Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

FIGURE D75: EXISTING CONDITIONS AT PAVEMENT CORE **PK-38**
(FACING EAST)

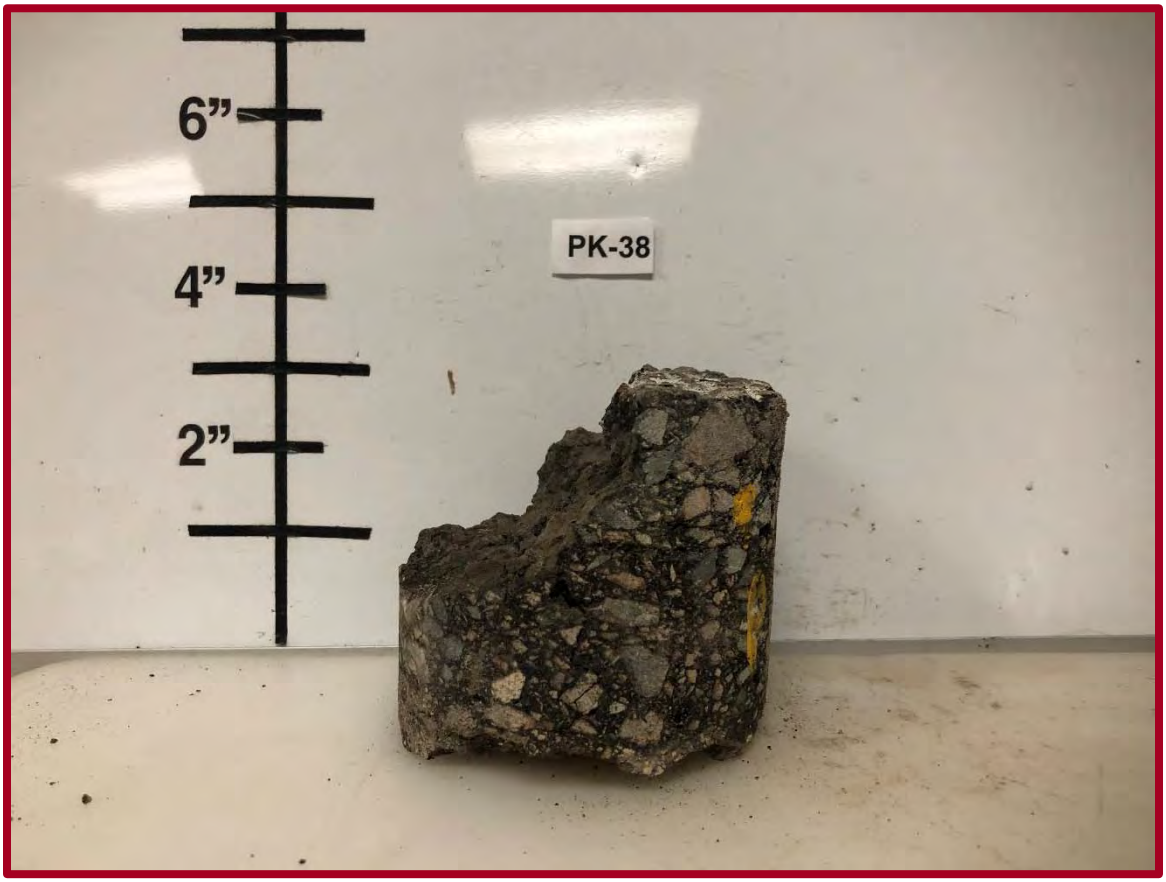


FIGURE D76: PHOTOGRAPH OF PAVEMENT CORE **PK-38**

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

FIGURE D77: EXISTING CONDITIONS AT PAVEMENT CORE **PK-39**
(FACING WEST)

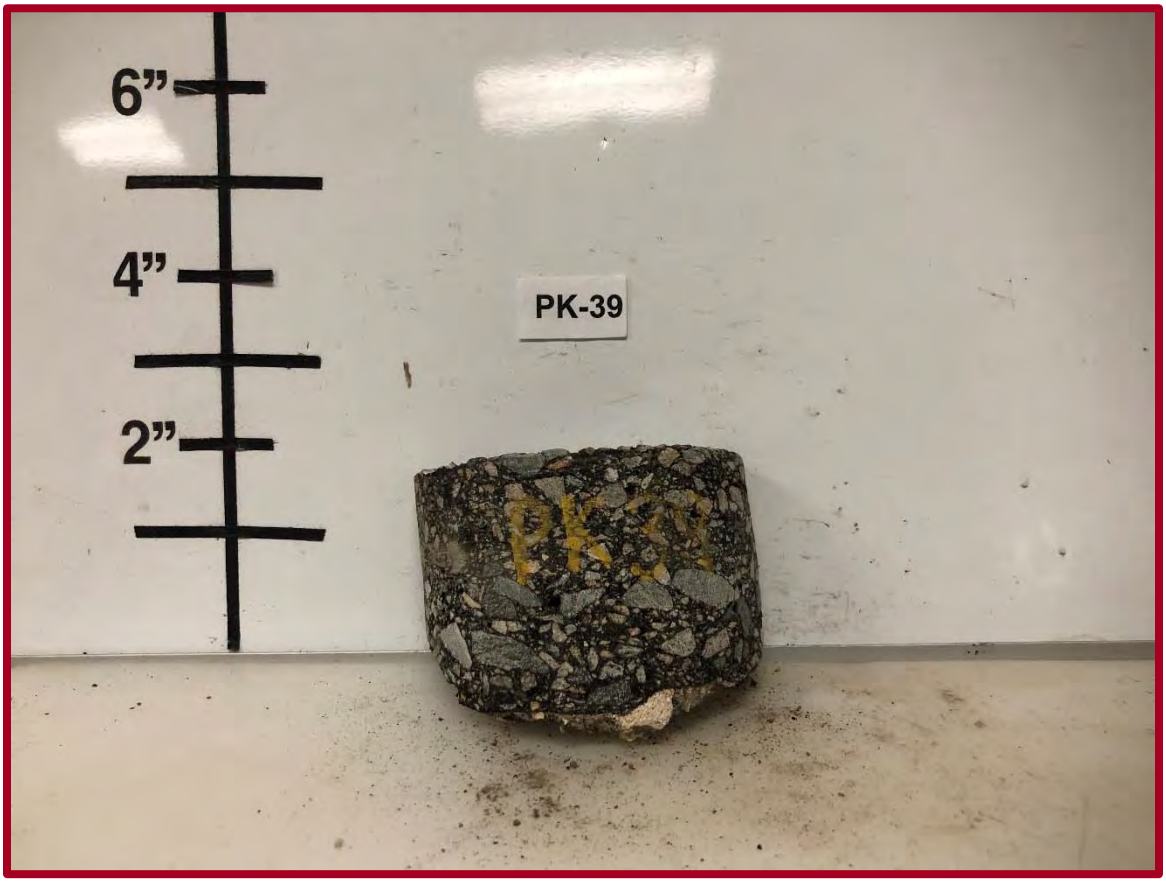


FIGURE D78: PHOTOGRAPH OF PAVEMENT CORE **PK-39**

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

FIGURE D79: EXISTING CONDITIONS AT PAVEMENT CORE **PK-40**
(FACING NORTHEAST)

FIGURE D80: PHOTOGRAPH OF PAVEMENT CORE **PK-40**

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

FIGURE D81: EXISTING CONDITIONS AT PAVEMENT CORE **PK-41**
(FACING SOUTHWEST)

FIGURE D82: PHOTOGRAPH OF PAVEMENT CORE **PK-41**

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

FIGURE D83: EXISTING CONDITIONS AT PAVEMENT CORE **PK-42**
(FACING NORTHEAST)

FIGURE D84: PHOTOGRAPH OF PAVEMENT CORE **PK-42**

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

FIGURE D85: EXISTING CONDITIONS AT PAVEMENT CORE **PK-43**
(FACING SOUTHWEST)

FIGURE D86: PHOTOGRAPH OF PAVEMENT CORE **PK-43**

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

FIGURE D87: EXISTING CONDITIONS AT PAVEMENT CORE **PK-44**
(FACING NORTHEAST)

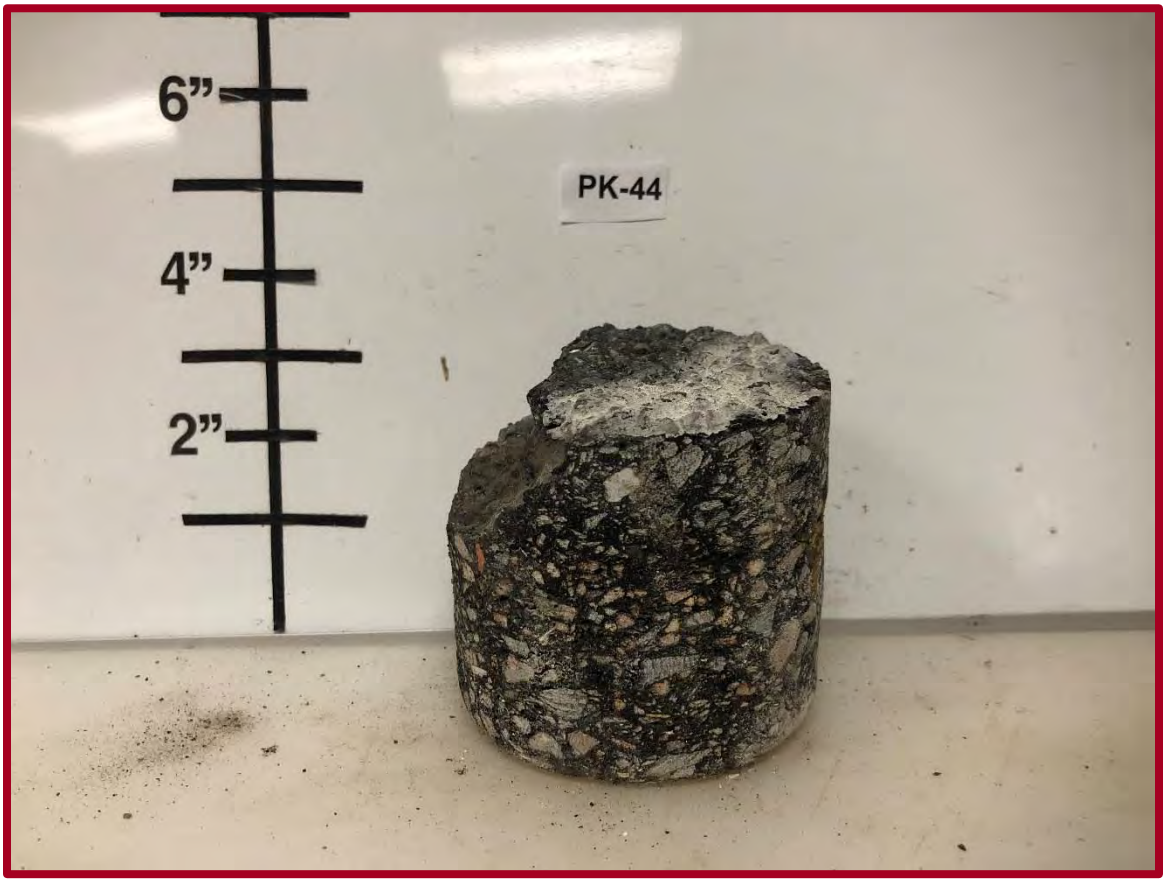


FIGURE D88: PHOTOGRAPH OF PAVEMENT CORE **PK-44**

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

FIGURE D89: EXISTING CONDITIONS AT PAVEMENT CORE **PK-45**
(FACING SOUTHWEST)

