDE:	9.9 PPM
SULFATE:	6.4 PPM
RESISTIVITY:	3110 OHM-CM

VERTICAL SCALE
HORIZONTAL SCALE: N.T.S.

GRANULAR MATERIALS- RELATIVE DENSITY	AUTOMATIC SPT HAMMER (BLOWS PER FOOT)
VERY LOOSE	LESS THAN 3
LOOSE	3-8
MEDIUM DENSE	8-24
DENSE	24-40
VERY DENSE	GREATER THAN 40
SILTS AND CLAYS CONSISTANCY	**AUTOMATIC SPT HAMMER (BLOWS PER FOOT)**
VERY SOFT	LESS THAN 1
SOFT	1-3
FIRM	3-6
STIFF	6-12
VERY STIFF	12-24
HARD	GREATER THAN 24

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD:
GEOSOL, INC.
ORACIO RICCOBONO, P.E.
P.E. LICENSE NO. 49324
5795-A NW 151ST STREET
MIAMI LAKES, FL 33014
PHONE: (305) 828-4367
CERTIFICATE OF AUTHORIZATION 8530

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9	MIAMI-DADE	425216-2-52-01

ROADWAY SOIL PROFILES

SHEET NO. 7

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

DATE OF SURVEY: 1/8-9/2015
SURVEY MADE BY: ORACIO RICCOBONO, P.E.
SUBMITTED BY: GEOSOL, Inc.

FINANCIAL PROJECT ID : 425216-2-52-01
PROJECT NAME: SR 9 / I-95 RAMPS ROADWAY IMPROVEMENTS

DISTRICT: SIX
ROAD NO.: 9
COUNTY: MIAMI-DADE

CROSS SECTION SOIL SURVEY FOR THE DESIGN OF ROADS

SURVEY BEGINS STA.: 11+20.00	SURVEY ENDS STA.: 23+40.00	REFERENCE: B/L SURVEY I-95 SB OFF RAMP
SURVEY BEGINS STA.: 11+90.00	SURVEY ENDS STA.: 16+75.00	REFERENCE: B/L SURVEY I-95 NB OFF RAMP
SURVEY BEGINS STA.: 11+30.00	SURVEY ENDS STA.: 18+70.00	REFERENCE: B/L SURVEY I-95 NB ON RAMP

	ORGANIC CONTENT			SIEVE ANALYSIS RESULTS PERCENT PASS						ATTERBERG LIMITS (%)					CORROSION TEST RESULTS				
STRATUM NO.	NO. OF TESTS	% ORGANIC	MOISTURE CONTENT	NO. OF TESTS	10 MESH	40 MESH	60 MESH	100 MESH	200 MESH	NO. OF TESTS	LIQUID LIMIT	PLASTIC INDEX	AASHTO GROUP	DESCRIPTION	NO. OF TESTS	RESISTIVITY ohms cm	CHLORIDE ppm	SULFATES ppm	pH
0													N/A	Asphalt Pavement/Concrete					
1	2		9-14	2	44-56	24-39	18-23	16-20	16-20				A-1-b	Brown Slightly Silty to Silty Fine to Coarse SAND with Some Limerock Fragments (FILL)					
2	2		1-15	2	99-100	51-60	9-10	2-5	1-5				A-3	Brown Fine to Medium SAND (FILL)					

EMBANKMENT AND SUBGRADE MATERIAL

STRATA BOUNDARIES ARE APPROXIMATE. MAKE FINAL CHECK AFTER GRADING.

GNE GROUNDWATER NOT ENCOUNTERED

Notes:

1) The material from Stratum Number 0 is the asphalt pavement.

2) The materials from Strata Numbers 1 and 2 (A-1-b and A-3) are considered to be select and should be utilized in accordance with FDOT Standard Index 505.

3) The soil survey presented on this sheet was performed under Task Work Order No. 81 of our Districtwide Contract with FDOT Districts 4 and 6 Materials Office.

NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 61G15-23.003, F.A.C.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD:
GEOSOL, INC.
ORACIO RICCOBONO, P.E.
P.E. LICENSE NO. 49324
5795-A NW 151ST STREET
MIAMI LAKES, FL 33014
PHONE: (305) 828-4367
CERTIFICATE OF AUTHORIZATION 8530

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9	MIAMI-DADE	425216-2-52-01

ROADWAY SOILS SURVEY

SHEET NO. 8

APPENDIX "B"

Table 2 – Summary of Laboratory Test Results
Table 3 – Summary of Environmental Classification Test Results
Moisture Content Test Results
Material Passing the No. 200 Sieve Test Results
Grain-Size Analysis Test Results and Curves
Environmental Classification Test Results

TABLE 2 - SUMMARY OF LABORATORY TEST RESULTS
SR 9 / I-95 RAMPS ROADWAY IMPROVEMENTS AT MIAMI GARDENS DRIVE
MIAMI-DADE COUNTY, FLORIDA
GEOSOL Project No.: 214195

BORING NUMBER	SAMPLE NUMBER	AASHTO GROUP	STRATUM NUMBER	Sample Depth (FEET)	Sieve Analysis (Percent Passing)									Organic Content (%)	Natural Moisture Content (%)
					1"	3/4"	3/8"	#4	#10	#40	#60	#100	#200		
A-1	1	A-1-b	1	0.6 - 2.0	100	97	81	66	56	39	23	20	20	-	9
A-3	1	A-1-b	1	0.6 - 2.0	100	96	79	57	44	24	18	16	16	-	14
A-2	3	A-3	2	4.0 - 6.0	100	100	100	100	100	60	10	2	1	-	1
A-3	2	A-3	2	2.0 - 4.0	100	100	100	100	99	51	9	5	5	-	15

TABLE 3 - SUMMARY OF ENVIRONMENTAL CLASSIFICATION TEST RESULTS
SR 9 / I-95 RAMPS ROADWAY IMPROVEMENTS
AT MIAMI GARDENS DRIVE
MIAMI-DADE COUNTY, FLORIDA
GEOSOL Project No.: 214195

Sample Location	Sample Type	Depth (ft)	pH	Resistivity (ohm-cm)	Chloride (ppm)	Sulfate (ppm)	FDOT ENVIRONMENTAL CLASSIFICATION	
							Steel	Concrete
P-1	WATER	3.1	7.6	3,110	10	6	MA	SA

NOTES: (1) The following FDOT laboratory test methods were utilized.

FM5-550: pH FM5-552: Chlorides

FM5-551: Resistivity FM5-553: Sulfates

(2) SA: SLIGHTLY AGGRESSIVE

(3) MA: MODERATELY AGGRESSIVE

(4) EA: EXTREMELY AGGRESSIVE

FDOT Criteria for Substructure Environmental Classification (FDOT *Structures Design Guidelines* 2014)

Classification	Environmental Condition	Units	Steel		Concrete	
			Water	Soil	Water	Soil
Extremely Aggressive (If any of these conditions exist)	pH		< 6.0		< 5.0	
	Cl	ppm	> 2000		> 2000	
	SO_4	ppm	N.A.		> 1500	> 2000
	Resistivity	Ohm-cm	< 1000		< 500	
Slightly Aggressive (If all of these conditions exist)	pH		> 7.0		> 6.0	
	Cl	ppm	< 500		< 500	
	SO_4	ppm	N.A.		< 150	< 1000
	Resistivity	Ohm-cm	> 5000		> 3000	
Moderately Aggressive	This classification must be used at all sites not meeting requirements for either slightly aggressive or extremely aggressive environments.					
pH = acidity ($-\log_{10}H^+$; potential of Hydrogen), Cl = chloride content, SO_4 = Sulfate content.						

MOISTURE CONTENT TEST RESULTS (ASTM D-2216)

PROJECT NAME: SR 9 / I-95 RAMPS ROADWAY IMPROVEMENTS AT MIAMI GARDENS DRIVE
LOCATION: MIAMI-DADE COUNTY, FLORIDA
PROJECT No.: 214195
DATE: 1/13/15

Boring No.	A-1	A-2	A-3	A-3
Sample No.	1	3	1	2
Sample Depth (Feet)	0.6-2	4-6	0.6-2	2-4
Tare No.	30	N-3	32	N-2
Tare plus wet soil (grams)	513.5	299.0	567.5	273.5
Tare plus dry soil (grams)	470.0	295.5	498.0	239.5
Water W_w (grams)	43.5	3.5	69.5	34.0
Tare (grams)	9.0	9.0	9.0	9.0
Dry soil W_s (grams)	461.0	286.5	489.0	230.5
Water Content w (%)	9.4	1.2	14.2	14.8

MATERIAL PASSING THE # 200 SIEVE TEST RESULTS (AASHTO T-11)

PROJECT NAME: SR 9 / I-95 RAMPS ROADWAY IMPROVEMENTS AT MIAMI GARDENS DRIVE
LOCATION: MIAMI-DADE COUNTY, FLORIDA
PROJECT No.: 214195
DATE: 1/13/15

Boring No.	A-1	A-3	A-3
Sample No.	1	1	2
Sample Depth (Feet)	0.6-2	0.6-2	2-4
Original Dry Weight of Soil (grams)	461.0	489.0	230.5
Weight of Soil After Washing (grams)	367.5	412.5	219.5
Weight of Soil Passing 200 Sieve (grams)	93.5	76.5	11.0
Percent of Soil Passing 200 Sieve (%)	20.3	15.6	4.8

Note: The percent passing the No. 200 sieve results presented above were determined using the wash method.

GRAIN SIZE DATA SHEET

DATE: 1/15/2015

PROJECT NAME: SR 9 / I-95 RAMPS ROADWAY IMPROVEMENTS AT MIAMI GARDENS DRIVE
GEOSOL PROJECT No. 214195
GENERAL LOCATION: MIAMI-DADE COUNTY, FLORIDA

Boring No. A-1
Sample No. 1
Depth (feet) 0.6-2

SOIL DESCRIPTION: Brown Silty Fine to Coarse SAND with Some Limerock Fragments (FILL; A-1-b)

Tare #	Dry Wt. - Tare Wt.
30	**461.0**

Sieve Size	Sieve Sizes	Cumulative Wt. Retained	% RETAINED	% PASSING	% PASSING TOTAL SAMPLE	WEIGHT RETAINED (Grams)
75	75mm 3"	0.0	0.0	100	100	0.0
50	50mm 2"	0.0	0.0	100	100	0.0
37.5	37.5mm 1.5"	0.0	0.0	100.0	100.0	0.0
25	25mm 1"	0.0	0.0	100.0	100.0	0.0
19	19mm 3/4"	12.5	2.7	97.3	97.3	12.5
9.5	9.5mm 3/8"	89.5	19.4	80.6	80.6	77.0
4.75	4.75mm #4	158.5	34.4	65.6	65.6	69.0
2.36	2 mm #10	205.0	44.5	55.5	55.5	46.5
0.6	425um #40	280.5	60.8	39.2	39.2	75.5
0.3	250um #60	355.5	77.1	22.9	22.9	75.0
0.15	150um #100	367.0	79.6	20.4	20.4	11.5
0.075	75um #200	367.5	79.7	20.3	20.3	0.5
PAN	-	461.0	100.0	0.0	0.0	93.5

NOTES: Percent passing the #200 sieve was determined by the wash method.

ASTM D 2487 Classification of Soil for Engineering Purposes

Coarse Gravel	< 3" and > 3/4"
Fine Gravel	< 3/4" and > #4

Coarse Sand	< #4 and > #10
Medium Sand	< #10 and > #40
Fine Sand	< #40 and > #200

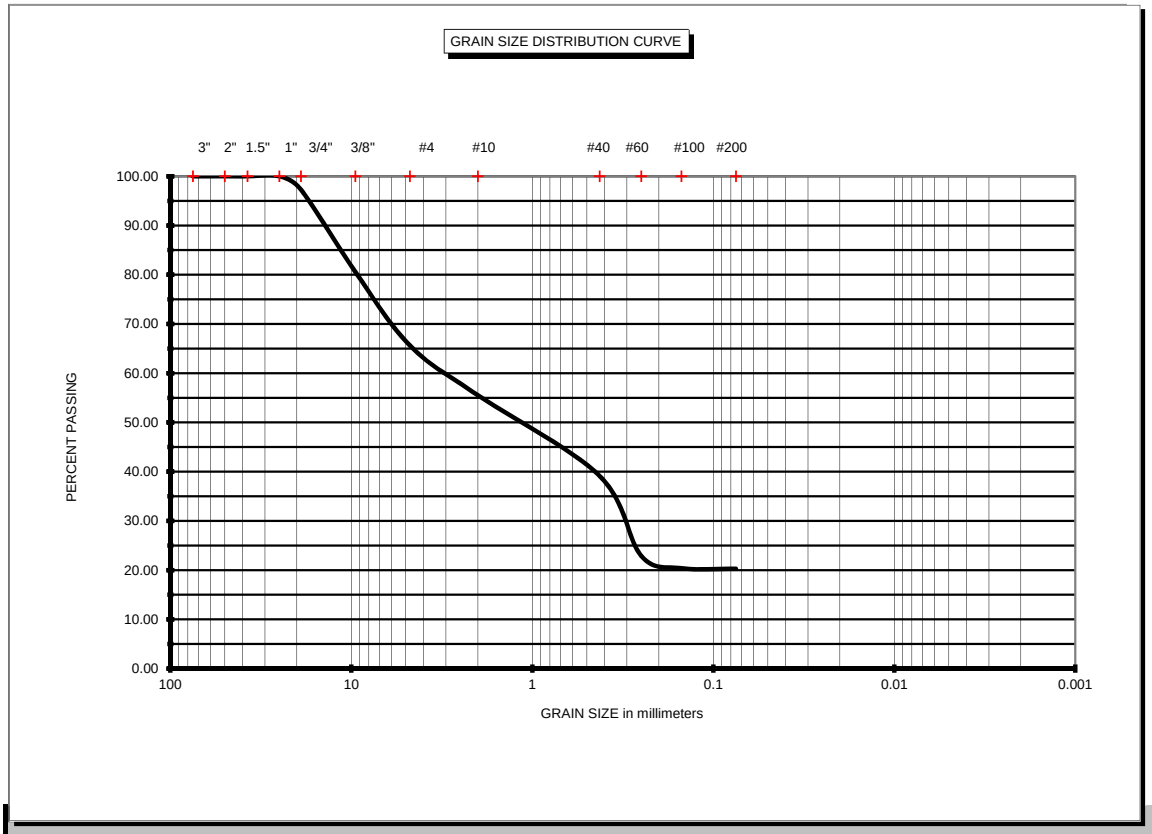
Cu = D60 / D10
Cc = (D30)^2 / (D10 x D60)
1000 um = 1 mm

tested by: J. Gonzalez computed by: S. Zhang checked by: O. Riccobono

GRAIN SIZE DATA SHEET

DATE: 1/15/2015

PROJECT NAME: SR 9 / I-95 RAMPS ROADWAY IMPROVEMENTS AT MIAMI GARDENS DRIVE
GEOSOL PROJECT No. 214195
GENERAL LOCATION: MIAMI-DADE COUNTY, FLORIDA



ASTM D 2487 Classification of Soil for Engineering Purposes			Coarse Sand	< #4 and > #10	Cu = D60 / D10
Coarse Gravel	< 3" and > 3/4"		Medium Sand	< #10 and > #40	Cc = (D30)^2 / (D10 x D60)
Fine Gravel	< 3/4" and > #4		Fine Sand	< #40 and > #200	

BORING # A-1 **SAMPLE #** 1 **Depth (feet)** 0.6-2

SOIL DESCRIPTION: Brown Silty Fine to Coarse SAND with Some Limerock Fragments (FILL; A-1-b)

Natural Moisture Content: 9.4%

GRAIN SIZE DATA SHEET

DATE: 1/16/2015

PROJECT NAME: SR 9 / I-95 RAMPS ROADWAY IMPROVEMENTS AT MIAMI GARDENS DRIVE
GEOSOL PROJECT No. 214195
GENERAL LOCATION: MIAMI-DADE COUNTY, FLORIDA

Boring No. A-3
Sample No. 1
Depth (feet) 0.6-2

SOIL DESCRIPTION: Brown Silty Medium to Coarse SAND and Limerock Fragments (FILL; A-1-b)

Tare #	Dry Wt. - Tare Wt.
32	489.0

Sieve Size	Sieve Sizes	Cumulative Wt. Retained	% RETAINED	% PASSING	% PASSING TOTAL SAMPLE	WEIGHT RETAINED (Grams)
75	75mm 3"	0.0	0.0	100	100	0.0
50	50mm 2"	0.0	0.0	100	100	0.0
37.5	37.5mm 1.5"	0.0	0.0	100.0	100.0	0.0
25	25mm 1"	0.0	0.0	100.0	100.0	0.0
19	19mm 3/4"	17.5	3.6	96.4	96.4	17.5
9.5	9.5mm 3/8"	100.5	20.6	79.4	79.4	83.0
4.75	4.75mm #4	210.5	43.0	57.0	57.0	110.0
2.36	2 mm #10	272.0	55.6	44.4	44.4	61.5
0.6	425um #40	372.0	76.1	23.9	23.9	100.0
0.3	250um #60	402.5	82.3	17.7	17.7	30.5
0.15	150um #100	410.5	83.9	16.1	16.1	8.0
0.075	75um #200	412.5	84.4	15.6	15.6	2.0
PAN	-	489.0	100.0	0.0	0.0	76.5

NOTES: Percent passing the #200 sieve was determined by the wash method.

ASTM D 2487 Classification of Soil for Engineering Purposes

Coarse Gravel	< 3" and > 3/4"
Fine Gravel	< 3/4" and > #4

Coarse Sand	< #4 and > #10
Medium Sand	< #10 and > #40
Fine Sand	< #40 and > #200

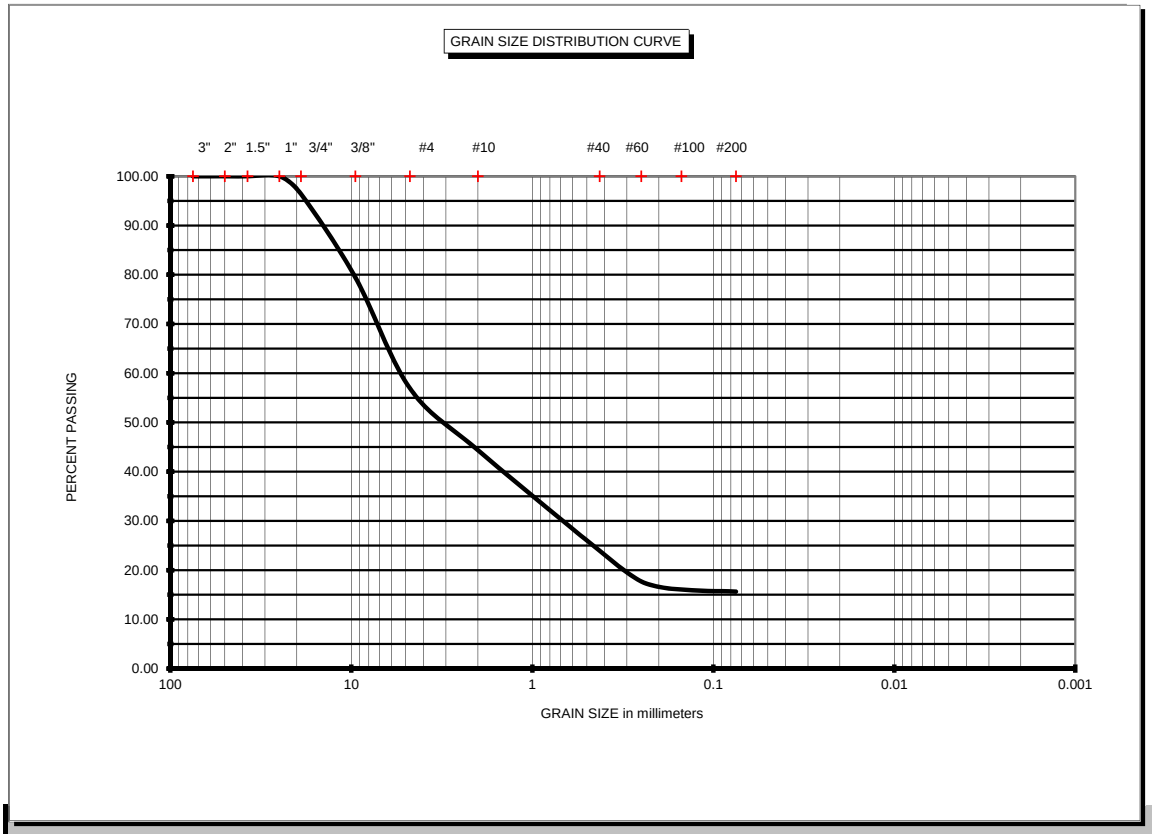
Cu = D60 / D10
Cc = (D30)^2 / (D10 x D60)
1000 um = 1 mm

tested by: J. Gonzalez computed by: S. Zhang checked by: O. Riccobono

GRAIN SIZE DATA SHEET

DATE: 1/16/2015

PROJECT NAME: SR 9 / I-95 RAMPS ROADWAY IMPROVEMENTS AT MIAMI GARDENS DRIVE
GEOSOL PROJECT No. 214195
GENERAL LOCATION: MIAMI-DADE COUNTY, FLORIDA



ASTM D 2487 Classification of Soil for Engineering Purposes			Coarse Sand	< #4 and > #10	Cu = D60 / D10
Coarse Gravel	< 3" and > 3/4"		Medium Sand	< #10 and > #40	Cc = (D30)^2 / (D10 x D60)
Fine Gravel	< 3/4" and > #4		Fine Sand	< #40 and > #200	

BORING # A-3 **SAMPLE #** 1 **Depth (feet)** 0.6-2

SOIL DESCRIPTION: Brown Silty Medium to Coarse SAND and Limerock Fragments (FILL; A-1-b)

Natural Moisture Content: 14.2%

GRAIN SIZE DATA SHEET

DATE: 1/15/2015

PROJECT NAME: SR 9 / I-95 RAMPS ROADWAY IMPROVEMENTS AT MIAMI GARDENS DRIVE
GEOSOL PROJECT No. 214195
GENERAL LOCATION: MIAMI-DADE COUNTY, FLORIDA

Boring No. A-2
Sample No. 3
Depth (feet) 4-6

SOIL DESCRIPTION: Brown Fine to Medium SAND (FILL; A-3)

Tare #	Dry Wt. - Tare Wt.
N-3	286.5

Sieve Size	Sieve Sizes	Cumulative Wt. Retained	% RETAINED	% PASSING	% PASSING TOTAL SAMPLE	WEIGHT RETAINED (Grams)
75	75mm 3"	0.0	0.0	100	100	0.0
50	50mm 2"	0.0	0.0	100	100	0.0
37.5	37.5mm 1.5"	0.0	0.0	100.0	100.0	0.0
25	25mm 1"	0.0	0.0	100.0	100.0	0.0
19	19mm 3/4"	0.0	0.0	100.0	100.0	0.0
9.5	9.5mm 3/8"	0.0	0.0	100.0	100.0	0.0
4.75	4.75mm #4	0.0	0.0	100.0	100.0	0.0
2.36	2 mm #10	0.0	0.0	100.0	100.0	0.0
0.6	425um #40	114.0	39.8	60.2	60.2	114.0
0.3	250um #60	259.0	90.4	9.6	9.6	145.0
0.15	150um #100	282.0	98.4	1.6	1.6	23.0
0.075	75um #200	283.5	99.0	1.0	1.0	1.5
PAN	-	286.5	100.0	0.0	0.0	3.0

NOTES: Percent passing the #200 sieve was determined by the wash method.

ASTM D 2487 Classification of Soil for Engineering Purposes

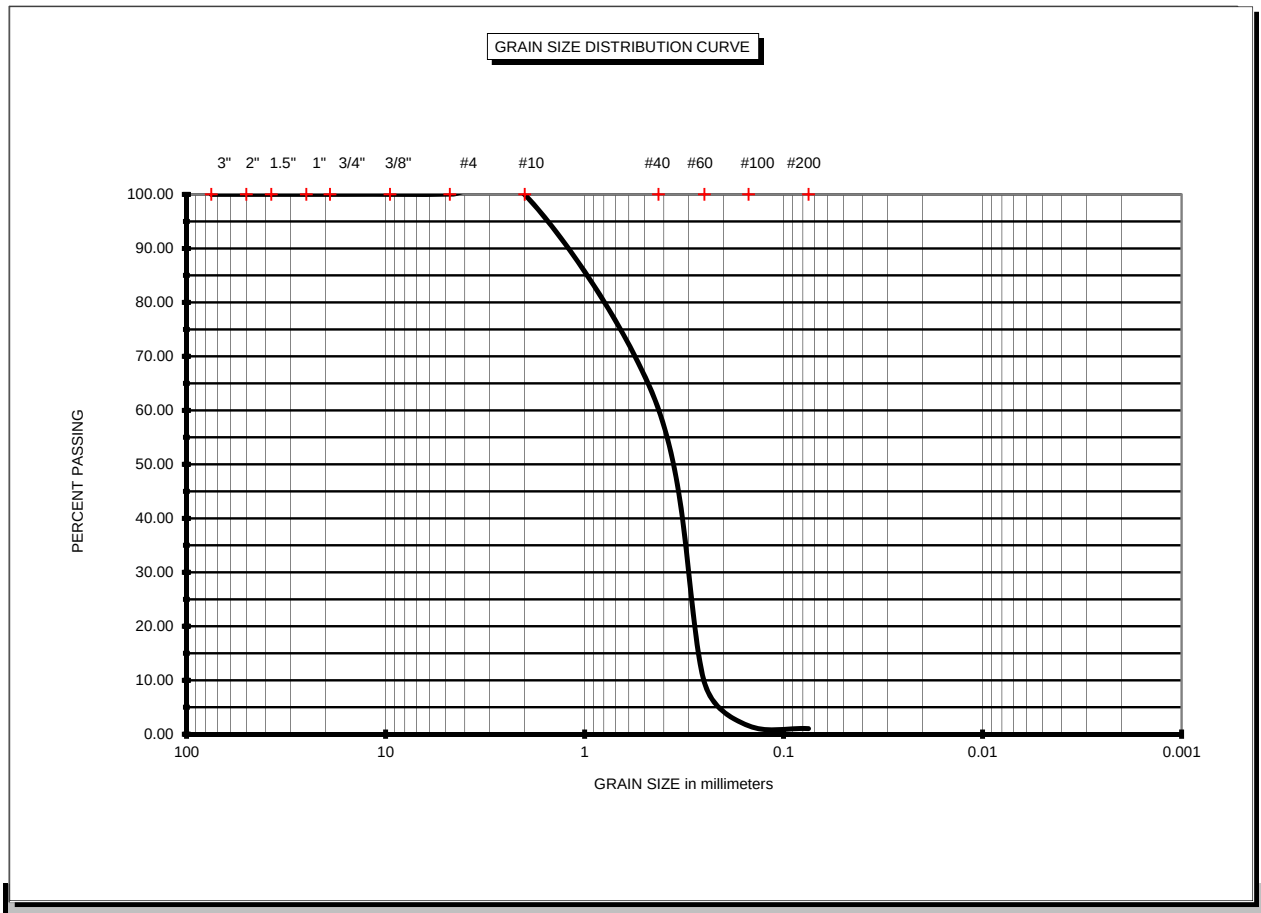
Coarse Gravel	< 3" and > 3/4"	Coarse Sand	< #4 and > #10	Cu = D60 / D10
Fine Gravel	< 3/4" and > #4	Medium Sand	< #10 and > #40	Cc = (D30)^2 / (D10 x D60)
		Fine Sand	< #40 and > #200	1000 um = 1 mm

tested by: J. Gonzalez computed by: S. Zhang checked by: O. Riccobono

GRAIN SIZE DATA SHEET

DATE: 1/15/2015

PROJECT NAME: SR 9 / I-95 RAMPS ROADWAY IMPROVEMENTS AT MIAMI GARDENS DRIVE
GEOSOL PROJECT No. 214195
GENERAL LOCATION: MIAMI-DADE COUNTY, FLORIDA



ASTM D 2487 Classification of Soil for Engineering Purposes			Coarse Sand	< #4 and > #10	Cu = D60 / D10
Coarse Gravel	< 3" and > 3/4"		Medium Sand	< #10 and > #40	Cc = (D30)^2 / (D10 x D60)
Fine Gravel	< 3/4" and > #4		Fine Sand	< #40 and > #200	

BORING # A-2 **SAMPLE #** 3 **Depth (feet)** 4-6

SOIL DESCRIPTION: Brown Fine to Medium SAND (FILL; A-3)

Natural Moisture Content: 1.2%

GRAIN SIZE DATA SHEET

DATE: 1/16/2015

PROJECT NAME: SR 9 / I-95 RAMPS ROADWAY IMPROVEMENTS AT MIAMI GARDENS DRIVE
GEOSOL PROJECT No. 214195
GENERAL LOCATION: MIAMI-DADE COUNTY, FLORIDA

Boring No. A-3
Sample No. 2
Depth (feet) 2-4

SOIL DESCRIPTION: Brown Fine to Medium SAND (FILL; A-3)

Tare #	Dry Wt. - Tare Wt.
N-2	230.5

Sieve Size	Sieve Sizes	Cumulative Wt. Retained	% RETAINED	% PASSING	% PASSING TOTAL SAMPLE	WEIGHT RETAINED (Grams)
75	75mm 3"	0.0	0.0	100	100	0.0
50	50mm 2"	0.0	0.0	100	100	0.0
37.5	37.5mm 1.5"	0.0	0.0	100.0	100.0	0.0
25	25mm 1"	0.0	0.0	100.0	100.0	0.0
19	19mm 3/4"	0.0	0.0	100.0	100.0	0.0
9.5	9.5mm 3/8"	0.0	0.0	100.0	100.0	0.0
4.75	4.75mm #4	0.0	0.0	100.0	100.0	0.0
2.36	2 mm #10	2.0	0.9	99.1	99.1	2.0
0.6	425um #40	113.0	49.0	51.0	51.0	111.0
0.3	250um #60	209.5	90.9	9.1	9.1	96.5
0.15	150um #100	218.5	94.8	5.2	5.2	9.0
0.075	75um #200	219.5	95.2	4.8	4.8	1.0
PAN	-	230.5	100.0	0.0	0.0	11.0

NOTES: Percent passing the #200 sieve was determined by the wash method.

ASTM D 2487 Classification of Soil for Engineering Purposes

Coarse Gravel	< 3" and > 3/4"
Fine Gravel	< 3/4" and > #4

Coarse Sand	< #4 and > #10
Medium Sand	< #10 and > #40
Fine Sand	< #40 and > #200

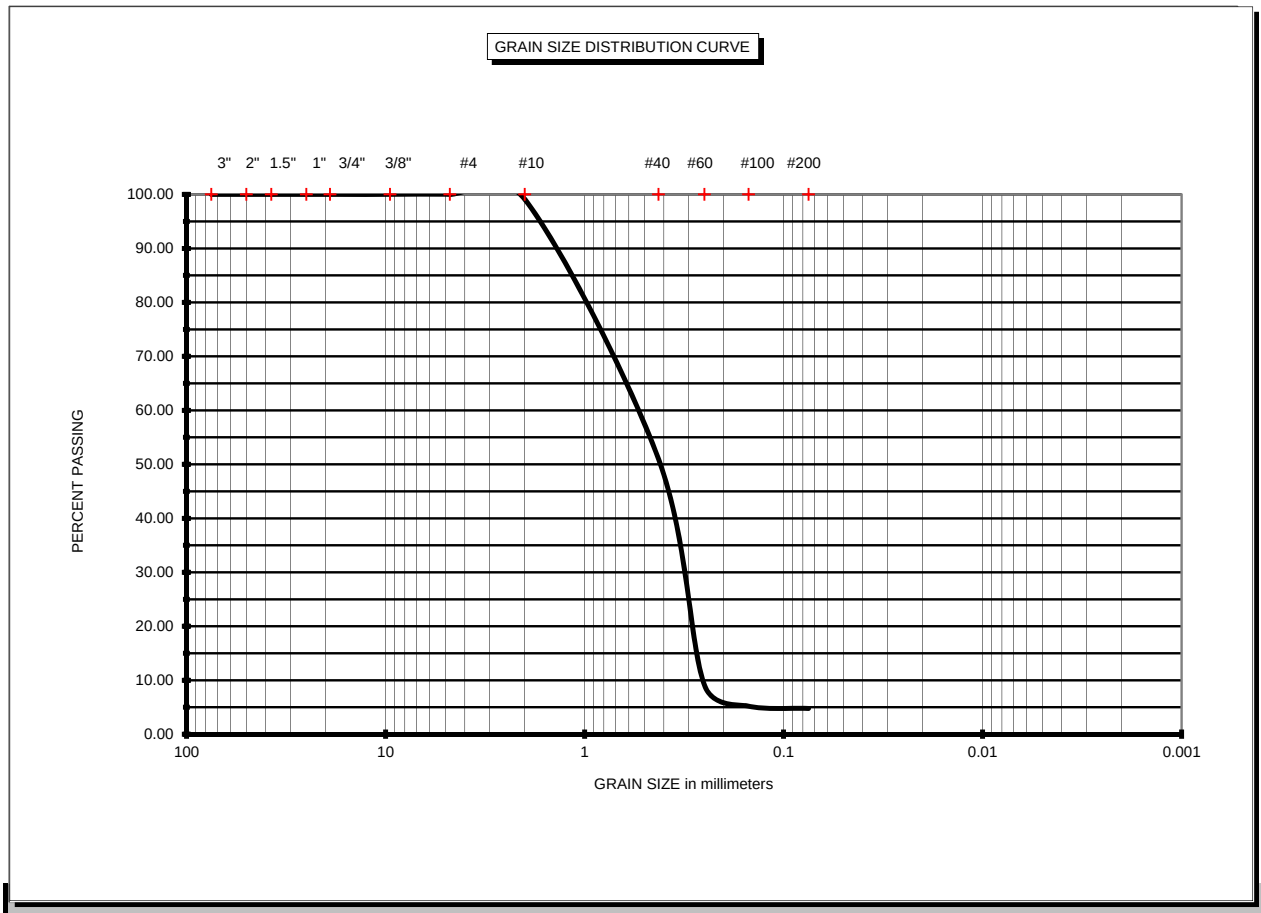
Cu = D60 / D10
Cc = (D30)^2 / (D10 x D60)
1000 um = 1 mm

tested by: J. Gonzalez computed by: S. Zhang checked by: O. Riccobono

GRAIN SIZE DATA SHEET

DATE: 1/16/2015

PROJECT NAME: SR 9 / I-95 RAMPS ROADWAY IMPROVEMENTS AT MIAMI GARDENS DRIVE
GEOSOL PROJECT No. 214195
GENERAL LOCATION: MIAMI-DADE COUNTY, FLORIDA



ASTM D 2487 Classification of Soil for Engineering Purposes			Coarse Sand	< #4 and > #10	Cu = D60 / D10
Coarse Gravel	< 3" and > 3/4"		Medium Sand	< #10 and > #40	Cc = (D30)^2 / (D10 x D60)
Fine Gravel	< 3/4" and > #4		Fine Sand	< #40 and > #200	

BORING # A-3 **SAMPLE #** 2 **Depth (feet)** 2-4

SOIL DESCRIPTION: Brown Fine to Medium SAND (FILL; A-3)

Natural Moisture Content: 14.8%

Pace Analytical Services, Inc.
3610 Park Central Blvd N
Pompano Beach, FL 33064
954-582-4300

ANALYTICAL RESULTS

Project: Ramos at Miami Gardens 214195
Pace Project No.: 35171246

Sample: P-1 **Lab ID: 35171246001** Collected: 01/13/15 17:00 Received: 01/14/15 16:00 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
Temperature, Water (C)	**24.5**	deg C	0.010	0.010	1		01/16/14 12:35		
pH at 25 Degrees C	**7.6**	Std. Units	0.10	0.10	1		01/16/14 12:35		Q
Resistivity	Analytical Method: EPA 120.1 Resistivity								
Resistivity	**3110**	ohms-cm			1		01/19/15 12:25		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**9.9**	mg/L	5.0	2.5	1		01/16/15 22:44	16887-00-6	
Sulfate	**6.4**	mg/L	5.0	2.5	1		01/16/15 22:44	14808-79-8	

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APPENDIX "C"

Table 4 – Summary of Constant Head Exfiltration Test Results
Schematics of SFWMD's Usual Open-Hole Exfiltration Test Procedures

TABLE 4 - SUMMARY OF CONSTANT HEAD EXFILTRATION TEST RESULTS

SR 9 / I-95 RAMPS ROADWAY IMPROVEMENTS
AT MIAMI GARDENS DRIVE
MIAMI-DADE COUNTY, FLORIDA
FPID NO.: 425216-2-52-01
GEOSOL PROJECT No. 214195

Test No.	Date Performed	Diameter		Depth of Hole (Feet)	Depth to Groundwater Level Below Ground Surface (Feet)		SATURATED HOLE DEPTH Ds (Feet)	Corrected Depth of Hole (Feet)	Average Flow Rate (gpm)	K, Hydraulic Conductivity (cfs/ft^2-Ft Head)
		Casing (Inches)	Hole (Inches)		Prior to Test	During Test				
P-1	01/12/15	6.00	6.75	10	3.1	0.00	6.90	10.00	1.5	8.00E-05
	01/12/15	6.00	6.75	15	3.1	0.00	11.90	15.00	0.9	3.03E-05
	01/12/15	6.00	6.75	20	3.1	0.00	16.90	20.00	0.6	1.48E-05

NOTES:

(1) The above hydraulic conductivity values are for a French drain installed to the same depth as the borehole tests. The values represent an ultimate value. The designer should decide on the required factor of safety.

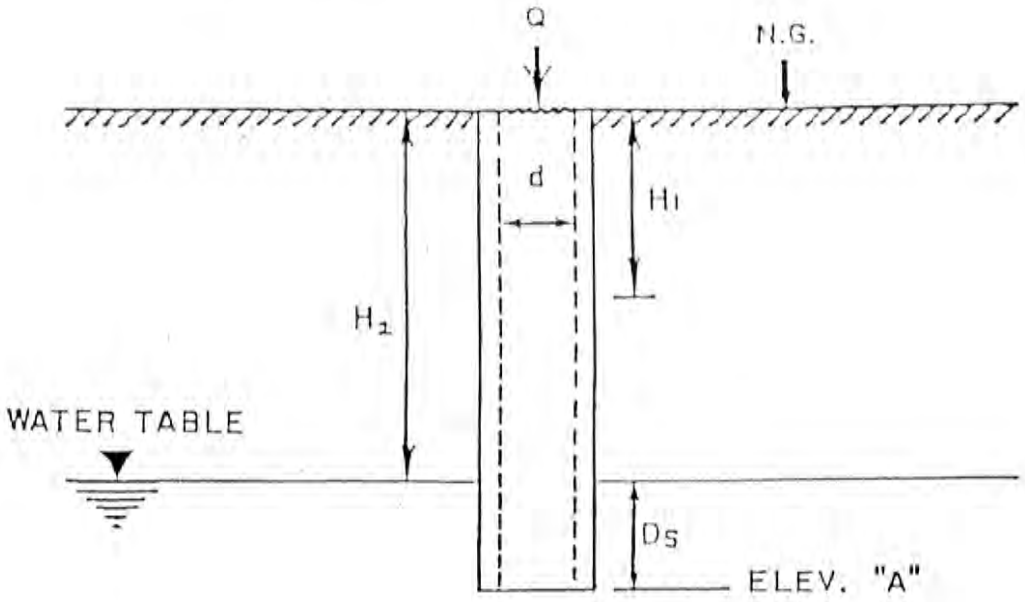
(2) The hydraulic conductivity values were calculated based on the South Florida Water Management Districts's USUAL OPEN HOLE CONSTANT HEAD exfiltration test procedure as shown on the following page.

(3) The diameter of the CASING was used in the computation of the hydraulic conductivity values presented in the above table.

SUBSURFACE STRATIFICATION

TEST No.	TEST LOCATION (FEET)			DEPTH (FEET)		GENERAL MATERIAL DESCRIPTION
	STATION	OFFSET	REFERENCE	FROM	TO	
P-1	18+35	75'RT	B/L SURVEY I-95 SB ON RAMP	0.00	0.17	Dark Brown Organic Silty Fine SAND with Grass (TOPSOIL)
				0.17	1.50	Brown Slightly Silty Fine to Medium SAND with Trace of Limerock Fragments (FILL)
				1.50	2.50	Brown Fine to Medium SAND (FILL)
				2.50	6.80	Brown Fine to Medium SAND with Some Limestone Fragments
				6.80	20.00	Brown Fine to Medium SAND

USUAL OPEN - HOLE TEST



$$K = \frac{4Q}{\pi d(2H_2^2 + 4H_2 D_S + H_2 d)}$$

K = HYDRAULIC CONDUCTIVITY (CFS/FT.^{2} - FT. HEAD)

Q = "STABILIZED" FLOW RATE (CFS)

d = DIAMETER OF TEST HOLE (FEET)

H_2 = DEPTH TO WATER TABLE (FEET)

D_S = SATURATED HOLE DEPTH (FEET)

ELEV. "A" = PROPOSED TRENCH BOTTOM ELEV.

H_1 = AVERAGE HEAD ON UNSATURATED HOLE SURFACE (FT. HEAD)

Reference: SFWMD Management and Storage of Surface Waters
Permit Information Manual Vol. IV, Figure 3, Page 12.

APPENDIX "D"

Pavement Evaluation and Condition Data Sheet
Asphalt Pavement and Site Photographs
Asphalt Pavement Coring Test Boring Records

State of Florida Department of Transportation

PAVEMENT EVALUATION AND CONDITION DATA

Cored by: R. Moralez - GEOSOL, INC. Date: 1/8-9/2015 Page: 1 OF 1 Typical Section No.:

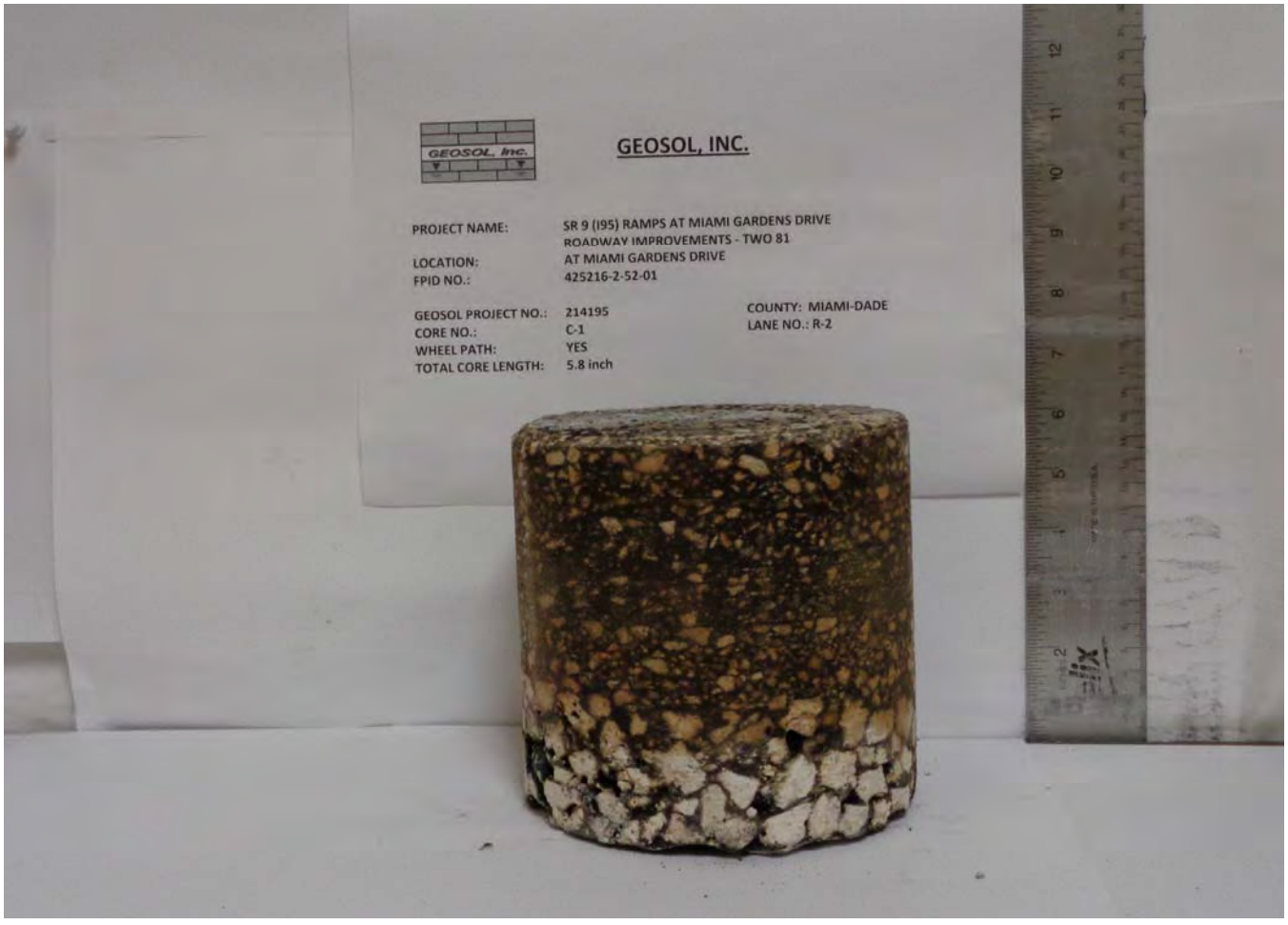
FPID No:	425216-2-52-01	Name:	SR 9 / I-95 Ramps Roadway Improvements	Lanes:	2-5 travel lanes
County:	Miami-Dade	S.R. No.:	9		
GEOSOL Project No.	214195	Project Limits:		Shoulder Type & Cond.:	Paved
			Miami Gardens Drive Interchange	Inside:	Y
				Outside:	Y
Median Curbed?	Y	Lawn?	N	Other?	Curb & Gutter? N

Core	Approximate Test Location (FEET)			Lane	Wheel	Pavement Layer (inches)							Base	Sub Base	Crack				Pavement	Rut	Cross	Comments
						Top						Core			Depth	Type	Class	Extent	Condition	Depth	Slope	
No.	Station	Offset	Reference		Path	FC-4	FC-2	S-I	S-III	Binder/Concrete	Binder	Length (inches)	(inches)	(inches)	(inches)					(in.)	(ft / 6 ft)	
C-1	12+20	5'LT	B/L I-95 SB On-Ramp	R-2	X	0.5	-	-	3.0	-	2.3	5.8	12.0	≥12	-	-	-	-	F	1/8	0.024	See Note 1
C-2	16+35	15'LT	B/L I-95 SB On-Ramp	R-1	X	0.7	-	9.5	-	-	-	10.2	12.0	≥12	-	-	-	-	F	1/8	0.045	See Note 1
C-3	22+30	10'LT	B/L I-95 SB On-Ramp	R-1	X	0.7	-	-	4.3	-	2.5	7.5	12.0	≥12	-	-	-	-	F	1/2	0.094	See Note 1
C-4	12+20	30'LT	B/L I-95 NB On-Ramp	R-1	X	0.8	-	-	2.0	-	2.0	4.8	12.0	≥12	-	-	-	-	F	1/16	0.017	See Note 1
C-5	12+30	30'LT	B/L I-95 NB Off-Ramp	L-3	X	1.0	-	-	4.0	-	2.0	7.0	12.0	≥12	-	-	-	-	F	1/8	0.024	See Note 1
C-6	12+50	15'LT	B/L I-95 NB On-Ramp	R-2	X	0.7	-	-	3.3	-	2.5	6.5	12.0	≥12	2.0	-	-	-	P	1/2	0.017	See Note 1
C-7	12+70	5'LT	B/L I-95 NB Off-Ramp	L-1	X	0.5	-	-	3.1	-	2.4	6.0	12.0	≥12	-	-	-	-	P	1/32	0.021	See Note 1
C-8	13+10	5'LT	B/L I-95 NB On-Ramp	R-2	X	0.7	-	-	3.8	-	2.0	6.5	12.0	≥12	6.5	-	-	-	P	1/2	0.017	See Note 1
C-9	13+35	15'LT	B/L I-95 NB Off-Ramp	L-2	X	0.5	-	-	4.0	-	2.5	7.0	12.0	≥12	-	-	-	-	P	1/32	0.017	See Note 1
C-10	16+35	10'LT	B/L I-95 NB Off-Ramp	L-1	X	0.7	-	-	3.3	2.2/5.2	-	6.2/9.2	12.0	≥12	6.2/9.2	-	-	-	P	1/8	0.083	See Note 1
C-11	17+75	5'LT	B/L I-95 NB On-Ramp	R-2	X	-	0.6	4.4	-	-	2.5	7.5	12.0	≥12	-	-	-	-	F	1/4	0.021	See Note 1

NOTES:

1) BASE AND SUBBASE MATERIALS CONSIST OF SLIGHTLY SILTY FINE TO MEDIUM SAND WITH SOME LIMEROCK FRAGMENTS (A-1-b).
2) R = RIGHT LANE
3) L = LEFT LANE

C-1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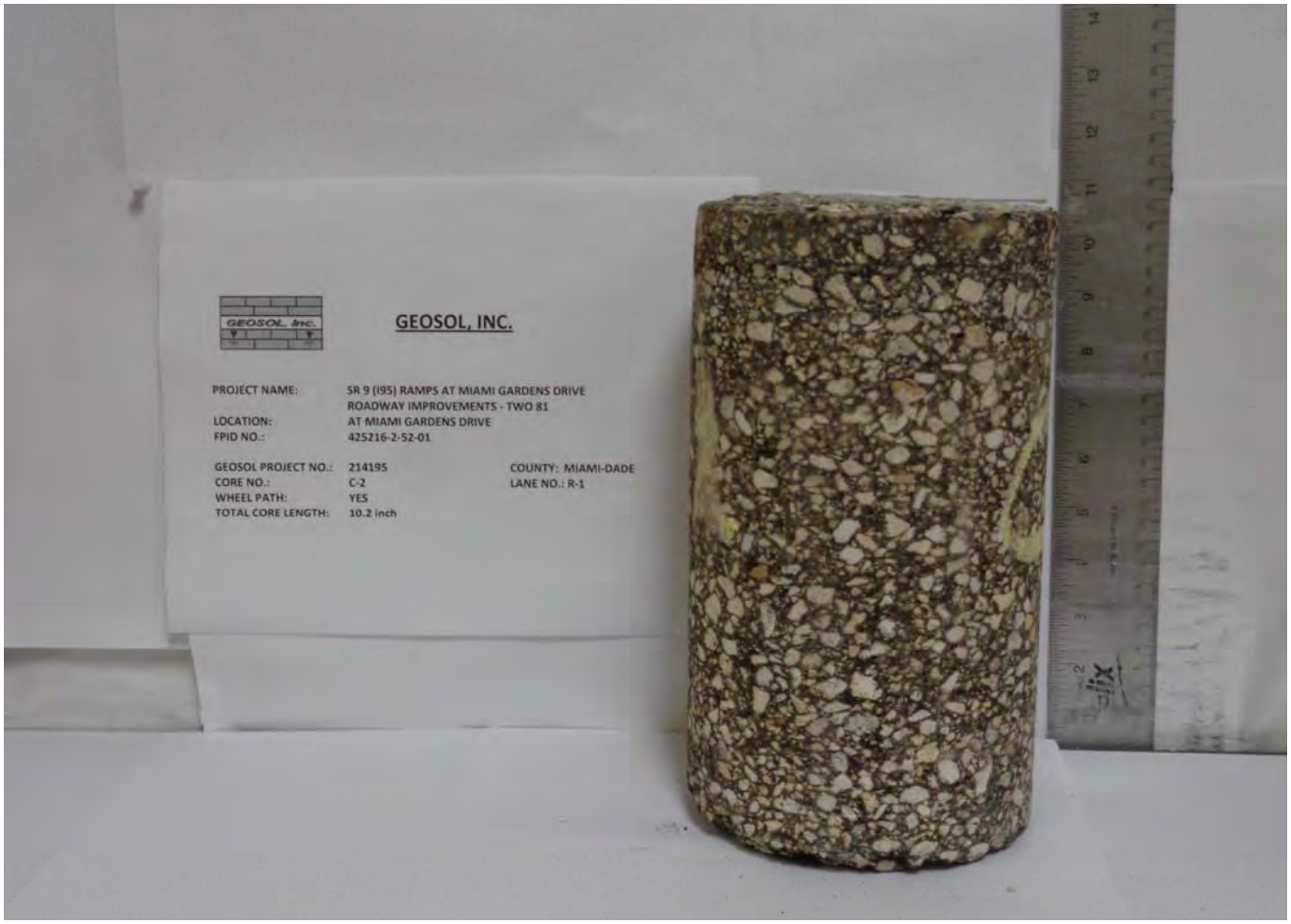
GEOSOL, INC.
PROJECT NAME: SR 9 (I95) RAMPS AT MIAMI GARDENS DRIVE
ROADWAY IMPROVEMENTS - TWO 81
LOCATION: AT MIAMI GARDENS DRIVE
FPID NO.: 425216-2-52-01
GEOSOL PROJECT NO.: 214195
CORE NO.: C-1
WHEEL PATH: YES
TOTAL CORE LENGTH: 5.8 inch
COUNTY: MIAMI-DADE
LANE NO.: R-2

15
C-2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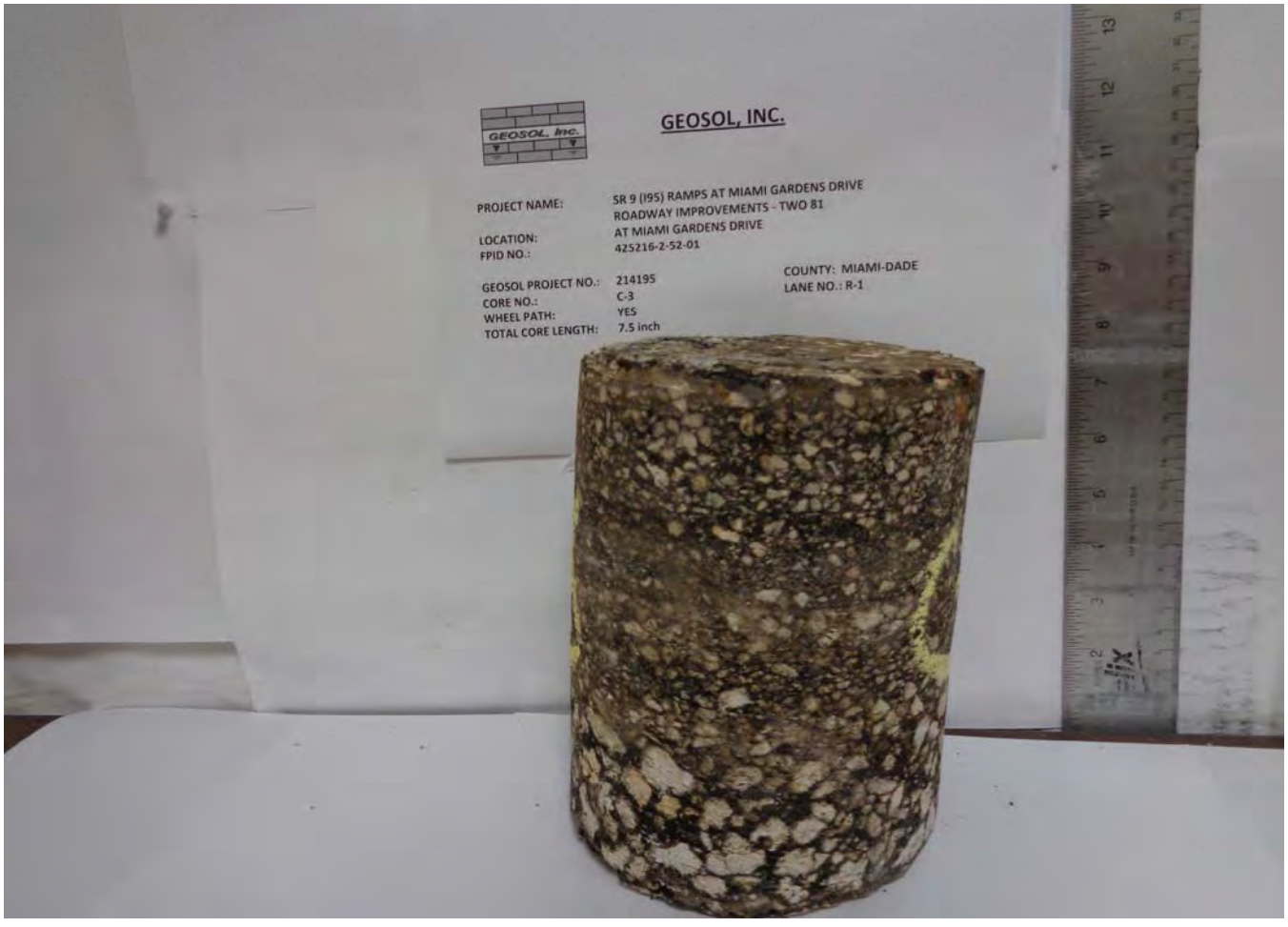
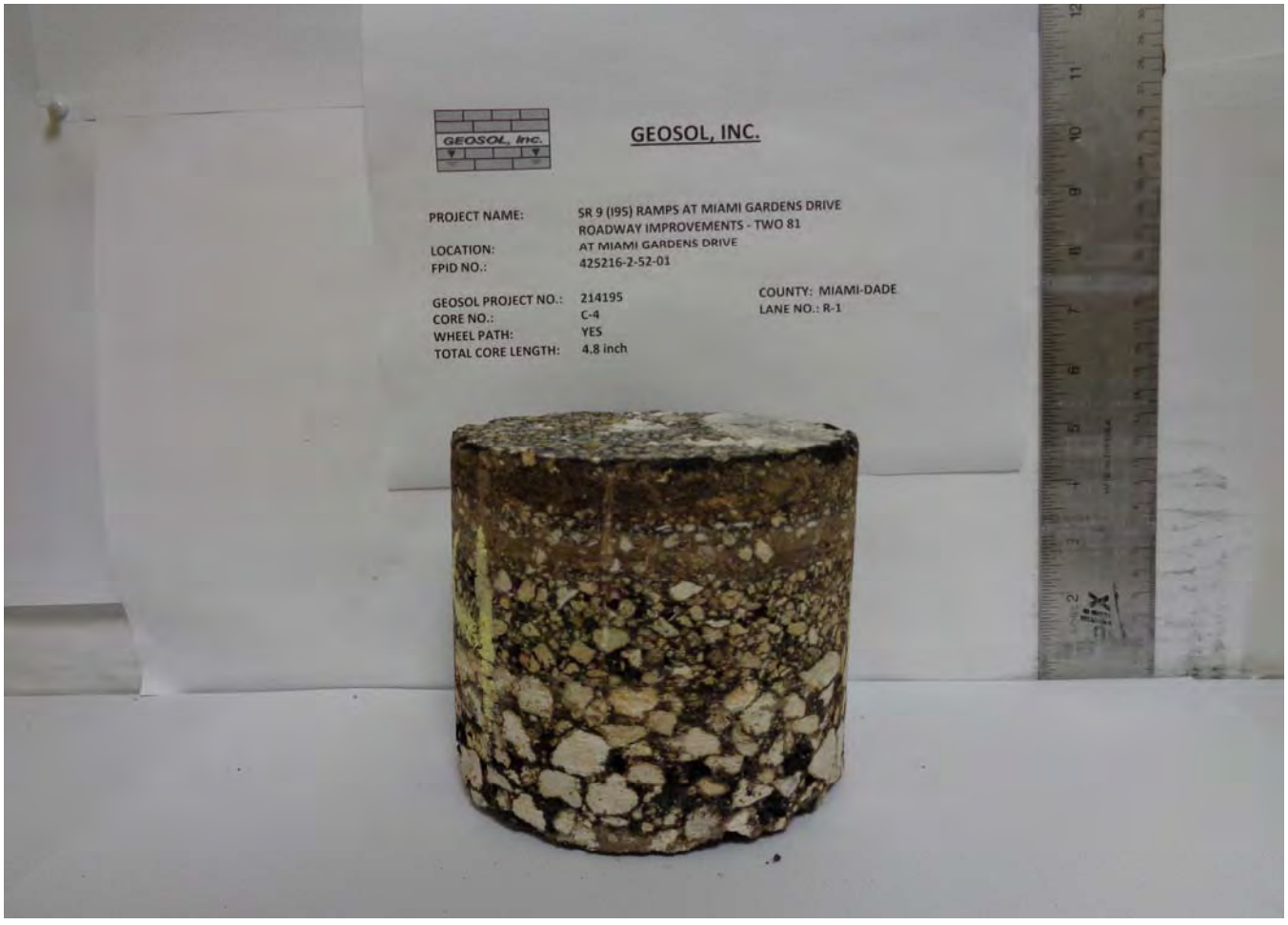
PROJECT NAME: SR 9 (I95) RAMPS AT MIAMI GARDENS DRIVE
ROADWAY IMPROVEMENTS - TWO 81
LOCATION: AT MIAMI GARDENS DRIVE
FPID NO.: 425216-2-52-01
GEOSOL PROJECT NO.: 214195
CORE NO.: C-2
WHEEL PATH: YES
TOTAL CORE LENGTH: 10.2 inch
COUNTY: MIAMI-DADE
LANE NO.: R-1

C-3/R-1


GEOSOL, INC.
GEOSOL, Inc.
PROJECT NAME: SR 9 (I95) RAMPS AT MIAMI GARDENS DRIVE
ROADWAY IMPROVEMENTS - TWO 81
LOCATION: AT MIAMI GARDENS DRIVE
FPID NO.: 425216-2-52-01
COUNTY: MIAMI-DADE
GEOSOL PROJECT NO.: 214195
CORE NO.: C-3
LANE NO.: R-1
WHEEL PATH: YES
TOTAL CORE LENGTH: 7.5 inch

C-4


GEOSOL, inc.
GEOSOL, INC.
PROJECT NAME: SR 9 (I95) RAMPS AT MIAMI GARDENS DRIVE
ROADWAY IMPROVEMENTS - TWO 81
LOCATION: AT MIAMI GARDENS DRIVE
FPID NO.: 425216-2-52-01
GEOSOL PROJECT NO.: 214195
CORE NO.: C-4
WHEEL PATH: YES
TOTAL CORE LENGTH: 4.8 inch
COUNTY: MIAMI-DADE
LANE NO.: R-1

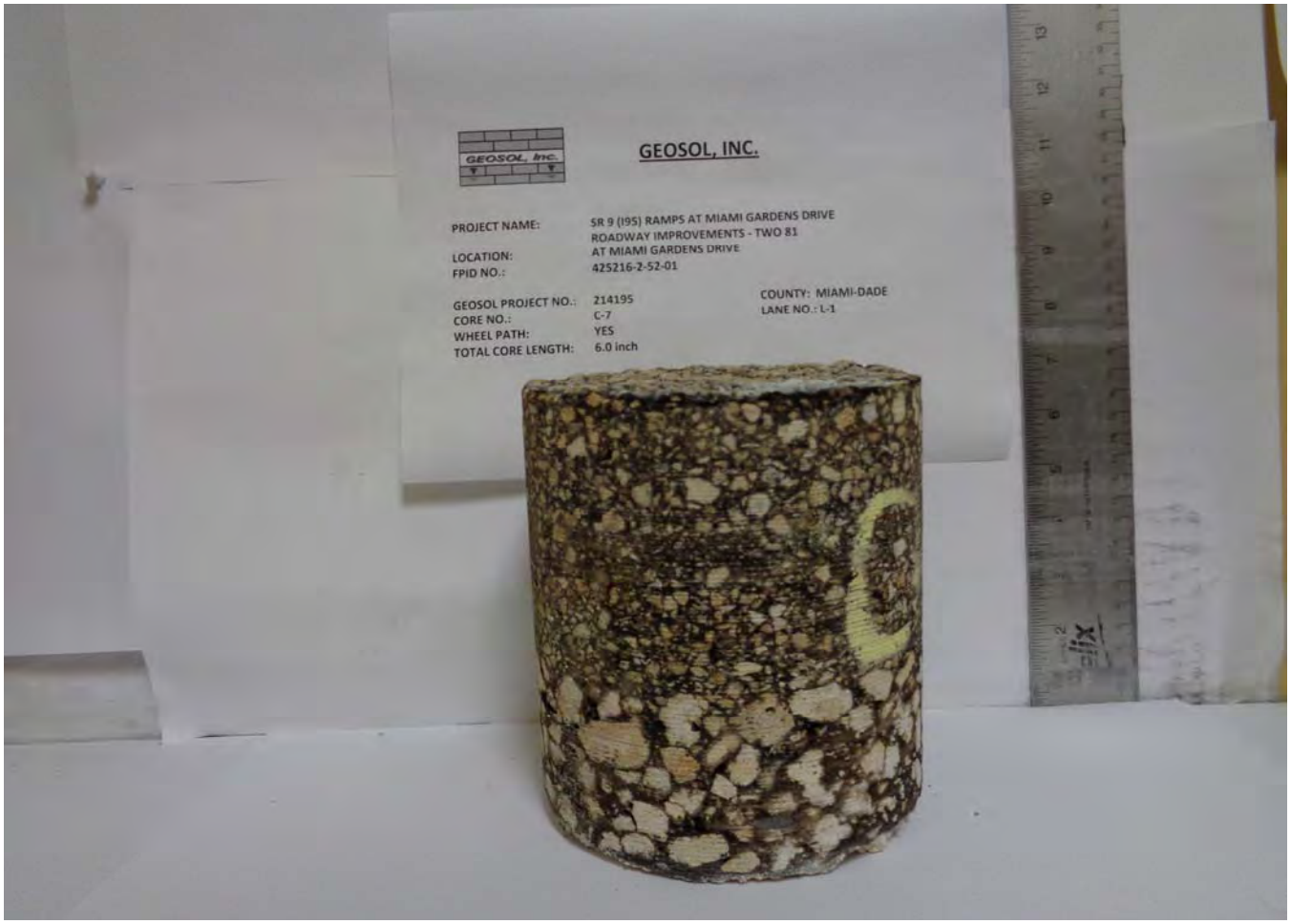
C-5

GEOSOL, INC.
GEOSOL, INC.
PROJECT NAME:
SR 9 (I95) RAMPS AT MIAMI GARDENS DRIVE
ROADWAY IMPROVEMENTS - TWO 81
LOCATION:
AT MIAMI GARDENS DRIVE
FPID NO.:
425216-2-52-01
GEOSOL PROJECT NO.:
214195
CORE NO.:
C-5
WHEEL PATH:
YES
TOTAL CORE LENGTH:
7.0 inch
COUNTY: MIAMI-DADE
LANE NO.: L-3

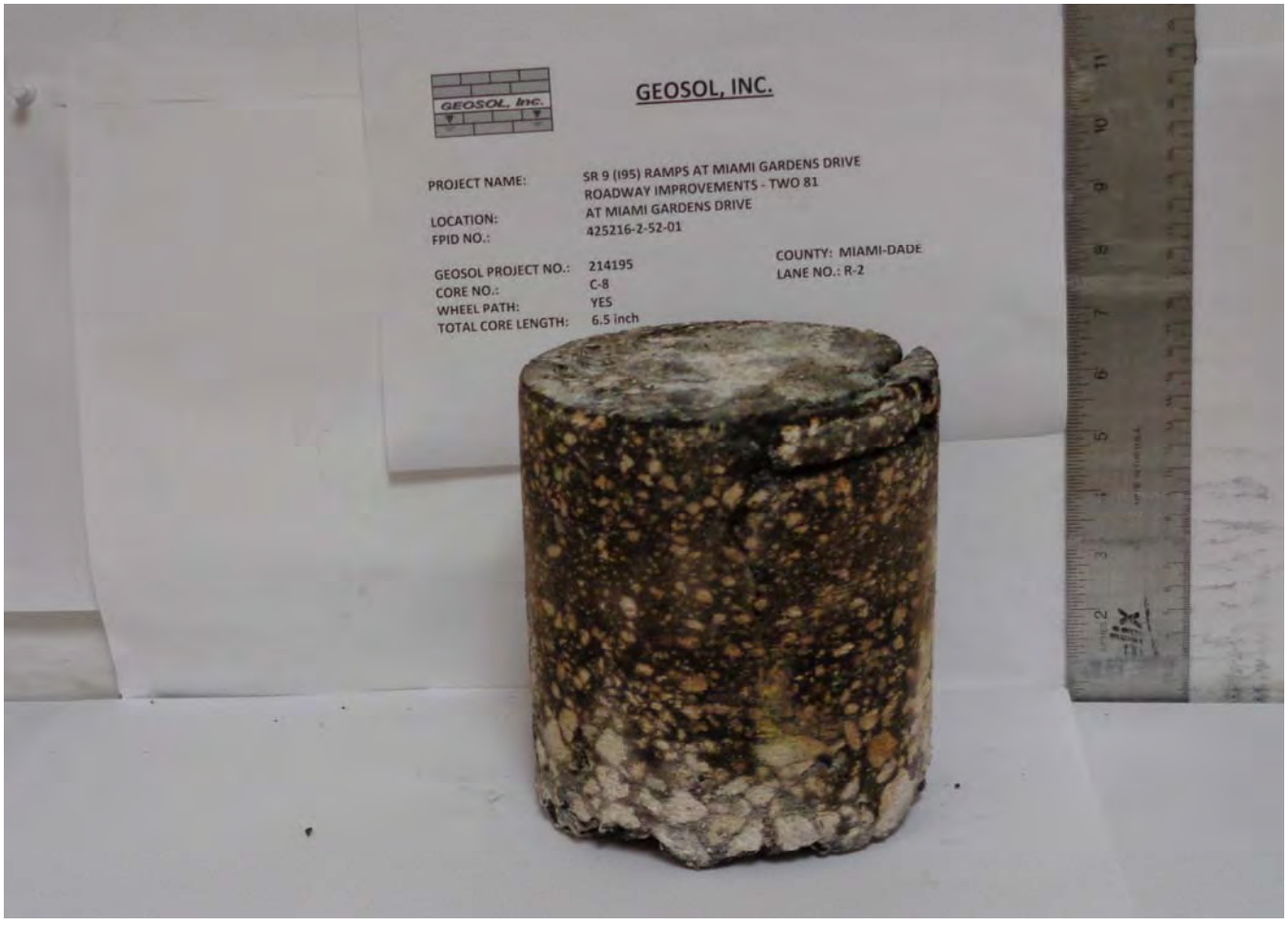
C-6

GEOSOL, Inc.
GEOSOL, INC.
PROJECT NAME: SR 9 (I95) RAMPS AT MIAMI GARDENS DRIVE
ROADWAY IMPROVEMENTS - TWO 81
LOCATION: AT MIAMI GARDENS DRIVE
FPID NO.: 425216-2-52-01
GEOSOL PROJECT NO.: 214195
CORE NO.: C-6
WHEEL PATH: YES
TOTAL CORE LENGTH: 6.5 inch
COUNTY: MIAMI-DADE
LANE NO.: R-2

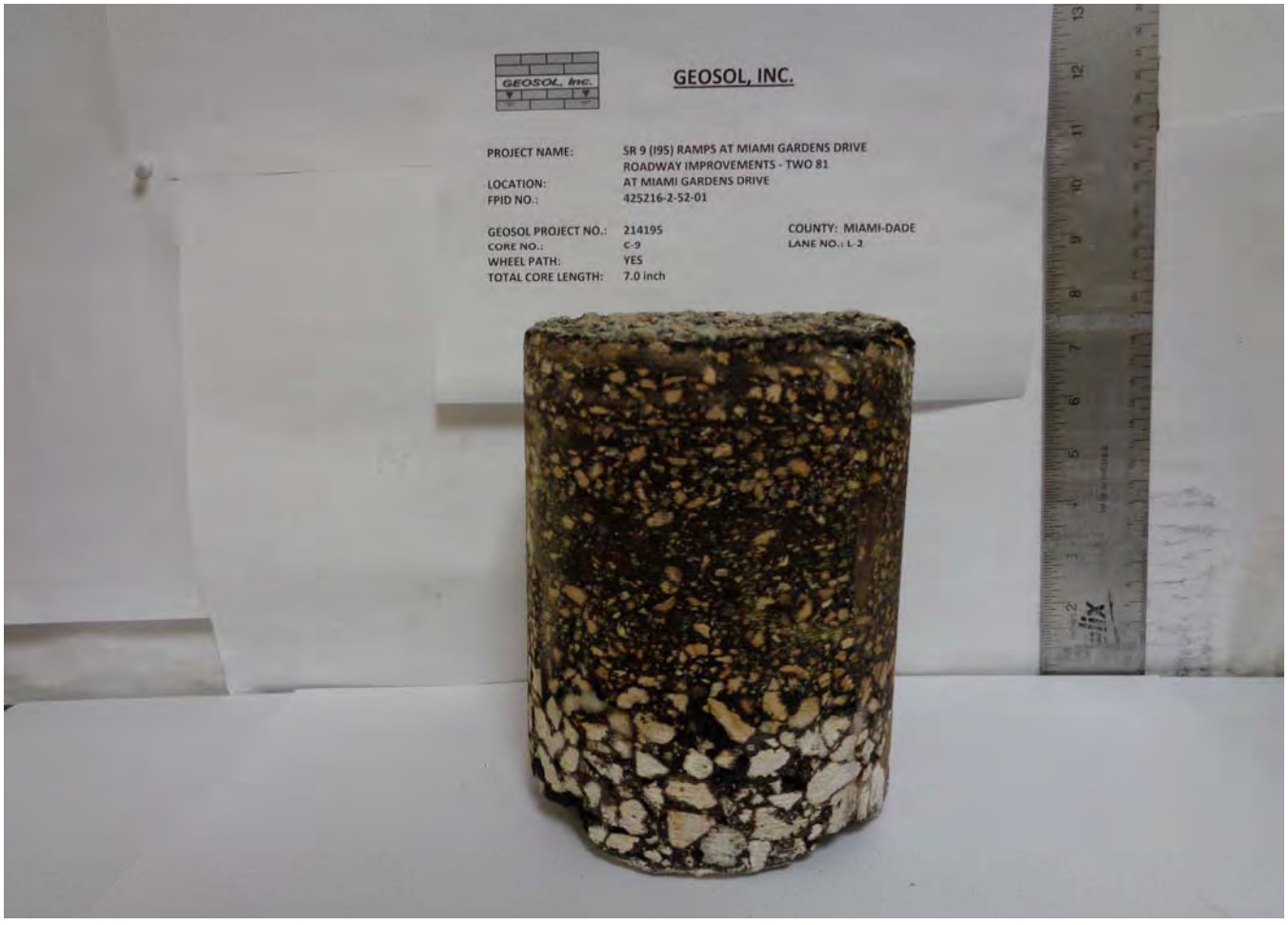
C-7
NORTH MIAMI BEACH


GEOSOL, Inc.
GEOSOL, INC.
PROJECT NAME: SR 9 (I95) RAMPS AT MIAMI GARDENS DRIVE ROADWAY IMPROVEMENTS - TWO 81
LOCATION: AT MIAMI GARDENS DRIVE
FPID NO.: 425216-2-52-01
GEOSOL PROJECT NO.: 214195
CORE NO.: C-7
WHEEL PATH: YES
TOTAL CORE LENGTH: 6.0 inch
COUNTY: MIAMI-DADE
LANE NO.: L-1

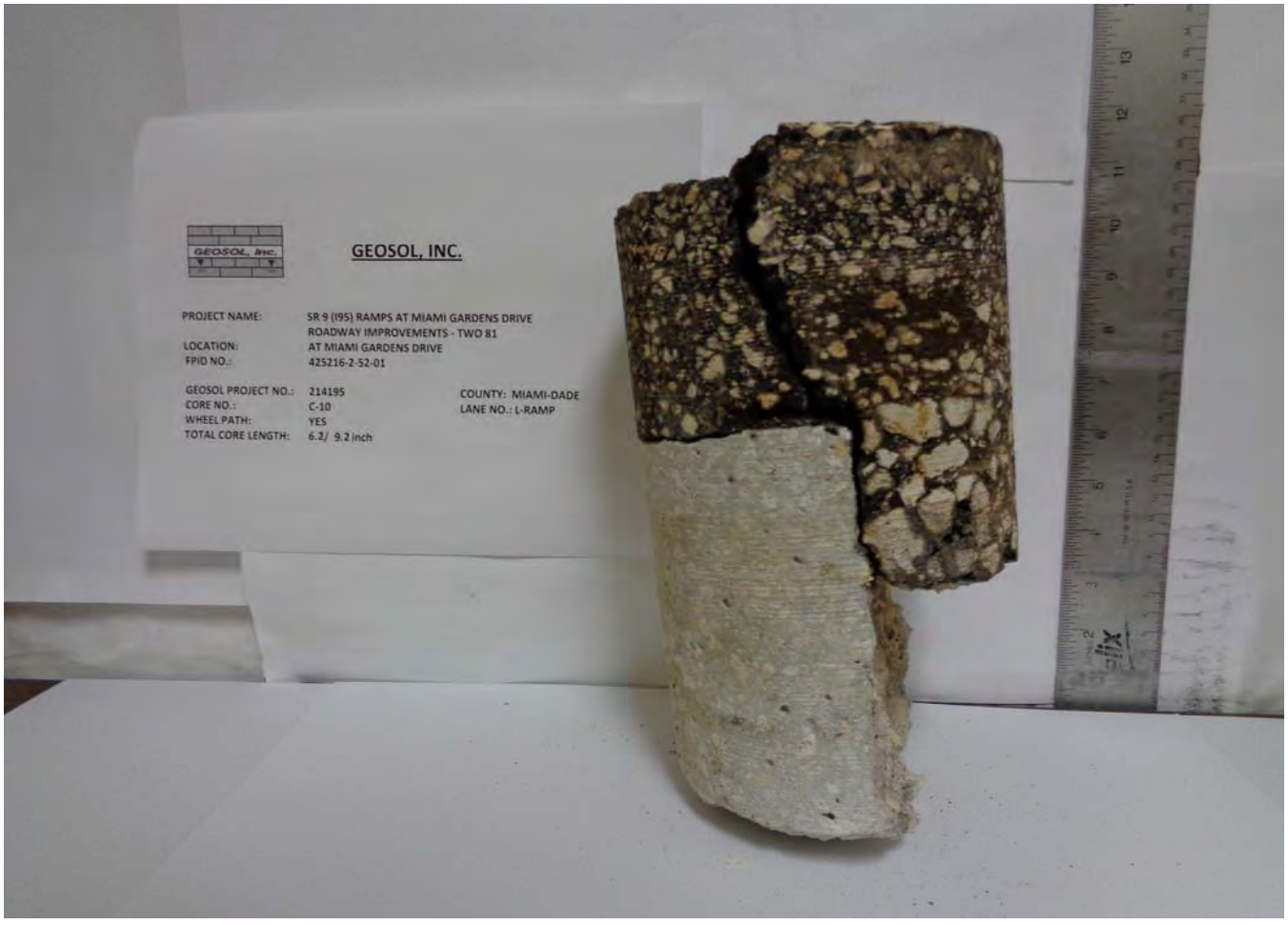
C-8


GEOSOL, INC.
GEOSOL, INC.
PROJECT NAME:
SR 9 (I95) RAMPS AT MIAMI GARDENS DRIVE
ROADWAY IMPROVEMENTS - TWO 81
AT MIAMI GARDENS DRIVE
LOCATION:
FPID NO.:
425216-2-52-01
GEOSOL PROJECT NO.:
214195
CORE NO.:
C-8
WHEEL PATH:
YES
TOTAL CORE LENGTH:
6.5 inch
COUNTY: MIAMI-DADE
LANE NO.: R-2

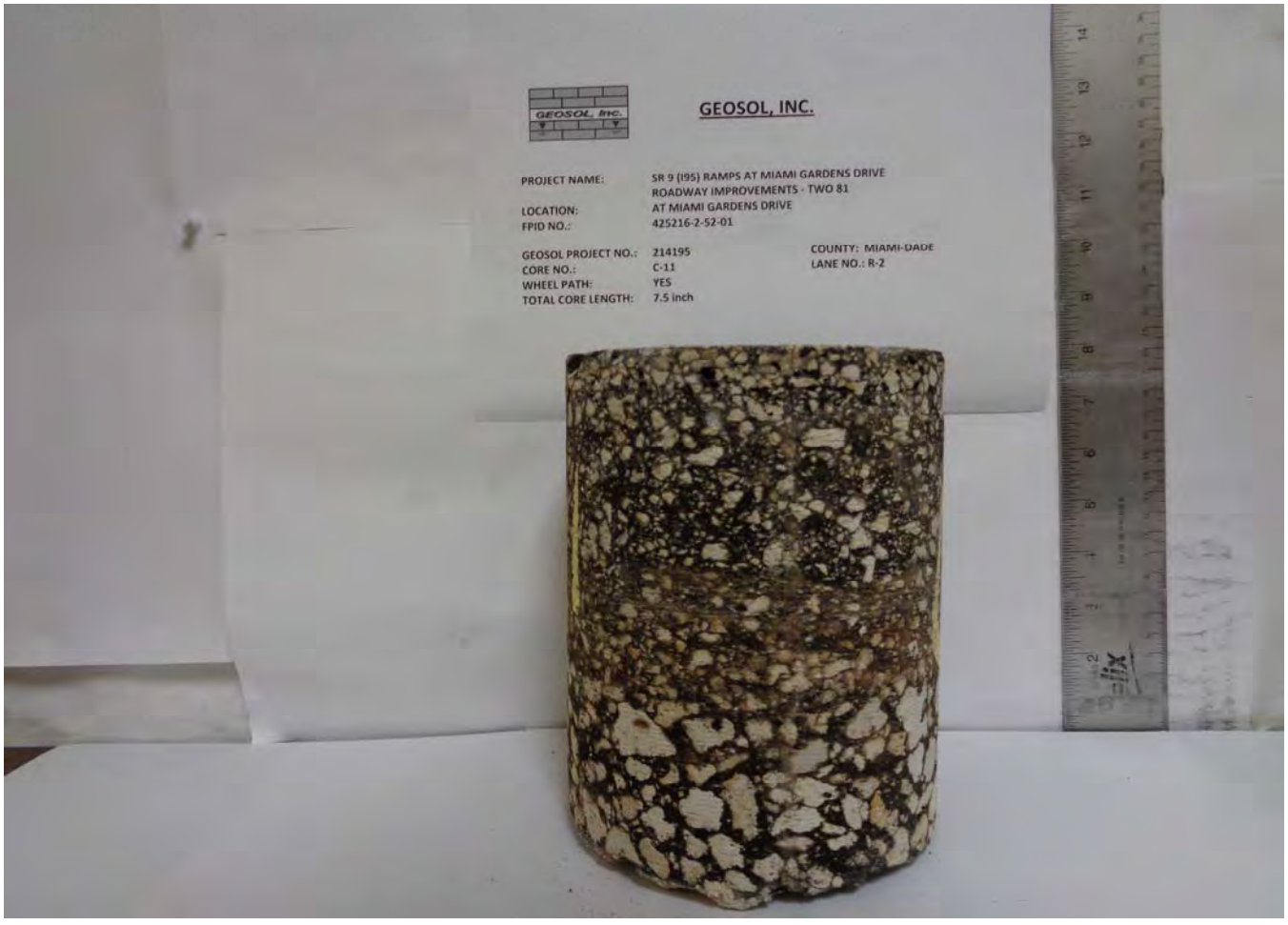
C-9


GEOSOL, INC.
GEOSOL, INC.
PROJECT NAME: SR 9 (I95) RAMPS AT MIAMI GARDENS DRIVE
ROADWAY IMPROVEMENTS - TWO 81
LOCATION: AT MIAMI GARDENS DRIVE
FPID NO.: 425216-2-52-01
GEOSOL PROJECT NO.: 214195
COUNTY: MIAMI-DADE
CORE NO.: C-9
LANE NO.: L-2
WHEEL PATH: YES
TOTAL CORE LENGTH: 7.0 inch

EMERGENCY
PARKING
ONLY
C-10 / A-2


GEOSOL, INC.
PROJECT NAME: SR 9 (I95) RAMPS AT MIAMI GARDENS DRIVE
ROADWAY IMPROVEMENTS - TWO 81
LOCATION: AT MIAMI GARDENS DRIVE
FPID NO.: 425216-2-52-01
GEOSOL PROJECT NO.: 214195
CORE NO.: C-10
WHEEL PATH: YES
TOTAL CORE LENGTH: 6.2/ 9.2 inch
COUNTY: MIAMI-DADE
LANE NO.: L-RAMP

C-11
A-3


GEOSOL, INC.
PROJECT NAME: SR 9 (I95) RAMPS AT MIAMI GARDENS DRIVE
ROADWAY IMPROVEMENTS - TWO 81
LOCATION: AT MIAMI GARDENS DRIVE
FPID NO.: 425216-2-52-01
GEOSOL PROJECT NO.: 214195
CORE NO.: C-11
WHEEL PATH: YES
TOTAL CORE LENGTH: 7.5 inch
COUNTY: MIAMI-DADE
LANE NO.: R-2

GEOSOL, Inc. MIAMI LAKES, FL	TEST BORING RECORD (ASTM D-1586)	BORING No. C-1
PROJECT NAME: SR 9 (I95) Ramps at Miami Gardens Drive Roadway Improvements TWO 81		SHEET No. 1 OF 1
CLIENT: FDOT		GEOSOL PROJECT No. 214195
BORING LOCATION: NORTHING (ft):	EASTING (ft): ELEVATION (ft):	

GROUNDWATER (FEET): N/A				CASING	SAMPLE	CORE	TUBE
DATE	TIME	DEPTH (ft)	CASING L (ft)	TYPE	NW	SS	
			-	DIA.(in)	3	1 - 3/8 ID	
				WT.(lbs)		140	
				FALL(in)		30	

DATUM (ft):	NGVD, 1929
DATE START:	1/9/2015
DATE FINISH:	1/9/2015
DRILLER:	R. Moralez
EQUIP./HAMMER:	B-53/ AUTO.

DEPTH, ft	SAMPLE No.	STRATUM No.	BLOWS / 6"	N Value (bpf)	SYMBOL	MATERIAL DESCRIPTION	REMARKS
			-			0 to 5.8": Asphalt Pavement	
1	S-1		23 17	32		5.8" to 2.48': Brown Slightly Silty Fine to Medium SAND with Some Limerock Fragments (Base/Stabilized Subbase; A-1-b)	BORING TERMINATED AT DEPTH OF 2.48ft. BOREHOLE GROUTED
2			15 13				
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

BLOWS/FT.	DENSITY
0-3	Very Loose
3-8	Loose
8-24	Medium Dense
24-40	Dense
> 40	Very Dense

BLOWS/FT.	CONSISTENCY
0-1	Very Soft
1-3	Soft
3-6	Medium Stiff
6-12	Stiff
12-24	Very Stiff
> 24	Hard

SAMPLE IDENTIFICATION

- H - Hand Auger
- S - Split Spoon
- T - Thin Wall Tube
- U - Undisturbed Piston
- C - Diamond Core
- W - Wash Sample

- FILL
- SAND
- ORGANIC SOILS / MUCK
- SILT
- CLAY
- LIMESTONE
- SANDSTONE

GEOSOL, Inc. MIAMI LAKES, FL	TEST BORING RECORD (ASTM D-1586)	BORING No. C-2
PROJECT NAME: SR 9 (I95) Ramps at Miami Gardens Drive Roadway Improvements TWO 81		SHEET No. 1 OF 1
CLIENT: FDOT		GEOSOL PROJECT No. 214195
BORING LOCATION: NORTHING (ft):	EASTING (ft): ELEVATION (ft):	

GROUNDWATER (FEET): N/A				CASING	SAMPLE	CORE	TUBE
DATE	TIME	DEPTH (ft)	CASING	TYPE	NW	SS		
			L (ft)	DIA.(in)	3	1 - 3/8 ID		
			-	WT.(lbs)		140		
				FALL(in)		30		

DATUM (ft):	NGVD, 1929
DATE START:	1/9/2015
DATE FINISH:	1/9/2015
DRILLER:	R. Moralez
EQUIP./HAMMER:	B-53/ AUTO.