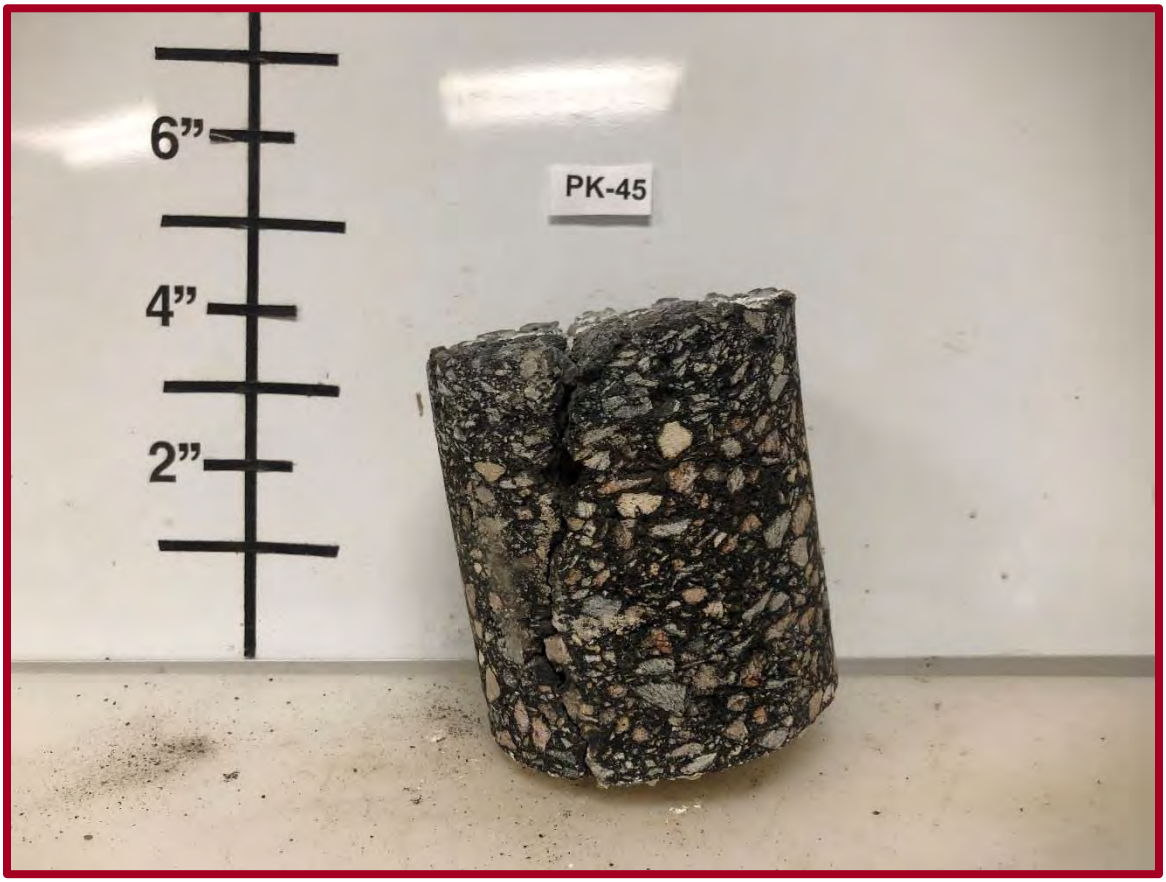


FIGURE D90: PHOTOGRAPH OF PAVEMENT CORE **PK-45**

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

FIGURE D91: EXISTING CONDITIONS AT PAVEMENT CORE **PK-46**
(FACING NORTHEAST)

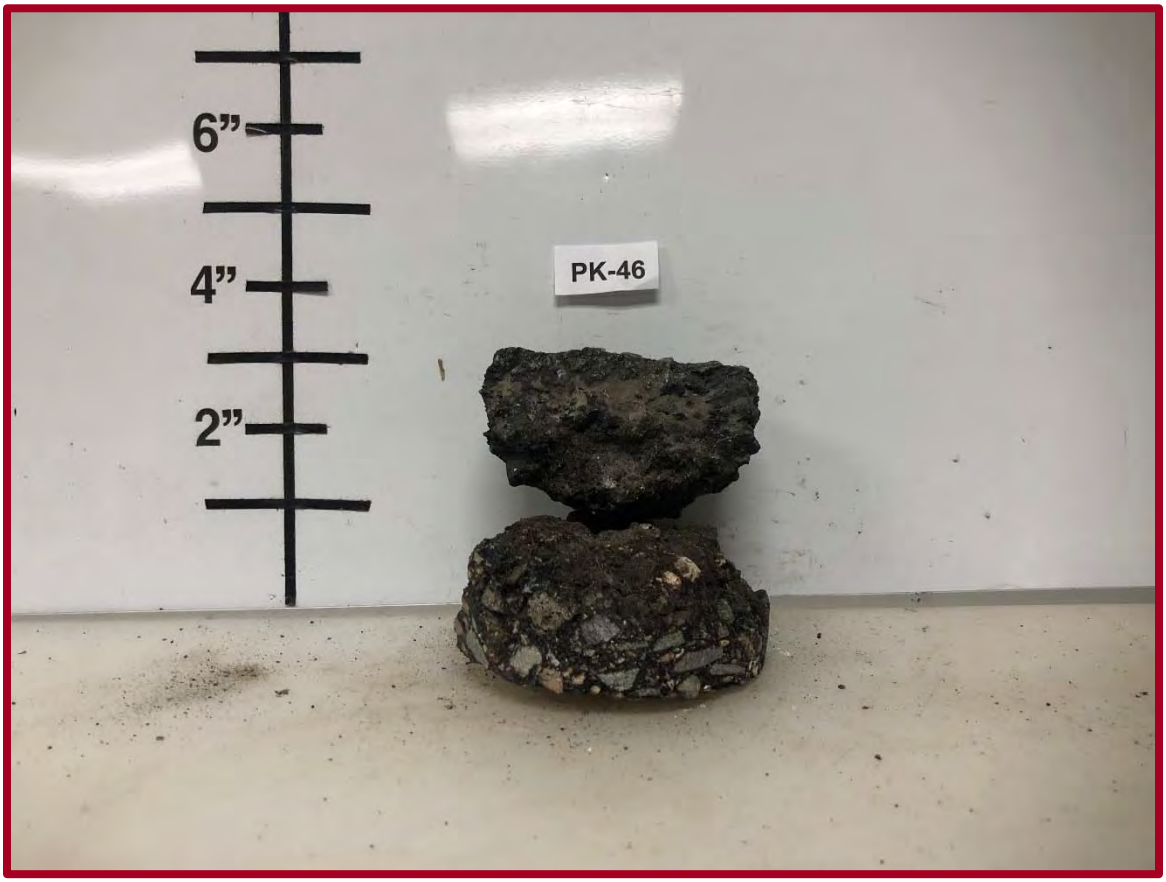


FIGURE D92: PHOTOGRAPH OF PAVEMENT CORE **PK-46**

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

FIGURE D93: EXISTING CONDITIONS AT PAVEMENT CORE **PK-47**
(FACING SOUTHWEST)

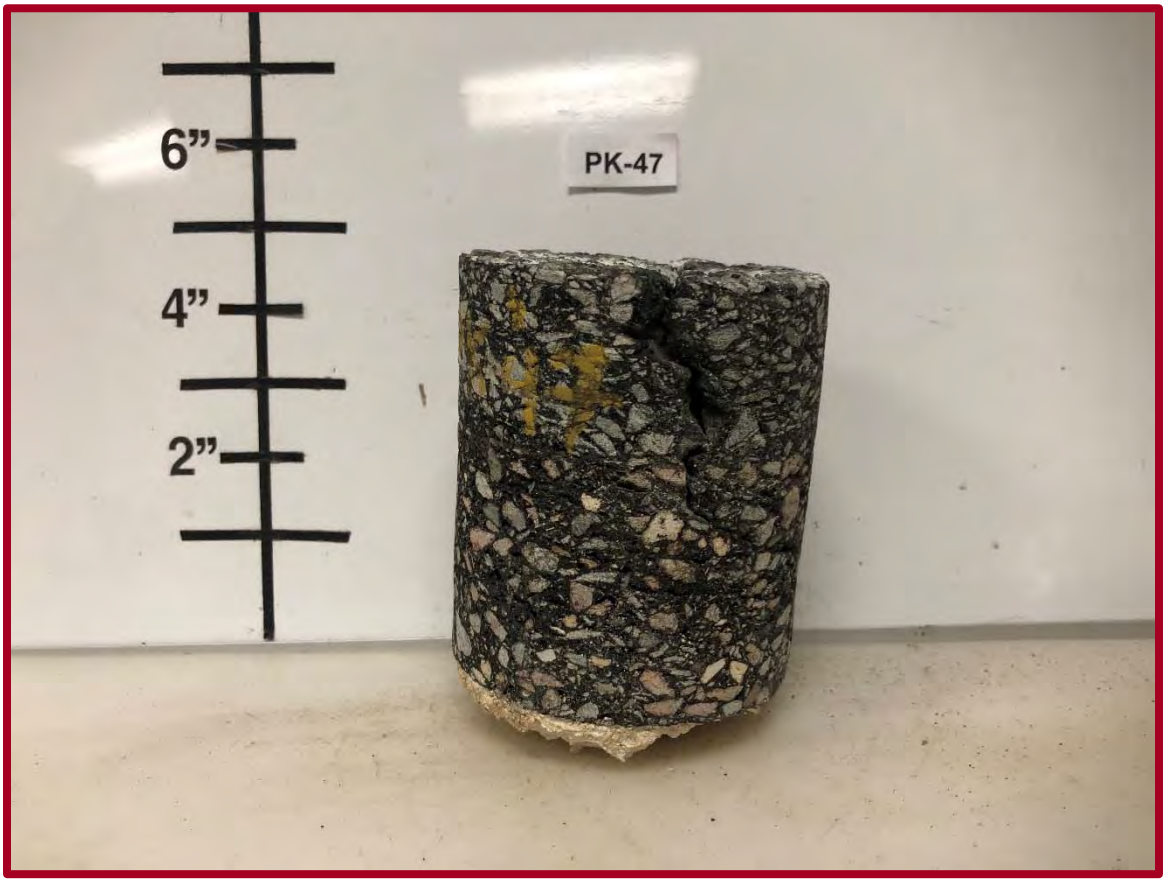


FIGURE D94: PHOTOGRAPH OF PAVEMENT CORE **PK-47**

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

FIGURE D95: EXISTING CONDITIONS AT PAVEMENT CORE **PK-48**
(FACING EAST)

FIGURE D96: PHOTOGRAPH OF PAVEMENT CORE **PK-48**

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

FIGURE D97: EXISTING CONDITIONS AT PAVEMENT CORE **PK-49**
(FACING WEST)

FIGURE D98: PHOTOGRAPH OF PAVEMENT CORE **PK-49**

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

FIGURE D99: EXISTING CONDITIONS AT PAVEMENT CORE **PK-50**
(FACING EAST)

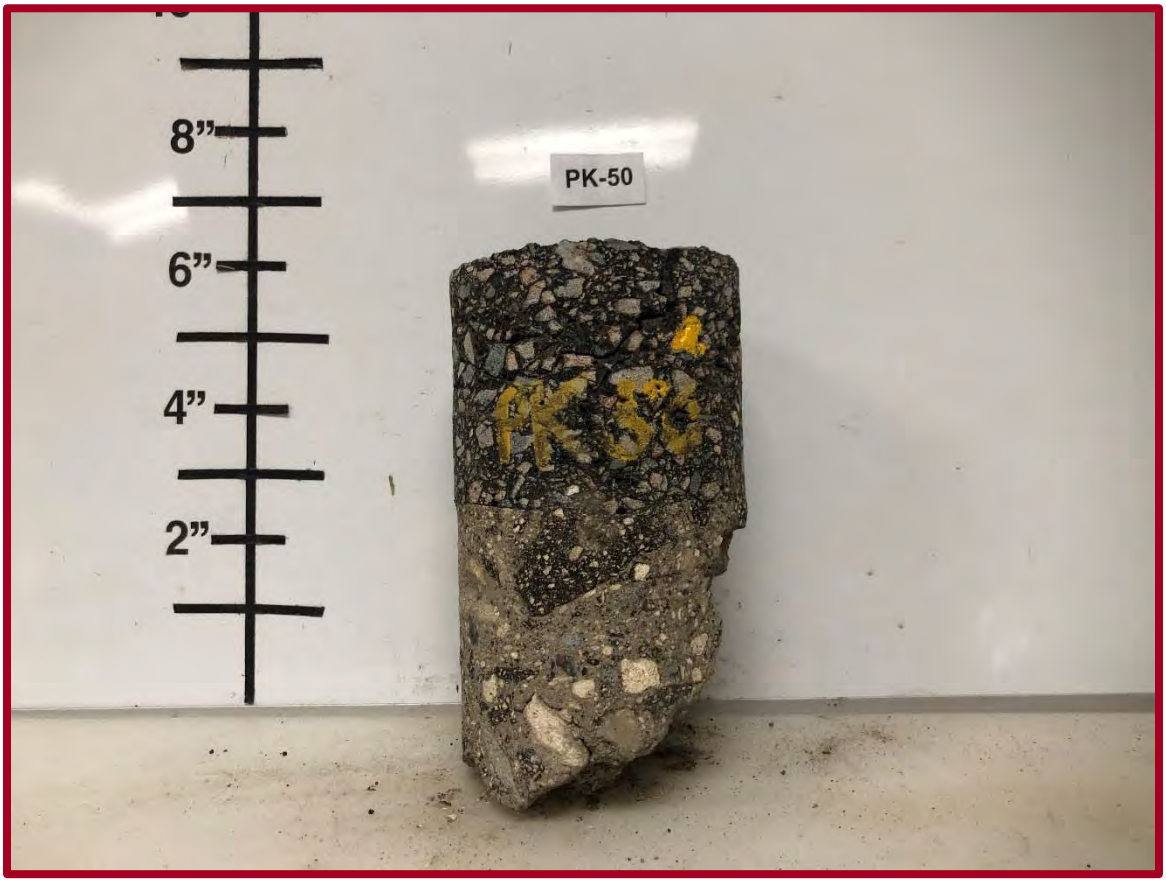


FIGURE D100: PHOTOGRAPH OF PAVEMENT CORE **PK-50**

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

FIGURE D101: EXISTING CONDITIONS AT PAVEMENT CORE **PK-51**
(FACING WEST)

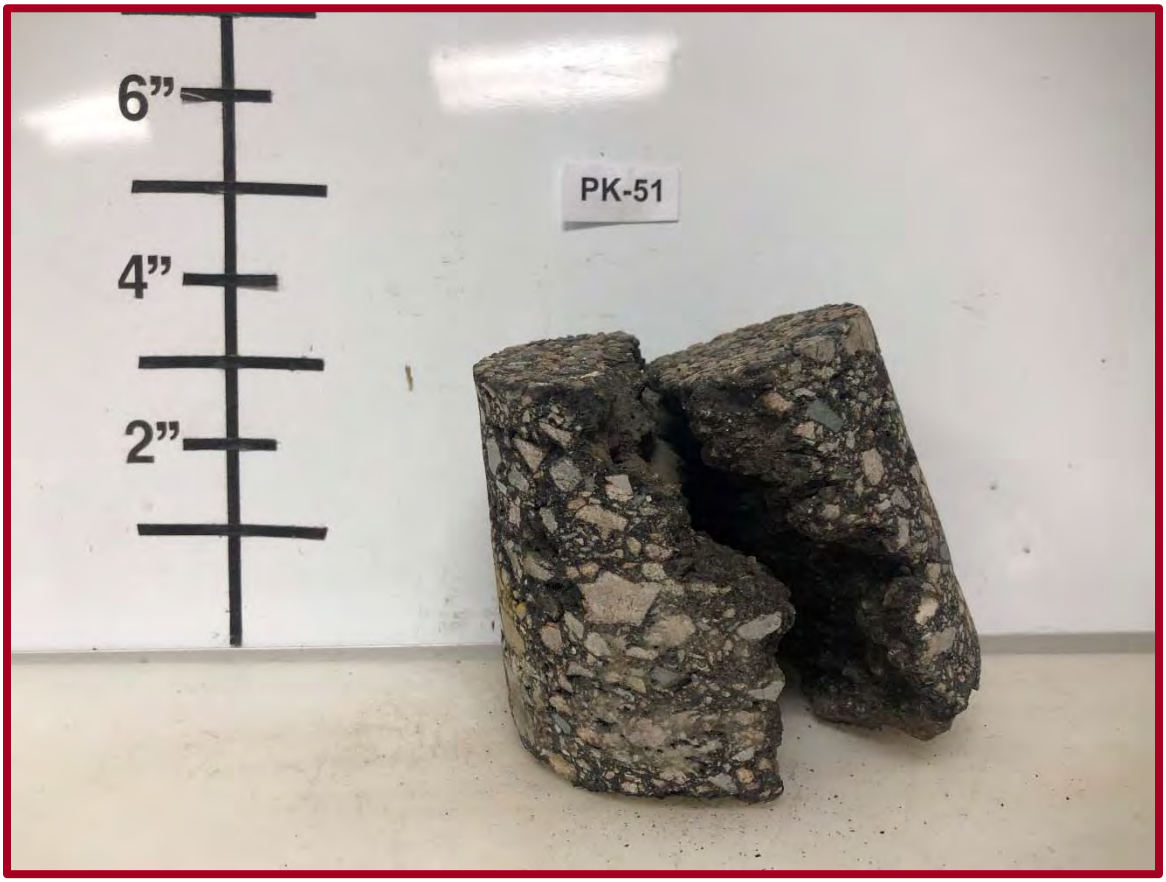


FIGURE D102: PHOTOGRAPH OF PAVEMENT CORE **PK-51**

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

FIGURE D103: EXISTING CONDITIONS AT PAVEMENT CORE **PK-52**
(FACING EAST)

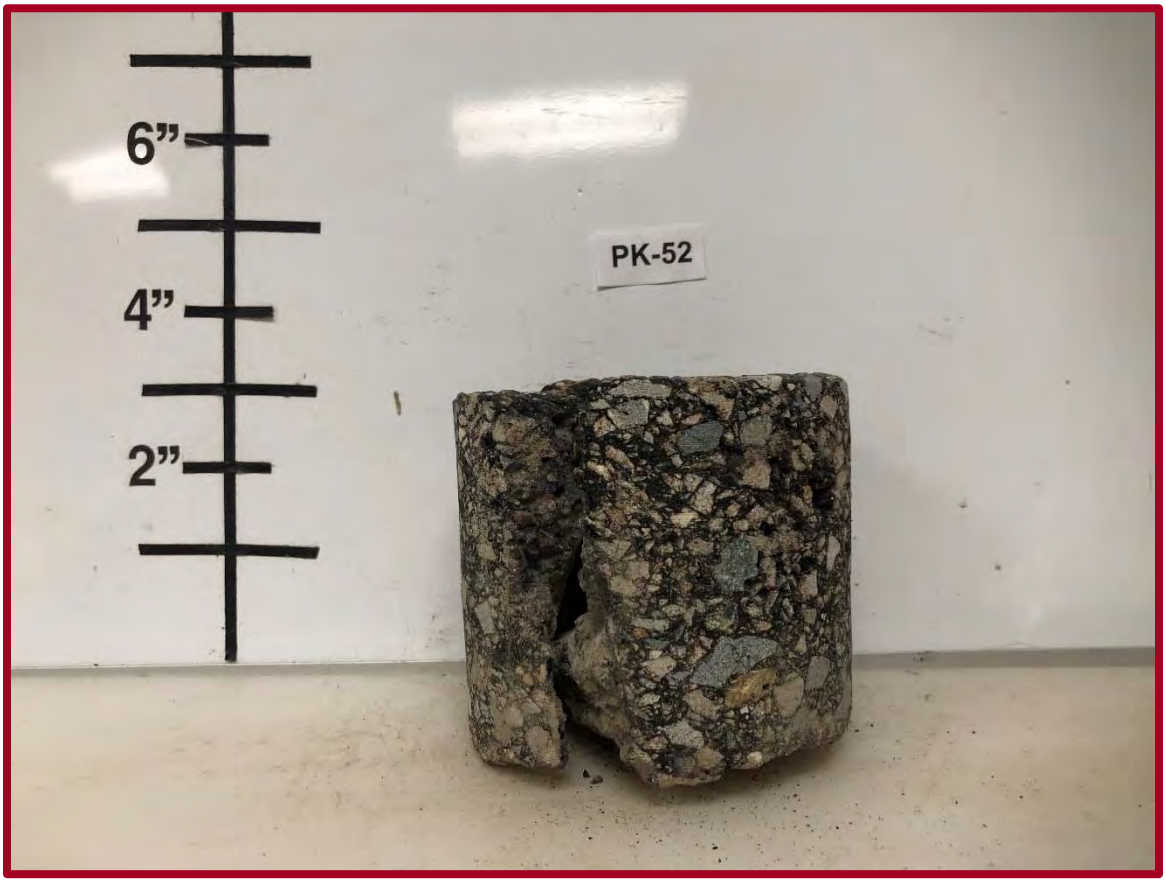


FIGURE D104: PHOTOGRAPH OF PAVEMENT CORE **PK-52**

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

FIGURE D105: EXISTING CONDITIONS AT PAVEMENT CORE **PK-53**
(FACING WEST)