DEPTH, ft	SAMPLE No.	STRATUM No.	BLOWS / 6"	N Value (bpf)	SYMBOL	MATERIAL DESCRIPTION	REMARKS
1			-			0 to 10.2": Asphalt Pavement	
2	S-1		23 18 14 11	32		10.2" to 2.85': Brown Slightly Silty Fine to Medium SAND with Some Limerock Fragments (Base/Stabilized Subbase; A-1-b)	BORING TERMINATED AT DEPTH OF 2.85ft. BOREHOLE GROUTED
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

BLOWS/FT.	DENSITY
0-3	Very Loose
3-8	Loose
8-24	Medium Dense
24-40	Dense
> 40	Very Dense

BLOWS/FT.	CONSISTENCY
0-1	Very Soft
1-3	Soft
3-6	Medium Stiff
6-12	Stiff
12-24	Very Stiff
> 24	Hard

SAMPLE IDENTIFICATION

- H - Hand Auger
- S - Split Spoon
- T - Thin Wall Tube
- U - Undisturbed Piston
- C - Diamond Core
- W - Wash Sample

- FILL
- SAND
- ORGANIC SOILS / MUCK
- SILT
- CLAY
- LIMESTONE
- SANDSTONE

GEOSOL, Inc. MIAMI LAKES, FL	TEST BORING RECORD (ASTM D-1586)	BORING No. A-1/C-3
PROJECT NAME: SR 9 (I95) Ramps at Miami Gardens Drive Roadway Improvements TWO 81		SHEET No. 1 OF 1
CLIENT: FDOT		GEOSOL PROJECT No. 214195
BORING LOCATION: NORTHING (ft):	EASTING (ft): ELEVATION (ft):	

GROUNDWATER (FEET): N/A				CASING	SAMPLE	CORE	TUBE
DATE	TIME	DEPTH (ft)	CASING	TYPE	NW	SS		
			L (ft)	DIA.(in)	3	1 - 3/8 ID		
			-	WT.(lbs)		140		
				FALL(in)		30		

DATUM (ft):	NGVD, 1929
DATE START:	1/9/2015
DATE FINISH:	1/9/2015
DRILLER:	R. Morales
EQUIP./HAMMER:	B-53/ AUTO.

DEPTH, ft	SAMPLE No.	STRATUM No.	BLOWS / 6"	N Value (bpf)	SYMBOL	MATERIAL DESCRIPTION	REMARKS
		0	-			0 to 7.5": Asphalt Pavement	
1	S-1	1	26	38		7.5" to 3': Brown Silty Fine to Coarse SAND with Some Limerock Fragments (FILL; A-1-b)	
			20				
2			18				
	S-2		14	21			
3			12				
		2	9			3' to 6': Brown Fine to Medium SAND (FILL; A-3)	
4			9				
	S-3		10	16			
5			9				BORING TERMINATED AT DEPTH OF 6 ft. BOREHOLE GROUTED
			7				
6			7				
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

BLOWS/FT.	DENSITY
0-3	Very Loose
3-8	Loose
8-24	Medium Dense
24-40	Dense
> 40	Very Dense

BLOWS/FT.	CONSISTENCY
0-1	Very Soft
1-3	Soft
3-6	Medium Stiff
6-12	Stiff
12-24	Very Stiff
> 24	Hard

SAMPLE IDENTIFICATION

- H - Hand Auger
- S - Split Spoon
- T - Thin Wall Tube
- U - Undisturbed Piston
- C - Diamond Core
- W - Wash Sample

- FILL
- SAND
- ORGANIC SOILS / MUCK
- SILT
- CLAY
- LIMESTONE
- SANDSTONE

GEOSOL, Inc. MIAMI LAKES, FL	TEST BORING RECORD (ASTM D-1586)	BORING No. C-4
PROJECT NAME: SR 9 (I95) Ramps at Miami Gardens Drive Roadway Improvements TWO 81		SHEET No. 1 OF 1
CLIENT: FDOT		GEOSOL PROJECT No. 214195
BORING LOCATION: NORTHING (ft): EASTING (ft): ELEVATION (ft):		

GROUNDWATER (FEET): N/A				CASING	SAMPLE	CORE	TUBE
DATE	TIME	DEPTH (ft)	CASING	TYPE	NW	SS	
			L (ft)	DIA.(in)	3	1 - 3/8 ID	
			-	WT.(lbs)		140	
				FALL(in)		30	

DATUM (ft):	NGVD, 1929
DATE START:	1/8/2015
DATE FINISH:	1/8/2015
DRILLER:	R. Moralez
EQUIP./HAMMER:	B-53/ AUTO.

DEPTH, ft	SAMPLE No.	STRATUM No.	BLOWS / 6"	N Value (bpf)	SYMBOL	MATERIAL DESCRIPTION	REMARKS
			"			0 to 4.8": Asphalt Pavement	
1	S-1		23 20	38		4.8" to 2.40': Brown Slightly Silty Fine to Medium SAND with Some Limerock Fragments (Base/Stabilized Subbase: A-1-b)	BORING TERMINATED AT DEPTH OF 2.40ft. BOREHOLE GROUTED
2			18 14				
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

BLOWS/FT	DENSITY
0-3	Very Loose
3-8	Loose
8-24	Medium Dense
24-40	Dense
> 40	Very Dense

BLOWS/FT.	CONSISTENCY
0-1	Very Soft
1-3	Soft
3-6	Medium Stiff
6-12	Stiff
12-24	Very Stiff
> 24	Hard

SAMPLE IDENTIFICATION

- H - Hand Auger
- S - Split Spoon
- T - Thin Wall Tube
- U - Undisturbed Piston
- C - Diamond Core
- W - Wash Sample

- FILL
- SAND
- ORGANIC SOILS / MUCK
- SILT
- CLAY
- LIMESTONE
- SANDSTONE

GEOSOL, Inc. MIAMI LAKES, FL	TEST BORING RECORD (ASTM D-1586)	BORING No. C-5
PROJECT NAME: SR 9 (I95) Ramps at Miami Gardens Drive Roadway Improvements TWO 81		SHEET No. 1 OF 1
CLIENT: FDOT		GEOSOL PROJECT No. 214195
BORING LOCATION: NORTHING (ft):	EASTING (ft): ELEVATION (ft):	

GROUNDWATER (FEET): N/A				CASING	SAMPLE	CORE	TUBE		
DATE	TIME	DEPTH (ft)	CASING	TYPE	NW	SS			DATUM (ft): NGVD, 1929
			L (ft)	DIA.(in)	3	1 - 3/8 ID			DATE START: 1/8/2015
			-	WT.(lbs)		140			DATE FINISH: 1/8/2015
				FALL(in)		30			DRILLER: R. Moralez
									EQUIP./HAMMER: B-53/ AUTO.

DEPTH, ft	SAMPLE No.	STRATUM No.	BLOWS / 6"	N Value (bpf)	SYMBOL	MATERIAL DESCRIPTION	REMARKS
			-			0 to 7.0": Asphalt Pavement	
1			-				
			24				BORING TERMINATED AT DEPTH OF 2.58ft. BOREHOLE GROUTED
2	S-1		20	37		7.0" to 2.58': Brown Slightly Silty Fine to Medium SAND with Some Limerock Fragments (Base/Stabilized Subbase, A-1-b)	
			17				
3			12				
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

BLOWS/FT	DENSITY
0-3	Very Loose
3-8	Loose
8-24	Medium Dense
24-40	Dense
> 40	Very Dense

BLOWS/FT.	CONSISTENCY
0-1	Very Soft
1-3	Soft
3-6	Medium Stiff
6-12	Stiff
12-24	Very Stiff
> 24	Hard

SAMPLE IDENTIFICATION

- H - Hand Auger
- S - Split Spoon
- T - Thin Wall Tube
- U - Undisturbed Piston
- C - Diamond Core
- W - Wash Sample

- FILL
- SAND
- ORGANIC SOILS / MUCK
- SILT
- CLAY
- LIMESTONE
- SANDSTONE

GEOSOL, Inc. MIAMI LAKES, FL	TEST BORING RECORD (ASTM D-1586)	BORING No. C-6
PROJECT NAME: SR 9 (I95) Ramps at Miami Gardens Drive Roadway Improvements TWO 81		SHEET No. 1 OF 1
CLIENT: FDOT		GEOSOL PROJECT No. 214195
BORING LOCATION: NORTHING (ft):	EASTING (ft): ELEVATION (ft):	

GROUNDWATER (FEET): N/A				CASING	SAMPLE	CORE	TUBE
DATE	TIME	DEPTH (ft)	CASING	TYPE	SS		
			L (ft)	DIA.(in)	1 - 3/8 ID		
			-	WT.(lbs)	140		
				FALL(in)	30		

DATUM (ft):	NGVD, 1929
DATE START:	1/8/2015
DATE FINISH:	1/8/2015
DRILLER:	R. Moralez
EQUIP./HAMMER:	B-53/ AUTO.

DEPTH, ft	SAMPLE No.	STRATUM No.	BLOWS / 6"	N Value (bpf)	SYMBOL	MATERIAL DESCRIPTION	REMARKS
			-			0 to 6.5": Asphalt Pavement	
1	S-1		19 17	33		6.5" to 2.54': Brown Slightly Silty Fine to Medium SAND with Some Limerock Fragments (Base/Stabilized Subbase; A-1-b)	BORING TERMINATED AT DEPTH OF 2.54ft. BOREHOLE GROUTED
2			16 13				
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

BLOWS/FT.	DENSITY
0-3	Very Loose
3-8	Loose
8-24	Medium Dense
24-40	Dense
> 40	Very Dense

BLOWS/FT.	CONSISTENCY
0-1	Very Soft
1-3	Soft
3-6	Medium Stiff
6-12	Stiff
12-24	Very Stiff
> 24	Hard

SAMPLE IDENTIFICATION
- H - Hand Auger
- S - Split Spoon
- T - Thin Wall Tube
- U - Undisturbed Piston
- C - Diamond Core
- W - Wash Sample

- FILL
- SAND
- ORGANIC SOILS / MUCK
- SILT
- CLAY
- LIMESTONE
- SANDSTONE

GEOSOL, Inc. MIAMI LAKES, FL	TEST BORING RECORD (ASTM D-1586)	BORING No. C-7
PROJECT NAME: SR 9 (I95) Ramps at Miami Gardens Drive Roadway Improvements TWO 81		SHEET No. 1 OF 1
CLIENT: FDOT		GEOSOL PROJECT No. 214195
BORING LOCATION: NORTHING (ft): EASTING (ft): ELEVATION (ft):		

GROUNDWATER (FEET): N/A				CASING	SAMPLE	CORE	TUBE
DATE	TIME	DEPTH (ft)	CASING	TYPE	NW	SS		
			L (ft)	DIA.(in)	3	1 - 3/8 ID		
			-	WT.(lbs)		140		
				FALL(in)		30		

DATUM (ft):	NGVD, 1929
DATE START:	1/8/2015
DATE FINISH:	1/8/2015
DRILLER:	R. Moralez
EQUIP./HAMMER:	B-53/ AUTO.

DEPTH, ft	SAMPLE No.	STRATUM No.	BLOWS / 6"	N Value (bpf)	SYMBOL	MATERIAL DESCRIPTION	REMARKS
			-			0 to 6": Asphalt Pavement	
1	S-1		21 19	34		6" to 2.5': Brown Slightly Silty Fine to Medium SAND with Some Limerock Fragments (Base/Stabilized Subbase; A-1-b)	BORING TERMINATED AT DEPTH OF 2.5ft. BOREHOLE GROUTED
2			15 11				
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

BLOWS/FT.	DENSITY
0-3	Very Loose
3-8	Loose
8-24	Medium Dense
24-40	Dense
> 40	Very Dense

BLOWS/FT.	CONSISTENCY
0-1	Very Soft
1-3	Soft
3-6	Medium Stiff
6-12	Stiff
12-24	Very Stiff
> 24	Hard

SAMPLE IDENTIFICATION

- H - Hand Auger
- S - Split Spoon
- T - Thin Wall Tube
- U - Undisturbed Piston
- C - Diamond Core
- W - Wash Sample

- FILL
- SAND
- ORGANIC SOILS / MUCK
- SILT
- CLAY
- LIMESTONE
- SANDSTONE

GEOSOL, Inc. MIAMI LAKES, FL	TEST BORING RECORD (ASTM D-1586)	BORING No. C-8
PROJECT NAME: SR 9 (I95) Ramps at Miami Gardens Drive Roadway Improvements TWO 81		SHEET No. 1 OF 1
CLIENT: FDOT		GEOSOL PROJECT No. 214195
BORING LOCATION: NORTHING (ft):	EASTING (ft): ELEVATION (ft):	

GROUNDWATER (FEET): N/A				CASING	SAMPLE	CORE	TUBE		
DATE	TIME	DEPTH (ft)	CASING	TYPE	NW	SS			DATUM (ft): NGVD, 1929
			L (ft)	DIA.(in)	3	1 - 3/8 ID			DATE START: 1/9/2015
			-	WT.(lbs)		140			DATE FINISH: 1/9/2015
				FALL(in)		30			DRILLER: R. Moralez
									EQUIP./HAMMER: B-53/ AUTO.

DEPTH, ft	SAMPLE No.	STRATUM No.	BLOWS / 6"	N Value (bpf)	SYMBOL	MATERIAL DESCRIPTION	REMARKS
			-			0 to 6.5": Asphalt Pavement	
1	S-1		21 19	34		6.5" to 2.54': Brown Slightly Silty Fine to Medium SAND with Some Limerock Fragments (Base/Stabilized Subbase; A-1-b)	BORING TERMINATED AT DEPTH OF 2.54ft. BOREHOLE GROUTED
2			15 12				
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
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14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

BLOWS/FT.	DENSITY
0-3	Very Loose
3-8	Loose
8-24	Medium Dense
24-40	Dense
> 40	Very Dense

BLOWS/FT.	CONSISTENCY
0-1	Very Soft
1-3	Soft
3-6	Medium Stiff
6-12	Stiff
12-24	Very Stiff
> 24	Hard

SAMPLE IDENTIFICATION
- H - Hand Auger
- S - Split Spoon
- T - Thin Wall Tube
- U - Undisturbed Piston
- C - Diamond Core
- W - Wash Sample

- FILL
- SAND
- ORGANIC SOILS / MUCK
- SILT
- CLAY
- LIMESTONE
- SANDSTONE

GEOSOL, Inc. MIAMI LAKES, FL	TEST BORING RECORD (ASTM D-1586)	BORING No. C-9
PROJECT NAME: SR 9 (I95) Ramps at Miami Gardens Drive Roadway Improvements TWO 81		SHEET No. 1 OF 1
CLIENT: FDOT		GEOSOL PROJECT No. 214195
BORING LOCATION: NORTHING (ft):	EASTING (ft): ELEVATION (ft):	

GROUNDWATER (FEET): N/A				CASING	SAMPLE	CORE	TUBE		
DATE	TIME	DEPTH (ft)	CASING	TYPE	NW	SS			DATUM (ft): NGVD, 1929
			I. (ft)	DIA.(in)	3	1 - 3/8 ID			DATE START: 1/8/2015
			-	WT.(lbs)		140			DATE FINISH: 1/8/2015
				FALL(in)		30			DRILLER: R. Moralez
									EQUIP./HAMMER: B-53/ AUTO.

DEPTH, ft	SAMPLE No.	STRATUM No.	BLOWS / 6"	N Value (bpf)	SYMBOL	MATERIAL DESCRIPTION	REMARKS
1			-			0 to 7.0": Asphalt Pavement	
			-				
			18				BORING TERMINATED AT DEPTH OF 2.58ft. BOREHOLE GROUTED
2	S-1		15	29		7.0" to 2.58': Brown Slightly Silty Fine to Medium SAND with Some Limerock Fragments (Base/Stabilized Subbase; A-1-b)	
			14				
3			12				
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

BLOWS/FT.	DENSITY
0-3	Very Loose
3-8	Loose
8-24	Medium Dense
24-40	Dense
> 40	Very Dense

BLOWS/FT.	CONSISTENCY
0-1	Very Soft
1-3	Soft
3-6	Medium Stiff
6-12	Stiff
12-24	Very Stiff
> 24	Hard

SAMPLE IDENTIFICATION

- H - Hand Auger
- S - Split Spoon
- T - Thin Wall Tube
- U - Undisturbed Piston
- C - Diamond Core
- W - Wash Sample

- FILL
- SAND
- ORGANIC SOILS / MUCK
- SILT
- CLAY
- LIMESTONE
- SANDSTONE

GEOSOL, Inc. MIAMI LAKES, FL	TEST BORING RECORD (ASTM D-1586)	BORING No. A-2/C-10
PROJECT NAME: SR 9 (I95) Ramps at Miami Gardens Drive Roadway Improvements TWO 81		SHEET No. 1 OF 1
CLIENT: FDOT		GEOSOL PROJECT No. 214195
BORING LOCATION: NORTHING (ft):	EASTING (ft): ELEVATION (ft):	

GROUNDWATER (FEET): N/A				CASING	SAMPLE	CORE	TUBE	DATUM (ft):	NGVD, 1929
DATE	TIME	DEPTH (ft)	CASING	TYPE	NW	SS		DATE START:	1/8/2015
			L (ft)	DIA.(in)	3	1 - 3/8 ID		DATE FINISH:	1/8/2015
			-	WT.(lbs)		140		DRILLER:	R. Morales
				FALL(in)		30		EQUIP./HAMMER:	B-53/ AUTO.

DEPTH, ft	SAMPLE No.	STRATUM No.	BLOWS / 6"	N Value (bpf)	SYMBOL	MATERIAL DESCRIPTION	REMARKS
		0	-			0 to 6.2": Asphalt Pavement	
1	S-1		-	34		6.2" to 9.2": Concrete	
		1	19			9.2" to 3': Brown Slightly Silty Fine to Medium SAND with Some Limerock Fragments (FILL; A-1-b)	
2			15				
	S-2		11	18			
3			9				
			9			3' to 6': Brown Fine to Medium SAND (FILL; A-3)	
4			7				
	S-3	2	5	9			BORING TERMINATED AT DEPTH OF 6 ft. BOREHOLE GROUTED
5			4				
			5				
6			5				
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

BLOWS/FT	DENSITY
0-3	Very Loose
3-8	Loose
8-24	Medium Dense
24-40	Dense
> 40	Very Dense

BLOWS/FT	CONSISTENCY
0-1	Very Soft
1-3	Soft
3-6	Medium Stiff
6-12	Stiff
12-24	Very Stiff
> 24	Hard

SAMPLE IDENTIFICATION

- H - Hand Auger
- S - Split Spoon
- T - Thin Wall Tube
- U - Undisturbed Piston
- C - Diamond Core
- W - Wash Sample

- FILL
- SAND
- ORGANIC SOILS / MUCK
- SILT
- CLAY
- LIMESTONE
- SANDSTONE

GEOSOL, Inc. MIAMI LAKES, FL	TEST BORING RECORD (ASTM D-1586)	BORING No. A-3/C-11

PROJECT NAME: SR 9 (I95) Ramps at Miami Gardens Drive Roadway Improvements TWO 81 — SHEET No. 1 OF 1

CLIENT: FDOT — GEOSOL PROJECT No. 214195

BORING LOCATION: NORTHING (ft): EASTING (ft): ELEVATION (ft):

GROUNDWATER (FEET): N/A

DATE	TIME	DEPTH (ft)	CASING	TYPE	CASING	SAMPLE	CORE	TUBE
			L (ft)	DIA.(in)	NW	SS		
			-	WT.(lbs)	3	1 - 3/8 ID		
				FALL(in)		140		
						30		

DATUM (ft):	NGVD, 1929
DATE START:	1/9/2015
DATE FINISH:	1/9/2015
DRILLER:	R. Morales
EQUIP./HAMMER:	B-53/ AUTO.

DEPTH, ft	SAMPLE No.	STRATUM No.	BLOWS / 6"	N Value (bpf)	SYMBOL	MATERIAL DESCRIPTION	REMARKS
		0	-			0 to 7.5": Asphalt Pavement	
1	S-1	1	20 17 13	30		7.5" to 2': Brown Silty Medium to Coarse SAND and Limerock Fragments (FILL; A-1-b)	
2							
3	S-2	2	11 8 7 7	15		2' to 6': Brown Fine to Medium SAND (FILL; A-3)	
4							
5	S-3		8 6 6 5	12			BORING TERMINATED AT DEPTH OF 6 ft. BOREHOLE GROUTED
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

BLOWS/FT.	DENSITY
0-3	Very Loose
3-8	Loose
8-24	Medium Dense
24-40	Dense
> 40	Very Dense

BLOWS/FT.	CONSISTENCY
0-1	Very Soft
1-3	Soft
3-6	Medium Stiff
6-12	Stiff
12-24	Very Stiff
> 24	Hard

SAMPLE IDENTIFICATION

- H - Hand Auger
- S - Split Spoon
- T - Thin Wall Tube
- U - Undisturbed Piston
- C - Diamond Core
- W - Wash Sample

- FILL
- SAND
- ORGANIC SOILS / MUCK
- SILT
- CLAY
- LIMESTONE
- SANDSTONE

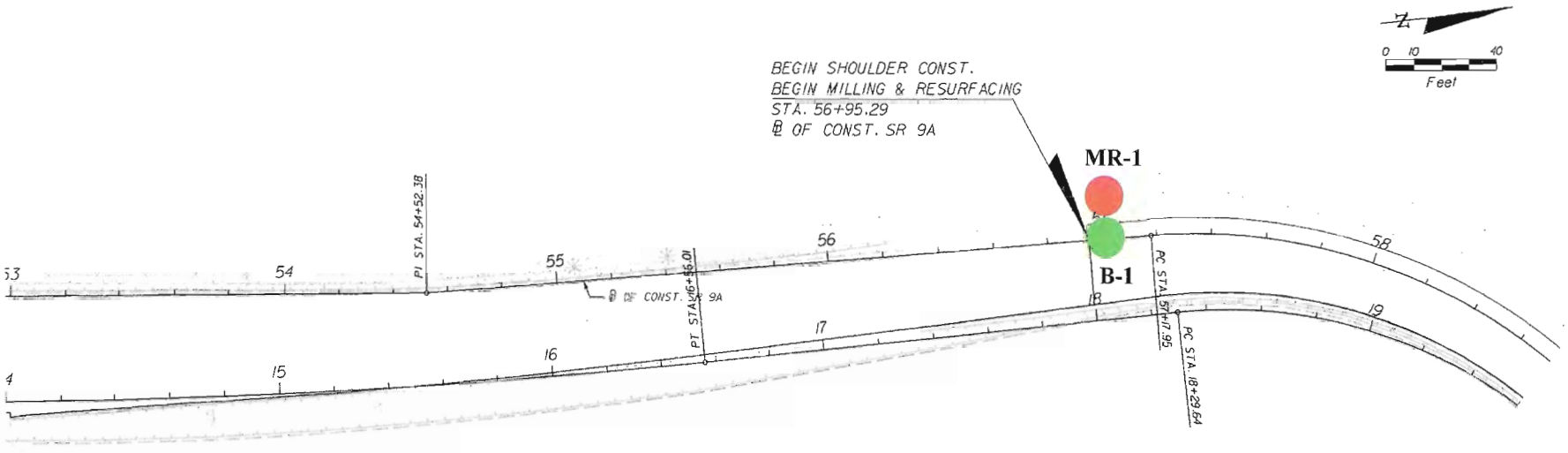
APPENDIX – B6

EXISTING GEOTECHNICAL INFORMATION

PROPOSED ROADWAY IMPROVEMENTS ALONG SR-9A (I-95)
SOUTHBOUND OFF-RAMP AT SR 860 (MIAMI GARDENS DRIVE)
MIAMI-DADE COUNTY, FLORIDA
FPID No.: 425216-1-52-01
GEOSOL PROJECT No. 209141

TABLE 1 - SUMMARY OF TEST LOCATIONS

BORING/TEST No.	APPROXIMATE TEST LOCATION (FEET)		REFERENCE	GROUND SURFACE ELEV.
	STATION	OFFSET		
B-1	57+00	6 LT	B/L OF CONST. SR-9A	N/A
MR-1	57+00	12 LT	B/L OF CONST. SR-9A	N/A
B-2	59+00	6 LT	B/L OF CONST. SR-9A	N/A
MR-2	59+00	12 LT	B/L OF CONST. SR-9A	N/A
PC-1	60+00	11 RT	B/L OF CONST. SR-9A	N/A
B-3	61+00	6 LT	B/L OF CONST. SR-9A	N/A
MR-3	61+00	12 LT	B/L OF CONST. SR-9A	N/A
B-4	63+00	6 LT	B/L OF CONST. SR-9A	N/A
MR-4	63+00	12 LT	B/L OF CONST. SR-9A	N/A
PC-2	64+00	4 RT	B/L OF CONST. SR-9A	N/A
B-5	65+00	6 LT	B/L OF CONST. SR-9A	N/A
MR-5	65+00	12 LT	B/L OF CONST. SR-9A	N/A



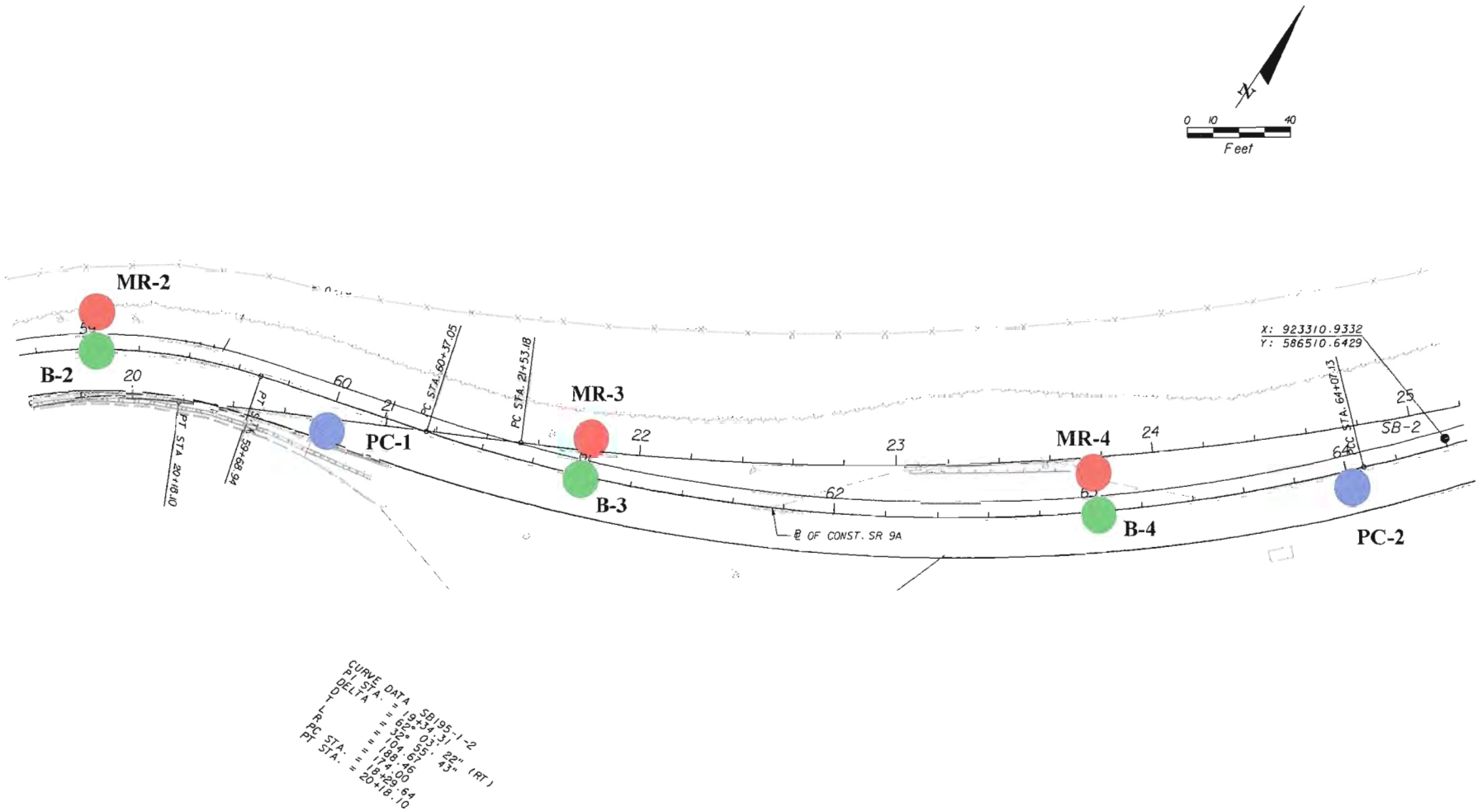
LEGEND

B-1: APPROXIMATE TEST BORING LOCATION

PC-1: APRROXIMATE PAVEMENT CORE LOCATION

MR-1: APPROXIMATE "BULK" SOIL SAMPLE LOCATION FOR RESILIENT MODULUS TESTING

REVISIONS				MARLIN ENGINEERING INC.	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			TEST LOCATION PLANS	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	2191 NW 97 Ave Miami Florida 33172 (305) 477-7575 C.A. No. 6104 Sergio Alfonso, Jr. P.E. No. 32518	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		3
					9A	MIAMI-DADE	425216-1-52-01		



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

MARLIN ENGINEERING INC.
2191 NW 97 Ave
Miami Florida 33172
(305) 477-7575 C.A. No. 6104
Sergio Alfonso, Jr., P.E. No. 32518

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9A	MIAMI-DADE	425216-1-52-01

TEST LOCATION PLANS

SHEET NO. 4

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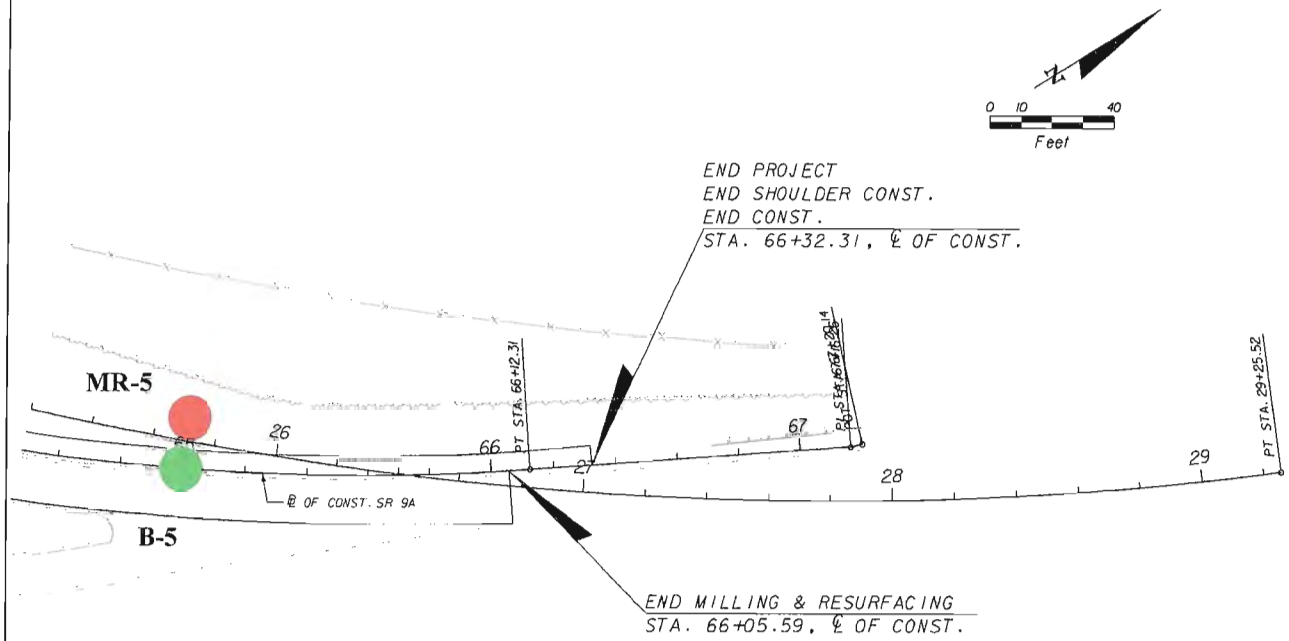

CURVE DATA
Δ = DELTA
P.I. STA. =
R =
P.T. STA. =

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

MARLIN ENGINEERING INC.
2191 NW 97 Ave
Miami Florida 33172
(305) 477-7575 C.A. No. 6104
Sergio Alfonso, Jr., P.E. No. 32518

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9A	MIAMI-DADE	425216-1-52-01

TEST LOCATION PLANS

SHEET NO. 5

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LEGEND

01) Asphalt Pavement

1) Dark Brown Organic Silty Fine SAND with Grass (TOPSOIL, A-8)

2) Light Brown to Brown Silty Fine to Medium SAND with Little Limerock Fragments (FILL, A-2-4)

3) Light Brown to Brown Silty Fine to Coarse SAND with Some Limerock Fragments (FILL, A-1-b)

4) Light Brown to Brown Slightly Silty Fine to Medium SAND with Little to Some Limerock Fragments (FILL; A-3)

5) Brown Sandy SILT (A-4)

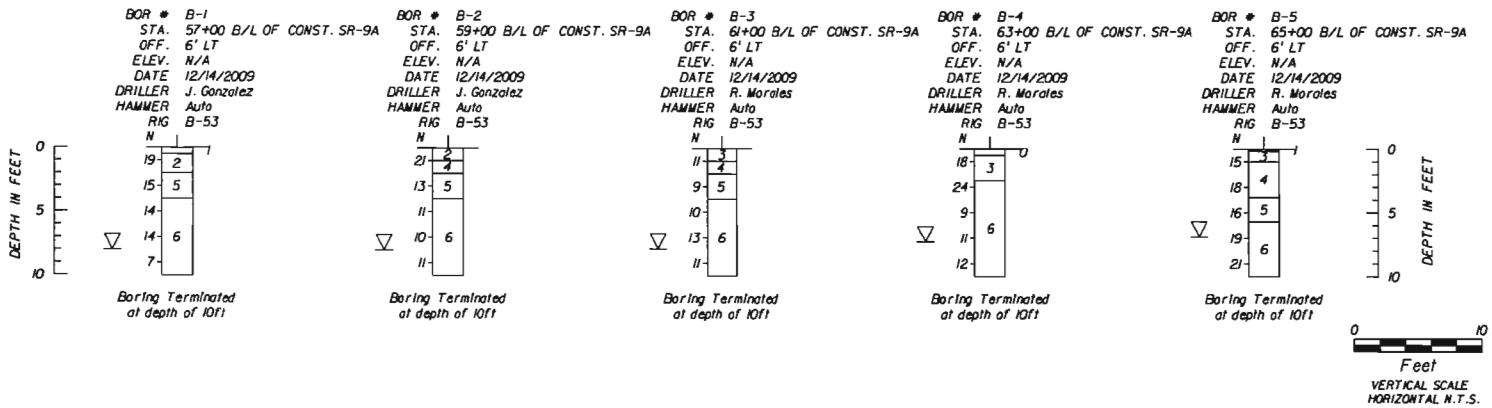
6) Light Brown to Brown Fine to Medium SAND with Trace of Limestone Fragments (A-3)

NOTES:

1) SPT BORINGS PERFORMED PER ASTM D-1586 WITH A HAMMER WEIGHT OF 140 LBS FALLING 30 INCHES.

▽ WATER TABLE AT TIME OF DRILLING

N NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12" PENETRATION (UNLESS OTHER WISE NOTED).



GRANULAR MATERIALS - RELATIVE DENSITY	AUTOMATIC SPT HAMMER (BLOWS PER FOOT)
VERY LOOSE	LESS THAN 3
LOOSE	3-8
MEDIUM DENSE	8-24
DENSE	24-40
VERY DENSE	GREATER THAN 40
SILTS AND CLAYS CONSISTANCY	**AUTOMATIC SPT HAMMER (BLOWS PER FOOT)**
VERY SOFT	LESS THAN 1
SOFT	1-3
FIRM	3-6
STIFF	6-12
VERY STIFF	12-24
HARD	GREATER THAN 24

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD:
GEOSOL, INC.
ORACIO RICCOBONO, P.E.
P.E. LICENSE NO. 49324
5795-A NW 151ST STREET
MIAMI LAKES, FL 33014
PHONE: (305) 828-4367
CERTIFICATE OF AUTHORIZATION 8530

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9A	MIAMI-DADE	425216-1-52-01

ROADWAY SOIL PROFILES

SHEET NO. 6

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

DATE OF SURVEY: DECEMBER 7 TO 14, 2009
SURVEY MADE BY: ORACIO RICCOBONO, P.E.
SUBMITTED BY: GEOSOL, INC.

FINANCIAL PROJECT ID : 425216-1-52-01
PROJECT NAME: ROADWAY IMPROVEMENTS ALONG SR-9A SOUTHBOUND OFF-RAMP AT SR 860

DISTRICT: SIX
ROAD NO.: SR-9A
COUNTY: MIAMI-DADE

CROSS SECTION SOIL SURVEY FOR THE DESIGN OF ROADS

SURVEY BEGINS STA. : 57+00.00 SURVEY ENDS STA. : 65+00.00

REFERENCE: B/L OF CONSTRUCTION SR-9A

	ORGANIC CONTENT			SIEVE ANALYSIS RESULTS PERCENT PASS						ATTERBERG LIMITS (%)					CORROSION TEST RESULTS				
STRATUM NO.	NO. OF TESTS	% ORGANIC	MOISTURE CONTENT	NO. OF TESTS	10 MESH	40 MESH	60 MESH	100 MESH	200 MESH	NO. OF TESTS	LIQUID LIMIT	PLASTIC INDEX	AASHTO GROUP	DESCRIPTION	NO. OF TESTS	RESISTIVITY ohms cm	CHLORIDE ppm	SULFATES ppm	pH
0													N/A	Asphalt Pavement					
1													A-8	Dark Brown Organic Silty Fine SAND with Grass (TOPSOIL)					
2	1		8	1	70	53	46	36	27				A-2-4	Light Brown to Brown Silty Fine to Medium SAND with Little Limerock Fragments (FILL)					
3	1		10	1	63	53	42	26	17				A-1-b	Light Brown to Brown Silty Fine to Coarse SAND with Some Limestone Fragments (FILL)					
4	5	1-3		5	61-77	50-64	36-45	14-21	7-10	5	N.P.	N.P.	A-3	Light Brown to Brown Slightly Silty Fine to Medium SAND with Little to Some Limerock Fragments (FILL)					
5	4	3	28-35	3					57-94				A-4	Brown Sandy SILT (A-4)					
6	1		5	1	92	78	49	16	4				A-3	Light Brown to Brown Fine to Medium SAND with Trace of Limestone Fragments	1	30,400	49	21	9.0

EMBANKMENT AND SUBGRADE MATERIAL

STRATA BOUNDARIES ARE APPROXIMATE. MAKE FINAL CHECK AFTER GRADING.

▽ - WATER TABLE ENCOUNTERED

GNE - GROUND WATER NOT ENCOUNTERED.

N.P. - DENOTES NON-PLASTIC.

NOTES:

1) The material from Stratum 0 is the existing asphalt pavement layer.

2) The material from Stratum 1 is topsoil (A-8) and considered to be unsuitable (muck). It shall be removed during clearing and grubbing in accordance with Section 110 of the FDOT Standard Specifications.

3) The material from Stratum Number 2 (A-2-4 soils) is considered to be select and should be utilized in accordance with FDOT Standard Index 505. Certain types of A-2-4 material are likely to retain excess moisture and may be difficult to dry and compact. They should be used in the embankment above the water level existing at time of construction. They may be used in the subgrade portion of the roadbed when approved by the District Materials Engineer.

4) The material from Strata Numbers 3, 4 and 6 (A-1-b and A-3 soils) are considered to be select and should be utilized in accordance with FDOT Standard Index 505.

5) The material from Stratum Number 5 (A-4 soils) is considered to be plastic. The materials from Stratum 5 were encountered at depths ranging from 2 to 5.7 feet below existing grades with an average thickness of about 2 feet. The material from Stratum 5 shall be utilized in embankment construction in accordance with FDOT Standard Index 505. Any removal that is required (based on the requirements of FDOT Standard Index 505), shall be performed in accordance with FDOT Standard Index 500 and replaced with select fill materials in accordance with the FDOT Standard Specifications for Road and Bridge Construction. The limits of Stratum 5 materials that were encountered in the proposed shoulder widening areas are from Station 56+95 to Station 66+33 (baseline of construction SR 9A). It should be noted that test boring B-4 did not encounter materials from Stratum 5. However, it is assumed that the materials from Stratum 5 are present along the entire alignment of the proposed shoulder widening.

6) The soils survey presented on this sheet was performed by GEOSOL, Inc. as a subconsultant to FDOT Districts 4 and 6 Materials Office under Task Work Order No.21.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD:
GEOSOL, INC.
ORACIO RICCOBONO, P.E.
PE LICENSE No. 49324
5795-A NW 151ST STREET
MIAMI LAKES, FL 33014
PHONE: (305) 828-4367
CERTIFICATE OF AUTHORIZATION 8530

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9A	MIAMI-DADE	425216-1-52-01

ROADWAY SOILS SURVEY

SHEET NO. 7

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GEOSOL, Inc.	TEST BORING RECORD	BORING No. B-1
MIAMI LAKES, FL	(ASTM D-1586)	

PROJECT NAME: ROADWAY IMPROVEMENTS ALONG SR-9A (I-95) SOUTHBOUND OFF-RAMP AT SR-860 — SHEET No. 1 OF 1

CLIENT: FDOT — STATION (ft): — OFFSET (ft):

BORING LOCATION: NORTHING: — EASTING: — ELEVATION (ft): — PROJECT No. 209141

GROUNDWATER (FEET): 8.0

DATE	TIME	DEPTH (ft)	CASING	CASING	SAMPLE	CORE	TUBE
			L (ft)	NW	SS		
			-	3	1 - 3/8 ID		
					140		
					30		

TYPE	
DIA.(in)	
WT.(lbs)	
FALL(in)	

DATUM (ft): NGVD, 1929
DATE START: 12/14/2009
DATE FINISH: 12/14/2009
DRILLER: J. Gonzalez
EQUIP./HAMMER: B-53 / AUTO.

DEPTH, ft	SAMPLE No.	STRATUM No.	BLOWS / 6"	N Value (bpf)	SYMBOL	MATERIAL DESCRIPTION	REMARKS
1	S-1	1	7	19		0 to 6": Dark Brown Organic Silty Fine SAND with Grass (TOPSOIL; A-8)	
		2	11			6" to 2': Brown Silty Fine to Medium SAND with Trace of Limerock Fragments (FILL; A-2-4)	
2			8				
			10				
3	S-2	5	9	15		2' to 4': Brown Sandy SILT (A-4)	
4			8				
			7				
5	S-3	6	8				
			6	14			
6			7				
			7				
7	S-4		8				
			4				
8			6	14		4' to 10': Light Brown to Brown Fine to Medium SAND (A-3)	
			8				
9	S-5		7				
			3				
10			4	7			BORING TERMINATED AT DEPTH OF 10 ft. BOREHOLE GROUTED
			3				
			3				
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

BLOWS/FT.	DENSITY
0-3	Very Loose
3-8	Loose
8-24	Medium Dense
24-40	Dense
> 40	Very Dense

BLOWS/FT.	CONSISTENCY
0-1	Very Soft
1-3	Soft
3-6	Medium Stiff
6-12	Stiff
12-24	Very Stiff
> 24	Hard

SAMPLE IDENTIFICATION
- H - Hand Auger
- S - Split Spoon
- T - Thin Wall Tube
- U - Undisturbed Piston
- C - Diamond Core
- W - Wash Sample

- FILL
- SAND
- ORGANIC SOILS / MUCK
- SILT
- CLAY
- LIMESTONE
- SANDSTONE

GEOSOL, Inc.
MIAMI LAKES, FL

TEST BORING RECORD
(ASTM D-1586)

BORING No. B-2

PROJECT NAME: ROADWAY IMPROVEMENTS ALONG SR-9A (I-95) SOUTHBOUND OFF-RAMP AT SR-860

SHEET No. 1 OF 1

CLIENT: FDOT STATION (ft): OFFSET (ft):

BORING LOCATION: NORTHING: EASTING: ELEVATION (ft):

PROJECT No. 209141

GROUNDWATER (FEET): 8.0

DATE	TIME	DEPTH (ft)	CASING L (ft)
			-

	CASING	SAMPLE	CORE	TUBE
TYPE	NW	SS		
DIA.(in)	3	1 - 3/8 ID		
WT.(lbs)		140		
FALL(in)		30		

DATUM (ft):	NGVD, 1929
DATE START:	12/14/2009
DATE FINISH:	12/14/2009
DRILLER:	J. Gonzalez
EQUIP./HAMMER:	B-53 / AUTO.

DEPTH, ft	SAMPLE No.	STRATUM No.	BLOWS / 6"	N Value (bpf)	SYMBOL	MATERIAL DESCRIPTION	REMARKS
1	S-1	2	12 10	21		0 to 1': Light Brown Silty Fine to Coarse SAND with Little Limerock Fragments (FILL; A-2-4)	
2		4	11 13			1' to 2': Light Brown Fine to Medium SAND with Trace of Limerock Fragments (FILL; A-3)	
3	S-2	5	10 6 7 8	13		2' to 4': Brown Sandy SILT (A-4)	
5	S-3	6	4 5 6 5	11		4' to 10': Brown Fine to Medium SAND (A-3)	
7	S-4		5 4 6 5	10			
9	S-5		5 6 5 6	11			BORING TERMINATED AT DEPTH OF 10 ft. BOREHOLE GROUTED

BLOWS/FT.	DENSITY
0-3	Very Loose
3-8	Loose
8-24	Medium Dense
24-40	Dense
> 40	Very Dense

BLOWS/FT.	CONSISTENCY
0-1	Very Soft
1-3	Soft
3-6	Medium Stiff
6-12	Stiff
12-24	Very Stiff
> 24	Hard

SAMPLE IDENTIFICATION
- H - Hand Auger
- S - Split Spoon
- T - Thin Wall Tube
- U - Undisturbed Piston
- C - Diamond Core
- W - Wash Sample

- FILL
- SAND
- ORGANIC SOILS / MUCK
- SILT
- CLAY
- LIMESTONE
- SANDSTONE

GEOSOL, Inc. MIAMI LAKES, FL	TEST BORING RECORD (ASTM D-1586)	BORING No. B-3
PROJECT NAME: ROADWAY IMPROVEMENTS ALONG SR-9A (I-95) SOUTHBOUND OFF-RAMP AT SR-860		SHEET No. 1 OF 1
CLIENT: FDOT	STATION (ft): OFFSET (ft):	
BORING LOCATION: NORTHING:	EASTING: ELEVATION (ft):	PROJECT No. 209141

GROUNDWATER (FEET): 7.9				CASING	SAMPLE	CORE	TUBE
DATE	TIME	DEPTH (ft)	CASING	TYPE	NW	SS		
			L (ft)	DIA.(in)	3	1 - 3/8 ID		
			-	WT.(lbs)		140		
				FALL(in)		30		

DATUM (ft):	NGVD, 1929
DATE START:	12/14/2009
DATE FINISH:	12/14/2009
DRILLER:	R. Morales
EQUIP./HAMMER:	B-53 / AUTO.

DEPTH, ft	SAMPLE No.	STRATUM No.	BLOWS / 6"	N Value (bpf)	SYMBOL	MATERIAL DESCRIPTION	REMARKS
1	S-1	3	4 6	11		0 to 1': Brown Silty Fine to Coarse SAND with Some Limerock Fragments (FILL; A-1-b)	
2		4	5 6			1' to 2': Brown Fine to Medium SAND with Trace of Limerock Fragments (FILL; A-3)	
3	S-2	5	8 5 4 5	9		2' to 4': Brown Sandy SILT (A-4)	
4							
5	S-3	6	6 4 6 7	10		4' to 10': Brown to Light Brown Fine to Medium SAND (A-3)	
6							
7	S-4		6 7 6 6	13			
8							
9	S-5		5 6 5 11	11			BORING TERMINATED AT DEPTH OF 10 ft. BOREHOLE GROUTED
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

BLOWS/FT.	DENSITY
0-3	Very Loose
3-8	Loose
8-24	Medium Dense
24-40	Dense
> 40	Very Dense

BLOWS/FT.	CONSISTENCY
0-1	Very Soft
1-3	Soft
3-6	Medium Stiff
6-12	Stiff
12-24	Very Stiff
> 24	Hard

SAMPLE IDENTIFICATION

- H - Hand Auger
- S - Split Spoon
- T - Thin Wall Tube
- U - Undisturbed Piston
- C - Diamond Core
- W - Wash Sample

- FILL
- SAND
- ORGANIC SOILS / MUCK
- SILT
- CLAY
- LIMESTONE
- SANDSTONE

GEOSOL, Inc.
MIAMI LAKES, FL

TEST BORING RECORD
(ASTM D-1586)

BORING No. B-4

PROJECT NAME: ROADWAY IMPROVEMENTS ALONG SR-9A (I-95) SOUTHBOUND OFF-RAMP AT SR-860

SHEET No. 1 OF 1

CLIENT: FDOT | STATION (ft): | OFFSET (ft):

BORING LOCATION: NORTHING: | EASTING: | ELEVATION (ft):

PROJECT No. 209141

GROUNDWATER (FEET): 7.3

DATE	TIME	DEPTH (ft)	CASING L (ft)	TYPE	CASING	SAMPLE	CORE	TUBE
				DIA.(in)	NW	SS		
			-	WT.(lbs)	3	1 - 3/8 ID		
				FALL(in)		140		
						30		

DATUM (ft): NGVD, 1929
DATE START: 12/14/2009
DATE FINISH: 12/14/2009
DRILLER: R. Morales
EQUIP./HAMMER: B-53 / AUTO.

DEPTH, ft	SAMPLE No.	STRATUM No.	BLOWS / 6"	N Value (bpf)	SYMBOL	MATERIAL DESCRIPTION	REMARKS
		0	-			0 to 6": Asphalt Pavement	
1	S-1	3	6 8 10	18		6" to 2.5': Brown Slightly Silty Fine to Medium SAND with Little Limerock Fragments (FILL; A-1-b)	
2			11				
3	S-2	6	13 11 12	24		2.5' to 7': Brown Fine to Medium SAND (A-3)	
4			6				
5	S-3		4 5	9			
6			5				
7	S-4		4 6	11			
8			5 6				
9	S-5		7 8 4 6	12		7' to 10': Brown Fine to Medium SAND with Little Limestone Fragments (A-3)	BORING TERMINATED AT DEPTH OF 10 ft. BOREHOLE GROUTED
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

BLOWS/FT.	DENSITY
0-3	Very Loose
3-8	Loose
8-24	Medium Dense
24-40	Dense
> 40	Very Dense

BLOWS/FT.	CONSISTENCY
0-1	Very Soft
1-3	Soft
3-6	Medium Stiff
6-12	Stiff
12-24	Very Stiff
> 24	Hard

SAMPLE IDENTIFICATION
- H - Hand Auger
- S - Split Spoon
- T - Thin Wall Tube
- U - Undisturbed Piston
- C - Diamond Core
- W - Wash Sample

- FILL
- SAND
- ORGANIC SOILS / MUCK
- SILT
- CLAY
- LIMESTONE
- SANDSTONE

GEOSOL, Inc. MIAMI LAKES, FL	TEST BORING RECORD (ASTM D-1586)	BORING No. B-5
PROJECT NAME: ROADWAY IMPROVEMENTS ALONG SR-9A (I-95) SOUTHBOUND OFF-RAMP AT SR-860		SHEET No. 1 OF 1
CLIENT: FDOT	STATION (ft): OFFSET (ft):	
BORING LOCATION: NORTHING:	EASTING: ELEVATION (ft):	PROJECT No. 209141

GROUNDWATER (FEET): 6.9				CASING	SAMPLE	CORE	TUBE	DATUM (ft):	NGVD, 1929
DATE	TIME	DEPTH (ft)	CASING	TYPE	NW	SS			DATE START: 12/14/2009
			L (ft)	DIA.(in)	3	1 - 3/8 ID			DATE FINISH: 12/14/2009
			-	WT.(lbs)		140			DRILLER: R. Morales
				FALL(in)		30			EQUIP./HAMMER: B-53 / AUTO.

DEPTH, ft	SAMPLE No.	STRATUM No.	BLOWS / 6"	N Value (bpf)	SYMBOL	MATERIAL DESCRIPTION	REMARKS
		1	3			0 to 2": Dark Brown Organic Silty Fine SAND with Grass (TOPSOIL; A-8)	
1	S-1	3	6	15		2" to 1': Brown Slightly Silty Fine to Medium SAND with Some Limerock Fragments (FILL; A-1-b)	
			9				
2		4	8				
	S-2		9	18		1' to 3.8': Brown Fine to Medium SAND with Trace of Limerock Fragments (FILL; A-3)	
3			8				
			10				
4			11				
	S-3	5	6	16		3.8' to 5.7': Brown Sandy SILT (A-4)	
5			7				
			9				
6			8				
	S-4		9	19		5.7' to 10': Brown Fine to Medium SAND with Trace of Limestone Fragments (A-3)	
7			10				
		6	9				
8			11				
	S-5		12	21			BORING TERMINATED AT DEPTH OF 10 ft. BOREHOLE GROUTED
9			10				
			11				
10			10				
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

BLOWS/FT.	DENSITY
0-3	Very Loose
3-8	Loose
8-24	Medium Dense
24-40	Dense
> 40	Very Dense

BLOWS/FT.	CONSISTENCY
0-1	Very Soft
1-3	Soft
3-6	Medium Stiff
6-12	Stiff
12-24	Very Stiff
> 24	Hard

SAMPLE IDENTIFICATION

- H - Hand Auger
- S - Split Spoon
- T - Thin Wall Tube
- U - Undisturbed Piston
- C - Diamond Core
- W - Wash Sample

- FILL
- SAND
- ORGANIC SOILS / MUCK
- SILT
- CLAY
- LIMESTONE
- SANDSTONE

GEOSOL, Inc. MIAMI LAKES, FL	TEST BORING RECORD (ASTM D-1586)	BORING No. PC-1
PROJECT NAME: ROADWAY IMPROVEMENTS ALONG SR-9A (I-95) SOUTHBOUND OFF-RAMP AT SR-860		SHEET No. 1 OF 1
CLIENT: FDOT	STATION (ft): OFFSET (ft):	
BORING LOCATION: NORTHING:	EASTING: ELEVATION (ft):	PROJECT No. 209141

GROUNDWATER (FEET): N/A				CASING	SAMPLE	CORE	TUBE	DATUM (ft):	NGVD, 1929
DATE	TIME	DEPTH (ft)	CASING	TYPE	NW	SS		DATE START:	12/14/2009
			L (ft)	DIA.(in)	3	1 - 3/8 ID		DATE FINISH:	12/14/2009
			-	WT.(lbs)		140		DRILLER:	R. Morales
				FALL(in)		30		EQUIP./HAMMER:	B-53 / AUTO.

DEPTH, ft	SAMPLE No.	STRATUM No.	BLOWS / 6"	N Value (bpf)	SYMBOL	MATERIAL DESCRIPTION	REMARKS
		0	-			0 to 5.4": Asphalt Pavement	
1	S-1	3	8 10	19		5.4" to 2.45': Light Brown Slightly Silty Fine to Coarse SAND with Some Limerock Fragments (BASE/STABILIZED SUBGRADE; A-1-b)	BORING TERMINATED AT DEPTH OF 2.45 ft. BOREHOLE GROUTED
2			9 13				
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

BLOWS/FT.	DENSITY
0-3	Very Loose
3-8	Loose
8-24	Medium Dense
24-40	Dense
> 40	Very Dense

BLOWS/FT.	CONSISTENCY
0-1	Very Soft
1-3	Soft
3-6	Medium Stiff
6-12	Stiff
12-24	Very Stiff
> 24	Hard

SAMPLE IDENTIFICATION

- H - Hand Auger
- S - Split Spoon
- T - Thin Wall Tube
- U - Undisturbed Piston
- C - Diamond Core
- W - Wash Sample

- FILL
- SAND
- ORGANIC SOILS / MUCK
- SILT
- CLAY
- LIMESTONE
- SANDSTONE

GEOSOL, Inc. MIAMI LAKES, FL	TEST BORING RECORD (ASTM D-1586)	BORING No. PC-2
PROJECT NAME: ROADWAY IMPROVEMENTS ALONG SR-9A (I-95) SOUTHBOUND OFF-RAMP AT SR-860		SHEET No. 1 OF 1
CLIENT: FDOT	STATION (ft): OFFSET (ft):	
BORING LOCATION: NORTHING:	EASTING: ELEVATION (ft):	PROJECT No. 209141

GROUNDWATER (FEET): N/A				CASING	SAMPLE	CORE	TUBE	DATUM (ft):	NGVD, 1929
DATE	TIME	DEPTH (ft)	CASING	TYPE	NW	SS		DATE START:	12/14/2009
			L (ft)	DIA.(in)	3	1 - 3/8 ID		DATE FINISH:	12/14/2009
			-	WT.(lbs)		140		DRILLER:	R. Morales
				FALL(in)		30		EQUIP./HAMMER:	B-53 / AUTO.

DEPTH, ft	SAMPLE No.	STRATUM No.	BLOWS / 6"	N Value (bpf)	SYMBOL	MATERIAL DESCRIPTION	REMARKS
		0	-			0 to 6.1": Asphalt Pavement	
1	S-1	3	10 13	24		6.1" to 2.51': Light Brown Slightly Silty Fine to Coarse SAND with Some Limerock Fragments (BASE/STABILIZED SUBGRADE; A-1-b)	BORING TERMINATED AT DEPTH OF 2.51 ft. BOREHOLE GROUTED
2			11 10				
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

BLOWS/FT.	DENSITY
0-3	Very Loose
3-8	Loose
8-24	Medium Dense
24-40	Dense
> 40	Very Dense

BLOWS/FT.	CONSISTENCY
0-1	Very Soft
1-3	Soft
3-6	Medium Stiff
6-12	Stiff
12-24	Very Stiff
> 24	Hard

SAMPLE IDENTIFICATION

- H - Hand Auger
- S - Split Spoon
- T - Thin Wall Tube
- U - Undisturbed Piston
- C - Diamond Core
- W - Wash Sample

- FILL
- SAND
- ORGANIC SOILS / MUCK
- SILT
- CLAY
- LIMESTONE
- SANDSTONE

APPENDIX "B"

Table 2 – Summary of Laboratory Test Results
Table 3 – Summary of Environmental Classification Test Results
Moisture Content Test Results
Material Passing the No. 200 Sieve Test Results
Grain-Size Analysis Test Results and Curves
Organic Content Test Results
Environmental Classification Test Results
Resilient Modulus (Mr) Test Results

TABLE 2 - SUMMARY OF LABORATORY TEST RESULTS
PROPOSED IMPROVEMENTS ALONG SR-9A SOUTHBOUND OFF-RAMP AT SR 860
MIAMI-DADE COUNTY, FL
GEOSOL PROJECT No.: 209141

BORING NUMBER	STRATUM NUMBER	SAMPLE NUMBER	AASHTO SYMBOL	Sample Depth (FEET)	Sieve Analysis (Percent Passing)									Atterberg Limits (%)			Organic Content (%)	Natural Moisture Content (%)	Standard Proctor Testing		Resilient Modulus (Mr) Value [2] (psi)
					1"	3/4"	3/8"	#4	#10	#40	#60	#100	#200	Liquid Limit	Plastic Limit	Plasticity Index			Maximum Density (pcf)	Optimum Moisture Content (%)	
B-2	2	1	A-2-4	0.0 - 1.0	100	98	94	84	70	53	46	36	27	-	-	-	-	8	-	-	-
B-3	3	1	A-1-b	0.0 - 1.0	100	93	85	72	63	53	42	26	17	-	-	-	-	10	-	-	-
MR-1	4	1	A-3	0.5 - 2.0	-	-	-	73	69	60	43	21	8	N.P.	N.P.	N.P.	2	-	112.2	12.0	15,961
																					15,397
MR-2	4	1	A-3	0.5 - 2.0	-	-	-	83	77	64	45	17	9	N.P.	N.P.	N.P.	2	-	113.9	9.9	16,084
																					15,746
MR-3	4	1	A-3	0.5 - 2.0	-	-	-	69	62	50	37	19	10	N.P.	N.P.	N.P.	3	-	117.4	10.8	16,694
																					16,393
MR-4	4	1	A-3	0.5 - 2.0	-	-	-	66	61	52	36	14	7	N.P.	N.P.	N.P.	2	-	114.8	10.1	16,425
																					16,757
MR-5	4	1	A-3	0.5 - 2.0	-	-	-	78	73	64	44	16	7	N.P.	N.P.	N.P.	1	-	111.8	10.7	16,326
																					17,159
B-1	5	2	A-4	2.0 - 4.0	-	-	-	-	-	-	-	-	94	-	-	-	-	33	-	-	-
B-3	5	2	A-4	2.0 - 4.0	-	-	-	-	-	-	-	-	75	-	-	-	-	28	-	-	-
B-5	5	3	A-4	4.0 - 5.7	-	-	-	-	-	-	-	-	57	-	-	-	3	35	-	-	-
B-5	6	5	A-3	8.0 - 10.0	100	100	99	95	92	78	49	16	4	-	-	-	-	5	-	-	-

Note: 1) N.P. denotes non-plastic.
2) Resilient Modulus (Mr) testing was performed with a bulk stress of 11 psi.

TABLE 3 - SUMMARY OF ENVIRONMENTAL CLASSIFICATION TEST RESULTS
PROPOSED ROADWAY IMPROVEMENTS
SR 9A (I-95) SOUTHBOUND OFF-RAMP TO SR 860 (MIAMI GARDENS DR.)
MIAMI-DADE COUNTY, FL
GEOSOL PROJECT No.: 209141

SAMPLE LOCATION	SAMPLE TYPE	Depth (ft)	pH	Resistivity (ohm-cm)	Chloride (ppm)	Sulfate (ppm)	FDOT ENVIRONMENTAL CLASSIFICATION	
							Steel	Concrete
B-2	SOIL	8-10	9.0	30,400	49	21	SA	SA

NOTES: (1) THE FOLLOWING FDOT AND ASTM LABORATORY TEST METHODS WERE UTILIZED:

FM5-550: pH
FM5-551: Resistivity
FM5-552: Chlorides
FM5-553: Sulfates

(2) SA: SLIGHTLY AGGRESSIVE
(3) MA: MODERATELY AGGRESSIVE
(4) EA: EXTREMELY AGGRESSIVE

FDOT Criteria for Substructure Environmental Classification

Classification	Environmental Condition	Units	Steel		Concrete	
			Water	Soil	Water	Soil
Extremely Aggressive (If any of these conditions exist)	pH		< 6.0		< 5.0	
	Cl	ppm	> 2000		> 2000	
	SO_4	ppm	N.A.		> 1500	> 2000
	Resistivity	Ohm-cm	< 1000		< 500	
Slightly Aggressive (If all of these conditions exist)	pH		> 7.0		> 8.0	
	Cl	ppm	N.A.		< 500	
	SO_4	ppm	N.A.		< 150	< 1000
	Resistivity	Ohm-cm	> 5000		> 3000	
Moderately Aggressive	This classification must be used at all sites not meeting requirements for either slightly aggressive or extremely aggressive environments.					

pH = acidity ($-\log_{10}H^+$; potential of Hydrogen), Cl = chloride content, SO_4 = Sulfate content

MOISTURE CONTENT TEST RESULTS (ASTM D-2216)

PROJECT NAME: PROPOSED IMPROVEMENTS ALONG SR-9A SOUTHBOUND OFF-RAMP AT SR 860
LOCATION: MIAMI-DADE COUNTY, FL
PROJECT No.: 209141
DATE: 12/22/2009

Boring No.	B-3	B-5	B-1	B-2	B-3	B-5
Sample No.	2	3	2	1	1	5
Sample Depth (Feet)	2-4	4-5.7	2-4	0-1	0-1	8-10
Tare No.	6	BB	J	25	28	201
Tare plus wet soil (grams)	463.0	376.0	292.5	493.0	386.0	214.5
Tare plus dry soil (grams)	365.0	281.0	222.0	455.5	350.5	204.5
Water W_w (grams)	98.0	95.0	70.5	37.5	35.5	10.0
Tare (grams)	9.0	9.5	9.5	9.0	9.0	9.0
Dry soil W_s (grams)	356.0	271.5	212.5	446.5	341.5	195.5
Water Content w (%)	27.5	35.0	33.2	8.4	10.4	5.1

MATERIAL PASSING THE # 200 SIEVE TEST RESULTS (AASHTO T-11)

PROJECT NAME: PROPOSED IMPROVEMENTS ALONG SR-9A SOUTHBOUND OFF-RAMP AT SR 860
LOCATION: MIAMI-DADE COUNTY, FL
PROJECT No.: 209141
DATE: 12/22/2009

Boring No.	B-3	B-5	B-1	B-2
Sample No.	2	3	2	1
Sample Depth (Feet)	2-4	4-5.7	2-4	0-1
Original Dry Weight of Soil (grams)	356	232	212.5	446.5
Weight of Soil After Washing (grams)	90.0	99.0	12.0	324.0
Weight of Soil Passing 200 Sieve (grams)	266.0	133.0	200.5	122.5
Percent of Soil Passing 200 Sieve (%)	74.7	57.3	94.4	27.4

GRAIN SIZE DATA SHEET

DATE: 12/22/2009

PROJECT NAME: PROPOSED IMPROVEMENTS ALONG SR-9A SOUTHBOUND OFF-RAMP AT SR 860
GEOSOL PROJECT No. 209141
GENERAL LOCATION: MIAMI-DADE COUNTY, FL

Boring No. B-2
Sample No. 1
Depth (feet) 0-1

SOIL DESCRIPTION: Light Brown Silty Fine to Coarse SAND with Little Limerock Fragments (FILL; A-2-4)

Tare #	Dry Wt. - Tare Wt.
D	446.5

Sieve Size	Sieve Sizes	Cumulative Wt. Retained	% RETAINED	% PASSING	% PASSING TOTAL SAMPLE	WEIGHT RETAINED (Grams)
75	75mm 3"	0.0	0.0	100	100	0.0
50	50mm 2"	0.0	0.0	100	100	0.0
37.5	37.5mm 1.5"	0.0	0.0	100.0	100.0	0.0
25	25mm 1"	0.0	0.0	100.0	100.0	0.0
19	19mm 3/4"	11.0	2.5	97.5	97.5	11.0
9.5	9.5mm 3/8"	25.0	5.6	94.4	94.4	14.0
4.75	4.75mm #4	72.0	16.1	83.9	83.9	47.0
2.36	2 mm #10	132.0	29.6	70.4	70.4	60.0
0.6	425um #40	211.0	47.3	52.7	52.7	79.0
0.3	250um #60	241.0	54.0	46.0	46.0	30.0
0.15	150um #100	288.0	64.5	35.5	35.5	47.0
0.075	75um #200	324.0	72.6	27.4	27.4	36.0
PAN	-	446.5	100.0	0.0	0.0	122.5

NOTES: The percent of soil passing the -200 sieve was determined by wash method

ASTM D 2487 Classification of Soil for Engineering Purposes

Coarse Gravel	< 3" and > 3/4"
Fine Gravel	< 3/4" and > #4

Coarse Sand	< #4 and > #10
Medium Sand	< #10 and > #40
Fine Sand	< #40 and > #200

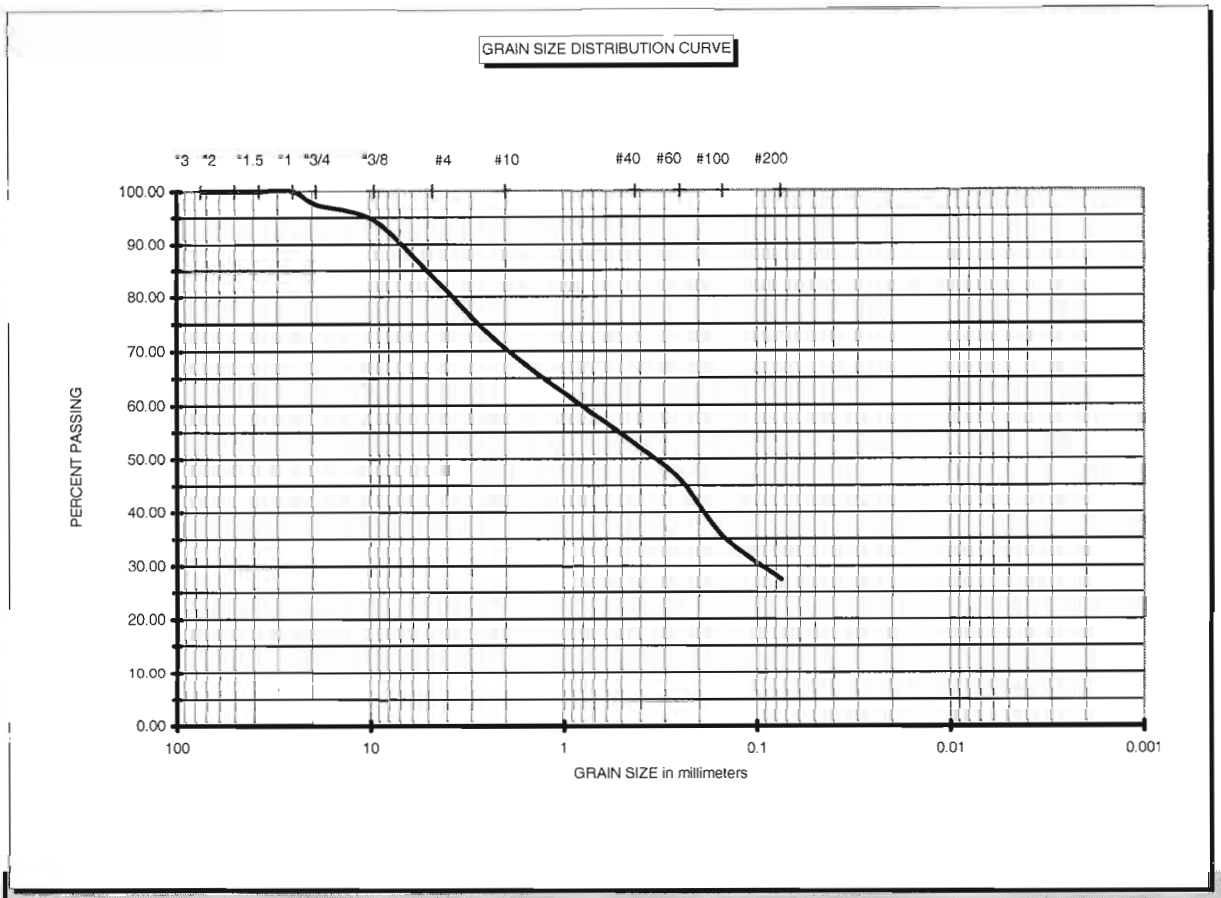
Cu = D60 / D10
Cc = (D30)^2 / (D10 x D60)
1000 um = 1 mm

tested by: O. Riccobono computed by: O. Riccobono checked by: D.R.

GRAIN SIZE DATA SHEET

DATE: 12/22/2009

PROJECT NAME: PROPOSED IMPROVEMENTS ALONG SR-9A SOUTHBOUND OFF-RAMP AT SR 860
GEOSOL PROJECT No. 209141
GENERAL LOCATION: MIAMI-DADE COUNTY, FL



ASTM D 2487 Classification of Soil for Engineering Purposes			Coarse Sand	< #4 and > #10	Cu = D60 / D10
Coarse Gravel	< 3" and > 3/4"		Medium Sand	< #10 and > #40	Cc = (D30)^2 / (D10 x D60)
Fine Gravel	< 3/4" and > #4		Fine Sand	< #40 and > #200	

BORING # B-2 **SAMPLE #** 1 **Depth (feet)** 0-1

SOIL DESCRIPTION: Light Brown Silty Fine to Coarse SAND with Little Limerock Fragments (FILL; A-2-4)

Natural Moisture Content: 8.4%

GRAIN SIZE DATA SHEET

DATE: 12/22/2009

PROJECT NAME: PROPOSED IMPROVEMENTS ALONG SR-9A SOUTHBOUND OFF-RAMP AT SR 86
GEOSOL PROJECT No. 209141
GENERAL LOCATION: MIAMI-DADE COUNTY, FL

Boring No. B-3
Sample No. 1
Depth (feet) 0-1

SOIL DESCRIPTION: Brown Silty Fine to Coarse SAND with Some Limerock Fragments (FILL; A-1-b)

Tare #	Dry Wt. - Tare Wt.
14	341.5

Sieve Size	Sieve Sizes	Cumulative Wt. Retained	% RETAINED	% PASSING	% PASSING TOTAL SAMPLE	WEIGHT RETAINED (Grams)
75	75mm 3"	0.0	0.0	100	100	0.0
50	50mm 2"	0.0	0.0	100	100	0.0
37.5	37.5mm 1.5"	0.0	0.0	100.0	100.0	0.0
25	25mm 1"	0.0	0.0	100.0	100.0	0.0
19	19mm 3/4"	22.5	6.6	93.4	93.4	22.5
9.5	9.5mm 3/8"	51.5	15.1	84.9	84.9	29.0
4.75	4.75mm #4	96.5	28.3	71.7	71.7	45.0
2.36	2 mm #10	126.5	37.0	63.0	63.0	30.0
0.6	425um #40	160.5	47.0	53.0	53.0	34.0
0.3	250um #60	197.5	57.8	42.2	42.2	37.0
0.15	150um #100	252.5	73.9	26.1	26.1	55.0
0.075	75um #200	282.5	82.7	17.3	17.3	30.0
PAN	-	341.5	100.0	0.0	0.0	59.0

NOTES: The percent of soil passing the -200 sieve was determined by wash method

ASTM D 2487 Classification of Soil for Engineering Purposes

Coarse Gravel	< 3" and > 3/4"
Fine Gravel	< 3/4" and > #4

Coarse Sand	< #4 and > #10
Medium Sand	< #10 and > #40
Fine Sand	< #40 and > #200

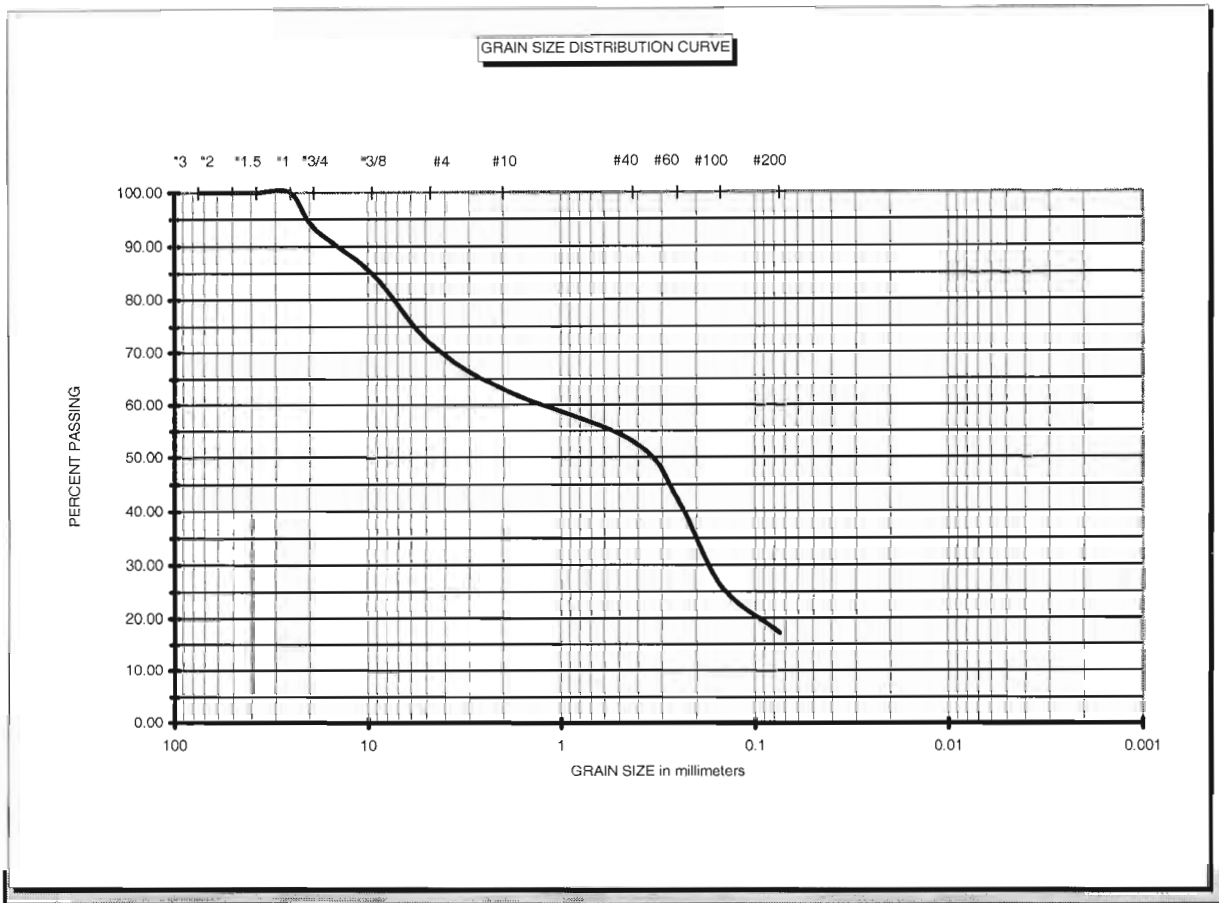
Cu = D60 / D10
Cc = (D30)^2 / (D10 x D60)
1000 um = 1 mm

tested by: O. Riccobono computed by: O. Riccobono checked by: D.R.

GRAIN SIZE DATA SHEET

DATE: 12/22/2009

PROJECT NAME: PROPOSED IMPROVEMENTS ALONG SR-9A SOUTHBOUND OFF-RAMP AT SR 8€
GEOSOL PROJECT No. 209141
GENERAL LOCATION: MIAMI-DADE COUNTY, FL



ASTM D 2487 Classification of Soil for Engineering Purposes			Coarse Sand	< #4 and > #10	Cu = D60 / D10
Coarse Gravel	< 3" and > 3/4"		Medium Sand	< #10 and > #40	Cc = (D30)^2 / (D10 x D60)
Fine Gravel	< 3/4" and > #4		Fine Sand	< #40 and > #200	

BORING # B-3 **SAMPLE #** 1 **Depth (feet)** 0-1

SOIL DESCRIPTION: Brown Silty Fine to Coarse SAND with Some Limerock Fragments (FILL; A-1-b)

Natural Moisture Content: 10.4%

GRAIN SIZE DATA SHEET

DATE: 12/22/2009

PROJECT NAME: PROPOSED IMPROVEMENTS ALONG SR-9A SOUTHBOUND OFF-RAMP AT SR 86(
GEOSOL PROJECT No. 209141
GENERAL LOCATION: MIAMI-DADE COUNTY, FL

Boring No. B-5
Sample No. 5
Depth (feet) 8-10

SOIL DESCRIPTION: Brown Fine to Medium SAND with Trace of Limestone Fragments (A-3)

Tare #	Dry Wt. - Tare Wt.
9	195.5

Sieve Size	Sieve Sizes	Cumulative Wt. Retained	% RETAINED	% PASSING	% PASSING TOTAL SAMPLE	WEIGHT RETAINED (Grams)
75	75mm 3"	0.0	0.0	100	100	0.0
50	50mm 2"	0.0	0.0	100	100	0.0
37.5	37.5mm 1.5"	0.0	0.0	100.0	100.0	0.0
25	25mm 1"	0.0	0.0	100.0	100.0	0.0
19	19mm 3/4"	0.0	0.0	100.0	100.0	0.0
9.5	9.5mm 3/8"	3.0	1.5	98.5	98.5	3.0
4.75	4.75mm #4	10.0	5.1	94.9	94.9	7.0
2.36	2 mm #10	15.0	7.7	92.3	92.3	5.0
0.6	425um #40	44.0	22.5	77.5	77.5	29.0
0.3	250um #60	100.0	51.2	48.8	48.8	56.0
0.15	150um #100	165.0	84.4	15.6	15.6	65.0
0.075	75um #200	187.0	95.7	4.3	4.3	22.0
PAN	-	195.5	100.0	0.0	0.0	8.5

NOTES: The percent of soil passing the -200 sieve was determined by wash method

ASTM D 2487 Classification of Soil for Engineering Purposes	
Coarse Gravel	< 3" and > 3/4"
Fine Gravel	< 3/4" and > #4

Coarse Sand	< #4 and > #10
Medium Sand	< #10 and > #40
Fine Sand	< #40 and > #200

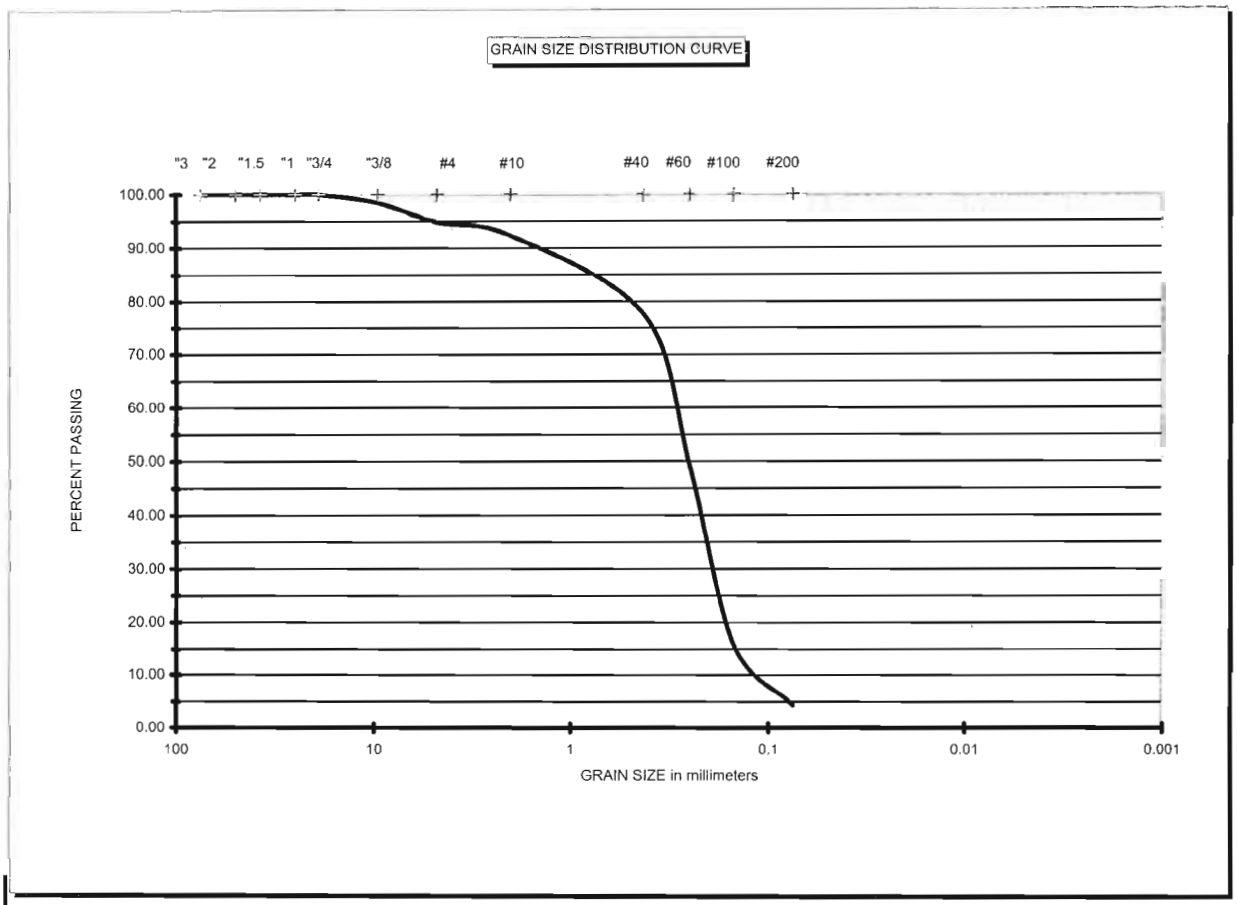
Cu = D60 / D10
Cc = (D30)^2 / (D10 x D60)
1000 um = 1 mm

tested by: O. Riccobono computed by: O. Riccobono checked by: D.R.

GRAIN SIZE DATA SHEET

DATE: 12/22/2009

PROJECT NAME: PROPOSED IMPROVEMENTS ALONG SR-9A SOUTHBOUND OFF-RAMP AT SR 86(
GEOSOL PROJECT No. 209141
GENERAL LOCATION: MIAMI-DADE COUNTY, FL



ASTM D 2487 Classification of Soil for Engineering Purposes			Coarse Sand	< #4 and > #10	Cu = D60 / D10
Coarse Gravel	< 3" and > 3/4"		Medium Sand	< #10 and > #40	Cc = (D30)^2 / (D10 x D60)
Fine Gravel	< 3/4" and > #4		Fine Sand	< #40 and > #200	

BORING # B-5 **SAMPLE #** 5 **Depth (feet)** 8-10

SOIL DESCRIPTION: Brown Fine to Medium SAND with Trace of Limestone Fragments (A-3)

Natural Moisture Content: 5.1%

ORGANIC CONTENT TEST RESULTS (ASTM D-2974)

PROJECT NAME: PROPOSED IMPROVEMENTS ALONG SR-9A SOUTHBOUND OFF-RAMP AT SR 860
LOCATION: MIAMI-DADE COUNTY, FL
PROJECT No.: 209141
DATE: 12/22/2009

Boring No.	B-5
Sample No.	3
Sample Depth (Feet)	4-5.7
Crucible No.	P
Weight of Crucible and Oven-Dried Sample (grams)	67.5
Weight of Crucible and Sample after Ignition (grams)	66.5
Weight of Crucible (grams)	28.0
Weight of Oven-Dried Soil (grams)	39.5
Weight Loss due to Ignition (grams)	1.0
Percent Organics (%)	2.5

XENCO Laboratories

Certificate of Analytical Results 355721

Geosol Inc., Miami Lakes, FL

ROADWAY IMPROVEMENTS SR-9A (I-95) SOUTHBOUND 0FF RAMP

Sample Id: **B-2**	Matrix: **Soil**	% Moisture: **17.78**
Lab Sample Id: **355721-001**	Date Collected: **Dec-15-09 00:00**	Basis: **Dry Weight**
Sample Depth: **8 - 10 ft**	Date Received: **Dec-15-09 13:45**	

Analytical Method: Inorganic Anions by EPA 300 Prep Method: E300P

Date Analyzed: Dec-24-09 03:21 Analyst: AMB Date Prep: Dec-24-09 03:21 Tech: AMB

Seq Number: 787400

Parameter	Cas Number	Result	PQL	MDL	Units	Flag	Dil
Chloride	16887-00-6	49.2	25.5	6.26	mg/kg	V	50
Sulfate	14808-79-8	20.7	14.0	3.36	mg/kg		50

Project: Florida Standard List of Methods

Version: 1.014

XENCO Laboratories

Certificate of Analytical Results 355721

Geosol Inc., Miami Lakes, FL

ROADWAY IMPROVEMENTS SR-9A (I-95) SOUTHBOUND 0FF RAMP

Sample Id: **B-2**	Matrix: **Soil**	% Moisture:
Lab Sample Id: **355721-001**	Date Collected: **Dec-15-09 00:00**	Basis: **Wet Weight**
Sample Depth: **8 - 10 ft**	Date Received: **Dec-15-09 13:45**	

Analytical Method: Percent Moisture — Prep Method:

Date Analyzed: Dec-16-09 09:51 Analyst: ARM Seq Number: 786053 — Date Prep: — Tech: ARM

Parameter	Cas Number	Result	PQL	MDL	Units	Flag	Dil
Percent Moisture	TMOIST	17.8	1.00	1.00	%		1

Analytical Method: Resistivity — Prep Method:

Date Analyzed: Dec-18-09 11:50 Analyst: YAD Seq Number: 786359 — Date Prep: — Tech: AOR

Parameter	Cas Number	Result	PQL	MDL	Units	Flag	Dil
Resistivity (as received)	RESISTIVIT'	30400	10.0	10.0	Ohm-c		1

Analytical Method: Soil pH — Prep Method:

Date Analyzed: Dec-17-09 08:10 Analyst: ZOE Seq Number: 786049 — Date Prep: — Tech: ZOE

Parameter	Cas Number	Result	PQL	MDL	Units	Flag	Dil
pH	PH	8.96		0.001	SU		1

Project: Florida Standard List of Methods

Version: 1.014

Florida Department of Transportation

CHARLIE CRIST
GOVERNOR

STATE MATERIALS OFFICE
5007 Northeast 39th Avenue, Gainesville, Florida 32609
Telephone: (352) 955-6600, Fax: (352) 955-6613

STEPHANIE C. KOPELOUSOS
SECRETARY

MEMORANDUM

DATE: December 14, 2009

TO: Michael Kim

FROM: David Horhota

SUBJECT: Embankment Resilient Modulus Pavement Design
Miami-Dade County
FPN 42521615201: SR-9A & I-95, southbound off ramp to Miami Gardens Drive.