FIGURE D106: PHOTOGRAPH OF PAVEMENT CORE **PK-53**

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

FIGURE D107: EXISTING CONDITIONS AT PAVEMENT CORE **PK-54**
(FACING SOUTHWEST)

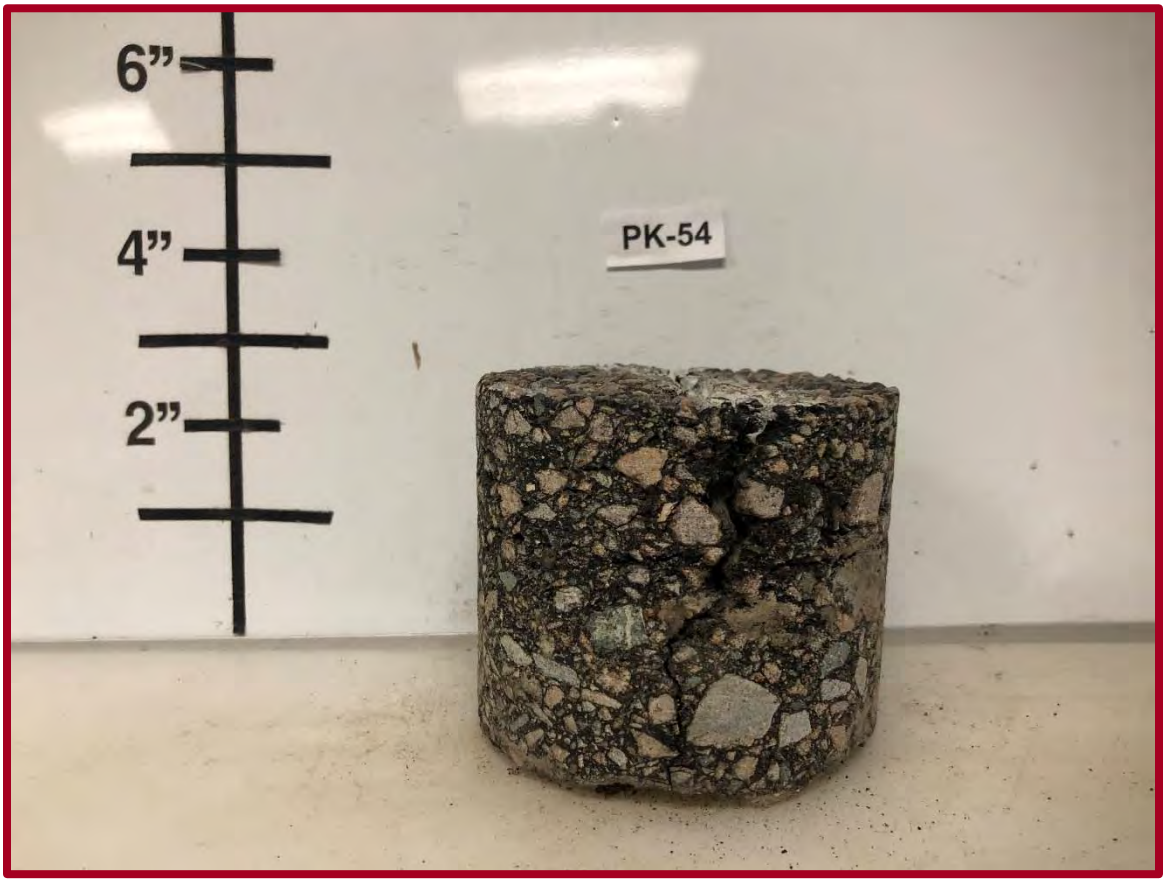


FIGURE D108: PHOTOGRAPH OF PAVEMENT CORE **PK-54**

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

FIGURE D109: EXISTING CONDITIONS AT PAVEMENT CORE **PK-55**
(FACING SOUTHWEST)

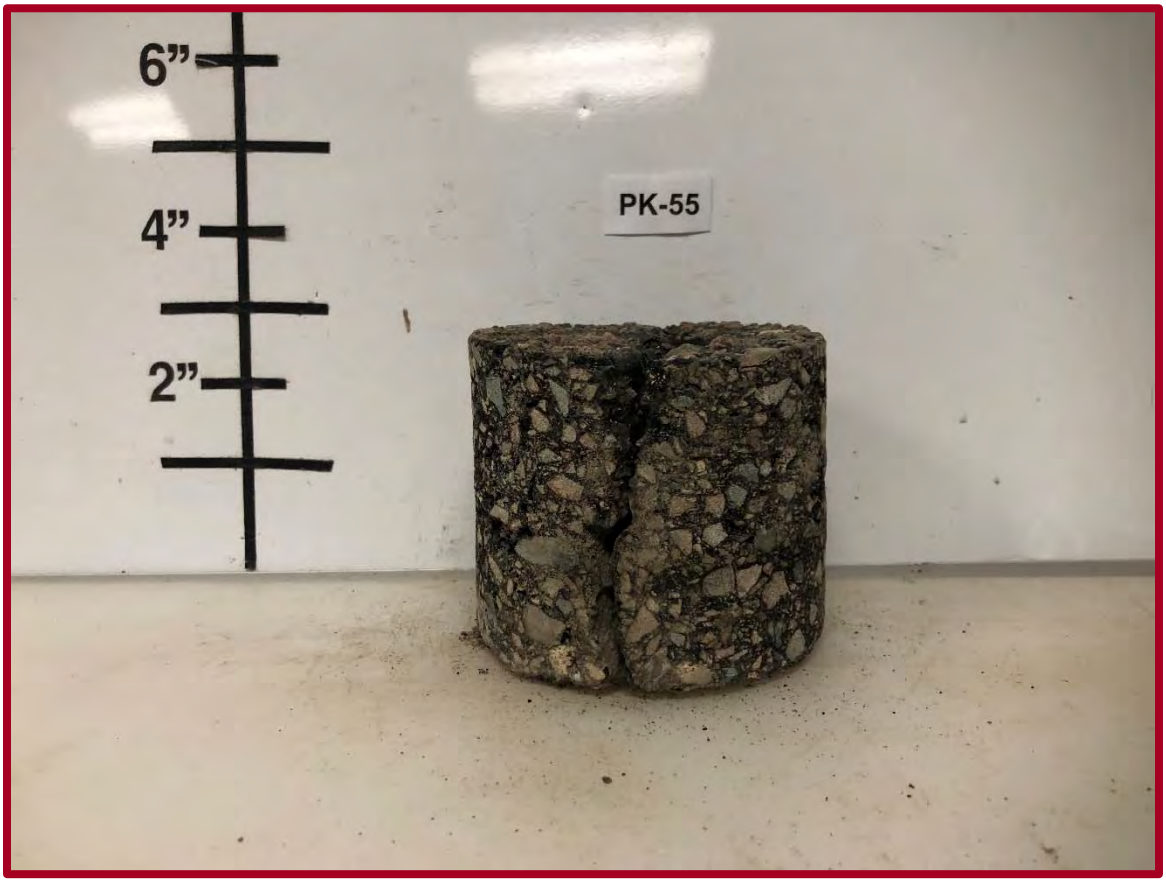


FIGURE D110: PHOTOGRAPH OF PAVEMENT CORE **PK-55**

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

FIGURE D111: EXISTING CONDITIONS AT PAVEMENT CORE **PK-56**
(FACING NORTHEAST)

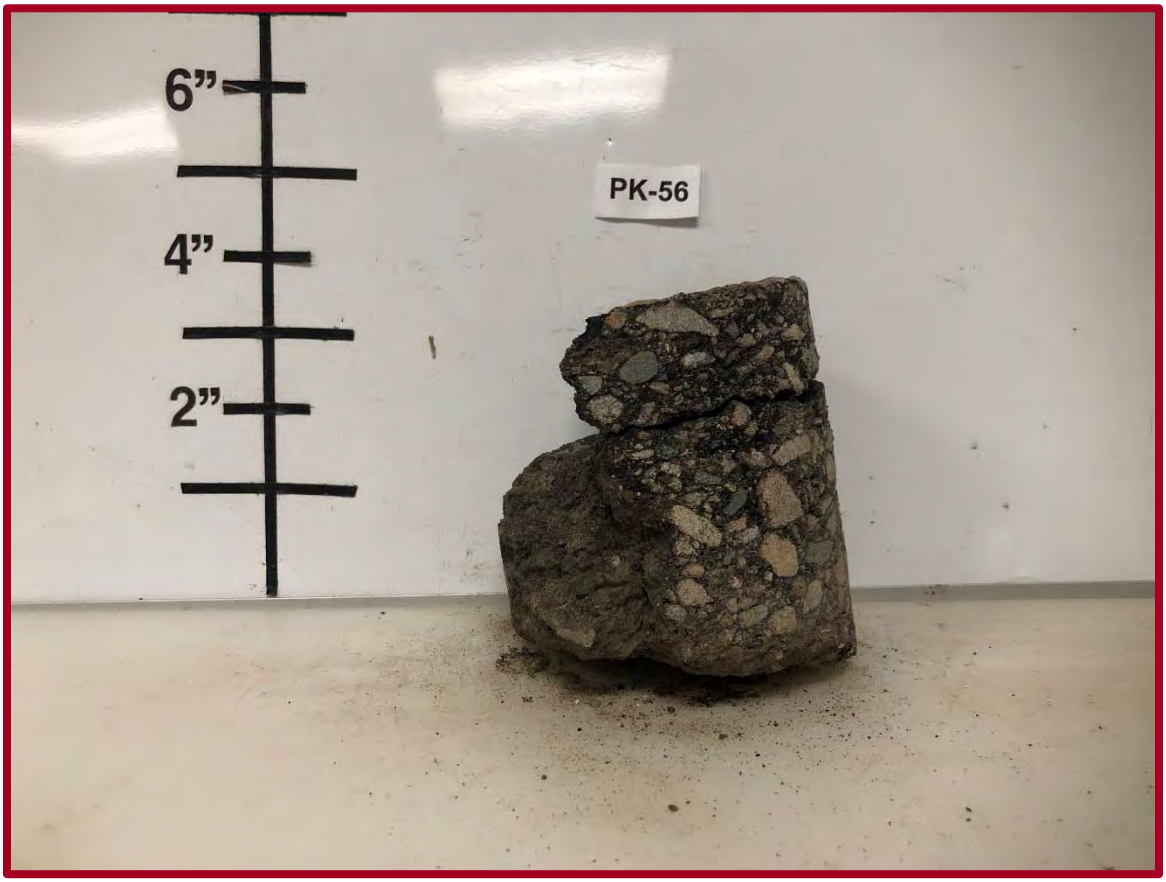


FIGURE D112: PHOTOGRAPH OF PAVEMENT CORE **PK-56**

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

FIGURE D113: EXISTING CONDITIONS AT PAVEMENT CORE **PK-57**
(FACING SOUTHWEST)

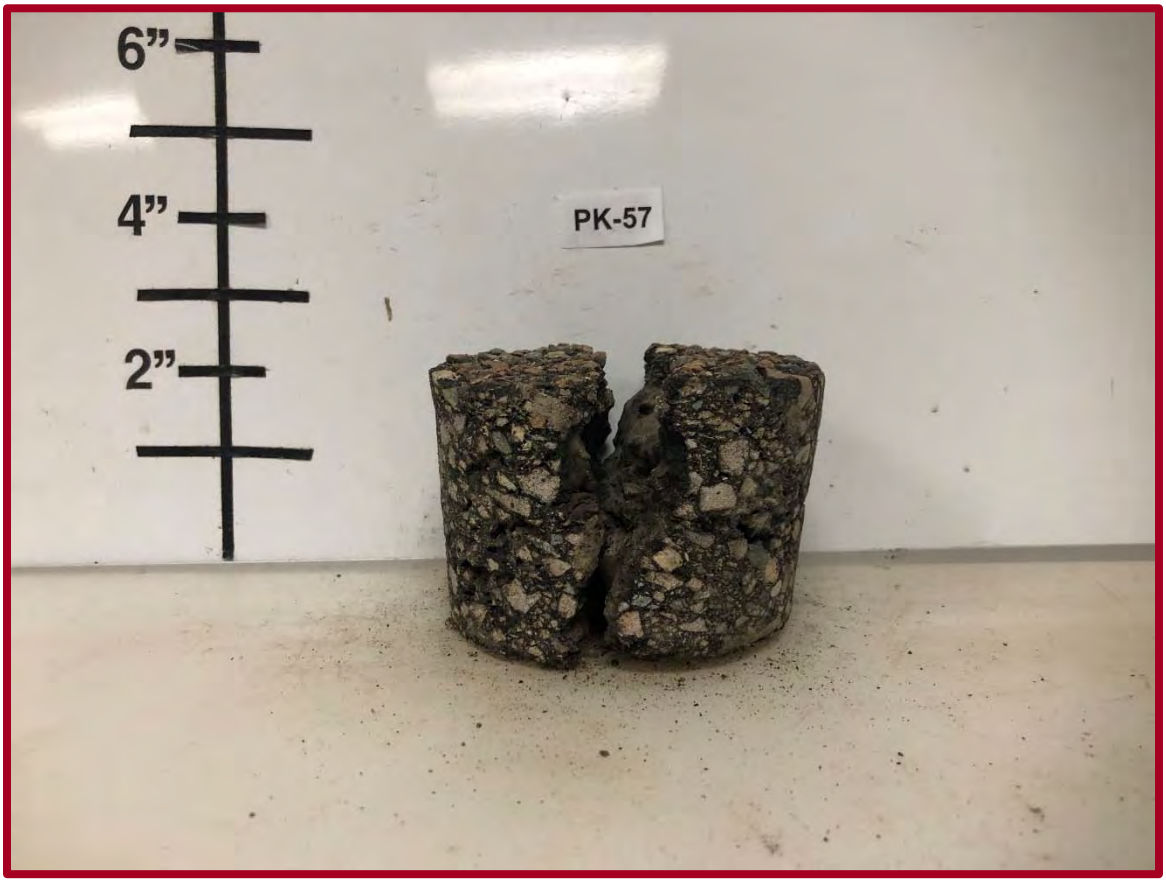


FIGURE D114: PHOTOGRAPH OF PAVEMENT CORE **PK-57**

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

FIGURE D115: EXISTING CONDITIONS AT PAVEMENT CORE **PK-58**
(FACING NORTHEAST)

FIGURE D116: PHOTOGRAPH OF PAVEMENT CORE **PK-58**

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

FIGURE D117: EXISTING CONDITIONS AT PAVEMENT CORE **PK-59**
(FACING SOUTHWEST)

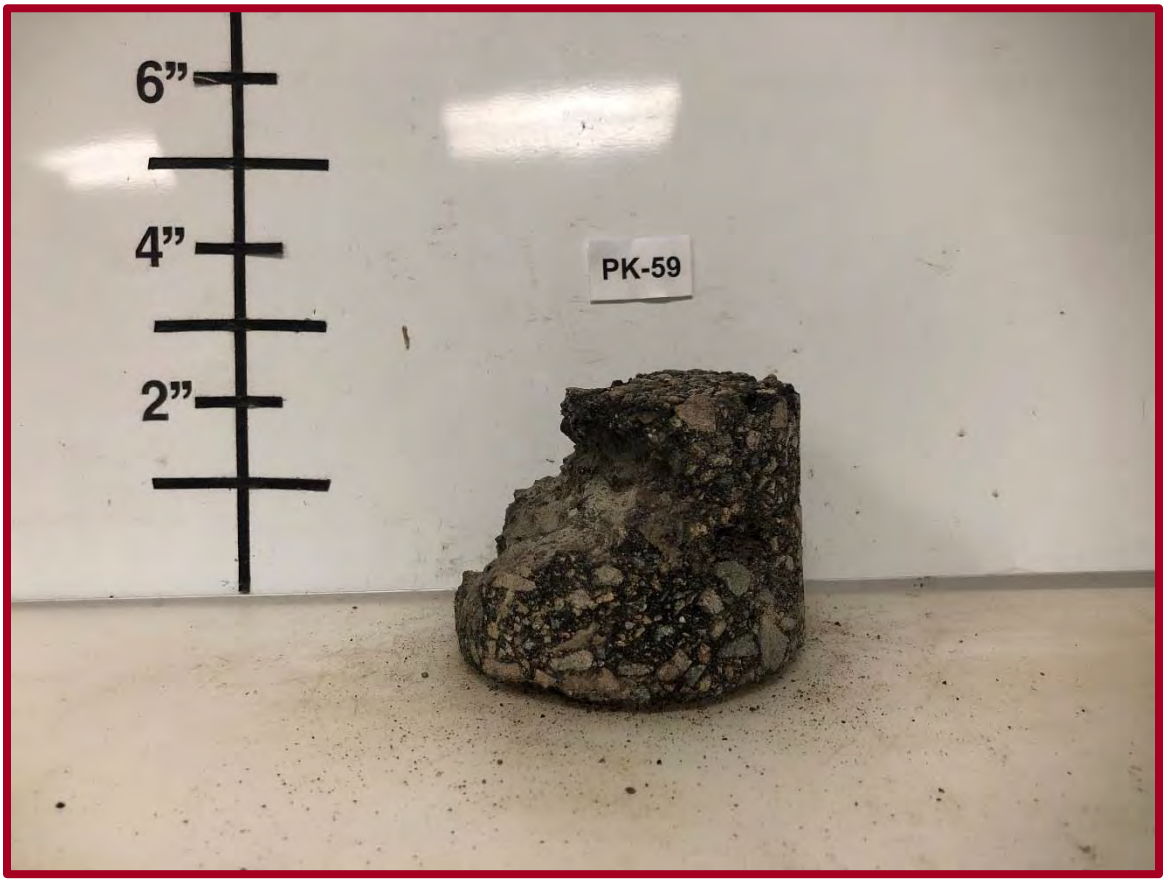


FIGURE D118: PHOTOGRAPH OF PAVEMENT CORE **PK-59**

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

FIGURE D119: EXISTING CONDITIONS AT PAVEMENT CORE **PK-60**
(FACING NORTHEAST)

FIGURE D120: PHOTOGRAPH OF PAVEMENT CORE **PK-60**

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

FIGURE D121: EXISTING CONDITIONS AT PAVEMENT CORE **PK-64**
(FACING SOUTHWEST)

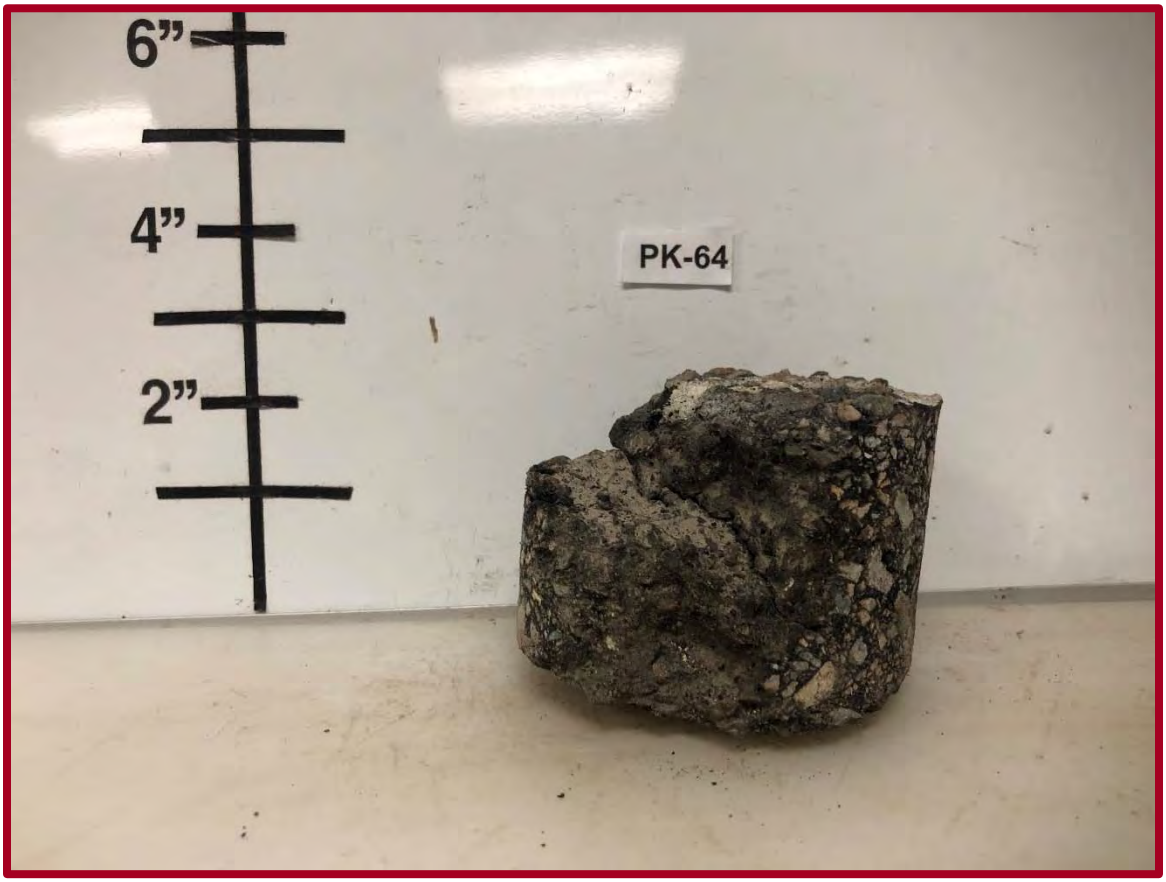


FIGURE D122: PHOTOGRAPH OF PAVEMENT CORE **PK-64**

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

FIGURE D123: EXISTING CONDITIONS AT PAVEMENT CORE **PK-66**
(FACING NORTHEAST)