Five (5), 2-bag samples were received by the State Materials Office (SMO) for determination of an embankment (roadbed) resilient modulus for pavement design. After visual observation of the five samples, it was determined that the material from each 2-bag sample looked visually similar and the material from each of the bags were combined to form one sample from each location. After combining materials from the bags, samples from each location were obtained for classification tests (Atterberg limits, sieve analysis and organic content), Proctor density, and resilient modulus. The classification test results are reported in Table 1. Based on the information on the sample bags submitted by Geosol Inc., all samples were obtained from a depth of 0.5 to 2 feet at an offset of 12' Left of the Centerline.

Table 1. Summary of Initial Classification Results

Sample Number	Station	% Passing No. 4	% Passing No. 10	% Passing No. 40	% Passing No. 60	% Passing No. 100	% Passing No. 200	Class.	Organic Content (%)	LL/PI
MR-1	57+00	73	69	59.6	43.1	20.9	8.4	A-3	2.0	N.P.
MR-2	59+00	83	77	64.3	45.3	17.4	8.5	A-3	2.3	N.P.
MR-3	61+00	69	62	50.2	37.0	18.7	9.8	A-3	2.7	N.P.
MR-4	63+00	66	61	52.2	36.2	14.1	7.4	A-3	1.8	N.P.
MR-5	65+00	78	73	63.8	44.2	16.3	6.8	A-3	1.4	N.P.

In addition to the classification testing, the following test program was conducted:

(1) Standard Proctor, AASHTO T 99
(2) Resilient Modulus (M_R), AASHTO T 307.

A summary of laboratory test results is included in Table 2. The resilient modulus values listed in this table were obtained using the relationship developed from each individual test (resilient modulus versus bulk stress - with bulk stress, Θ, defined as $\Theta = \sigma_1 + \sigma_2 + \sigma_3$), and using a bulk stress of 11 psi, which is the recommendation from Dr. Ping's research work in modeling the embankment in-situ stresses for Florida pavement conditions. Two results are listed for each location because two samples were prepared for each location. The resilient modulus samples were compacted to within 1 pcf of the maximum density and 0.5% of the optimum moisture content as determined by AASHTO T99.

Table 2. Summary of T-99 and M_R Test Results

Sample Number	Station	Passing No. 200, %	Standard Proctor Density, pcf	Optimum Moisture Content, %	Resilient Modulus @ Θ=11psi (psi)
MR-1	57+00	8.4	112.2	12.0%	15,961
					15,397
MR-2	59+00	8.5	113.9	9.9%	16,084
					15,746
MR-3	61+00	9.8	117.4	10.8%	16,694
					16,393
MR-4	63+00	7.4	114.8	10.1%	16,425
					16,757
MR-5	65+00	6.8	111.8	10.7%	16,326
					17,159

To obtain a design embankment resilient modulus, a 90% method was used as outlined in both the Flexible Pavement Design Manual and Soils and Foundations Handbook. The resilient modulus values were ranked in ascending order and the percent of values which were greater than or equal to the individual value were determined. The results of this analysis are recorded in Table 3 and the corresponding graph of these results is included as Figure 1. The numbers in parentheses (after the location information) represent the test number (either 1 or 2) for the corresponding resilient modulus value due to the fact that the two individual tests were performed on material from the same location (as shown in Table 2).

Table 3. Ranked M_R Test Results for 90% Method

Rank	Sample Location	% ≥	M_R (psi)
1	57+00(2)	100	15,397
2	59+00(2)	90	15,746
3	57+00(1)	80	15,961
4	59+00(1)	70	16,084
5	65+00(1)	60	16,326
6	61+00(2)	50	16,393
7	63+00(1)	40	16,425
8	61+00(1)	30	16,694
9	63+00(2)	20	16,757
10	65+00(2)	10	17,159

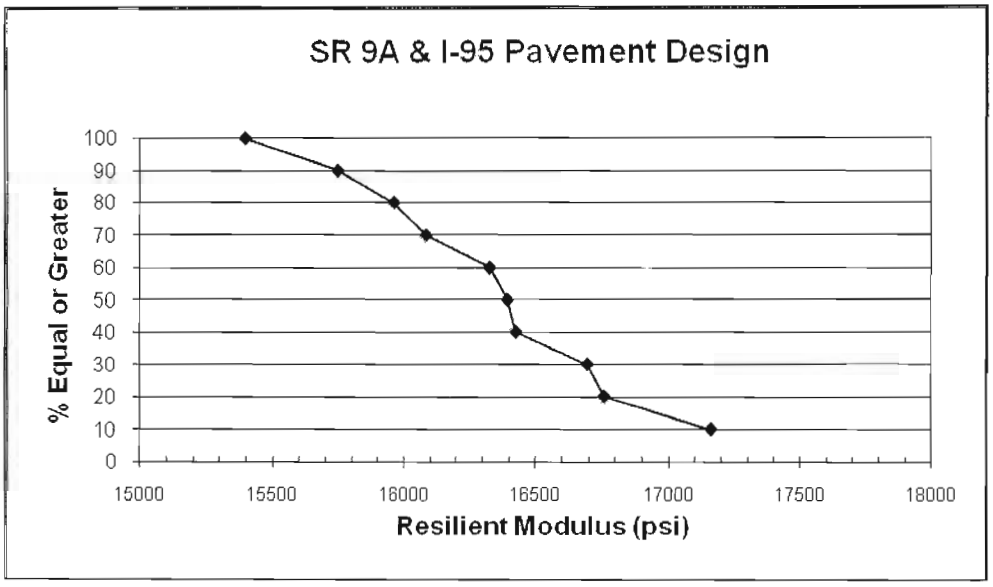


Figure 1. Ranked M_R Test Results for 90% Method

Based on the results shown in Table 3 and Figure 1, the resilient modulus corresponding to a 90th percentile is 15,700 psi, which would represent the design embankment M_R value.

APPENDIX "C"

Pavement Evaluation and Condition Data
Asphalt Pavement Core and Site Photographs

State of Florida Department of Transportation

PAVEMENT EVALUATION AND CONDITION DATA

Cored by: J. GONZALEZ & R. MORALES - GEOSOL, INC. Date: 12/14/2009 Page: 1 OF 1 Typical Section No.:

FPID No. 425216-1-52-01 Name: I-95 SOUTHBOUND OFF-RAMP TO MIAMI GARDENS DRIVE Lanes: ONE LANE (I-95 SOUTHBOUND OFF-RAMP)

County: MIAMI-DADE S.R. No.: 9A Shoulder Type & Cond.: UNPAVED

PROJECT LIMITS: Inside: N/A

FROM: STATION 56+95.29 Outside: N/A

TO: STATION 66+32.31

Median Curbed? Y Lawn? Y Other? Curb & Gutter? N

Core No.	Approx. Sta.	Lane	Wheel Path	Pavement Layer (inches) Top									Core Length (inches)	Base (inches)	Sub Base (inches)	Crack Depth (inches)	Crack Type	Crack Class	Crack Extent	Pavement Condition	Rut Depth (in.)	Cross Slope (ft / 6 ft)	Comments
				FC-2	FC-4	S-III	S-I	Type-I	Binder	SBRM/SAHM	ABC-3	CONCRETRE											
PC-1	60+00	L-1 (SB OFF-RAMP)	X	-	0.5	-	-	2.8	2.1	-	-	-	5.4	12.0	≥12	-	-	-	-	P	1/16	0.035	
PC-2	64+00	L-1 (SB OFF-RAMP)	X	-	0.5	-	-	3.4	2.2	-	-	-	6.1	12.0	≥12	-	-	-	-	F	1/64	0.069	

NOTE: 1) BASE AND SUBBASE MATERIALS CONSISTED OF SLIGHTLY SILTY FINE TO COARSE SAND WITH SOME LIMEROCK FRAGMENTS (A-1-b)

GEOSOL, INC.

PROJECT NAME: I-95 SOUTHBOUND OFF-RAMP TO MIAMI GARDENS DRIVE
FROM STATION 50+00.00
TO STATION 66+32.31
FPID No. 425216-1-52-01

State Road No.:	9A	County:	MIAMI-DADE
GEOSOL Project No.:	209141		
Core No.:	PC-1	Lane No.:	L-1 (SB OFF-RAMP)
Wheel Path:	YES		
Total Core Length (in)	5.4		

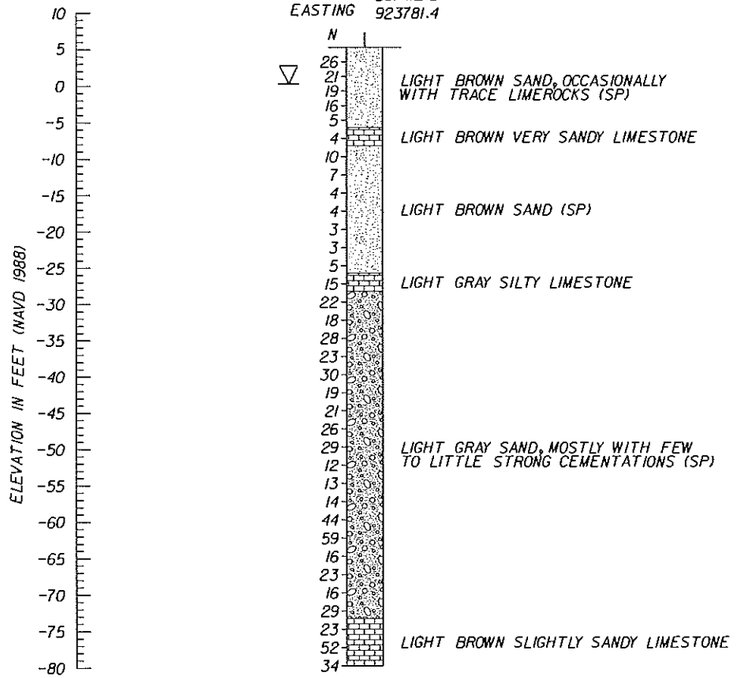
GEOSOL, INC.

PROJECT NAME: I-95 SOUTHBOUND OFF-RAMP TO MIAMI GARDENS DRIVE
FROM STATION 50+00.00
TO STATION 66+32.31
FPID No. 425216-1-52-01

State Road No.:	9A	County:	MIAMI-DADE
GEOSOL Project No.:	209141		
Core No.:	PC-2	Lane No.:	L-1 (SB OFF-RAMP)
Wheel Path:	YES		
Total Core Length (in)	6.1		

APPENDIX – B7

EXISTING GEOTECHNICAL INFORMATION



BOR # BSC-1
STA. 81+07.28
OFF. 114.3' LT
ELEV. 5.3'
DATE 12/22/2011
HAMMER Safety
RIG CME-55
NORTHING 587412.5
EASTING 923781.4

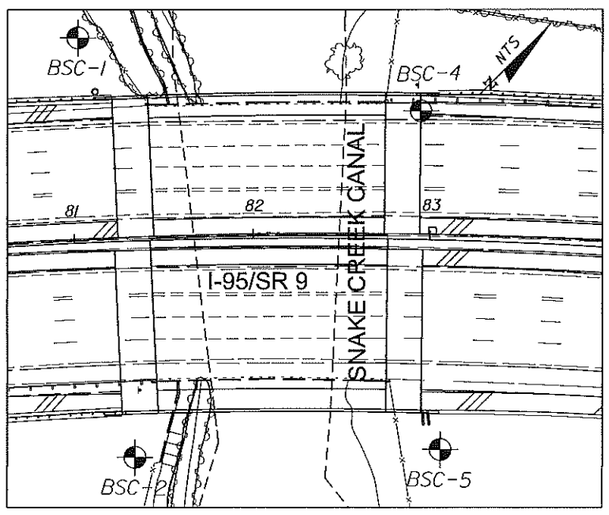
N	
26 21 19 16	LIGHT BROWN SAND, OCCASIONALLY WITH TRACE LIMEROCKS (SP)
5 4	LIGHT BROWN VERY SANDY LIMESTONE
10 7 4 4 3 3 5	LIGHT BROWN SAND (SP)
15 22 18 28 23 30 19 21 26 29 12 13 14 44 59 16 23 16 29	LIGHT GRAY SILTY LIMESTONE LIGHT GRAY SAND, MOSTLY WITH FEW TO LITTLE STRONG CEMENTATIONS (SP)
23 52 34	LIGHT BROWN SLIGHTLY SANDY LIMESTONE

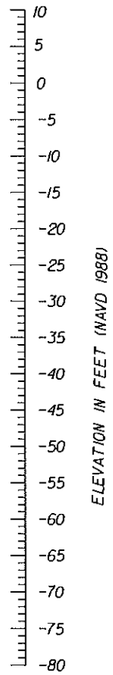
Boring Terminated at Elev. -79.7ft

BOR # BSC-2
STA. 81+28.21
OFF. 120.2' RT
ELEV. 5.9'
DATE 12/22/2011
HAMMER Auto
RIG CME-45
NORTHING 587290.5
EASTING 923982.7

N	
15 16 10 17 16 10	LIGHT BROWN SAND, WITH FEW LIMEROCKS (SP) LIGHT BROWN VERY SANDY LIMESTONE
8 4 4 6 13 30 18 17	LIGHT BROWN SAND (SP)
20 21 15 15 104 13 19 15 21 29 16 17 16 102 38 10 18 30	LIGHT GRAY SANDY LIMESTONE LIGHT GRAY SAND, MOSTLY WITH LITTLE TO SOME STRONG CEMENTATIONS (SP)
22 35 35 19	LIGHT BROWN SLIGHTLY SANDY LIMESTONE

Boring Terminated at Elev. -79.1ft





Asphalt
Sand
Limestone
Gravelly Sand

NOTES:

∇ ENCOUNTERED WATER TABLE

N NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12" PENETRATION. (UNLESS OTHERWISE NOTED.)

MC=	NATURAL MOISTURE CONTENT (%)
-200=	FINES PASSING #200 SIEVE (%)
OC=	ORGANIC CONTENT (%)
LL=	LIQUID LIMIT (%)
PI=	PLASTICITY INDEX (%)
NP=	INDICATES NON-PLASTIC
WOH=	WEIGHT OF HAMMER

STRATA BOUNDARIES ARE APPROXIMATE AND MAY VARY BETWEEN OR AWAY FROM BORING LOCATIONS.

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 Inches
SPOON OUTSIDE DIA.	2.0 Inches
AVG. HAMMER DROP	30.0 Inches
HAMMER WEIGHT	140.0 pounds

SPT CONSISTENCY CHART

SILTS AND CLAYS

CONSISTENCY	SAFETY HAMMER SPT N-VALUE (BLOW/FOOT)	AUTOMATIC HAMMER SPT N-VALUE (BLOW/FOOT)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 - 4	1 - 3
FIRM	4 - 8	3 - 6
STIFF	8 - 15	6 - 12
VERY STIFF	15 - 30	12 - 24
HARD	GREATER THAN 30	GREATER THAN 24

SPT DENSITY CHART

GRANULAR MATERIALS

RELATIVE DENSITY	SAFETY HAMMER SPT N-VALUE (BLOW/FOOT)	AUTOMATIC HAMMER SPT N-VALUE (BLOW/FOOT)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 - 10	3 - 8
MEDIUM	10 - 30	8 - 24
DENSE	30 - 50	24 - 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40

ENVIRONMENTAL CLASSIFICATION

SUBSTRUCTURE: MODERATELY AGGRESSIVE (RESISTIVITY= 1600ohm-cm)

SUPERSTRUCTURE: SLIGHTLY AGGRESSIVE

BRIDGE No. 860094 NB
BRIDGE No. 860094 SB

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

DRAWN BY:	NG 03-12
CHECKED BY:	RM 03-12
DESIGNED BY:	RM 03-12
CHECKED BY:	RK 03-12

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9	BROWARD MIAMI-DADE	422796-1-52-01 422796-2-52-01

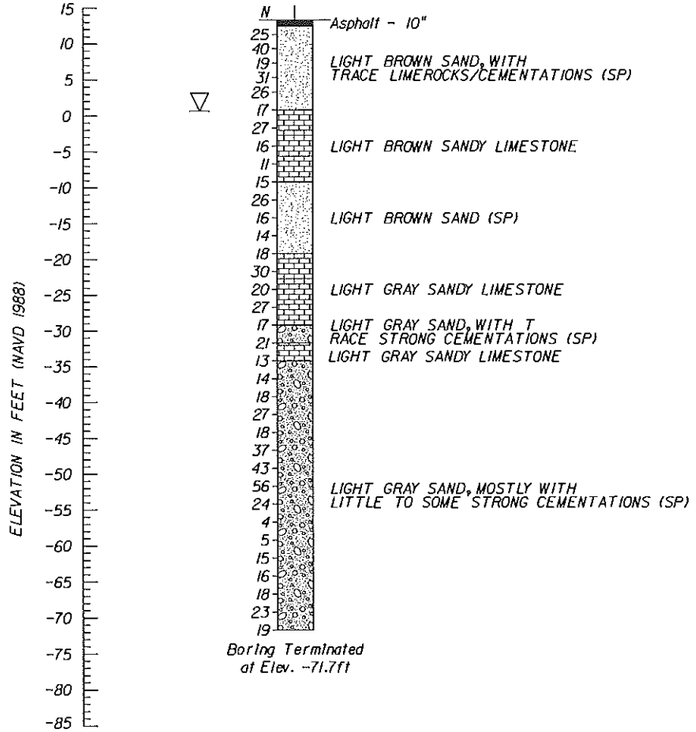
SHEET TITLE: REPORT OF CORE BORINGS (1 OF 2)

REF. DWG. NO.

PROJECT NAME: SR 9/I-95 OVER SNAKE CREEK CANAL

SHEET NO.

BOR # BSC-4
STA. 82+95.72
OFF. 71.7' LT
ELEV. 13.3'
DATE 1/9/2012
HAMMER Auto
RIG CME-45
NORTHING 587539.6
EASTING 923934.7



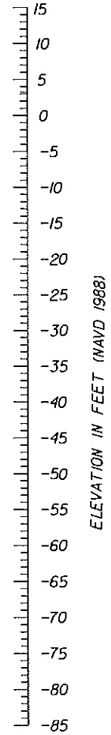
N	
	Asphalt - 10"
25	
40	
19	LIGHT BROWN SAND, WITH TRACE LIMEROCKS/CEMENTATIONS (SP)
31	
26	
17	
27	
16	LIGHT BROWN SANDY LIMESTONE
11	
15	
26	
16	LIGHT BROWN SAND (SP)
14	
18	
30	
20	LIGHT GRAY SANDY LIMESTONE
27	
17	LIGHT GRAY SAND, WITH T
21	RACE STRONG CEMENTATIONS (SP)
13	LIGHT GRAY SANDY LIMESTONE
14	
18	
27	
18	
37	
43	
56	LIGHT GRAY SAND, MOSTLY WITH
24	LITTLE TO SOME STRONG CEMENTATIONS (SP)
4	
5	
15	
16	
18	
23	
19	

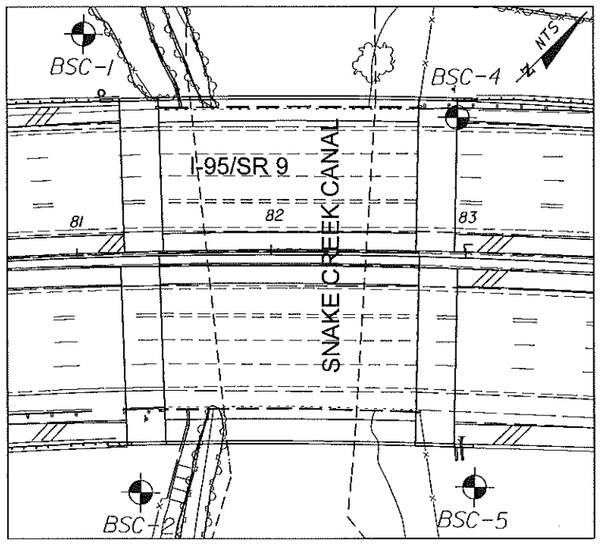
Boring Terminated at Elev. -71.7ft

BOR # BSC-5
STA. 83+08.40
OFF. 116.4' RT
ELEV. 3.2'
DATE 12/21/2011
HAMMER Auto
RIG CME-45
NORTHING 587428.3
EASTING 924086.9

N	
7	BROWN TO DARK BROWN SAND (SP)
6	
29	
24	LIGHT BROWN SAND WITH
19	SOME LIMESTONE FRAGMENTS (SP)
18	
11	
12	
7	LIGHT BROWN SAND (SP)
6	
18	
50/2"	LIGHT GRAY LIMESTONE
44	
16	
21	
15	
15	
19	
25	
21	
21	
27	LIGHT GRAY SAND, MOSTLY WITH FEW
21	TO LITTLE STRONG CEMENTATIONS (SP)
34	
67	
29	
34	
30	
52	
25	
37	
41	
46	
32	
27	LIGHT BROWN SLIGHTLY SANDY LIMESTONE

Boring Terminated at Elev. -81.8ft





Asphalt
Sand
Limestone
Gravelly Sand

NOTES:

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N NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12" PENETRATION. (UNLESS OTHERWISE NOTED.)

MC=	NATURAL MOISTURE CONTENT (%)
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LL=	LIQUID LIMIT (%)
PI=	PLASTICITY INDEX (%)
NP=	INDICATES NON-PLASTIC
WOH=	WEIGHT OF HAMMER

STRATA BOUNDARIES ARE APPROXIMATE AND MAY VARY BETWEEN OR AWAY FROM BORING LOCATIONS.

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 Inches
SPOON OUTSIDE DIA.	2.0 Inches
AVG. HAMMER DROP	30.0 Inches
HAMMER WEIGHT	140.0 pounds

SPT CONSISTENCY CHART

SILTS AND CLAYS

CONSISTENCY	SAFETY HAMMER SPT N-VALUE (BLOW/FOOT)	AUTOMATIC HAMMER SPT N-VALUE (BLOW/FOOT)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 - 4	1 - 3
FIRM	4 - 8	3 - 6
STIFF	8 - 15	6 - 12
VERY STIFF	15 - 30	12 - 24
HARD	GREATER THAN 30	GREATER THAN 24

SPT DENSITY CHART

GRANULAR MATERIALS

RELATIVE DENSITY	SAFETY HAMMER SPT N-VALUE (BLOW/FOOT)	AUTOMATIC HAMMER SPT N-VALUE (BLOW/FOOT)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 - 10	3 - 8
MEDIUM	10 - 30	8 - 24
DENSE	30 - 50	24 - 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40

ENVIRONMENTAL CLASSIFICATION

SUBSTRUCTURE: MODERATELY AGGRESSIVE (RESISTIVITY= 1600ohm-cm)

SUPERSTRUCTURE: SLIGHTLY AGGRESSIVE

BRIDGE No. 860094 NB
BRIDGE No. 860094 SB

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

DRAWN BY: NG 03-12	
CHECKED BY: NM 02-12	
DESIGNED BY: NM 02-12	
CHECKED BY: RK 02-12	

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9	BROWARD MIAMI-DADE	422796-1-52-01 422796-2-52-01

SHEET TITLE: REPORT OF CORE BORINGS (2 OF 2)

REF. DWG. NO.

PROJECT NAME: SR 9/I-95 OVER SNAKE CREEK CANAL

SHEET NO.

TIERRA SOUTH FLORIDA

SUMMARY OF CORROSION TEST RESULTS

I-95 Express Lanes

TSF Project No: 7111-11-297

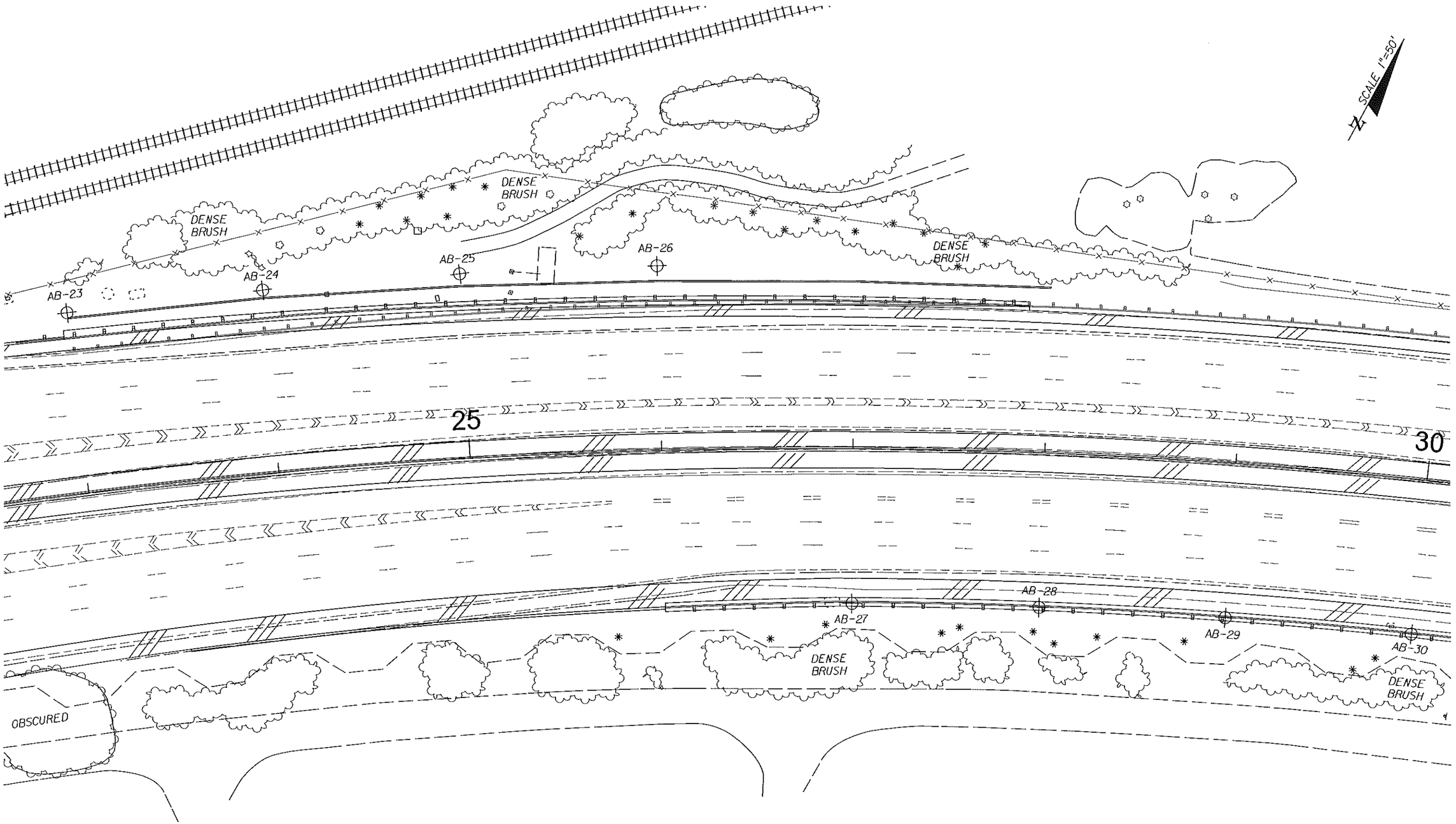
Boring Number	Station	Depth (ft)	pH (FM 5-550)	Resistivity (ohm-cm) (FM 5-551)	Chlorides (ppm) (FM 5-552)	Sulfates (ppm) (FM 5-553)	Environmental Classification* (Soil)	
							Steel	Concrete
Bridge and MSE Wall Borings:								
I-95 over Hallandale Beach Blvd.								
WHA - 4	244+71.54	6.0 - 8.0	8.6	7,700	30	14.7	Slightly Aggressive	Slightly Aggressive
BH - 2	246+65.59	6.0 - 8.0	9.0	17,000	30	30.0	Slightly Aggressive	Slightly Aggressive
BH - 4	248+37.3	6.0 - 8.0	8.4	18,000	30	19.8	Slightly Aggressive	Slightly Aggressive
BH - 5	249+11.81	6.0 - 8.0	8.5	19,000	60	0.0	Slightly Aggressive	Slightly Aggressive
WHA - 1	250+61.94	4.0 - 8.0	8.6	8,200	30	0.0	Slightly Aggressive	Slightly Aggressive
I-95 over Pembroke Road								
WP - 6	285+72.31	8.0 - 10.0	8.5	13,000	15	0.0	Slightly Aggressive	Slightly Aggressive
BP - 3	288+74.03	6.0 - 8.0	9.0	20,000	45	4.8	Slightly Aggressive	Slightly Aggressive
WP - 1	289+07.43	8.0 - 10.0	8.8	21,000	30	0.0	Slightly Aggressive	Slightly Aggressive
I-95 over Hollywood Blvd.								
WH - 2	339+57.13	8.0 - 10.0	8.5	21,000	15	0.0	Slightly Aggressive	Slightly Aggressive
BH - 1	341+07.67	8.0 - 10.0	8.1	23,000	45	14.7	Slightly Aggressive	Slightly Aggressive
BH - 3	342+81.11	8.0 - 10.0	9.0	44,000	45	0.0	Slightly Aggressive	Slightly Aggressive
WH - 5	342+88.91	6.0 - 8.0	8.6	25,000	30	0.0	Slightly Aggressive	Slightly Aggressive
I-95 over Stirling Road								
WS- 4	476+76.92	6.0 - 8.0	8.5	9,500	30	0.0	Slightly Aggressive	Slightly Aggressive
BS - 1	478+30.38	6.0 - 8.0	8.5	8,000	30	64.5	Slightly Aggressive	Slightly Aggressive
WS - 1	480+57.33	8.0 - 10.0	8.8	5,200	45	0.0	Slightly Aggressive	Slightly Aggressive
I-95 over Snake Creek Canal								
Snake Creek Canal Water Sample	82+00		7.9	1,600	63	9.9	Moderately Aggressive	Moderately Aggressive

* As per FDOT Structures Design Guidelines, Table 1.1, Updated July 7, 2007

**** Any reading represented as "0.0" is below the detection limit of 4.8 ppm**

APPENDIX – B8

EXISTING GEOTECHNICAL INFORMATION



⊕ DENOTES THE APPROXIMATE BORING LOCATIONS

I-95/SR 9 EXPRESS LANES

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

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TIERRA SOUTH FLORIDA
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WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9	MIAMI-DADE BROWARD	422796-1-52-01 422796-2-52-01

BORING LOCATION PLAN

SHEET NO.

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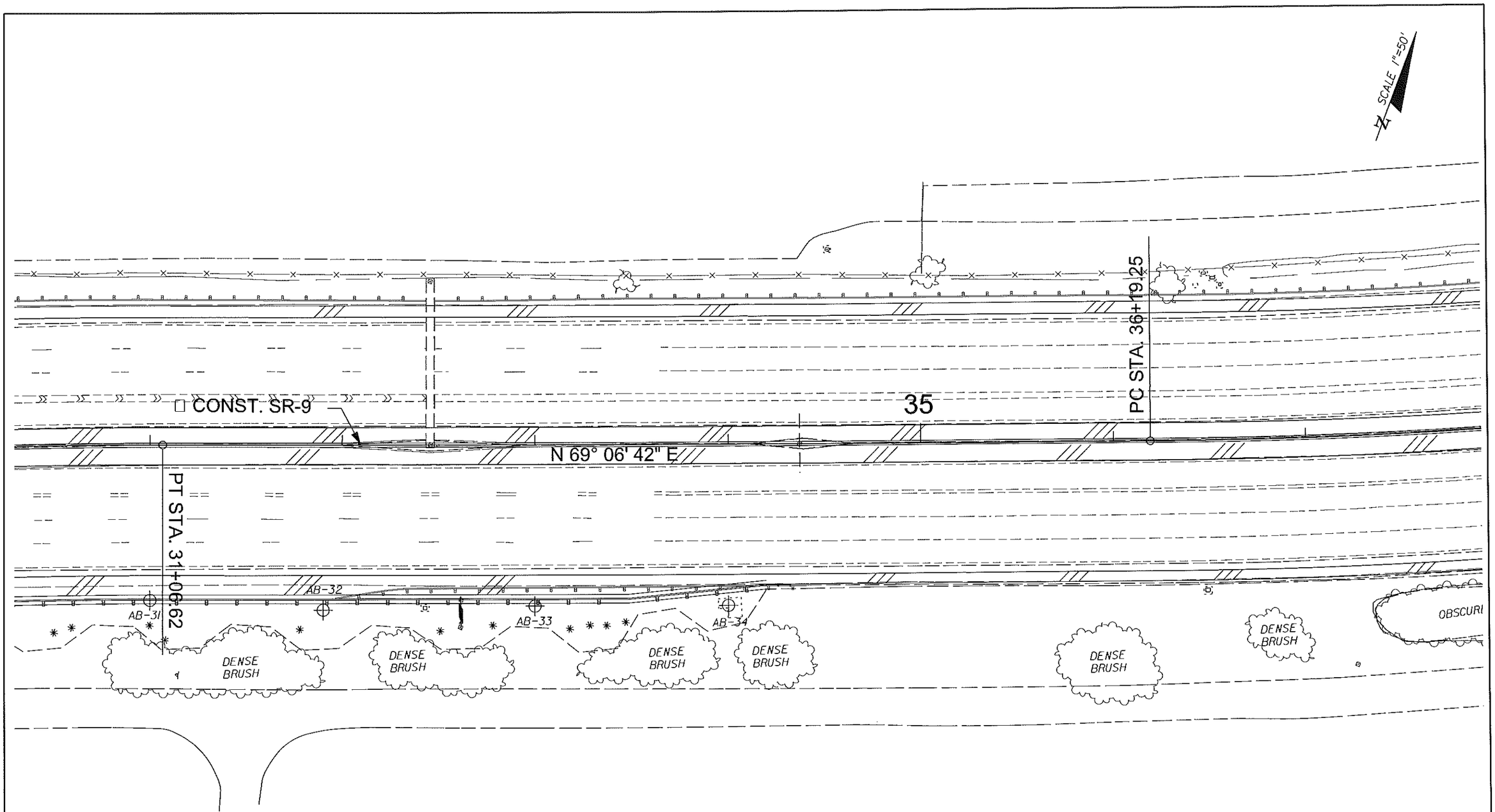

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I-95/SR 9 EXPRESS LANES

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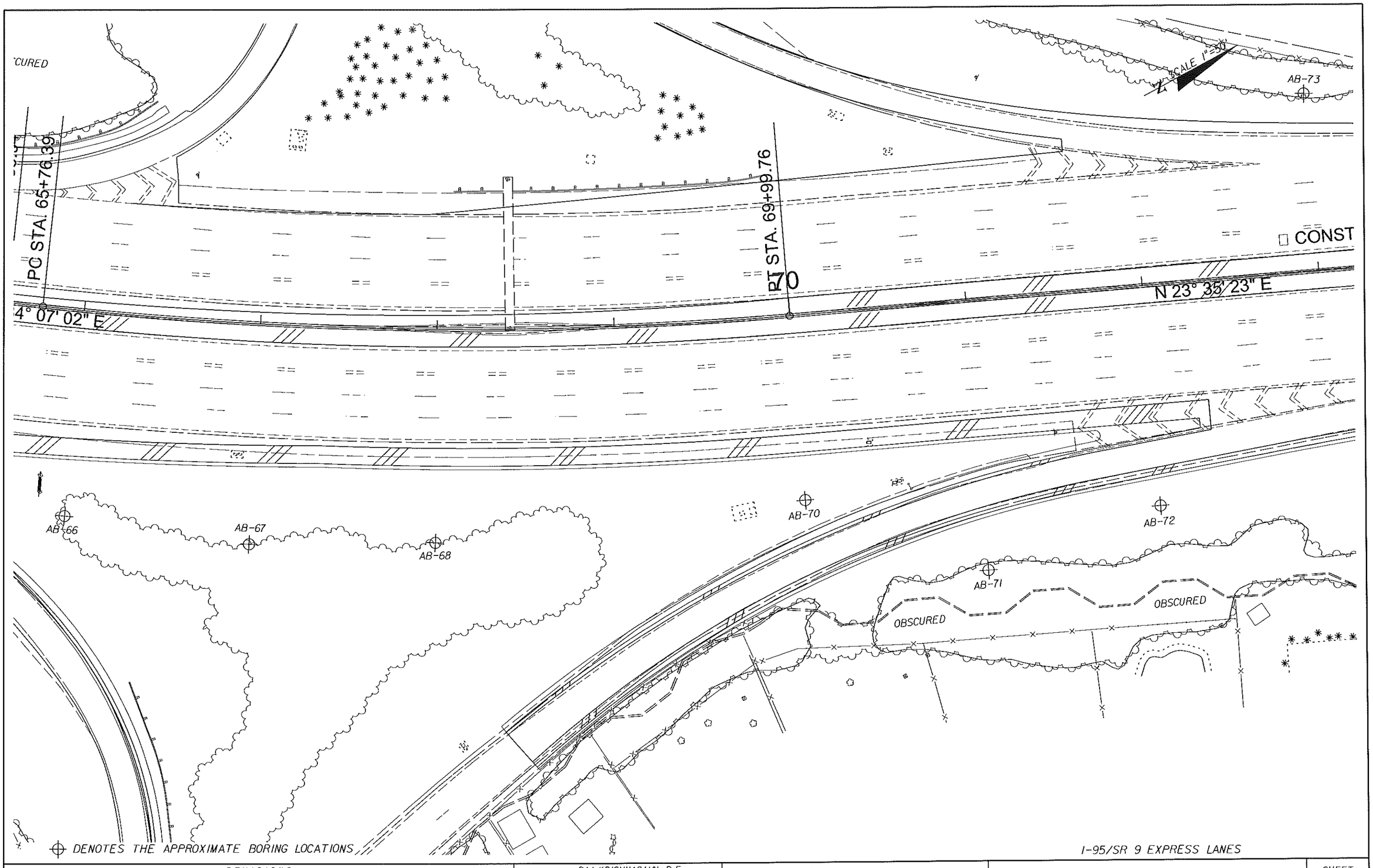

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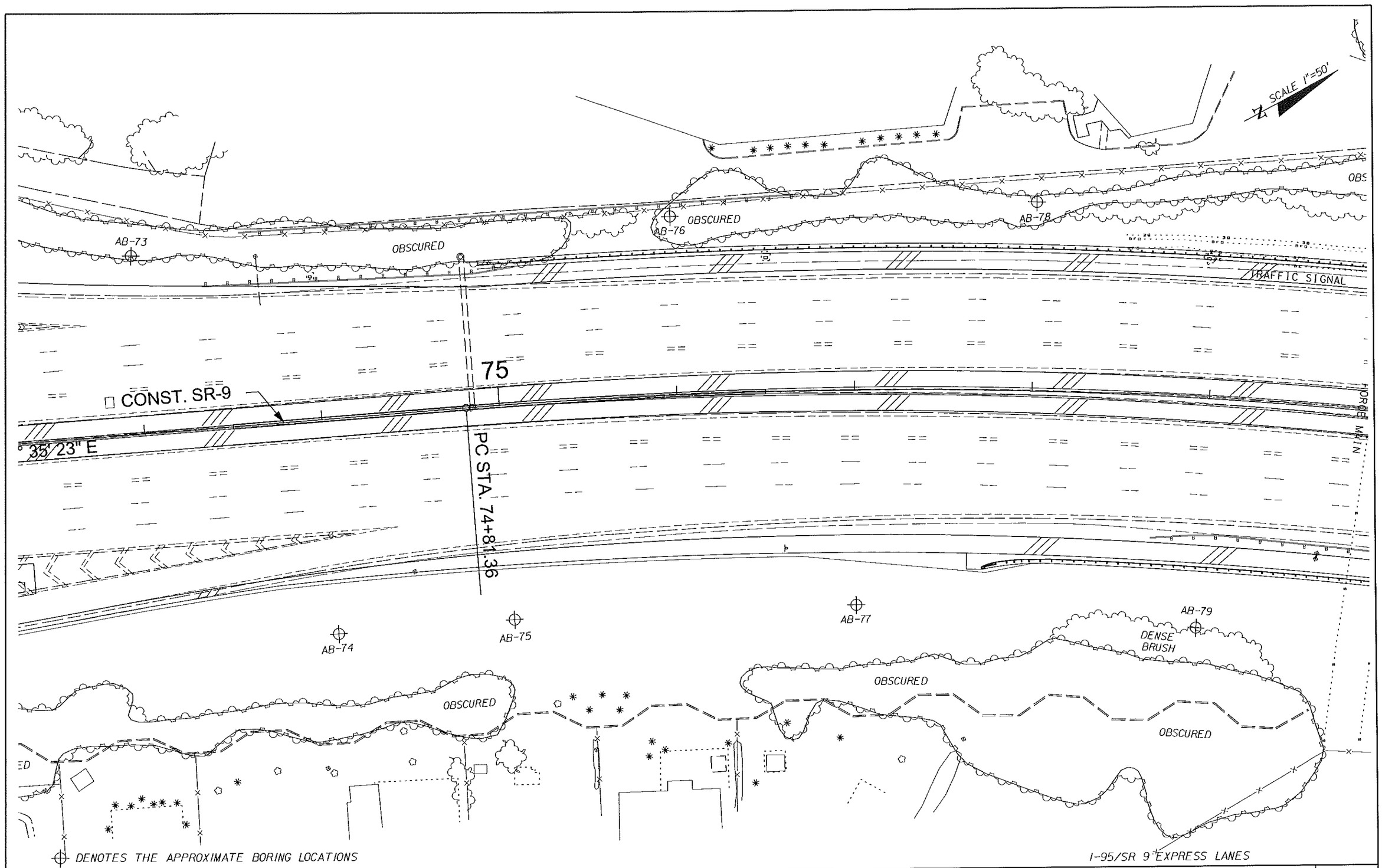

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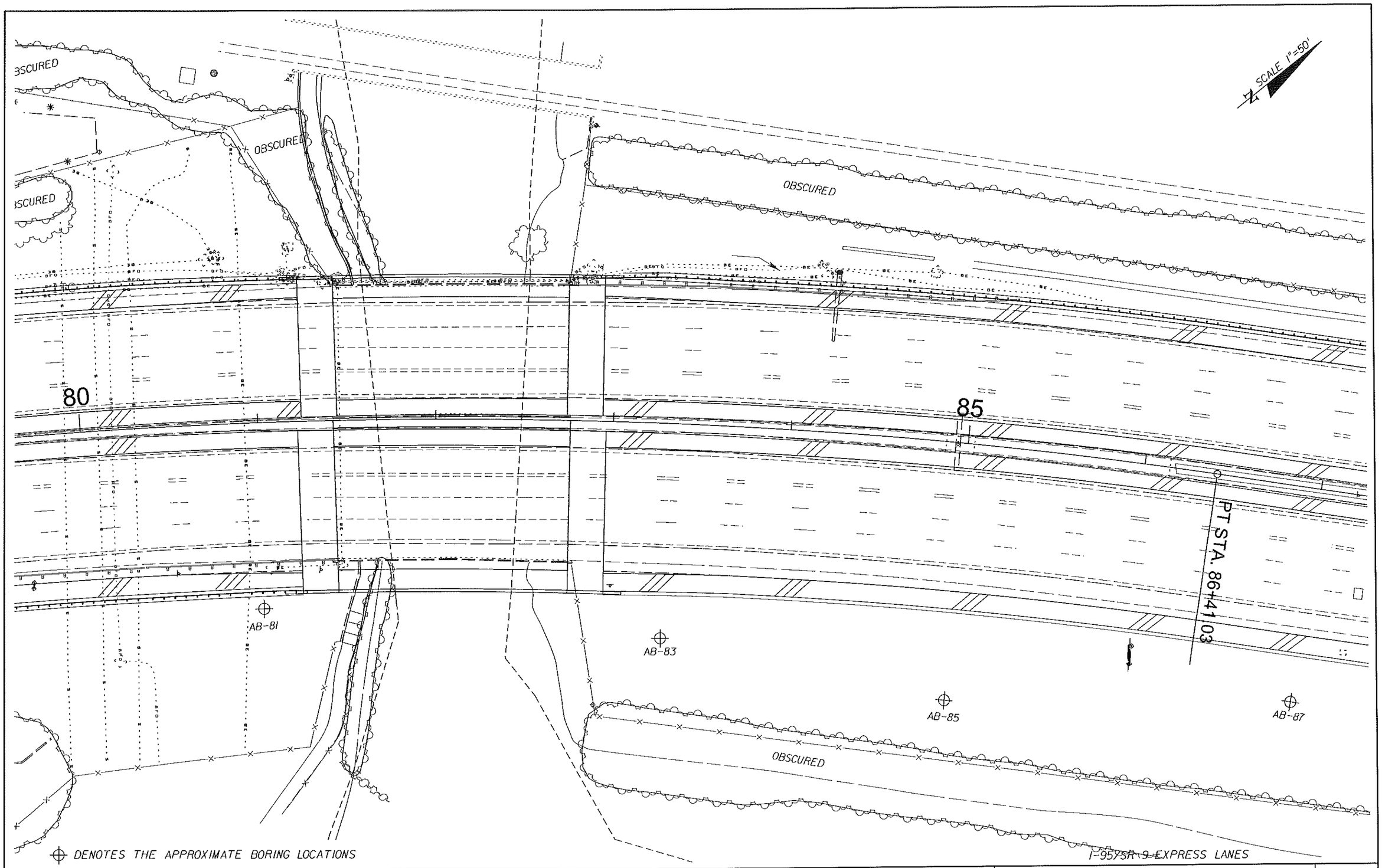

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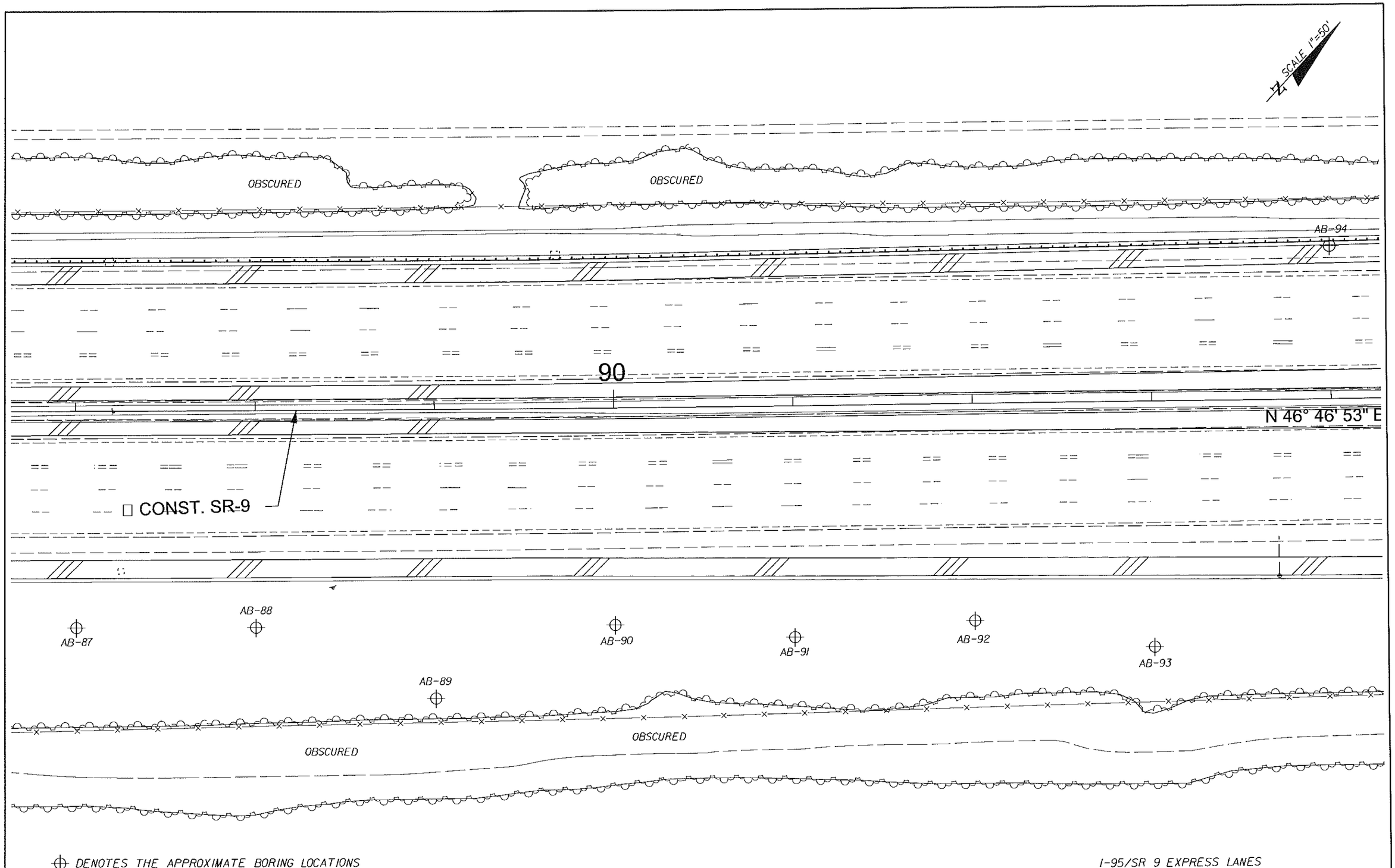

⊕ DENOTES THE APPROXIMATE BORING LOCATIONS

I-95/SR 9 EXPRESS LANES

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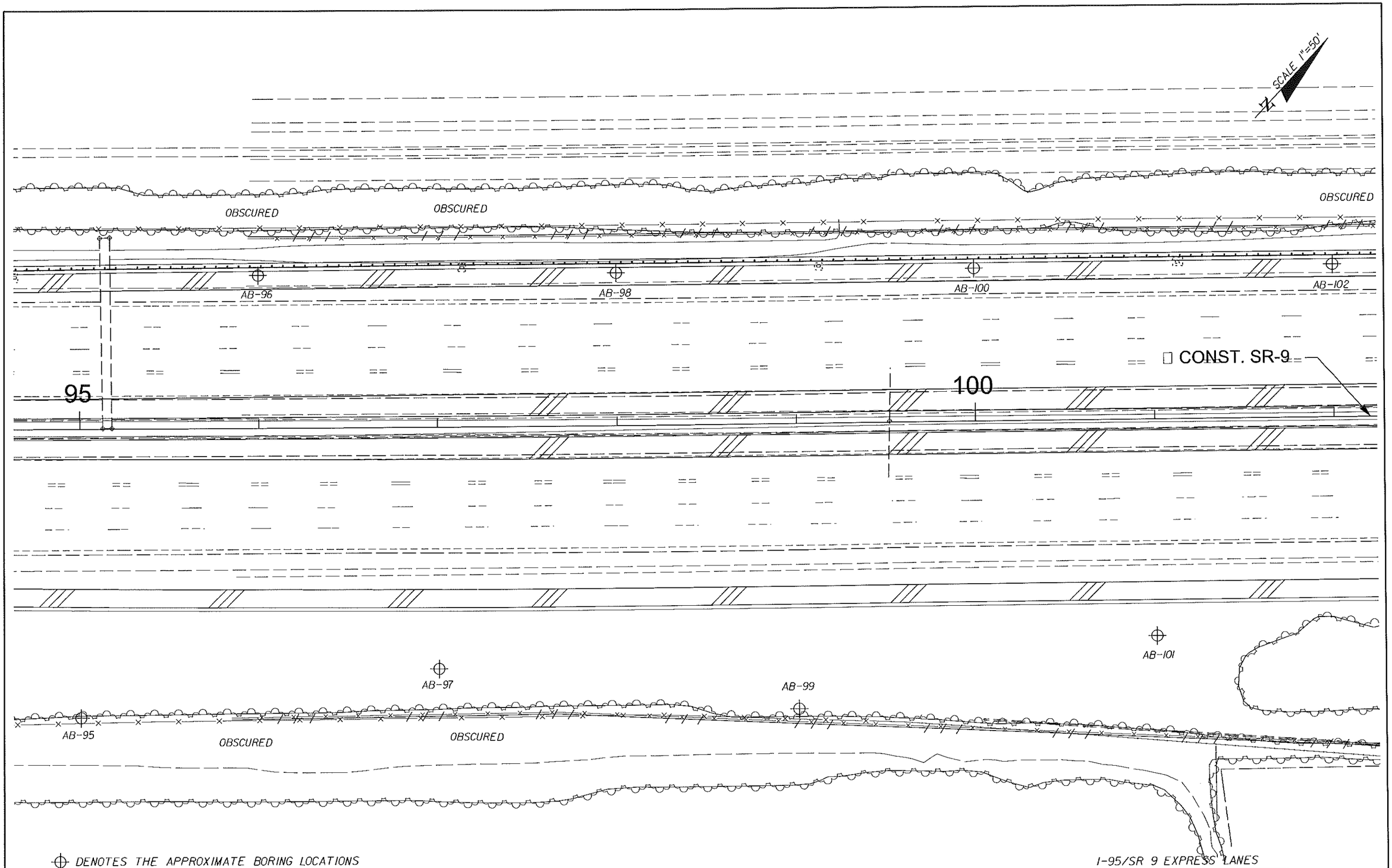

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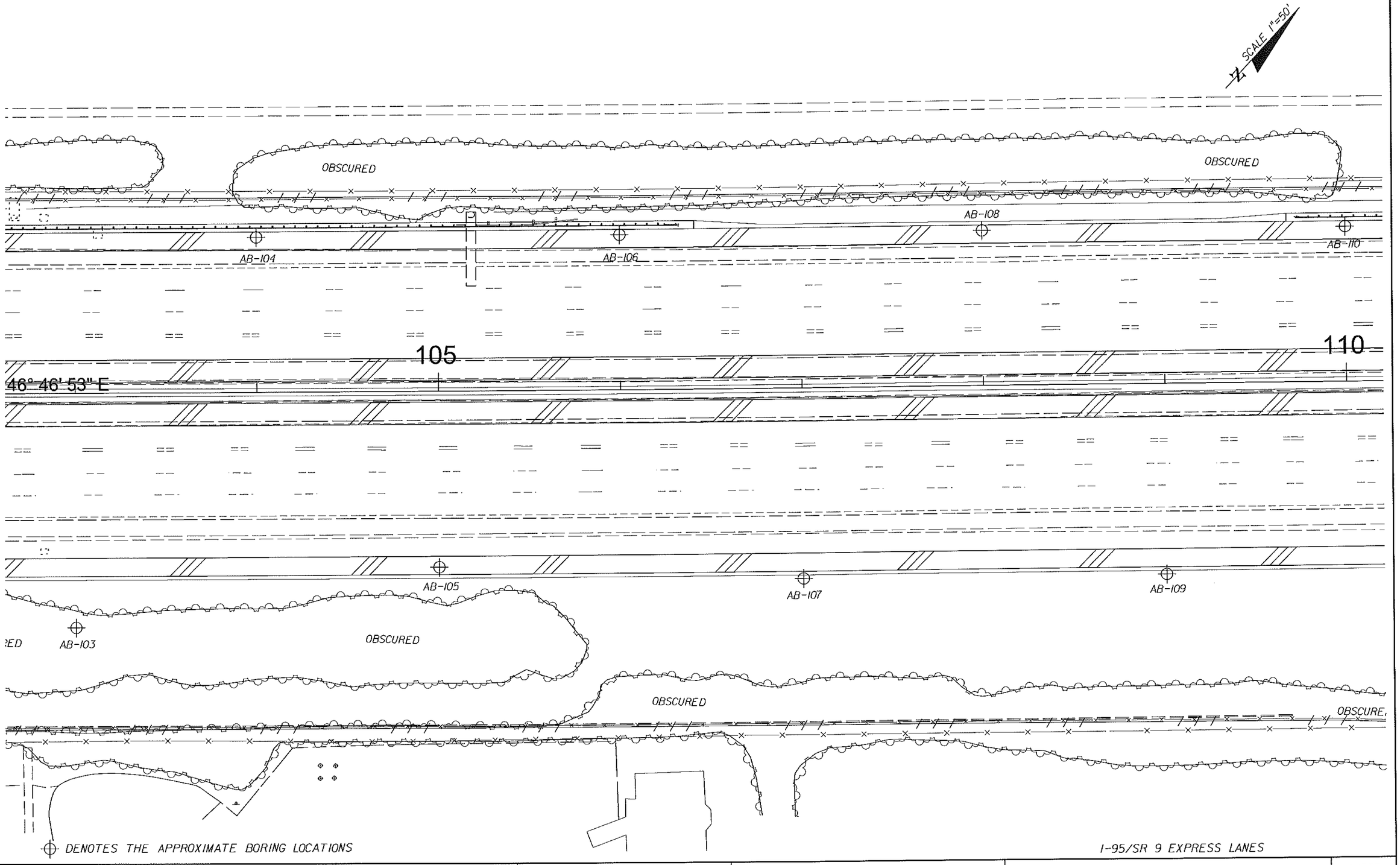

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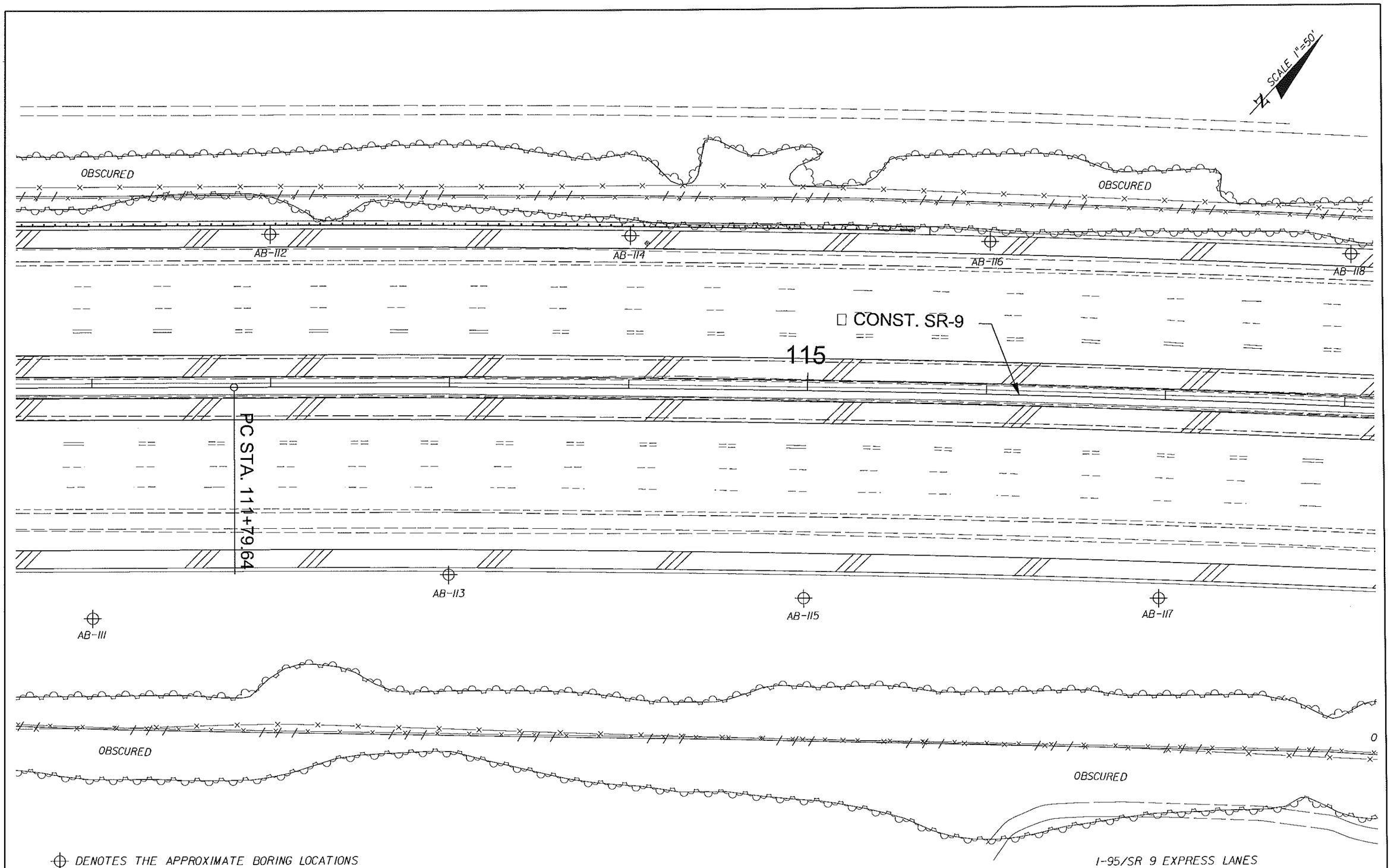

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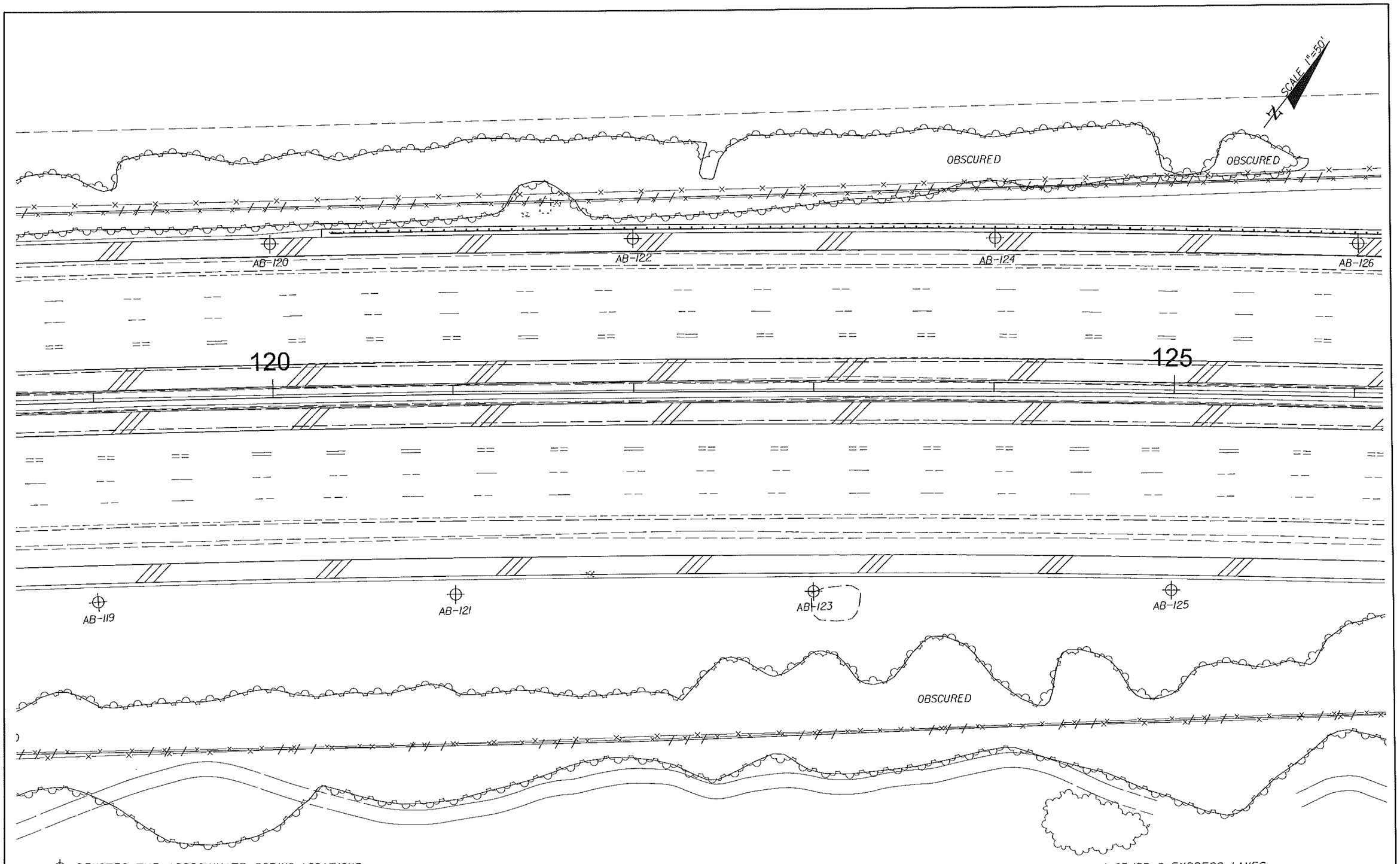

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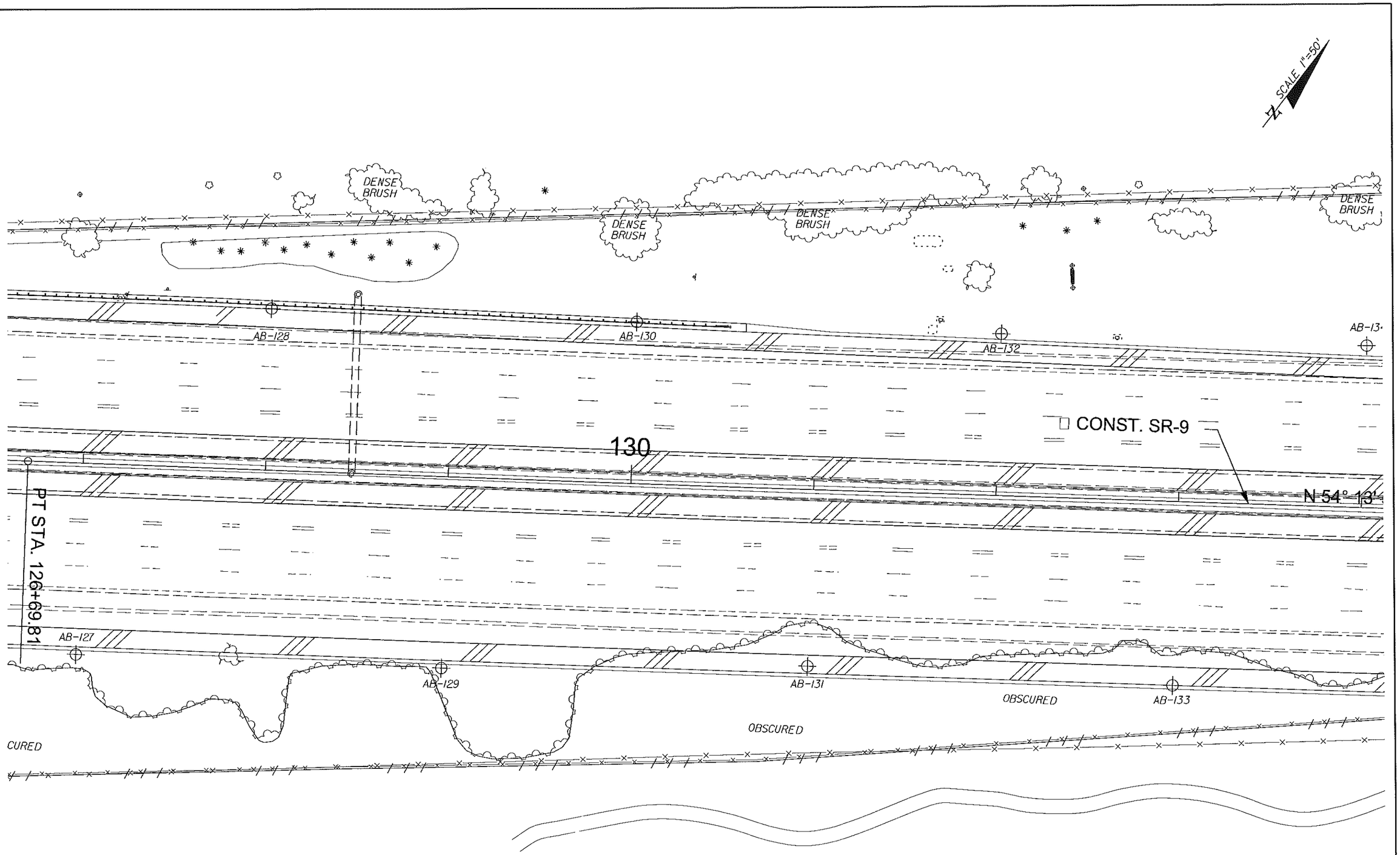

⊕ DENOTES THE APPROXIMATE BORING LOCATIONS

I-95/SR 9 EXPRESS LANES

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BORING LOCATION PLAN

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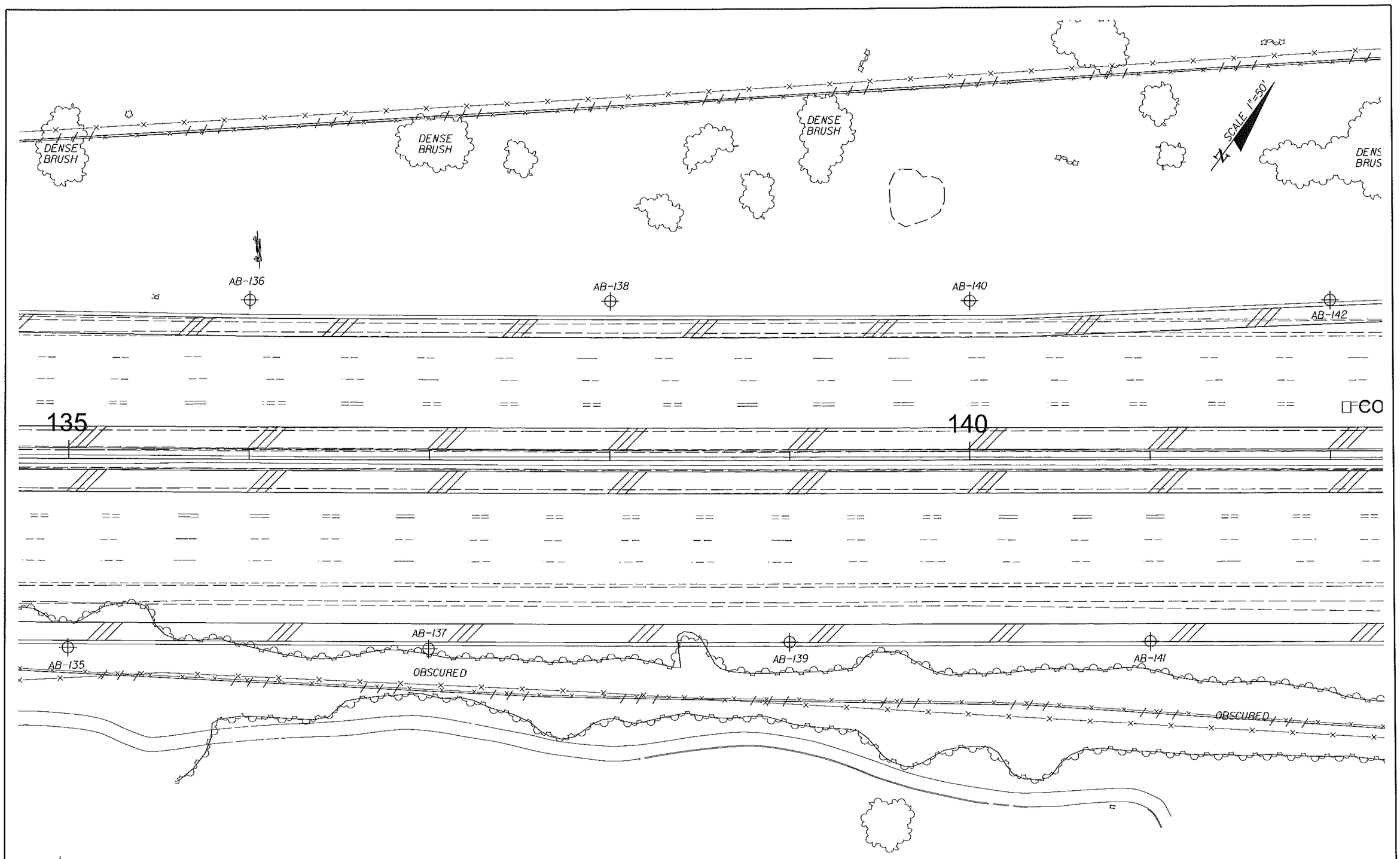

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I-95/SR 9 EXPRESS LANES

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9	MIAMI-DADE BROWARD	422796-1-52-01 422796-2-52-01

BORING LOCATION PLAN

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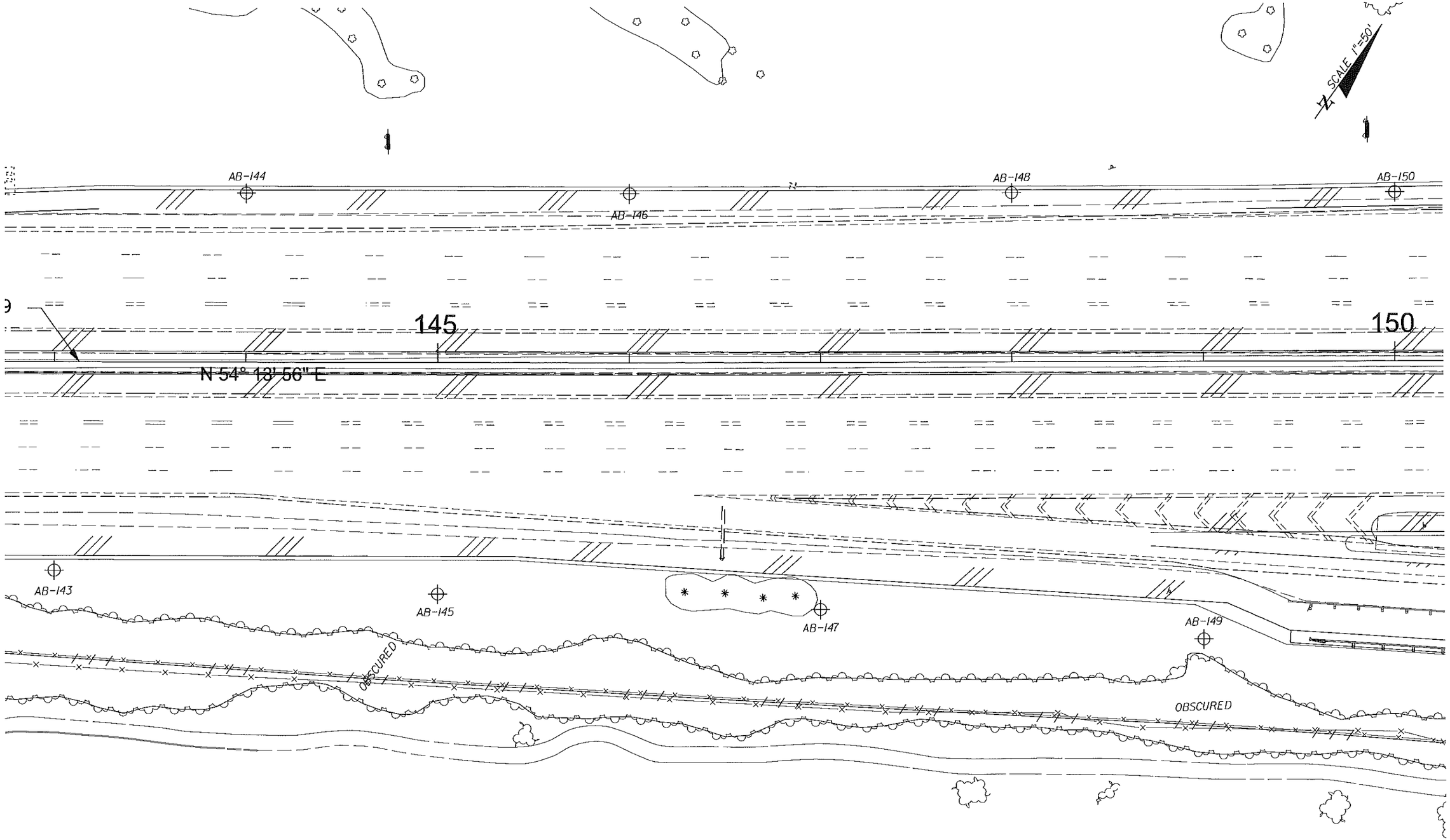

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I-95/SR 9 EXPRESS LANES

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BORING LOCATION PLAN

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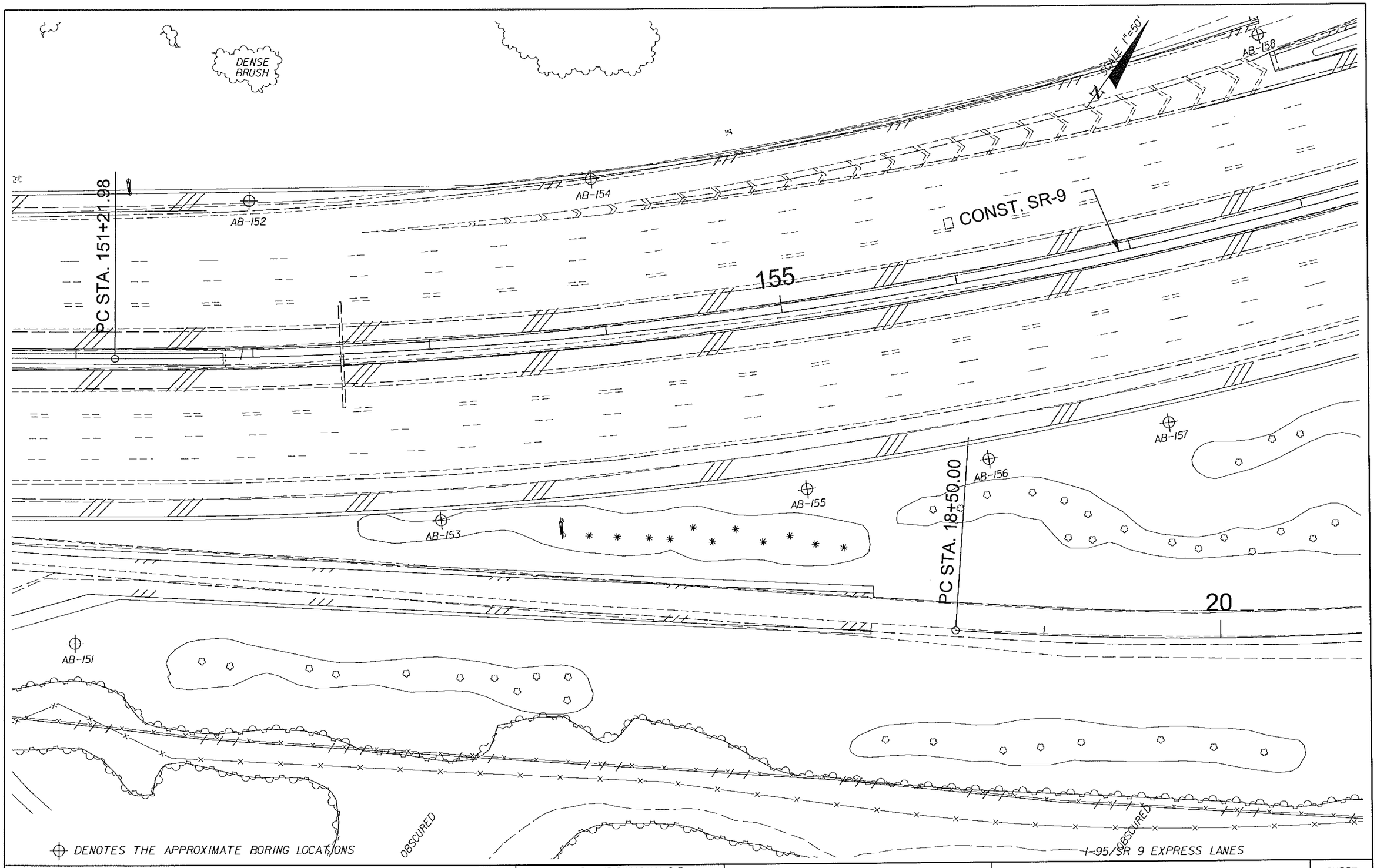

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BORING LOCATION PLAN

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SCALE 1"=50'

AB-158

AB-160

AB-164

165

160

AB-159

AB-161

AB-162

AB-163

AB-165

⊕ DENOTES THE APPROXIMATE BORING LOCATIONS

I-95/SR 9 EXPRESS LANES

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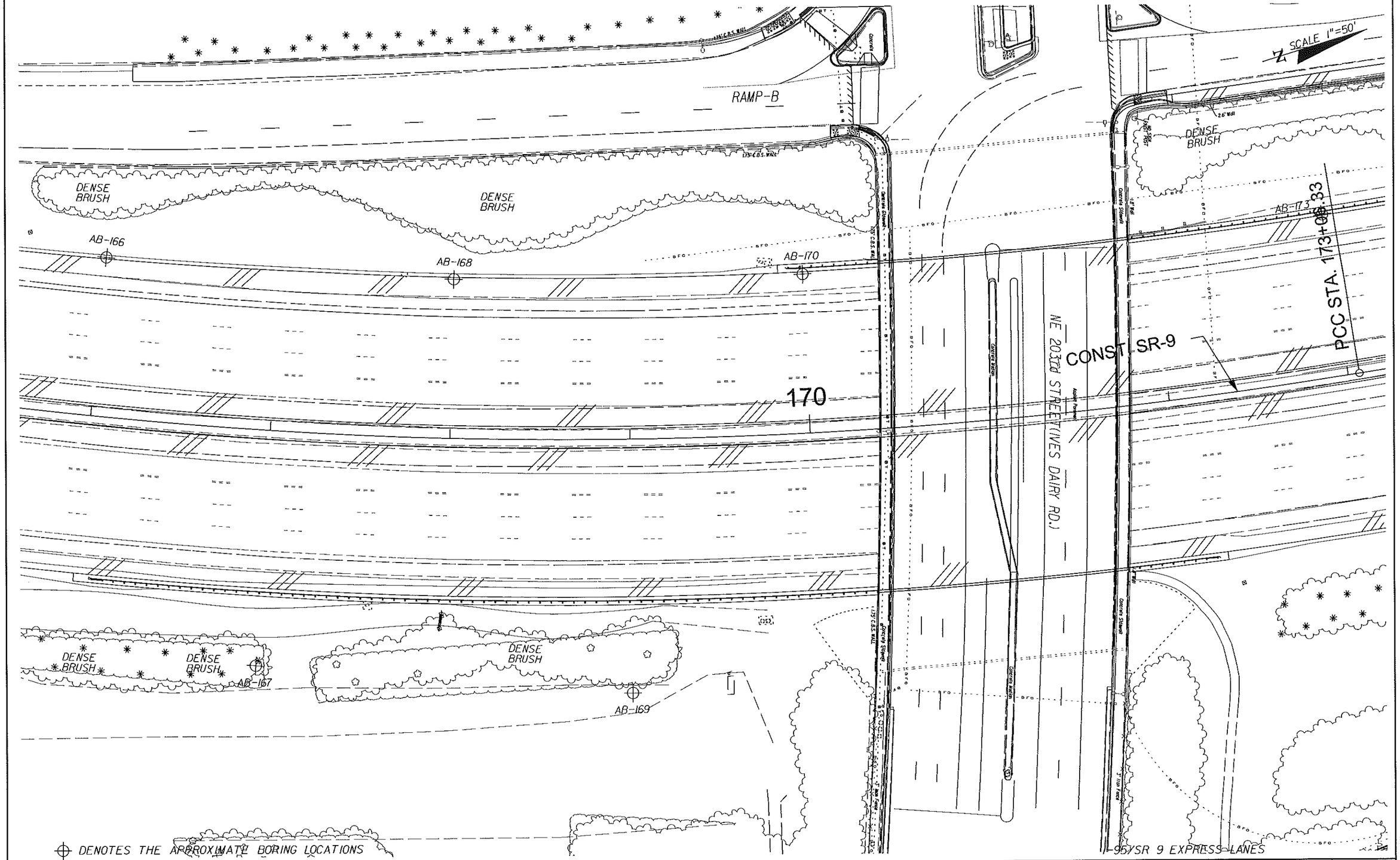

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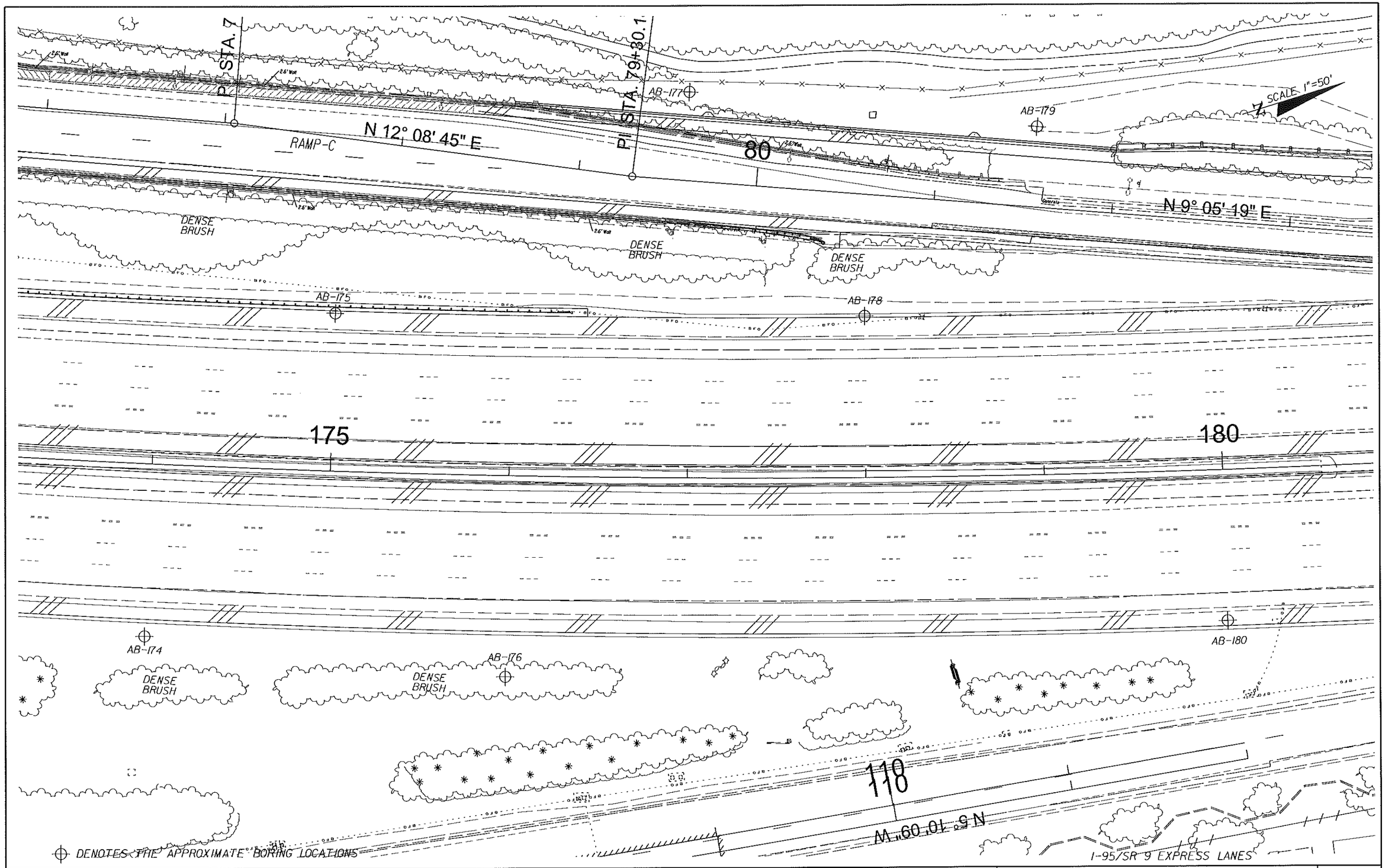

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SCALE 1"=50'

DENSE BRUSH

AB-181

AB-183

AB-185

AB-187

AB-182

AB-184

AB-186

AB-188

PI STA. 86+00.00

N 5° 43' 31" E

85

185

□ CONST. SR-9

DENOTES THE APPROXIMATE BORING LOCATIONS

I-95/SR 9 EXPRESS LANES

REVISIONS			
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BORING LOCATION PLAN

SHEET NO.