FIGURE D124: PHOTOGRAPH OF PAVEMENT CORE **PK-66**

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

FIGURE D125: EXISTING CONDITIONS AT PAVEMENT CORE **PK-67**
(FACING SOUTHWEST)

FIGURE D126: PHOTOGRAPH OF PAVEMENT CORE **PK-67**

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

FIGURE D127: EXISTING CONDITIONS AT PAVEMENT CORE **PK-68**
(FACING NORTHEAST)

FIGURE D128: PHOTOGRAPH OF PAVEMENT CORE **PK-68**

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

FIGURE D129: EXISTING CONDITIONS AT PAVEMENT CORE **PK-69**
(FACING SOUTHWEST)

FIGURE D130: PHOTOGRAPH OF PAVEMENT CORE **PK-69**

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

FIGURE D131: EXISTING CONDITIONS AT PAVEMENT CORE **PK-70**
(FACING NORTHEAST)

FIGURE D132: PHOTOGRAPH OF PAVEMENT CORE **PK-70**

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

FIGURE D133: EXISTING CONDITIONS AT PAVEMENT CORE **PK-71**
(FACING WEST)

FIGURE D134: PHOTOGRAPH OF PAVEMENT CORE **PK-71**

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

FIGURE D135: EXISTING CONDITIONS AT PAVEMENT CORE **PK-72**
(FACING EAST)

FIGURE D136: PHOTOGRAPH OF PAVEMENT CORE **PK-72**

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

FIGURE D137: EXISTING CONDITIONS AT PAVEMENT CORE **PK-73**
(FACING WEST)

FIGURE D138: PHOTOGRAPH OF PAVEMENT CORE **PK-73**

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

FIGURE D139: EXISTING CONDITIONS AT PAVEMENT CORE **PK-74**
(FACING EAST)

FIGURE D140: PHOTOGRAPH OF PAVEMENT CORE **PK-74**

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

FIGURE D141: EXISTING CONDITIONS AT PAVEMENT CORE **PK-75**
(FACING WEST)

FIGURE D142: PHOTOGRAPH OF PAVEMENT CORE **PK-75**

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

FIGURE D143: EXISTING CONDITIONS AT PAVEMENT CORE **PK-76**
(FACING EAST)

FIGURE D144: PHOTOGRAPH OF PAVEMENT CORE **PK-76**

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

FIGURE D145: EXISTING CONDITIONS AT PAVEMENT CORE **PK-77**
(FACING WEST)

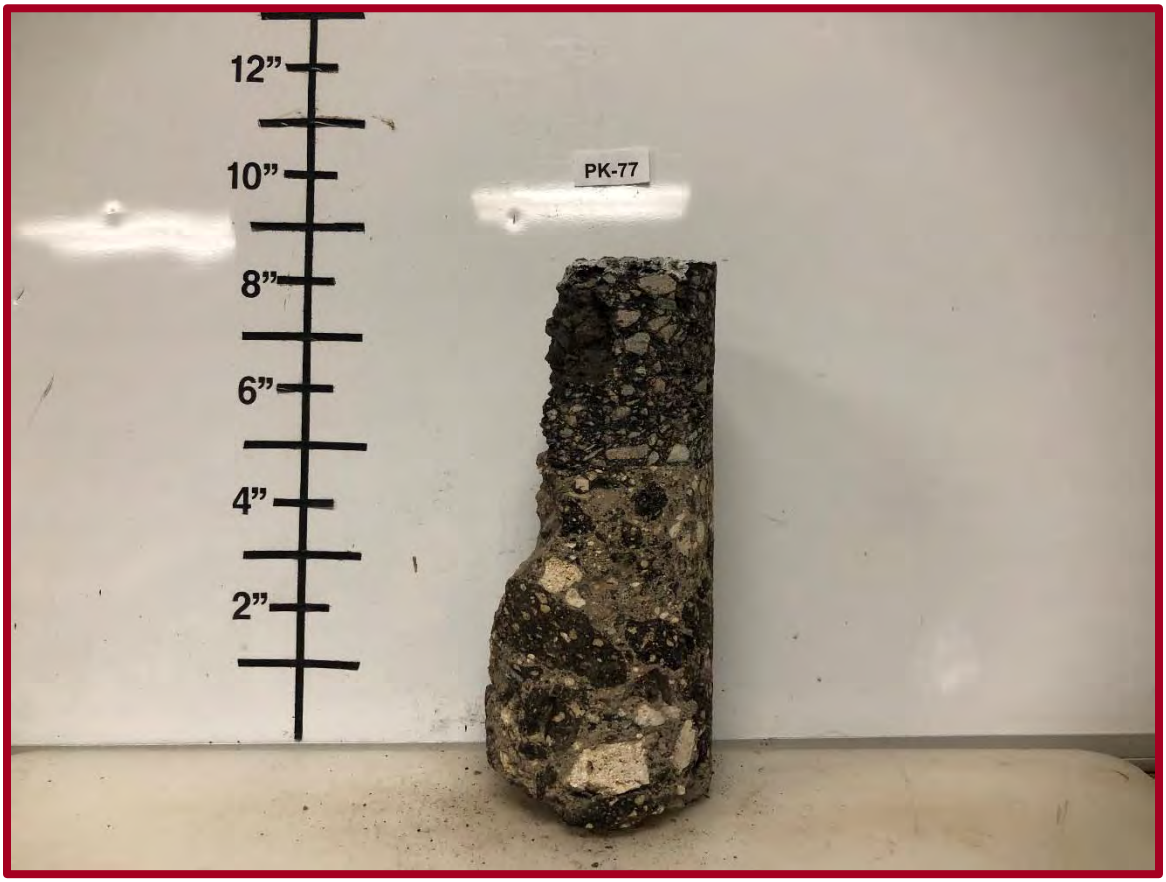


FIGURE D146: PHOTOGRAPH OF PAVEMENT CORE **PK-77**

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

FIGURE D147: EXISTING CONDITIONS AT PAVEMENT CORE **PK-78**
(FACING EAST)

FIGURE D148: PHOTOGRAPH OF PAVEMENT CORE **PK-78**

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

FIGURE D149: EXISTING CONDITIONS AT PAVEMENT CORE **PK-79**
(FACING NORTHWEST)

FIGURE D150: PHOTOGRAPH OF PAVEMENT CORE **PK-79**

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

FIGURE D151: EXISTING CONDITIONS AT PAVEMENT CORE **PK-80**
(FACING SOUTHEAST)

FIGURE D152: PHOTOGRAPH OF PAVEMENT CORE **PK-80**

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

FIGURE D153: EXISTING CONDITIONS AT PAVEMENT CORE **PK-81**
(FACING NORTHWEST)

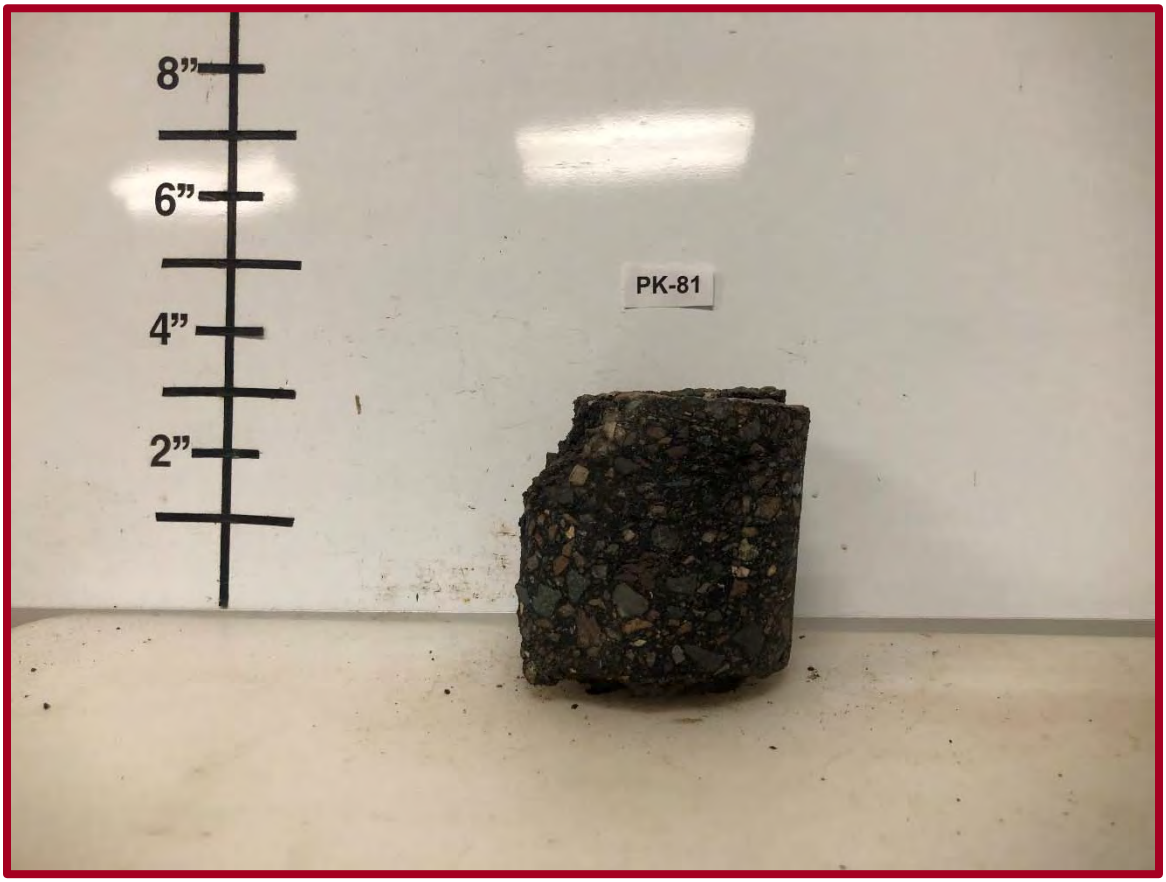


FIGURE D154: PHOTOGRAPH OF PAVEMENT CORE **PK-81**

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

FIGURE D155: EXISTING CONDITIONS AT PAVEMENT CORE **PK-82**
(FACING SOUTHEAST)

FIGURE D156: PHOTOGRAPH OF PAVEMENT CORE **PK-82**

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

FIGURE D157: EXISTING CONDITIONS AT PAVEMENT CORE **PK-83**
(FACING NORTHWEST)

FIGURE D158: PHOTOGRAPH OF PAVEMENT CORE **PK-83**

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

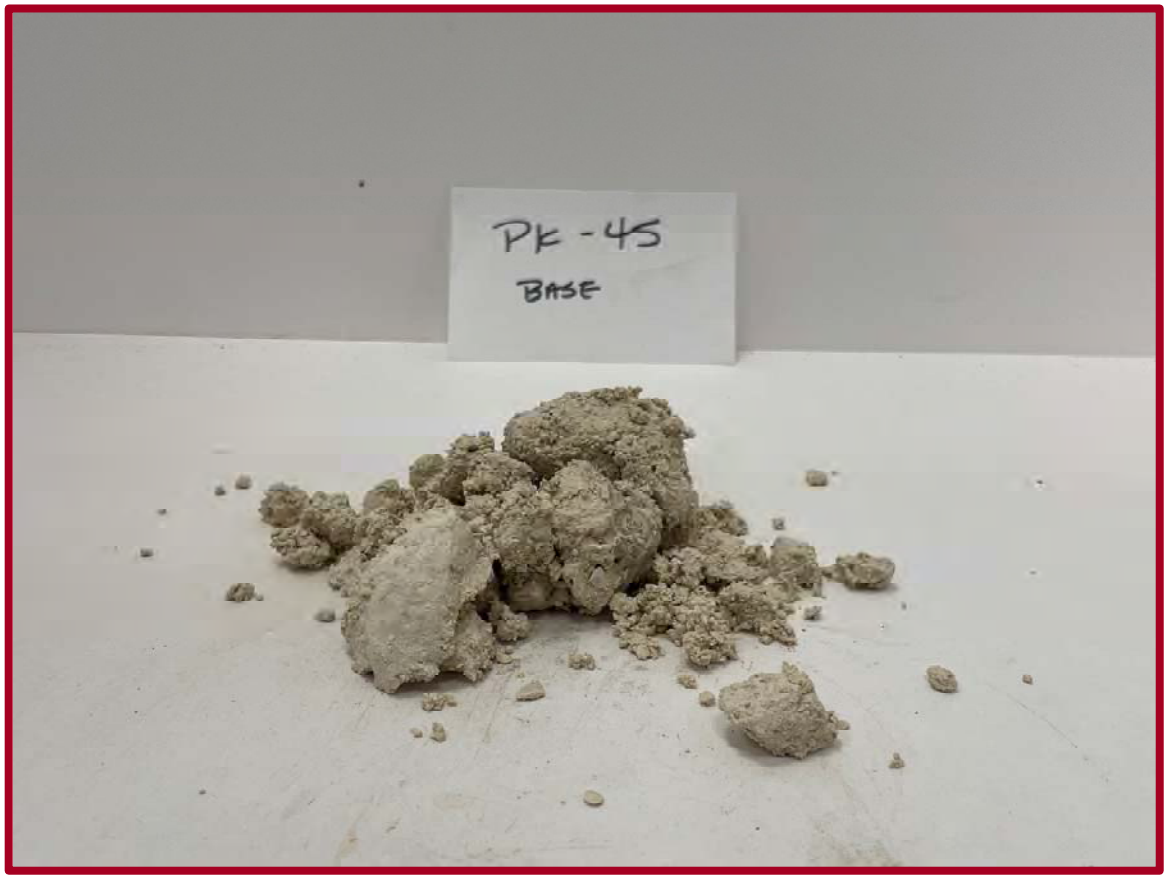


FIGURE D159: PHOTOGRAPH OF BASE MATERIAL
(LIMEROCK BASE)

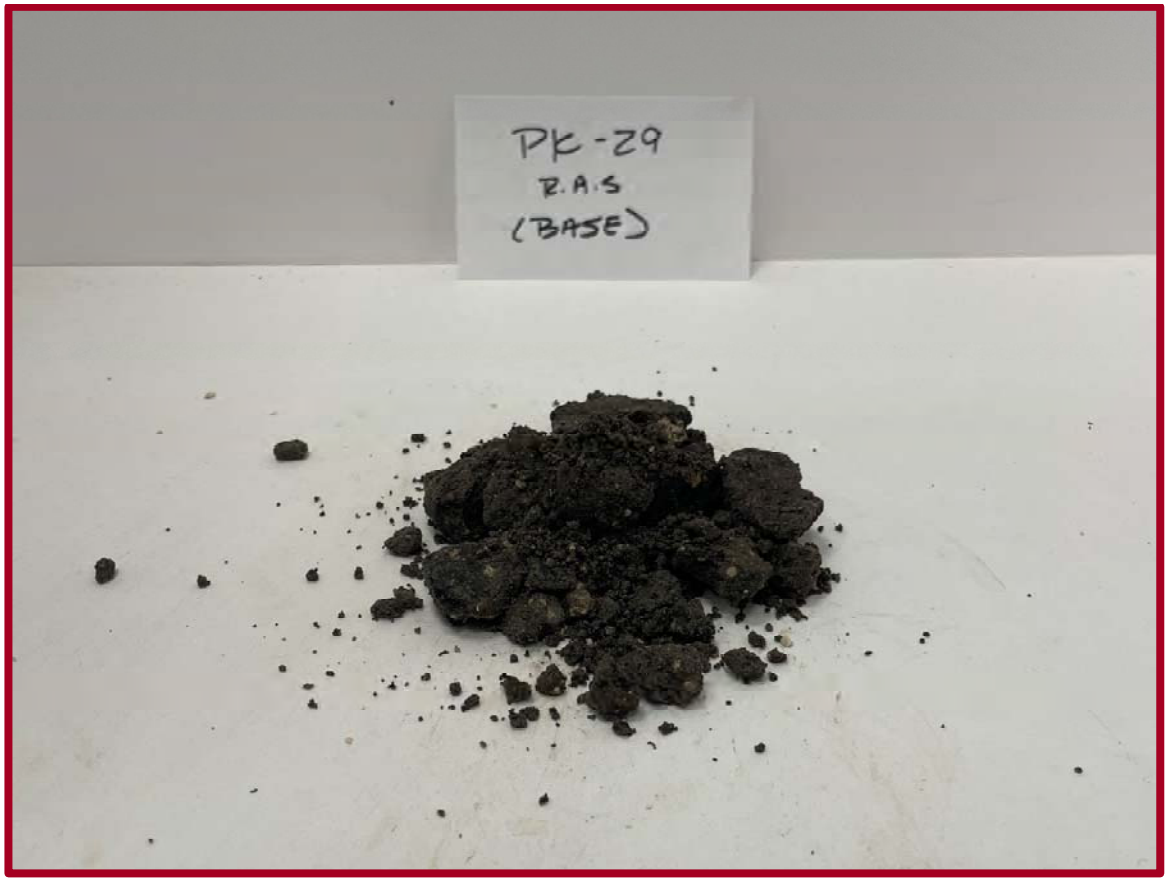


FIGURE D160: PHOTOGRAPH OF BASE MATERIAL
(UNBONDED RECYCLED ASPHALT STABILIZATION)

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

APPENDIX E

NRCS SOIL DATA

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

0 250 500
Feet

DRAWN: A. JETT	CHECKED: K. MORALES, P.E.	Environmental and Geotechnical Specialists, Inc. 3772 Kori Road Jacksonville, Florida 32257 Office: (904) 329-7180	TITLE: NRCS SOIL SURVEY CR 121 PAVEMENT EVALUATION AND WIDENING FROM DUVAL COUNTY LINE TO CR 119 NASSAU COUNTY, FLORIDA
ENGINEER: M. LANDSCHOOT, P.E.			
CLIENT: KIMLEY-HORN AND ASSOCIATES, INC.			
PROJ. NO.: 13-54-23-01	SCALE: AS SHOWN		DATE: JULY 2023 / FIGURE NO.: E1

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

0 250 500
Feet

DRAWN: A. JETT	CHECKED: K. MORALES, P.E.	Environmental and Geotechnical Specialists, Inc. 3772 Kori Road Jacksonville, Florida 32257 Office: (904) 329-7180	TITLE: NRCS SOIL SURVEY CR 121 PAVEMENT EVALUATION AND WIDENING FROM DUVAL COUNTY LINE TO CR 119 NASSAU COUNTY, FLORIDA
ENGINEER: M. LANDSCHOOT, P.E.			
CLIENT: KIMLEY-HORN AND ASSOCIATES, INC.			
PROJ. NO.: 13-54-23-01	SCALE: AS SHOWN		DATE: JULY 2023 / FIGURE NO.: E2