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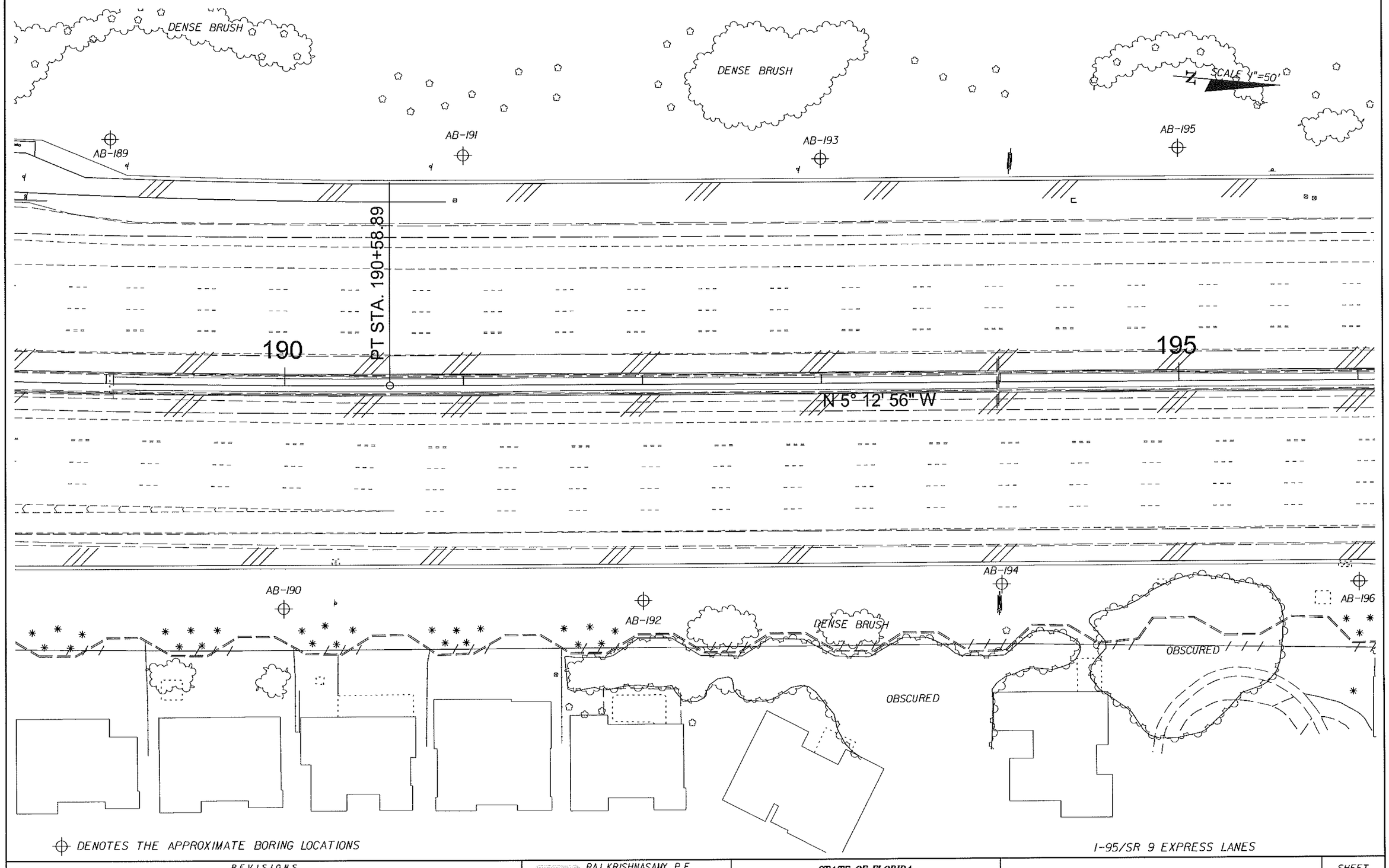

⊕ DENOTES THE APPROXIMATE BORING LOCATIONS

I-95/SR 9 EXPRESS LANES

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9	MIAMI-DADE BROWARD	422796-1-52-01 422796-2-52-01

BORING LOCATION PLAN

SHEET NO.

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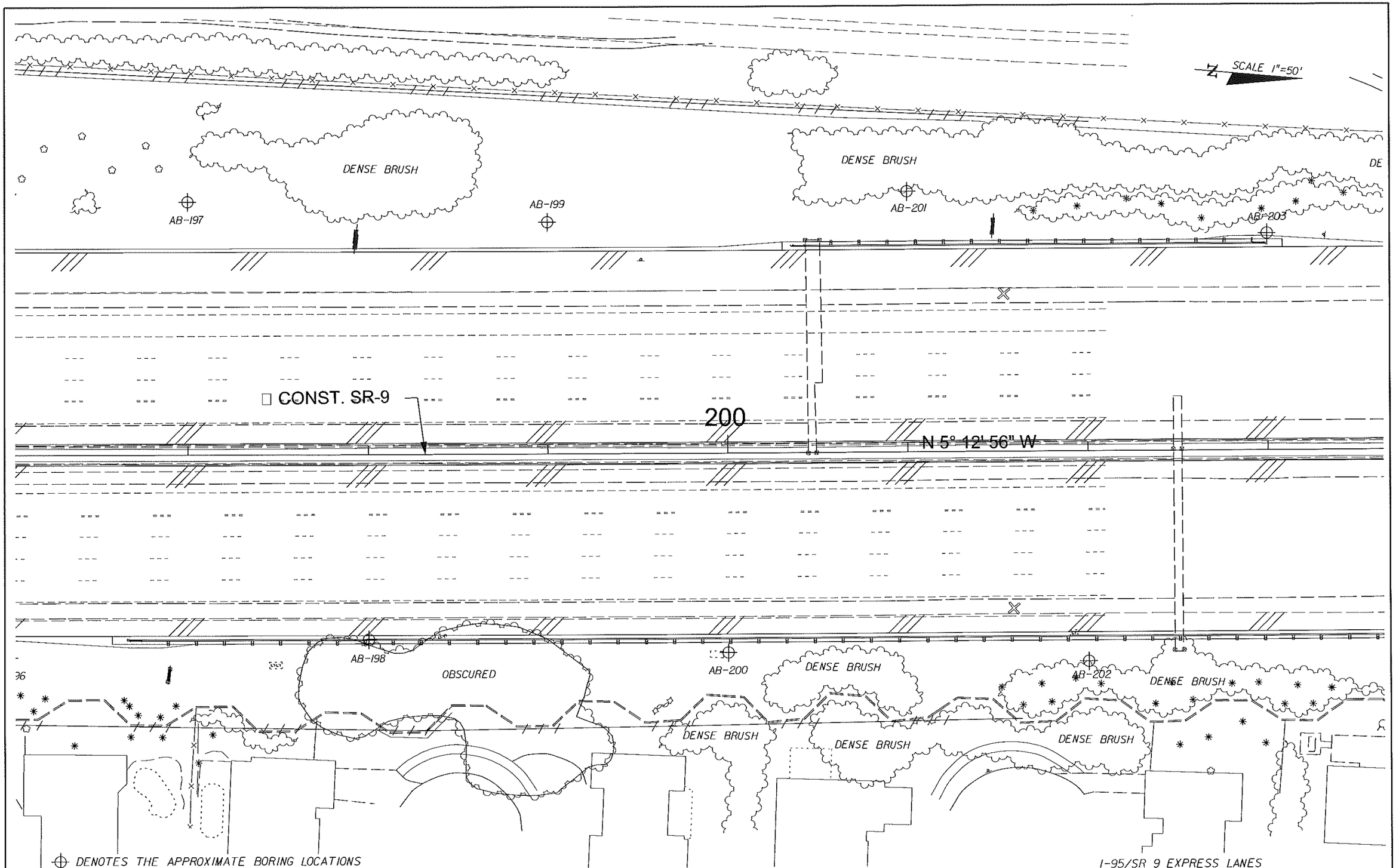

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9	MIAMI-DADE BROWARD	422796-1-52-01 422796-2-52-01

BORING LOCATION PLAN

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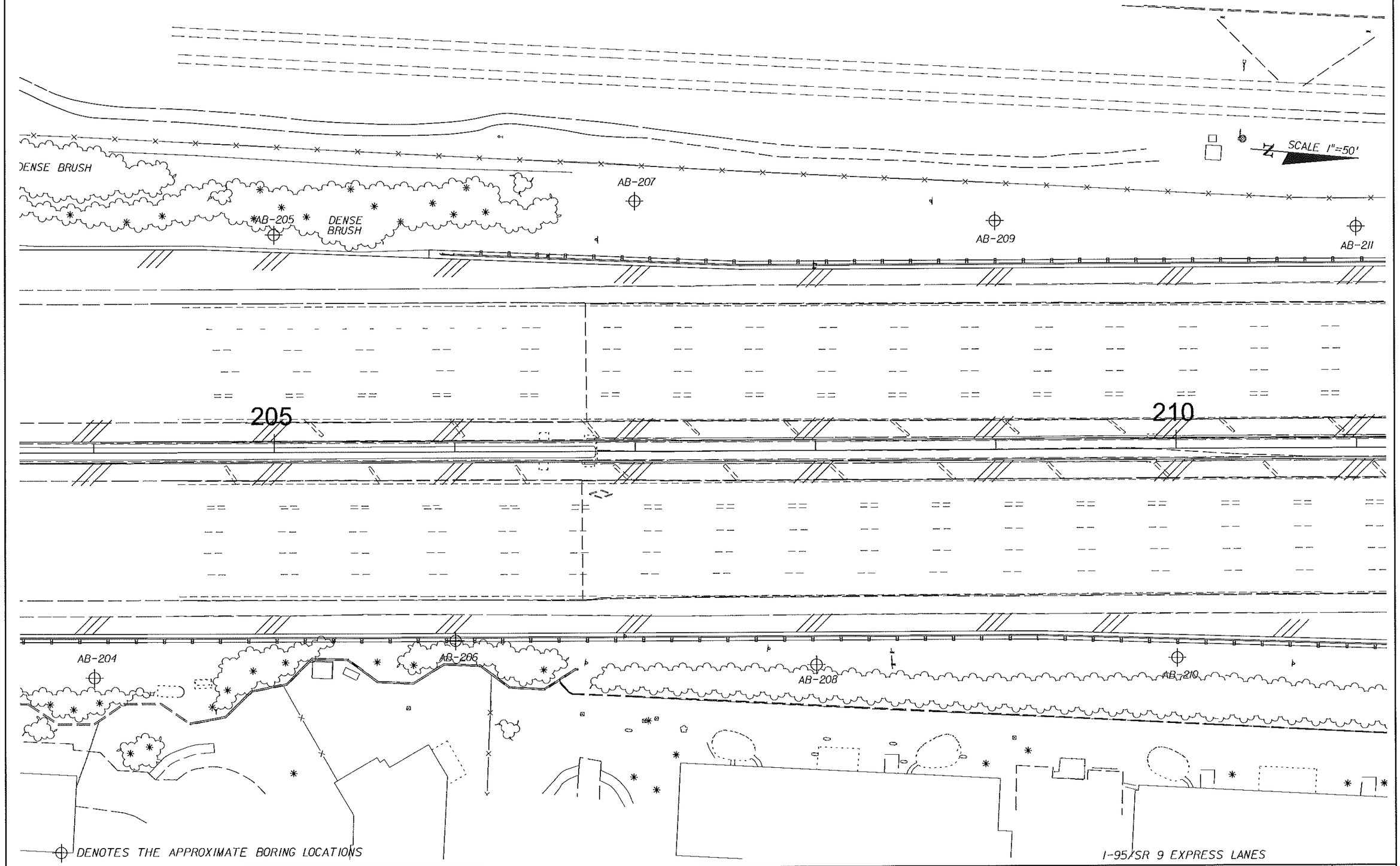

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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9	MIAMI-DADE BROWARD	422796-1-52-01 422796-2-52-01

BORING LOCATION PLAN

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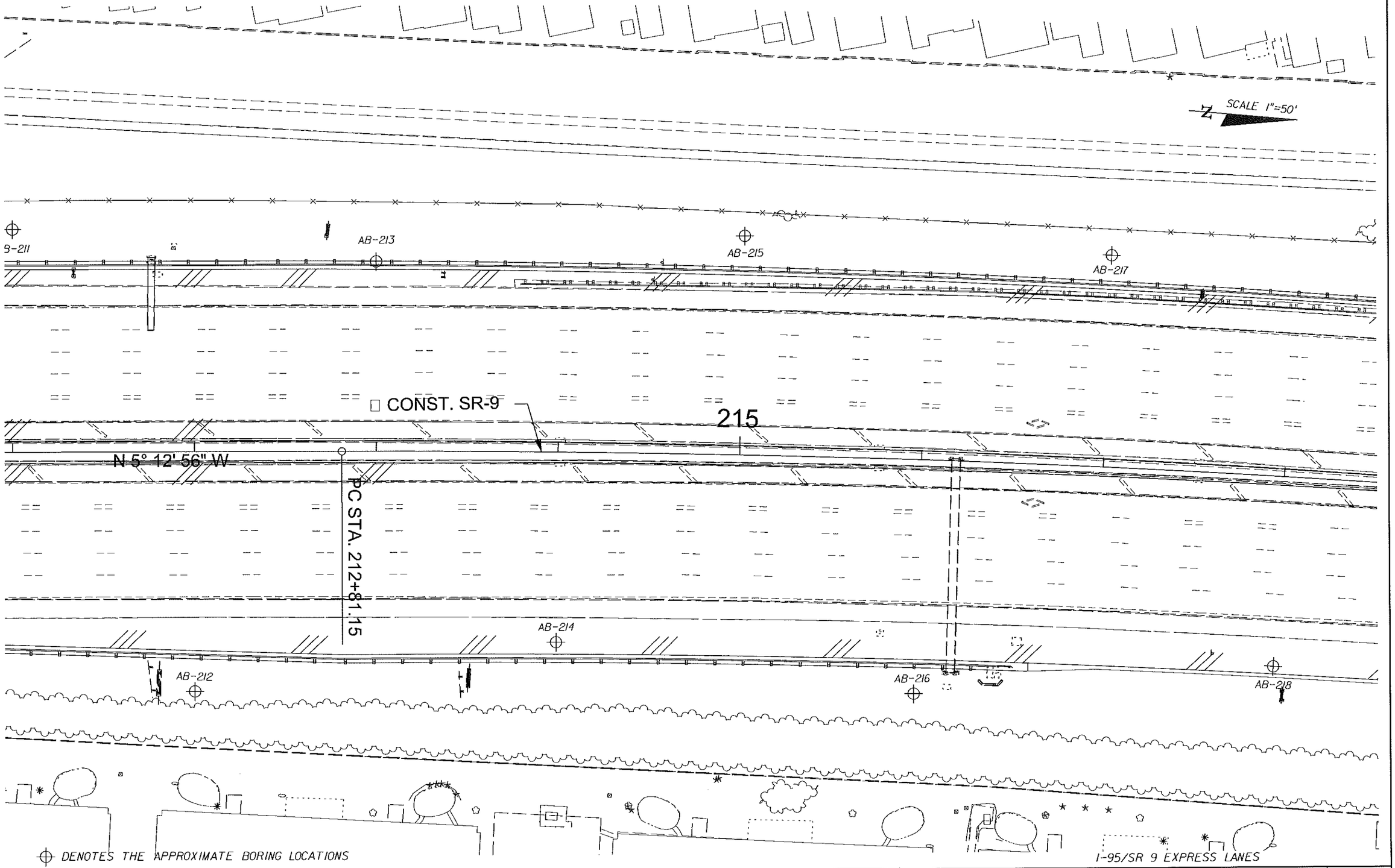

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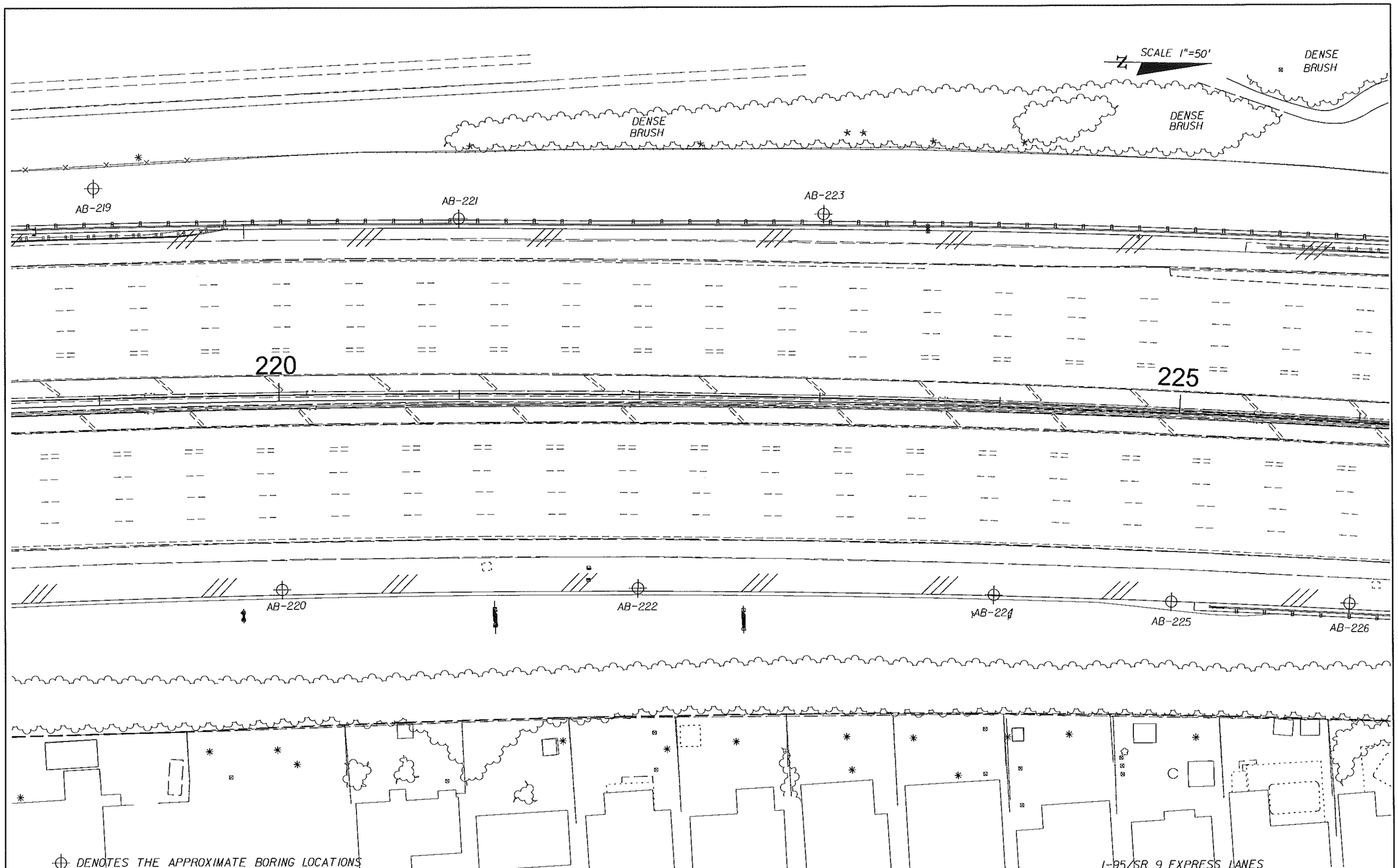

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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
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BORING LOCATION PLAN

SHEET NO.

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SCALE 1"=50'

DENSE BRUSH

DENSE BRUSH

DENSE BRUSH

DENSE BRUSH

AB-227

AB-229

AB-231

AB-233

CONST. SR-9

230

N 6° 35' 14" E

PT STA. 228+90.63

AB-226

AB-228

AB-230

AB-232

OBSCURED

OBSCURED

DENOTES THE APPROXIMATE BORING LOCATIONS

I-95/SR 9 EXPRESS LANES

REVISIONS			
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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9	MIAMI-DADE BROWARD	422796-1-52-01 422796-2-52-01

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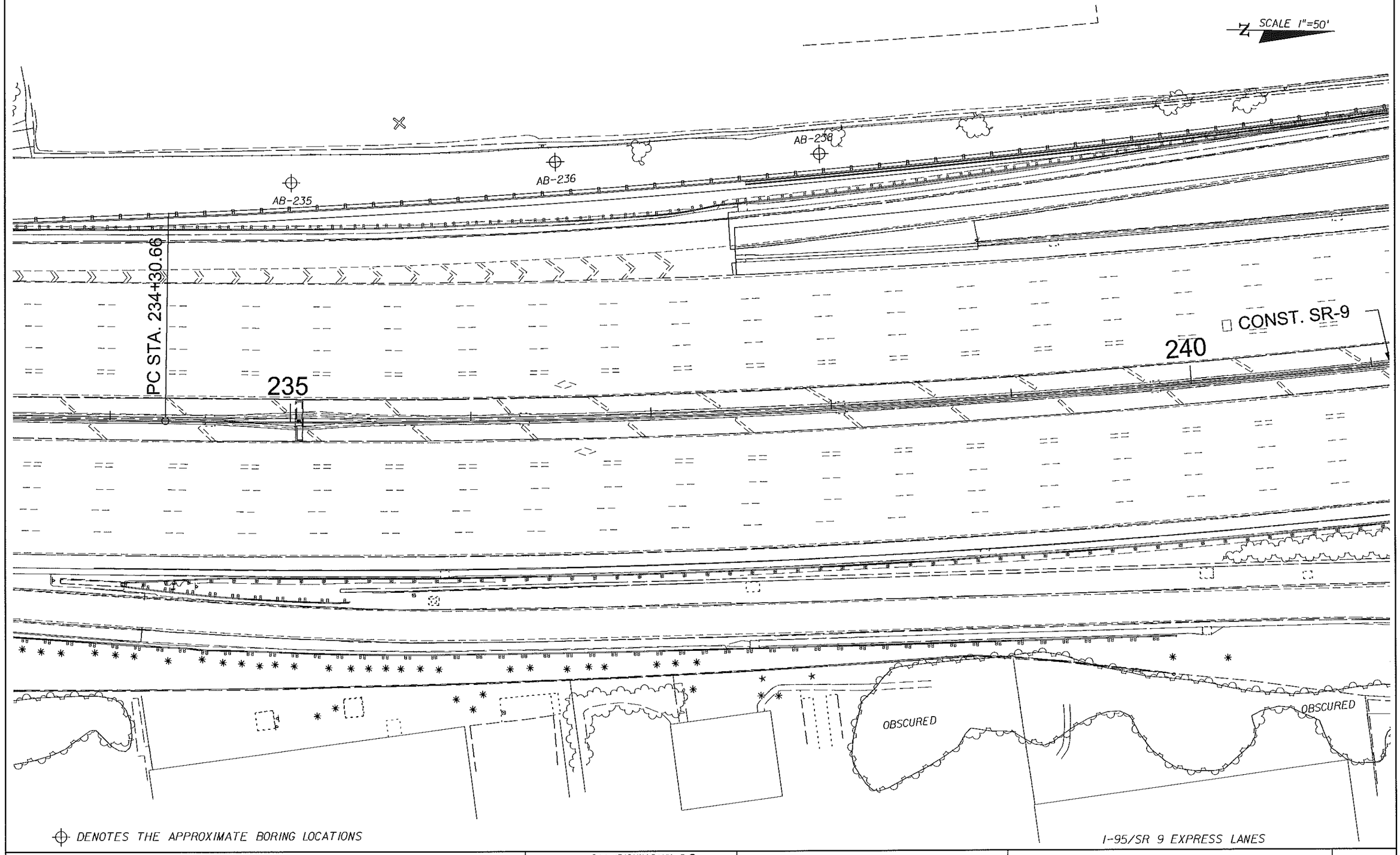

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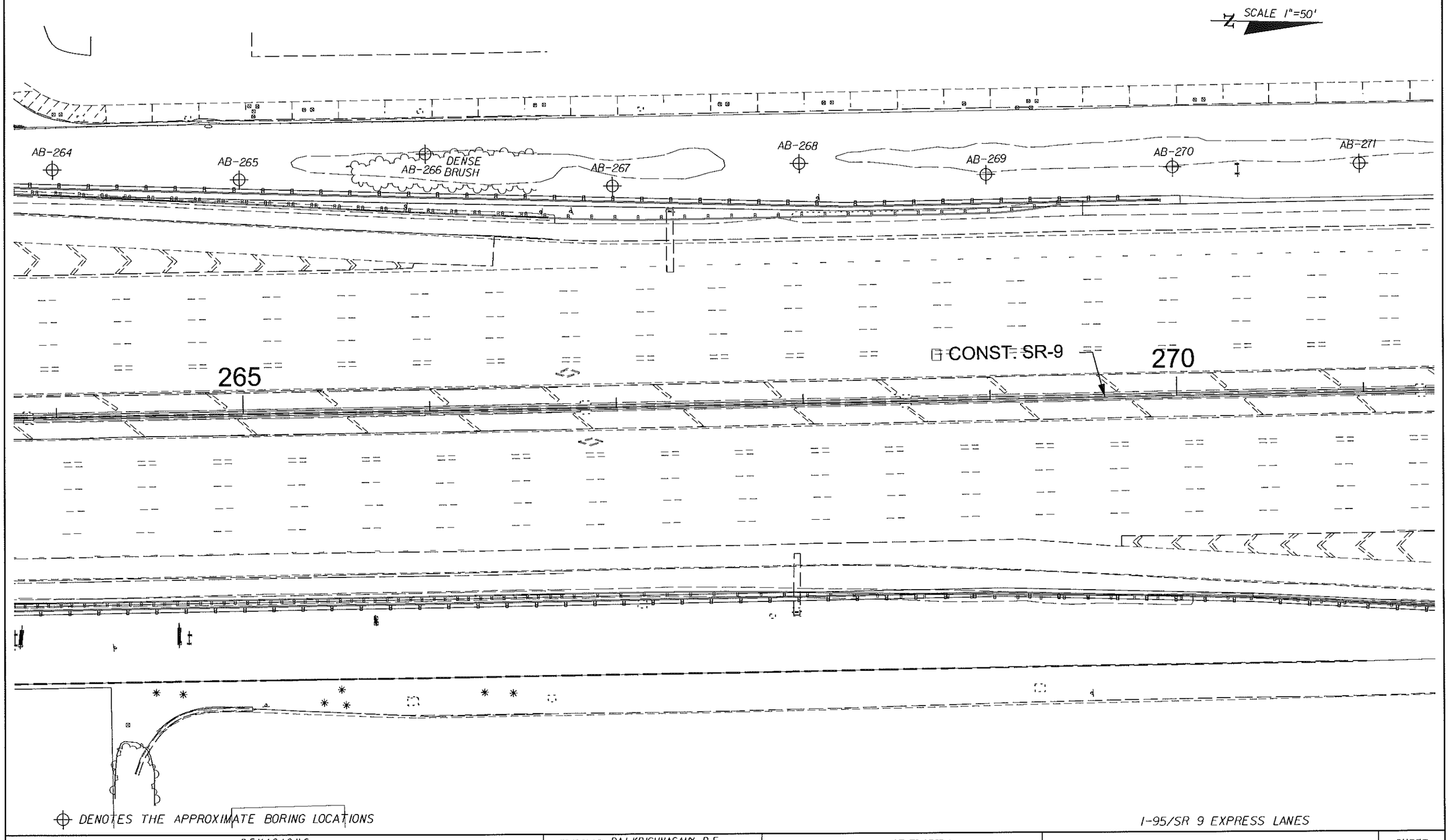

I-95/SR 9 EXPRESS LANES

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BORING LOCATION PLAN

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SCALE 1"=50'

AB-272

AB-273

AB-274

AB-276

AB-277

AB-278

275

N 2° 08' 25" W

⊕ DENOTES THE APPROXIMATE BORING LOCATIONS

I-95/SR 9 EXPRESS LANES

REVISIONS			
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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9	MIAMI-DADE BROWARD	422796-1-52-01 422796-2-52-01

BORING LOCATION PLAN

SHEET NO.

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SCALE 1"=50'

CONST. SR-9

305

PC STA. 303+76.77

AB-301

AB-302

AB-303

AB-304

AB-305

AB-306

AB-307

AB-308

⊕ DENOTES THE APPROXIMATE BORING LOCATIONS

I-95/SR 9 EXPRESS LANES

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9	MIAMI-DADE BROWARD	422796-1-52-01 422796-2-52-01

BORING LOCATION PLAN

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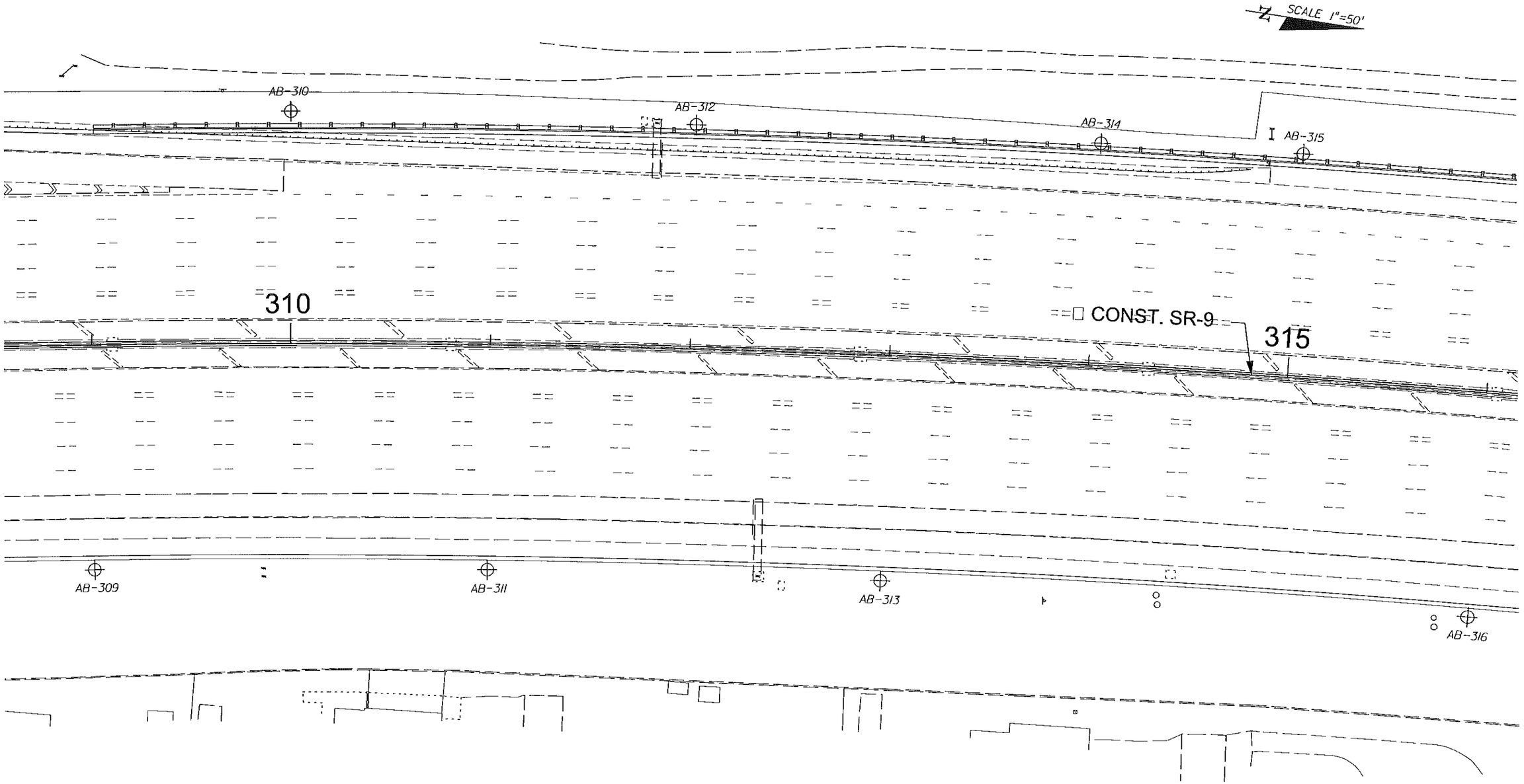

⊕ DENOTES THE APPROXIMATE BORING LOCATIONS

I-95/SR 9 EXPRESS LANES

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9	MIAMI-DADE BROWARD	422796-1-52-01 422796-2-52-01

BORING LOCATION PLAN

SHEET NO.

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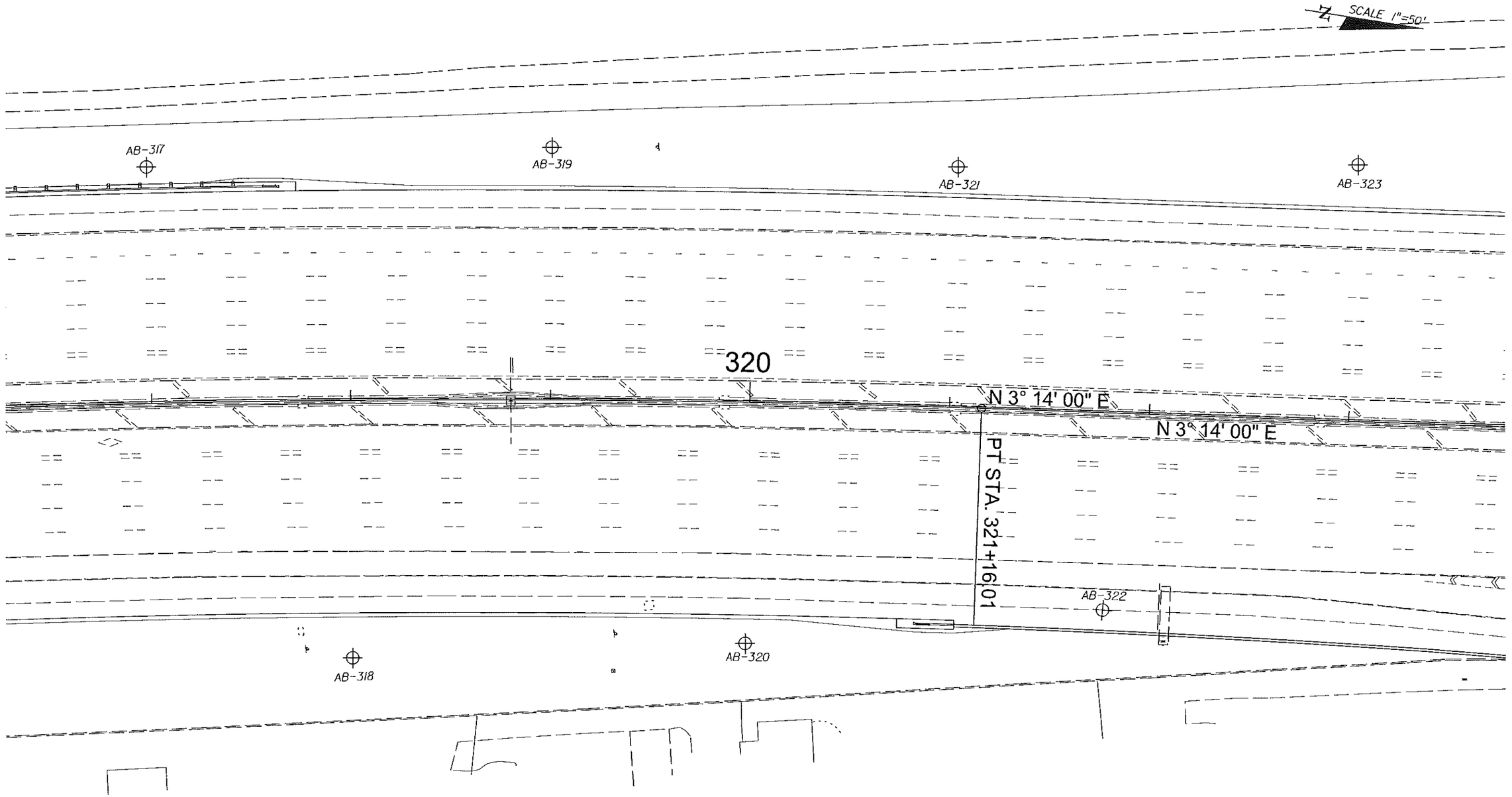

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I-95/SR 9 EXPRESS LANES

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STATE OF FLORIDA
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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9	MIAMI-DADE BROWARD	422796-1-52-01 422796-2-52-01

BORING LOCATION PLAN

SHEET NO.

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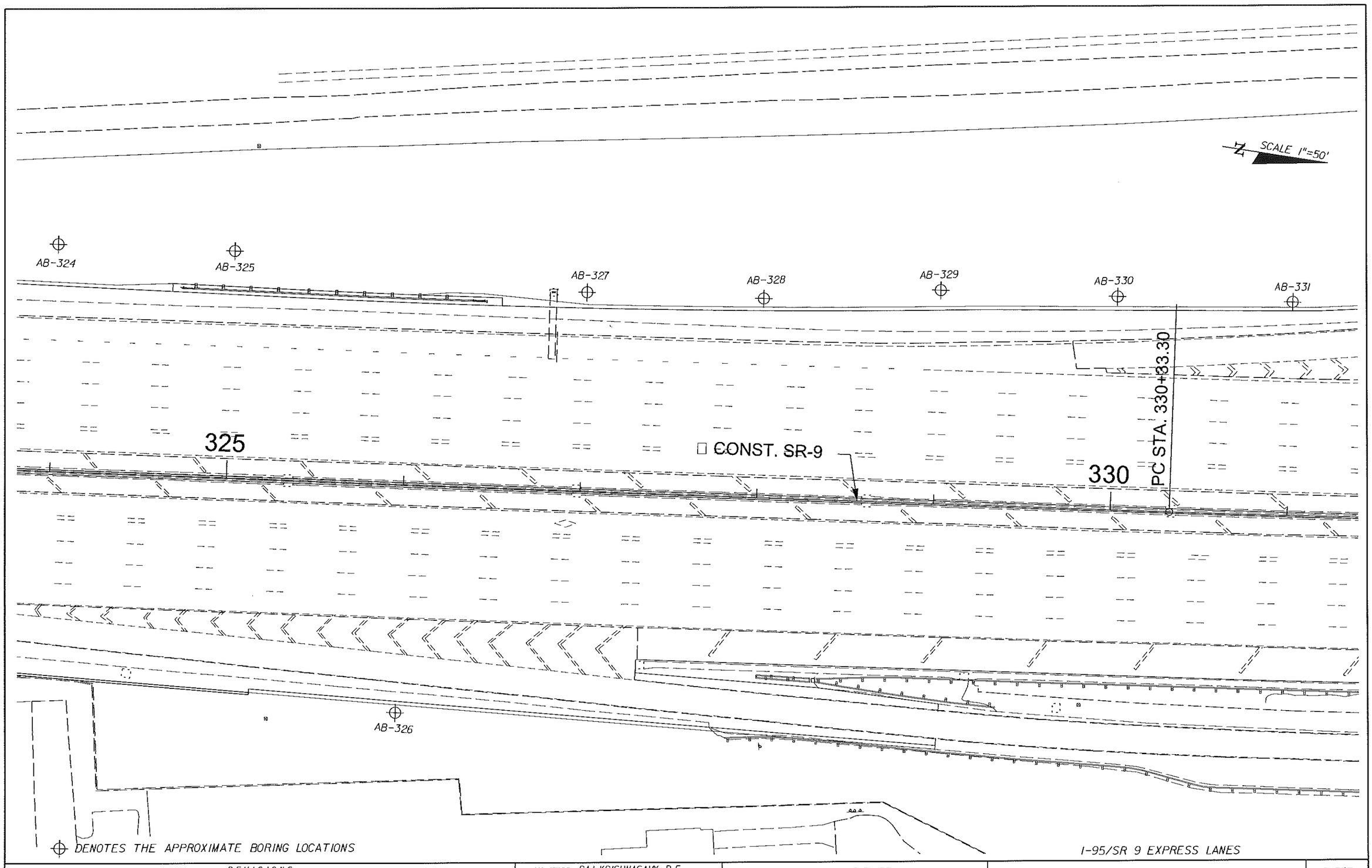

I-95/SR 9 EXPRESS LANES

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STATE OF FLORIDA
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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9	MIAMI-DADE BROWARD	422796-1-52-01 422796-2-52-01

BORING LOCATION PLAN

SHEET NO.

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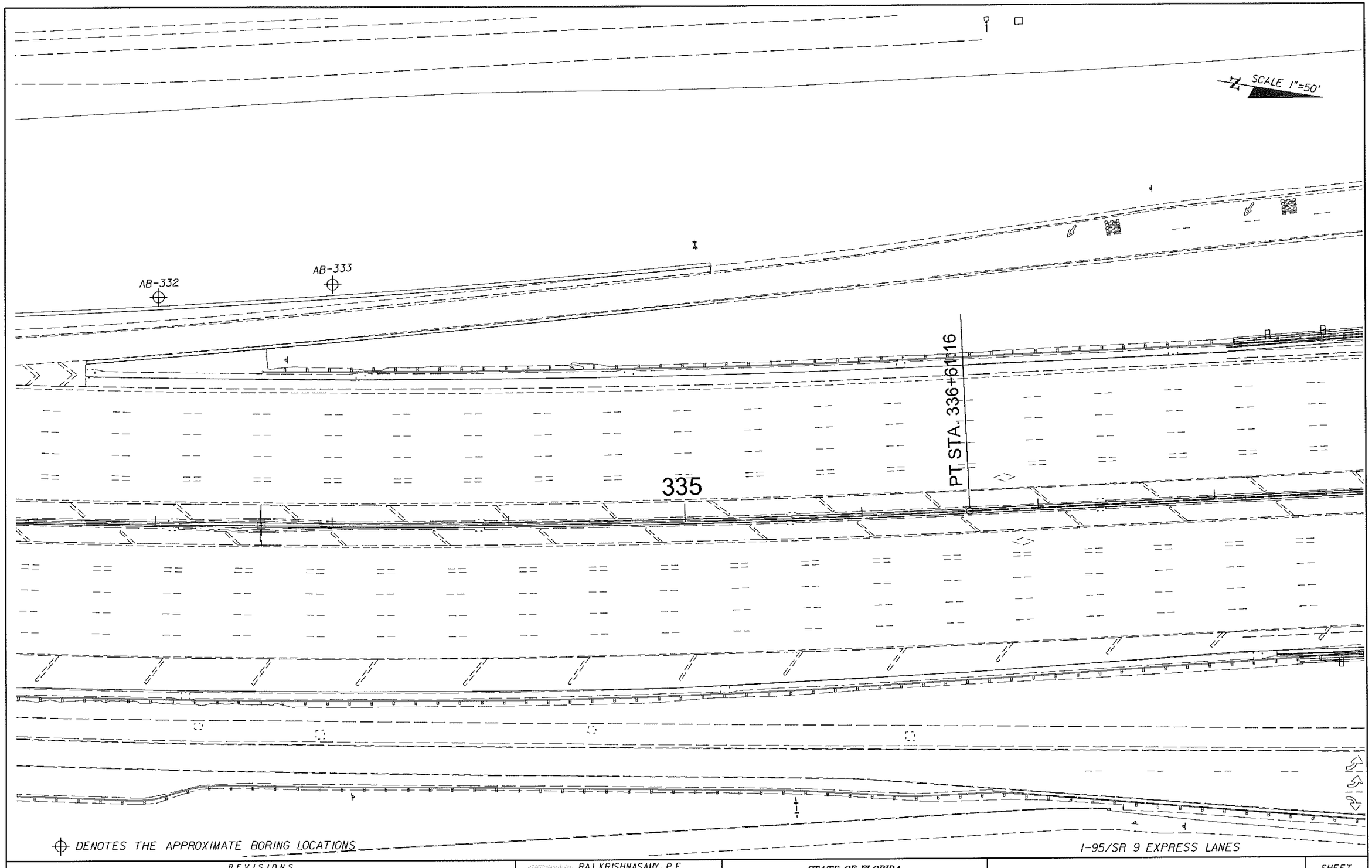

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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9	MIAMI-DADE BROWARD	422796-1-52-01 422796-2-52-01

BORING LOCATION PLAN

SHEET NO.

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SCALE 1"=50'

AB-379

AB-383

AB-384

380

N 1° 32' 30" W

PC STA. 382+08.71

CONST. SR-9

385

AB-381

I-95/SR 9 EXPRESS LANES

⊕ DENOTES THE APPROXIMATE BORING LOCATIONS

REVISIONS			
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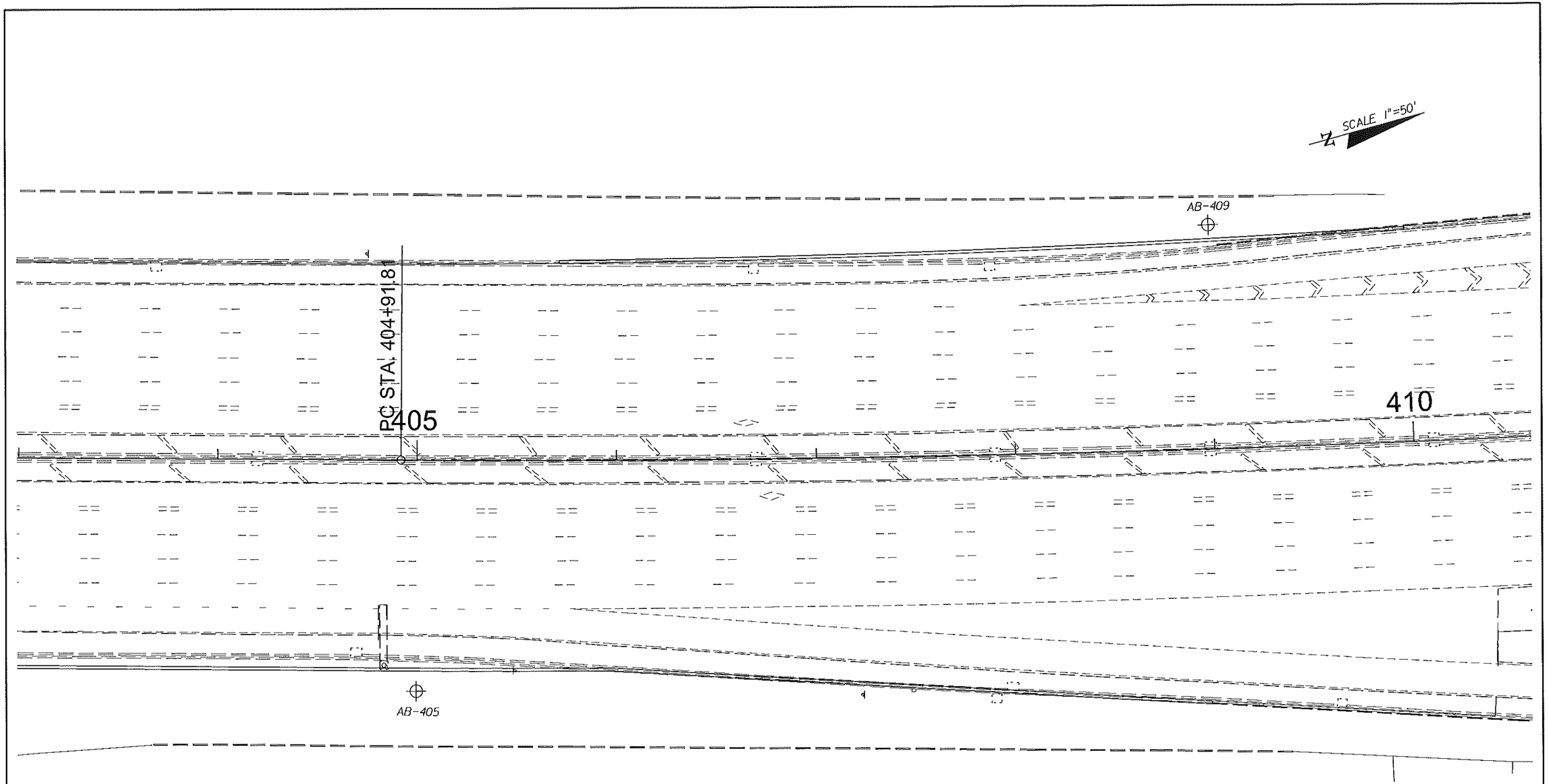

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I-95/SR 9 EXPRESS LANES

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BORING LOCATION PLAN

SHEET NO.

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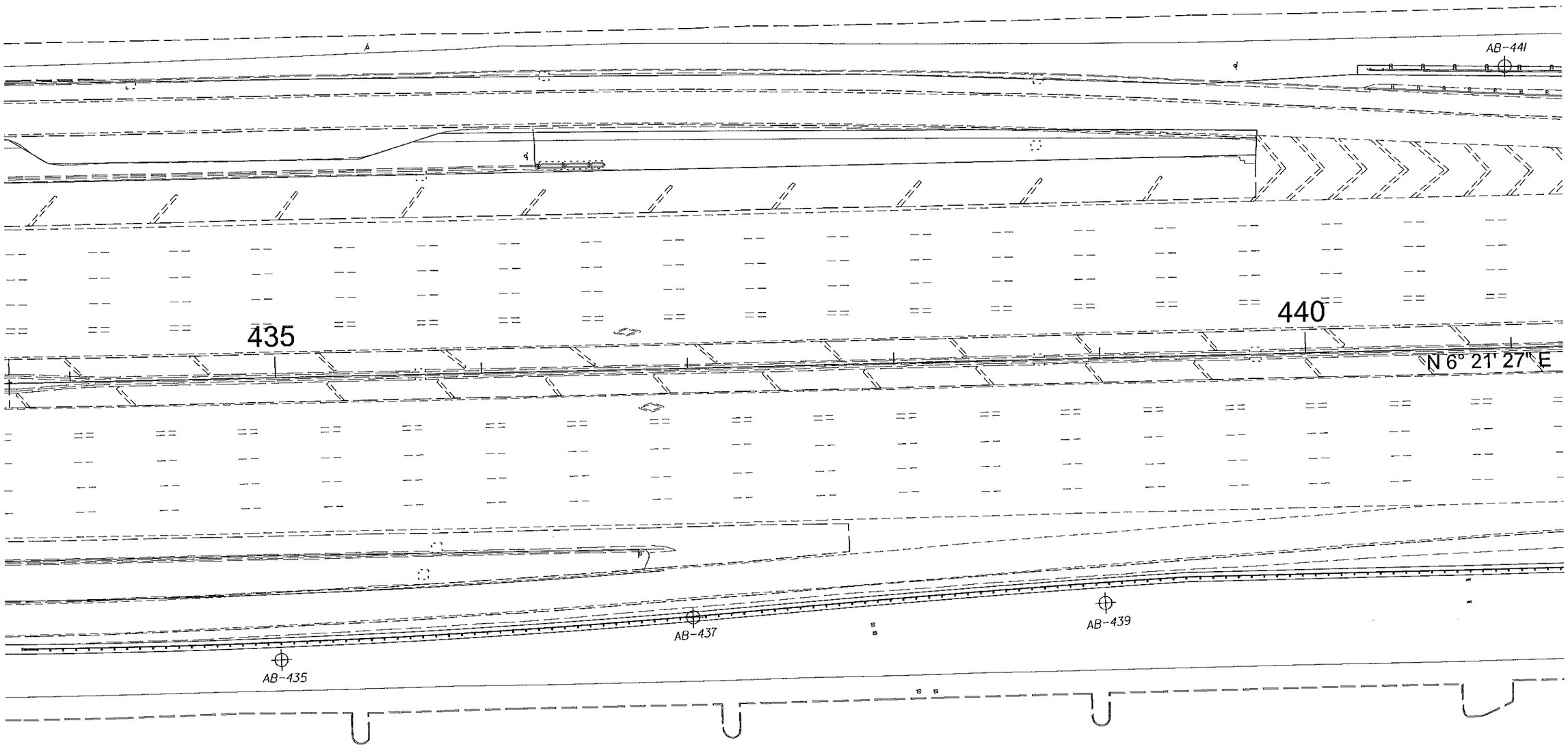
SCALE 1"=50'



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I-95/SR 9 EXPRESS LANES

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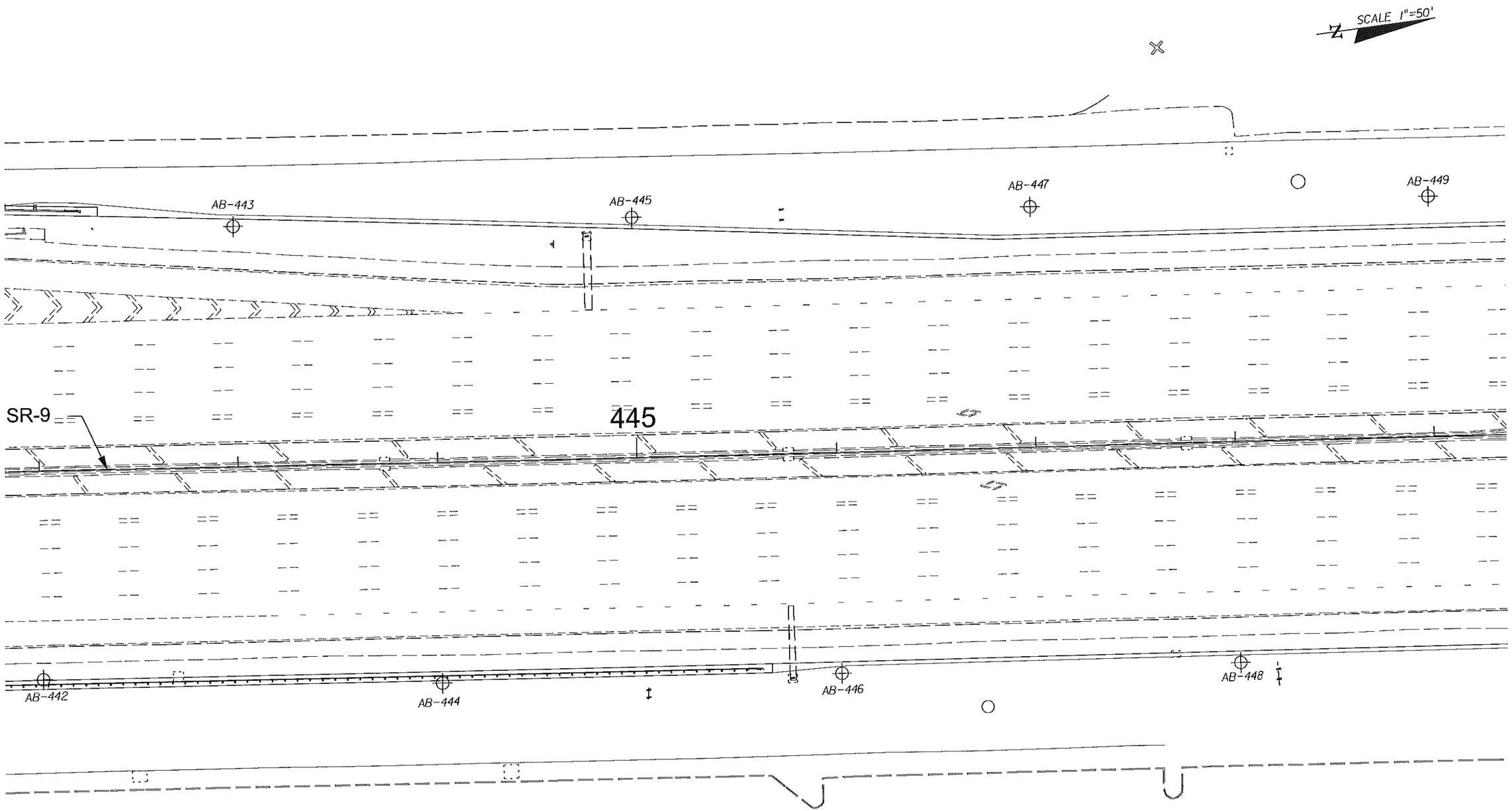
BORING LOCATION PLAN

SHEET NO.



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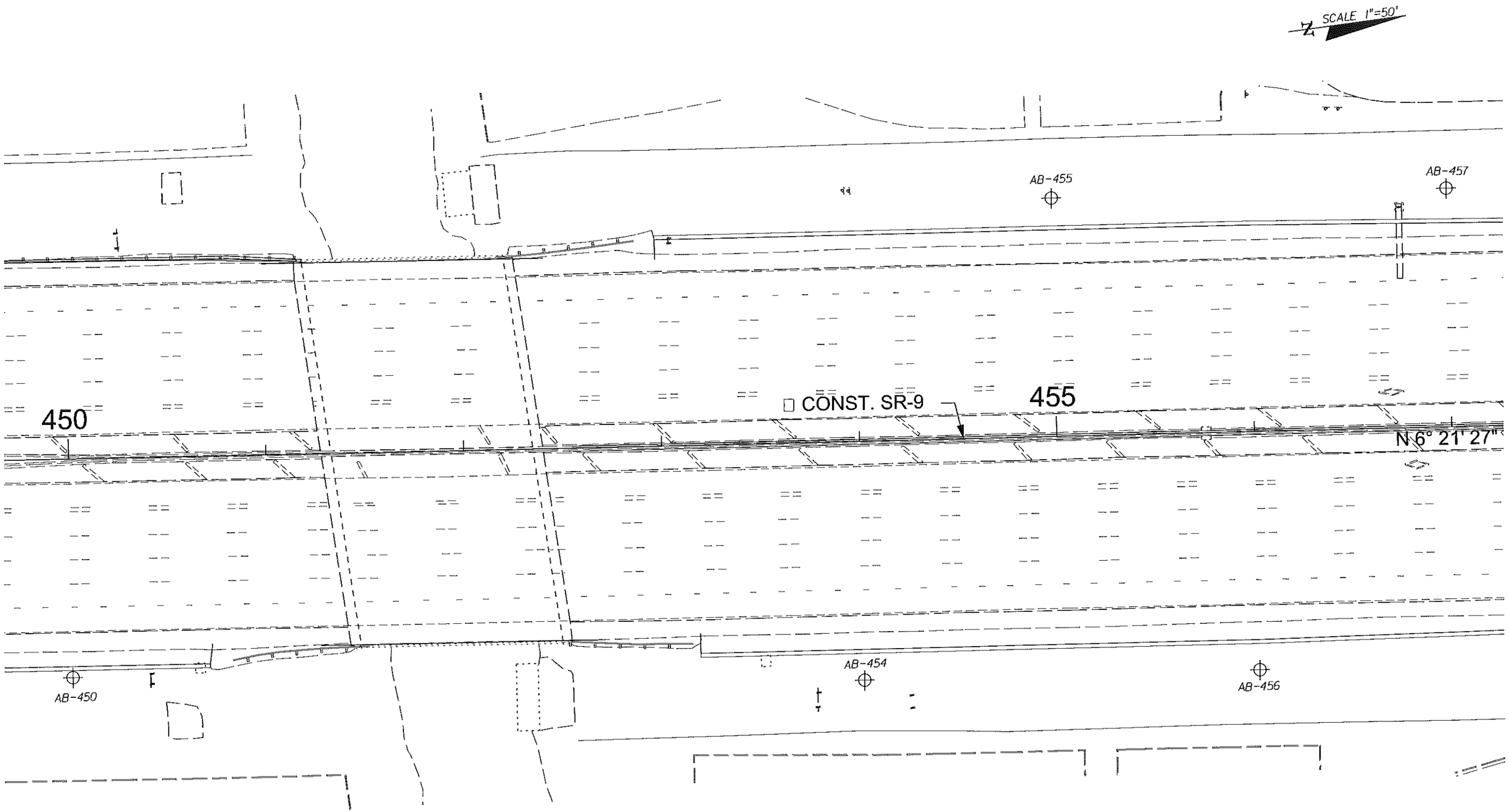

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SCALE 1"=50'

AB-459

AB-461

AB-463

460

465

AB-458

AB-460

AB-462

⊕ DENOTES THE APPROXIMATE BORING LOCATIONS

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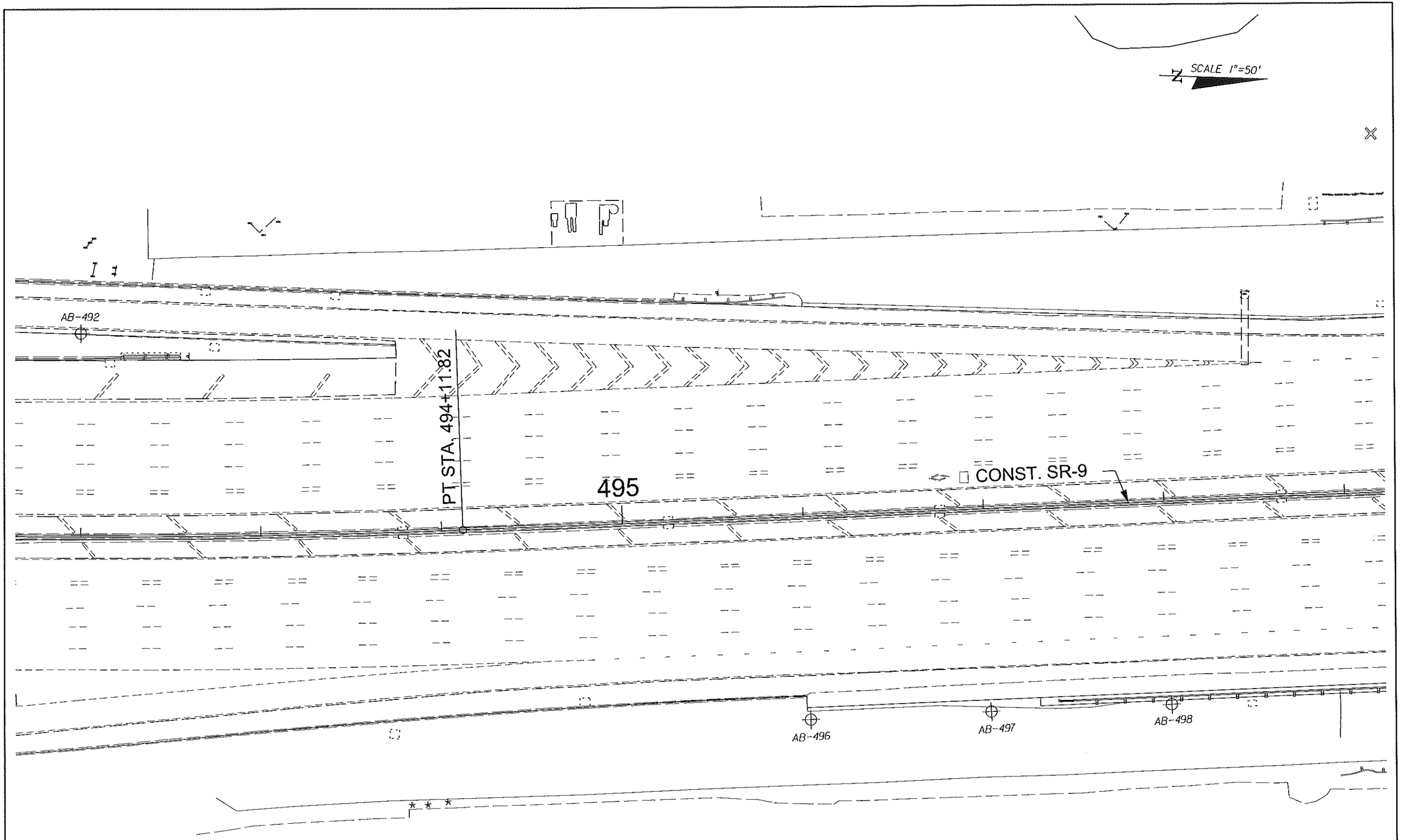

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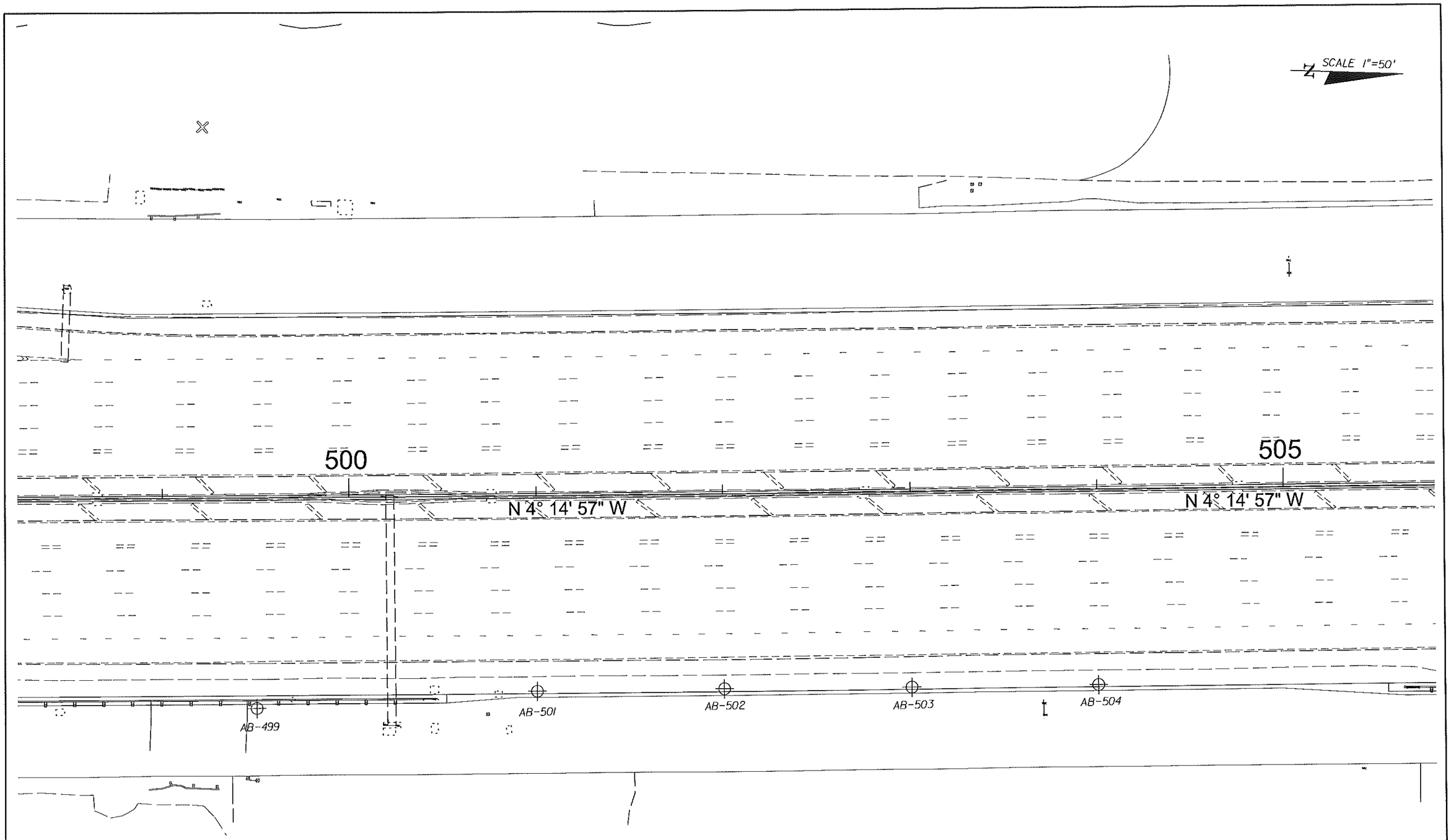

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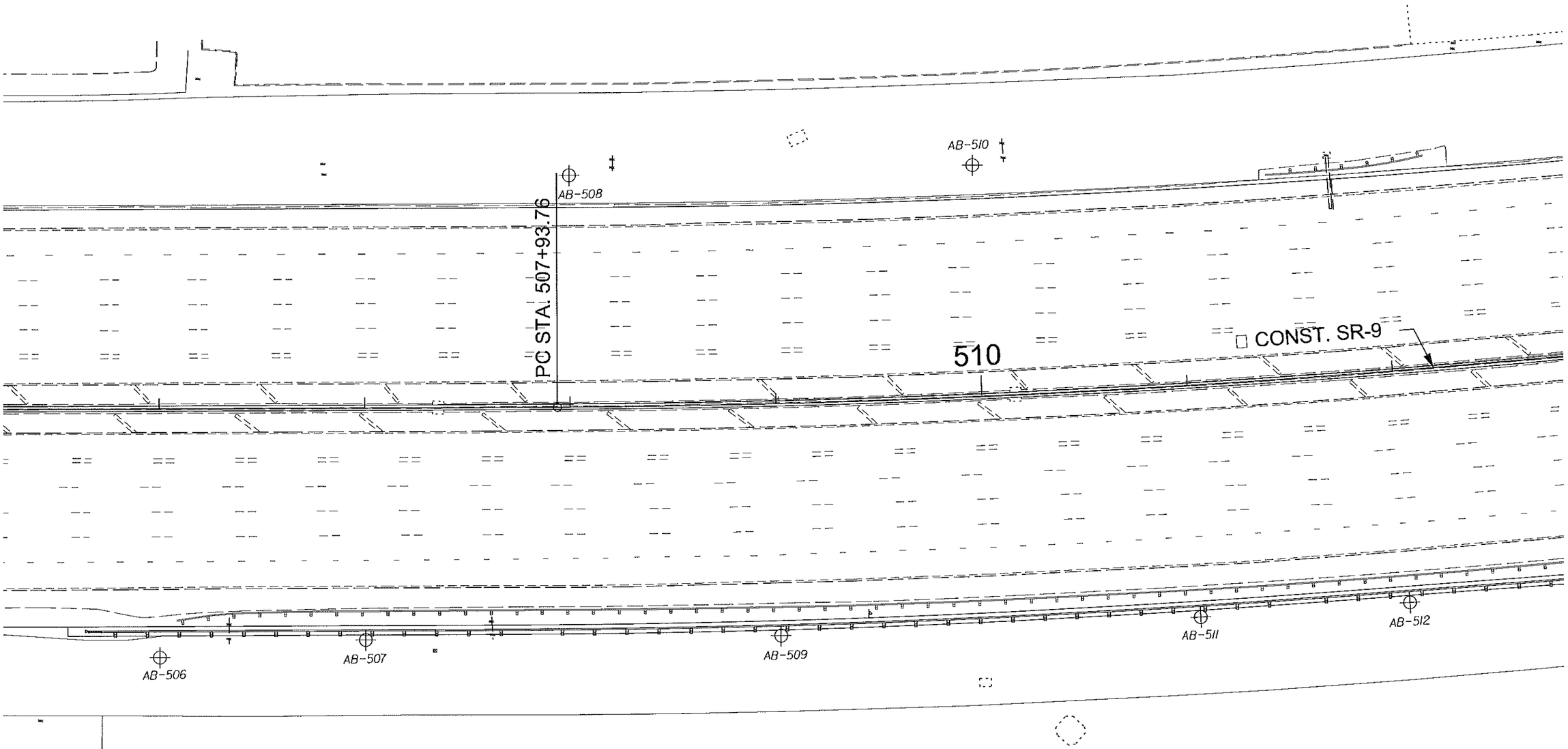
BORING LOCATION PLAN

SHEET NO.

rgonzalez 3/22/2012 1:28:48 PM J:\Tierra Documents\Projects\TSF - 2011\111-11-297.195-Broward-Express Lane (Metric)\geotech

SCALE 1"=50'



⊕ DENOTES THE APPROXIMATE BORING LOCATIONS

I-95/SR 9 EXPRESS LANES

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9	MIAMI-DADE BROWARD	422796-1-52-01 422796-2-52-01

BORING LOCATION PLAN

SHEET NO.

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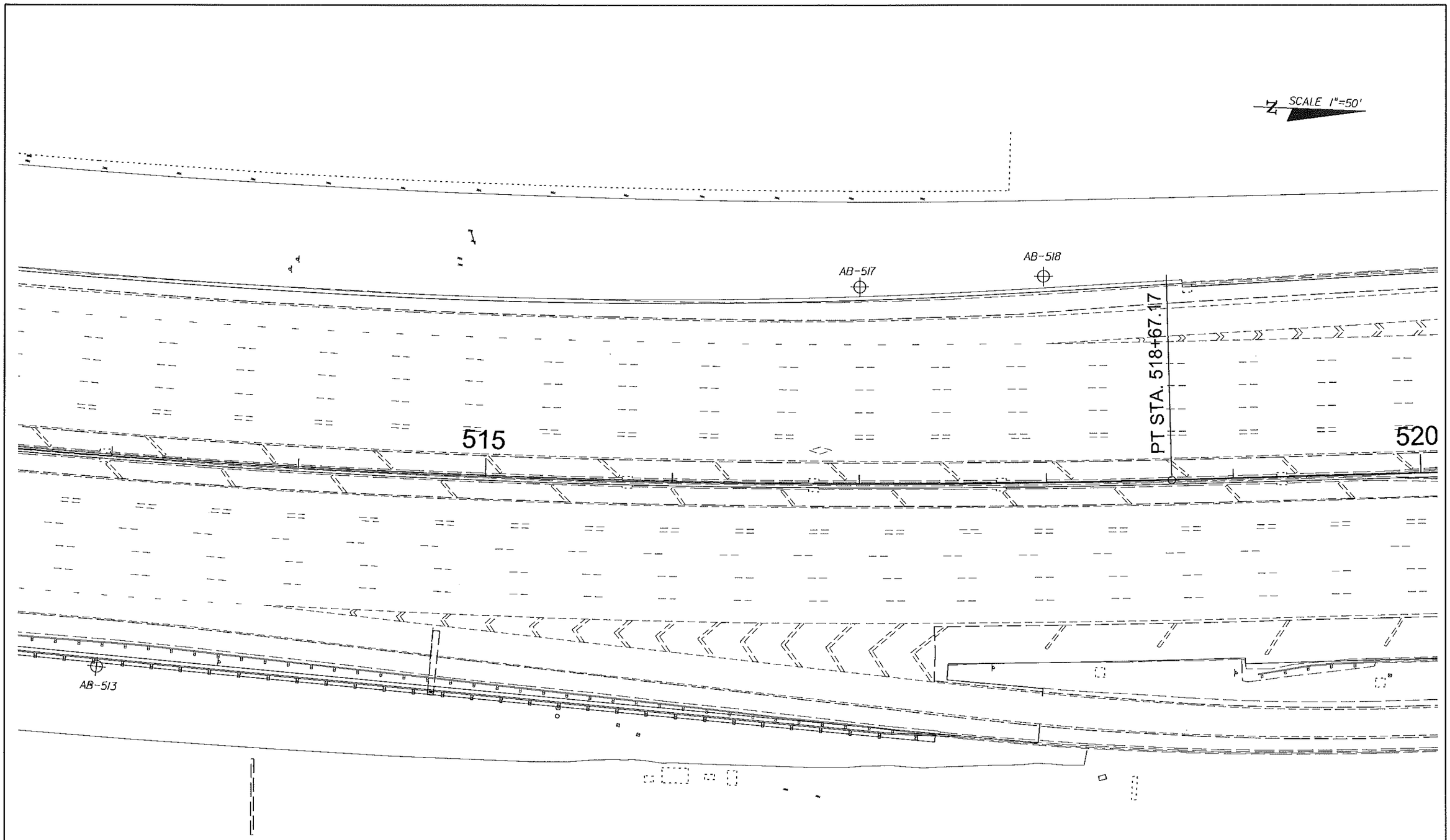


⊕ DENOTES THE APPROXIMATE BORING LOCATIONS

I-95/SR 9 EXPRESS LANES

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9	MIAMI-DADE BROWARD	422796-1-52-01 422796-2-52-01

BORING LOCATION PLAN

SHEET NO.

ngonzalez 3/22/2012 1:29:33 PM J:\Tierra Documents\Projects\TSF - 2011\111-11-297.195-Broward-Express Lane (Metric)\geotech

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

FINANCIAL PROJECT ID : 422796-1-52-01, 4229769-2-52-01

PROJECT NAME: I-95/SR 9 EXPRESS LANES IN MIAMI-DADE AND BROWARD COUNTIES.

CROSS SECTION SOIL SURVEY FOR DESIGN OF ROADS

DATE OF SURVEY: FEBRUARY-MARCH, 2012
SURVEY MADE BY: TIERRA SOUTH FLORIDA, INC.
SUBMITTED BY: TIERRA SOUTH FLORIDA, INC.

DISTRICT: VI AND IV
ROAD NO.: SR 9
COUNTY: MIAMI-DADE AND BROWARD

SURVEY BEGINS STA. 20+00.00 SURVEY ENDS STA. 540+00.00

	ORGANIC CONTENT			SIEVE ANALYSIS RESULTS PERCENT PASS						ATTERBERG LIMITS (%)					CORROSION TEST RESULTS				
STRATUM NO.	NO. OF TESTS	% ORGANIC	MOISTURE CONTENT(%)	NO. OF TESTS	10 MESH	40 MESH	60 MESH	100 MESH	200 MESH	NO. OF TESTS	LIQUID LIMIT	PLASTIC INDEX	AASHTO GROUP	DESCRIPTION	NO. OF TESTS	RESISTIVITY ohms cm	CHLORIDE ppm	SULFATES ppm	pH
1	-	-	-	-	-	-	-	-	-	-	-	-	A-8	TOPSOIL	-	-	-	-	-
2	-	-	7-10	2	34-60	29-49	22-36	9-22	6-17	-	-	-	A-1-a/A-1-b	BROWN TO LIGHT BROWN LIMEROCKS WITH SAND	1	19,000	30	<4.8	8.5
3	-	-	6-22	4	79-100	66-91	34-56	10-18	1-10	-	-	-	A-3	LIGHT BROWN TO GRAY SAND, OCCASIONALLY WITH LIMEROCKS	2	12,000-16,000	30-45	<4.8	8.3-8.6
4	-	-	12-16	2	63-73	57-61	46-48	24-36	15-31	2	NP	NP	A-2-4	LIGHT BROWN SILTY SAND, MOSTLY WITH LIMESTONE FRAGMENTS	1	14,000	30	<4.8	8.5
5	-	-	-	-	-	-	-	-	-	-	-	-	-	LIGHT BROWN SANDY LIMESTONE	-	-	-	-	-
6	-	-	41	1	100	94	89	84	80	1	NP	NP	A-4	DARK BROWN SILT	-	-	-	-	-
7	2	17.4-29.0	66-215	1	99	77	55	33	26	-	-	-	A-8	DARK ORGANIC SOIL/MUCK	-	-	-	-	-

EMBANKMENT AND SUBGRADE MATERIAL

STRATA BOUNDARIES ARE APPROXIMATE. MAKE FINAL CHECK AFTER GRADING.

∇ - ENCOUNTERED GROUNDWATER LEVEL
GNE - GROUNDWATER NOT ENCOUNTERED.
NP - NON PLASTIC

1) STRATUM 1 CONSISTS OF TOPSOIL. TOPSOIL SHOULD BE STRIPPED IN ACCORDANCE WITH THE FDOT STANDARD SPECIFICATIONS SECTION 110 CLEARING AND GRUBBING.

2) STRATA 2 AND 3 CONSIST OF SELECT MATERIAL (A-1-a/ A-1-b/ A-3). THESE MATERIALS APPEAR TO BE SUITABLE TO BE USED IN SUBGRADE AND EMBANKMENT AND SHOULD BE UTILIZED ACCORDING TO STANDARD INDEX 505.

3) STRATUM 4 CONSIST OF SELECT MATERIAL (A-2-4). THIS MATERIAL IS LIKELY TO RETAIN EXCESSIVE MOISTURE AND MAY BE DIFFICULT TO DRY AND COMPACT. IT SHOULD BE USED IN THE EMBANKMENT ABOVE THE WATER LEVEL EXISTING AT THE TIME OF CONSTRUCTION.

4) STRATUM 5 CONSISTS OF LIMESTONE. THIS MATERIAL CAN BE USED AS SELECT MATERIAL AS LONG AS THE GRADATION SATISFIES THE FDOT STANDARD SPECIFICATION REQUIREMENTS.

5) SOILS CLASSIFIED UNDER STRATUM 6 CONSIST OF SILTY MATERIAL (A-4). THIS MATERIAL WAS ENCOUNTERED IN THE BORING AB-73 (STATION 73+00). SINCE THE MATERIAL WAS ENCOUNTERED ABOUT 4 FEET BELOW THE PROPOSED PAVEMENT, IT CAN BE LEFT IN PLACE.

6) STRATUM 7 CONSISTS OF MUCK (A-8). THIS MATERIAL WAS ENCOUNTERED IN BORINGS AB-76 (STATION 76+00) AND AB-266 (STATION 266+00). SINCE THESE TWO BORINGS ARE LOCATED IN SWALE AREAS OUTSIDE THE ROADWAY EMBANKMENT, THEY MAY BE LEFT IN PLACE. IF THIS MATERIAL IS ENCOUNTERED AT OTHER LOCATIONS, IT SHOULD BE REMOVED AND REPLACED WITH SUITABLE MATERIAL IN ACCORDANCE WITH STANDARD INDEX 500.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

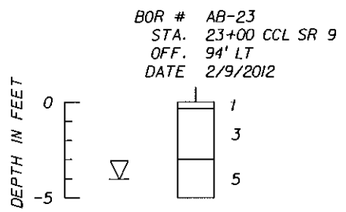
RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

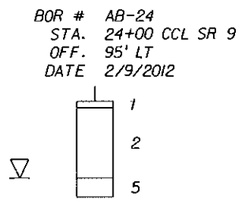
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

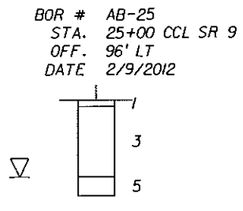
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9	MIAMI-DADE BROWARD	422976-1-52-01 422976-2-52-01

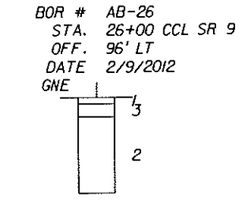
ROADWAY SOIL SURVEY

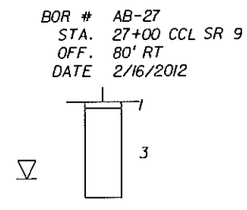
SHEET NO.

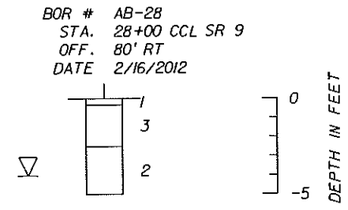


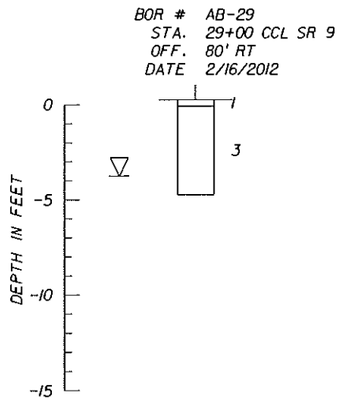


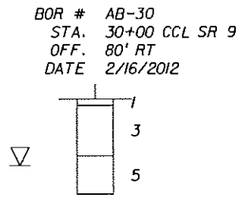


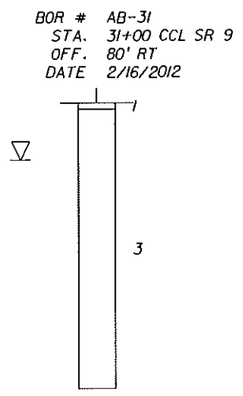


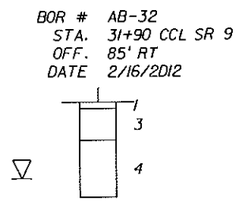


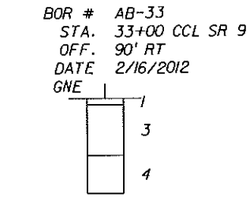


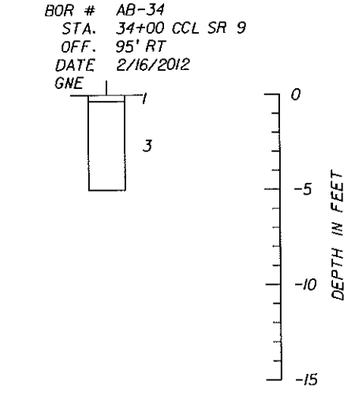


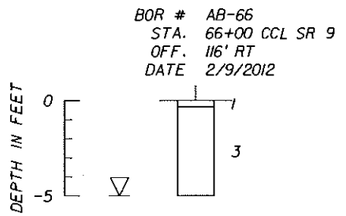


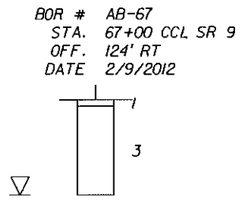


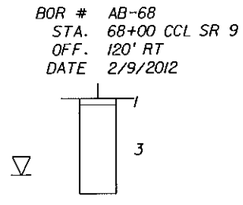


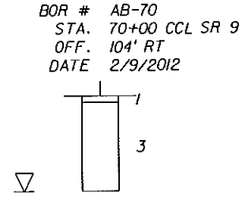


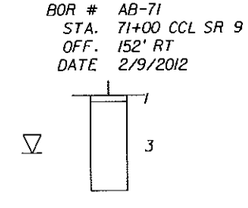


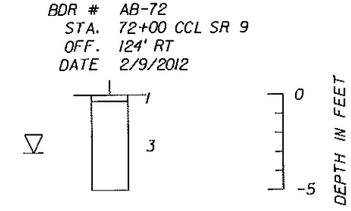


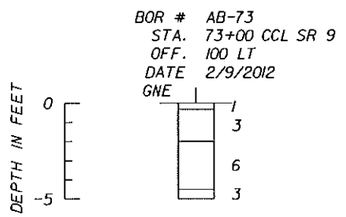


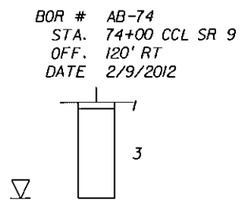


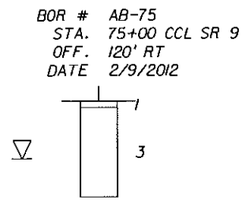


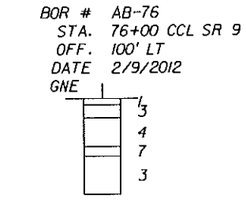


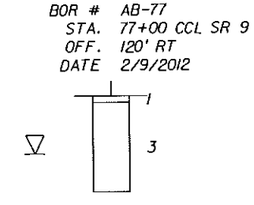


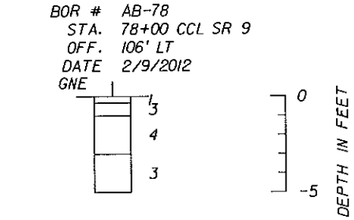












REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

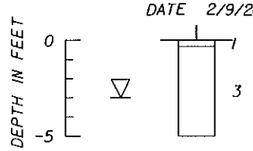
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9	MIAMI-DADE BROWARD	422796-1-52-01 422796-2-52-01

ROADWAY SOIL SURVEY

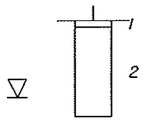
SHEET NO.

ngonzalez 3/22/2012 11:58:52 AM J:\Tierra Documents\Projects\TSF - 2011\111-11-297.195-Broward-Express Lane (Metric)\geotech\B2BORINGS.DGN

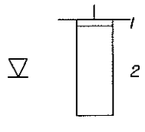
BOR # AB-79
STA. 79+00 CCL SR 9
OFF. 128' RT
DATE 2/9/2012



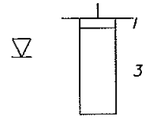
BOR # AB-81
STA. 81+00 CCL SR 9
OFF. 104' RT
DATE 2/9/2012



BOR # AB-83
STA. 83+30 CCL SR 9
OFF. 120' RT
DATE 2/9/2012



BOR # AB-85
STA. 85+00 CCL SR 9
OFF. 144' RT
DATE 2/9/2012



BOR # AB-87
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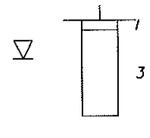
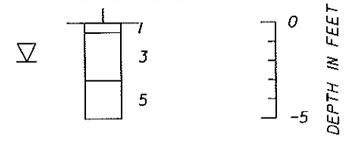
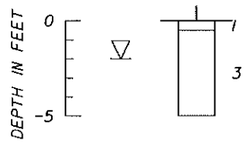
OFF. 120' RT
DATE 2/9/2012



BOR # AB-88
STA. 88+00 CCL SR 9
OFF. 120' RT
DATE 2/9/2012



BOR # AB-89
STA. 89+00 CCL SR 9
OFF. 160' RT
DATE 2/9/2012



BOR # AB-90
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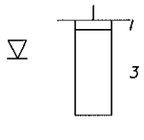
OFF. 120' RT
DATE 2/9/2012



BOR # AB-91
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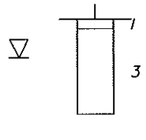
DATE 2/9/2012



BOR # AB-92
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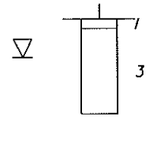
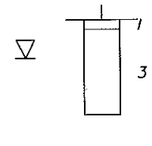
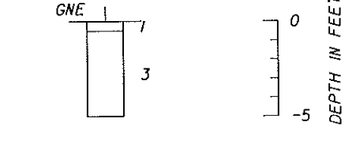
OFF. 120' RT
DATE 2/9/2012



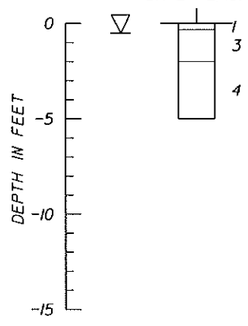
BOR # AB-93
STA. 93+00 CCL SR 9
OFF. 136' RT
DATE 2/9/2012



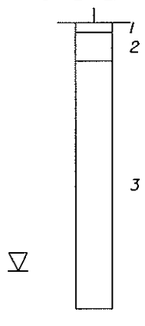
BOR # AB-94
STA. 94+00 CCL SR 9
OFF. 85' LT
DATE 2/14/2012
GNE



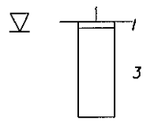
BOR # AB-95
STA. 95+00 CCL SR 9
OFF. 160' RT
DATE 2/13/2012



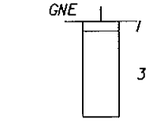
BOR # AB-96
STA. 96+00 CCL SR 9
OFF. 85' LT
DATE 2/14/2012



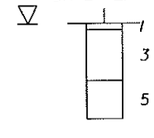
BOR # AB-97
STA. 97+00 CCL SR 9
OFF. 134' RT
DATE 2/13/2012



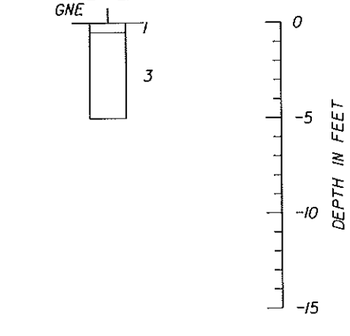
BOR # AB-98
STA. 98+00 CCL SR 9
OFF. 85' LT
DATE 2/14/2012
GNE



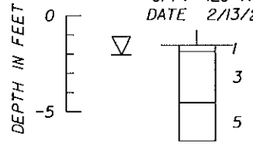
BOR # AB-99
STA. 99+00 CCL SR 9
OFF. 158' RT
DATE 2/13/2012



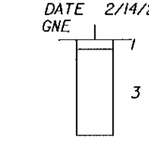
BOR # AB-100
STA. 100+00 CCL SR 9
OFF. 85' LT
DATE 2/14/2012
GNE



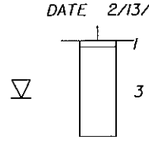
BOR # AB-101
STA. 101+00 CCL SR 9
OFF. 120' RT
DATE 2/13/2012



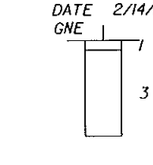
BOR # AB-102
STA. 102+00 CCL SR 9
OFF. 85' LT
DATE 2/14/2012
GNE



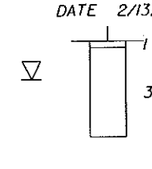
BOR # AB-103
STA. 103+00 CCL SR 9
OFF. 128' RT
DATE 2/13/2012



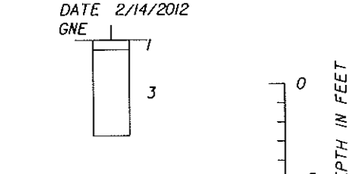
BOR # AB-104
STA. 104+00 CCL SR 9
OFF. 85' LT
DATE 2/14/2012
GNE



BOR # AB-105
STA. 105+00 CCL SR 9
OFF. 96' RT
DATE 2/13/2012



BOR # AB-106
STA. 106+00 CCL SR 9
OFF. 85' LT
DATE 2/14/2012
GNE



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

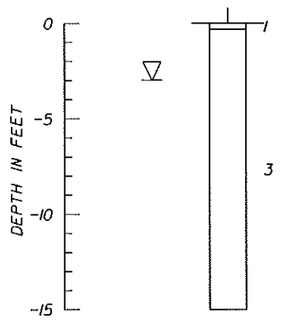
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9	MIAMI-DADE BROWARD	422796-1-52-01 422796-2-52-01

ROADWAY SOIL SURVEY

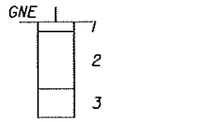
SHEET NO.

ngonzalez 3/22/2012 11:59:00 AM J:\Tierra Documents\Projects\TSF - 2011\111-11-297.195-Broward-Express Lane (Metric)\geotech\B2BORINGS.

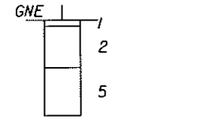
BOR # AB-107
STA. 107+00 CCL SR 9
OFF. 104' RT
DATE 2/16/2012



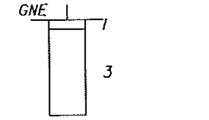
BOR # AB-108
STA. 108+00 CCL SR 9
OFF. 85' LT
DATE 2/14/2012



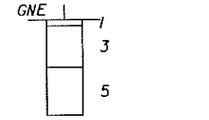
BOR # AB-109
STA. 109+00 CCL SR 9
ELEV. 104' RT
DATE 2/13/2012



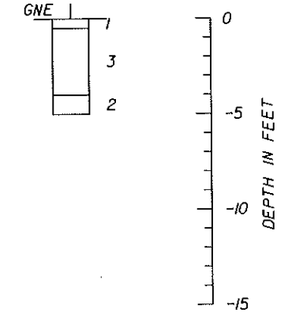
BOR # AB-110
STA. 110+00 CCL SR 9
OFF. 85' LT
DATE 2/14/2012



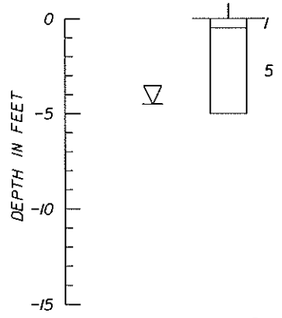
BOR # AB-111
STA. 111+00 CCL SR 9
OFF. 128' RT
DATE 2/13/2012



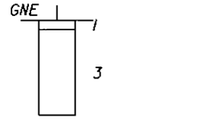
BOR # AB-112
STA. 112+00 CCL SR 9
OFF. 85' LT
DATE 2/14/2012



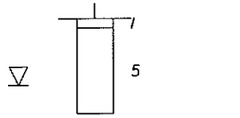
BOR # AB-113
STA. 113+00 CCL SR 9
OFF. 104' RT
DATE 2/14/2012



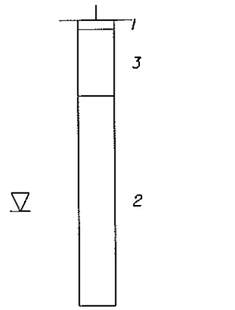
BOR # AB-114
STA. 114+00 CCL SR 9
OFF. 85' LT
DATE 2/14/2012



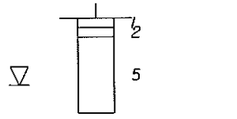
BOR # AB-115
STA. 115+00 CCL SR 9
OFF. 115' RT
DATE 2/14/2012



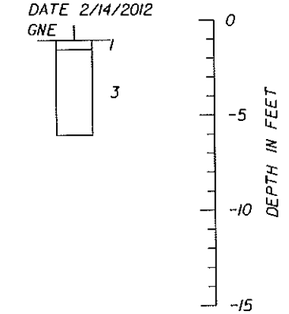
BOR # AB-116
STA. 116+00 CCL SR 9
OFF. 85' LT
DATE 2/14/2012



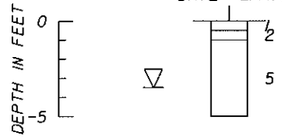
BOR # AB-117
STA. 117+00 CCL SR 9
OFF. 110' RT
DATE 2/14/2012



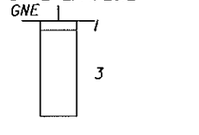
BOR # AB-118
STA. 118+00 CCL SR 9
OFF. 85' LT
DATE 2/14/2012



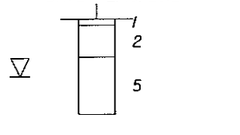
BOR # AB-119
STA. 119+00 CCL SR 9
OFF. 110' RT
DATE 2/14/2012



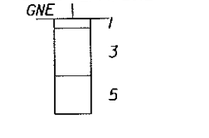
BOR # AB-120
STA. 120+00 CCL SR 9
OFF. 85' LT
DATE 2/14/2012



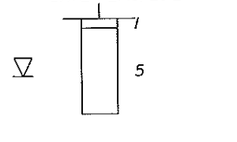
BOR # AB-121
STA. 121+00 CCL SR 9
OFF. 110' RT
DATE 2/16/2012



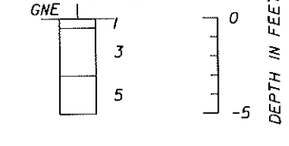
BOR # AB-122
STA. 122+00 CCL SR 9
OFF. 85' LT
DATE 2/14/2012



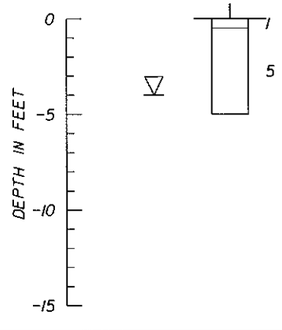
BOR # AB-123
STA. 123+00 CCL SR 9
OFF. 110' RT
DATE 2/16/2012



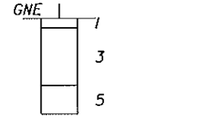
BOR # AB-124
STA. 124+00 CCL SR 9
OFF. 85' LT
DATE 2/14/2012



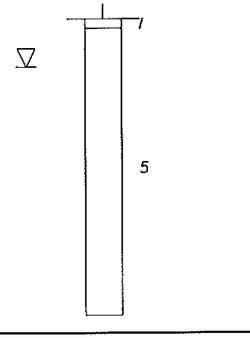
BOR # AB-125
STA. 125+00 CCL SR 9
OFF. 108' RT
DATE 2/16/2012



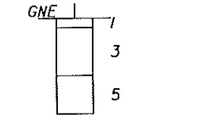
BOR # AB-126
STA. 126+00 CCL SR 9
OFF. 85' LT
DATE 2/14/2012



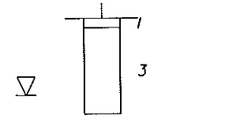
BOR # AB-127
STA. 127+00 CCL SR 9
OFF. 104' RT
DATE 2/16/2012



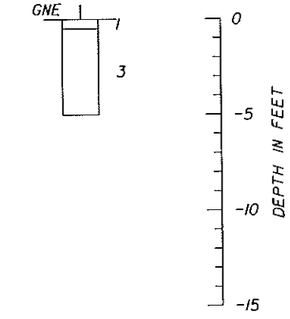
BOR # AB-128
STA. 128+00 CCL SR 9
OFF. 88' LT
DATE 2/14/2012



BOR # AB-129
STA. 129+00 CCL SR 9
OFF. 104' RT
DATE 2/16/2012



BOR # AB-130
STA. 130+00 CCL SR 9
OFF. 88' LT
DATE 2/14/2012



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

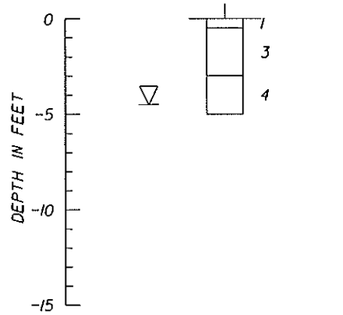
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9	MIAMI-DADE BROWARD	422796-1-52-01 422796-2-52-01

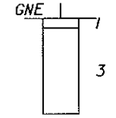
ROADWAY SOIL SURVEY

SHEET NO.

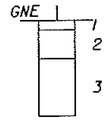
BOR # AB-131
STA. 131+00 CCL SR 9
OFF. 96' RT
DATE 2/16/2012



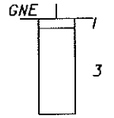
BOR # AB-132
STA. 132+00 CCL SR 9
OFF. 88' LT
DATE 2/14/2012
GNE



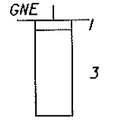
BOR # AB-133
STA. 133+00 CCL SR 9
OFF. 100' RT
DATE 2/16/2012
GNE



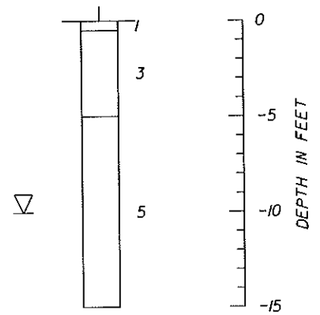
BOR # AB-134
STA. 134+00 CCL SR 9
OFF. 88' LT
DATE 2/14/2012
GNE



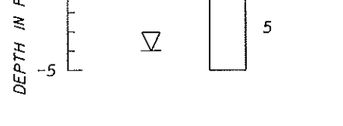
BOR # AB-135
STA. 135+00 CCL SR 9
OFF. 104' RT
DATE 2/16/2012
GNE



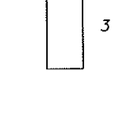
BOR # AB-136
STA. 136+00 CCL SR 9
OFF. 88' LT
DATE 2/14/2012



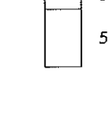
BOR # AB-137
STA. 137+00 CCL SR 9
OFF. 104' RT
DATE 2/16/2012
GNE



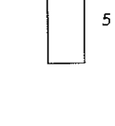
BOR # AB-138
STA. 138+00 CCL SR 9
OFF. 88' LT
DATE 2/9/2012
GNE



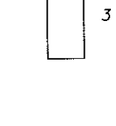
BOR # AB-139
STA. 139+00 CCL SR 9
OFF. 100' RT
DATE 2/16/2012
GNE



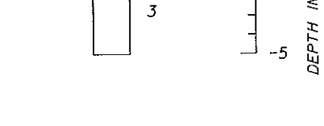
BOR # AB-140
STA. 140+00 CCL SR 9
OFF. 88' LT
DATE 2/9/2012
GNE



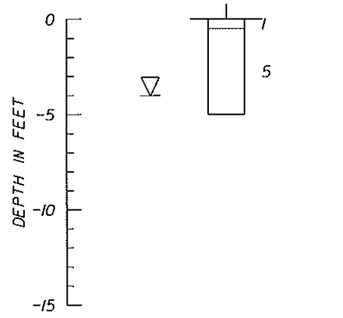
BOR # AB-141
STA. 141+00 CCL SR 9
OFF. 100' RT
DATE 2/16/2012
GNE



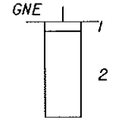
BOR # AB-142
STA. 142+00 CCL SR 9
OFF. 88' LT
DATE 2/9/2012
GNE



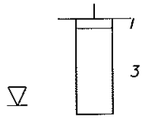
BOR # AB-143
STA. 143+00 CCL SR 9
OFF. 108' RT
DATE 2/16/2012



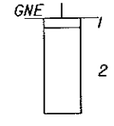
BOR # AB-144
STA. 144+00 CCL SR 9
OFF. 88' LT
DATE 2/9/2012
GNE



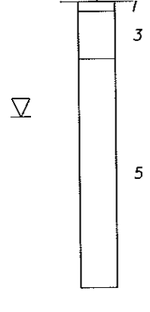
BOR # AB-145
STA. 145+00 CCL SR 9
OFF. 120' RT
DATE 2/16/2012



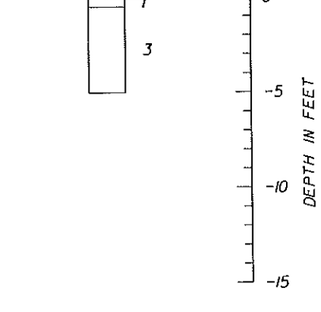
BOR # AB-146
STA. 146+00 CCL SR 9
OFF. 88' LT
DATE 2/9/2012
GNE



BOR # AB-147
STA. 147+00 CCL SR 9
OFF. 128' RT
DATE 2/16/2012



BOR # AB-148
STA. 148+00 CCL SR 9
OFF. 88' LT
DATE 2/9/2012
GNE



BOR # AB-149
STA. 149+00 CCL SR 9
OFF. 144' RT
DATE 2/16/2012

BOR # AB-150
STA. 150+00 CCL SR 9
OFF. 88' LT
DATE 2/9/2012
GNE

BOR # AB-151
STA. 151+00 CCL SR 9
OFF. 160' RT
DATE 2/16/2012

BOR # AB-152
STA. 152+00 CCL SR 9
OFF. 88' LT
DATE 2/9/2012
GNE

BOR # AB-153
STA. 153+00 CCL SR 9
OFF. 96' RT
DATE 2/16/2012
GNE

BOR # AB-154
STA. 154+00 CCL SR 9
OFF. 88' LT
DATE 2/9/2012
GNE

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

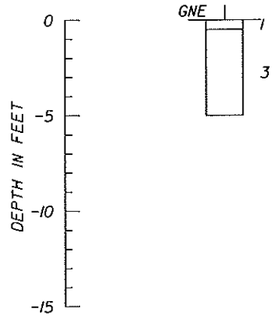
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9	MIAMI-DADE BROWARD	422796-1-52-01 422796-2-52-01

ROADWAY SOIL SURVEY

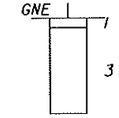
SHEET NO.

ngonzalez 3/22/2012 11:59:14 AM J:\Tierra Documents\Projects\TSF - 2011\211-11-297.195-Broward-Express Lane (Metric)\geotech\B2BORINGS

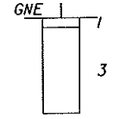
BOR # AB-155
STA. 155+00 CCL SR 9
OFF. 100' RT
DATE 2/16/2012



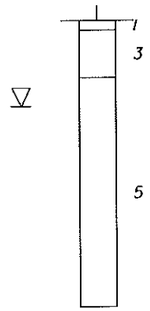
BOR # AB-156
STA. 156+00 CCL SR 9
OFF. 100' RT
DATE 2/16/2012



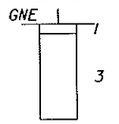
BOR # AB-157
STA. 157+00 CCL SR 9
OFF. 100' RT
DATE 2/16/2012



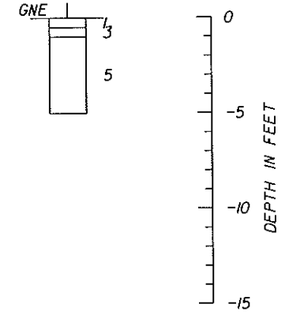
BOR # AB-158
STA. 158+00 CCL SR 9
OFF. 108' LT
DATE 2/14/2012



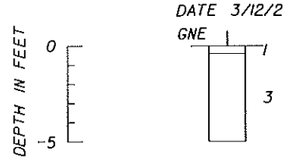
BOR # AB-159
STA. 159+00 CCL SR 9
OFF. 100' RT
DATE 2/16/2012



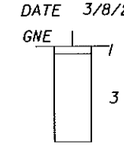
BOR # AB-160
STA. 160+00 CCL SR 9
OFF. 85' LT
DATE 2/9/2012



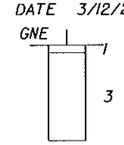
BOR # AB-161
STA. 161+00 CCL SR 9
OFF. 125' RT
DATE 2/16/2012



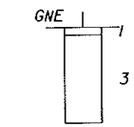
BOR # AB-162
STA. 162+00 CCL SR 9
OFF. 125' RT
DATE 2/16/2012



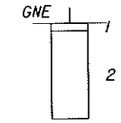
BOR # AB-163
STA. 163+00 CCL SR 9
OFF. 126' RT
DATE 2/16/2012



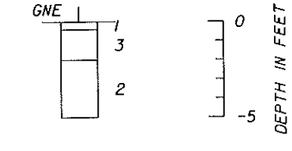
BOR # AB-164
STA. 164+00 CCL SR 9
OFF. 88' LT
DATE 2/9/2012



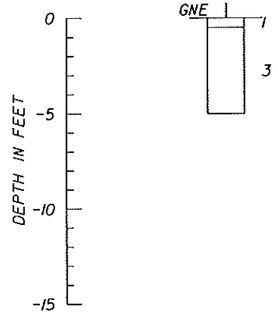
BOR # AB-165
STA. 165+00 CCL SR 9
OFF. 128' RT
DATE 2/16/2012



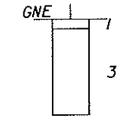
BOR # AB-166
STA. 166+00 CCL SR 9
OFF. 88' LT
DATE 2/9/2012



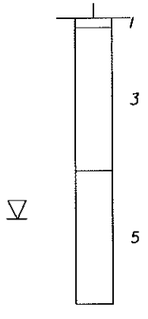
BOR # AB-167
STA. 167+00 CCL SR 9
OFF. 130' RT
DATE 2/16/2012



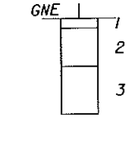
BOR # AB-168
STA. 168+00 CCL SR 9
OFF. 88' LT
DATE 2/9/2012



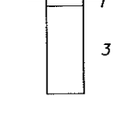
BOR # AB-169
STA. 169+00 CCL SR 9
OFF. 140' RT
DATE 2/16/2012



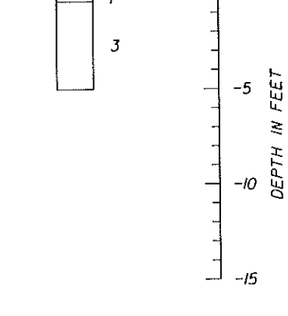
BOR # AB-170
STA. 170+00 CCL SR 9
OFF. 88' LT
DATE 2/9/2012



BOR # AB-173
STA. 173+00 CCL SR 9
OFF. 93' LT
DATE 3/12/2012



BOR # AB-174
STA. 174+00 CCL SR 9
OFF. 96' RT
DATE 3/8/2012



BOR # AB-175
STA. 175+00 CCL SR 9
OFF. 88' LT
DATE 3/12/2012

BOR # AB-176
STA. 176+00 CCL SR 9
OFF. 112' RT
DATE 3/8/2012

BOR # AB-177
STA. 177+00 CCL SR 9
OFF. 215' LT
DATE 3/12/2012

BOR # AB-178
STA. 178+00 CCL SR 9
OFF. 90' LT
DATE 3/12/2012

BOR # AB-179
STA. 179+00 CCL SR 9
OFF. 194' LT
DATE 3/12/2012

BOR # AB-180
STA. 180+00 CCL SR 9
OFF. 84' RT
DATE 3/7/2012

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

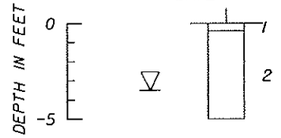
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9	MIAMI-DADE BROWARD	422796-1-52-01 422796-2-52-01

ROADWAY SOIL SURVEY

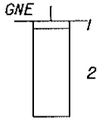
SHEET NO.

rgonzalez 3/22/2012 11:59:22 AM J:\Tierra Documents\Projects\TSF - 2011\7111-11-297.195-Broward-Express Lane (Metric)\geotech\B2BORINGS.

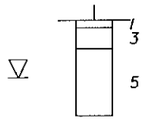
BOR # AB-181
STA. 181+00 CCL SR 9
OFF. 170' LT
DATE 3/12/2012



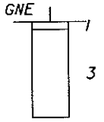
BOR # AB-182
STA. 182+00 CCL SR 9
OFF. 149' RT
DATE 3/7/2012
GNE



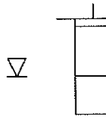
BOR # AB-183
STA. 183+00 CCL SR 9
OFF. 152' LT
ELEV.
DATE 3/12/2012



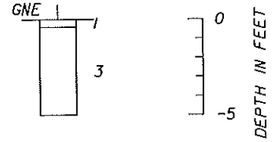
BOR # AB-184
STA. 184+00 CCL SR 9
OFF. 147' RT
DATE 3/7/2012
GNE



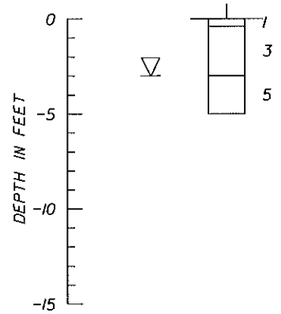
BOR # AB-185
STA. 185+00 CCL SR 9
OFF. 146' LT
DATE 3/12/2012



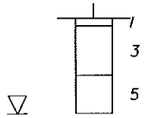
BOR # AB-186
STA. 186+00 CCL SR 9
OFF. 138' RT
DATE 3/7/2012
GNE



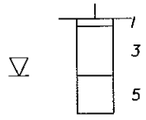
BOR # AB-187
STA. 187+00 CCL SR 9
OFF. 130' LT
DATE 3/12/2012



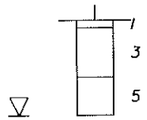
BOR # AB-188
STA. 188+00 CCL SR 9
OFF. 130' RT
DATE 3/7/2012



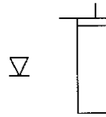
BOR # AB-189
STA. 189+00 CCL SR 9
OFF. 136' LT
DATE 3/12/2012



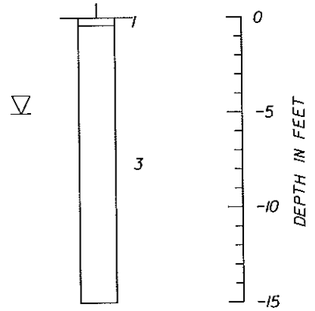
BOR # AB-190
STA. 190+00 CCL SR 9
OFF. 128' RT
DATE 3/7/2012



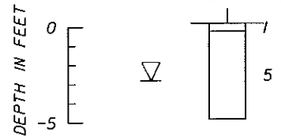
BOR # AB-191
STA. 191+00 CCL SR 9
OFF. 128' LT
DATE 3/10/2012



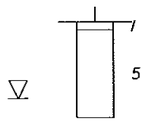
BOR # AB-192
STA. 192+00 CCL SR 9
OFF. 120' RT
DATE 3/8/2012



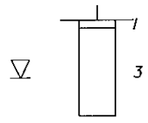
BOR # AB-193
STA. 193+00 CCL SR 9
OFF. 125' LT
DATE 3/10/2012



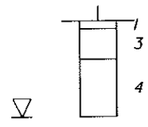
BOR # AB-194
STA. 194+00 CCL SR 9
OFF. 112' RT
DATE 3/8/2012



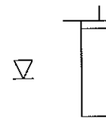
BOR # AB-195
STA. 195+00 CCL SR 9
OFF. 130' LT
DATE 3/10/2012



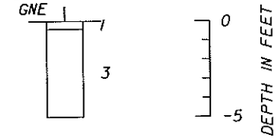
BOR # AB-196
STA. 196+00 CCL SR 9
OFF. 112' RT
DATE 3/8/2012



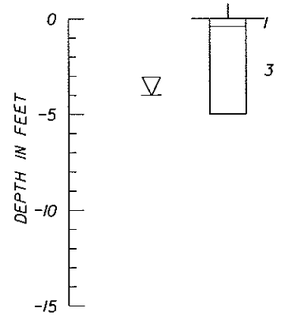
BOR # AB-197
STA. 197+00 CCL SR 9
OFF. 140' LT
DATE 3/10/2012



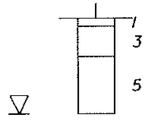
BOR # AB-198
STA. 198+00 CCL SR 9
OFF. 102' RT
DATE 3/8/2012
GNE



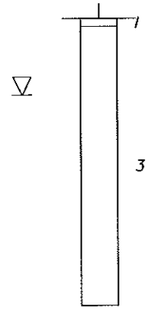
BOR # AB-199
STA. 199+00 CCL SR 9
OFF. 128' LT
DATE 3/10/2012



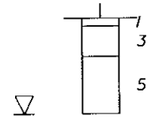
BOR # AB-200
STA. 200+00 CCL SR 9
OFF. 110' RT
DATE 3/8/2012



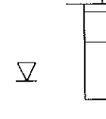
BOR # AB-201
STA. 201+00 CCL SR 9
OFF. 144' LT
DATE 3/10/2012



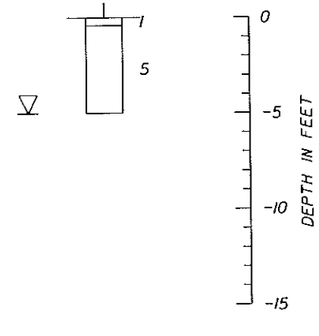
BOR # AB-202
STA. 202+00 CCL SR 9
OFF. 116' RT
DATE 3/8/2012



BOR # AB-203
STA. 203+00 CCL SR 9
OFF. 120' LT
DATE 3/10/2012



BOR # AB-204
STA. 204+00 CCL SR 9
OFF. 124' RT
DATE 3/8/2012



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

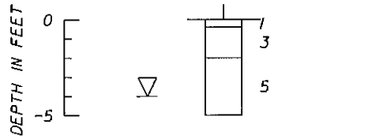
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9	MIAMI-DADE BROWARD	422796-1-52-01 422796-2-52-01

ROADWAY SOIL SURVEY

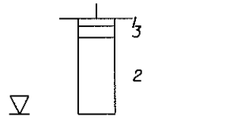
SHEET NO.

nganzalez 3/22/2012 11:59:38 AM J:\Tierra Documents\Projects\TSF - 2011\11-11-297.195-Broward-Express Lane (Metric)\geotech

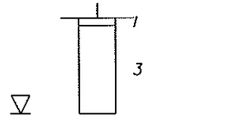
BOR # AB-205
STA. 205+00 CCL SR 9
OFF. 120' LT
DATE 3/10/2012



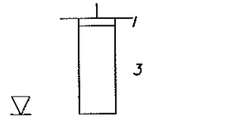
BOR # AB-206
STA. 206+00 CCL SR 9
OFF. 104' RT
DATE 3/8/2012



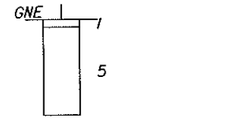
BOR # AB-207
STA. 207+00 CCL SR 9
OFF. 138' LT
DATE 3/10/2012



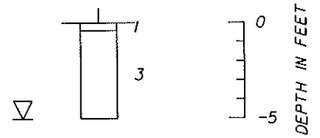
BOR # AB-208
STA. 208+00 CCL SR 9
OFF. 118' RT
DATE 3/8/2012



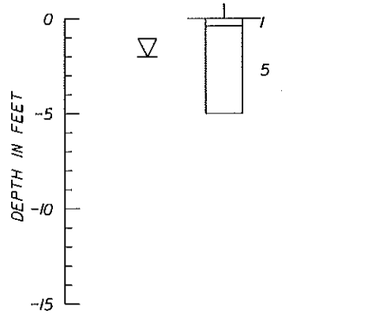
BOR # AB-209
STA. 209+00 CCL SR 9
OFF. 126' LT
DATE 3/10/2012



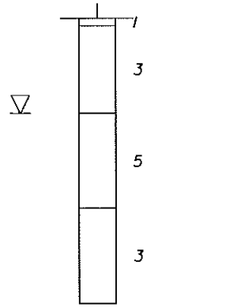
BOR # AB-210
STA. 210+00 CCL SR 9
OFF. 115' RT
DATE 3/8/2012



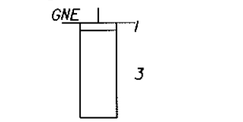
BOR # AB-211
STA. 211+00 CCL SR 9
OFF. 122' LT
DATE 3/10/2012



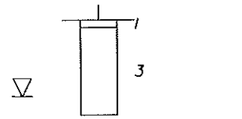
BOR # AB-212
STA. 212+00 CCL SR 9
OFF. 131' RT
DATE 3/8/2012



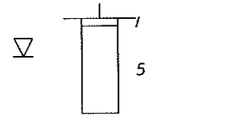
BOR # AB-213
STA. 213+00 CCL SR 9
OFF. 104' LT
DATE 3/10/2012



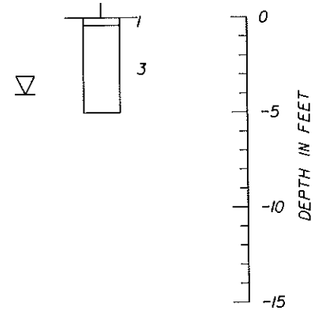
BOR # AB-214
STA. 214+00 CCL SR 9
OFF. 104' RT
DATE 3/8/2012



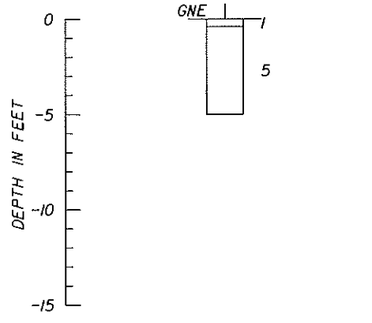
BOR # AB-215
STA. 215+00 CCL SR 9
OFF. 120' LT
DATE 3/10/2012



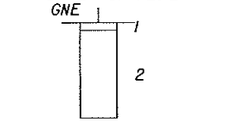
BOR # AB-216
STA. 216+00 CCL SR 9
OFF. 128' RT
DATE 3/8/2012



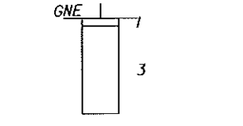
BOR # AB-217
STA. 217+00 CCL SR 9
OFF. 116' LT
DATE 3/10/2012



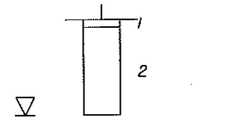
BOR # AB-218
STA. 218+00 CCL SR 9
OFF. 104' RT
DATE 3/8/2012



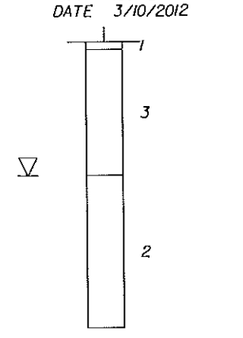
BOR # AB-219
STA. 219+00 CCL SR 9
OFF. 120' LT
DATE 3/10/2012



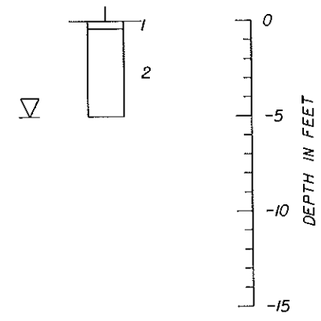
BOR # AB-220
STA. 220+00 CCL SR 9
OFF. 104' RT
DATE 3/8/2012



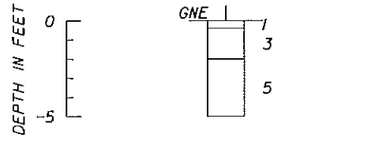
BOR # AB-221
STA. 221+00 CCL SR 9
OFF. 100' LT
DATE 3/10/2012



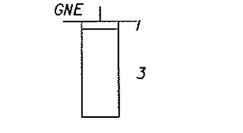
BOR # AB-222
STA. 222+00 CCL SR 9
OFF. 104' RT
DATE 3/8/2012



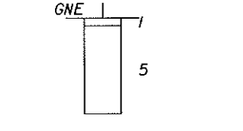
BOR # AB-223
STA. 223+00 CCL SR 9
OFF. 104' LT
DATE 3/10/2012



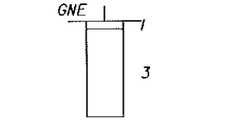
BOR # AB-224
STA. 224+00 CCL SR 9
OFF. 104' RT
DATE 3/8/2012



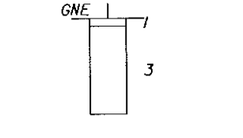
BOR # AB-225
STA. 225+00 CCL SR 9
OFF. 104' LT
DATE 3/10/2012



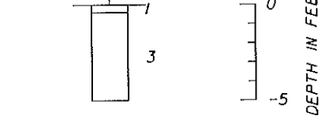
BOR # AB-226
STA. 226+00 CCL SR 9
OFF. 100' RT
DATE 3/8/2012



BOR # AB-227
STA. 227+00 CCL SR 9
OFF. 112' LT
DATE 3/10/2012



BOR # AB-228
STA. 228+00 CCL SR 9
OFF. 104' RT
DATE 3/8/2012



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

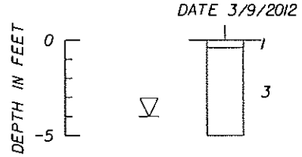
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9	MIAMI-DADE BROWARD	422796-1-52-01 422796-2-52-01

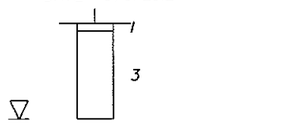
ROADWAY SOIL SURVEY

SHEET NO.

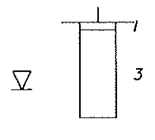
BOR # AB-229
STA. 229+00 CCL SR 9
OFF. 120' LT
DATE 3/9/2012



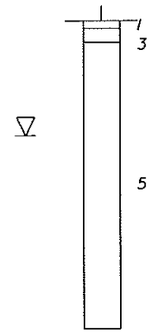
BOR # AB-230
STA. 230+00 CCL SR 9
OFF. 120' RT
DATE 3/8/2012



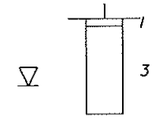
BOR # AB-231
STA. 231+00 CCL SR 9
OFF. 122' LT
DATE 3/9/2012



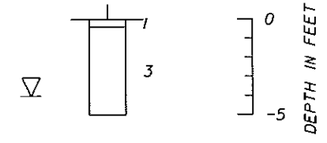
BOR # AB-232
STA. 232+00 CCL SR 9
OFF. 100' RT
DATE 3/8/2012



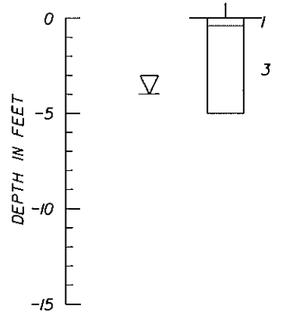
BOR # AB-233
STA. 233+00 CCL SR 9
OFF. 128' LT
DATE 3/9/2012



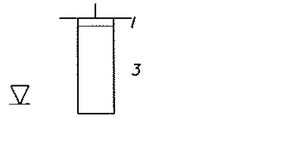
BOR # AB-235
STA. 235+00 CCL SR 9
OFF. 132' LT
DATE 3/9/2012



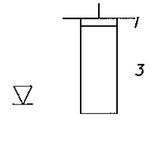
BOR # AB-236
STA. 236+00 CCL SR 9
OFF. 142' LT
DATE 3/9/2012



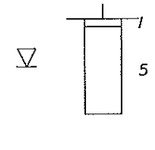
BOR # AB-238
STA. 238+00 CCL SR 9
OFF. 141' LT
DATE 3/9/2012



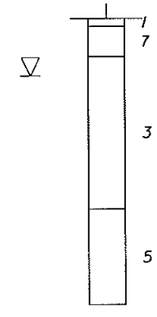
BOR # AB-264
STA. 264+00 CCL SR 9
OFF. 132' LT
DATE 3/9/2012



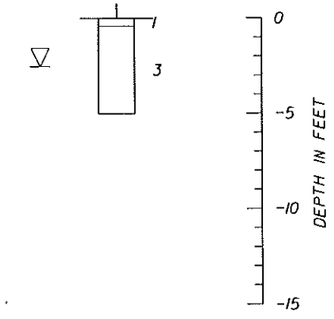
BOR # AB-265
STA. 265+00 CCL SR 9
OFF. 125' LT
DATE 3/9/2012



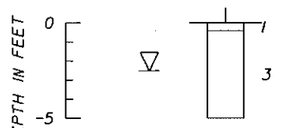
BOR # AB-266
STA. 266+00 CCL SR 9
OFF. 137' LT
DATE 3/10/2012



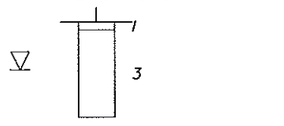
BOR # AB-267
STA. 267+00 CCL SR 9
OFF. 118' LT
DATE 3/9/2012



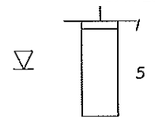
BOR # AB-268
STA. 268+00 CCL SR 9
OFF. 128' LT
DATE 3/9/2012



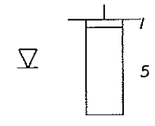
BOR # AB-269
STA. 269+00 CCL SR 9
OFF. 120' LT
DATE 3/9/2012



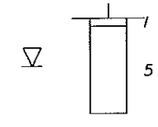
BOR # AB-270
STA. 270+00 CCL SR 9
OFF. 122' LT
DATE 3/9/2012



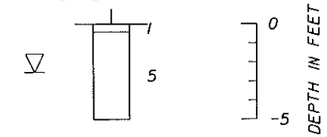
BOR # AB-271
STA. 271+00 CCL SR 9
OFF. 122' LT
DATE 3/9/2012



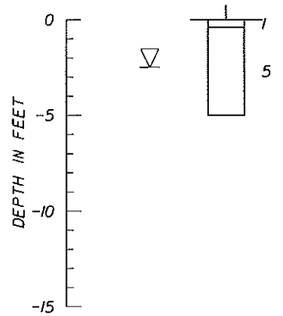
BOR # AB-272
STA. 272+00 CCL SR 9
OFF. 122' LT
DATE 3/9/2012



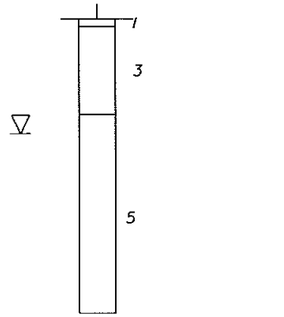
BOR # AB-273
STA. 273+00 CCL SR 9
OFF. 122' LT
DATE 3/9/2012



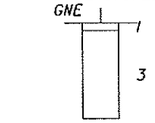
BOR # AB-274
STA. 274+00 CCL SR 9
OFF. 130' LT
DATE 3/9/2012



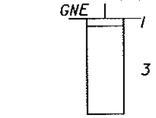
BOR # AB-276
STA. 276+00 CCL SR 9
OFF. 114' LT
DATE 3/10/2012



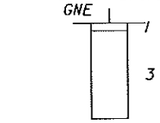
BOR # AB-277
STA. 277+00 CCL SR 9
OFF. 128' LT
DATE 3/9/2012
GNE



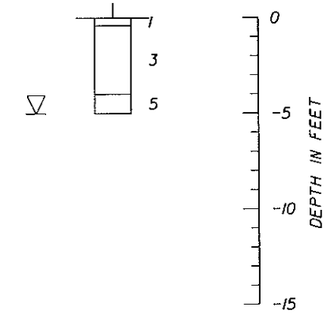
BOR # AB-278
STA. 278+00 CCL SR 9
OFF. 128' LT
DATE 3/9/2012
GNE



BOR # AB-301
STA. 301+00 CCL SR 9
OFF. 130' RT
DATE 3/8/2012
GNE



BOR # AB-302
STA. 302+00 CCL SR 9
OFF. 128' RT
DATE 3/9/2012



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

RAJ KRISHNASAMY, P.E.
P.E. LICENSE NUMBER 53567
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
CERTIFICATE OF AUTHORIZATION 28073

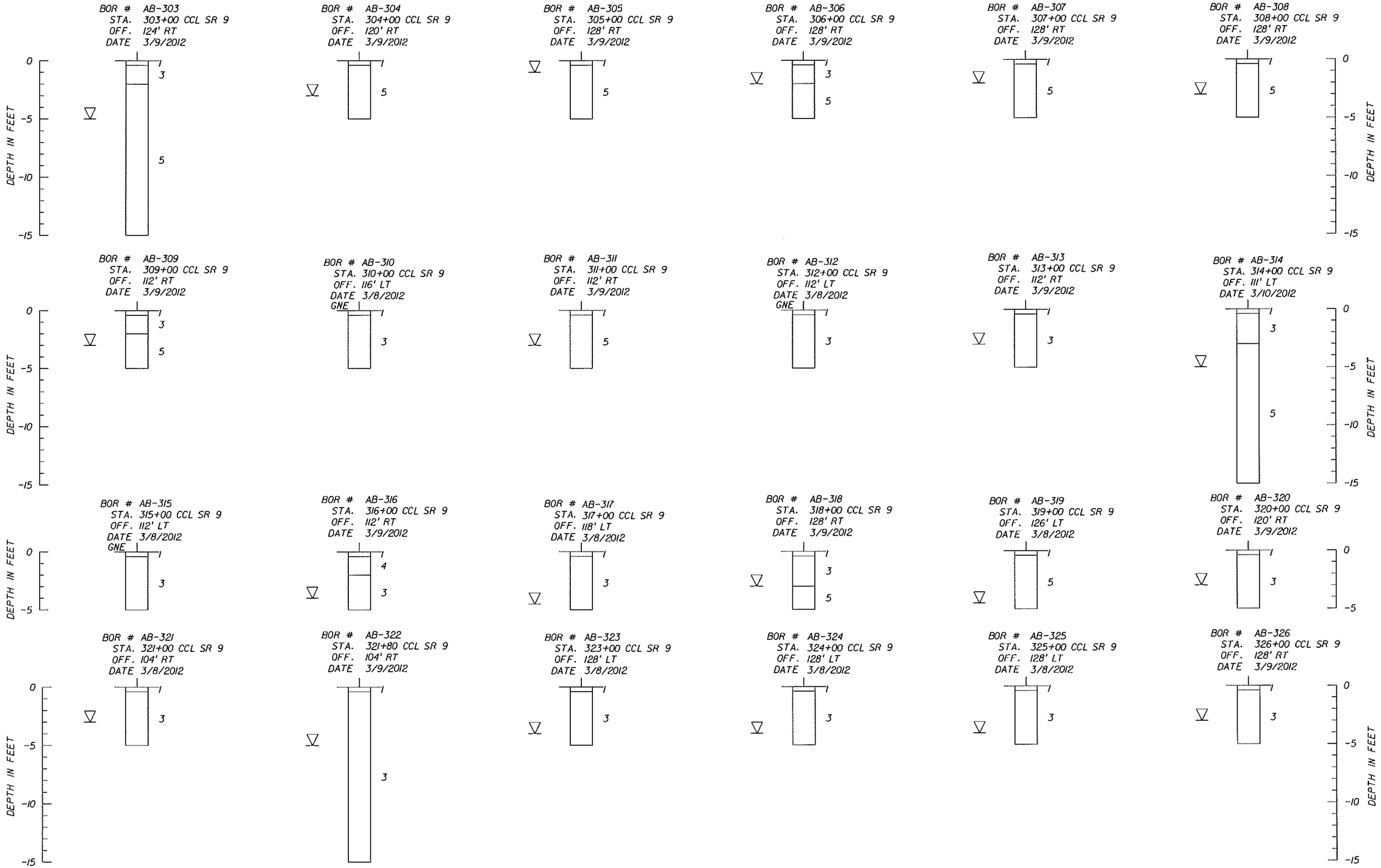
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9	MIAMI-DADE BROWARD	422796-1-52-01 422796-2-52-01

ROADWAY SOIL SURVEY

SHEET NO.

ngonzalez 3/22/2012 11:59:58 AM J:\Tierra Documents\Projects\TSF - 2011\11-11-297.195-Broward-Express Lane (Metric)\geotech\B2BORING



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

RAJ KRISHNASAMY, P.E.
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TIERRA SOUTH FLORIDA
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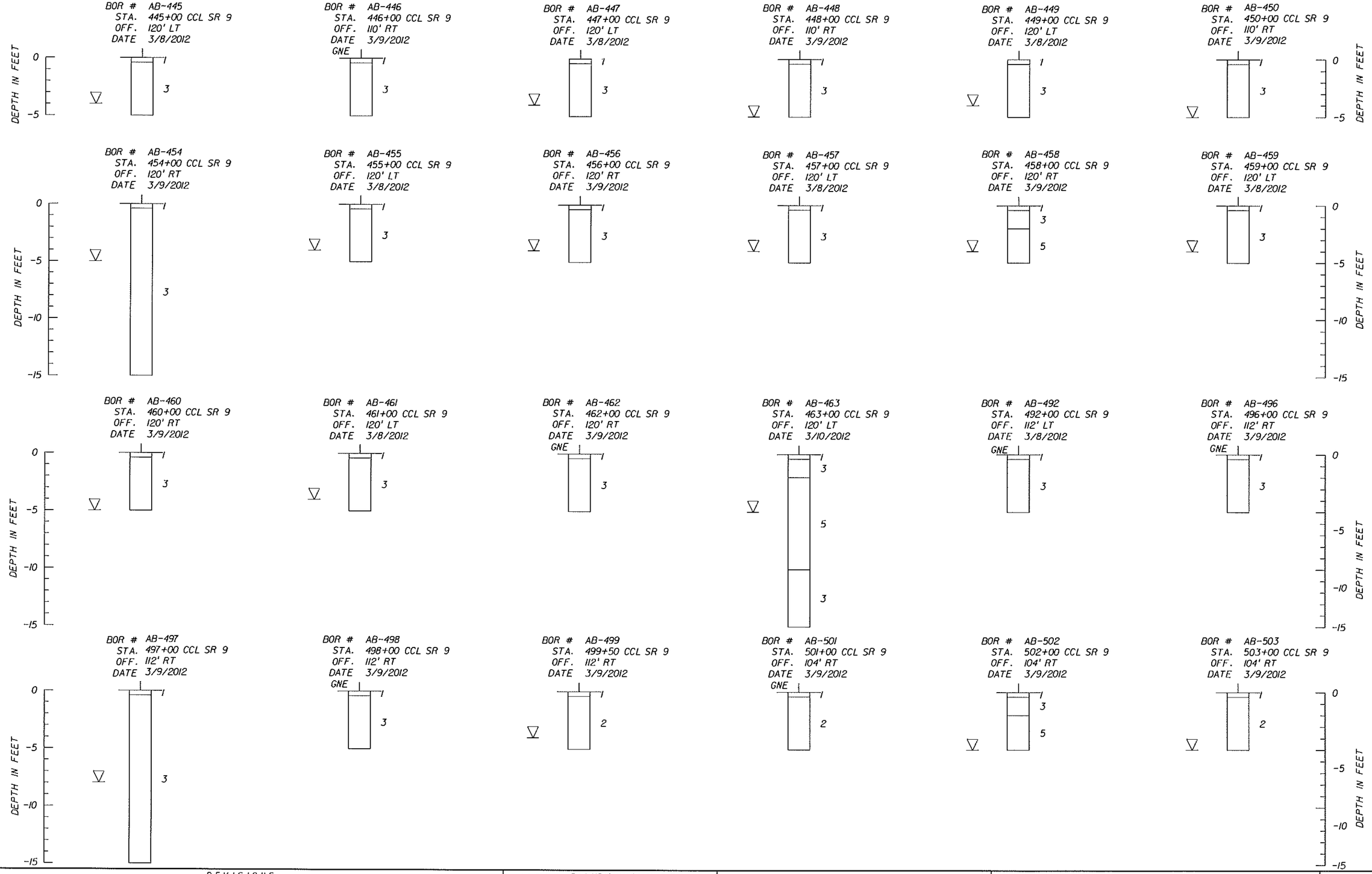
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9	MIAMI-DADE BROWARD	422796-1-52-01 422796-2-52-01

ROADWAY SOIL SURVEY

SHEET NO.

ngonzalez 3/22/2012 12:00:08 PM J:\Tierra Documents\Projects\TSF - 2011\111-11-297.195-Broward-Express Lane (Metric)\geotech\B2BORING



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

RAJ KRISHNASAMY, P.E.
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TIERRA SOUTH FLORIDA
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STATE OF FLORIDA
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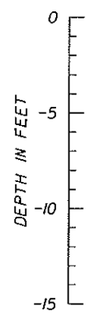
9	MIAMI-DADE BROWARD	422796-1-52-01 422796-2-52-01

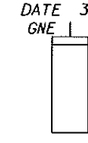
ROADWAY SOIL SURVEY

SHEET NO.

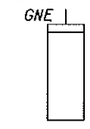
ngonzalez 3/22/2012 12:00:23 PM J:\Tierra Documents\Projects\TSF - 2011\111-11-297.195-Broward-Express Lane (Metric)\geotech\B2BORING

BOR # AB-327
STA. 327+00 CCL SR 9
OFF. 112' LT
DATE 3/8/2012

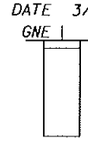




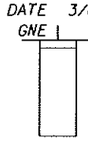
BOR # AB-328
STA. 328+00 CCL SR 9
OFF. 112' LT
DATE 3/8/2012



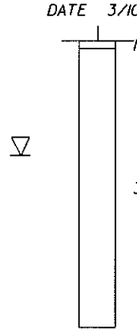
BOR # AB-329
STA. 329+00 CCL SR 9
OFF. 120' LT
DATE 3/8/2012



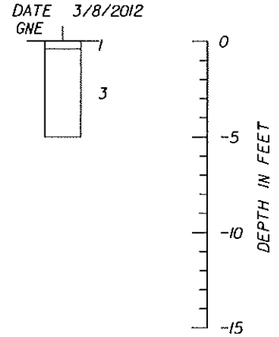
BOR # AB-330
STA. 330+00 CCL SR 9
OFF. 120' LT
DATE 3/8/2012



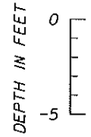
BOR # AB-331
STA. 331+00 CCL SR 9
OFF. 120' LT
DATE 3/10/2012

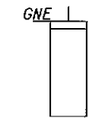


BOR # AB-332
STA. 332+00 CCL SR 9
OFF. 128' LT
DATE 3/8/2012

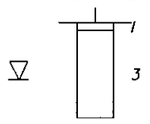


BOR # AB-333
STA. 333+00 CCL SR 9
OFF. 136' LT
DATE 3/8/2012

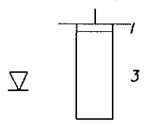




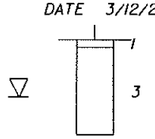
BOR # AB-379
STA. 379+00 CCL SR 9
OFF. 128' LT
DATE 3/12/2012



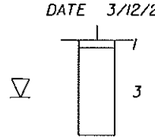
BOR # AB-381
STA. 381+00 CCL SR 9
OFF. 108' RT
DATE 3/12/2012



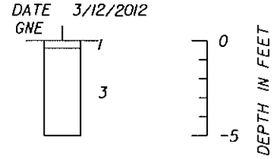
BOR # AB-383
STA. 383+10 CCL SR 9
OFF. 140' LT
DATE 3/12/2012



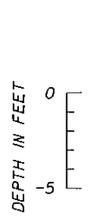
BOR # AB-384
STA. 384+00 CCL SR 9
OFF. 145' LT
DATE 3/12/2012

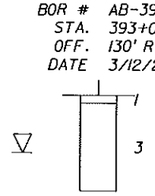


BOR # AB-392
STA. 392+00 CCL SR 9
OFF. 130' LT
DATE 3/12/2012

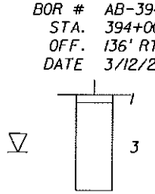


BOR # AB-393
STA. 393+00 CCL SR 9
OFF. 130' RT
DATE 3/12/2012

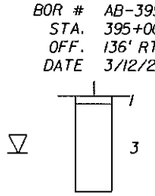




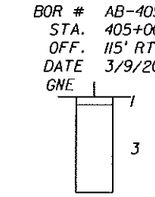
BOR # AB-394
STA. 394+00 CCL SR 9
OFF. 136' RT
DATE 3/12/2012



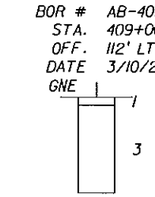
BOR # AB-395
STA. 395+00 CCL SR 9
OFF. 136' RT
DATE 3/12/2012



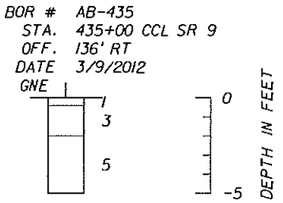
BOR # AB-405
STA. 405+00 CCL SR 9
OFF. 115' RT
DATE 3/9/2012



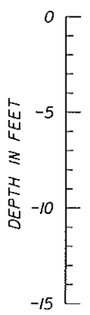
BOR # AB-409
STA. 409+00 CCL SR 9
OFF. 112' LT
DATE 3/10/2012

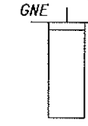


BOR # AB-435
STA. 435+00 CCL SR 9
OFF. 136' RT
DATE 3/9/2012

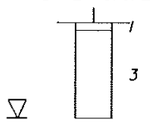


BOR # AB-437
STA. 437+00 CCL SR 9
OFF. 120' RT
DATE 3/9/2012

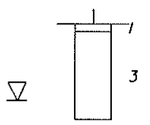




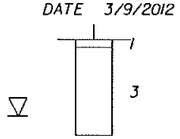
BOR # AB-439
STA. 439+00 CCL SR 9
OFF. 118' RT
DATE 3/9/2012



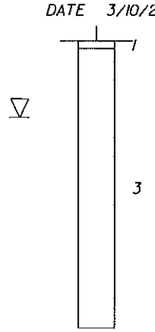
BOR # AB-441
STA. 441+00 CCL SR 9
OFF. 136' LT
DATE 3/8/2012



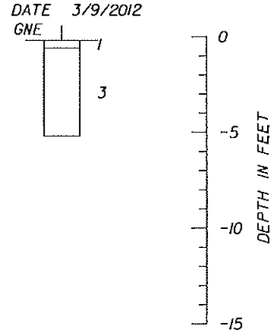
BOR # AB-442
STA. 442+00 CCL SR 9
OFF. 104' RT
DATE 3/9/2012



BOR # AB-443
STA. 443+00 CCL SR 9
OFF. 120' LT
DATE 3/10/2012



BOR # AB-444
STA. 444+00 CCL SR 9
OFF. 110' RT
DATE 3/9/2012



REVISIONS			
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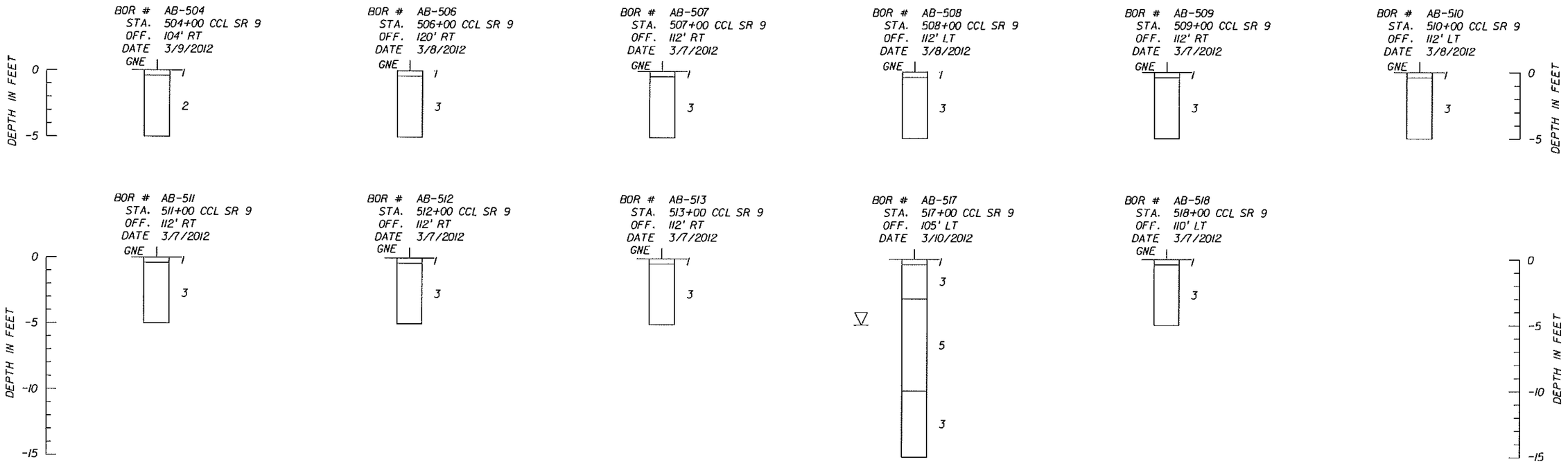
9	MIAMI-DADE BROWARD	422796-1-52-01 422796-2-52-01

ROADWAY SOIL SURVEY

SHEET NO.



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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9	MIAMI-DADE BROWARD	422796-1-52-01 422796-2-52-01

ROADWAY SOIL SURVEY

SHEET NO.

Summary of Laboratory Test Results
I-95 Express Lanes
FM No.: 422796-1-52-01 & 422796-2-52-01
TSF Project No: 7111-11-297

Boring Number	Sample Depth (ft)	Stratum Number	AASHTO Symbol	Sieve Analysis, Percentage Passing								Atterberg Limits			Organic Content (%)	Natural Moisture Content (%)
				3/4"	3/8"	#4	#10	#40	#60	#100	#200	Liquid Limit	Plastic Limit	Plasticity Index		
AB-24	0.5 - 4.0	4	A-2-4	92	73	66	63	57	46	24	15	NP	NP	NP		12
AB-28	2.5 - 5.0	4	A-2-4	100	96	84	73	61	48	36	31	NP	NP	NP		16
AB-71	0.3 - 5.0	3	A-3	100	100	100	100	91	56	10	1					22
AB-73	3.0 - 4.0	6	A-4	100	100	100	100	94	89	84	80	NP	NP	NP		41
AB-76	2.5 - 3.0	7	A-8	100	100	100	99	77	55	33	26				17.4	66
AB-81	0.3 - 5.0	2	A-1-a	42	37	36	34	29	22	9	6					7
AB-141	0.5 - 5.0	2	A-1-b	100	88	69	60	49	36	22	17					10
AB-157	2.0 - 5.0	3	A-3	96	93	85	81	67	45	17	10					7
AB-266	0.0 - 2.0	7	A-8												29.0	215
AB-445	0.3 - 5.0	3	A-3	93	91	87	84	66	34	13	9					14
AB-506	0.3 - 5.0	3	A-3	89	84	81	79	67	44	18	10					6

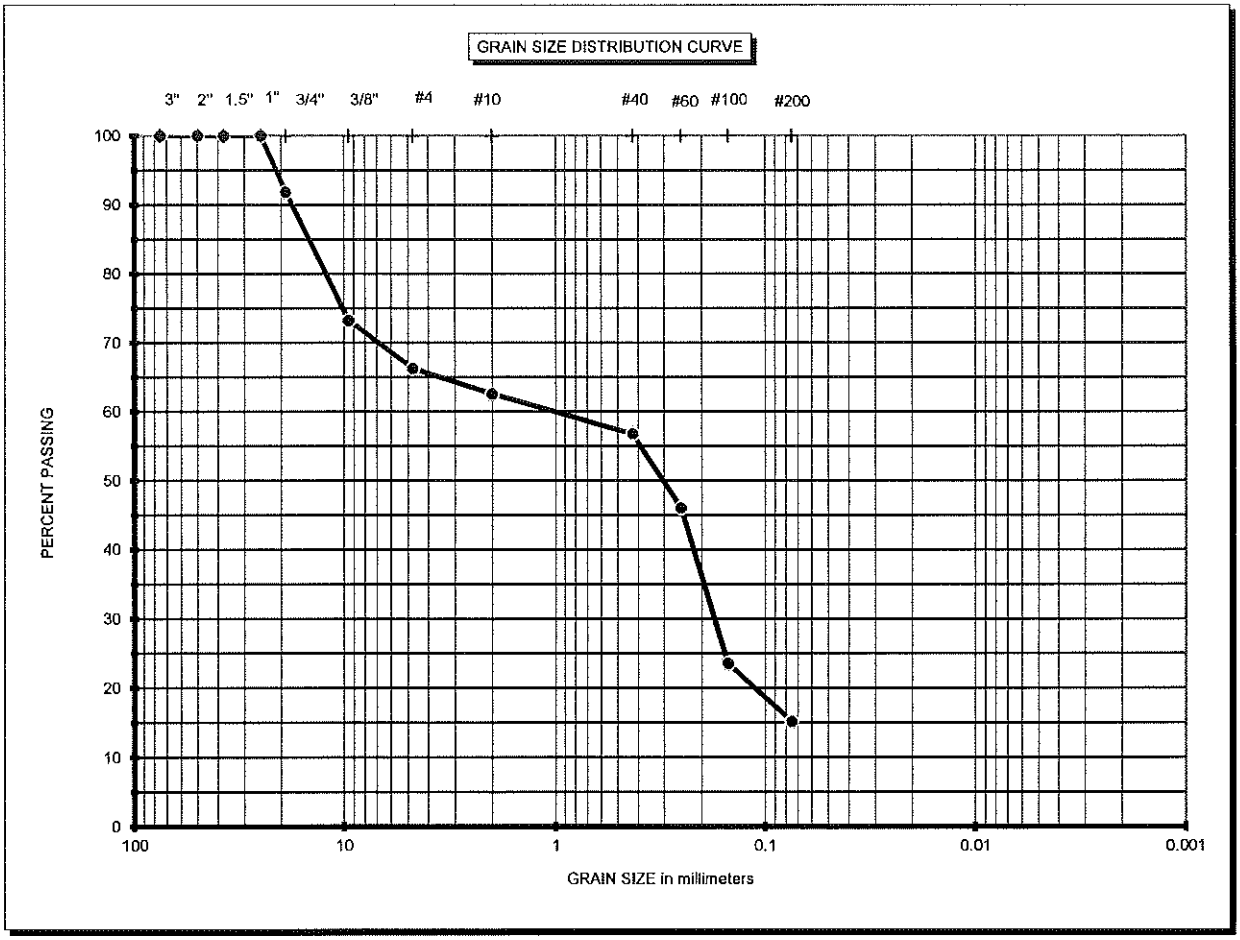
NP - Non-plastic

tierra SOUTH FLORIDA

GRAIN SIZE DATA SHEET

PROJECT NAME: I-95 Express Lanes **DATE:** 2/17/2012

PROJECT #: 7111-11-297



ASTM D 2487 Classification of Soil for Engineering Purposes			Coarse Sand	< #4 and > #10	Cu = D60 / D10
Coarse Gravel	< 3" and > 3/4"		Medium Sand	< #10 and > #40	Cc = (D30)^2 / (D10 x D60)
Fine Gravel	< 3/4" and > #4		Fine Sand	< #40 and > #200	

BORING # AB-24 **OFFSET (ft)** **DEPTH (ft):** 0.5 - 4.0

SOIL CLASSIFICATION: A-2-4

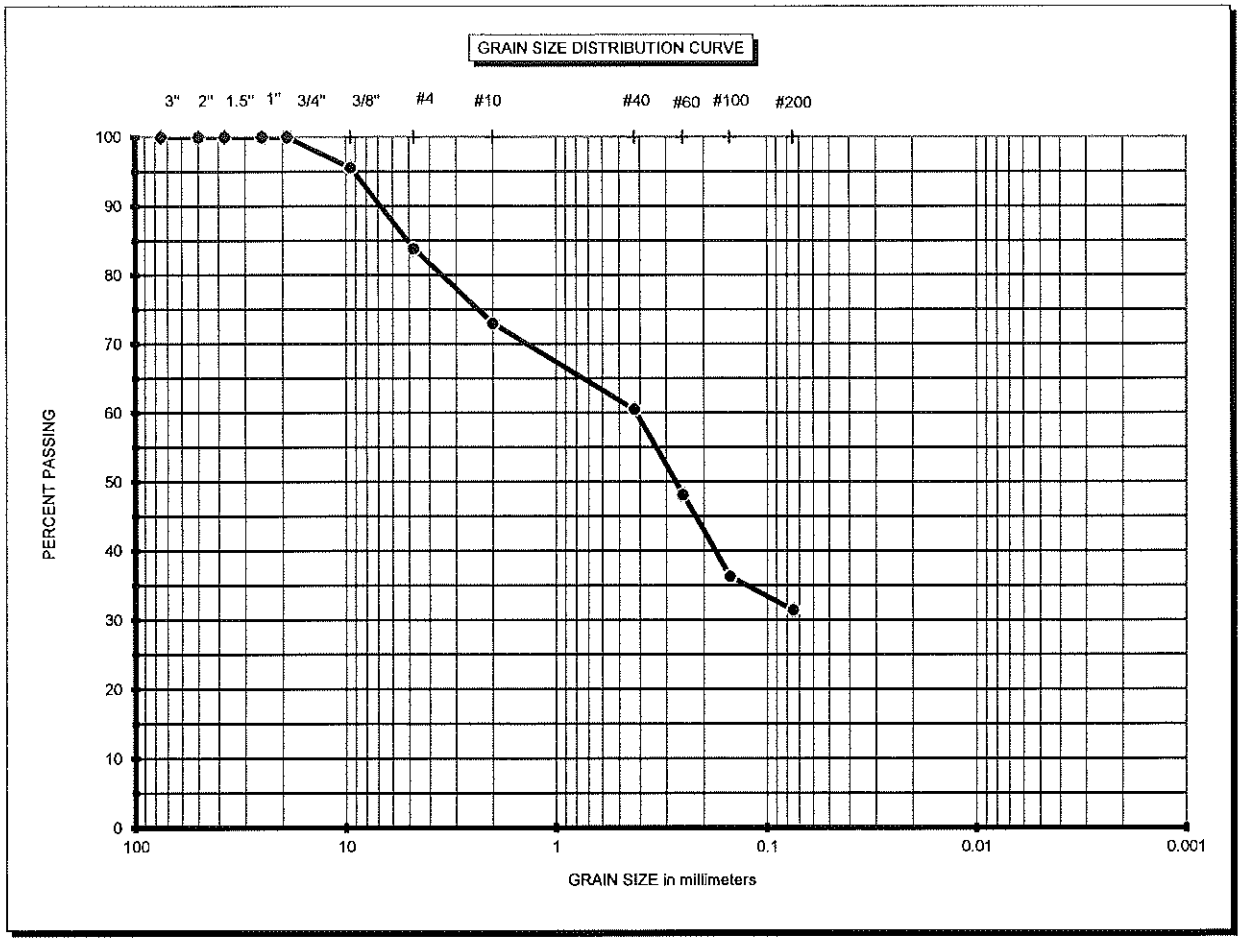
ATTERBERG LIMIT (- #40 Material)	
LIQUID LIMIT	NP
PLASTIC LIMIT	NP
PLASTIC INDEX	NP

tierra SOUTH FLORIDA

GRAIN SIZE DATA SHEET

PROJECT NAME: I-95 Express Lanes **DATE:** 2/22/2012

PROJECT #: 7111-11-297



ASTM D 2487 Classification of Soil for Engineering Purposes			Coarse Sand	< #4 and > #10	Cu = D60 / D10
Coarse Gravel	< 3" and > 3/4"		Medium Sand	< #10 and > #40	Cc = (D30)^2 / (D10 x D60)
Fine Gravel	< 3/4" and > #4		Fine Sand	< #40 and > #200	

BORING # AB-28 **OFFSET (ft)** **DEPTH (ft):** 2.5 - 5.0

SOIL CLASSIFICATION: A-2-4

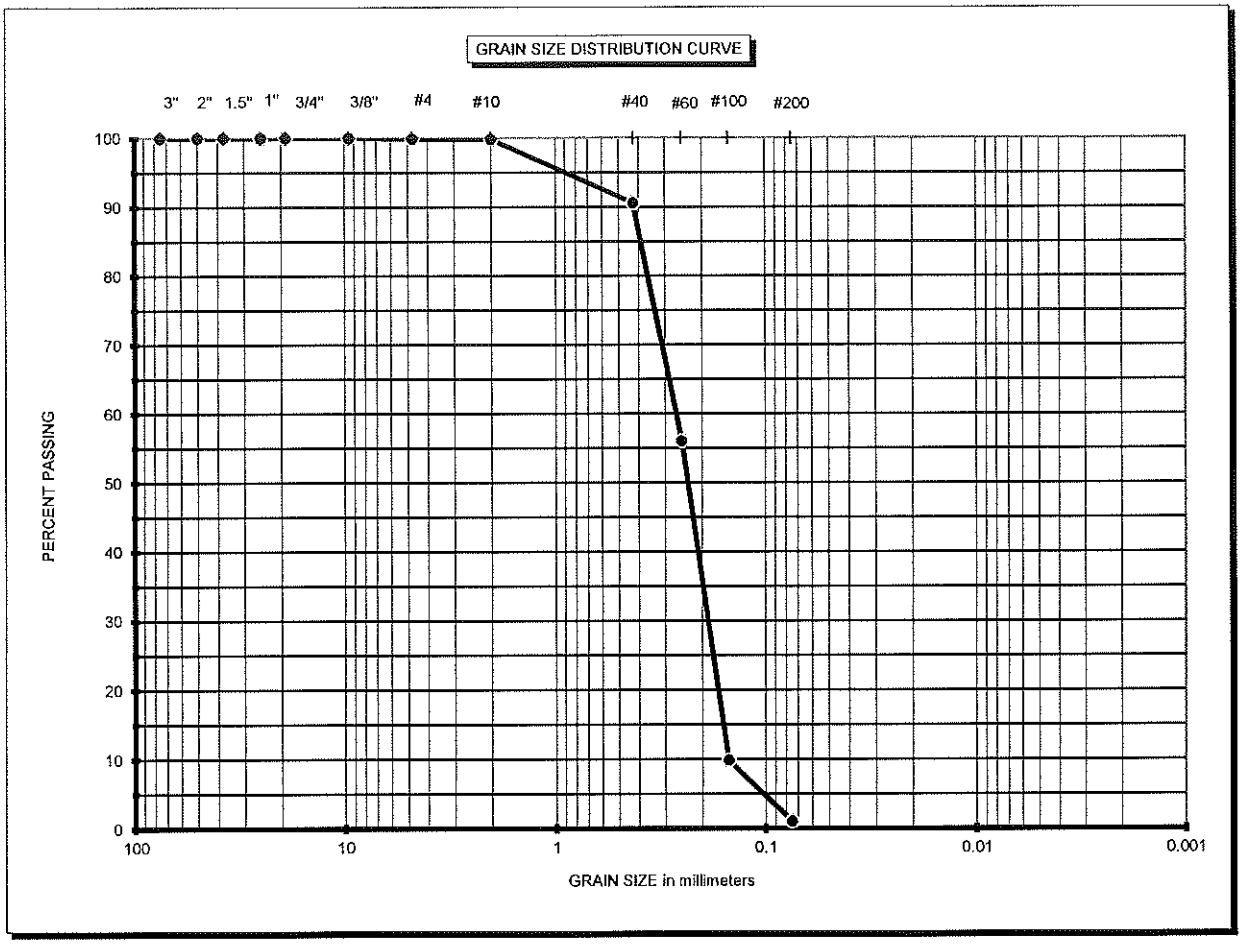
ATTERBERG LIMIT (- #40 Material)	
LIQUID LIMIT	NP
PLASTIC LIMIT	NP
PLASTIC INDEX	NP

tierra SOUTH FLORIDA

GRAIN SIZE DATA SHEET

PROJECT NAME: I-95 Express Lanes **DATE:** 2/17/2012

PROJECT #: 7111-11-297



ASTM D 2487 Classification of Soil for Engineering Purposes			Coarse Sand	< #4 and > #10	Cu = D60 / D10
Coarse Gravel	< 3" and > 3/4"		Medium Sand	< #10 and > #40	Cc = (D30)^2 / (D10 x D60)
Fine Gravel	< 3/4" and > #4		Fine Sand	< #40 and > #200	

BORING # AB-71 **OFFSET (ft)** _____ **DEPTH (ft):** 0.3 - 5.0

SOIL CLASSIFICATION: A-3

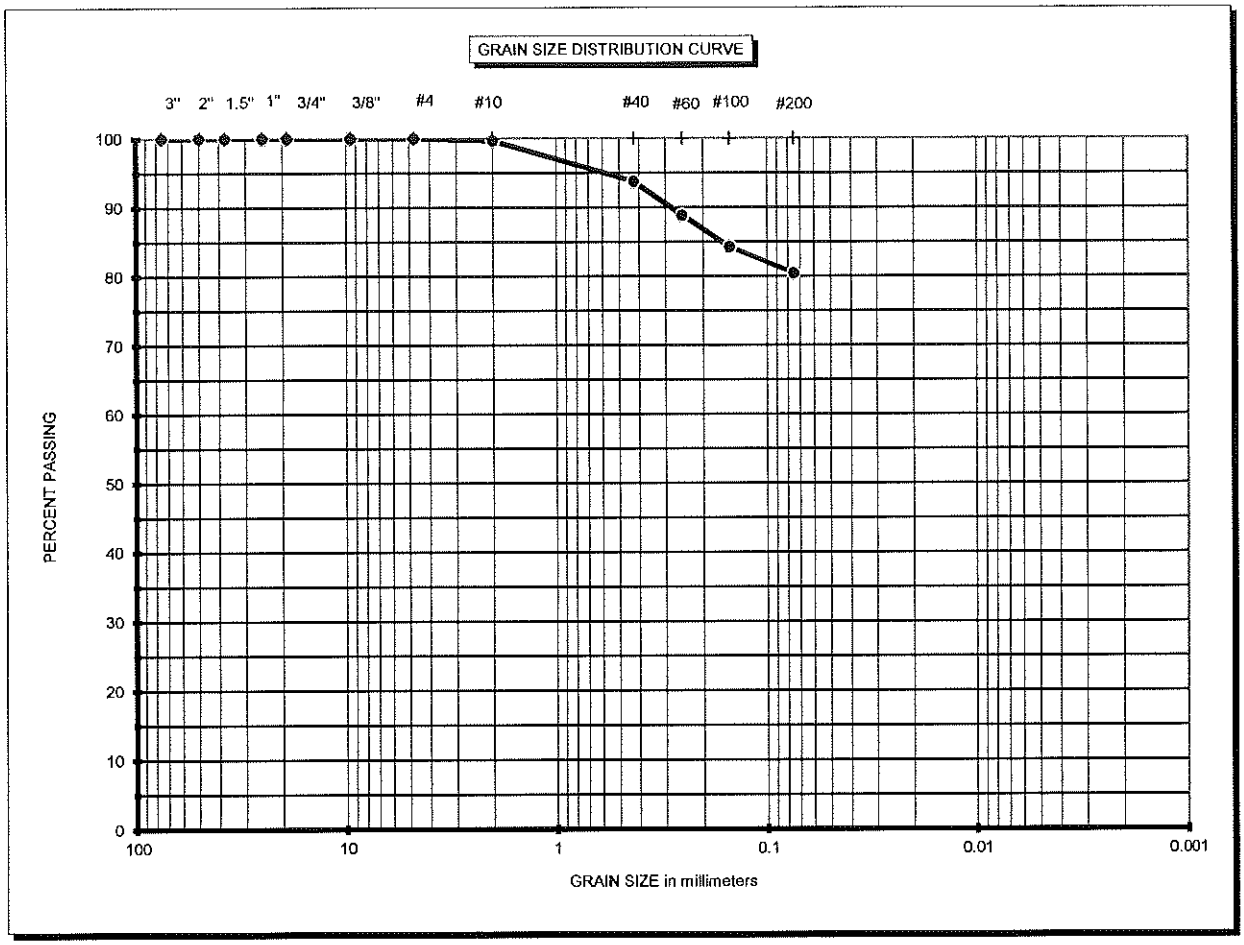
ATTERBERG LIMIT (- #40 Material)
LIQUID LIMIT
PLASTIC LIMIT
PLASTIC INDEX

tierra SOUTH FLORIDA

GRAIN SIZE DATA SHEET

PROJECT NAME: I-95 Express Lanes **DATE:** 2/17/2012

PROJECT #: 7111-11-297



ASTM D 2487 Classification of Soil for Engineering Purposes			Coarse Sand	< #4 and > #10	Cu = D60 / D10
Coarse Gravel	< 3" and > 3/4"		Medium Sand	< #10 and > #40	Cc = (D30)^2 / (D10 x D60)
Fine Gravel	< 3/4" and > #4		Fine Sand	< #40 and > #200	

BORING # AB-73 **OFFSET (ft)** **DEPTH (ft):** 3.0 - 4.0

SOIL CLASSIFICATION: A-4

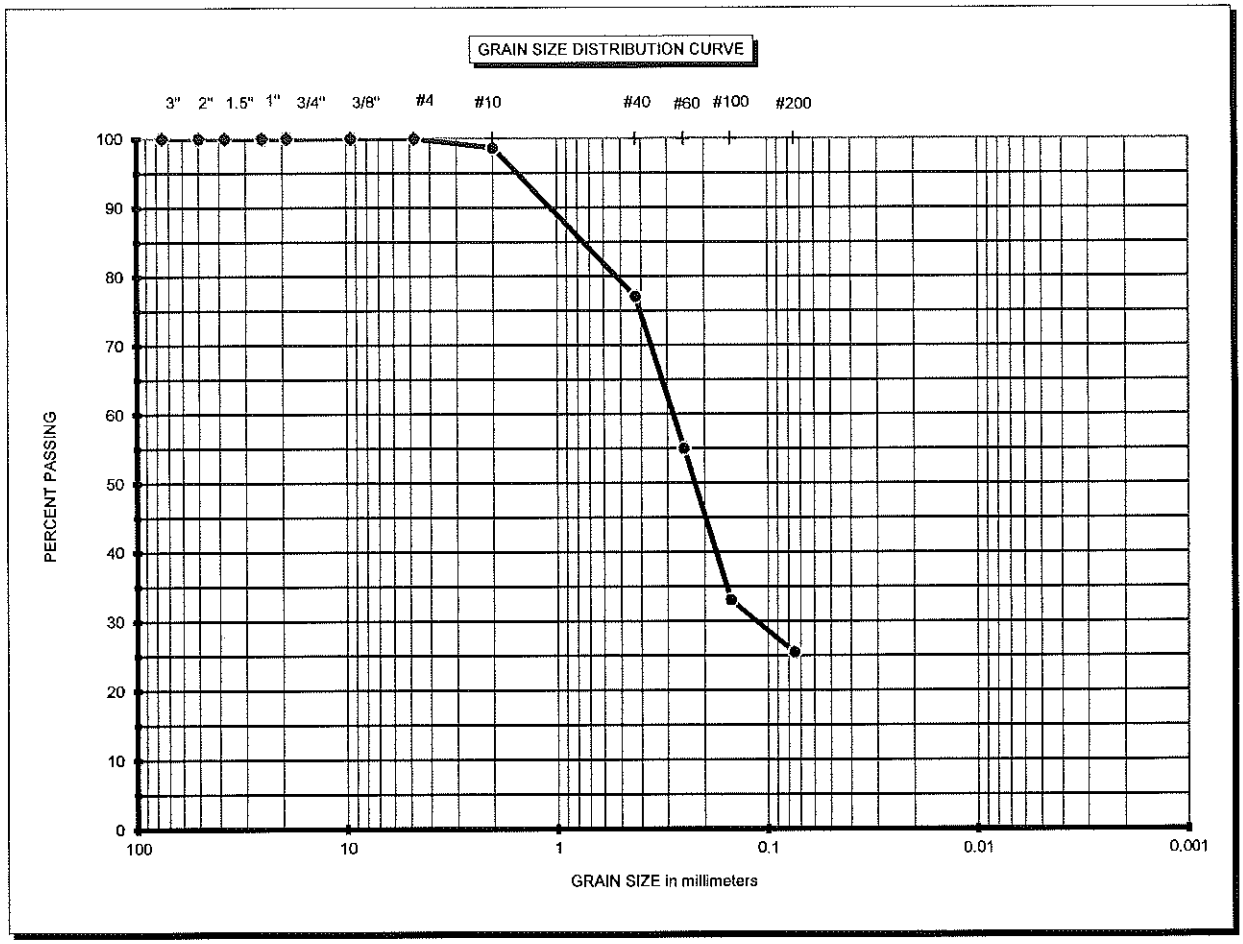
ATTERBERG LIMIT (- #40 Material)	
LIQUID LIMIT	NP
PLASTIC LIMIT	NP
PLASTIC INDEX	NP

tierra SOUTH FLORIDA

GRAIN SIZE DATA SHEET

PROJECT NAME: I-95 Express Lanes **DATE:** 2/17/2012

PROJECT #: 7111-11-297



ASTM D 2487 Classification of Soil for Engineering Purposes			Coarse Sand	< #4 and > #10	Cu = D60 / D10
Coarse Gravel	< 3" and > 3/4"		Medium Sand	< #10 and > #40	Cc = (D30)^2 / (D10 x D60)
Fine Gravel	< 3/4" and > #4		Fine Sand	< #40 and > #200	

BORING # AB-76 **OFFSET (ft)** **DEPTH (ft):** 2.5 - 3.0

SOIL CLASSIFICATION: A-8

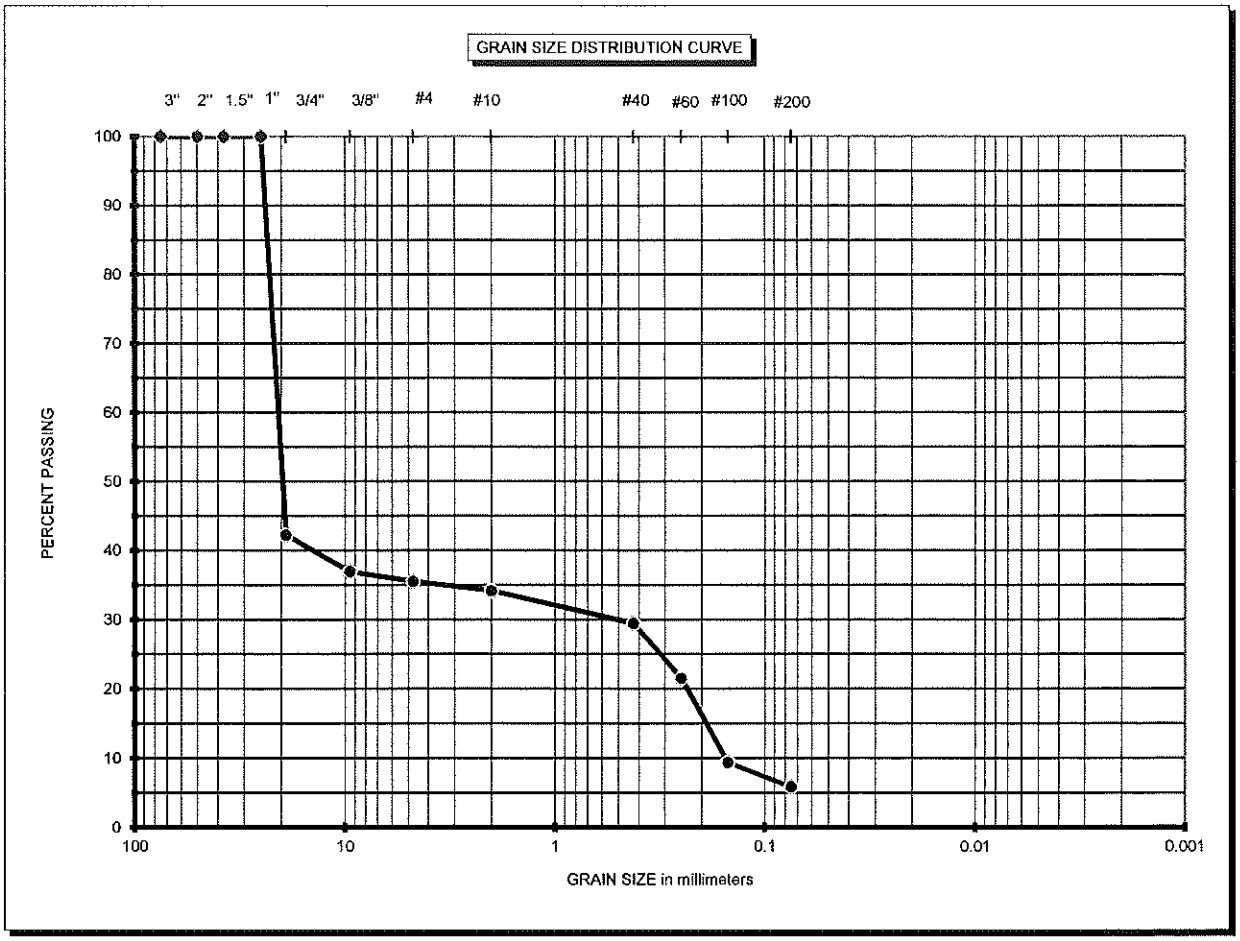
ATTERBERG LIMIT (- #40 Material)
LIQUID LIMIT
PLASTIC LIMIT
PLASTIC INDEX

tierra SOUTH FLORIDA

GRAIN SIZE DATA SHEET

PROJECT NAME: I-95 Express Lanes **DATE:** 2/17/2012

PROJECT #: 7111-11-297



ASTM D 2487 Classification of Soil for Engineering Purposes			Coarse Sand	< #4 and > #10	Cu = D60 / D10
Coarse Gravel	< 3" and > 3/4"		Medium Sand	< #10 and > #40	Cc = (D30)^2 / (D10 x D60)
Fine Gravel	< 3/4" and > #4		Fine Sand	< #40 and > #200	

BORING # AB-81 **OFFSET (ft)** **DEPTH (ft):** 0.3 - 5.0

SOIL CLASSIFICATION: A-1-a

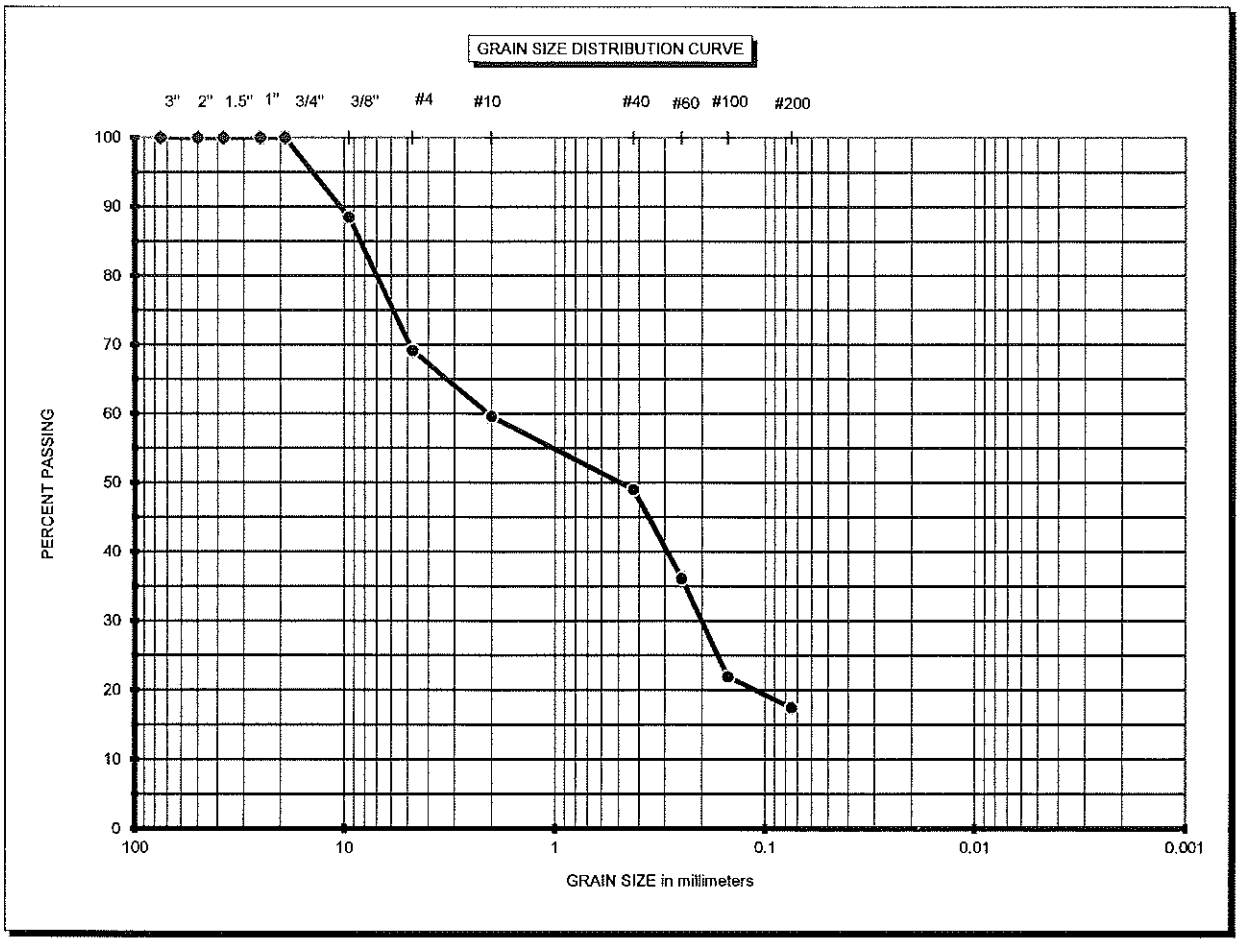
ATTERBERG LIMIT (- #40 Material)
LIQUID LIMIT
PLASTIC LIMIT
PLASTIC INDEX

tierra SOUTH FLORIDA

GRAIN SIZE DATA SHEET

PROJECT NAME: I-95 Express Lanes **DATE:** 2/22/2012

PROJECT #: 7111-11-297



ASTM D 2487 Classification of Soil for Engineering Purposes			Coarse Sand	< #4 and > #10	Cu = D60 / D10
Coarse Gravel	< 3" and > 3/4"		Medium Sand	< #10 and > #40	Cc = (D30)^2 / (D10 x D60)
Fine Gravel	< 3/4" and > #4		Fine Sand	< #40 and > #200	

BORING # AB-141 **OFFSET (ft)** **DEPTH (ft):** 0.5 - 5.0

SOIL CLASSIFICATION: A-1-b

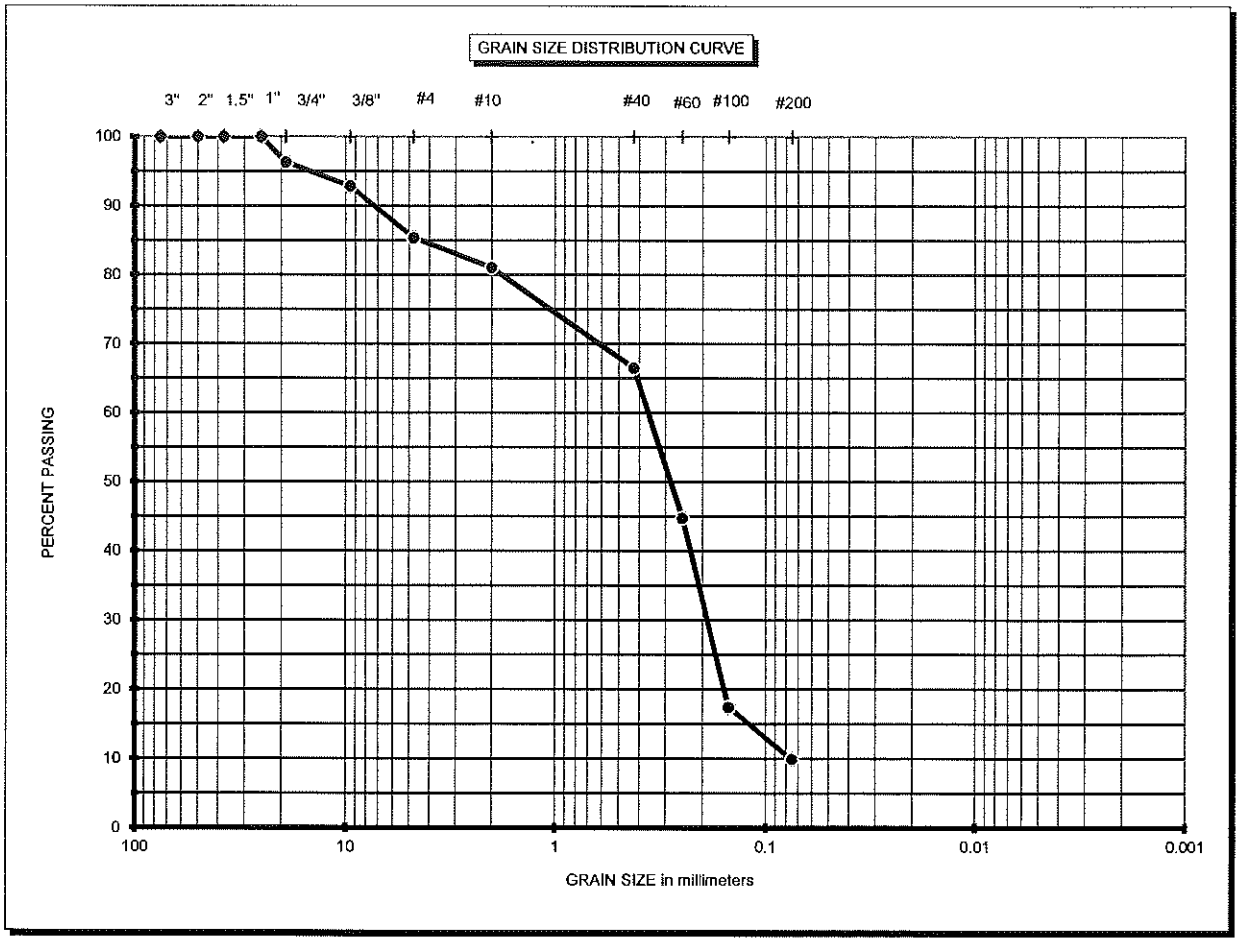
ATTERBERG LIMIT (- #40 Material)
LIQUID LIMIT
PLASTIC LIMIT
PLASTIC INDEX

tierra SOUTH FLORIDA

GRAIN SIZE DATA SHEET

PROJECT NAME: I-95 Express Lanes **DATE:** 2/22/2012

PROJECT #: 7111-11-297



ASTM D 2487 Classification of Soil for Engineering Purposes			Coarse Sand	< #4 and > #10	Cu = D60 / D10
Coarse Gravel	< 3" and > 3/4"		Medium Sand	< #10 and > #40	Cc = (D30)^2 / (D10 x D60)
Fine Gravel	< 3/4" and > #4		Fine Sand	< #40 and > #200	

BORING # AB-157 **OFFSET (ft)** _____ **DEPTH (ft):** 2.0 - 5.0

SOIL CLASSIFICATION: A-3

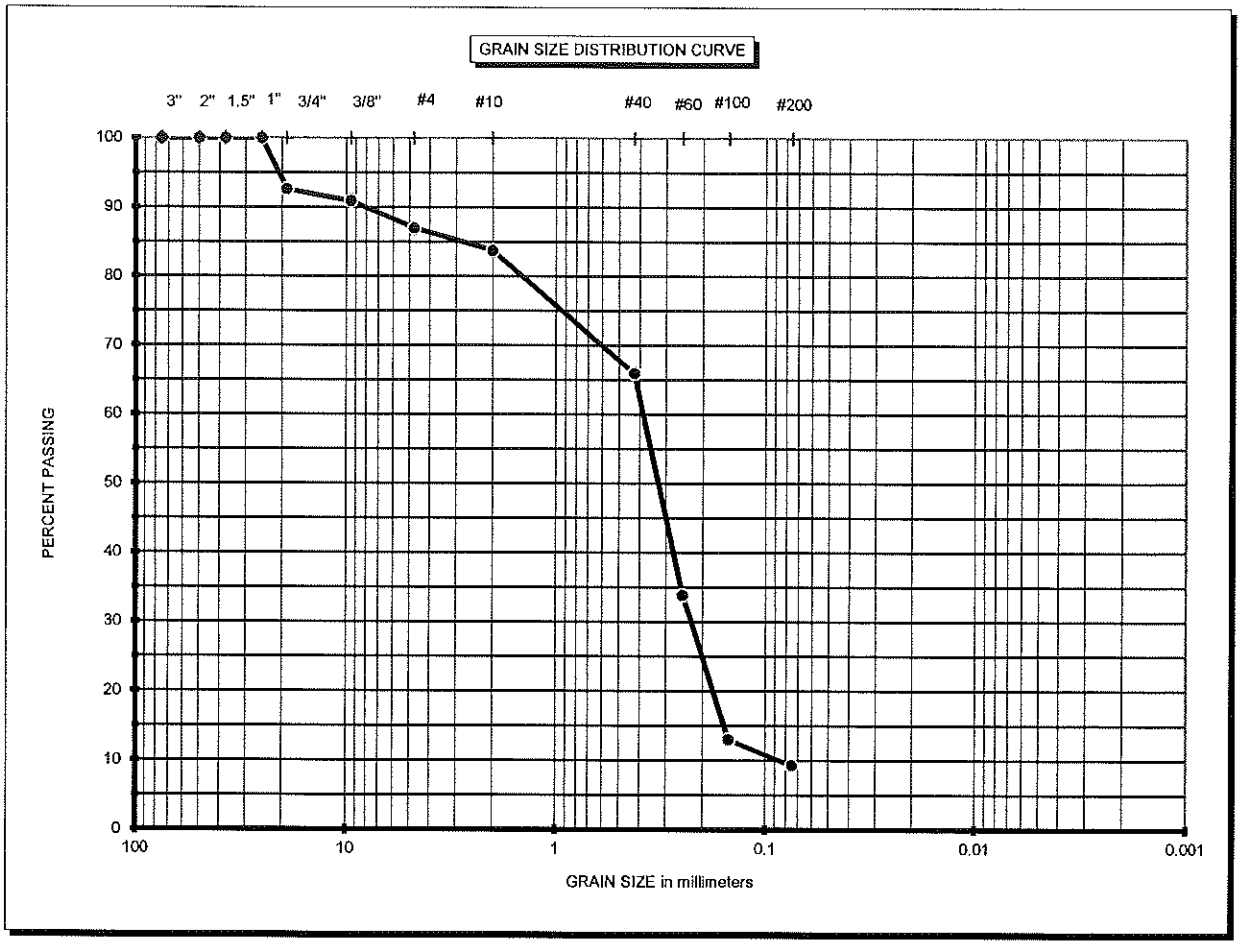
ATTERBERG LIMIT (- #40 Material)
LIQUID LIMIT
PLASTIC LIMIT
PLASTIC INDEX

tierra SOUTH FLORIDA

GRAIN SIZE DATA SHEET

PROJECT NAME: I-95 Express Lanes **DATE:** 3/14/2012

PROJECT #: 7111-11-297



ASTM D 2487 Classification of Soil for Engineering Purposes			Coarse Sand	< #4 and > #10	Cu = D60 / D10
Coarse Gravel	< 3" and > 3/4"		Medium Sand	< #10 and > #40	Cc = (D30)^2 / (D10 x D60)
Fine Gravel	< 3/4" and > #4		Fine Sand	< #40 and > #200	

BORING # AB-445 **OFFSET (ft)** _____ **DEPTH (ft):** 0.3 - 5.0

SOIL CLASSIFICATION: A-3

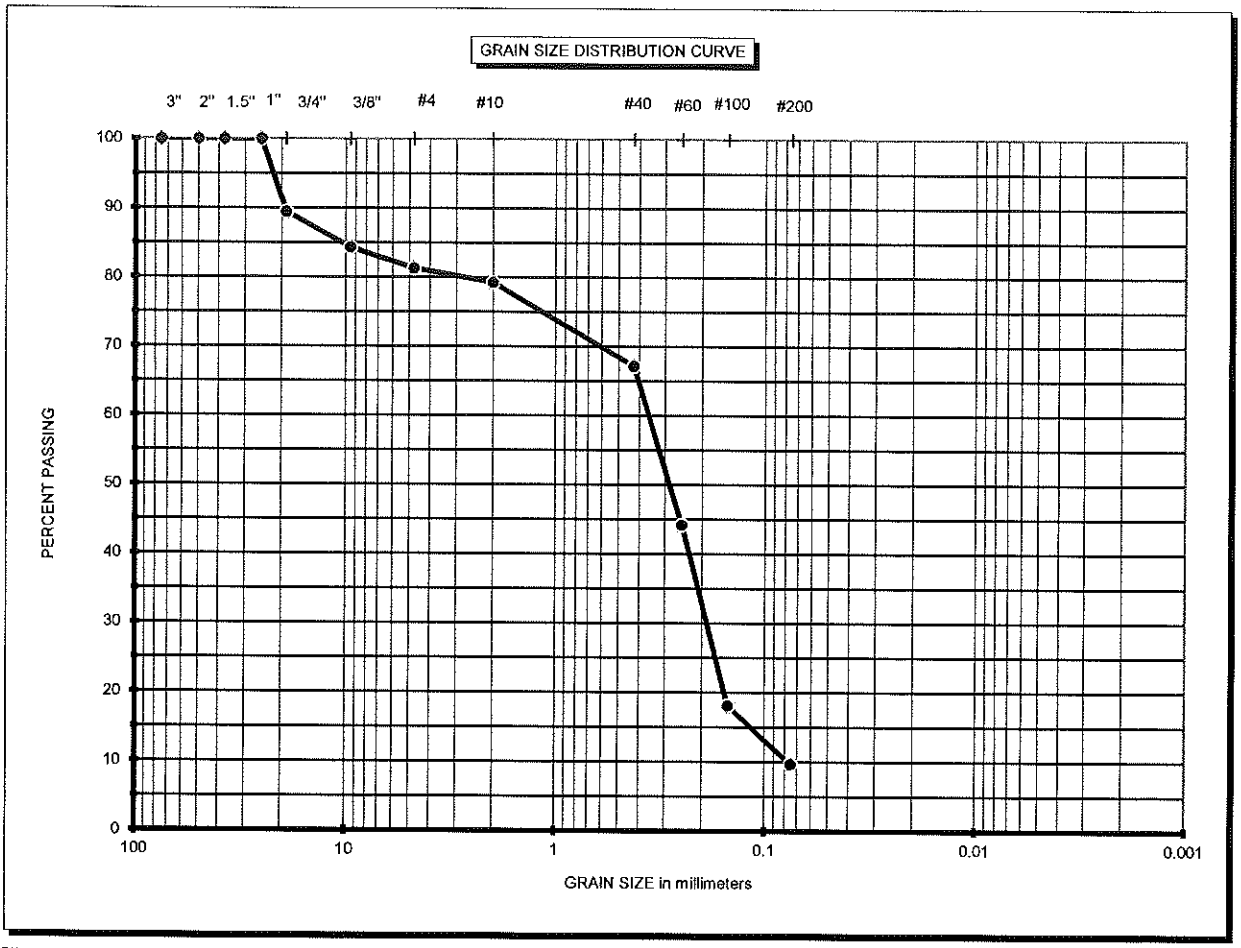
ATTERBERG LIMIT (- #40 Material)
LIQUID LIMIT
PLASTIC LIMIT
PLASTIC INDEX

tierra SOUTH FLORIDA

GRAIN SIZE DATA SHEET

PROJECT NAME: I-95 Express Lanes **DATE:** 3/14/2012

PROJECT #: 7111-11-297



ASTM D 2487 Classification of Soil for Engineering Purposes			Coarse Sand	< #4 and > #10	Cu = D60 / D10
Coarse Gravel	< 3" and > 3/4"		Medium Sand	< #10 and > #40	Cc = (D30)^2 / (D10 x D60)
Fine Gravel	< 3/4" and > #4		Fine Sand	< #40 and > #200	

BORING # AB-506 **OFFSET (ft)** _____ **DEPTH (ft):** 0.3 - 5.0

SOIL CLASSIFICATION: A-3

ATTERBERG LIMIT (- #40 Material)
LIQUID LIMIT
PLASTIC LIMIT
PLASTIC INDEX

TIERRA SOUTH FLORIDA

SUMMARY OF CORROSION TEST RESULTS

I-95 Express Lanes

TSF Project No: 7111-11-297

Boring Number	Depth (ft)	pH (FM 5-550)	Resistivity (ohm-cm) (FM 5-551)	Chlorides (ppm) (FM 5-552)	Sulfates (ppm) (FM 5-553)	Environmental Classification* (Soil)	
						Steel	Concrete
AB - 79	4.0 - 5.0	8.6	12,000	30	0.0	Slightly Aggressive	Slightly Aggressive
AB - 131	3.0 - 5.0	8.5	14,000	30	0.0	Slightly Aggressive	Slightly Aggressive
AB - 221	7.0 - 10.0	8.5	19,000	30	0.0	Slightly Aggressive	Slightly Aggressive
AB - 441	0.3 - 5.0	8.3	16,000	45	0.0	Slightly Aggressive	Slightly Aggressive

* As per FDOT Structures Design Guidelines, Table 1.1, Updated July 7, 2007

**** Any reading represented as "0.0" is below the detection limit of 4.8 ppm**

APPENDIX – B9

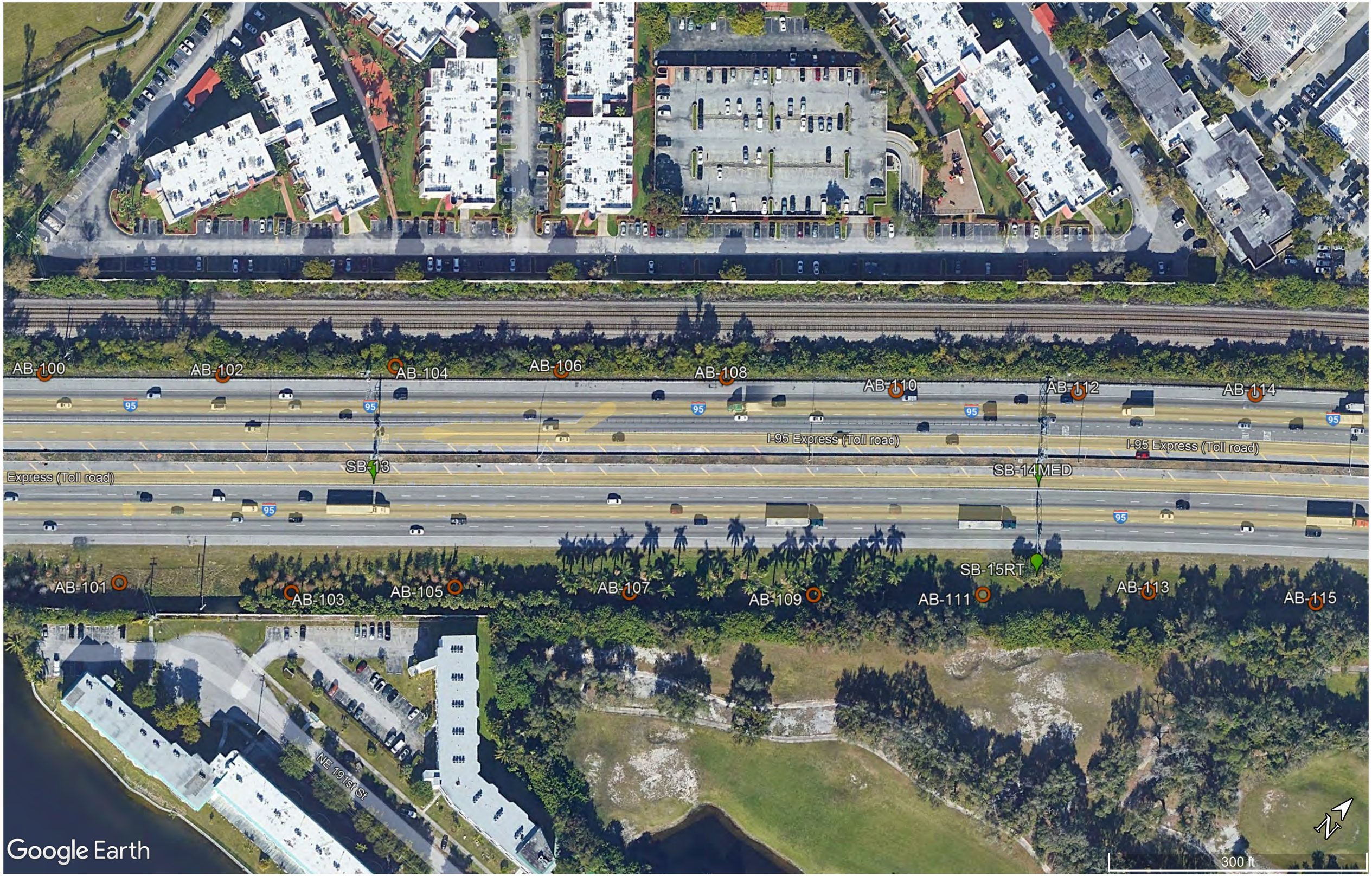
EXISTING GEOTECHNICAL INFORMATION

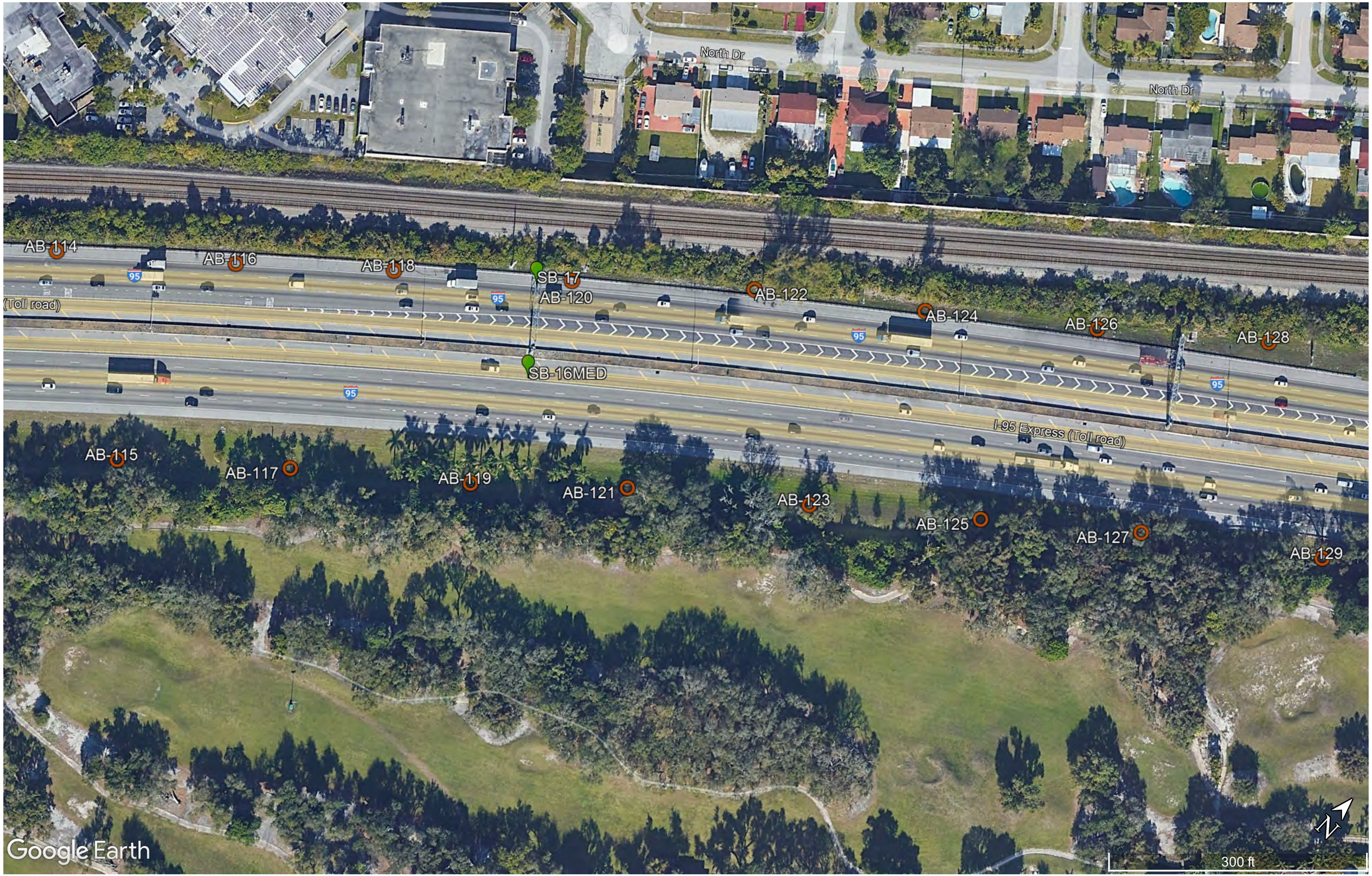
NE 5th Ave
Miami Gardens Dr
860
95
14
SB-11
SB-08
Begin (Miami Garden Dr)
866+00
867+00
868+00
869+00
870+00
871+00
872+00
873+00
874+00
P-1
P-1 (0-10')
MR-3
C-2
027-CCTV (CCTV-26)
NB-43
MR-6
NW-12
NW-13
SB-09RT
C-1
NE 180th Dr
NE 181st St
Google Earth
300 ft

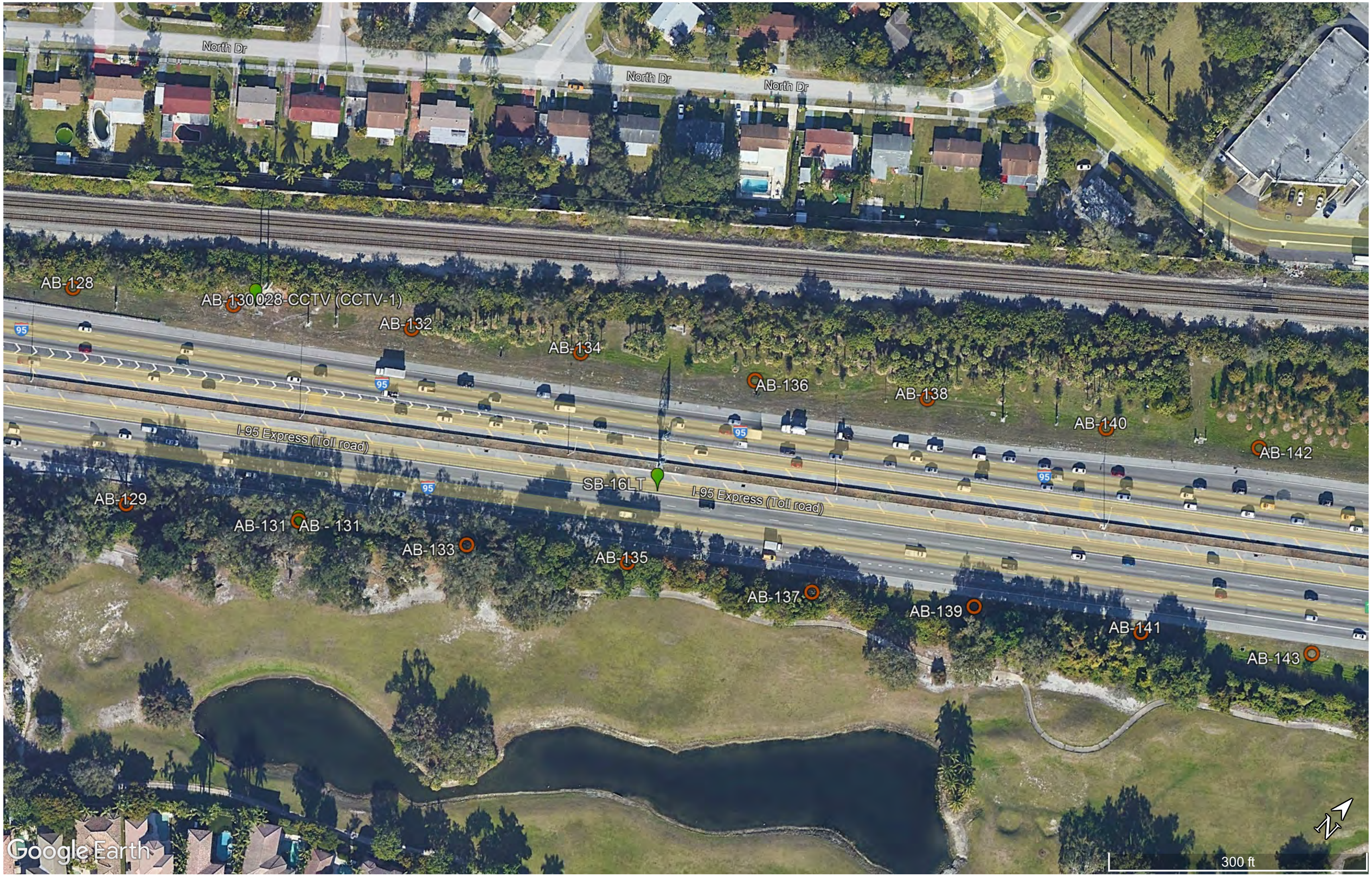
P-1
P-1 (0-10')
MR-3
C-2
C-3
A-1
871+00
872+00
873+00
874+00
027-CCTV (CCTV-26)
MA-1
C-1
SB-09RT
NE 5th Ave
AB-73
I-95 Express (Toll road)
SB-10
AB-66
AB-67
AB-68
AB-70
AB-71
AB-72
AB-74
MR-2
A-3
C-11
C-10
Miami Gardens Dr
NE 7th Ct
NE 184th Terrace
NE 181st St
C-9
C-7
C-8
C-5
C-6
C-4
MR-1
Google Earth
300 ft

NE 5th Ave
AB-73
AB-75
AB-76
AB-78
BSC-1
SB-10B
BSC-4
AB-74
AB-77
AB-79
AB - 79
AB-81
BSC-2
BSC-5
AB-83
AB-83
SB-11LT
I-95 Express (Toll road)
I-95 Express (Toll road)
AB-85
NE 184th Terrace
Google Earth
300 ft

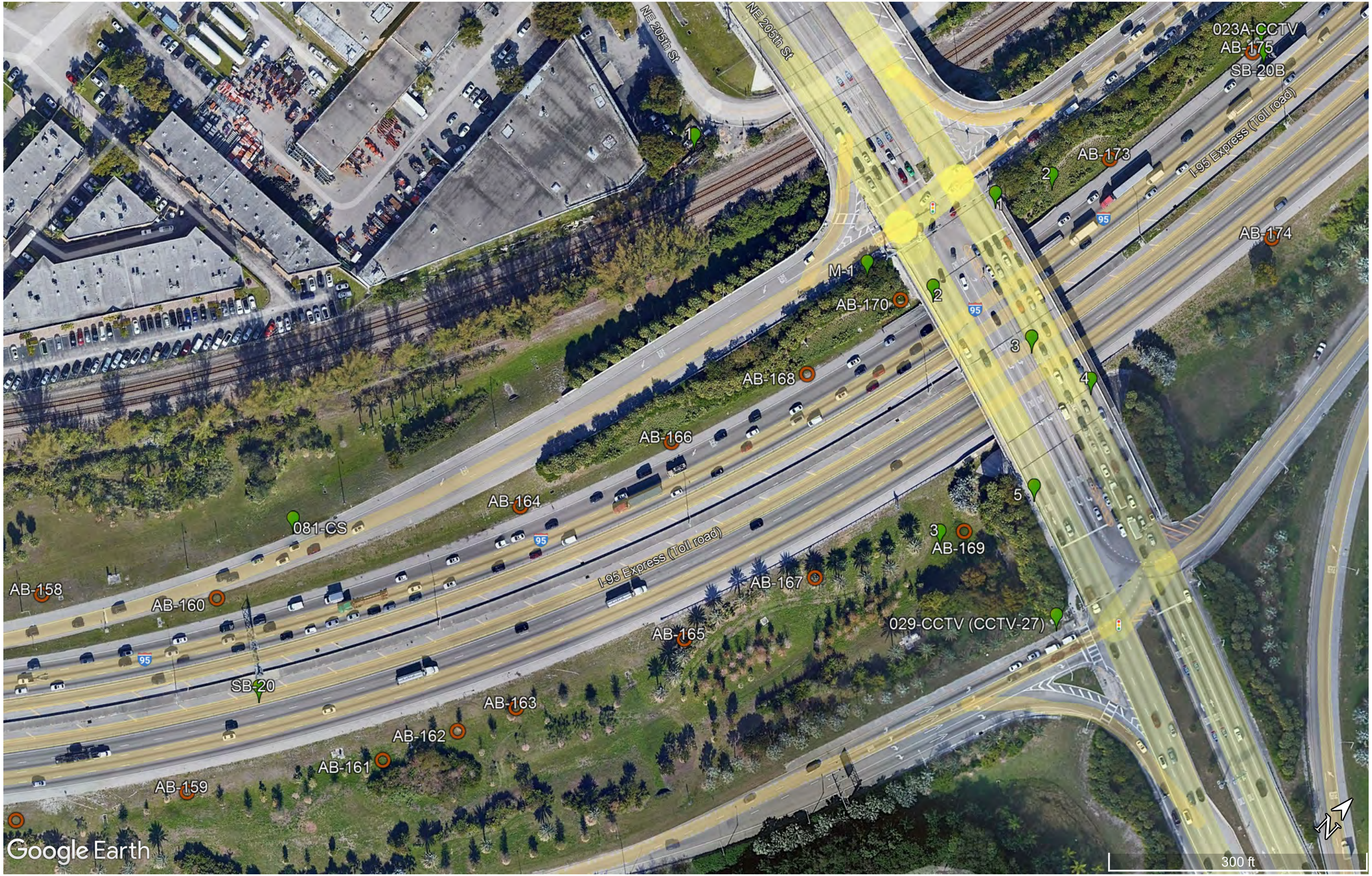
NE 8th Ct
SB-11LT
AB-94
AB-96
AB-98
AB-100
I-95 Express (Toll road)
SB-12
I-95 Express (Toll road)
AB-85
AB-87
AB-88
AB-89
AB-91
AB-92
AB-93
AB-95
AB-97
AB-99
AB-101
Google Earth
300 ft


AB-100
AB-102
AB-104
AB-106
AB-108
AB-110
AB-112
AB-114
I-95 Express (Toll road)
I-95 Express (Toll road)
I-95 Express (Toll road)
SB-13
SB-14MED
SB-15RT
AB-101
AB-103
AB-105
AB-107
AB-109
AB-111
AB-113
AB-115
NE 191st St
Google Earth
300 ft


North Dr
North Dr
AB-114
AB-116
AB-118
SB-17
AB-120
AB-122
AB-124
AB-126
AB-128
(Toll road)
95
SB-16MED
I-95 Express (Toll road)
AB-115
AB-117
AB-119
AB-121
AB-123
AB-125
AB-127
AB-129
Google Earth
300 ft

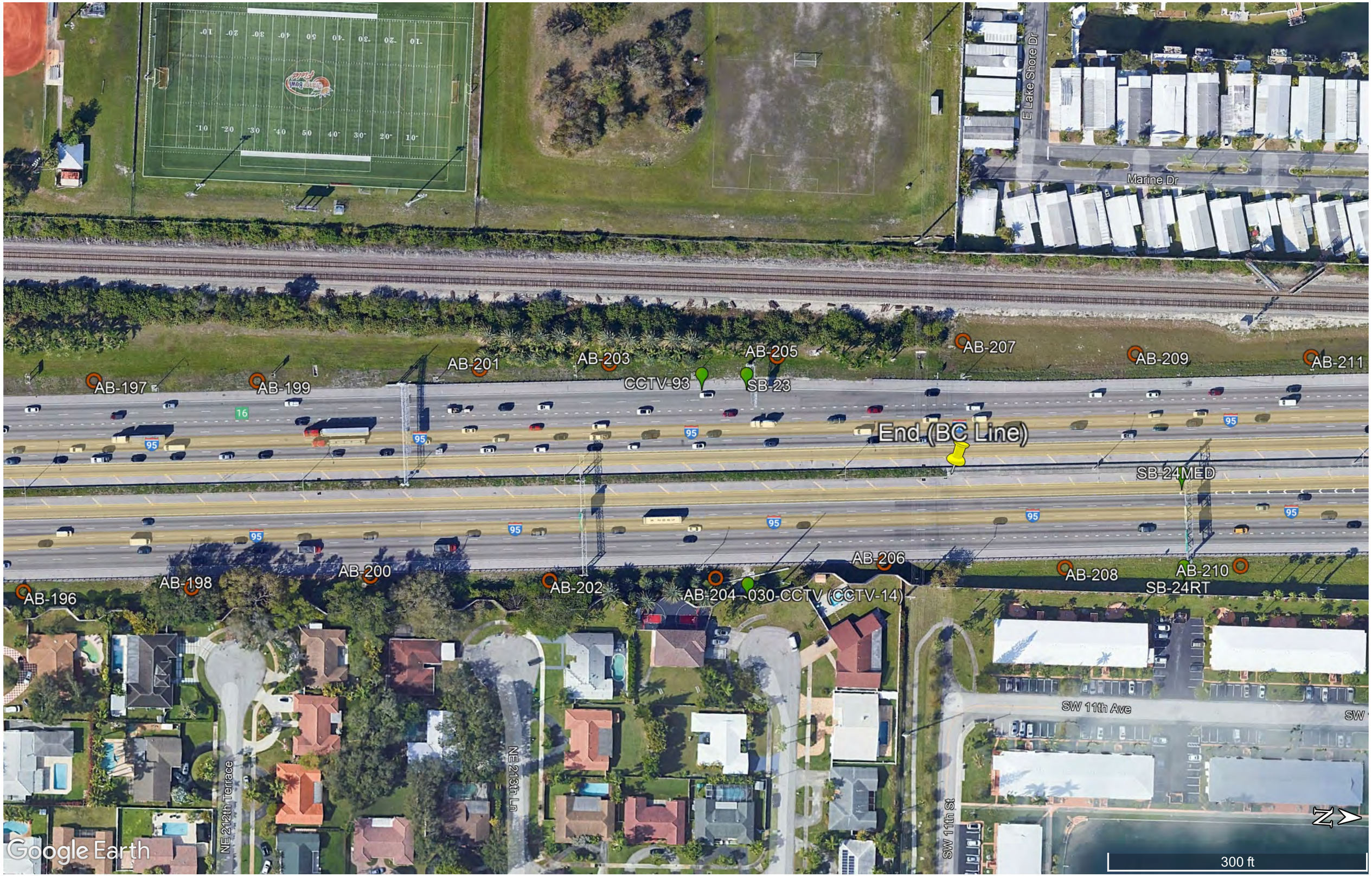

North Dr
North Dr
North Dr
AB-128
AB-130028-CCTV (CCTV-1)
AB-132
AB-134
AB-136
AB-138
AB-140
AB-142
95
I-95 Express (Toll road)
SB-16LT
I-95 Express (Toll road)
AB-129
AB-131
AB - 131
AB-133
AB-135
AB-137
AB-139
AB-141
AB-143
Google Earth
300 ft

NE 15th Ct
AB-142
AB-144
AB-146
AB-148
AB-150
AB-152
AB-154
AB-158
95
16
I-95 Express (Toll road)
AB-143
SB-19RT
AB-145
AB-147
AB-149
AB-151
AB-153
AB-155
AB-156
AB-157
Google Earth
300 ft


NE 205th St
NE 205th St
023A-CCTV
AB-175
SB-20B
I-95 Express (Toll road)
AB-173
AB-174
M-1
AB-170
AB-168
AB-166
AB-164
081-CS
AB-158
AB-160
SB-20
AB-163
AB-162
AB-161
AB-159
I-95 Express (Toll road)
AB-167
AB-165
AB-169
029-CCTV (CCTV-27)
Google Earth
300 ft

NE 17th Ave
NE 17th Ave
M-1
AB-168
AB-170
2
1
2
AB-173
RW-1
AB-177
RW-2
AB-179
AB-175
023A-CCTV
SB-20B
AB-178
AB-181
AB-183
3
3
AB-169
4
5
AB-174
AB-176
I-95 Express (Toll road)
AB-180
080-CS
AB-182
AB-184
NE 19th Ave
Google Earth
300 ft

AB-183
AB-185
AB-187
AB-189
AB-191
SB-21LT
AB-193
AB-195
AB-197
AB-184
AB-186
AB-188
AB-190
AB-192
AB-194
SB-22
AB-196
AB-198
SB-21MED
I-95 Express (Toll road)
I-95 Express (Toll road)
NE 18th Ct
NE 21th Ln
95
16
Google Earth
300 ft
N


E Lake Shore Dr
Marine Dr
AB-197
AB-199
AB-201
AB-203
CCTV-93
AB-205
SB-23
AB-207
AB-209
AB-211
End (BC Line)
SB-24MED
AB-196
AB-198
AB-200
AB-202
AB-204
030-CCTV (CCTV-14)
AB-206
AB-208
AB-210
SB-24RT
SW 11th Ave
NE 212th Terrace
NE 213th Ln
SW 11th St
Google Earth
300 ft

APPENDIX – C

FB DEEP OUTPUTS – VERTICAL CAPACITY ANALYSIS OF PRECAST CONCRETE PILES

Florida Bridge Software Institute Date: November 29, 2023
Shaft and Pile Analysis (FB-Deep v.2.06) Time: 09:48:38

General Information:
==========
Input file: .....tructure\Bridge\FB-Deep\Pile\Predrill 10 ft\B-101-Void-10ft.in
Project number: 2000-01-21007
Job name: PD&E I-95
Engineer: ZP
Units: English

Analysis Information:
==========
Analysis Type: SPT

Soil Information:
==========
Boring date: 8-25-2023, Boring Number: B-101
Station number: 685+50 Offset: -97.1

Ground Elevation: 8.580(ft)

Hammer type: Automatic Hammer, Correction factor = 1.24

ID	Depth (ft)	No. of Blows (Blows/ft)	Soil Type
1	0.00	11.00	5- Cavity layer
2	2.00	12.00	5- Cavity layer
3	4.00	0.00	5- Cavity layer
4	6.00	4.00	5- Cavity layer
5	8.00	8.00	5- Cavity layer
6	10.00	14.00	4- Lime Stone/Very shelly sand
7	12.00	16.00	4- Lime Stone/Very shelly sand
8	13.50	18.00	4- Lime Stone/Very shelly sand
9	15.00	13.00	4- Lime Stone/Very shelly sand
10	18.00	13.00	4- Lime Stone/Very shelly sand
11	20.50	17.00	4- Lime Stone/Very shelly sand
12	23.00	14.00	4- Lime Stone/Very shelly sand
13	25.50	2.00	3- Clean sand
14	28.00	2.00	3- Clean sand
15	30.50	8.00	3- Clean sand
16	33.00	18.00	3- Clean sand
17	35.00	4.00	2- Clay and silty sand
18	37.00	24.00	4- Lime Stone/Very shelly sand
19	38.00	47.00	4- Lime Stone/Very shelly sand
20	40.50	21.00	4- Lime Stone/Very shelly sand
21	43.00	19.00	4- Lime Stone/Very shelly sand
22	45.50	40.00	4- Lime Stone/Very shelly sand
23	48.00	12.00	4- Lime Stone/Very shelly sand
24	50.50	18.00	4- Lime Stone/Very shelly sand
25	53.00	22.00	4- Lime Stone/Very shelly sand
26	55.50	60.00	4- Lime Stone/Very shelly sand
27	58.00	55.00	4- Lime Stone/Very shelly sand
28	60.50	27.00	4- Lime Stone/Very shelly sand
29	63.00	22.00	4- Lime Stone/Very shelly sand
30	65.50	15.00	3- Clean sand
31	68.00	13.00	4- Lime Stone/Very shelly sand
32	70.50	32.00	4- Lime Stone/Very shelly sand
33	73.00	62.00	4- Lime Stone/Very shelly sand
34	75.50	45.00	4- Lime Stone/Very shelly sand
35	78.00	51.00	4- Lime Stone/Very shelly sand
36	80.50	49.00	4- Lime Stone/Very shelly sand
37	83.00	76.00	3- Clean sand
38	85.50	57.00	4- Lime Stone/Very shelly sand
39	88.00	20.00	4- Lime Stone/Very shelly sand
40	90.50	48.00	3- Clean sand
41	93.00	41.00	3- Clean sand
42	95.50	60.00	4- Lime Stone/Very shelly sand

43	98.00	60.00	4- Lime Stone/Very shelly sand
44	100.00	60.00	4- Lime Stone/Very shelly sand

Blowcount Average Per Soil Layer

Layer Num.	Starting Elevation (ft)	Bottom Elevation (ft)	Thickness (ft)	Average Blowcount (Blows/ft)	Soil Type
1	8.58	-1.42	10.00	7.00	5-Void
2	-1.42	-16.92	15.50	14.71	4-Limestone, Very Shelly Sand
3	-16.92	-26.42	9.50	6.95	3-Clean Sand
4	-26.42	-28.42	2.00	4.00	2-Clay and Silty Sand
5	-28.42	-56.92	28.50	30.93	4-Limestone, Very Shelly Sand
6	-56.92	-59.42	2.50	15.00	3-Clean Sand
7	-59.42	-74.42	15.00	42.00	4-Limestone, Very Shelly Sand
8	-74.42	-76.92	2.50	76.00	3-Clean Sand
9	-76.92	-81.92	5.00	38.50	4-Limestone, Very Shelly Sand
10	-81.92	-86.92	5.00	44.50	3-Clean Sand
11	-86.92	-91.42	4.50	60.00	4-Limestone, Very Shelly Sand

Driven Pile Data:

Pile unit weight = 150.00(pcf), Section Type: Square

Pile Geometry:

Width (in)	Length (ft)	Tip Elev. (ft)
18.00	10.00	-1.42
18.00	11.00	-2.42
18.00	12.00	-3.42
18.00	13.00	-4.42
18.00	14.00	-5.42
18.00	15.00	-6.42
18.00	16.00	-7.42
18.00	17.00	-8.42
18.00	18.00	-9.42
18.00	19.00	-10.42
18.00	20.00	-11.42
18.00	21.00	-12.42
18.00	22.00	-13.42
18.00	23.00	-14.42
18.00	24.00	-15.42
18.00	25.00	-16.42
18.00	26.00	-17.42
18.00	27.00	-18.42
18.00	28.00	-19.42
18.00	29.00	-20.42
18.00	30.00	-21.42
18.00	31.00	-22.42
18.00	32.00	-23.42
18.00	33.00	-24.42
18.00	34.00	-25.42
18.00	35.00	-26.42
18.00	36.00	-27.42
18.00	37.00	-28.42
18.00	38.00	-29.42
18.00	39.00	-30.42
18.00	40.00	-31.42
18.00	41.00	-32.42
18.00	42.00	-33.42
18.00	43.00	-34.42
18.00	44.00	-35.42
18.00	45.00	-36.42
18.00	46.00	-37.42
18.00	47.00	-38.42
18.00	48.00	-39.42

18.00	49.00	-40.42
18.00	50.00	-41.42
18.00	51.00	-42.42
18.00	52.00	-43.42
18.00	53.00	-44.42
18.00	54.00	-45.42
18.00	55.00	-46.42
18.00	56.00	-47.42
18.00	57.00	-48.42
18.00	58.00	-49.42
18.00	59.00	-50.42
18.00	60.00	-51.42
18.00	61.00	-52.42
18.00	62.00	-53.42
18.00	63.00	-54.42
18.00	64.00	-55.42
18.00	65.00	-56.42
18.00	66.00	-57.42
18.00	67.00	-58.42
18.00	68.00	-59.42
18.00	69.00	-60.42
18.00	70.00	-61.42
18.00	71.00	-62.42
18.00	72.00	-63.42
18.00	73.00	-64.42
18.00	74.00	-65.42
18.00	75.00	-66.42
18.00	76.00	-67.42
18.00	77.00	-68.42
18.00	78.00	-69.42
18.00	79.00	-70.42
18.00	80.00	-71.42
18.00	81.00	-72.42
18.00	82.00	-73.42
18.00	83.00	-74.42
18.00	84.00	-75.42
18.00	85.00	-76.42
18.00	86.00	-77.42
18.00	87.00	-78.42
18.00	88.00	-79.42
18.00	89.00	-80.42
18.00	90.00	-81.42
18.00	91.00	-82.42
18.00	92.00	-83.42
18.00	93.00	-84.42
18.00	94.00	-85.42
18.00	95.00	-86.42
24.00	10.00	-1.42
24.00	11.00	-2.42
24.00	12.00	-3.42
24.00	13.00	-4.42
24.00	14.00	-5.42
24.00	15.00	-6.42
24.00	16.00	-7.42
24.00	17.00	-8.42
24.00	18.00	-9.42
24.00	19.00	-10.42
24.00	20.00	-11.42
24.00	21.00	-12.42
24.00	22.00	-13.42
24.00	23.00	-14.42
24.00	24.00	-15.42
24.00	25.00	-16.42
24.00	26.00	-17.42
24.00	27.00	-18.42
24.00	28.00	-19.42
24.00	29.00	-20.42
24.00	30.00	-21.42
24.00	31.00	-22.42
24.00	32.00	-23.42
24.00	33.00	-24.42
24.00	34.00	-25.42
24.00	35.00	-26.42

24.00	36.00	-27.42
24.00	37.00	-28.42
24.00	38.00	-29.42
24.00	39.00	-30.42
24.00	40.00	-31.42
24.00	41.00	-32.42
24.00	42.00	-33.42
24.00	43.00	-34.42
24.00	44.00	-35.42
24.00	45.00	-36.42
24.00	46.00	-37.42
24.00	47.00	-38.42
24.00	48.00	-39.42
24.00	49.00	-40.42
24.00	50.00	-41.42
24.00	51.00	-42.42
24.00	52.00	-43.42
24.00	53.00	-44.42
24.00	54.00	-45.42
24.00	55.00	-46.42
24.00	56.00	-47.42
24.00	57.00	-48.42
24.00	58.00	-49.42
24.00	59.00	-50.42
24.00	60.00	-51.42
24.00	61.00	-52.42
24.00	62.00	-53.42
24.00	63.00	-54.42
24.00	64.00	-55.42
24.00	65.00	-56.42
24.00	66.00	-57.42
24.00	67.00	-58.42
24.00	68.00	-59.42
24.00	69.00	-60.42
24.00	70.00	-61.42
24.00	71.00	-62.42
24.00	72.00	-63.42
24.00	73.00	-64.42
24.00	74.00	-65.42
24.00	75.00	-66.42
24.00	76.00	-67.42
24.00	77.00	-68.42
24.00	78.00	-69.42
24.00	79.00	-70.42
24.00	80.00	-71.42
24.00	81.00	-72.42
24.00	82.00	-73.42
24.00	83.00	-74.42
24.00	84.00	-75.42
24.00	85.00	-76.42
24.00	86.00	-77.42
24.00	87.00	-78.42
24.00	88.00	-79.42
24.00	89.00	-80.42
24.00	90.00	-81.42
24.00	91.00	-82.42
24.00	92.00	-83.42
24.00	93.00	-84.42

Driven Pile Capacity:
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Section Type: Square
Pile Width: 18.00 (in)

Test Pile	Pile Width	Ultimate Side	Mobilized End	Estimated Davisson	Allowable Pile	Ultimate Pile

Length (ft)	(in)	Friction (tons)	Bearing (tons)	Capacity (tons)	Capacity (tons)	Capacity (tons)
10.00	18.0	1.04	35.89	36.93	18.46	108.70
11.00	18.0	2.12	35.27	37.39	18.69	107.93
12.00	18.0	3.27	34.23	37.51	18.75	105.98
13.00	18.0	4.51	33.04	37.56	18.78	103.64
14.00	18.0	5.81	32.20	38.01	19.00	102.40
15.00	18.0	6.90	33.02	39.92	19.96	105.96
16.00	18.0	7.87	34.18	42.05	21.02	110.41
17.00	18.0	8.84	34.84	43.68	21.84	113.36
18.00	18.0	9.80	34.16	43.97	21.98	112.30
19.00	18.0	10.83	30.98	41.81	20.90	103.77
20.00	18.0	11.97	25.22	37.20	18.60	87.65
21.00	18.0	13.21	18.68	31.89	15.95	69.25
22.00	18.0	14.39	12.49	26.88	13.44	51.85
23.00	18.0	15.48	7.59	23.07	11.53	38.25
24.00	18.0	16.31	5.62	21.93	10.97	33.17
25.00	18.0	16.73	7.46	24.19	12.09	39.12
26.00	18.0	16.78	4.85	21.63	10.82	31.34
27.00	18.0	16.78	7.15	23.93	11.96	38.23
28.00	18.0	16.78	8.64	25.42	12.71	42.71
29.00	18.0	16.90	10.76	27.66	13.83	49.19
30.00	18.0	17.26	12.55	29.81	14.91	54.92
31.00	18.0	17.89	15.01	32.90	16.45	62.92
32.00	18.0	18.82	19.25	38.06	19.03	76.55
33.00	18.0	20.03	27.85	47.88	23.94	103.58
34.00	18.0	21.44	37.67	59.10	29.55	134.44
35.00	18.0	26.69	44.35	71.04	35.52	159.74
36.00	18.0	28.08	44.81	72.89	36.45	162.50
37.00	18.0	29.84	72.55	102.39	51.20	247.50
38.00	18.0	32.48	66.58	99.07	49.53	232.23
39.00	18.0	35.59	61.41	97.00	48.50	219.83
40.00	18.0	37.93	64.22	102.15	51.07	230.58
41.00	18.0	39.58	67.55	107.13	53.57	242.23
42.00	18.0	41.09	66.68	107.76	53.88	241.12
43.00	18.0	42.53	64.08	106.61	53.30	234.77
44.00	18.0	44.25	60.66	104.92	52.46	226.24
45.00	18.0	46.61	54.22	100.83	50.41	209.27
46.00	18.0	49.40	45.68	95.08	47.54	186.43
47.00	18.0	51.54	41.84	93.38	46.69	177.05
48.00	18.0	52.85	47.51	100.36	50.18	195.37
49.00	18.0	53.83	63.27	117.10	58.55	243.65
50.00	18.0	54.99	84.90	139.90	69.95	309.71
51.00	18.0	56.33	105.51	161.84	80.92	372.87
52.00	18.0	57.78	124.17	181.95	90.98	430.29
53.00	18.0	59.36	138.57	197.93	98.97	475.08
54.00	18.0	61.56	142.72	204.29	102.14	489.73
55.00	18.0	64.90	133.58	198.47	99.24	465.63
56.00	18.0	69.20	116.04	185.24	92.62	417.32
57.00	18.0	73.52	97.66	171.18	85.59	366.49
58.00	18.0	77.68	79.76	157.44	78.72	316.97
59.00	18.0	81.36	64.86	146.22	73.11	275.93
60.00	18.0	84.20	55.23	139.43	69.72	249.90
61.00	18.0	86.29	49.97	136.26	68.13	236.19
62.00	18.0	88.15	45.26	133.42	66.71	223.94
63.00	18.0	89.87	42.67	132.54	66.27	217.89
64.00	18.0	91.60	44.20	135.80	67.90	224.21
65.00	18.0	93.53	50.09	143.62	71.81	243.81
66.00	18.0	95.56	48.36	143.92	71.96	240.63
67.00	18.0	96.89	49.18	146.07	73.03	244.43
68.00	18.0	98.42	105.87	204.29	102.14	416.02
69.00	18.0	99.67	123.31	222.98	111.49	469.60
70.00	18.0	101.49	134.04	235.52	117.76	503.60
71.00	18.0	103.91	141.65	245.55	122.78	528.85
72.00	18.0	107.18	144.34	251.52	125.76	540.19
73.00	18.0	111.35	140.80	252.15	126.07	533.74
74.00	18.0	115.71	135.47	251.18	125.59	522.12
75.00	18.0	119.56	133.82	253.39	126.69	521.03
76.00	18.0	123.00	136.02	259.02	129.51	531.06
77.00	18.0	126.52	138.19	264.72	132.36	541.10
78.00	18.0	130.23	139.96	270.19	135.09	550.10
79.00	18.0	133.99	142.51	276.50	138.25	561.51

80.00	18.0	137.70	145.63	283.32	141.66	574.57
81.00	18.0	141.51	142.54	284.05	142.02	569.12
82.00	18.0	146.43	131.30	277.74	138.87	540.35
83.00	18.0	152.63	132.72	285.35	142.67	550.78
84.00	18.0	158.95	127.04	285.99	143.00	540.07
85.00	18.0	164.24	122.92	287.15	143.58	532.99
86.00	18.0	168.47	105.11	273.58	136.79	483.79
87.00	18.0	171.61	106.71	278.32	139.16	491.73
88.00	18.0	173.65	116.96	290.61	145.31	524.54
89.00	18.0	176.19	131.30	307.49	153.75	570.09
90.00	18.0	180.86	142.30	323.16	161.58	607.76
91.00	18.0	187.29	133.63	320.92	160.46	588.18
92.00	18.0	193.37	134.02	327.39	163.70	595.43
93.00	18.0	198.76	134.88	333.64	166.82	603.40
94.00	18.0	203.54	136.11	339.66	169.83	611.88
95.00	18.0	Soil Elevations Must Extend At or Below Contribution Zone				

Section Type: Square
Pile Width: 24.00 (in)

Test Pile Length (ft)	Pile Width (in)	Ultimate Side Friction (tons)	Mobilized End Bearing (tons)	Estimated Davisson Capacity (tons)	Allowable Pile Capacity (tons)	Ultimate Pile Capacity (tons)
10.00	24.0	1.39	61.26	62.65	31.32	185.17
11.00	24.0	2.83	60.88	63.71	31.85	185.46
12.00	24.0	4.36	60.83	65.19	32.60	186.85
13.00	24.0	6.02	60.82	66.84	33.42	188.48
14.00	24.0	7.75	59.91	67.66	33.83	187.48
15.00	24.0	9.20	59.86	69.07	34.53	188.80
16.00	24.0	10.49	58.96	69.45	34.73	187.38
17.00	24.0	11.78	55.16	66.94	33.47	177.25
18.00	24.0	13.07	48.82	61.89	30.94	159.52
19.00	24.0	14.44	41.67	56.11	28.05	139.44
20.00	24.0	15.97	33.63	49.60	24.80	116.87
21.00	24.0	17.62	25.96	43.58	21.79	95.51
22.00	24.0	19.19	20.88	40.07	20.03	81.83
23.00	24.0	20.63	18.65	39.29	19.64	76.60
24.00	24.0	21.74	20.79	42.53	21.27	84.11
25.00	24.0	22.30	28.47	50.77	25.38	107.71
26.00	24.0	22.37	16.06	38.43	19.22	70.55
27.00	24.0	22.37	21.35	43.72	21.86	86.42
28.00	24.0	22.37	23.62	45.99	22.99	93.23
29.00	24.0	22.66	25.97	48.64	24.32	100.59
30.00	24.0	23.36	28.49	51.85	25.92	108.83
31.00	24.0	24.20	34.59	58.79	29.40	127.98
32.00	24.0	25.32	43.53	68.85	34.43	155.92
33.00	24.0	26.98	51.58	78.56	39.28	181.73
34.00	24.0	28.83	57.99	86.82	43.41	202.79
35.00	24.0	35.59	78.33	113.92	56.96	270.58
36.00	24.0	37.49	78.64	116.14	58.07	273.42
37.00	24.0	39.79	127.47	167.27	83.63	422.22
38.00	24.0	43.31	128.61	171.93	85.96	429.15
39.00	24.0	47.46	120.16	167.62	83.81	407.93
40.00	24.0	50.57	111.68	162.26	81.13	385.62
41.00	24.0	52.78	106.49	159.27	79.63	372.25
42.00	24.0	54.78	103.89	158.67	79.34	366.45
43.00	24.0	56.70	103.04	159.74	79.87	365.82
44.00	24.0	59.01	100.74	159.74	79.87	361.22
45.00	24.0	62.14	94.06	156.20	78.10	344.31
46.00	24.0	65.87	89.40	155.27	77.63	334.07
47.00	24.0	68.72	100.79	169.51	84.75	371.08
48.00	24.0	70.47	128.19	198.66	99.33	455.04
49.00	24.0	71.78	158.28	230.06	115.03	546.62
50.00	24.0	73.33	185.42	258.74	129.37	629.57
51.00	24.0	75.10	206.53	281.63	140.81	694.68
52.00	24.0	77.05	218.79	295.84	147.92	733.43
53.00	24.0	79.15	223.11	302.26	151.13	748.47
54.00	24.0	82.08	219.57	301.65	150.83	740.79

55.00	24.0	86.53	204.13	290.66	145.33	698.93
56.00	24.0	92.27	178.56	270.83	135.41	627.95
57.00	24.0	98.02	152.32	250.34	125.17	554.97
58.00	24.0	103.58	126.88	230.46	115.23	484.21
59.00	24.0	108.48	104.96	213.44	106.72	423.37
60.00	24.0	112.27	89.63	201.89	100.95	381.14
61.00	24.0	115.06	82.93	197.99	98.99	363.84
62.00	24.0	117.54	82.78	200.32	100.16	365.88
63.00	24.0	119.82	88.90	208.72	104.36	386.51
64.00	24.0	122.13	104.34	226.47	113.24	435.16
65.00	24.0	124.70	129.44	254.14	127.07	513.02
66.00	24.0	127.42	106.73	234.15	117.07	447.60
67.00	24.0	129.62	120.46	250.09	125.04	491.01
68.00	24.0	131.23	201.14	332.37	166.19	734.66
69.00	24.0	132.90	220.86	353.75	176.88	795.47
70.00	24.0	135.32	237.85	373.17	186.58	848.87
71.00	24.0	138.54	250.38	388.92	194.46	889.68
72.00	24.0	142.91	253.95	396.86	198.43	904.76
73.00	24.0	148.46	248.20	396.67	198.33	893.07
74.00	24.0	154.28	241.35	395.63	197.82	878.34
75.00	24.0	159.42	240.70	400.12	200.06	881.53
76.00	24.0	163.99	245.75	409.74	204.87	901.24
77.00	24.0	168.70	251.52	420.22	210.11	923.27
78.00	24.0	173.64	255.67	429.30	214.65	940.64
79.00	24.0	178.66	250.52	429.18	214.59	930.21
80.00	24.0	183.60	235.80	419.40	209.70	891.00
81.00	24.0	188.68	220.64	409.32	204.66	850.59
82.00	24.0	195.24	213.23	408.48	204.24	834.95
83.00	24.0	203.51	209.17	412.68	206.34	831.01
84.00	24.0	211.75	209.37	421.12	210.56	839.87
85.00	24.0	218.38	209.90	428.28	214.14	848.08
86.00	24.0	224.62	197.58	422.21	211.10	817.38
87.00	24.0	228.81	205.65	434.46	217.23	845.76
88.00	24.0	231.53	227.89	459.42	229.71	915.21
89.00	24.0	234.93	251.58	486.50	243.25	989.66
90.00	24.0	241.15	266.82	507.97	253.98	1041.60
91.00	24.0	249.74	246.19	495.93	247.96	988.31
92.00	24.0	257.92	246.62	504.54	252.27	997.78
93.00	24.0	265.26	247.55	512.80	256.40	1007.89

NOTES
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1. MOBILIZED END BEARING IS 1/3 OF THE ORIGINAL RB-121 VALUES.

2. DAVISSON PILE CAPACITY IS AN ESTIMATE BASED ON FAILURE CRITERIA, AND EQUALS ULTIMATE SIDE FRICTION PLUS MOBILIZED END BEARING.

3. ALLOWABLE PILE CAPACITY IS 1/2 THE DAVISSON PILE CAPACITY.

4. ULTIMATE PILE CAPACITY IS ULTIMATE SIDE FRICTION PLUS 3 x THE MOBILIZED END BEARING.
   EXCEPTION: FOR H-PILES TIPPED IN SAND OR LIMESTONE, THE ULTIMATE PILE CAPACITY IS ULTIMATE SIDE FRICTION PLUS 2 x THE MOBILIZED END BEARING.

Florida Bridge Software Institute Date: November 29, 2023
Shaft and Pile Analysis (FB-Deep v.2.06) Time: 09:55:51

General Information:
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Input file: .....tructure\Bridge\FB-Deep\Pile\Predrill 10 ft\B-201-Void-10ft.in
Project number: 2000-01-21007
Job name: PD&E I-95
Engineer: ZP
Units: English

Analysis Information:
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Analysis Type: SPT

Soil Information:
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Boring date: 8-22-2023, Boring Number: B-201
Station number: 578+32 Offset: +157.1

Ground Elevation: 17.360(ft)

Hammer type: Automatic Hammer, Correction factor = 1.24

ID	Depth (ft)	No. of Blows (Blows/ft)	Soil Type
1	0.00	13.00	5- Cavity layer
2	2.00	26.00	5- Cavity layer
3	4.00	19.00	5- Cavity layer
4	6.00	29.00	5- Cavity layer
5	8.00	30.00	5- Cavity layer
6	10.00	39.00	3- Clean sand
7	12.00	24.00	3- Clean sand
8	13.50	7.00	3- Clean sand
9	15.00	4.00	4- Lime Stone/Very shelly sand
10	18.00	5.00	3- Clean sand
11	20.50	19.00	3- Clean sand
12	23.00	11.00	3- Clean sand
13	25.50	18.00	3- Clean sand
14	28.00	16.00	3- Clean sand
15	30.50	28.00	3- Clean sand
16	33.00	25.00	3- Clean sand
17	35.50	7.00	3- Clean sand
18	38.00	18.00	3- Clean sand
19	40.50	60.00	4- Lime Stone/Very shelly sand
20	43.00	60.00	4- Lime Stone/Very shelly sand
21	45.50	14.00	3- Clean sand
22	48.00	13.00	3- Clean sand
23	50.50	14.00	4- Lime Stone/Very shelly sand
24	53.00	11.00	3- Clean sand
25	55.50	21.00	3- Clean sand
26	58.00	48.00	3- Clean sand
27	60.50	16.00	4- Lime Stone/Very shelly sand
28	63.00	15.00	3- Clean sand
29	65.50	39.00	3- Clean sand
30	68.00	60.00	4- Lime Stone/Very shelly sand
31	70.50	95.00	4- Lime Stone/Very shelly sand
32	73.00	18.00	4- Lime Stone/Very shelly sand
33	75.50	56.00	4- Lime Stone/Very shelly sand
34	78.00	47.00	3- Clean sand
35	80.50	26.00	4- Lime Stone/Very shelly sand
36	83.00	51.00	4- Lime Stone/Very shelly sand
37	85.50	28.00	4- Lime Stone/Very shelly sand
38	88.00	15.00	4- Lime Stone/Very shelly sand
39	90.50	57.00	3- Clean sand
40	93.00	12.00	4- Lime Stone/Very shelly sand
41	95.50	11.00	4- Lime Stone/Very shelly sand
42	98.00	13.00	4- Lime Stone/Very shelly sand

43 100.00 13.00 4- Lime Stone/Very shelly sand

Blowcount Average Per Soil Layer

Layer Num.	Starting Elevation (ft)	Bottom Elevation (ft)	Thickness (ft)	Average Blowcount (Blows/ft)	Soil Type
1	17.36	7.36	10.00	23.40	5-Void
2	7.36	2.36	5.00	24.90	3-Clean Sand
3	2.36	-0.64	3.00	4.00	4-Limestone, Very Shelly Sand
4	-0.64	-23.14	22.50	16.33	3-Clean Sand
5	-23.14	-28.14	5.00	60.00	4-Limestone, Very Shelly Sand
6	-28.14	-33.14	5.00	13.50	3-Clean Sand
7	-33.14	-35.64	2.50	14.00	4-Limestone, Very Shelly Sand
8	-35.64	-43.14	7.50	26.67	3-Clean Sand
9	-43.14	-45.64	2.50	16.00	4-Limestone, Very Shelly Sand
10	-45.64	-50.64	5.00	27.00	3-Clean Sand
11	-50.64	-60.64	10.00	57.25	4-Limestone, Very Shelly Sand
12	-60.64	-63.14	2.50	47.00	3-Clean Sand
13	-63.14	-73.14	10.00	30.00	4-Limestone, Very Shelly Sand
14	-73.14	-75.64	2.50	57.00	3-Clean Sand
15	-75.64	-82.64	7.00	11.93	4-Limestone, Very Shelly Sand

Driven Pile Data:

Pile unit weight = 150.00(pcf), Section Type: Square

Pile Geometry:

Width (in)	Length (ft)	Tip Elev. (ft)
18.00	10.00	7.36
18.00	11.00	6.36
18.00	12.00	5.36
18.00	13.00	4.36
18.00	14.00	3.36
18.00	15.00	2.36
18.00	16.00	1.36
18.00	17.00	0.36
18.00	18.00	-0.64
18.00	19.00	-1.64
18.00	20.00	-2.64
18.00	21.00	-3.64
18.00	22.00	-4.64
18.00	23.00	-5.64
18.00	24.00	-6.64
18.00	25.00	-7.64
18.00	26.00	-8.64
18.00	27.00	-9.64
18.00	28.00	-10.64
18.00	29.00	-11.64
18.00	30.00	-12.64
18.00	31.00	-13.64
18.00	32.00	-14.64
18.00	33.00	-15.64
18.00	34.00	-16.64
18.00	35.00	-17.64
18.00	36.00	-18.64
18.00	37.00	-19.64
18.00	38.00	-20.64
18.00	39.00	-21.64
18.00	40.00	-22.64
18.00	41.00	-23.64
18.00	42.00	-24.64
18.00	43.00	-25.64
18.00	44.00	-26.64
18.00	45.00	-27.64

18.00	46.00	-28.64
18.00	47.00	-29.64
18.00	48.00	-30.64
18.00	49.00	-31.64
18.00	50.00	-32.64
18.00	51.00	-33.64
18.00	52.00	-34.64
18.00	53.00	-35.64
18.00	54.00	-36.64
18.00	55.00	-37.64
18.00	56.00	-38.64
18.00	57.00	-39.64
18.00	58.00	-40.64
18.00	59.00	-41.64
18.00	60.00	-42.64
18.00	61.00	-43.64
18.00	62.00	-44.64
18.00	63.00	-45.64
18.00	64.00	-46.64
18.00	65.00	-47.64
18.00	66.00	-48.64
18.00	67.00	-49.64
18.00	68.00	-50.64
18.00	69.00	-51.64
18.00	70.00	-52.64
18.00	71.00	-53.64
18.00	72.00	-54.64
18.00	73.00	-55.64
18.00	74.00	-56.64
18.00	75.00	-57.64
18.00	76.00	-58.64
18.00	77.00	-59.64
18.00	78.00	-60.64
18.00	79.00	-61.64
18.00	80.00	-62.64
18.00	81.00	-63.64
18.00	82.00	-64.64
18.00	83.00	-65.64
18.00	84.00	-66.64
18.00	85.00	-67.64
18.00	86.00	-68.64
18.00	87.00	-69.64
18.00	88.00	-70.64
18.00	89.00	-71.64
18.00	90.00	-72.64
18.00	91.00	-73.64
18.00	92.00	-74.64
18.00	93.00	-75.64
18.00	94.00	-76.64
18.00	95.00	-77.64
24.00	10.00	7.36
24.00	11.00	6.36
24.00	12.00	5.36
24.00	13.00	4.36
24.00	14.00	3.36
24.00	15.00	2.36
24.00	16.00	1.36
24.00	17.00	0.36
24.00	18.00	-0.64
24.00	19.00	-1.64
24.00	20.00	-2.64
24.00	21.00	-3.64
24.00	22.00	-4.64
24.00	23.00	-5.64
24.00	24.00	-6.64
24.00	25.00	-7.64
24.00	26.00	-8.64
24.00	27.00	-9.64
24.00	28.00	-10.64
24.00	29.00	-11.64
24.00	30.00	-12.64
24.00	31.00	-13.64
24.00	32.00	-14.64

24.00	33.00	-15.64
24.00	34.00	-16.64
24.00	35.00	-17.64
24.00	36.00	-18.64
24.00	37.00	-19.64
24.00	38.00	-20.64
24.00	39.00	-21.64
24.00	40.00	-22.64
24.00	41.00	-23.64
24.00	42.00	-24.64
24.00	43.00	-25.64
24.00	44.00	-26.64
24.00	45.00	-27.64
24.00	46.00	-28.64
24.00	47.00	-29.64
24.00	48.00	-30.64
24.00	49.00	-31.64
24.00	50.00	-32.64
24.00	51.00	-33.64
24.00	52.00	-34.64
24.00	53.00	-35.64
24.00	54.00	-36.64
24.00	55.00	-37.64
24.00	56.00	-38.64
24.00	57.00	-39.64
24.00	58.00	-40.64
24.00	59.00	-41.64
24.00	60.00	-42.64
24.00	61.00	-43.64
24.00	62.00	-44.64
24.00	63.00	-45.64
24.00	64.00	-46.64
24.00	65.00	-47.64
24.00	66.00	-48.64
24.00	67.00	-49.64
24.00	68.00	-50.64
24.00	69.00	-51.64
24.00	70.00	-52.64
24.00	71.00	-53.64
24.00	72.00	-54.64
24.00	73.00	-55.64
24.00	74.00	-56.64
24.00	75.00	-57.64
24.00	76.00	-58.64
24.00	77.00	-59.64
24.00	78.00	-60.64
24.00	79.00	-61.64
24.00	80.00	-62.64
24.00	81.00	-63.64
24.00	82.00	-64.64
24.00	83.00	-65.64
24.00	84.00	-66.64
24.00	85.00	-67.64
24.00	86.00	-68.64
24.00	87.00	-69.64
24.00	88.00	-70.64
24.00	89.00	-71.64
24.00	90.00	-72.64
24.00	91.00	-73.64
24.00	92.00	-74.64

Driven Pile Capacity:
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Section Type: Square
Pile Width: 18.00 (in)

Test Pile Length (ft)	Pile Width (in)	Ultimate Side Friction (tons)	Mobilized End Bearing (tons)	Estimated Davisson Capacity (tons)	Allowable Pile Capacity (tons)	Ultimate Pile Capacity (tons)
10.00	18.0	5.51	32.59	38.11	19.05	103.29
11.00	18.0	10.50	27.84	38.33	19.17	94.00
12.00	18.0	14.42	23.76	38.17	19.09	85.69
13.00	18.0	17.01	22.25	39.26	19.63	83.75
14.00	18.0	18.14	23.57	41.71	20.85	88.84
15.00	18.0	18.67	25.35	44.02	22.01	94.71
16.00	18.0	19.04	31.53	50.57	25.28	113.63
17.00	18.0	19.54	35.79	55.33	27.67	126.92
18.00	18.0	20.18	37.89	58.06	29.03	133.83
19.00	18.0	21.21	38.07	59.28	29.64	135.42
20.00	18.0	22.86	38.60	61.46	30.73	138.67
21.00	18.0	25.05	39.17	64.22	32.11	142.57
22.00	18.0	27.24	39.21	66.45	33.22	144.86
23.00	18.0	29.20	38.89	68.09	34.05	145.88
24.00	18.0	30.86	39.16	70.01	35.01	148.32
25.00	18.0	32.44	40.52	72.96	36.48	154.00
26.00	18.0	33.94	43.26	77.20	38.60	163.73
27.00	18.0	35.35	46.76	82.11	41.05	175.62
28.00	18.0	36.75	50.77	87.53	43.76	189.07
29.00	18.0	38.76	53.79	92.55	46.28	200.14
30.00	18.0	41.85	54.56	96.41	48.20	205.53
31.00	18.0	45.93	53.15	99.08	49.54	205.37
32.00	18.0	49.80	51.34	101.14	50.57	203.82
33.00	18.0	53.27	49.93	103.20	51.60	203.07
34.00	18.0	56.23	53.09	109.32	54.66	215.50
35.00	18.0	58.30	62.36	120.66	60.33	245.37
36.00	18.0	59.63	75.85	135.48	67.74	287.18
37.00	18.0	61.33	88.66	149.99	75.00	327.32
38.00	18.0	63.58	100.33	163.91	81.95	364.57
39.00	18.0	66.46	106.80	173.25	86.63	386.85
40.00	18.0	70.04	105.77	175.82	87.91	387.36
41.00	18.0	79.06	112.82	191.88	95.94	417.52
42.00	18.0	83.52	90.46	173.98	86.99	354.90
43.00	18.0	87.98	67.80	155.78	77.89	291.38
44.00	18.0	91.95	49.13	141.08	70.54	239.33
45.00	18.0	94.92	38.89	133.81	66.91	211.59
46.00	18.0	96.98	37.72	134.70	67.35	210.14
47.00	18.0	98.91	37.71	136.62	68.31	212.05
48.00	18.0	100.81	37.18	137.98	68.99	212.33
49.00	18.0	102.49	37.19	139.68	69.84	214.05
50.00	18.0	103.71	37.93	141.65	70.82	217.51
51.00	18.0	104.95	52.39	157.34	78.67	262.12
52.00	18.0	106.20	68.07	174.27	87.14	310.42
53.00	18.0	107.65	76.02	183.67	91.84	335.71
54.00	18.0	109.46	76.09	185.55	92.78	337.74
55.00	18.0	111.89	73.97	185.87	92.93	333.81
56.00	18.0	114.98	68.14	183.13	91.56	319.41
57.00	18.0	119.48	63.06	182.54	91.27	308.65
58.00	18.0	125.50	58.52	184.02	92.01	301.07
59.00	18.0	131.17	56.60	187.77	93.88	300.98
60.00	18.0	134.59	59.71	194.30	97.15	313.72
61.00	18.0	136.11	80.74	216.85	108.43	378.34
62.00	18.0	137.67	101.00	238.67	119.34	440.67
63.00	18.0	139.61	89.89	229.50	114.75	409.28
64.00	18.0	142.03	90.69	232.72	116.36	414.11
65.00	18.0	144.90	93.28	238.18	119.09	424.75
66.00	18.0	148.11	97.38	245.49	122.75	440.24
67.00	18.0	151.46	100.93	252.39	126.20	454.26
68.00	18.0	161.62	163.57	325.20	162.60	652.35
69.00	18.0	166.39	150.57	316.96	158.48	618.09
70.00	18.0	171.78	138.52	310.30	155.15	587.35
71.00	18.0	177.47	123.20	300.67	150.33	547.07
72.00	18.0	181.60	118.48	300.08	150.04	537.05
73.00	18.0	183.87	124.96	308.84	154.42	558.76
74.00	18.0	185.78	129.70	315.48	157.74	574.87
75.00	18.0	188.82	122.91	311.72	155.86	557.54
76.00	18.0	192.96	113.38	306.34	153.17	533.09
77.00	18.0	198.12	109.12	307.24	153.62	525.49

78.00	18.0	204.27	103.90	308.17	154.08	515.97
79.00	18.0	209.49	104.45	313.94	156.97	522.84
80.00	18.0	213.62	104.12	317.74	158.87	525.99
81.00	18.0	216.05	95.42	311.47	155.74	502.32
82.00	18.0	218.73	86.62	305.35	152.67	478.59
83.00	18.0	222.15	75.15	297.31	148.65	447.62
84.00	18.0	225.61	70.76	296.37	148.18	437.90
85.00	18.0	228.37	76.53	304.90	152.45	457.96
86.00	18.0	230.49	80.89	311.38	155.69	473.15
87.00	18.0	232.19	80.09	312.28	156.14	472.47
88.00	18.0	233.50	77.63	311.13	155.57	466.40
89.00	18.0	235.76	72.53	308.29	154.15	453.35
90.00	18.0	240.31	60.07	300.38	150.19	420.51
91.00	18.0	245.39	55.67	301.06	150.53	412.40
92.00	18.0	249.42	56.02	305.45	152.72	417.50
93.00	18.0	253.11	27.64	280.75	140.37	336.02
94.00	18.0	253.99	28.12	282.11	141.06	338.36
95.00	18.0	Soil Elevations Must Extend At or Below Contribution Zone				

Section Type: Square
Pile Width: 24.00 (in)

Test Pile Length (ft)	Pile Width (in)	Ultimate Side Friction (tons)	Mobilized End Bearing (tons)	Estimated Davisson Capacity (tons)	Allowable Pile Capacity (tons)	Ultimate Pile Capacity (tons)
10.00	24.0	7.35	48.52	55.87	27.93	152.90
11.00	24.0	13.99	44.50	58.49	29.25	147.49
12.00	24.0	19.22	41.59	60.81	30.41	143.99
13.00	24.0	22.68	41.73	64.41	32.20	147.86
14.00	24.0	24.19	45.21	69.40	34.70	159.83
15.00	24.0	24.89	52.58	77.47	38.74	182.63
16.00	24.0	25.38	58.57	83.95	41.98	201.10
17.00	24.0	26.05	65.98	92.03	46.02	223.99
18.00	24.0	26.90	59.87	86.77	43.39	206.52
19.00	24.0	28.26	60.15	88.41	44.21	208.71
20.00	24.0	30.42	60.83	91.25	45.63	212.91
21.00	24.0	33.22	61.71	94.93	47.47	218.35
22.00	24.0	35.45	63.12	98.56	49.28	224.80
23.00	24.0	36.81	65.62	102.43	51.22	233.68
24.00	24.0	37.93	69.33	107.25	53.63	245.91
25.00	24.0	39.63	72.96	112.59	56.29	258.50
26.00	24.0	42.07	75.32	117.39	58.69	268.03
27.00	24.0	44.81	76.55	121.36	60.68	274.46
28.00	24.0	47.73	76.90	124.63	62.31	278.43
29.00	24.0	51.25	76.31	127.57	63.78	280.19
30.00	24.0	55.37	76.50	131.87	65.93	284.87
31.00	24.0	59.94	77.50	137.44	68.72	292.43
32.00	24.0	63.62	81.65	145.27	72.63	308.57
33.00	24.0	65.93	91.40	157.33	78.67	340.13
34.00	24.0	67.04	107.67	174.71	87.36	390.06
35.00	24.0	67.62	127.39	195.02	97.51	449.80
36.00	24.0	68.03	149.38	217.41	108.70	516.16
37.00	24.0	70.50	162.67	233.17	116.58	558.51
38.00	24.0	73.53	168.69	242.22	121.11	579.59
39.00	24.0	77.26	167.17	244.43	122.21	578.77
40.00	24.0	81.77	161.30	243.07	121.53	565.66
41.00	24.0	105.41	167.49	272.89	136.45	607.86
42.00	24.0	111.36	136.73	248.09	124.05	521.56
43.00	24.0	117.31	105.51	222.82	111.41	433.84
44.00	24.0	122.60	80.08	202.69	101.34	362.86
45.00	24.0	126.56	66.38	192.95	96.47	325.71
46.00	24.0	129.29	64.85	194.14	97.07	323.85
47.00	24.0	131.75	65.00	196.76	98.38	326.77
48.00	24.0	134.07	65.30	199.37	99.68	329.97
49.00	24.0	135.91	66.07	201.98	100.99	334.12
50.00	24.0	136.89	68.13	205.01	102.51	341.27
51.00	24.0	139.94	125.09	265.03	132.52	515.21
52.00	24.0	141.60	135.54	277.15	138.57	548.24

53.00	24.0	143.54	145.78	289.31	144.66	580.87
54.00	24.0	145.99	145.78	291.77	145.88	583.33
55.00	24.0	149.19	143.10	292.29	146.15	578.50
56.00	24.0	153.31	136.98	290.29	145.14	564.24
57.00	24.0	159.30	128.40	287.70	143.85	544.49
58.00	24.0	167.33	120.82	288.15	144.07	529.78
59.00	24.0	174.89	117.13	292.02	146.01	526.28
60.00	24.0	179.46	120.92	300.38	150.19	542.21
61.00	24.0	181.48	185.96	367.44	183.72	739.36
62.00	24.0	183.56	226.81	410.37	205.19	863.99
63.00	24.0	186.14	174.91	361.05	180.53	710.87
64.00	24.0	189.43	175.93	365.36	182.68	717.21
65.00	24.0	193.83	178.07	371.91	185.95	728.05
66.00	24.0	199.70	179.75	379.44	189.72	738.94
67.00	24.0	205.70	180.79	386.50	193.25	748.08
68.00	24.0	215.49	276.84	492.34	246.17	1046.02
69.00	24.0	221.86	268.13	489.99	244.99	1026.26
70.00	24.0	229.04	250.22	479.26	239.63	979.69
71.00	24.0	236.62	223.90	460.52	230.26	908.32
72.00	24.0	242.14	206.64	448.78	224.39	862.06
73.00	24.0	245.17	203.49	448.65	224.33	855.63
74.00	24.0	247.71	209.91	457.62	228.81	877.44
75.00	24.0	251.75	212.88	464.63	232.31	890.38
76.00	24.0	257.29	207.27	464.56	232.28	879.10
77.00	24.0	264.16	195.48	459.64	229.82	850.61
78.00	24.0	272.36	186.93	459.29	229.64	833.14
79.00	24.0	279.56	187.37	466.93	233.47	841.67
80.00	24.0	285.05	179.13	464.18	232.09	822.44
81.00	24.0	288.07	149.20	437.27	218.64	735.68
82.00	24.0	291.64	150.46	442.10	221.05	743.01
83.00	24.0	296.21	152.03	448.23	224.12	752.28
84.00	24.0	300.81	145.51	446.32	223.16	737.35
85.00	24.0	304.50	135.03	439.53	219.77	709.60
86.00	24.0	307.33	125.23	432.56	216.28	683.02
87.00	24.0	309.59	118.68	428.27	214.13	665.63
88.00	24.0	311.33	115.06	426.39	213.19	656.50
89.00	24.0	314.35	108.47	422.82	211.41	639.75
90.00	24.0	320.41	92.64	413.05	206.52	598.32
91.00	24.0	326.92	86.62	413.54	206.77	586.79
92.00	24.0	331.61	87.65	419.27	209.63	594.57

NOTES
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1. MOBILIZED END BEARING IS 1/3 OF THE ORIGINAL RB-121 VALUES.

2. DAVISSON PILE CAPACITY IS AN ESTIMATE BASED ON FAILURE CRITERIA, AND EQUALS ULTIMATE SIDE FRICTION PLUS MOBILIZED END BEARING.

3. ALLOWABLE PILE CAPACITY IS 1/2 THE DAVISSON PILE CAPACITY.

4. ULTIMATE PILE CAPACITY IS ULTIMATE SIDE FRICTION PLUS 3 x THE MOBILIZED END BEARING.
   EXCEPTION: FOR H-PILES TIPPED IN SAND OR LIMESTONE, THE ULTIMATE PILE CAPACITY IS ULTIMATE SIDE FRICTION PLUS 2 x THE MOBILIZED END BEARING.

APPENDIX – D

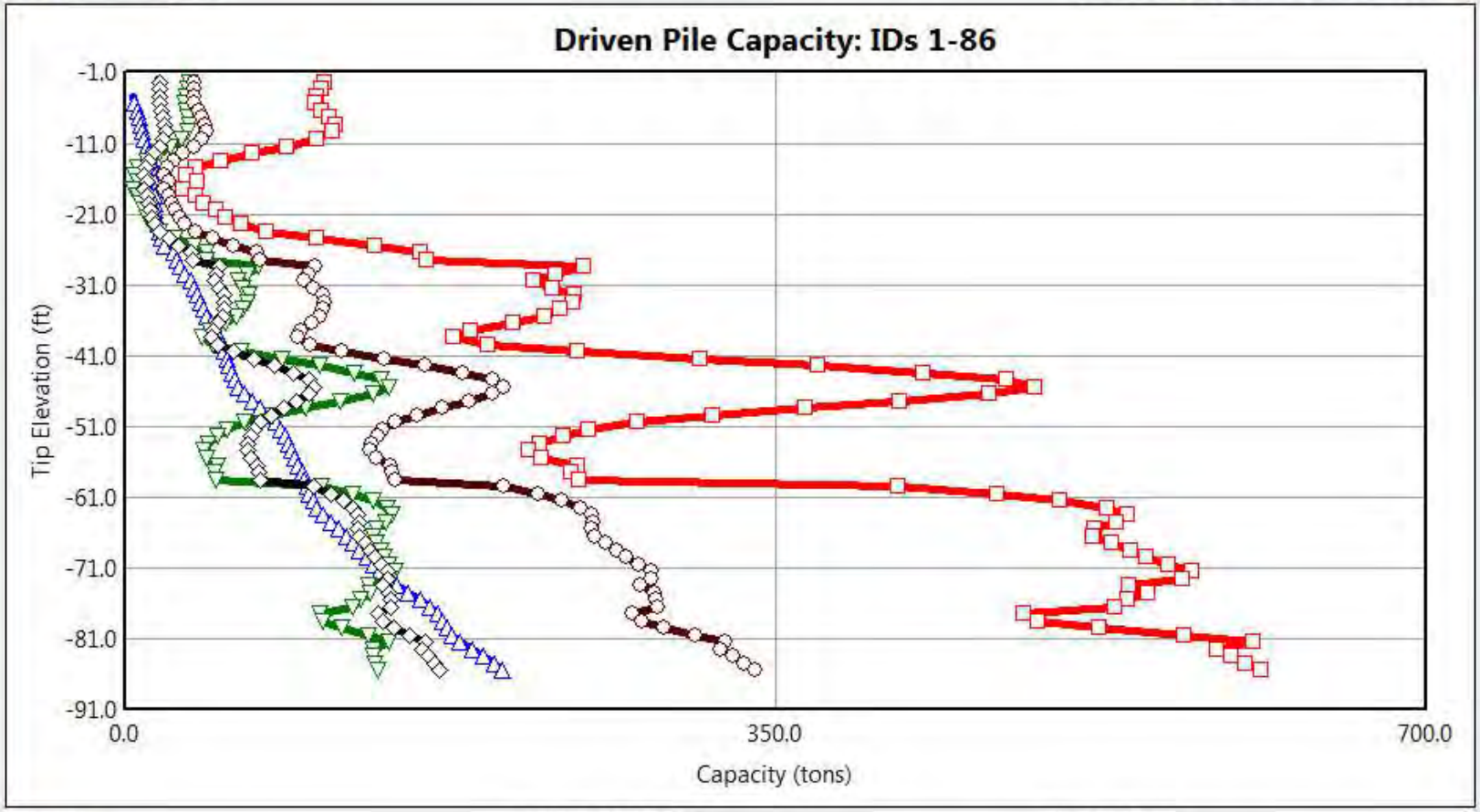
GRAPHS – VERTICAL CAPACITY ANALYSIS OF

PRECAST CONCRETE PILES

Plot Window

Job Name: PDE I-95

State Job (Project) #: 2000-01-21007



Curves

- Ultimate Side Friction
- Mobilized End Bearing
- Ultimate Pile Capacity
- Estimated Davisson Capacity
- Allowable Pile Capacity

*The 'Save to File' button saves the currently selected Curves to a text file.

Driven Pile Data

Boring Number:	B-101	
Ground Surface Elevation	8.58	(ft)
Section:	Square	
Width	18.00	(in)

Project Data

File:	B-101-Void-10ft
Date:	Nov 29, 2023
Engineer:	ZP

Analysis Data

Analysis Type:	SPT

Plot Options

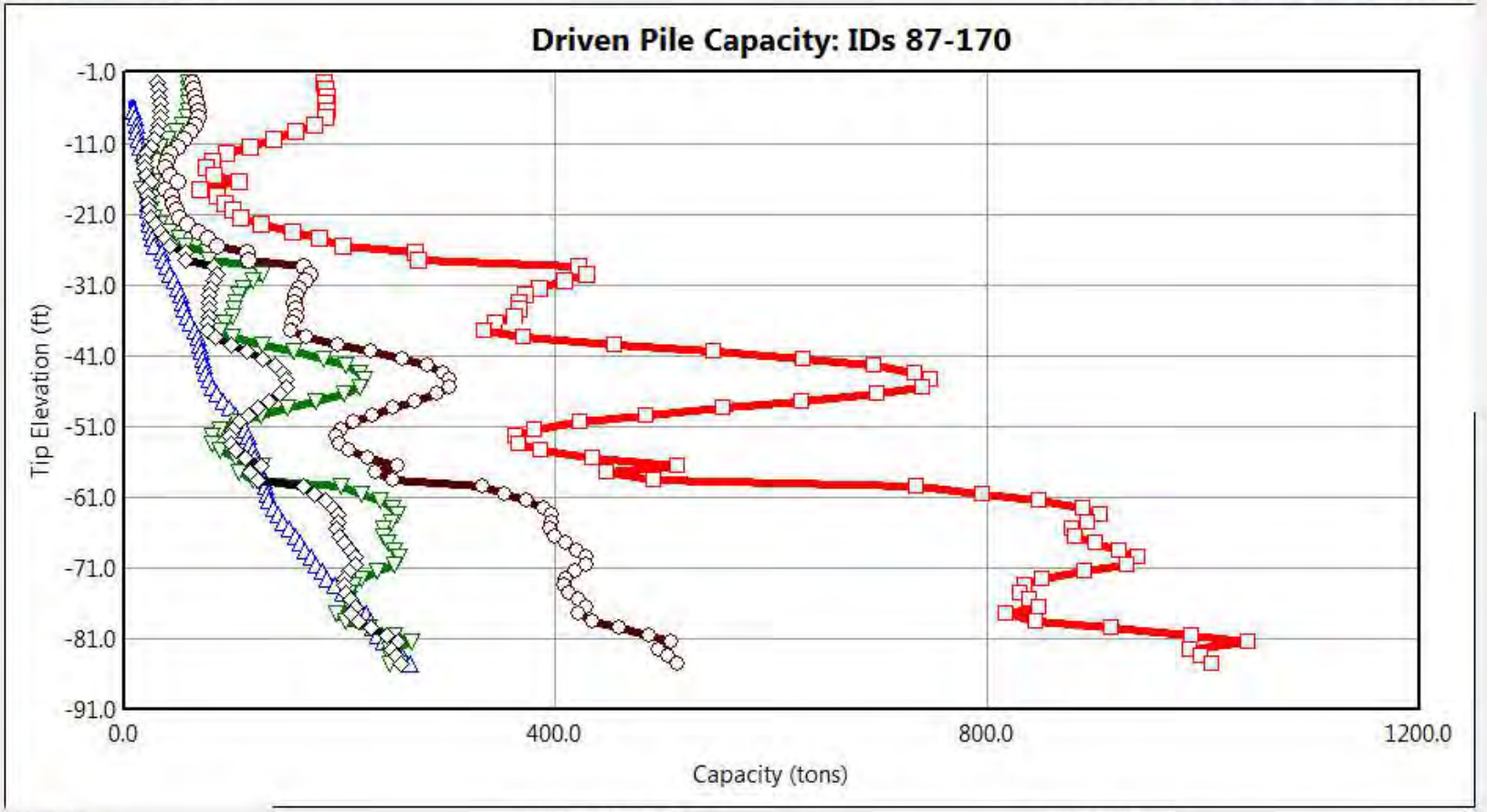
Customize | Update Plot | Print Plot | Print Window | Save To File

Close

Plot Window

Job Name: PDE I-95

State Job (Project) #: 2000-01-21007



Curves

- ☑ Ultimate Side Friction
- ☑ Mobilized End Bearing
- ☑ Ultimate Pile Capacity
- ☑ Estimated Davisson Capacity
- ☑ Allowable Pile Capacity

*The 'Save to File' button saves the currently selected Curves to a text file.

Driven Pile Data

Boring Number:	B-101	
Ground Surface Elevation	8.58	(ft)
Section:	Square	
Width	24.00	(in)

Project Data

File:	B-101-Void-10ft
Date:	Nov 29, 2023
Engineer:	ZP

Analysis Data

Analysis Type:	SPT

Plot Options

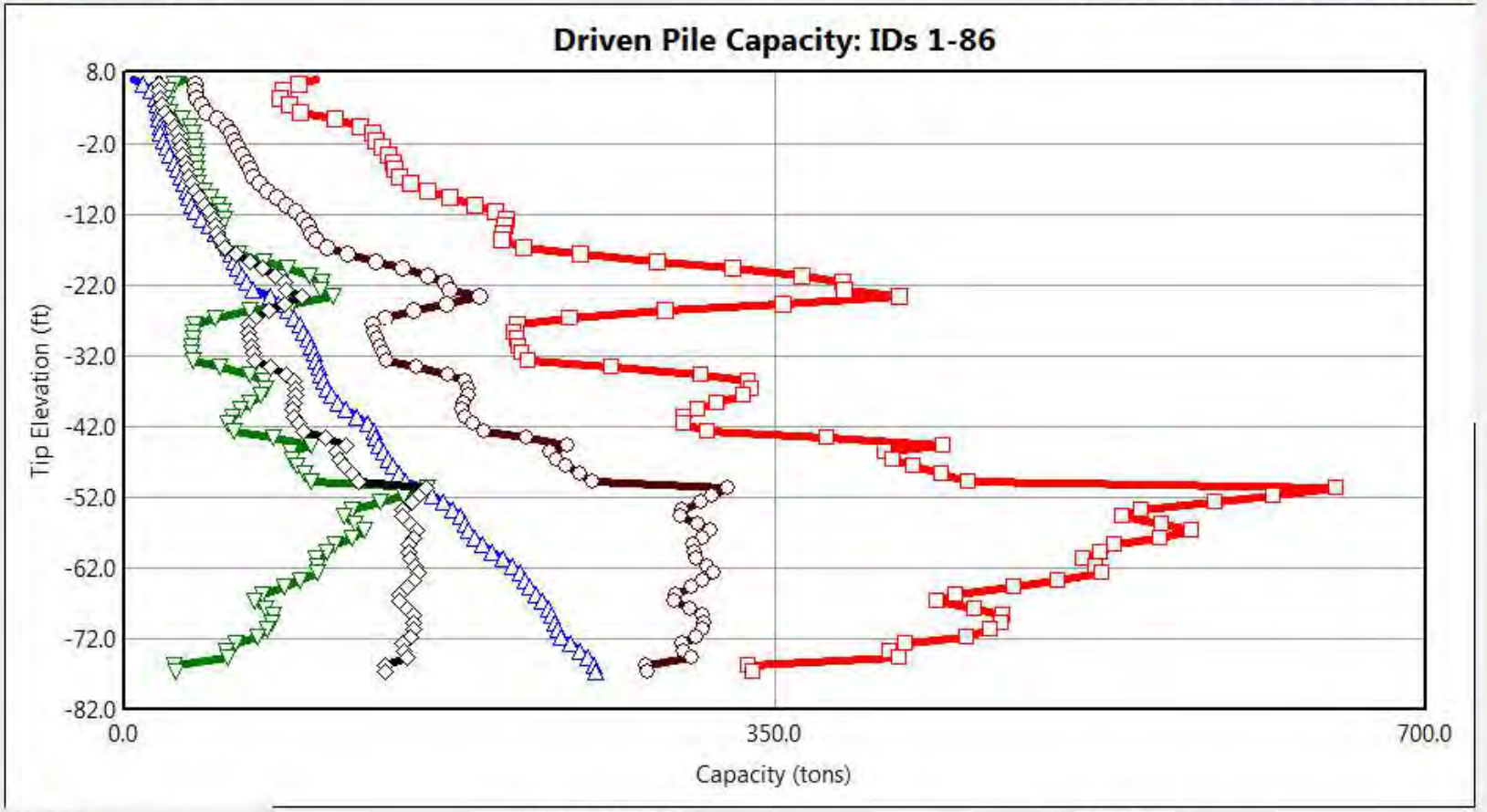
Customize | Update Plot | Print Plot | Print Window | Save To File

Close

Plot Window

Job Name: PDE I-95

State Job (Project) #: 2000-01-21007



Curves

- Ultimate Side Friction
- Mobilized End Bearing
- Ultimate Pile Capacity
- Estimated Davisson Capacity
- Allowable Pile Capacity

*The 'Save to File' button saves the currently selected Curves to a text file.

Driven Pile Data

Boring Number:	B-201	
Ground Surface Elevation	17.36	(ft)
Section:	Square	
Width	18.00	(in)

Project Data

File:	B-201-Void-10ft
Date:	Nov 29, 2023
Engineer:	ZP

Analysis Data

Analysis Type:	SPT

Plot Options

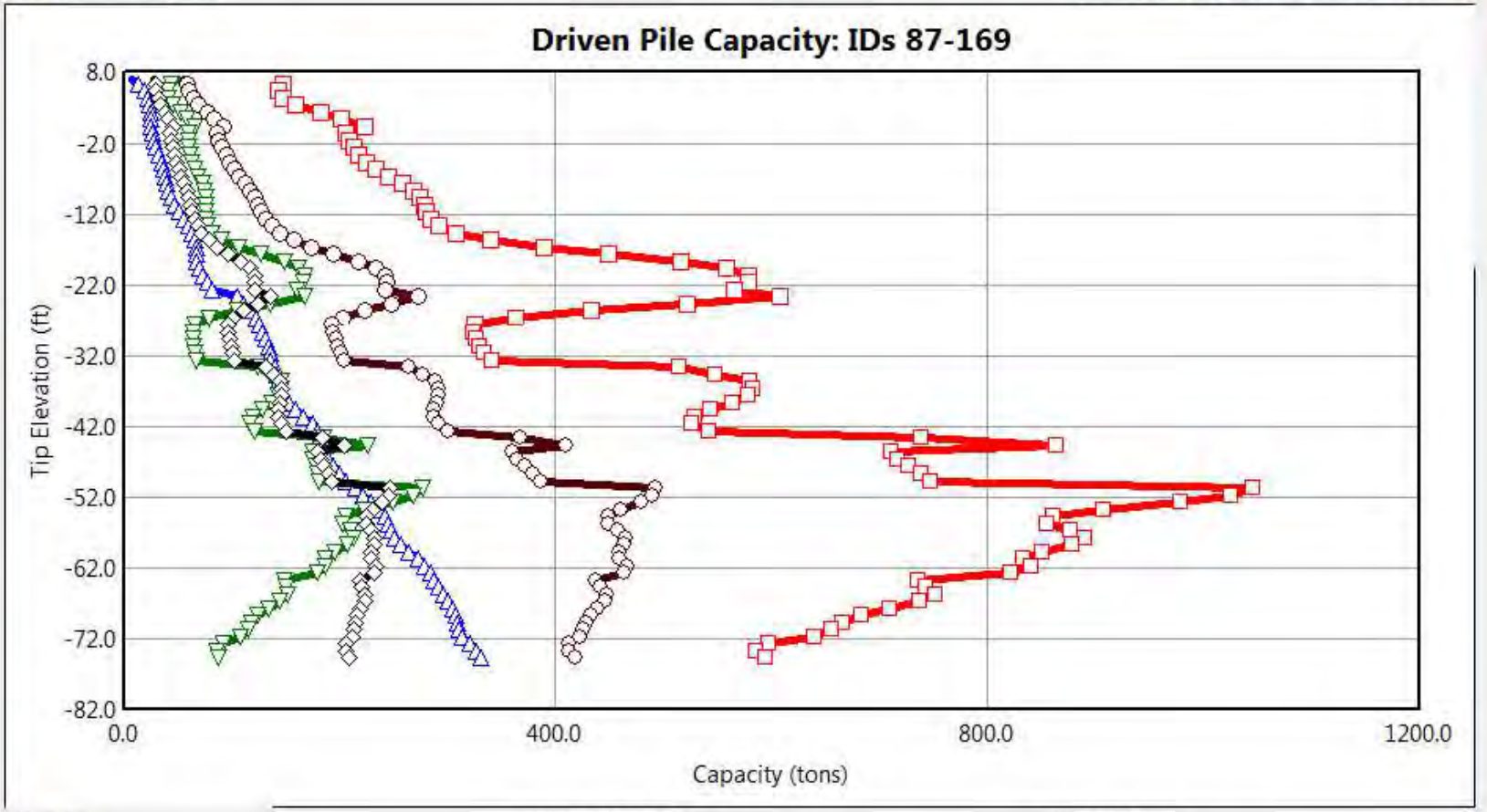
Customize | Update Plot | Print Plot | Print Window | Save To File

Close

Plot Window

Job Name: PDE I-95

State Job (Project) #: 2000-01-21007



Curves

- [x] Ultimate Side Friction
- [x] Mobilized End Bearing
- [x] Ultimate Pile Capacity
- [x] Estimated Davisson Capacity
- [x] Allowable Pile Capacity

*The 'Save to File' button saves the currently selected Curves to a text file.

Driven Pile Data

Boring Number:	B-201	
Ground Surface Elevation	17.36	(ft)
Section:	Square	
Width	24.00	(in)

Project Data

File:	B-201-Void-10ft
Date:	Nov 29, 2023
Engineer:	ZP

Analysis Data

Analysis Type:	SPT

Plot Options

Customize | Update Plot | Print Plot | Print Window | Save To File

Close

APPENDIX – E

FB DEEP OUTPUTS – VERTICAL CAPACITY ANALYSIS OF DRILLED SHAFTS

Florida Bridge Software Institute Date: November 29, 2023
Shaft and Pile Analysis (FB-Deep v.2.06) Time: 10:00:17

General Information:
==========
Input file: .....Bridge\FB-Deep\Shaft\All Model as Sand\B-101-Void-10ft_48in.in
Project number: 2000-01-21007
Job name: PD&E I-95
Engineer: ZP
Units: English

Analysis Information:
==========
Analysis Type: Drilled Shaft Analysis

Soil Information:
==========
Boring date: 8-25-2023
Boring number: B-101
Station number: 685+50 Offset: -97.1

Ground Elevation: 8.58(ft)
Water table Elevation = 8.58(ft)

Hammer type: Automatic Hammer, Correction factor = 1.24

ID	Depth (ft)	Elevation (ft)	SPT Blows (Blows/ft)	Unit Weight (pcf)	Soil Type
1	0.00	8.58	N/A	0.00	5- Cavity layer
2	2.00	6.58	N/A	0.00	5- Cavity layer
3	4.00	4.58	N/A	0.00	5- Cavity layer
4	6.00	2.58	N/A	0.00	5- Cavity layer
5	8.00	0.58	N/A	0.00	5- Cavity layer
6	10.00	-1.42	14.00	115.00	3- Clean sand
7	12.00	-3.42	16.00	120.00	3- Clean sand
8	13.50	-4.92	18.00	120.00	3- Clean sand
9	15.00	-6.42	13.00	115.00	3- Clean sand
10	18.00	-9.42	13.00	115.00	3- Clean sand
11	20.50	-11.92	17.00	120.00	3- Clean sand
12	23.00	-14.42	14.00	115.00	3- Clean sand
13	25.50	-16.92	2.00	100.00	3- Clean sand
14	28.00	-19.42	2.00	100.00	3- Clean sand
15	30.50	-21.92	8.00	105.00	3- Clean sand
16	33.00	-24.42	18.00	115.00	3- Clean sand
17	35.00	-26.42	4.00	105.00	3- Clean sand
18	37.00	-28.42	24.00	120.00	3- Clean sand
19	38.00	-29.42	47.00	135.00	3- Clean sand
20	40.50	-31.92	21.00	120.00	3- Clean sand
21	43.00	-34.42	19.00	120.00	3- Clean sand
22	45.50	-36.92	40.00	130.00	3- Clean sand
23	48.00	-39.42	12.00	115.00	3- Clean sand
24	50.50	-41.92	18.00	120.00	3- Clean sand
25	53.00	-44.42	22.00	120.00	3- Clean sand
26	55.50	-46.92	60.00	145.00	3- Clean sand
27	58.00	-49.42	55.00	140.00	3- Clean sand
28	60.50	-51.92	27.00	125.00	3- Clean sand
29	63.00	-54.42	22.00	120.00	3- Clean sand
30	65.50	-56.92	15.00	110.00	3- Clean sand
31	68.00	-59.42	13.00	115.00	3- Clean sand
32	70.50	-61.92	32.00	125.00	3- Clean sand
33	73.00	-64.42	62.00	145.00	3- Clean sand
34	75.50	-66.92	45.00	135.00	3- Clean sand
35	78.00	-69.42	51.00	140.00	3- Clean sand
36	80.50	-71.92	49.00	135.00	3- Clean sand
37	83.00	-74.42	76.00	140.00	3- Clean sand
38	85.50	-76.92	57.00	140.00	3- Clean sand
39	88.00	-79.42	20.00	120.00	3- Clean sand
40	90.50	-81.92	48.00	130.00	3- Clean sand

41	93.00	-84.42	41.00	130.00	3- Clean sand
42	95.50	-86.92	60.00	145.00	3- Clean sand
43	98.00	-89.42	60.00	145.00	3- Clean sand
44	100.00	-91.42	60.00	145.00	3- Clean sand

ID	Cu-DIR (tsf)	qu (tsf)	qt (tsf)	Em (ksi)	qb (tsf)
1	N/A	N/A	N/A	N/A	N/A
2	N/A	N/A	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A	N/A
5	N/A	N/A	N/A	N/A	N/A
6	N/A	N/A	N/A	N/A	N/A
7	N/A	N/A	N/A	N/A	N/A
8	N/A	N/A	N/A	N/A	N/A
9	N/A	N/A	N/A	N/A	N/A
10	N/A	N/A	N/A	N/A	N/A
11	N/A	N/A	N/A	N/A	N/A
12	N/A	N/A	N/A	N/A	N/A
13	N/A	N/A	N/A	N/A	N/A
14	N/A	N/A	N/A	N/A	N/A
15	N/A	N/A	N/A	N/A	N/A
16	N/A	N/A	N/A	N/A	N/A
17	N/A	N/A	N/A	N/A	N/A
18	N/A	N/A	N/A	N/A	N/A
19	N/A	N/A	N/A	N/A	N/A
20	N/A	N/A	N/A	N/A	N/A
21	N/A	N/A	N/A	N/A	N/A
22	N/A	N/A	N/A	N/A	N/A
23	N/A	N/A	N/A	N/A	N/A
24	N/A	N/A	N/A	N/A	N/A
25	N/A	N/A	N/A	N/A	N/A
26	N/A	N/A	N/A	N/A	N/A
27	N/A	N/A	N/A	N/A	N/A
28	N/A	N/A	N/A	N/A	N/A
29	N/A	N/A	N/A	N/A	N/A
30	N/A	N/A	N/A	N/A	N/A
31	N/A	N/A	N/A	N/A	N/A
32	N/A	N/A	N/A	N/A	N/A
33	N/A	N/A	N/A	N/A	N/A
34	N/A	N/A	N/A	N/A	N/A
35	N/A	N/A	N/A	N/A	N/A
36	N/A	N/A	N/A	N/A	N/A
37	N/A	N/A	N/A	N/A	N/A
38	N/A	N/A	N/A	N/A	N/A
39	N/A	N/A	N/A	N/A	N/A
40	N/A	N/A	N/A	N/A	N/A
41	N/A	N/A	N/A	N/A	N/A
42	N/A	N/A	N/A	N/A	N/A
43	N/A	N/A	N/A	N/A	N/A
44	N/A	N/A	N/A	N/A	N/A

ID	RQD	F.M.	S.R.I.	Rock Recovery
1	N/A		N/A	N/A
2	N/A		N/A	N/A
3	N/A		N/A	N/A
4	N/A		N/A	N/A
5	N/A		N/A	N/A
6	N/A		N/A	N/A
7	N/A		N/A	N/A
8	N/A		N/A	N/A
9	N/A		N/A	N/A
10	N/A		N/A	N/A
11	N/A		N/A	N/A
12	N/A		N/A	N/A
13	N/A		N/A	N/A
14	N/A		N/A	N/A
15	N/A		N/A	N/A
16	N/A		N/A	N/A
17	N/A		N/A	N/A

18	N/A	N/A	N/A
19	N/A	N/A	N/A
20	N/A	N/A	N/A
21	N/A	N/A	N/A
22	N/A	N/A	N/A
23	N/A	N/A	N/A
24	N/A	N/A	N/A
25	N/A	N/A	N/A
26	N/A	N/A	N/A
27	N/A	N/A	N/A
28	N/A	N/A	N/A
29	N/A	N/A	N/A
30	N/A	N/A	N/A
31	N/A	N/A	N/A
32	N/A	N/A	N/A
33	N/A	N/A	N/A
34	N/A	N/A	N/A
35	N/A	N/A	N/A
36	N/A	N/A	N/A
37	N/A	N/A	N/A
38	N/A	N/A	N/A
39	N/A	N/A	N/A
40	N/A	N/A	N/A
41	N/A	N/A	N/A
42	N/A	N/A	N/A
43	N/A	N/A	N/A
44	N/A	N/A	N/A

Drilled Shaft Data:
==========

Shaft Geometry:

ID	Length (ft)	Tip Elev. (ft)	Case Len. (ft)	Diameter (in)	Base Diam. (in)	Bell Len. (ft)
1	15.00	-6.42	6.00	48.00	48.00	0.00
2	16.00	-7.42	6.00	48.00	48.00	0.00
3	17.00	-8.42	6.00	48.00	48.00	0.00
4	18.00	-9.42	6.00	48.00	48.00	0.00
5	19.00	-10.42	6.00	48.00	48.00	0.00
6	20.00	-11.42	6.00	48.00	48.00	0.00
7	21.00	-12.42	6.00	48.00	48.00	0.00
8	22.00	-13.42	6.00	48.00	48.00	0.00
9	23.00	-14.42	6.00	48.00	48.00	0.00
10	24.00	-15.42	6.00	48.00	48.00	0.00
11	25.00	-16.42	6.00	48.00	48.00	0.00
12	26.00	-17.42	6.00	48.00	48.00	0.00
13	27.00	-18.42	6.00	48.00	48.00	0.00
14	28.00	-19.42	6.00	48.00	48.00	0.00
15	29.00	-20.42	6.00	48.00	48.00	0.00
16	30.00	-21.42	6.00	48.00	48.00	0.00
17	31.00	-22.42	6.00	48.00	48.00	0.00
18	32.00	-23.42	6.00	48.00	48.00	0.00
19	33.00	-24.42	6.00	48.00	48.00	0.00
20	34.00	-25.42	6.00	48.00	48.00	0.00
21	35.00	-26.42	6.00	48.00	48.00	0.00
22	36.00	-27.42	6.00	48.00	48.00	0.00
23	37.00	-28.42	6.00	48.00	48.00	0.00
24	38.00	-29.42	6.00	48.00	48.00	0.00
25	39.00	-30.42	6.00	48.00	48.00	0.00
26	40.00	-31.42	6.00	48.00	48.00	0.00
27	41.00	-32.42	6.00	48.00	48.00	0.00
28	42.00	-33.42	6.00	48.00	48.00	0.00
29	43.00	-34.42	6.00	48.00	48.00	0.00
30	44.00	-35.42	6.00	48.00	48.00	0.00
31	45.00	-36.42	6.00	48.00	48.00	0.00
32	46.00	-37.42	6.00	48.00	48.00	0.00
33	47.00	-38.42	6.00	48.00	48.00	0.00
34	48.00	-39.42	6.00	48.00	48.00	0.00
35	49.00	-40.42	6.00	48.00	48.00	0.00
36	50.00	-41.42	6.00	48.00	48.00	0.00

37	51.00	-42.42	6.00	48.00	48.00	0.00
38	52.00	-43.42	6.00	48.00	48.00	0.00
39	53.00	-44.42	6.00	48.00	48.00	0.00
40	54.00	-45.42	6.00	48.00	48.00	0.00
41	55.00	-46.42	6.00	48.00	48.00	0.00
42	56.00	-47.42	6.00	48.00	48.00	0.00
43	57.00	-48.42	6.00	48.00	48.00	0.00
44	58.00	-49.42	6.00	48.00	48.00	0.00
45	59.00	-50.42	6.00	48.00	48.00	0.00
46	60.00	-51.42	6.00	48.00	48.00	0.00
47	61.00	-52.42	6.00	48.00	48.00	0.00
48	62.00	-53.42	6.00	48.00	48.00	0.00
49	63.00	-54.42	6.00	48.00	48.00	0.00
50	64.00	-55.42	6.00	48.00	48.00	0.00
51	65.00	-56.42	6.00	48.00	48.00	0.00
52	66.00	-57.42	6.00	48.00	48.00	0.00
53	67.00	-58.42	6.00	48.00	48.00	0.00
54	68.00	-59.42	6.00	48.00	48.00	0.00
55	69.00	-60.42	6.00	48.00	48.00	0.00
56	70.00	-61.42	6.00	48.00	48.00	0.00
57	71.00	-62.42	6.00	48.00	48.00	0.00
58	72.00	-63.42	6.00	48.00	48.00	0.00
59	73.00	-64.42	6.00	48.00	48.00	0.00
60	74.00	-65.42	6.00	48.00	48.00	0.00
61	75.00	-66.42	6.00	48.00	48.00	0.00
62	76.00	-67.42	6.00	48.00	48.00	0.00
63	77.00	-68.42	6.00	48.00	48.00	0.00
64	78.00	-69.42	6.00	48.00	48.00	0.00
65	79.00	-70.42	6.00	48.00	48.00	0.00
66	80.00	-71.42	6.00	48.00	48.00	0.00
67	81.00	-72.42	6.00	48.00	48.00	0.00
68	82.00	-73.42	6.00	48.00	48.00	0.00
69	83.00	-74.42	6.00	48.00	48.00	0.00
70	84.00	-75.42	6.00	48.00	48.00	0.00
71	85.00	-76.42	6.00	48.00	48.00	0.00
72	86.00	-77.42	6.00	48.00	48.00	0.00
73	87.00	-78.42	6.00	48.00	48.00	0.00
74	88.00	-79.42	6.00	48.00	48.00	0.00
75	89.00	-80.42	6.00	48.00	48.00	0.00
76	90.00	-81.42	6.00	48.00	48.00	0.00
77	91.00	-82.42	6.00	48.00	48.00	0.00
78	92.00	-83.42	6.00	48.00	48.00	0.00
79	93.00	-84.42	6.00	48.00	48.00	0.00

Drilled Shaft Capacity (sorted by shaft diameter):
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Strength reduction factors: Skin-friction = 1.00, End-bearing = 1.00

ID	Diameter (in)	Length (ft)	Skin Fric. (tons)	End Bearing (tons)	Capacity (tons)
1	48.00	15.00	4.311	67.345	71.656
2	48.00	16.00	6.163	138.010	144.173
3	48.00	17.00	8.299	133.219	141.518
4	48.00	18.00	10.713	125.194	135.907
5	48.00	19.00	13.382	116.065	129.448
6	48.00	20.00	16.307	106.664	122.972
7	48.00	21.00	19.481	100.350	119.831
8	48.00	22.00	22.914	96.571	119.485
9	48.00	23.00	26.605	94.078	120.683
10	48.00	24.00	30.523	93.221	123.745
11	48.00	25.00	34.655	93.143	127.798
12	48.00	26.00	37.468	90.124	127.592
13	48.00	27.00	38.851	81.924	120.775
14	48.00	28.00	40.293	75.263	115.556
15	48.00	29.00	41.794	75.613	117.407
16	48.00	30.00	43.354	86.459	129.814
17	48.00	31.00	45.782	104.062	149.845
18	48.00	32.00	49.094	121.161	170.255
19	48.00	33.00	52.482	135.497	187.979
20	48.00	34.00	57.736	148.566	206.303
21	48.00	35.00	63.141	158.870	222.011

22	48.00	36.00	65.126	169.817	234.943
23	48.00	37.00	67.178	185.594	252.772
24	48.00	38.00	72.917	204.450	277.367
25	48.00	39.00	78.833	215.915	294.748
26	48.00	40.00	84.952	220.498	305.450
27	48.00	41.00	91.256	226.627	317.883
28	48.00	42.00	97.690	232.665	330.355
29	48.00	43.00	104.244	232.100	336.344
30	48.00	44.00	110.907	223.014	333.922
31	48.00	45.00	117.678	213.152	330.830
32	48.00	46.00	124.553	213.080	337.633
33	48.00	47.00	131.552	220.933	352.485
34	48.00	48.00	138.677	231.649	370.326
35	48.00	49.00	145.831	242.667	388.498
36	48.00	50.00	153.043	251.192	404.235
37	48.00	51.00	160.339	252.064	412.402
38	48.00	52.00	167.725	245.517	413.242
39	48.00	53.00	175.172	243.228	418.400
40	48.00	54.00	182.670	249.123	431.792
41	48.00	55.00	190.216	258.705	448.921
42	48.00	56.00	197.815	266.263	464.079
43	48.00	57.00	205.518	270.572	476.090
44	48.00	58.00	213.328	272.067	485.395
45	48.00	59.00	221.225	271.182	492.406
46	48.00	60.00	229.198	265.313	494.512
47	48.00	61.00	237.235	254.765	491.999
48	48.00	62.00	245.294	243.190	488.484
49	48.00	63.00	253.369	234.641	488.010
50	48.00	64.00	261.443	227.881	489.324
51	48.00	65.00	269.508	224.597	494.106
52	48.00	66.00	277.555	225.942	503.497
53	48.00	67.00	285.560	230.909	516.469
54	48.00	68.00	293.517	237.603	531.121
55	48.00	69.00	301.427	246.518	547.945
56	48.00	70.00	309.294	258.783	568.076
57	48.00	71.00	317.115	274.605	591.720
58	48.00	72.00	324.902	293.167	618.070
59	48.00	73.00	332.657	313.195	645.853
60	48.00	74.00	340.391	334.171	674.562
61	48.00	75.00	348.123	352.498	700.621
62	48.00	76.00	355.843	364.904	720.746
63	48.00	77.00	363.526	371.804	735.330
64	48.00	78.00	371.169	375.101	746.270
65	48.00	79.00	378.765	371.647	750.412
66	48.00	80.00	386.317	362.147	748.464
67	48.00	81.00	393.817	352.647	746.464
68	48.00	82.00	401.250	347.897	749.147
69	48.00	83.00	408.613	347.303	755.916
70	48.00	84.00	415.900	347.303	763.203
71	48.00	85.00	423.113	347.303	770.416
72	48.00	86.00	430.247	347.105	777.353
73	48.00	87.00	437.452	345.522	782.974
74	48.00	88.00	444.778	342.355	787.133
75	48.00	89.00	452.210	339.188	791.399
76	48.00	90.00	459.733	337.605	797.338
77	48.00	91.00	467.349	337.407	804.756
78	48.00	92.00	475.068	338.199	813.267
79	48.00	93.00 Soil Elevations Must Extend At or Below Contribution Zone			

Drilled Shaft Capacity at User-Defined Settlement (sorted by shaft diameter):

***** Capacity is NOT modified by the strength reduction factors *****

User-Defined Settlement = 1.04%

ID	Diameter (in)	Length (ft)	Skin Fric. (tons)	End Bearing (tons)	Capacity (tons)
1	48.00	15.00	4.217	21.421	25.638
2	48.00	16.00	6.028	43.899	49.927
3	48.00	17.00	8.118	42.375	50.493

4	48.00	18.00	10.478	39.823	50.301
5	48.00	19.00	13.089	36.919	50.008
6	48.00	20.00	15.951	33.928	49.879
7	48.00	21.00	19.055	31.920	50.975
8	48.00	22.00	22.412	30.718	53.130
9	48.00	23.00	26.022	29.925	55.947
10	48.00	24.00	29.855	29.652	59.508
11	48.00	25.00	33.897	29.628	63.524
12	48.00	26.00	36.648	28.667	65.316
13	48.00	27.00	38.001	26.059	64.060
14	48.00	28.00	39.411	23.940	63.351
15	48.00	29.00	40.880	24.051	64.931
16	48.00	30.00	42.406	27.501	69.907
17	48.00	31.00	44.780	33.101	77.881
18	48.00	32.00	48.019	38.540	86.559
19	48.00	33.00	51.334	43.100	94.433
20	48.00	34.00	56.473	47.257	103.729
21	48.00	35.00	61.759	50.534	112.293
22	48.00	36.00	63.701	54.016	117.717
23	48.00	37.00	65.708	59.035	124.743
24	48.00	38.00	71.321	65.033	136.354
25	48.00	39.00	77.107	68.680	145.787
26	48.00	40.00	83.093	70.137	153.230
27	48.00	41.00	89.258	72.087	161.345
28	48.00	42.00	95.552	74.007	169.559
29	48.00	43.00	101.962	73.828	175.790
30	48.00	44.00	108.480	70.938	179.418
31	48.00	45.00	115.102	67.801	182.903
32	48.00	46.00	121.827	67.778	189.604
33	48.00	47.00	128.673	70.276	198.948
34	48.00	48.00	135.642	73.684	209.326
35	48.00	49.00	142.639	77.189	219.828
36	48.00	50.00	149.693	79.901	229.594
37	48.00	51.00	156.829	80.178	237.007
38	48.00	52.00	164.054	78.096	242.149
39	48.00	53.00	171.338	77.367	248.705
40	48.00	54.00	178.671	79.243	257.914
41	48.00	55.00	186.053	82.290	268.343
42	48.00	56.00	193.486	84.695	278.180
43	48.00	57.00	201.019	86.065	287.084
44	48.00	58.00	208.659	86.541	295.199
45	48.00	59.00	216.382	86.259	302.642
46	48.00	60.00	224.181	84.393	308.574
47	48.00	61.00	232.042	81.037	313.079
48	48.00	62.00	239.925	77.355	317.280
49	48.00	63.00	247.823	74.636	322.459
50	48.00	64.00	255.721	72.486	328.206
51	48.00	65.00	263.609	71.441	335.051
52	48.00	66.00	271.480	71.869	343.349
53	48.00	67.00	279.310	73.449	352.759
54	48.00	68.00	287.093	75.578	362.671
55	48.00	69.00	294.829	78.414	373.243
56	48.00	70.00	302.524	82.315	384.839
57	48.00	71.00	310.174	87.348	397.522
58	48.00	72.00	317.791	93.252	411.043
59	48.00	73.00	325.376	99.623	424.999
60	48.00	74.00	332.940	106.295	439.236
61	48.00	75.00	340.503	112.125	452.628
62	48.00	76.00	348.054	116.071	464.125
63	48.00	77.00	355.569	118.266	473.835
64	48.00	78.00	363.045	119.314	482.359
65	48.00	79.00	370.475	118.216	488.690
66	48.00	80.00	377.861	115.194	493.055
67	48.00	81.00	385.197	112.172	497.369
68	48.00	82.00	392.467	110.661	503.129
69	48.00	83.00	399.669	110.472	510.142
70	48.00	84.00	406.797	110.472	517.269
71	48.00	85.00	413.852	110.472	524.325
72	48.00	86.00	420.830	110.409	531.240
73	48.00	87.00	427.877	109.906	537.783
74	48.00	88.00	435.043	108.898	543.941
75	48.00	89.00	442.312	107.891	550.204
76	48.00	90.00	449.671	107.388	557.058

77	48.00	91.00	457.119	107.325	564.444
78	48.00	92.00	464.670	107.576	572.246
79	48.00	93.00	Soil Elevations Must Extend At or Below Contribution Zone		

Florida Bridge Software Institute Date: November 29, 2023
Shaft and Pile Analysis (FB-Deep v.2.06) Time: 10:03:24

General Information:
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Input file: .....Bridge\FB-Deep\Shaft\All Model as Sand\B-101-Void-10ft_60in.in
Project number: 2000-01-21007
Job name: PD&E I-95
Engineer: ZP
Units: English

Analysis Information:
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Analysis Type: Drilled Shaft Analysis

Soil Information:
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Boring date: 8-25-2023
Boring number: B-101
Station number: 685+50 Offset: -97.1

Ground Elevation: 8.58(ft)
Water table Elevation = 8.58(ft)

Hammer type: Automatic Hammer, Correction factor = 1.24

ID	Depth (ft)	Elevation (ft)	SPT Blows (Blows/ft)	Unit Weight (pcf)	Soil Type
1	0.00	8.58	N/A	0.00	5- Cavity layer
2	2.00	6.58	N/A	0.00	5- Cavity layer
3	4.00	4.58	N/A	0.00	5- Cavity layer
4	6.00	2.58	N/A	0.00	5- Cavity layer
5	8.00	0.58	N/A	0.00	5- Cavity layer
6	10.00	-1.42	14.00	115.00	3- Clean sand
7	12.00	-3.42	16.00	120.00	3- Clean sand
8	13.50	-4.92	18.00	120.00	3- Clean sand
9	15.00	-6.42	13.00	115.00	3- Clean sand
10	18.00	-9.42	13.00	115.00	3- Clean sand
11	20.50	-11.92	17.00	120.00	3- Clean sand
12	23.00	-14.42	14.00	115.00	3- Clean sand
13	25.50	-16.92	2.00	100.00	3- Clean sand
14	28.00	-19.42	2.00	100.00	3- Clean sand
15	30.50	-21.92	8.00	105.00	3- Clean sand
16	33.00	-24.42	18.00	115.00	3- Clean sand
17	35.00	-26.42	4.00	105.00	3- Clean sand
18	37.00	-28.42	24.00	120.00	3- Clean sand
19	38.00	-29.42	47.00	135.00	3- Clean sand
20	40.50	-31.92	21.00	120.00	3- Clean sand
21	43.00	-34.42	19.00	120.00	3- Clean sand
22	45.50	-36.92	40.00	130.00	3- Clean sand
23	48.00	-39.42	12.00	115.00	3- Clean sand
24	50.50	-41.92	18.00	120.00	3- Clean sand
25	53.00	-44.42	22.00	120.00	3- Clean sand
26	55.50	-46.92	60.00	145.00	3- Clean sand
27	58.00	-49.42	55.00	140.00	3- Clean sand
28	60.50	-51.92	27.00	125.00	3- Clean sand
29	63.00	-54.42	22.00	120.00	3- Clean sand
30	65.50	-56.92	15.00	110.00	3- Clean sand
31	68.00	-59.42	13.00	115.00	3- Clean sand
32	70.50	-61.92	32.00	125.00	3- Clean sand
33	73.00	-64.42	62.00	145.00	3- Clean sand
34	75.50	-66.92	45.00	135.00	3- Clean sand
35	78.00	-69.42	51.00	140.00	3- Clean sand
36	80.50	-71.92	49.00	135.00	3- Clean sand
37	83.00	-74.42	76.00	140.00	3- Clean sand
38	85.50	-76.92	57.00	140.00	3- Clean sand
39	88.00	-79.42	20.00	120.00	3- Clean sand
40	90.50	-81.92	48.00	130.00	3- Clean sand

41	93.00	-84.42	41.00	130.00	3- Clean sand
42	95.50	-86.92	60.00	145.00	3- Clean sand
43	98.00	-89.42	60.00	145.00	3- Clean sand
44	100.00	-91.42	60.00	145.00	3- Clean sand

ID	Cu-DIR (tsf)	qu (tsf)	qt (tsf)	Em (ksi)	qb (tsf)
1	N/A	N/A	N/A	N/A	N/A
2	N/A	N/A	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A	N/A
5	N/A	N/A	N/A	N/A	N/A
6	N/A	N/A	N/A	N/A	N/A
7	N/A	N/A	N/A	N/A	N/A
8	N/A	N/A	N/A	N/A	N/A
9	N/A	N/A	N/A	N/A	N/A
10	N/A	N/A	N/A	N/A	N/A
11	N/A	N/A	N/A	N/A	N/A
12	N/A	N/A	N/A	N/A	N/A
13	N/A	N/A	N/A	N/A	N/A
14	N/A	N/A	N/A	N/A	N/A
15	N/A	N/A	N/A	N/A	N/A
16	N/A	N/A	N/A	N/A	N/A
17	N/A	N/A	N/A	N/A	N/A
18	N/A	N/A	N/A	N/A	N/A
19	N/A	N/A	N/A	N/A	N/A
20	N/A	N/A	N/A	N/A	N/A
21	N/A	N/A	N/A	N/A	N/A
22	N/A	N/A	N/A	N/A	N/A
23	N/A	N/A	N/A	N/A	N/A
24	N/A	N/A	N/A	N/A	N/A
25	N/A	N/A	N/A	N/A	N/A
26	N/A	N/A	N/A	N/A	N/A
27	N/A	N/A	N/A	N/A	N/A
28	N/A	N/A	N/A	N/A	N/A
29	N/A	N/A	N/A	N/A	N/A
30	N/A	N/A	N/A	N/A	N/A
31	N/A	N/A	N/A	N/A	N/A
32	N/A	N/A	N/A	N/A	N/A
33	N/A	N/A	N/A	N/A	N/A
34	N/A	N/A	N/A	N/A	N/A
35	N/A	N/A	N/A	N/A	N/A
36	N/A	N/A	N/A	N/A	N/A
37	N/A	N/A	N/A	N/A	N/A
38	N/A	N/A	N/A	N/A	N/A
39	N/A	N/A	N/A	N/A	N/A
40	N/A	N/A	N/A	N/A	N/A
41	N/A	N/A	N/A	N/A	N/A
42	N/A	N/A	N/A	N/A	N/A
43	N/A	N/A	N/A	N/A	N/A
44	N/A	N/A	N/A	N/A	N/A

ID	RQD	F.M.	S.R.I.	Rock Recovery
1	N/A		N/A	N/A
2	N/A		N/A	N/A
3	N/A		N/A	N/A
4	N/A		N/A	N/A
5	N/A		N/A	N/A
6	N/A		N/A	N/A
7	N/A		N/A	N/A
8	N/A		N/A	N/A
9	N/A		N/A	N/A
10	N/A		N/A	N/A
11	N/A		N/A	N/A
12	N/A		N/A	N/A
13	N/A		N/A	N/A
14	N/A		N/A	N/A
15	N/A		N/A	N/A
16	N/A		N/A	N/A
17	N/A		N/A	N/A

18	N/A	N/A	N/A
19	N/A	N/A	N/A
20	N/A	N/A	N/A
21	N/A	N/A	N/A
22	N/A	N/A	N/A
23	N/A	N/A	N/A
24	N/A	N/A	N/A
25	N/A	N/A	N/A
26	N/A	N/A	N/A
27	N/A	N/A	N/A
28	N/A	N/A	N/A
29	N/A	N/A	N/A
30	N/A	N/A	N/A
31	N/A	N/A	N/A
32	N/A	N/A	N/A
33	N/A	N/A	N/A
34	N/A	N/A	N/A
35	N/A	N/A	N/A
36	N/A	N/A	N/A
37	N/A	N/A	N/A
38	N/A	N/A	N/A
39	N/A	N/A	N/A
40	N/A	N/A	N/A
41	N/A	N/A	N/A
42	N/A	N/A	N/A
43	N/A	N/A	N/A
44	N/A	N/A	N/A

Drilled Shaft Data:
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Shaft Geometry:

ID	Length (ft)	Tip Elev. (ft)	Case Len. (ft)	Diameter (in)	Base Diam. (in)	Bell Len. (ft)
1	15.00	-6.42	6.00	60.00	60.00	0.00
2	16.00	-7.42	6.00	60.00	60.00	0.00
3	17.00	-8.42	6.00	60.00	60.00	0.00
4	18.00	-9.42	6.00	60.00	60.00	0.00
5	19.00	-10.42	6.00	60.00	60.00	0.00
6	20.00	-11.42	6.00	60.00	60.00	0.00
7	21.00	-12.42	6.00	60.00	60.00	0.00
8	22.00	-13.42	6.00	60.00	60.00	0.00
9	23.00	-14.42	6.00	60.00	60.00	0.00
10	24.00	-15.42	6.00	60.00	60.00	0.00
11	25.00	-16.42	6.00	60.00	60.00	0.00
12	26.00	-17.42	6.00	60.00	60.00	0.00
13	27.00	-18.42	6.00	60.00	60.00	0.00
14	28.00	-19.42	6.00	60.00	60.00	0.00
15	29.00	-20.42	6.00	60.00	60.00	0.00
16	30.00	-21.42	6.00	60.00	60.00	0.00
17	31.00	-22.42	6.00	60.00	60.00	0.00
18	32.00	-23.42	6.00	60.00	60.00	0.00
19	33.00	-24.42	6.00	60.00	60.00	0.00
20	34.00	-25.42	6.00	60.00	60.00	0.00
21	35.00	-26.42	6.00	60.00	60.00	0.00
22	36.00	-27.42	6.00	60.00	60.00	0.00
23	37.00	-28.42	6.00	60.00	60.00	0.00
24	38.00	-29.42	6.00	60.00	60.00	0.00
25	39.00	-30.42	6.00	60.00	60.00	0.00
26	40.00	-31.42	6.00	60.00	60.00	0.00
27	41.00	-32.42	6.00	60.00	60.00	0.00
28	42.00	-33.42	6.00	60.00	60.00	0.00
29	43.00	-34.42	6.00	60.00	60.00	0.00
30	44.00	-35.42	6.00	60.00	60.00	0.00
31	45.00	-36.42	6.00	60.00	60.00	0.00
32	46.00	-37.42	6.00	60.00	60.00	0.00
33	47.00	-38.42	6.00	60.00	60.00	0.00
34	48.00	-39.42	6.00	60.00	60.00	0.00
35	49.00	-40.42	6.00	60.00	60.00	0.00
36	50.00	-41.42	6.00	60.00	60.00	0.00

37	51.00	-42.42	6.00	60.00	60.00	0.00
38	52.00	-43.42	6.00	60.00	60.00	0.00
39	53.00	-44.42	6.00	60.00	60.00	0.00
40	54.00	-45.42	6.00	60.00	60.00	0.00
41	55.00	-46.42	6.00	60.00	60.00	0.00
42	56.00	-47.42	6.00	60.00	60.00	0.00
43	57.00	-48.42	6.00	60.00	60.00	0.00
44	58.00	-49.42	6.00	60.00	60.00	0.00
45	59.00	-50.42	6.00	60.00	60.00	0.00
46	60.00	-51.42	6.00	60.00	60.00	0.00
47	61.00	-52.42	6.00	60.00	60.00	0.00
48	62.00	-53.42	6.00	60.00	60.00	0.00
49	63.00	-54.42	6.00	60.00	60.00	0.00
50	64.00	-55.42	6.00	60.00	60.00	0.00
51	65.00	-56.42	6.00	60.00	60.00	0.00
52	66.00	-57.42	6.00	60.00	60.00	0.00
53	67.00	-58.42	6.00	60.00	60.00	0.00
54	68.00	-59.42	6.00	60.00	60.00	0.00
55	69.00	-60.42	6.00	60.00	60.00	0.00
56	70.00	-61.42	6.00	60.00	60.00	0.00
57	71.00	-62.42	6.00	60.00	60.00	0.00
58	72.00	-63.42	6.00	60.00	60.00	0.00
59	73.00	-64.42	6.00	60.00	60.00	0.00
60	74.00	-65.42	6.00	60.00	60.00	0.00
61	75.00	-66.42	6.00	60.00	60.00	0.00
62	76.00	-67.42	6.00	60.00	60.00	0.00
63	77.00	-68.42	6.00	60.00	60.00	0.00
64	78.00	-69.42	6.00	60.00	60.00	0.00
65	79.00	-70.42	6.00	60.00	60.00	0.00
66	80.00	-71.42	6.00	60.00	60.00	0.00
67	81.00	-72.42	6.00	60.00	60.00	0.00
68	82.00	-73.42	6.00	60.00	60.00	0.00
69	83.00	-74.42	6.00	60.00	60.00	0.00
70	84.00	-75.42	6.00	60.00	60.00	0.00
71	85.00	-76.42	6.00	60.00	60.00	0.00
72	86.00	-77.42	6.00	60.00	60.00	0.00
73	87.00	-78.42	6.00	60.00	60.00	0.00
74	88.00	-79.42	6.00	60.00	60.00	0.00
75	89.00	-80.42	6.00	60.00	60.00	0.00
76	90.00	-81.42	6.00	60.00	60.00	0.00
77	91.00	-82.42	6.00	60.00	60.00	0.00

Drilled Shaft Capacity (sorted by shaft diameter):

Strength reduction factors: Skin-friction = 1.00, End-bearing = 1.00

ID	Diameter (in)	Length (ft)	Skin Fric. (tons)	End Bearing (tons)	Capacity (tons)
1	60.00	15.00	5.389	81.351	86.739
2	60.00	16.00	7.703	75.020	82.724
3	60.00	17.00	10.374	68.325	78.699
4	60.00	18.00	13.391	151.410	164.801
5	60.00	19.00	16.728	143.984	160.712
6	60.00	20.00	20.384	137.498	157.883
7	60.00	21.00	24.352	131.800	156.152
8	60.00	22.00	28.643	129.054	157.697
9	60.00	23.00	33.256	130.867	164.123
10	60.00	24.00	38.154	131.496	169.650
11	60.00	25.00	43.319	126.890	170.209
12	60.00	26.00	46.835	122.183	169.019
13	60.00	27.00	48.564	122.305	170.869
14	60.00	28.00	50.367	129.139	179.506
15	60.00	29.00	52.243	138.670	190.913
16	60.00	30.00	54.193	144.957	199.150
17	60.00	31.00	57.228	148.933	206.162
18	60.00	32.00	61.367	156.197	217.564
19	60.00	33.00	65.603	167.681	233.284
20	60.00	34.00	72.170	183.121	255.292
21	60.00	35.00	78.926	202.254	281.180
22	60.00	36.00	81.408	225.070	306.477
23	60.00	37.00	83.973	242.884	326.856

24	60.00	38.00	91.146	254.603	345.749
25	60.00	39.00	98.541	261.919	360.460
26	60.00	40.00	106.190	265.881	372.071
27	60.00	41.00	114.070	267.721	381.791
28	60.00	42.00	122.112	274.822	396.935
29	60.00	43.00	130.305	286.692	416.997
30	60.00	44.00	138.634	295.658	434.292
31	60.00	45.00	147.097	302.033	449.130
32	60.00	46.00	155.691	303.353	459.044
33	60.00	47.00	164.440	307.288	471.728
34	60.00	48.00	173.346	315.223	488.569
35	60.00	49.00	182.288	324.104	506.393
36	60.00	50.00	191.304	330.878	522.182
37	60.00	51.00	200.423	334.845	535.268
38	60.00	52.00	209.656	331.801	541.457
39	60.00	53.00	218.965	321.048	540.013
40	60.00	54.00	228.337	310.876	539.213
41	60.00	55.00	237.770	309.576	547.346
42	60.00	56.00	247.269	315.735	563.004
43	60.00	57.00	256.897	320.873	577.770
44	60.00	58.00	266.660	323.576	590.236
45	60.00	59.00	276.531	326.185	602.715
46	60.00	60.00	286.498	331.040	617.537
47	60.00	61.00	296.543	337.319	633.863
48	60.00	62.00	306.617	340.093	646.711
49	60.00	63.00	316.711	338.539	655.251
50	60.00	64.00	326.804	334.538	661.342
51	60.00	65.00	336.885	329.968	666.853
52	60.00	66.00	346.944	325.422	672.366
53	60.00	67.00	356.950	324.446	681.396
54	60.00	68.00	366.897	327.634	694.531
55	60.00	69.00	376.784	334.485	711.269
56	60.00	70.00	386.617	344.501	731.118
57	60.00	71.00	396.393	357.656	754.049
58	60.00	72.00	406.128	373.785	779.913
59	60.00	73.00	415.821	392.863	808.684
60	60.00	74.00	425.489	413.739	839.227
61	60.00	75.00	435.154	435.264	870.418
62	60.00	76.00	444.803	455.967	900.771
63	60.00	77.00	454.408	467.026	921.434
64	60.00	78.00	463.961	466.968	930.930
65	60.00	79.00	473.456	462.476	935.932
66	60.00	80.00	482.896	460.230	943.126
67	60.00	81.00	492.271	459.949	952.220
68	60.00	82.00	501.562	459.949	961.511
69	60.00	83.00	510.766	459.949	970.715
70	60.00	84.00	519.875	459.949	979.824
71	60.00	85.00	528.892	459.949	988.841
72	60.00	86.00	537.809	459.743	997.552
73	60.00	87.00	546.815	458.093	1004.908
74	60.00	88.00	555.972	454.795	1010.767
75	60.00	89.00	565.263	451.496	1016.759
76	60.00	90.00	574.667	449.847	1024.513
77	60.00	91.00 Soil Elevations Must Extend At or Below Contribution Zone			

Drilled Shaft Capacity at User-Defined Settlement (sorted by shaft diameter):

***** Capacity is NOT modified by the strength reduction factors *****

User-Defined Settlement = 0.83%

ID	Diameter (in)	Length (ft)	Skin Fric. (tons)	End Bearing (tons)	Capacity (tons)
1	60.00	15.00	5.251	21.247	26.498
2	60.00	16.00	7.507	19.594	27.101
3	60.00	17.00	10.110	17.845	27.955
4	60.00	18.00	13.050	39.545	52.595
5	60.00	19.00	16.302	37.605	53.907
6	60.00	20.00	19.865	35.911	55.777
7	60.00	21.00	23.732	34.423	58.155

8	60.00	22.00	27.913	33.706	61.619
9	60.00	23.00	32.409	34.179	66.588
10	60.00	24.00	37.183	34.344	71.526
11	60.00	25.00	42.216	33.141	75.356
12	60.00	26.00	45.643	31.911	77.554
13	60.00	27.00	47.327	31.943	79.270
14	60.00	28.00	49.084	33.728	82.812
15	60.00	29.00	50.912	36.217	87.130
16	60.00	30.00	52.813	37.859	90.672
17	60.00	31.00	55.771	38.898	94.669
18	60.00	32.00	59.804	40.795	100.599
19	60.00	33.00	63.932	43.794	107.727
20	60.00	34.00	70.332	47.827	118.159
21	60.00	35.00	76.916	52.824	129.740
22	60.00	36.00	79.334	58.783	138.117
23	60.00	37.00	81.834	63.435	145.270
24	60.00	38.00	88.825	66.496	155.321
25	60.00	39.00	96.032	68.407	164.439
26	60.00	40.00	103.486	69.442	172.928
27	60.00	41.00	111.165	69.922	181.087
28	60.00	42.00	119.003	71.777	190.780
29	60.00	43.00	126.987	74.877	201.864
30	60.00	44.00	135.104	77.219	212.323
31	60.00	45.00	143.351	78.884	222.235
32	60.00	46.00	151.726	79.229	230.955
33	60.00	47.00	160.253	80.256	240.509
34	60.00	48.00	168.932	82.329	251.261
35	60.00	49.00	177.646	84.648	262.295
36	60.00	50.00	186.432	86.418	272.849
37	60.00	51.00	195.319	87.454	282.773
38	60.00	52.00	204.317	86.659	290.976
39	60.00	53.00	213.389	83.850	297.239
40	60.00	54.00	222.522	81.193	303.715
41	60.00	55.00	231.715	80.854	312.569
42	60.00	56.00	240.972	82.463	323.435
43	60.00	57.00	250.355	83.804	334.159
44	60.00	58.00	259.869	84.510	344.379
45	60.00	59.00	269.489	85.192	354.680
46	60.00	60.00	279.202	86.460	365.661
47	60.00	61.00	288.991	88.100	377.091
48	60.00	62.00	298.809	88.824	387.633
49	60.00	63.00	308.646	88.418	397.064
50	60.00	64.00	318.481	87.373	405.855
51	60.00	65.00	328.306	86.180	414.486
52	60.00	66.00	338.109	84.992	423.101
53	60.00	67.00	347.860	84.738	432.598
54	60.00	68.00	357.553	85.570	443.124
55	60.00	69.00	367.189	87.360	454.548
56	60.00	70.00	376.771	89.976	466.747
57	60.00	71.00	386.299	93.411	479.710
58	60.00	72.00	395.786	97.624	493.409
59	60.00	73.00	405.232	102.606	507.838
60	60.00	74.00	414.653	108.059	522.712
61	60.00	75.00	424.072	113.681	537.753
62	60.00	76.00	433.476	119.088	552.564
63	60.00	77.00	442.836	121.976	564.812
64	60.00	78.00	452.146	121.961	574.107
65	60.00	79.00	461.399	120.788	582.187
66	60.00	80.00	470.599	120.201	590.800
67	60.00	81.00	479.735	120.128	599.863
68	60.00	82.00	488.790	120.128	608.917
69	60.00	83.00	497.759	120.128	617.887
70	60.00	84.00	506.636	120.128	626.764
71	60.00	85.00	515.423	120.128	635.551
72	60.00	86.00	524.113	120.074	644.187
73	60.00	87.00	532.890	119.643	652.533
74	60.00	88.00	541.814	118.782	660.596
75	60.00	89.00	550.868	117.920	668.788
76	60.00	90.00	560.032	117.489	677.521
77	60.00	91.00 Soil Elevations Must Extend At or Below Contribution Zone			

Florida Bridge Software Institute Date: November 29, 2023
Shaft and Pile Analysis (FB-Deep v.2.06) Time: 10:05:43

General Information:
==========
Input file: .....Bridge\FB-Deep\Shaft\All Model as Sand\B-101-Void-10ft_72in.in
Project number: 2000-01-21007
Job name: PD&E I-95
Engineer: ZP
Units: English

Analysis Information:
==========
Analysis Type: Drilled Shaft Analysis

Soil Information:
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Boring date: 8-25-2023
Boring number: B-101
Station number: 685+50 Offset: -97.1

Ground Elevation: 8.58(ft)
Water table Elevation = 8.58(ft)

Hammer type: Automatic Hammer, Correction factor = 1.24

ID	Depth (ft)	Elevation (ft)	SPT Blows (Blows/ft)	Unit Weight (pcf)	Soil Type
1	0.00	8.58	N/A	0.00	5- Cavity layer
2	2.00	6.58	N/A	0.00	5- Cavity layer
3	4.00	4.58	N/A	0.00	5- Cavity layer
4	6.00	2.58	N/A	0.00	5- Cavity layer
5	8.00	0.58	N/A	0.00	5- Cavity layer
6	10.00	-1.42	14.00	115.00	3- Clean sand
7	12.00	-3.42	16.00	120.00	3- Clean sand
8	13.50	-4.92	18.00	120.00	3- Clean sand
9	15.00	-6.42	13.00	115.00	3- Clean sand
10	18.00	-9.42	13.00	115.00	3- Clean sand
11	20.50	-11.92	17.00	120.00	3- Clean sand
12	23.00	-14.42	14.00	115.00	3- Clean sand
13	25.50	-16.92	2.00	100.00	3- Clean sand
14	28.00	-19.42	2.00	100.00	3- Clean sand
15	30.50	-21.92	8.00	105.00	3- Clean sand
16	33.00	-24.42	18.00	115.00	3- Clean sand
17	35.00	-26.42	4.00	105.00	3- Clean sand
18	37.00	-28.42	24.00	120.00	3- Clean sand
19	38.00	-29.42	47.00	135.00	3- Clean sand
20	40.50	-31.92	21.00	120.00	3- Clean sand
21	43.00	-34.42	19.00	120.00	3- Clean sand
22	45.50	-36.92	40.00	130.00	3- Clean sand
23	48.00	-39.42	12.00	115.00	3- Clean sand
24	50.50	-41.92	18.00	120.00	3- Clean sand
25	53.00	-44.42	22.00	120.00	3- Clean sand
26	55.50	-46.92	60.00	145.00	3- Clean sand
27	58.00	-49.42	55.00	140.00	3- Clean sand
28	60.50	-51.92	27.00	125.00	3- Clean sand
29	63.00	-54.42	22.00	120.00	3- Clean sand
30	65.50	-56.92	15.00	110.00	3- Clean sand
31	68.00	-59.42	13.00	115.00	3- Clean sand
32	70.50	-61.92	32.00	125.00	3- Clean sand
33	73.00	-64.42	62.00	145.00	3- Clean sand
34	75.50	-66.92	45.00	135.00	3- Clean sand
35	78.00	-69.42	51.00	140.00	3- Clean sand
36	80.50	-71.92	49.00	135.00	3- Clean sand
37	83.00	-74.42	76.00	140.00	3- Clean sand
38	85.50	-76.92	57.00	140.00	3- Clean sand
39	88.00	-79.42	20.00	120.00	3- Clean sand
40	90.50	-81.92	48.00	130.00	3- Clean sand

41	93.00	-84.42	41.00	130.00	3- Clean sand
42	95.50	-86.92	60.00	145.00	3- Clean sand
43	98.00	-89.42	60.00	145.00	3- Clean sand
44	100.00	-91.42	60.00	145.00	3- Clean sand

ID	Cu-DIR (tsf)	qu (tsf)	qt (tsf)	Em (ksi)	qb (tsf)
1	N/A	N/A	N/A	N/A	N/A
2	N/A	N/A	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A	N/A
5	N/A	N/A	N/A	N/A	N/A
6	N/A	N/A	N/A	N/A	N/A
7	N/A	N/A	N/A	N/A	N/A
8	N/A	N/A	N/A	N/A	N/A
9	N/A	N/A	N/A	N/A	N/A
10	N/A	N/A	N/A	N/A	N/A
11	N/A	N/A	N/A	N/A	N/A
12	N/A	N/A	N/A	N/A	N/A
13	N/A	N/A	N/A	N/A	N/A
14	N/A	N/A	N/A	N/A	N/A
15	N/A	N/A	N/A	N/A	N/A
16	N/A	N/A	N/A	N/A	N/A
17	N/A	N/A	N/A	N/A	N/A
18	N/A	N/A	N/A	N/A	N/A
19	N/A	N/A	N/A	N/A	N/A
20	N/A	N/A	N/A	N/A	N/A
21	N/A	N/A	N/A	N/A	N/A
22	N/A	N/A	N/A	N/A	N/A
23	N/A	N/A	N/A	N/A	N/A
24	N/A	N/A	N/A	N/A	N/A
25	N/A	N/A	N/A	N/A	N/A
26	N/A	N/A	N/A	N/A	N/A
27	N/A	N/A	N/A	N/A	N/A
28	N/A	N/A	N/A	N/A	N/A
29	N/A	N/A	N/A	N/A	N/A
30	N/A	N/A	N/A	N/A	N/A
31	N/A	N/A	N/A	N/A	N/A
32	N/A	N/A	N/A	N/A	N/A
33	N/A	N/A	N/A	N/A	N/A
34	N/A	N/A	N/A	N/A	N/A
35	N/A	N/A	N/A	N/A	N/A
36	N/A	N/A	N/A	N/A	N/A
37	N/A	N/A	N/A	N/A	N/A
38	N/A	N/A	N/A	N/A	N/A
39	N/A	N/A	N/A	N/A	N/A
40	N/A	N/A	N/A	N/A	N/A
41	N/A	N/A	N/A	N/A	N/A
42	N/A	N/A	N/A	N/A	N/A
43	N/A	N/A	N/A	N/A	N/A
44	N/A	N/A	N/A	N/A	N/A

ID	RQD	F.M.	S.R.I.	Rock Recovery
1	N/A		N/A	N/A
2	N/A		N/A	N/A
3	N/A		N/A	N/A
4	N/A		N/A	N/A
5	N/A		N/A	N/A
6	N/A		N/A	N/A
7	N/A		N/A	N/A
8	N/A		N/A	N/A
9	N/A		N/A	N/A
10	N/A		N/A	N/A
11	N/A		N/A	N/A
12	N/A		N/A	N/A
13	N/A		N/A	N/A
14	N/A		N/A	N/A
15	N/A		N/A	N/A
16	N/A		N/A	N/A
17	N/A		N/A	N/A

18	N/A	N/A	N/A
19	N/A	N/A	N/A
20	N/A	N/A	N/A
21	N/A	N/A	N/A
22	N/A	N/A	N/A
23	N/A	N/A	N/A
24	N/A	N/A	N/A
25	N/A	N/A	N/A
26	N/A	N/A	N/A
27	N/A	N/A	N/A
28	N/A	N/A	N/A
29	N/A	N/A	N/A
30	N/A	N/A	N/A
31	N/A	N/A	N/A
32	N/A	N/A	N/A
33	N/A	N/A	N/A
34	N/A	N/A	N/A
35	N/A	N/A	N/A
36	N/A	N/A	N/A
37	N/A	N/A	N/A
38	N/A	N/A	N/A
39	N/A	N/A	N/A
40	N/A	N/A	N/A
41	N/A	N/A	N/A
42	N/A	N/A	N/A
43	N/A	N/A	N/A
44	N/A	N/A	N/A

Drilled Shaft Data:
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Shaft Geometry:

ID	Length (ft)	Tip Elev. (ft)	Case Len. (ft)	Diameter (in)	Base Diam. (in)	Bell Len. (ft)
1	15.00	-6.42	6.00	72.00	72.00	0.00
2	16.00	-7.42	6.00	72.00	72.00	0.00
3	17.00	-8.42	6.00	72.00	72.00	0.00
4	18.00	-9.42	6.00	72.00	72.00	0.00
5	19.00	-10.42	6.00	72.00	72.00	0.00
6	20.00	-11.42	6.00	72.00	72.00	0.00
7	21.00	-12.42	6.00	72.00	72.00	0.00
8	22.00	-13.42	6.00	72.00	72.00	0.00
9	23.00	-14.42	6.00	72.00	72.00	0.00
10	24.00	-15.42	6.00	72.00	72.00	0.00
11	25.00	-16.42	6.00	72.00	72.00	0.00
12	26.00	-17.42	6.00	72.00	72.00	0.00
13	27.00	-18.42	6.00	72.00	72.00	0.00
14	28.00	-19.42	6.00	72.00	72.00	0.00
15	29.00	-20.42	6.00	72.00	72.00	0.00
16	30.00	-21.42	6.00	72.00	72.00	0.00
17	31.00	-22.42	6.00	72.00	72.00	0.00
18	32.00	-23.42	6.00	72.00	72.00	0.00
19	33.00	-24.42	6.00	72.00	72.00	0.00
20	34.00	-25.42	6.00	72.00	72.00	0.00
21	35.00	-26.42	6.00	72.00	72.00	0.00
22	36.00	-27.42	6.00	72.00	72.00	0.00
23	37.00	-28.42	6.00	72.00	72.00	0.00
24	38.00	-29.42	6.00	72.00	72.00	0.00
25	39.00	-30.42	6.00	72.00	72.00	0.00
26	40.00	-31.42	6.00	72.00	72.00	0.00
27	41.00	-32.42	6.00	72.00	72.00	0.00
28	42.00	-33.42	6.00	72.00	72.00	0.00
29	43.00	-34.42	6.00	72.00	72.00	0.00
30	44.00	-35.42	6.00	72.00	72.00	0.00
31	45.00	-36.42	6.00	72.00	72.00	0.00
32	46.00	-37.42	6.00	72.00	72.00	0.00
33	47.00	-38.42	6.00	72.00	72.00	0.00
34	48.00	-39.42	6.00	72.00	72.00	0.00
35	49.00	-40.42	6.00	72.00	72.00	0.00
36	50.00	-41.42	6.00	72.00	72.00	0.00

37	51.00	-42.42	6.00	72.00	72.00	0.00
38	52.00	-43.42	6.00	72.00	72.00	0.00
39	53.00	-44.42	6.00	72.00	72.00	0.00
40	54.00	-45.42	6.00	72.00	72.00	0.00
41	55.00	-46.42	6.00	72.00	72.00	0.00
42	56.00	-47.42	6.00	72.00	72.00	0.00
43	57.00	-48.42	6.00	72.00	72.00	0.00
44	58.00	-49.42	6.00	72.00	72.00	0.00
45	59.00	-50.42	6.00	72.00	72.00	0.00
46	60.00	-51.42	6.00	72.00	72.00	0.00
47	61.00	-52.42	6.00	72.00	72.00	0.00
48	62.00	-53.42	6.00	72.00	72.00	0.00
49	63.00	-54.42	6.00	72.00	72.00	0.00
50	64.00	-55.42	6.00	72.00	72.00	0.00
51	65.00	-56.42	6.00	72.00	72.00	0.00
52	66.00	-57.42	6.00	72.00	72.00	0.00
53	67.00	-58.42	6.00	72.00	72.00	0.00
54	68.00	-59.42	6.00	72.00	72.00	0.00
55	69.00	-60.42	6.00	72.00	72.00	0.00
56	70.00	-61.42	6.00	72.00	72.00	0.00
57	71.00	-62.42	6.00	72.00	72.00	0.00
58	72.00	-63.42	6.00	72.00	72.00	0.00
59	73.00	-64.42	6.00	72.00	72.00	0.00
60	74.00	-65.42	6.00	72.00	72.00	0.00
61	75.00	-66.42	6.00	72.00	72.00	0.00
62	76.00	-67.42	6.00	72.00	72.00	0.00
63	77.00	-68.42	6.00	72.00	72.00	0.00
64	78.00	-69.42	6.00	72.00	72.00	0.00
65	79.00	-70.42	6.00	72.00	72.00	0.00
66	80.00	-71.42	6.00	72.00	72.00	0.00
67	81.00	-72.42	6.00	72.00	72.00	0.00
68	82.00	-73.42	6.00	72.00	72.00	0.00
69	83.00	-74.42	6.00	72.00	72.00	0.00
70	84.00	-75.42	6.00	72.00	72.00	0.00
71	85.00	-76.42	6.00	72.00	72.00	0.00
72	86.00	-77.42	6.00	72.00	72.00	0.00
73	87.00	-78.42	6.00	72.00	72.00	0.00
74	88.00	-79.42	6.00	72.00	72.00	0.00
75	89.00	-80.42	6.00	72.00	72.00	0.00

Drilled Shaft Capacity (sorted by shaft diameter):

Strength reduction factors: Skin-friction = 1.00, End-bearing = 1.00

ID	Diameter (in)	Length (ft)	Skin Fric. (tons)	End Bearing (tons)	Capacity (tons)
1	72.00	15.00	6.466	84.151	90.617
2	72.00	16.00	9.244	77.455	86.699
3	72.00	17.00	12.449	71.490	83.939
4	72.00	18.00	16.069	66.986	83.055
5	72.00	19.00	20.073	170.340	190.413
6	72.00	20.00	24.461	169.001	193.462
7	72.00	21.00	29.222	169.539	198.761
8	72.00	22.00	34.371	168.044	202.415
9	72.00	23.00	39.907	161.436	201.343
10	72.00	24.00	45.785	157.365	203.150
11	72.00	25.00	51.983	159.759	211.742
12	72.00	26.00	56.203	169.312	225.515
13	72.00	27.00	58.277	181.359	239.636
14	72.00	28.00	60.440	188.052	248.492
15	72.00	29.00	62.691	189.512	252.204
16	72.00	30.00	65.032	189.431	254.463
17	72.00	31.00	68.674	190.080	258.754
18	72.00	32.00	73.641	194.788	268.428
19	72.00	33.00	78.723	207.854	286.577
20	72.00	34.00	86.604	228.133	314.738
21	72.00	35.00	94.711	245.075	339.786
22	72.00	36.00	97.689	255.991	353.680
23	72.00	37.00	100.767	266.257	367.024
24	72.00	38.00	109.375	279.681	389.056
25	72.00	39.00	118.249	293.429	411.678

26	72.00	40.00	127.428	304.533	431.961
27	72.00	41.00	136.884	312.135	449.018
28	72.00	42.00	146.535	318.869	465.404
29	72.00	43.00	156.366	331.120	487.486
30	72.00	44.00	166.361	353.727	520.088
31	72.00	45.00	176.517	377.378	553.894
32	72.00	46.00	186.829	394.120	580.949
33	72.00	47.00	197.328	396.784	594.112
34	72.00	48.00	208.016	390.444	598.460
35	72.00	49.00	218.746	386.494	605.241
36	72.00	50.00	229.564	387.131	616.695
37	72.00	51.00	240.508	388.368	628.876
38	72.00	52.00	251.587	389.139	640.727
39	72.00	53.00	262.758	385.447	648.204
40	72.00	54.00	274.004	374.290	648.295
41	72.00	55.00	285.325	359.153	644.478
42	72.00	56.00	296.723	351.931	648.655
43	72.00	57.00	308.276	356.055	664.331
44	72.00	58.00	319.992	368.375	688.367
45	72.00	59.00	331.837	382.508	714.345
46	72.00	60.00	343.797	396.044	739.841
47	72.00	61.00	355.852	409.230	765.082
48	72.00	62.00	367.941	421.641	789.582
49	72.00	63.00	380.054	430.023	810.076
50	72.00	64.00	392.165	431.969	824.134
51	72.00	65.00	404.262	428.143	832.405
52	72.00	66.00	416.333	423.056	839.389
53	72.00	67.00	428.340	417.756	846.096
54	72.00	68.00	440.276	414.456	854.732
55	72.00	69.00	452.141	416.170	868.311
56	72.00	70.00	463.940	423.414	887.355
57	72.00	71.00	475.672	434.053	909.725
58	72.00	72.00	487.354	447.098	934.452
59	72.00	73.00	498.986	462.767	961.753
60	72.00	74.00	510.586	480.427	991.014
61	72.00	75.00	522.185	495.828	1018.013
62	72.00	76.00	533.764	507.132	1040.896
63	72.00	77.00	545.289	519.086	1064.375
64	72.00	78.00	556.754	533.228	1089.982
65	72.00	79.00	568.147	545.532	1113.680
66	72.00	80.00	579.476	552.720	1132.196
67	72.00	81.00	590.725	556.773	1147.498
68	72.00	82.00	601.875	558.124	1159.998
69	72.00	83.00	612.920	558.124	1171.043
70	72.00	84.00	623.850	558.124	1181.974
71	72.00	85.00	634.670	558.124	1192.794
72	72.00	86.00	645.371	557.917	1203.289
73	72.00	87.00	656.178	556.268	1212.446
74	72.00	88.00	667.167	552.969	1220.136
75	72.00	89.00 Soil Elevations Must Extend At or Below Contribution Zone			

Drilled Shaft Capacity at User-Defined Settlement (sorted by shaft diameter):
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***** Capacity is NOT modified by the strength reduction factors *****

User-Defined Settlement = 0.69%

ID	Diameter (in)	Length (ft)	Skin Fric. (tons)	End Bearing (tons)	Capacity (tons)
1	72.00	15.00	6.165	18.638	24.804
2	72.00	16.00	8.814	17.155	25.969
3	72.00	17.00	11.869	15.834	27.704
4	72.00	18.00	15.322	14.836	30.158
5	72.00	19.00	19.139	37.728	56.867
6	72.00	20.00	23.323	37.432	60.754
7	72.00	21.00	27.862	37.551	65.413
8	72.00	22.00	32.771	37.220	69.991
9	72.00	23.00	38.050	35.756	73.806
10	72.00	24.00	43.654	34.854	78.509
11	72.00	25.00	49.563	35.385	84.948

12	72.00	26.00	53.587	37.500	91.087
13	72.00	27.00	55.565	40.169	95.733
14	72.00	28.00	57.627	41.651	99.278
15	72.00	29.00	59.774	41.975	101.748
16	72.00	30.00	62.005	41.957	103.962
17	72.00	31.00	65.478	42.100	107.578
18	72.00	32.00	70.213	43.143	113.356
19	72.00	33.00	75.060	46.037	121.097
20	72.00	34.00	82.574	50.529	133.102
21	72.00	35.00	90.303	54.281	144.584
22	72.00	36.00	93.143	56.699	149.841
23	72.00	37.00	96.077	58.973	155.050
24	72.00	38.00	104.285	61.946	166.230
25	72.00	39.00	112.746	64.991	177.737
26	72.00	40.00	121.497	67.450	188.947
27	72.00	41.00	130.513	69.134	199.647
28	72.00	42.00	139.715	70.625	210.340
29	72.00	43.00	149.089	73.339	222.428
30	72.00	44.00	158.618	78.346	236.964
31	72.00	45.00	168.301	83.584	251.886
32	72.00	46.00	178.134	87.292	265.426
33	72.00	47.00	188.144	87.882	276.027
34	72.00	48.00	198.334	86.478	284.813
35	72.00	49.00	208.565	85.604	294.169
36	72.00	50.00	218.880	85.744	304.624
37	72.00	51.00	229.314	86.019	315.333
38	72.00	52.00	239.878	86.189	326.067
39	72.00	53.00	250.529	85.371	335.900
40	72.00	54.00	261.252	82.900	344.152
41	72.00	55.00	272.045	79.548	351.593
42	72.00	56.00	282.913	77.948	360.862
43	72.00	57.00	293.929	78.862	372.790
44	72.00	58.00	305.099	81.590	386.689
45	72.00	59.00	316.393	84.721	401.113
46	72.00	60.00	327.796	87.719	415.515
47	72.00	61.00	339.290	90.639	429.929
48	72.00	62.00	350.816	93.388	444.205
49	72.00	63.00	362.365	95.244	457.610
50	72.00	64.00	373.913	95.676	469.588
51	72.00	65.00	385.447	94.828	480.276
52	72.00	66.00	396.956	93.701	490.658
53	72.00	67.00	408.405	92.527	500.932
54	72.00	68.00	419.785	91.797	511.582
55	72.00	69.00	431.097	92.176	523.274
56	72.00	70.00	442.348	93.781	536.129
57	72.00	71.00	453.534	96.137	549.671
58	72.00	72.00	464.672	99.027	563.698
59	72.00	73.00	475.762	102.497	578.259
60	72.00	74.00	486.823	106.408	593.232
61	72.00	75.00	497.882	109.819	607.701
62	72.00	76.00	508.922	112.323	621.245
63	72.00	77.00	519.911	114.971	634.882
64	72.00	78.00	530.841	118.103	648.945
65	72.00	79.00	541.705	120.828	662.534
66	72.00	80.00	552.506	122.420	674.926
67	72.00	81.00	563.232	123.318	686.550
68	72.00	82.00	573.863	123.617	697.480
69	72.00	83.00	584.393	123.617	708.011
70	72.00	84.00	594.815	123.617	718.432
71	72.00	85.00	605.132	123.617	728.749
72	72.00	86.00	615.335	123.572	738.906
73	72.00	87.00	625.638	123.206	748.845
74	72.00	88.00	636.116	122.476	758.592
75	72.00	89.00 Soil Elevations Must Extend At or Below Contribution Zone			

Florida Bridge Software Institute Date: November 29, 2023
Shaft and Pile Analysis (FB-Deep v.2.06) Time: 10:09:03

General Information:
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Input file: .....Bridge\FB-Deep\Shaft\All Model as Sand\B-201-Void-10ft_48in.in
Project number: 2000-01-21007
Job name: PD&E I-95
Engineer: ZP
Units: English

Analysis Information:
==========
Analysis Type: Drilled Shaft Analysis

Soil Information:
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Boring date: 8-22-2023
Boring number: B-201
Station number: 578+32 Offset: +157.1

Ground Elevation: 17.36(ft)
Water table Elevation = 17.36(ft)

Hammer type: Automatic Hammer, Correction factor = 1.24

ID	Depth (ft)	Elevation (ft)	SPT Blows (Blows/ft)	Unit Weight (pcf)	Soil Type
1	0.00	17.36	N/A	0.00	5- Cavity layer
2	2.00	15.36	N/A	0.00	5- Cavity layer
3	4.00	13.36	N/A	0.00	5- Cavity layer
4	6.00	11.36	N/A	0.00	5- Cavity layer
5	8.00	9.36	N/A	0.00	5- Cavity layer
6	10.00	7.36	39.00	125.00	3- Clean sand
7	12.00	5.36	24.00	120.00	3- Clean sand
8	13.50	3.86	7.00	105.00	3- Clean sand
9	15.00	2.36	4.00	105.00	3- Clean sand
10	18.00	-0.64	5.00	105.00	3- Clean sand
11	20.50	-3.14	19.00	115.00	3- Clean sand
12	23.00	-5.64	11.00	110.00	3- Clean sand
13	25.50	-8.14	18.00	115.00	3- Clean sand
14	28.00	-10.64	16.00	115.00	3- Clean sand
15	30.50	-13.14	28.00	120.00	3- Clean sand
16	33.00	-15.64	25.00	120.00	3- Clean sand
17	35.50	-18.14	7.00	105.00	3- Clean sand
18	38.00	-20.64	18.00	115.00	3- Clean sand
19	40.50	-23.14	60.00	145.00	3- Clean sand
20	43.00	-25.64	60.00	145.00	3- Clean sand
21	45.50	-28.14	14.00	110.00	3- Clean sand
22	48.00	-30.64	13.00	110.00	3- Clean sand
23	50.50	-33.14	14.00	115.00	3- Clean sand
24	53.00	-35.64	11.00	110.00	3- Clean sand
25	55.50	-38.14	21.00	115.00	3- Clean sand
26	58.00	-40.64	48.00	130.00	3- Clean sand
27	60.50	-43.14	16.00	120.00	3- Clean sand
28	63.00	-45.64	15.00	110.00	3- Clean sand
29	65.50	-48.14	39.00	125.00	3- Clean sand
30	68.00	-50.64	60.00	145.00	3- Clean sand
31	70.50	-53.14	95.00	145.00	3- Clean sand
32	73.00	-55.64	18.00	120.00	3- Clean sand
33	75.50	-58.14	56.00	140.00	3- Clean sand
34	78.00	-60.64	47.00	130.00	3- Clean sand
35	80.50	-63.14	26.00	125.00	3- Clean sand
36	83.00	-65.64	51.00	140.00	3- Clean sand
37	85.50	-68.14	28.00	125.00	3- Clean sand
38	88.00	-70.64	15.00	115.00	3- Clean sand
39	90.50	-73.14	57.00	135.00	3- Clean sand
40	93.00	-75.64	12.00	115.00	3- Clean sand

41	95.50	-78.14	11.00	115.00	3- Clean sand
42	98.00	-80.64	13.00	115.00	3- Clean sand
43	100.00	-82.64	13.00	115.00	3- Clean sand

ID	Cu-DIR (tsf)	qu (tsf)	qt (tsf)	Em (ksi)	qb (tsf)
1	N/A	N/A	N/A	N/A	N/A
2	N/A	N/A	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A	N/A
5	N/A	N/A	N/A	N/A	N/A
6	N/A	N/A	N/A	N/A	N/A
7	N/A	N/A	N/A	N/A	N/A
8	N/A	N/A	N/A	N/A	N/A
9	N/A	N/A	N/A	N/A	N/A
10	N/A	N/A	N/A	N/A	N/A
11	N/A	N/A	N/A	N/A	N/A
12	N/A	N/A	N/A	N/A	N/A
13	N/A	N/A	N/A	N/A	N/A
14	N/A	N/A	N/A	N/A	N/A
15	N/A	N/A	N/A	N/A	N/A
16	N/A	N/A	N/A	N/A	N/A
17	N/A	N/A	N/A	N/A	N/A
18	N/A	N/A	N/A	N/A	N/A
19	N/A	N/A	N/A	N/A	N/A
20	N/A	N/A	N/A	N/A	N/A
21	N/A	N/A	N/A	N/A	N/A
22	N/A	N/A	N/A	N/A	N/A
23	N/A	N/A	N/A	N/A	N/A
24	N/A	N/A	N/A	N/A	N/A
25	N/A	N/A	N/A	N/A	N/A
26	N/A	N/A	N/A	N/A	N/A
27	N/A	N/A	N/A	N/A	N/A
28	N/A	N/A	N/A	N/A	N/A
29	N/A	N/A	N/A	N/A	N/A
30	N/A	N/A	N/A	N/A	N/A
31	N/A	N/A	N/A	N/A	N/A
32	N/A	N/A	N/A	N/A	N/A
33	N/A	N/A	N/A	N/A	N/A
34	N/A	N/A	N/A	N/A	N/A
35	N/A	N/A	N/A	N/A	N/A
36	N/A	N/A	N/A	N/A	N/A
37	N/A	N/A	N/A	N/A	N/A
38	N/A	N/A	N/A	N/A	N/A
39	N/A	N/A	N/A	N/A	N/A
40	N/A	N/A	N/A	N/A	N/A
41	N/A	N/A	N/A	N/A	N/A
42	N/A	N/A	N/A	N/A	N/A
43	N/A	N/A	N/A	N/A	N/A

ID	RQD F.M.	S.R.I.	Rock Recovery
1	N/A	N/A	N/A
2	N/A	N/A	N/A
3	N/A	N/A	N/A
4	N/A	N/A	N/A
5	N/A	N/A	N/A
6	N/A	N/A	N/A
7	N/A	N/A	N/A
8	N/A	N/A	N/A
9	N/A	N/A	N/A
10	N/A	N/A	N/A
11	N/A	N/A	N/A
12	N/A	N/A	N/A
13	N/A	N/A	N/A
14	N/A	N/A	N/A
15	N/A	N/A	N/A
16	N/A	N/A	N/A
17	N/A	N/A	N/A
18	N/A	N/A	N/A
19	N/A	N/A	N/A

20	N/A	N/A	N/A
21	N/A	N/A	N/A
22	N/A	N/A	N/A
23	N/A	N/A	N/A
24	N/A	N/A	N/A
25	N/A	N/A	N/A
26	N/A	N/A	N/A
27	N/A	N/A	N/A
28	N/A	N/A	N/A
29	N/A	N/A	N/A
30	N/A	N/A	N/A
31	N/A	N/A	N/A
32	N/A	N/A	N/A
33	N/A	N/A	N/A
34	N/A	N/A	N/A
35	N/A	N/A	N/A
36	N/A	N/A	N/A
37	N/A	N/A	N/A
38	N/A	N/A	N/A
39	N/A	N/A	N/A
40	N/A	N/A	N/A
41	N/A	N/A	N/A
42	N/A	N/A	N/A
43	N/A	N/A	N/A

Drilled Shaft Data:
==========

Shaft Geometry:

ID	Length (ft)	Tip Elev. (ft)	Case Len. (ft)	Diameter (in)	Base Diam. (in)	Bell Len. (ft)
1	15.00	2.36	6.00	48.00	48.00	0.00
2	16.00	1.36	6.00	48.00	48.00	0.00
3	17.00	0.36	6.00	48.00	48.00	0.00
4	18.00	-0.64	6.00	48.00	48.00	0.00
5	19.00	-1.64	6.00	48.00	48.00	0.00
6	20.00	-2.64	6.00	48.00	48.00	0.00
7	21.00	-3.64	6.00	48.00	48.00	0.00
8	22.00	-4.64	6.00	48.00	48.00	0.00
9	23.00	-5.64	6.00	48.00	48.00	0.00
10	24.00	-6.64	6.00	48.00	48.00	0.00
11	25.00	-7.64	6.00	48.00	48.00	0.00
12	26.00	-8.64	6.00	48.00	48.00	0.00
13	27.00	-9.64	6.00	48.00	48.00	0.00
14	28.00	-10.64	6.00	48.00	48.00	0.00
15	29.00	-11.64	6.00	48.00	48.00	0.00
16	30.00	-12.64	6.00	48.00	48.00	0.00
17	31.00	-13.64	6.00	48.00	48.00	0.00
18	32.00	-14.64	6.00	48.00	48.00	0.00
19	33.00	-15.64	6.00	48.00	48.00	0.00
20	34.00	-16.64	6.00	48.00	48.00	0.00
21	35.00	-17.64	6.00	48.00	48.00	0.00
22	36.00	-18.64	6.00	48.00	48.00	0.00
23	37.00	-19.64	6.00	48.00	48.00	0.00
24	38.00	-20.64	6.00	48.00	48.00	0.00
25	39.00	-21.64	6.00	48.00	48.00	0.00
26	40.00	-22.64	6.00	48.00	48.00	0.00
27	41.00	-23.64	6.00	48.00	48.00	0.00
28	42.00	-24.64	6.00	48.00	48.00	0.00
29	43.00	-25.64	6.00	48.00	48.00	0.00
30	44.00	-26.64	6.00	48.00	48.00	0.00
31	45.00	-27.64	6.00	48.00	48.00	0.00
32	46.00	-28.64	6.00	48.00	48.00	0.00
33	47.00	-29.64	6.00	48.00	48.00	0.00
34	48.00	-30.64	6.00	48.00	48.00	0.00
35	49.00	-31.64	6.00	48.00	48.00	0.00
36	50.00	-32.64	6.00	48.00	48.00	0.00
37	51.00	-33.64	6.00	48.00	48.00	0.00
38	52.00	-34.64	6.00	48.00	48.00	0.00
39	53.00	-35.64	6.00	48.00	48.00	0.00

40	54.00	-36.64	6.00	48.00	48.00	0.00
41	55.00	-37.64	6.00	48.00	48.00	0.00
42	56.00	-38.64	6.00	48.00	48.00	0.00
43	57.00	-39.64	6.00	48.00	48.00	0.00
44	58.00	-40.64	6.00	48.00	48.00	0.00
45	59.00	-41.64	6.00	48.00	48.00	0.00
46	60.00	-42.64	6.00	48.00	48.00	0.00
47	61.00	-43.64	6.00	48.00	48.00	0.00
48	62.00	-44.64	6.00	48.00	48.00	0.00
49	63.00	-45.64	6.00	48.00	48.00	0.00
50	64.00	-46.64	6.00	48.00	48.00	0.00
51	65.00	-47.64	6.00	48.00	48.00	0.00
52	66.00	-48.64	6.00	48.00	48.00	0.00
53	67.00	-49.64	6.00	48.00	48.00	0.00
54	68.00	-50.64	6.00	48.00	48.00	0.00
55	69.00	-51.64	6.00	48.00	48.00	0.00
56	70.00	-52.64	6.00	48.00	48.00	0.00
57	71.00	-53.64	6.00	48.00	48.00	0.00
58	72.00	-54.64	6.00	48.00	48.00	0.00
59	73.00	-55.64	6.00	48.00	48.00	0.00
60	74.00	-56.64	6.00	48.00	48.00	0.00
61	75.00	-57.64	6.00	48.00	48.00	0.00
62	76.00	-58.64	6.00	48.00	48.00	0.00
63	77.00	-59.64	6.00	48.00	48.00	0.00
64	78.00	-60.64	6.00	48.00	48.00	0.00
65	79.00	-61.64	6.00	48.00	48.00	0.00
66	80.00	-62.64	6.00	48.00	48.00	0.00
67	81.00	-63.64	6.00	48.00	48.00	0.00
68	82.00	-64.64	6.00	48.00	48.00	0.00
69	83.00	-65.64	6.00	48.00	48.00	0.00
70	84.00	-66.64	6.00	48.00	48.00	0.00
71	85.00	-67.64	6.00	48.00	48.00	0.00
72	86.00	-68.64	6.00	48.00	48.00	0.00
73	87.00	-69.64	6.00	48.00	48.00	0.00
74	88.00	-70.64	6.00	48.00	48.00	0.00
75	89.00	-71.64	6.00	48.00	48.00	0.00
76	90.00	-72.64	6.00	48.00	48.00	0.00
77	91.00	-73.64	6.00	48.00	48.00	0.00
78	92.00	-74.64	6.00	48.00	48.00	0.00
79	93.00	-75.64	6.00	48.00	48.00	0.00

Drilled Shaft Capacity (sorted by shaft diameter):

Strength reduction factors: Skin-friction = 1.00, End-bearing = 1.00

ID	Diameter (in)	Length (ft)	Skin Fric. (tons)	End Bearing (tons)	Capacity (tons)
1	48.00	15.00	3.759	47.331	51.090
2	48.00	16.00	4.356	129.015	133.371
3	48.00	17.00	5.028	111.310	116.337
4	48.00	18.00	5.772	100.886	106.658
5	48.00	19.00	6.786	98.172	104.958
6	48.00	20.00	7.883	104.002	111.885
7	48.00	21.00	9.917	114.345	124.261
8	48.00	22.00	13.006	127.733	140.739
9	48.00	23.00	16.332	142.604	158.936
10	48.00	24.00	19.545	156.914	176.459
11	48.00	25.00	22.933	168.756	191.690
12	48.00	26.00	26.672	174.239	200.912
13	48.00	27.00	30.785	171.941	202.726
14	48.00	28.00	35.096	167.763	202.858
15	48.00	29.00	39.591	168.191	207.782
16	48.00	30.00	44.269	172.282	216.551
17	48.00	31.00	49.125	178.874	227.999
18	48.00	32.00	54.167	188.765	242.932
19	48.00	33.00	59.395	203.260	262.655
20	48.00	34.00	64.796	218.213	283.009
21	48.00	35.00	70.367	230.205	300.572
22	48.00	36.00	74.880	234.261	309.141
23	48.00	37.00	78.250	229.584	307.833
24	48.00	38.00	81.670	220.702	302.371

25	48.00	39.00	87.679	213.079	300.758
26	48.00	40.00	93.808	210.234	304.042
27	48.00	41.00	100.063	214.520	314.583
28	48.00	42.00	106.527	223.738	330.265
29	48.00	43.00	113.210	230.774	343.983
30	48.00	44.00	120.093	232.772	352.865
31	48.00	45.00	127.175	226.825	354.000
32	48.00	46.00	134.428	212.936	347.364
33	48.00	47.00	141.746	194.972	336.718
34	48.00	48.00	149.111	178.671	327.782
35	48.00	49.00	156.516	166.613	323.129
36	48.00	50.00	163.959	163.252	327.211
37	48.00	51.00	171.437	167.548	338.985
38	48.00	52.00	178.956	173.182	352.138
39	48.00	53.00	186.518	174.876	361.394
40	48.00	54.00	193.416	176.240	369.656
41	48.00	55.00	200.329	178.148	378.477
42	48.00	56.00	207.598	183.303	390.902
43	48.00	57.00	215.231	195.327	410.558
44	48.00	58.00	222.883	214.582	437.465
45	48.00	59.00	230.567	235.549	466.116
46	48.00	60.00	238.302	253.839	492.142
47	48.00	61.00	246.079	267.500	513.579
48	48.00	62.00	253.868	277.376	531.244
49	48.00	63.00	261.664	280.863	542.527
50	48.00	64.00	269.445	274.659	544.104
51	48.00	65.00	277.196	265.886	543.083
52	48.00	66.00	284.918	266.343	551.261
53	48.00	67.00	292.634	279.012	571.647
54	48.00	68.00	300.347	297.570	597.918
55	48.00	69.00	308.070	317.144	625.214
56	48.00	70.00	315.826	333.133	648.959
57	48.00	71.00	323.605	339.752	663.357
58	48.00	72.00	331.398	334.905	666.303
59	48.00	73.00	339.203	324.513	663.716
60	48.00	74.00	346.980	316.219	663.199
61	48.00	75.00	354.701	312.806	667.507
62	48.00	76.00	362.366	311.148	673.515
63	48.00	77.00	370.000	307.698	677.697
64	48.00	78.00	377.604	307.434	685.038
65	48.00	79.00	385.157	310.551	695.707
66	48.00	80.00	392.648	309.513	702.160
67	48.00	81.00	400.070	302.121	702.191
68	48.00	82.00	407.410	295.398	702.808
69	48.00	83.00	414.666	293.273	707.938
70	48.00	84.00	421.840	286.173	708.012
71	48.00	85.00	428.943	273.724	702.668
72	48.00	86.00	435.968	261.346	697.314
73	48.00	87.00	443.042	251.076	694.118
74	48.00	88.00	450.215	236.299	686.514
75	48.00	89.00	457.479	217.918	675.397
76	48.00	90.00	464.825	201.666	666.491
77	48.00	91.00	472.258	190.938	663.196
78	48.00	92.00	479.800	182.393	662.194
79	48.00	93.00 Soil Elevations Must Extend At or Below Contribution Zone			

Drilled Shaft Capacity at User-Defined Settlement (sorted by shaft diameter):
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***** Capacity is NOT modified by the strength reduction factors *****

User-Defined Settlement = 1.04%

ID	Diameter (in)	Length (ft)	Skin Fric. (tons)	End Bearing (tons)	Capacity (tons)
1	48.00	15.00	3.677	15.055	18.732
2	48.00	16.00	4.261	41.038	45.299
3	48.00	17.00	4.918	35.406	40.324
4	48.00	18.00	5.646	32.090	37.736
5	48.00	19.00	6.637	31.227	37.864
6	48.00	20.00	7.711	33.082	40.792

7	48.00	21.00	9.700	36.372	46.071
8	48.00	22.00	12.721	40.630	53.351
9	48.00	23.00	15.974	45.360	61.335
10	48.00	24.00	19.117	49.912	69.029
11	48.00	25.00	22.432	53.679	76.111
12	48.00	26.00	26.089	55.423	81.512
13	48.00	27.00	30.111	54.692	84.803
14	48.00	28.00	34.327	53.363	87.690
15	48.00	29.00	38.724	53.499	92.224
16	48.00	30.00	43.300	54.800	98.101
17	48.00	31.00	48.050	56.897	104.947
18	48.00	32.00	52.981	60.043	113.025
19	48.00	33.00	58.095	64.654	122.749
20	48.00	34.00	63.378	69.411	132.788
21	48.00	35.00	68.827	73.225	142.052
22	48.00	36.00	73.241	74.515	147.757
23	48.00	37.00	76.537	73.027	149.564
24	48.00	38.00	79.882	70.202	150.084
25	48.00	39.00	85.760	67.777	153.538
26	48.00	40.00	91.755	66.872	158.627
27	48.00	41.00	97.873	68.236	166.109
28	48.00	42.00	104.195	71.168	175.363
29	48.00	43.00	110.732	73.406	184.138
30	48.00	44.00	117.464	74.041	191.506
31	48.00	45.00	124.391	72.150	196.541
32	48.00	46.00	131.486	67.732	199.218
33	48.00	47.00	138.643	62.018	200.661
34	48.00	48.00	145.848	56.833	202.680
35	48.00	49.00	153.090	52.997	206.088
36	48.00	50.00	160.370	51.928	212.298
37	48.00	51.00	167.684	53.295	220.979
38	48.00	52.00	175.039	55.087	230.126
39	48.00	53.00	182.435	55.626	238.061
40	48.00	54.00	189.183	56.059	245.242
41	48.00	55.00	195.944	56.667	252.611
42	48.00	56.00	203.054	58.306	261.361
43	48.00	57.00	210.520	62.131	272.651
44	48.00	58.00	218.005	68.256	286.260
45	48.00	59.00	225.520	74.925	300.445
46	48.00	60.00	233.086	80.743	313.829
47	48.00	61.00	240.692	85.088	325.781
48	48.00	62.00	248.311	88.229	336.540
49	48.00	63.00	255.936	89.339	345.275
50	48.00	64.00	263.547	87.365	350.912
51	48.00	65.00	271.129	84.575	355.704
52	48.00	66.00	278.682	84.720	363.402
53	48.00	67.00	286.229	88.750	374.979
54	48.00	68.00	293.773	94.653	388.426
55	48.00	69.00	301.327	100.879	402.206
56	48.00	70.00	308.913	105.965	414.878
57	48.00	71.00	316.522	108.070	424.592
58	48.00	72.00	324.145	106.529	430.673
59	48.00	73.00	331.779	103.223	435.002
60	48.00	74.00	339.386	100.585	439.971
61	48.00	75.00	346.938	99.499	446.437
62	48.00	76.00	354.435	98.972	453.407
63	48.00	77.00	361.901	97.874	459.776
64	48.00	78.00	369.339	97.791	467.129
65	48.00	79.00	376.726	98.782	475.508
66	48.00	80.00	384.054	98.452	482.505
67	48.00	81.00	391.313	96.101	487.414
68	48.00	82.00	398.493	93.962	492.455
69	48.00	83.00	405.589	93.286	498.875
70	48.00	84.00	412.606	91.028	503.634
71	48.00	85.00	419.554	87.068	506.622
72	48.00	86.00	426.425	83.131	509.556
73	48.00	87.00	433.345	79.864	513.209
74	48.00	88.00	440.361	75.163	515.524
75	48.00	89.00	447.466	69.317	516.782
76	48.00	90.00	454.651	64.147	518.798
77	48.00	91.00	461.921	60.735	522.656
78	48.00	92.00	469.299	58.017	527.315
79	48.00	93.00	Soil Elevations Must Extend At or Below Contribution Zone		

Florida Bridge Software Institute Date: November 29, 2023
Shaft and Pile Analysis (FB-Deep v.2.06) Time: 10:11:14

General Information:
==========
Input file: .....Bridge\FB-Deep\Shaft\All Model as Sand\B-201-Void-10ft_60in.in
Project number: 2000-01-21007
Job name: PD&E I-95
Engineer: ZP
Units: English

Analysis Information:
==========
Analysis Type: Drilled Shaft Analysis

Soil Information:
==========
Boring date: 8-22-2023
Boring number: B-201
Station number: 578+32 Offset: +157.1

Ground Elevation: 17.36(ft)
Water table Elevation = 17.36(ft)

Hammer type: Automatic Hammer, Correction factor = 1.24

ID	Depth (ft)	Elevation (ft)	SPT Blows (Blows/ft)	Unit Weight (pcf)	Soil Type
1	0.00	17.36	N/A	0.00	5- Cavity layer
2	2.00	15.36	N/A	0.00	5- Cavity layer
3	4.00	13.36	N/A	0.00	5- Cavity layer
4	6.00	11.36	N/A	0.00	5- Cavity layer
5	8.00	9.36	N/A	0.00	5- Cavity layer
6	10.00	7.36	39.00	125.00	3- Clean sand
7	12.00	5.36	24.00	120.00	3- Clean sand
8	13.50	3.86	7.00	105.00	3- Clean sand
9	15.00	2.36	4.00	105.00	3- Clean sand
10	18.00	-0.64	5.00	105.00	3- Clean sand
11	20.50	-3.14	19.00	115.00	3- Clean sand
12	23.00	-5.64	11.00	110.00	3- Clean sand
13	25.50	-8.14	18.00	115.00	3- Clean sand
14	28.00	-10.64	16.00	115.00	3- Clean sand
15	30.50	-13.14	28.00	120.00	3- Clean sand
16	33.00	-15.64	25.00	120.00	3- Clean sand
17	35.50	-18.14	7.00	105.00	3- Clean sand
18	38.00	-20.64	18.00	115.00	3- Clean sand
19	40.50	-23.14	60.00	145.00	3- Clean sand
20	43.00	-25.64	60.00	145.00	3- Clean sand
21	45.50	-28.14	14.00	110.00	3- Clean sand
22	48.00	-30.64	13.00	110.00	3- Clean sand
23	50.50	-33.14	14.00	115.00	3- Clean sand
24	53.00	-35.64	11.00	110.00	3- Clean sand
25	55.50	-38.14	21.00	115.00	3- Clean sand
26	58.00	-40.64	48.00	130.00	3- Clean sand
27	60.50	-43.14	16.00	120.00	3- Clean sand
28	63.00	-45.64	15.00	110.00	3- Clean sand
29	65.50	-48.14	39.00	125.00	3- Clean sand
30	68.00	-50.64	60.00	145.00	3- Clean sand
31	70.50	-53.14	95.00	145.00	3- Clean sand
32	73.00	-55.64	18.00	120.00	3- Clean sand
33	75.50	-58.14	56.00	140.00	3- Clean sand
34	78.00	-60.64	47.00	130.00	3- Clean sand
35	80.50	-63.14	26.00	125.00	3- Clean sand
36	83.00	-65.64	51.00	140.00	3- Clean sand
37	85.50	-68.14	28.00	125.00	3- Clean sand
38	88.00	-70.64	15.00	115.00	3- Clean sand
39	90.50	-73.14	57.00	135.00	3- Clean sand
40	93.00	-75.64	12.00	115.00	3- Clean sand

41	95.50	-78.14	11.00	115.00	3- Clean sand
42	98.00	-80.64	13.00	115.00	3- Clean sand
43	100.00	-82.64	13.00	115.00	3- Clean sand

ID	Cu-DIR (tsf)	qu (tsf)	qt (tsf)	Em (ksi)	qb (tsf)
1	N/A	N/A	N/A	N/A	N/A
2	N/A	N/A	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A	N/A
5	N/A	N/A	N/A	N/A	N/A
6	N/A	N/A	N/A	N/A	N/A
7	N/A	N/A	N/A	N/A	N/A
8	N/A	N/A	N/A	N/A	N/A
9	N/A	N/A	N/A	N/A	N/A
10	N/A	N/A	N/A	N/A	N/A
11	N/A	N/A	N/A	N/A	N/A
12	N/A	N/A	N/A	N/A	N/A
13	N/A	N/A	N/A	N/A	N/A
14	N/A	N/A	N/A	N/A	N/A
15	N/A	N/A	N/A	N/A	N/A
16	N/A	N/A	N/A	N/A	N/A
17	N/A	N/A	N/A	N/A	N/A
18	N/A	N/A	N/A	N/A	N/A
19	N/A	N/A	N/A	N/A	N/A
20	N/A	N/A	N/A	N/A	N/A
21	N/A	N/A	N/A	N/A	N/A
22	N/A	N/A	N/A	N/A	N/A
23	N/A	N/A	N/A	N/A	N/A
24	N/A	N/A	N/A	N/A	N/A
25	N/A	N/A	N/A	N/A	N/A
26	N/A	N/A	N/A	N/A	N/A
27	N/A	N/A	N/A	N/A	N/A
28	N/A	N/A	N/A	N/A	N/A
29	N/A	N/A	N/A	N/A	N/A
30	N/A	N/A	N/A	N/A	N/A
31	N/A	N/A	N/A	N/A	N/A
32	N/A	N/A	N/A	N/A	N/A
33	N/A	N/A	N/A	N/A	N/A
34	N/A	N/A	N/A	N/A	N/A
35	N/A	N/A	N/A	N/A	N/A
36	N/A	N/A	N/A	N/A	N/A
37	N/A	N/A	N/A	N/A	N/A
38	N/A	N/A	N/A	N/A	N/A
39	N/A	N/A	N/A	N/A	N/A
40	N/A	N/A	N/A	N/A	N/A
41	N/A	N/A	N/A	N/A	N/A
42	N/A	N/A	N/A	N/A	N/A
43	N/A	N/A	N/A	N/A	N/A

ID	RQD F.M.	S.R.I.	Rock Recovery
1	N/A	N/A	N/A
2	N/A	N/A	N/A
3	N/A	N/A	N/A
4	N/A	N/A	N/A
5	N/A	N/A	N/A
6	N/A	N/A	N/A
7	N/A	N/A	N/A
8	N/A	N/A	N/A
9	N/A	N/A	N/A
10	N/A	N/A	N/A
11	N/A	N/A	N/A
12	N/A	N/A	N/A
13	N/A	N/A	N/A
14	N/A	N/A	N/A
15	N/A	N/A	N/A
16	N/A	N/A	N/A
17	N/A	N/A	N/A
18	N/A	N/A	N/A
19	N/A	N/A	N/A

20	N/A	N/A	N/A
21	N/A	N/A	N/A
22	N/A	N/A	N/A
23	N/A	N/A	N/A
24	N/A	N/A	N/A
25	N/A	N/A	N/A
26	N/A	N/A	N/A
27	N/A	N/A	N/A
28	N/A	N/A	N/A
29	N/A	N/A	N/A
30	N/A	N/A	N/A
31	N/A	N/A	N/A
32	N/A	N/A	N/A
33	N/A	N/A	N/A
34	N/A	N/A	N/A
35	N/A	N/A	N/A
36	N/A	N/A	N/A
37	N/A	N/A	N/A
38	N/A	N/A	N/A
39	N/A	N/A	N/A
40	N/A	N/A	N/A
41	N/A	N/A	N/A
42	N/A	N/A	N/A
43	N/A	N/A	N/A

Drilled Shaft Data:
==========

Shaft Geometry:

ID	Length (ft)	Tip Elev. (ft)	Case Len. (ft)	Diameter (in)	Base Diam. (in)	Bell Len. (ft)
1	15.00	2.36	6.00	60.00	60.00	0.00
2	16.00	1.36	6.00	60.00	60.00	0.00
3	17.00	0.36	6.00	60.00	60.00	0.00
4	18.00	-0.64	6.00	60.00	60.00	0.00
5	19.00	-1.64	6.00	60.00	60.00	0.00
6	20.00	-2.64	6.00	60.00	60.00	0.00
7	21.00	-3.64	6.00	60.00	60.00	0.00
8	22.00	-4.64	6.00	60.00	60.00	0.00
9	23.00	-5.64	6.00	60.00	60.00	0.00
10	24.00	-6.64	6.00	60.00	60.00	0.00
11	25.00	-7.64	6.00	60.00	60.00	0.00
12	26.00	-8.64	6.00	60.00	60.00	0.00
13	27.00	-9.64	6.00	60.00	60.00	0.00
14	28.00	-10.64	6.00	60.00	60.00	0.00
15	29.00	-11.64	6.00	60.00	60.00	0.00
16	30.00	-12.64	6.00	60.00	60.00	0.00
17	31.00	-13.64	6.00	60.00	60.00	0.00
18	32.00	-14.64	6.00	60.00	60.00	0.00
19	33.00	-15.64	6.00	60.00	60.00	0.00
20	34.00	-16.64	6.00	60.00	60.00	0.00
21	35.00	-17.64	6.00	60.00	60.00	0.00
22	36.00	-18.64	6.00	60.00	60.00	0.00
23	37.00	-19.64	6.00	60.00	60.00	0.00
24	38.00	-20.64	6.00	60.00	60.00	0.00
25	39.00	-21.64	6.00	60.00	60.00	0.00
26	40.00	-22.64	6.00	60.00	60.00	0.00
27	41.00	-23.64	6.00	60.00	60.00	0.00
28	42.00	-24.64	6.00	60.00	60.00	0.00
29	43.00	-25.64	6.00	60.00	60.00	0.00
30	44.00	-26.64	6.00	60.00	60.00	0.00
31	45.00	-27.64	6.00	60.00	60.00	0.00
32	46.00	-28.64	6.00	60.00	60.00	0.00
33	47.00	-29.64	6.00	60.00	60.00	0.00
34	48.00	-30.64	6.00	60.00	60.00	0.00
35	49.00	-31.64	6.00	60.00	60.00	0.00
36	50.00	-32.64	6.00	60.00	60.00	0.00
37	51.00	-33.64	6.00	60.00	60.00	0.00
38	52.00	-34.64	6.00	60.00	60.00	0.00
39	53.00	-35.64	6.00	60.00	60.00	0.00

40	54.00	-36.64	6.00	60.00	60.00	0.00
41	55.00	-37.64	6.00	60.00	60.00	0.00
42	56.00	-38.64	6.00	60.00	60.00	0.00
43	57.00	-39.64	6.00	60.00	60.00	0.00
44	58.00	-40.64	6.00	60.00	60.00	0.00
45	59.00	-41.64	6.00	60.00	60.00	0.00
46	60.00	-42.64	6.00	60.00	60.00	0.00
47	61.00	-43.64	6.00	60.00	60.00	0.00
48	62.00	-44.64	6.00	60.00	60.00	0.00
49	63.00	-45.64	6.00	60.00	60.00	0.00
50	64.00	-46.64	6.00	60.00	60.00	0.00
51	65.00	-47.64	6.00	60.00	60.00	0.00
52	66.00	-48.64	6.00	60.00	60.00	0.00
53	67.00	-49.64	6.00	60.00	60.00	0.00
54	68.00	-50.64	6.00	60.00	60.00	0.00
55	69.00	-51.64	6.00	60.00	60.00	0.00
56	70.00	-52.64	6.00	60.00	60.00	0.00
57	71.00	-53.64	6.00	60.00	60.00	0.00
58	72.00	-54.64	6.00	60.00	60.00	0.00
59	73.00	-55.64	6.00	60.00	60.00	0.00
60	74.00	-56.64	6.00	60.00	60.00	0.00
61	75.00	-57.64	6.00	60.00	60.00	0.00
62	76.00	-58.64	6.00	60.00	60.00	0.00
63	77.00	-59.64	6.00	60.00	60.00	0.00
64	78.00	-60.64	6.00	60.00	60.00	0.00
65	79.00	-61.64	6.00	60.00	60.00	0.00
66	80.00	-62.64	6.00	60.00	60.00	0.00
67	81.00	-63.64	6.00	60.00	60.00	0.00
68	82.00	-64.64	6.00	60.00	60.00	0.00
69	83.00	-65.64	6.00	60.00	60.00	0.00
70	84.00	-66.64	6.00	60.00	60.00	0.00
71	85.00	-67.64	6.00	60.00	60.00	0.00
72	86.00	-68.64	6.00	60.00	60.00	0.00
73	87.00	-69.64	6.00	60.00	60.00	0.00
74	88.00	-70.64	6.00	60.00	60.00	0.00
75	89.00	-71.64	6.00	60.00	60.00	0.00
76	90.00	-72.64	6.00	60.00	60.00	0.00
77	91.00	-73.64	6.00	60.00	60.00	0.00

Drilled Shaft Capacity (sorted by shaft diameter):

Strength reduction factors: Skin-friction = 1.00, End-bearing = 1.00

ID	Diameter (in)	Length (ft)	Skin Fric. (tons)	End Bearing (tons)	Capacity (tons)
1	60.00	15.00	4.699	66.103	70.802
2	60.00	16.00	5.445	74.249	79.694
3	60.00	17.00	6.285	81.980	88.264
4	60.00	18.00	7.215	161.605	168.821
5	60.00	19.00	8.482	148.823	157.305
6	60.00	20.00	9.854	146.574	156.428
7	60.00	21.00	12.396	156.513	168.909
8	60.00	22.00	16.257	171.162	187.419
9	60.00	23.00	20.415	185.818	206.232
10	60.00	24.00	24.431	197.842	222.274
11	60.00	25.00	28.667	205.782	234.449
12	60.00	26.00	33.340	209.894	243.235
13	60.00	27.00	38.481	211.720	250.202
14	60.00	28.00	43.869	211.518	255.387
15	60.00	29.00	49.489	214.803	264.292
16	60.00	30.00	55.337	227.095	282.431
17	60.00	31.00	61.406	246.952	308.358
18	60.00	32.00	67.709	265.733	333.442
19	60.00	33.00	74.244	281.999	356.243
20	60.00	34.00	80.995	293.396	374.391
21	60.00	35.00	87.959	297.573	385.533
22	60.00	36.00	93.600	295.027	388.627
23	60.00	37.00	97.812	288.737	386.549
24	60.00	38.00	102.087	279.201	381.288
25	60.00	39.00	109.599	269.556	379.155
26	60.00	40.00	117.260	262.941	380.200

27	60.00	41.00	125.079	259.614	384.693
28	60.00	42.00	133.159	261.141	394.300
29	60.00	43.00	141.512	267.780	409.292
30	60.00	44.00	150.116	275.339	425.456
31	60.00	45.00	158.969	279.626	438.595
32	60.00	46.00	168.035	280.722	448.757
33	60.00	47.00	177.182	279.113	456.295
34	60.00	48.00	186.389	274.881	461.270
35	60.00	49.00	195.645	266.417	462.062
36	60.00	50.00	204.949	252.112	457.061
37	60.00	51.00	214.296	233.704	448.000
38	60.00	52.00	223.695	221.617	445.313
39	60.00	53.00	233.147	217.588	450.735
40	60.00	54.00	241.770	221.078	462.848
41	60.00	55.00	250.411	231.547	481.958
42	60.00	56.00	259.498	248.319	507.817
43	60.00	57.00	269.039	267.334	536.373
44	60.00	58.00	278.604	287.914	566.518
45	60.00	59.00	288.208	308.777	596.985
46	60.00	60.00	297.878	328.639	626.517
47	60.00	61.00	307.598	346.532	654.130
48	60.00	62.00	317.335	356.632	673.967
49	60.00	63.00	327.080	357.970	685.049
50	60.00	64.00	336.806	355.481	692.287
51	60.00	65.00	346.495	354.103	700.598
52	60.00	66.00	356.148	354.696	710.844
53	60.00	67.00	365.793	362.431	728.224
54	60.00	68.00	375.434	378.169	753.603
55	60.00	69.00	385.088	396.328	781.416
56	60.00	70.00	394.782	411.323	806.106
57	60.00	71.00	404.506	422.788	827.294
58	60.00	72.00	414.248	428.505	842.753
59	60.00	73.00	424.004	428.107	852.112
60	60.00	74.00	433.725	423.843	857.568
61	60.00	75.00	443.377	417.960	861.337
62	60.00	76.00	452.958	410.266	863.224
63	60.00	77.00	462.500	399.600	862.100
64	60.00	78.00	472.004	385.770	857.774
65	60.00	79.00	481.446	376.481	857.927
66	60.00	80.00	490.810	379.442	870.252
67	60.00	81.00	500.088	391.499	891.587
68	60.00	82.00	509.263	393.729	902.992
69	60.00	83.00	518.332	382.980	901.312
70	60.00	84.00	527.300	365.119	892.418
71	60.00	85.00	536.179	346.014	882.193
72	60.00	86.00	544.959	326.331	871.290
73	60.00	87.00	553.803	310.064	863.867
74	60.00	88.00	562.769	297.879	860.648
75	60.00	89.00	571.849	286.437	858.285
76	60.00	90.00	581.031	272.400	853.432
77	60.00	91.00	Soil Elevations Must Extend At or Below Contribution Zone		

Drilled Shaft Capacity at User-Defined Settlement (sorted by shaft diameter):
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***** Capacity is NOT modified by the strength reduction factors *****

User-Defined Settlement = 0.83%

ID	Diameter (in)	Length (ft)	Skin Fric. (tons)	End Bearing (tons)	Capacity (tons)
1	60.00	15.00	4.579	17.265	21.844
2	60.00	16.00	5.306	19.392	24.699
3	60.00	17.00	6.125	21.411	27.536
4	60.00	18.00	7.031	42.208	49.239
5	60.00	19.00	8.266	38.869	47.135
6	60.00	20.00	9.603	38.282	47.885
7	60.00	21.00	12.080	40.877	52.958
8	60.00	22.00	15.843	44.703	60.547
9	60.00	23.00	19.895	48.531	68.426
10	60.00	24.00	23.809	51.672	75.481

11	60.00	25.00	27.937	53.745	81.682
12	60.00	26.00	32.491	54.819	87.311
13	60.00	27.00	37.501	55.296	92.797
14	60.00	28.00	42.752	55.243	97.996
15	60.00	29.00	48.228	56.101	104.330
16	60.00	30.00	53.927	59.312	113.239
17	60.00	31.00	59.842	64.498	124.340
18	60.00	32.00	65.985	69.403	135.388
19	60.00	33.00	72.353	73.651	146.005
20	60.00	34.00	78.932	76.628	155.561
21	60.00	35.00	85.719	77.719	163.438
22	60.00	36.00	91.217	77.054	168.271
23	60.00	37.00	95.321	75.411	170.732
24	60.00	38.00	99.487	72.921	172.408
25	60.00	39.00	106.808	70.402	177.210
26	60.00	40.00	114.274	68.674	182.948
27	60.00	41.00	121.894	67.805	189.699
28	60.00	42.00	129.768	68.204	197.972
29	60.00	43.00	137.908	69.938	207.846
30	60.00	44.00	146.293	71.912	218.206
31	60.00	45.00	154.920	73.032	227.952
32	60.00	46.00	163.756	73.318	237.074
33	60.00	47.00	172.670	72.898	245.568
34	60.00	48.00	181.643	71.792	253.435
35	60.00	49.00	190.663	69.582	260.245
36	60.00	50.00	199.729	65.846	265.575
37	60.00	51.00	208.839	61.038	269.877
38	60.00	52.00	217.999	57.881	275.880
39	60.00	53.00	227.210	56.829	284.039
40	60.00	54.00	235.613	57.740	293.354
41	60.00	55.00	244.034	60.475	304.509
42	60.00	56.00	252.889	64.855	317.745
43	60.00	57.00	262.188	69.821	332.009
44	60.00	58.00	271.509	75.196	346.705
45	60.00	59.00	280.869	80.645	361.514
46	60.00	60.00	290.292	85.833	376.125
47	60.00	61.00	299.765	90.506	390.271
48	60.00	62.00	309.253	93.144	402.397
49	60.00	63.00	318.750	93.493	412.244
50	60.00	64.00	328.229	92.843	421.072
51	60.00	65.00	337.671	92.483	430.155
52	60.00	66.00	347.078	92.638	439.716
53	60.00	67.00	356.478	94.658	451.136
54	60.00	68.00	365.873	98.769	464.642
55	60.00	69.00	375.281	103.511	478.793
56	60.00	70.00	384.729	107.428	492.157
57	60.00	71.00	394.205	110.422	504.627
58	60.00	72.00	403.699	111.915	515.614
59	60.00	73.00	413.207	111.812	525.018
60	60.00	74.00	422.680	110.698	533.378
61	60.00	75.00	432.086	109.161	541.247
62	60.00	76.00	441.423	107.152	548.575
63	60.00	77.00	450.722	104.366	555.088
64	60.00	78.00	459.984	100.754	560.738
65	60.00	79.00	469.185	98.328	567.513
66	60.00	80.00	478.311	99.101	577.412
67	60.00	81.00	487.353	102.250	589.603
68	60.00	82.00	496.294	102.833	599.127
69	60.00	83.00	505.132	100.025	605.157
70	60.00	84.00	513.871	95.360	609.232
71	60.00	85.00	522.525	90.371	612.895
72	60.00	86.00	531.082	85.230	616.311
73	60.00	87.00	539.700	80.981	620.681
74	60.00	88.00	548.438	77.799	626.237
75	60.00	89.00	557.286	74.810	632.096
76	60.00	90.00	566.235	71.145	637.379
77	60.00	91.00	Soil Elevations Must Extend At or Below Contribution Zone		

Florida Bridge Software Institute Date: November 29, 2023
Shaft and Pile Analysis (FB-Deep v.2.06) Time: 10:15:20

General Information:
==========
Input file: .....Bridge\FB-Deep\Shaft\All Model as Sand\B-201-Void-10ft_72in.in
Project number: 2000-01-21007
Job name: PD&E I-95
Engineer: ZP
Units: English

Analysis Information:
==========
Analysis Type: Drilled Shaft Analysis

Soil Information:
==========
Boring date: 8-22-2023
Boring number: B-201
Station number: 578+32 Offset: +157.1

Ground Elevation: 17.36(ft)
Water table Elevation = 17.36(ft)

Hammer type: Automatic Hammer, Correction factor = 1.24

ID	Depth (ft)	Elevation (ft)	SPT Blows (Blows/ft)	Unit Weight (pcf)	Soil Type
1	0.00	17.36	N/A	0.00	5- Cavity layer
2	2.00	15.36	N/A	0.00	5- Cavity layer
3	4.00	13.36	N/A	0.00	5- Cavity layer
4	6.00	11.36	N/A	0.00	5- Cavity layer
5	8.00	9.36	N/A	0.00	5- Cavity layer
6	10.00	7.36	39.00	125.00	3- Clean sand
7	12.00	5.36	24.00	120.00	3- Clean sand
8	13.50	3.86	7.00	105.00	3- Clean sand
9	15.00	2.36	4.00	105.00	3- Clean sand
10	18.00	-0.64	5.00	105.00	3- Clean sand
11	20.50	-3.14	19.00	115.00	3- Clean sand
12	23.00	-5.64	11.00	110.00	3- Clean sand
13	25.50	-8.14	18.00	115.00	3- Clean sand
14	28.00	-10.64	16.00	115.00	3- Clean sand
15	30.50	-13.14	28.00	120.00	3- Clean sand
16	33.00	-15.64	25.00	120.00	3- Clean sand
17	35.50	-18.14	7.00	105.00	3- Clean sand
18	38.00	-20.64	18.00	115.00	3- Clean sand
19	40.50	-23.14	60.00	145.00	3- Clean sand
20	43.00	-25.64	60.00	145.00	3- Clean sand
21	45.50	-28.14	14.00	110.00	3- Clean sand
22	48.00	-30.64	13.00	110.00	3- Clean sand
23	50.50	-33.14	14.00	115.00	3- Clean sand
24	53.00	-35.64	11.00	110.00	3- Clean sand
25	55.50	-38.14	21.00	115.00	3- Clean sand
26	58.00	-40.64	48.00	130.00	3- Clean sand
27	60.50	-43.14	16.00	120.00	3- Clean sand
28	63.00	-45.64	15.00	110.00	3- Clean sand
29	65.50	-48.14	39.00	125.00	3- Clean sand
30	68.00	-50.64	60.00	145.00	3- Clean sand
31	70.50	-53.14	95.00	145.00	3- Clean sand
32	73.00	-55.64	18.00	120.00	3- Clean sand
33	75.50	-58.14	56.00	140.00	3- Clean sand
34	78.00	-60.64	47.00	130.00	3- Clean sand
35	80.50	-63.14	26.00	125.00	3- Clean sand
36	83.00	-65.64	51.00	140.00	3- Clean sand
37	85.50	-68.14	28.00	125.00	3- Clean sand
38	88.00	-70.64	15.00	115.00	3- Clean sand
39	90.50	-73.14	57.00	135.00	3- Clean sand
40	93.00	-75.64	12.00	115.00	3- Clean sand

41	95.50	-78.14	11.00	115.00	3- Clean sand
42	98.00	-80.64	13.00	115.00	3- Clean sand
43	100.00	-82.64	13.00	115.00	3- Clean sand

ID	Cu-DIR (tsf)	qu (tsf)	qt (tsf)	Em (ksi)	qb (tsf)
1	N/A	N/A	N/A	N/A	N/A
2	N/A	N/A	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A	N/A
5	N/A	N/A	N/A	N/A	N/A
6	N/A	N/A	N/A	N/A	N/A
7	N/A	N/A	N/A	N/A	N/A
8	N/A	N/A	N/A	N/A	N/A
9	N/A	N/A	N/A	N/A	N/A
10	N/A	N/A	N/A	N/A	N/A
11	N/A	N/A	N/A	N/A	N/A
12	N/A	N/A	N/A	N/A	N/A
13	N/A	N/A	N/A	N/A	N/A
14	N/A	N/A	N/A	N/A	N/A
15	N/A	N/A	N/A	N/A	N/A
16	N/A	N/A	N/A	N/A	N/A
17	N/A	N/A	N/A	N/A	N/A
18	N/A	N/A	N/A	N/A	N/A
19	N/A	N/A	N/A	N/A	N/A
20	N/A	N/A	N/A	N/A	N/A
21	N/A	N/A	N/A	N/A	N/A
22	N/A	N/A	N/A	N/A	N/A
23	N/A	N/A	N/A	N/A	N/A
24	N/A	N/A	N/A	N/A	N/A
25	N/A	N/A	N/A	N/A	N/A
26	N/A	N/A	N/A	N/A	N/A
27	N/A	N/A	N/A	N/A	N/A
28	N/A	N/A	N/A	N/A	N/A
29	N/A	N/A	N/A	N/A	N/A
30	N/A	N/A	N/A	N/A	N/A
31	N/A	N/A	N/A	N/A	N/A
32	N/A	N/A	N/A	N/A	N/A
33	N/A	N/A	N/A	N/A	N/A
34	N/A	N/A	N/A	N/A	N/A
35	N/A	N/A	N/A	N/A	N/A
36	N/A	N/A	N/A	N/A	N/A
37	N/A	N/A	N/A	N/A	N/A
38	N/A	N/A	N/A	N/A	N/A
39	N/A	N/A	N/A	N/A	N/A
40	N/A	N/A	N/A	N/A	N/A
41	N/A	N/A	N/A	N/A	N/A
42	N/A	N/A	N/A	N/A	N/A
43	N/A	N/A	N/A	N/A	N/A

ID	RQD F.M.	S.R.I.	Rock Recovery
1	N/A	N/A	N/A
2	N/A	N/A	N/A
3	N/A	N/A	N/A
4	N/A	N/A	N/A
5	N/A	N/A	N/A
6	N/A	N/A	N/A
7	N/A	N/A	N/A
8	N/A	N/A	N/A
9	N/A	N/A	N/A
10	N/A	N/A	N/A
11	N/A	N/A	N/A
12	N/A	N/A	N/A
13	N/A	N/A	N/A
14	N/A	N/A	N/A
15	N/A	N/A	N/A
16	N/A	N/A	N/A
17	N/A	N/A	N/A
18	N/A	N/A	N/A
19	N/A	N/A	N/A

20	N/A	N/A	N/A
21	N/A	N/A	N/A
22	N/A	N/A	N/A
23	N/A	N/A	N/A
24	N/A	N/A	N/A
25	N/A	N/A	N/A
26	N/A	N/A	N/A
27	N/A	N/A	N/A
28	N/A	N/A	N/A
29	N/A	N/A	N/A
30	N/A	N/A	N/A
31	N/A	N/A	N/A
32	N/A	N/A	N/A
33	N/A	N/A	N/A
34	N/A	N/A	N/A
35	N/A	N/A	N/A
36	N/A	N/A	N/A
37	N/A	N/A	N/A
38	N/A	N/A	N/A
39	N/A	N/A	N/A
40	N/A	N/A	N/A
41	N/A	N/A	N/A
42	N/A	N/A	N/A
43	N/A	N/A	N/A

Drilled Shaft Data:
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Shaft Geometry:

ID	Length (ft)	Tip Elev. (ft)	Case Len. (ft)	Diameter (in)	Base Diam. (in)	Bell Len. (ft)
1	15.00	2.36	6.00	72.00	72.00	0.00
2	16.00	1.36	6.00	72.00	72.00	0.00
3	17.00	0.36	6.00	72.00	72.00	0.00
4	18.00	-0.64	6.00	72.00	72.00	0.00
5	19.00	-1.64	6.00	72.00	72.00	0.00
6	20.00	-2.64	6.00	72.00	72.00	0.00
7	21.00	-3.64	6.00	72.00	72.00	0.00
8	22.00	-4.64	6.00	72.00	72.00	0.00
9	23.00	-5.64	6.00	72.00	72.00	0.00
10	24.00	-6.64	6.00	72.00	72.00	0.00
11	25.00	-7.64	6.00	72.00	72.00	0.00
12	26.00	-8.64	6.00	72.00	72.00	0.00
13	27.00	-9.64	6.00	72.00	72.00	0.00
14	28.00	-10.64	6.00	72.00	72.00	0.00
15	29.00	-11.64	6.00	72.00	72.00	0.00
16	30.00	-12.64	6.00	72.00	72.00	0.00
17	31.00	-13.64	6.00	72.00	72.00	0.00
18	32.00	-14.64	6.00	72.00	72.00	0.00
19	33.00	-15.64	6.00	72.00	72.00	0.00
20	34.00	-16.64	6.00	72.00	72.00	0.00
21	35.00	-17.64	6.00	72.00	72.00	0.00
22	36.00	-18.64	6.00	72.00	72.00	0.00
23	37.00	-19.64	6.00	72.00	72.00	0.00
24	38.00	-20.64	6.00	72.00	72.00	0.00
25	39.00	-21.64	6.00	72.00	72.00	0.00
26	40.00	-22.64	6.00	72.00	72.00	0.00
27	41.00	-23.64	6.00	72.00	72.00	0.00
28	42.00	-24.64	6.00	72.00	72.00	0.00
29	43.00	-25.64	6.00	72.00	72.00	0.00
30	44.00	-26.64	6.00	72.00	72.00	0.00
31	45.00	-27.64	6.00	72.00	72.00	0.00
32	46.00	-28.64	6.00	72.00	72.00	0.00
33	47.00	-29.64	6.00	72.00	72.00	0.00
34	48.00	-30.64	6.00	72.00	72.00	0.00
35	49.00	-31.64	6.00	72.00	72.00	0.00
36	50.00	-32.64	6.00	72.00	72.00	0.00
37	51.00	-33.64	6.00	72.00	72.00	0.00
38	52.00	-34.64	6.00	72.00	72.00	0.00
39	53.00	-35.64	6.00	72.00	72.00	0.00

40	54.00	-36.64	6.00	72.00	72.00	0.00
41	55.00	-37.64	6.00	72.00	72.00	0.00
42	56.00	-38.64	6.00	72.00	72.00	0.00
43	57.00	-39.64	6.00	72.00	72.00	0.00
44	58.00	-40.64	6.00	72.00	72.00	0.00
45	59.00	-41.64	6.00	72.00	72.00	0.00
46	60.00	-42.64	6.00	72.00	72.00	0.00
47	61.00	-43.64	6.00	72.00	72.00	0.00
48	62.00	-44.64	6.00	72.00	72.00	0.00
49	63.00	-45.64	6.00	72.00	72.00	0.00
50	64.00	-46.64	6.00	72.00	72.00	0.00
51	65.00	-47.64	6.00	72.00	72.00	0.00
52	66.00	-48.64	6.00	72.00	72.00	0.00
53	67.00	-49.64	6.00	72.00	72.00	0.00
54	68.00	-50.64	6.00	72.00	72.00	0.00
55	69.00	-51.64	6.00	72.00	72.00	0.00
56	70.00	-52.64	6.00	72.00	72.00	0.00
57	71.00	-53.64	6.00	72.00	72.00	0.00
58	72.00	-54.64	6.00	72.00	72.00	0.00
59	73.00	-55.64	6.00	72.00	72.00	0.00
60	74.00	-56.64	6.00	72.00	72.00	0.00
61	75.00	-57.64	6.00	72.00	72.00	0.00
62	76.00	-58.64	6.00	72.00	72.00	0.00
63	77.00	-59.64	6.00	72.00	72.00	0.00
64	78.00	-60.64	6.00	72.00	72.00	0.00
65	79.00	-61.64	6.00	72.00	72.00	0.00
66	80.00	-62.64	6.00	72.00	72.00	0.00
67	81.00	-63.64	6.00	72.00	72.00	0.00
68	82.00	-64.64	6.00	72.00	72.00	0.00
69	83.00	-65.64	6.00	72.00	72.00	0.00
70	84.00	-66.64	6.00	72.00	72.00	0.00
71	85.00	-67.64	6.00	72.00	72.00	0.00
72	86.00	-68.64	6.00	72.00	72.00	0.00
73	87.00	-69.64	6.00	72.00	72.00	0.00
74	88.00	-70.64	6.00	72.00	72.00	0.00
75	89.00	-71.64	6.00	72.00	72.00	0.00

Drilled Shaft Capacity (sorted by shaft diameter):
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Strength reduction factors: Skin-friction = 1.00, End-bearing = 1.00

ID	Diameter (in)	Length (ft)	Skin Fric. (tons)	End Bearing (tons)	Capacity (tons)
1	72.00	15.00	5.638	87.255	92.893
2	72.00	16.00	6.534	94.701	101.235
3	72.00	17.00	7.542	103.162	110.703
4	72.00	18.00	8.658	114.341	122.999
5	72.00	19.00	10.179	220.161	230.340
6	72.00	20.00	11.825	210.584	222.409
7	72.00	21.00	14.875	207.277	222.152
8	72.00	22.00	19.509	208.630	228.139
9	72.00	23.00	24.497	213.202	237.699
10	72.00	24.00	29.317	216.803	246.120
11	72.00	25.00	34.400	223.444	257.845
12	72.00	26.00	40.008	232.970	272.979
13	72.00	27.00	46.177	246.211	292.388
14	72.00	28.00	52.643	262.317	314.960
15	72.00	29.00	59.387	279.040	338.426
16	72.00	30.00	66.404	293.763	360.167
17	72.00	31.00	73.687	311.013	384.700
18	72.00	32.00	81.251	327.564	408.814
19	72.00	33.00	89.093	337.625	426.718
20	72.00	34.00	97.194	338.923	436.117
21	72.00	35.00	105.551	335.839	441.390
22	72.00	36.00	112.321	331.629	443.949
23	72.00	37.00	117.374	328.667	446.041
24	72.00	38.00	122.504	325.217	447.722
25	72.00	39.00	131.519	319.346	450.866
26	72.00	40.00	140.712	311.392	452.104
27	72.00	41.00	150.095	304.657	454.752
28	72.00	42.00	159.791	299.975	459.765

29	72.00	43.00	169.814	301.136	470.950
30	72.00	44.00	180.140	309.790	489.930
31	72.00	45.00	190.762	325.396	516.159
32	72.00	46.00	201.642	341.433	543.075
33	72.00	47.00	212.619	352.952	565.571
34	72.00	48.00	223.667	353.060	576.727
35	72.00	49.00	234.774	340.708	575.482
36	72.00	50.00	245.938	321.144	567.082
37	72.00	51.00	257.155	300.471	557.626
38	72.00	52.00	268.435	282.395	550.830
39	72.00	53.00	279.777	274.192	553.968
40	72.00	54.00	290.124	279.971	570.095
41	72.00	55.00	300.493	295.091	595.584
42	72.00	56.00	311.397	312.791	624.189
43	72.00	57.00	322.847	332.451	655.298
44	72.00	58.00	334.325	353.679	688.004
45	72.00	59.00	345.850	373.700	719.550
46	72.00	60.00	357.453	386.830	744.283
47	72.00	61.00	369.118	393.598	762.716
48	72.00	62.00	380.801	401.023	781.824
49	72.00	63.00	392.496	412.665	805.161
50	72.00	64.00	404.167	426.750	830.917
51	72.00	65.00	415.794	439.837	855.631
52	72.00	66.00	427.377	448.748	876.125
53	72.00	67.00	438.952	449.979	888.931
54	72.00	68.00	450.521	448.643	899.164
55	72.00	69.00	462.106	452.641	914.746
56	72.00	70.00	473.739	466.203	939.942
57	72.00	71.00	485.407	484.297	969.704
58	72.00	72.00	497.097	501.375	998.472
59	72.00	73.00	508.805	509.907	1018.712
60	72.00	74.00	520.470	507.627	1028.097
61	72.00	75.00	532.052	497.143	1029.195
62	72.00	76.00	543.549	483.730	1027.279
63	72.00	77.00	555.000	471.614	1026.613
64	72.00	78.00	566.405	465.448	1031.854
65	72.00	79.00	577.735	463.234	1040.969
66	72.00	80.00	588.972	455.501	1044.473
67	72.00	81.00	600.105	446.340	1046.446
68	72.00	82.00	611.116	441.729	1052.845
69	72.00	83.00	621.998	438.036	1060.035
70	72.00	84.00	632.760	427.026	1059.785
71	72.00	85.00	643.415	409.070	1052.485
72	72.00	86.00	653.951	389.689	1043.640
73	72.00	87.00	664.563	369.503	1034.066
74	72.00	88.00	675.323	350.587	1025.910
75	72.00	89.00	Soil Elevations Must Extend At or Below Contribution Zone		

Drilled Shaft Capacity at User-Defined Settlement (sorted by shaft diameter):

***** Capacity is NOT modified by the strength reduction factors *****

User-Defined Settlement = 0.69%

ID	Diameter (in)	Length (ft)	Skin Fric. (tons)	End Bearing (tons)	Capacity (tons)
1	72.00	15.00	5.376	19.326	24.702
2	72.00	16.00	6.230	20.975	27.205
3	72.00	17.00	7.191	22.849	30.040
4	72.00	18.00	8.255	25.325	33.580
5	72.00	19.00	9.705	48.763	58.468
6	72.00	20.00	11.274	46.642	57.916
7	72.00	21.00	14.183	45.909	60.092
8	72.00	22.00	18.601	46.209	64.810
9	72.00	23.00	23.357	47.221	70.579
10	72.00	24.00	27.953	48.019	75.972
11	72.00	25.00	32.799	49.490	82.289
12	72.00	26.00	38.146	51.600	89.746
13	72.00	27.00	44.028	54.533	98.561
14	72.00	28.00	50.193	58.100	108.293

15	72.00	29.00	56.623	61.804	118.426
16	72.00	30.00	63.313	65.065	128.378
17	72.00	31.00	70.258	68.885	139.143
18	72.00	32.00	77.469	72.551	150.020
19	72.00	33.00	84.946	74.780	159.726
20	72.00	34.00	92.670	75.067	167.737
21	72.00	35.00	100.639	74.384	175.023
22	72.00	36.00	107.093	73.452	180.545
23	72.00	37.00	111.912	72.795	184.707
24	72.00	38.00	116.803	72.031	188.834
25	72.00	39.00	125.398	70.731	196.129
26	72.00	40.00	134.163	68.969	203.132
27	72.00	41.00	143.109	67.478	210.587
28	72.00	42.00	152.354	66.441	218.794
29	72.00	43.00	161.911	66.698	228.609
30	72.00	44.00	171.756	68.615	240.370
31	72.00	45.00	181.884	72.071	253.955
32	72.00	46.00	192.258	75.623	267.881
33	72.00	47.00	202.723	78.174	280.898
34	72.00	48.00	213.257	78.198	291.455
35	72.00	49.00	223.847	75.463	299.310
36	72.00	50.00	234.492	71.129	305.621
37	72.00	51.00	245.187	66.550	311.737
38	72.00	52.00	255.941	62.547	318.488
39	72.00	53.00	266.756	60.730	327.486
40	72.00	54.00	276.622	62.010	338.632
41	72.00	55.00	286.508	65.359	351.867
42	72.00	56.00	296.904	69.279	366.184
43	72.00	57.00	307.821	73.634	381.455
44	72.00	58.00	318.765	78.335	397.100
45	72.00	59.00	329.754	82.770	412.524
46	72.00	60.00	340.817	85.678	426.495
47	72.00	61.00	351.939	87.177	439.116
48	72.00	62.00	363.078	88.821	451.900
49	72.00	63.00	374.228	91.400	465.628
50	72.00	64.00	385.357	94.520	479.876
51	72.00	65.00	396.442	97.418	493.861
52	72.00	66.00	407.487	99.392	506.878
53	72.00	67.00	418.522	99.665	518.187
54	72.00	68.00	429.553	99.369	528.922
55	72.00	69.00	440.599	100.254	540.853
56	72.00	70.00	451.690	103.258	554.948
57	72.00	71.00	462.816	107.266	570.081
58	72.00	72.00	473.962	111.048	585.010
59	72.00	73.00	485.125	112.938	598.062
60	72.00	74.00	496.247	112.433	608.680
61	72.00	75.00	507.290	110.111	617.400
62	72.00	76.00	518.252	107.140	625.392
63	72.00	77.00	529.169	104.456	633.626
64	72.00	78.00	540.044	103.091	643.135
65	72.00	79.00	550.846	102.600	653.447
66	72.00	80.00	561.560	100.888	662.448
67	72.00	81.00	572.176	98.859	671.034
68	72.00	82.00	582.674	97.837	680.511
69	72.00	83.00	593.050	97.019	690.069
70	72.00	84.00	603.310	94.581	697.891
71	72.00	85.00	613.469	90.604	704.073
72	72.00	86.00	623.516	86.311	709.827
73	72.00	87.00	633.634	81.840	715.474
74	72.00	88.00	643.893	77.650	721.543
75	72.00	89.00	Soil Elevations Must Extend At or Below Contribution Zone		

APPENDIX – F

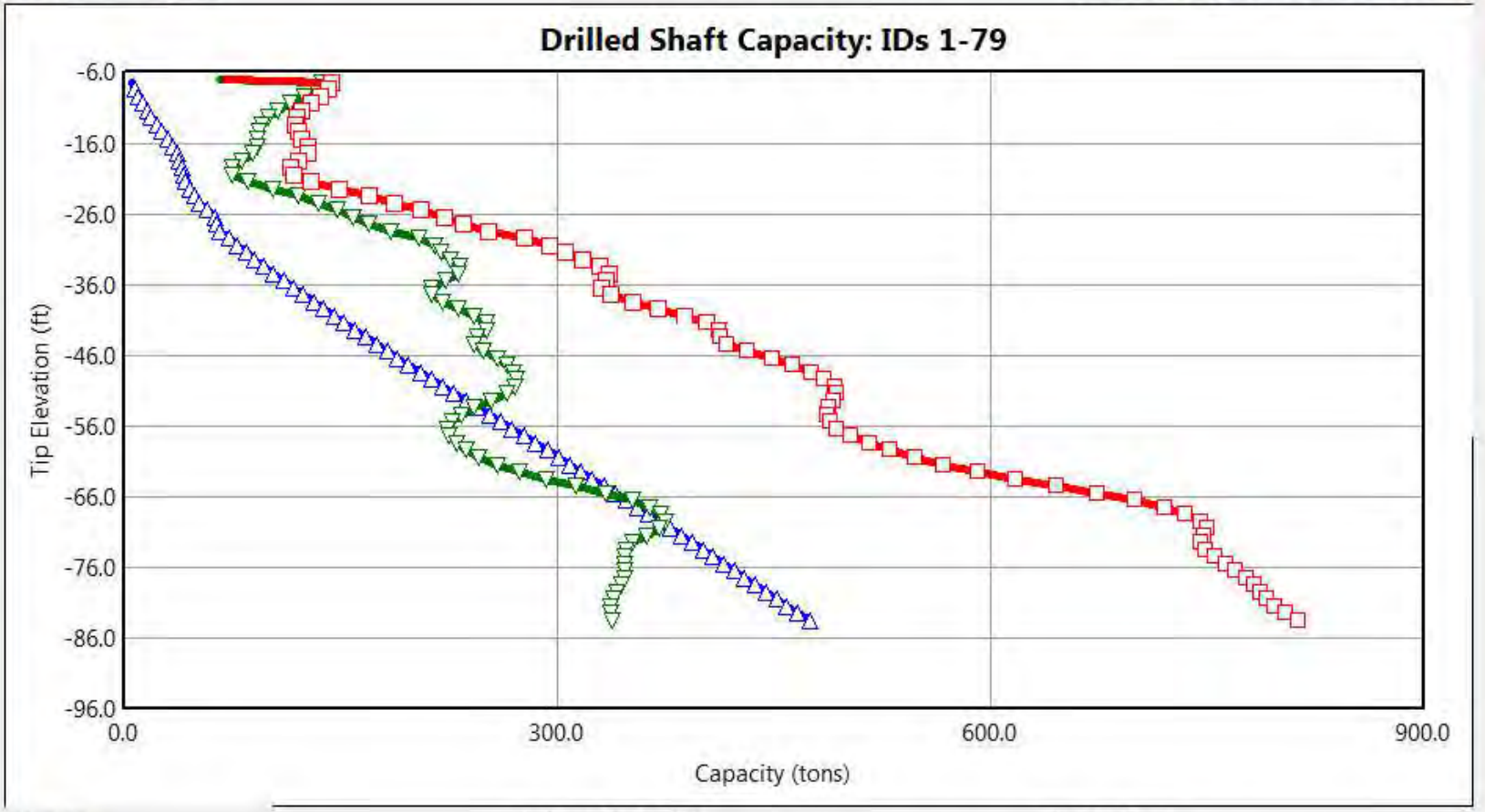
GRAPHS – VERTICAL CAPACITY ANALYSIS OF

DRILLED SHAFTS

Plot Window

Job Name: PDE I-95

State Job (Project) #: 2000-01-21007



Curves

- ☑ Ultimate Side Friction
- ☑ Mobilized End Bearing
- ☑ Ultimate Shaft Capacity

*The 'Save to File' button saves the currently selected Curves to a text file.

Drilled Shaft Data

Boring Number:	B-101	
Ground Surface Elevation:	8.58	(ft)
Diameter	48.00	(in)
Bell Diameter	48.00	(in)
Bell Length	0.00	(ft)
Case Length	6.00	(ft)

Project Data

File:	-101-Void-10ft_48in	
Date:	Nov 29, 2023	
Engineer:	ZP	
Water Table Elevation:	8.58	(ft)

Analysis Data

Analysis Type:	SPT

Plot Options

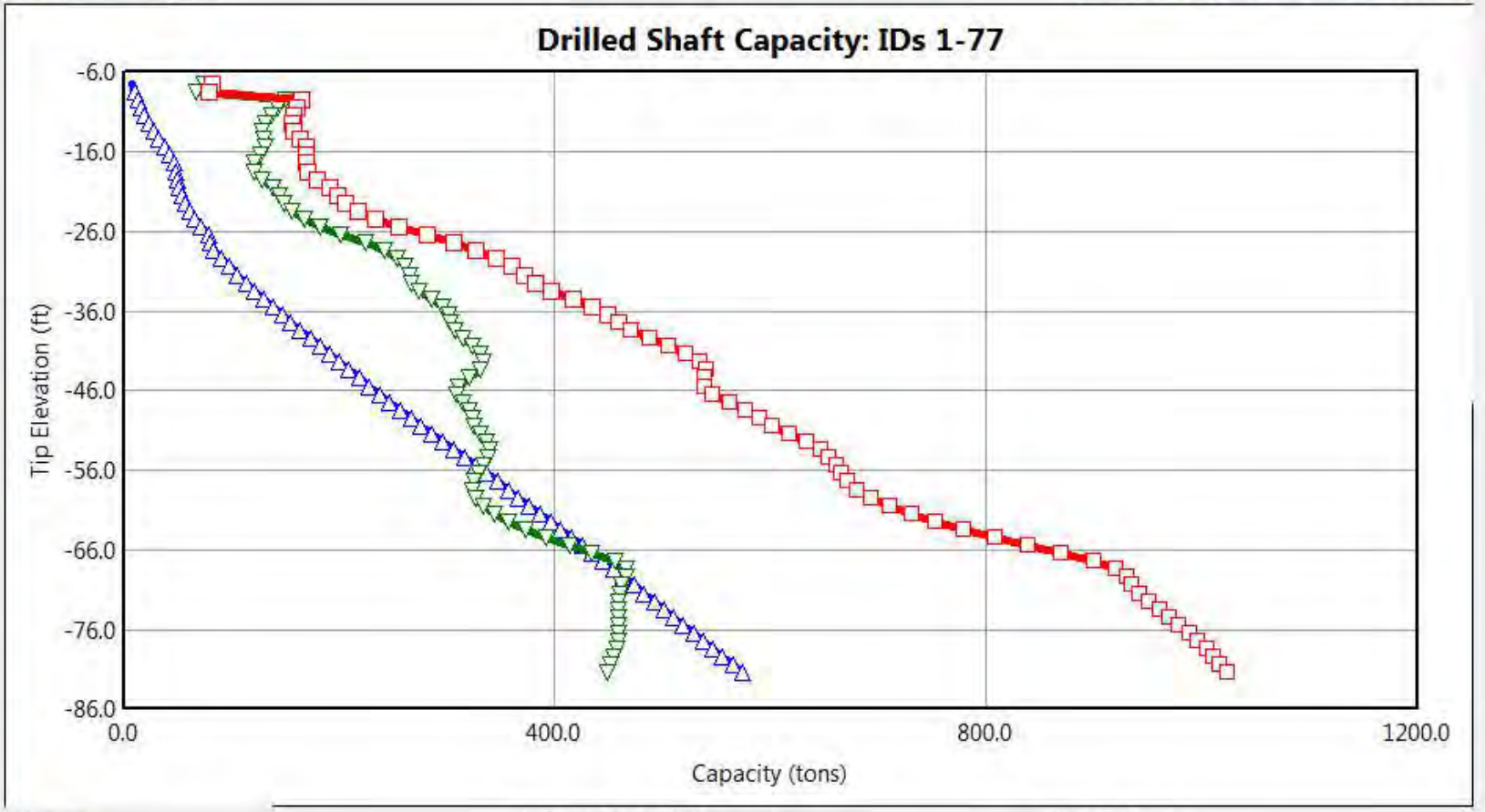
Customize | Update Plot | Print Plot | Print Window | Save To File

Close

Plot Window

Job Name: PDE I-95

State Job (Project) #: 2000-01-21007



Curves

- [x] Ultimate Side Friction
- [x] Mobilized End Bearing
- [x] Ultimate Shaft Capacity

*The 'Save to File' button saves the currently selected Curves to a text file.

Drilled Shaft Data		
Boring Number:	B-101	
Ground Surface Elevation:	8.58	(ft)
Diameter	60.00	(in)
Bell Diameter	60.00	(in)
Bell Length	0.00	(ft)
Case Length	6.00	(ft)

Project Data		
File:	-101-Void-10ft_60in	
Date:	Nov 29, 2023	
Engineer:	ZP	
Water Table Elevation:	8.58	(ft)

Analysis Data

Analysis Type: SPT

Plot Options

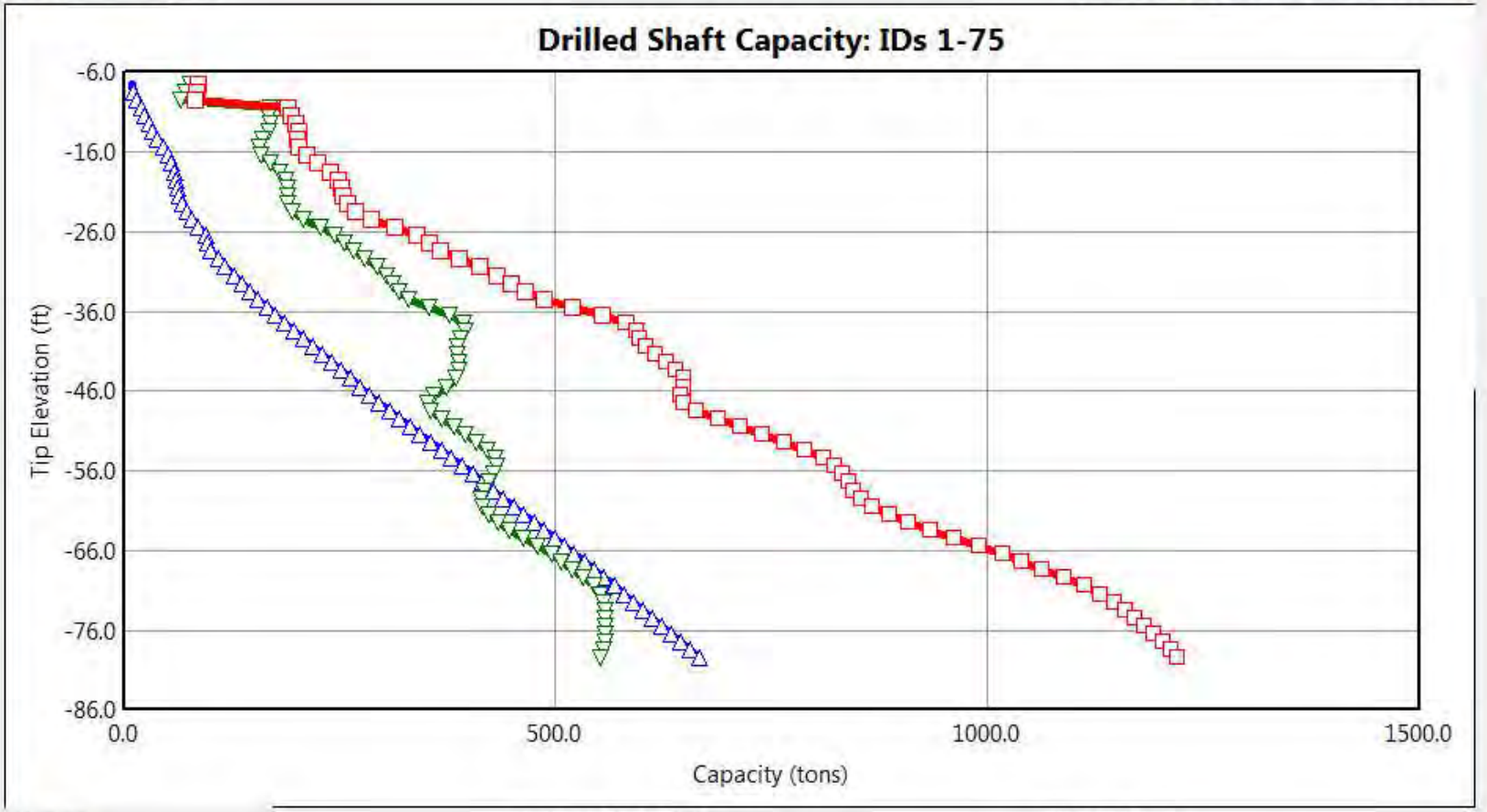
Customize | Update Plot | Print Plot | Print Window | Save To File

Close

Plot Window

Job Name: PDE I-95

State Job (Project) #: 2000-01-21007



Curves

- [x] Ultimate Side Friction
- [x] Mobilized End Bearing
- [x] Ultimate Shaft Capacity

*The 'Save to File' button saves the currently selected Curves to a text file.

Drilled Shaft Data

Boring Number:	B-101	
Ground Surface Elevation:	8.58	(ft)
Diameter	72.00	(in)
Bell Diameter	72.00	(in)
Bell Length	0.00	(ft)
Case Length	6.00	(ft)

Project Data

File:	-101-Void-10ft_72in	
Date:	Nov 29, 2023	
Engineer:	ZP	
Water Table Elevation:	8.58	(ft)

Analysis Data

Analysis Type:	SPT

Plot Options

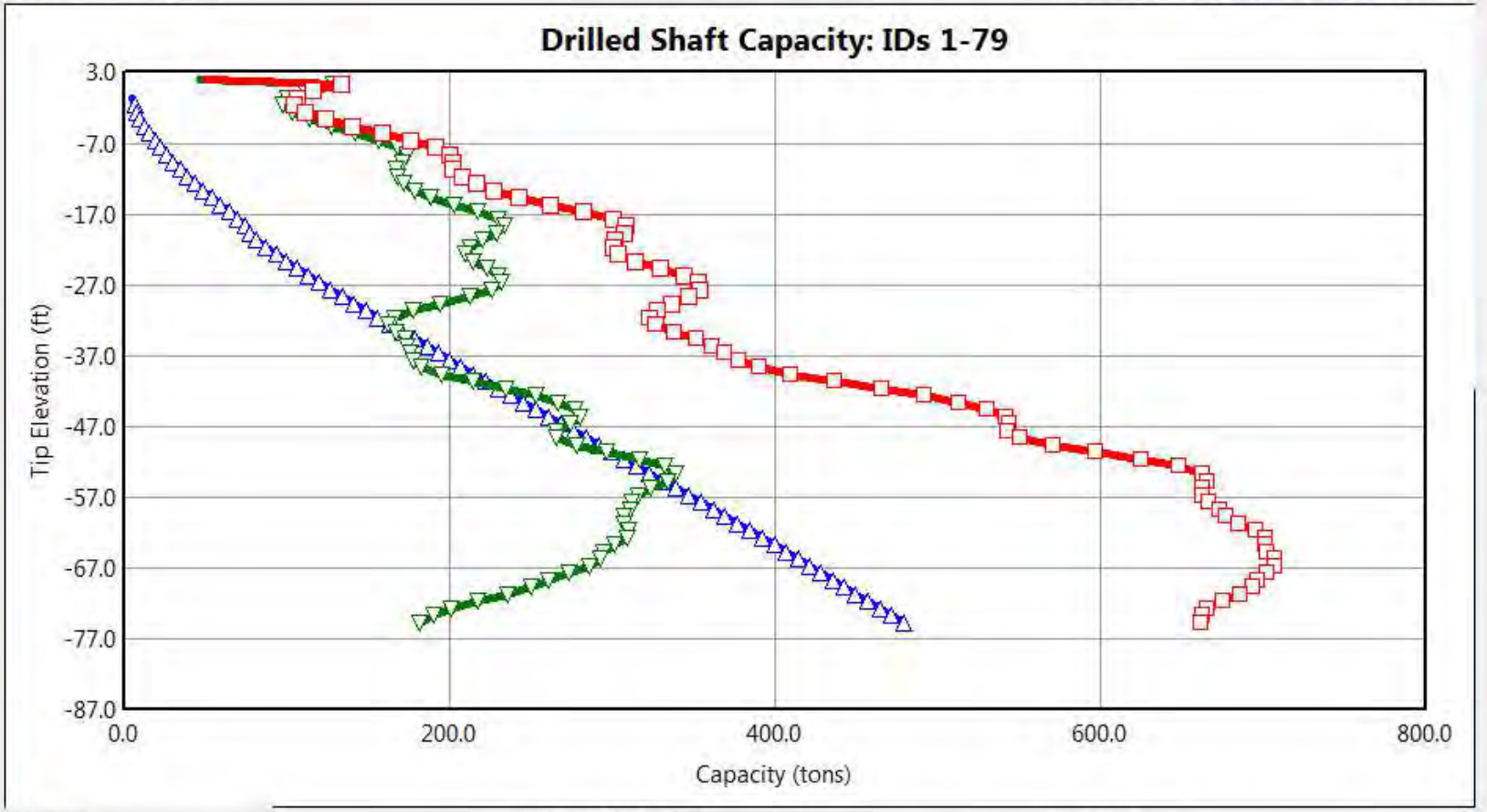
Customize | Update Plot | Print Plot | Print Window | Save To File

Close

Plot Window

Job Name: PDE I-95

State Job (Project) #: 2000-01-21007



Curves

- Ultimate Side Friction
- Mobilized End Bearing
- Ultimate Shaft Capacity

*The 'Save to File' button saves the currently selected Curves to a text file.

Drilled Shaft Data

Boring Number:	B-201	
Ground Surface Elevation:	17.36	(ft)
Diameter	48.00	(in)
Bell Diameter	48.00	(in)
Bell Length	0.00	(ft)
Case Length	6.00	(ft)

Project Data

File:	-201-Void-10ft_48in
Date:	Nov 29, 2023
Engineer:	ZP
Water Table Elevation:	17.36 (ft)

Analysis Data

Analysis Type:	SPT

Plot Options

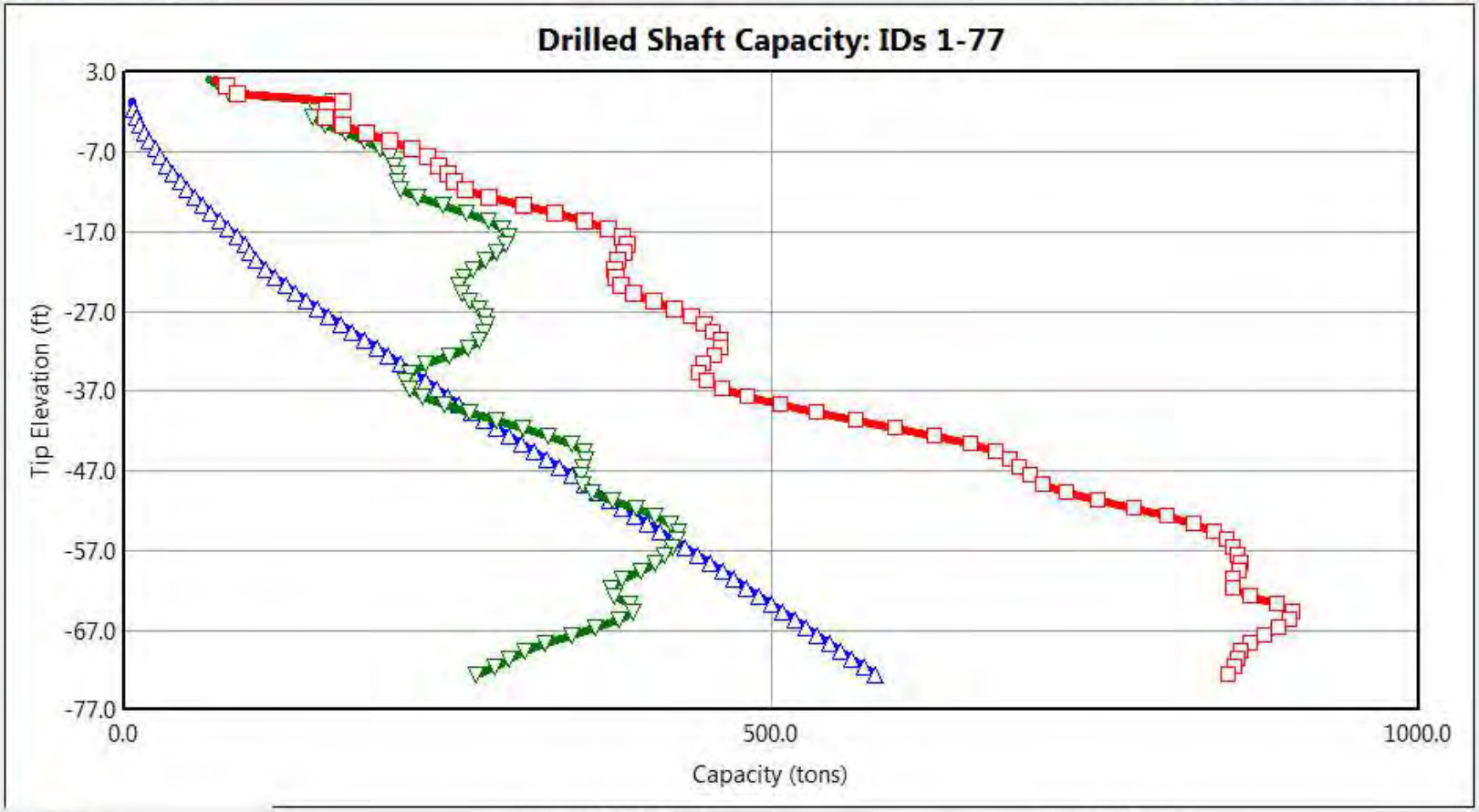
Customize | Update Plot | Print Plot | Print Window | Save To File

Close

Plot Window

Job Name: PDE I-95

State Job (Project) #: 2000-01-21007



Curves

- Ultimate Side Friction
- Mobilized End Bearing
- Ultimate Shaft Capacity

*The 'Save to File' button saves the currently selected Curves to a text file.

Drilled Shaft Data

Boring Number:	B-201	
Ground Surface Elevation:	17.36	(ft)
Diameter	60.00	(in)
Bell Diameter	60.00	(in)
Bell Length	0.00	(ft)
Case Length	6.00	(ft)

Project Data

File:	-201-Void-10ft_60in	
Date:	Nov 29, 2023	
Engineer:	ZP	
Water Table Elevation:	17.36	(ft)

Analysis Data

Analysis Type:	SPT

Plot Options

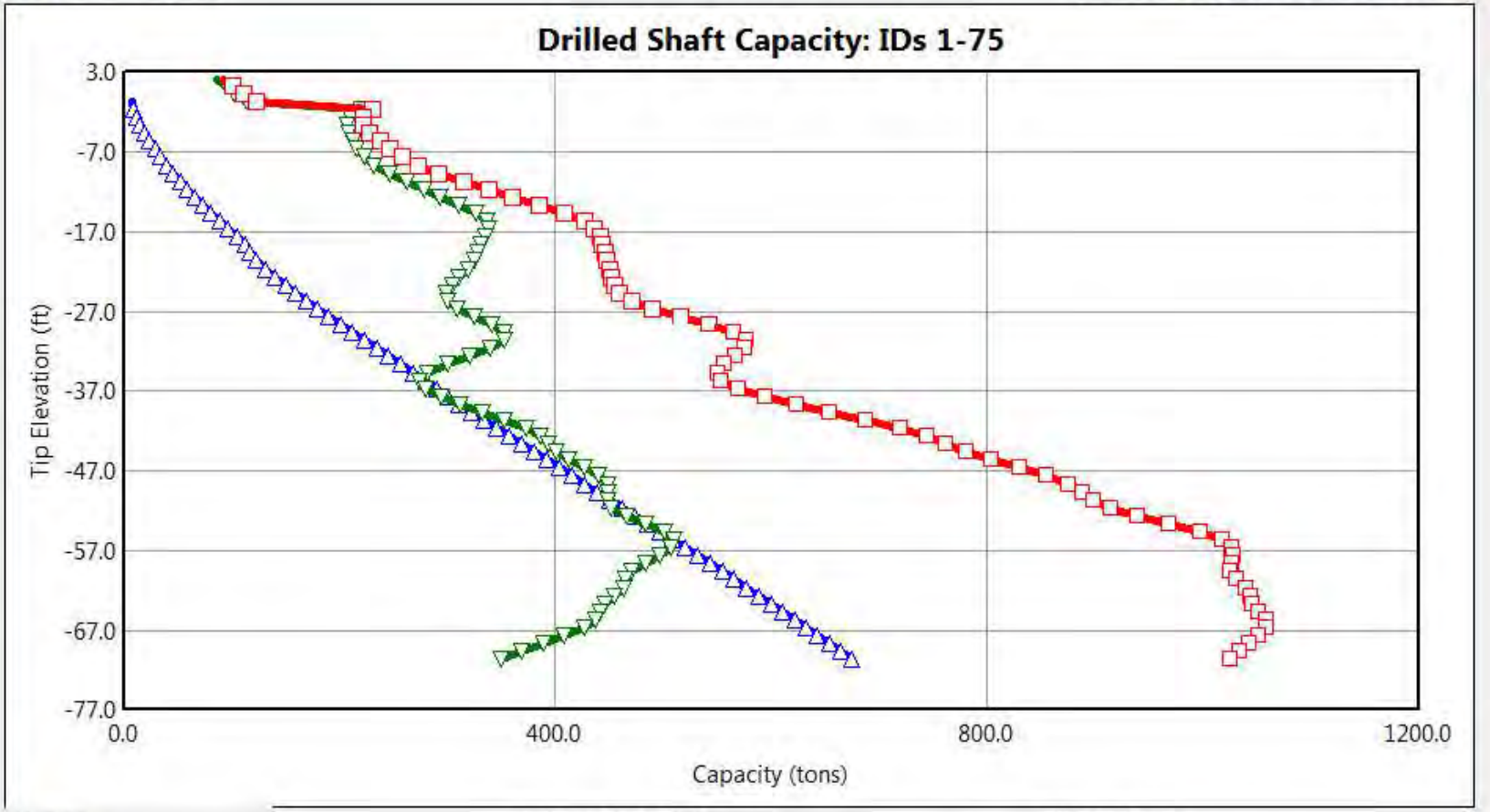
Customize | Update Plot | Print Plot | Print Window | Save To File

Close

Plot Window

Job Name: PDE I-95

State Job (Project) #: 2000-01-21007



Curves

- Ultimate Side Friction
- Mobilized End Bearing
- Ultimate Shaft Capacity

*The 'Save to File' button saves the currently selected Curves to a text file.

Drilled Shaft Data

Boring Number:	B-201	
Ground Surface Elevation:	17.36	(ft)
Diameter	72.00	(in)
Bell Diameter	72.00	(in)
Bell Length	0.00	(ft)
Case Length	6.00	(ft)

Project Data

File:	-201-Void-10ft_72in
Date:	Nov 29, 2023
Engineer:	ZP
Water Table Elevation:	17.36 (ft)

Analysis Data

Analysis Type: SPT

Plot Options

Customize | Update Plot | Print Plot | Print Window | Save To File

Close