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

Legend

- Nassau County Boundary

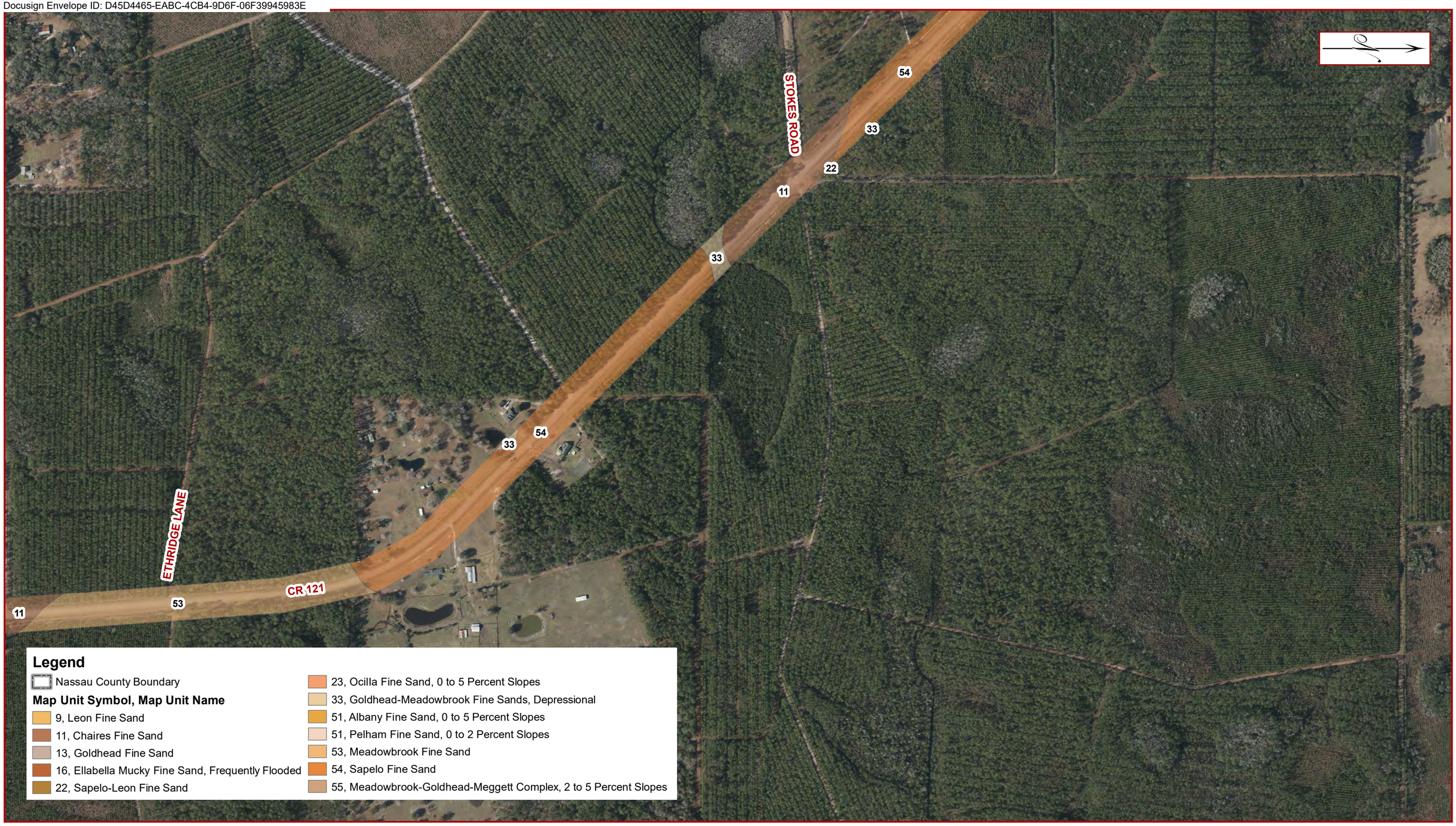
Map Unit Symbol, Map Unit Name

- 9, Leon Fine Sand
- 11, Chaires Fine Sand
- 13, Goldhead Fine Sand
- 16, Ellabella Mucky Fine Sand, Frequently Flooded
- 22, Sapelo-Leon Fine Sand
- 23, Ocilla Fine Sand, 0 to 5 Percent Slopes
- 33, Goldhead-Meadowbrook Fine Sands, Depressional
- 51, Albany Fine Sand, 0 to 5 Percent Slopes
- 51, Pelham Fine Sand, 0 to 2 Percent Slopes
- 53, Meadowbrook Fine Sand
- 54, Sapelo Fine Sand
- 55, Meadowbrook-Goldhead-Meggett Complex, 2 to 5 Percent Slopes

0 250 500
Feet

DRAWN: A. JETT	CHECKED: K. MORALES, P.E.	Environmental and Geotechnical Specialists, Inc. 3772 Kori Road Jacksonville, Florida 32257 Office: (904) 329-7180	TITLE: NRCS SOIL SURVEY CR 121 PAVEMENT EVALUATION AND WIDENING FROM DUVAL COUNTY LINE TO CR 119 NASSAU COUNTY, FLORIDA
ENGINEER: M. LANDSCHOOT, P.E.			
CLIENT: KIMLEY-HORN AND ASSOCIATES, INC.			
PROJ. NO.: 13-54-23-01	SCALE: AS SHOWN		DATE: JULY 2023 / FIGURE NO.: E3

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E



Legend

- Nassau County Boundary

Map Unit Symbol, Map Unit Name

- 9, Leon Fine Sand
- 11, Chaires Fine Sand
- 13, Goldhead Fine Sand
- 16, Ellabella Mucky Fine Sand, Frequently Flooded
- 22, Sapelo-Leon Fine Sand
- 23, Ocilla Fine Sand, 0 to 5 Percent Slopes
- 33, Goldhead-Meadowbrook Fine Sands, Depressional
- 51, Albany Fine Sand, 0 to 5 Percent Slopes
- 51, Pelham Fine Sand, 0 to 2 Percent Slopes
- 53, Meadowbrook Fine Sand
- 54, Sapelo Fine Sand
- 55, Meadowbrook-Goldhead-Meggett Complex, 2 to 5 Percent Slopes

0 250 500
Feet

DRAWN: A. JETT	CHECKED: K. MORALES, P.E.	Environmental and Geotechnical Specialists, Inc. 3772 Kori Road Jacksonville, Florida 32257 Office: (904) 329-7180	TITLE: NRCS SOIL SURVEY CR 121 PAVEMENT EVALUATION AND WIDENING FROM DUVAL COUNTY LINE TO CR 119 NASSAU COUNTY, FLORIDA
ENGINEER: M. LANDSCHOOT, P.E.			
CLIENT: KIMLEY-HORN AND ASSOCIATES, INC.			
PROJ. NO.: 13-54-23-01	SCALE: AS SHOWN		DATE: JULY 2023 / FIGURE NO.: E4

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

Legend

- Nassau County Boundary

Map Unit Symbol, Map Unit Name

- 9, Leon Fine Sand
- 11, Chaires Fine Sand
- 13, Goldhead Fine Sand
- 16, Ellabella Mucky Fine Sand, Frequently Flooded
- 22, Sapelo-Leon Fine Sand
- 23, Ocilla Fine Sand, 0 to 5 Percent Slopes
- 33, Goldhead-Meadowbrook Fine Sands, Depressional
- 51, Albany Fine Sand, 0 to 5 Percent Slopes
- 51, Pelham Fine Sand, 0 to 2 Percent Slopes
- 53, Meadowbrook Fine Sand
- 54, Sapelo Fine Sand
- 55, Meadowbrook-Goldhead-Meggett Complex, 2 to 5 Percent Slopes

0 250 500
Feet

DRAWN: A. JETT	CHECKED: K. MORALES, P.E.	Environmental and Geotechnical Specialists, Inc. 3772 Kori Road Jacksonville, Florida 32257 Office: (904) 329-7180	TITLE: NRCS SOIL SURVEY CR 121 PAVEMENT EVALUATION AND WIDENING FROM DUVAL COUNTY LINE TO CR 119 NASSAU COUNTY, FLORIDA
ENGINEER: M. LANDSCHOOT, P.E.			
CLIENT: KIMLEY-HORN AND ASSOCIATES, INC.			
PROJ. NO.: 13-54-23-01	SCALE: AS SHOWN		DATE: JULY 2023 / FIGURE NO.: E5

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

Chemical Soil Properties–Duval County, Florida								
Map symbol and soil name	**Depth**	**Cation-exchange capacity**	**Effective cation-exchange capacity**	**Soil reaction**	**Calcium carbonate**	**Gypsum**	**Salinity**	**Sodium adsorption ratio**
	In	*meq/100g*	*meq/100g*	*pH*	*Pct*	*Pct*	*mmhos/cm*	
51—Pelham fine sand, 0 to 2 percent slopes								
Pelham	0-6	—	0.3-0.9	3.5-5.5	0	0	0.0-2.0	0-4
	6-26	—	0.3-2.9	3.5-5.5	0	0	0.0-2.0	0-4
	26-42	—	1.1-3.8	3.5-5.5	0	0	0.0-2.0	0-4
	42-83	—	1.3-3.8	3.5-5.5	0	0	0.0-2.0	0-4

Chemical Soil Properties–Nassau County, Florida								
Map symbol and soil name	**Depth**	**Cation-exchange capacity**	**Effective cation-exchange capacity**	**Soil reaction**	**Calcium carbonate**	**Gypsum**	**Salinity**	**Sodium adsorption ratio**
	In	*meq/100g*	*meq/100g*	*pH*	*Pct*	*Pct*	*mmhos/cm*	
9—Leon fine sand, 0 to 2 percent slopes								
Leon, non-hydric	0-8	—	0.1-5.6	3.5-4.7	0	0	0.0-2.0	0-4
	8-18	—	0.0-5.4	3.2-5.4	0	0	0.0-2.0	0-4
	18-37	—	0.1-5.7	3.1-5.2	0	0	0.0-2.0	0-4
	37-45	—	0.0-5.6	4.3-5.2	0	0	0.0-2.0	0-4
	45-80	—	0.1-5.3	4.5-5.6	0	0	0.0-2.0	0-4
11—Chaires fine sand								
Chaires	0-7	—	0.3-3.0	3.5-5.5	0	0	0.0-2.0	0-4
	7-18	—	0.0-2.1	3.5-5.5	0	0	0.0-2.0	0-4
	18-27	—	0.4-5.3	3.5-5.5	0	0	0.0-2.0	0-4
	27-31	—	0.0-1.7	3.5-5.5	0	0	0.0-2.0	0-4
	31-80	9.1-19	—	4.5-7.3	0	0	0.0-2.0	0-4

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Chemical Soil Properties–Nassau County, Florida								
Map symbol and soil name	**Depth**	**Cation-exchange capacity**	**Effective cation-exchange capacity**	**Soil reaction**	**Calcium carbonate**	**Gypsum**	**Salinity**	**Sodium adsorption ratio**
	In	*meq/100g*	*meq/100g*	*pH*	*Pct*	*Pct*	*mmhos/cm*	
13—Goldhead fine sand								
Goldhead, non-hydric	0-8	0.6-2.8	—	4.5-7.8	0	0	0.0-2.0	0-4
	8-33	0.5-2.7	—	4.5-7.8	0	0	0.0-2.0	0-4
	33-69	6.6-18	—	4.5-8.4	0	0	0.0-2.0	0-4
	69-80	—	0.0-4.3	3.5-5.5	0	0	0.0-2.0	0-4
Goldhead, hydric	0-8	0.6-2.8	—	4.5-7.8	0	0	0.0-2.0	0-4
	8-33	0.5-2.7	—	4.5-7.8	0	0	0.0-2.0	0-4
	33-69	6.6-18	—	4.5-8.4	0	0	0.0-2.0	0-4
	69-80	—	0.0-4.3	3.5-5.5	0	0	0.0-2.0	0-4
16—Ellabelle mucky fine sand, frequently flooded								
Ellabelle	0-4	—	11-28	4.5-5.5	0	0	0.0-2.0	0-4
	4-12	—	0.0-1.2	4.5-5.5	0	0	0.0-2.0	0-4
	12-36	—	0.0-3.0	4.5-5.5	0	0	0.0-2.0	0-4
	36-80	—	4.0-7.0	4.5-5.5	0	0	0.0-2.0	0-4

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Chemical Soil Properties–Nassau County, Florida								
Map symbol and soil name	**Depth**	**Cation-exchange capacity**	**Effective cation-exchange capacity**	**Soil reaction**	**Calcium carbonate**	**Gypsum**	**Salinity**	**Sodium adsorption ratio**
	In	*meq/100g*	*meq/100g*	*pH*	*Pct*	*Pct*	*mmhos/cm*	
22—Sapelo-Leon fine sand								
Sapelo, non-hydric	0-6	—	0.2-3.2	3.5-5.5	0	0	0.0-2.0	0-4
	6-21	—	0.1-4.6	3.5-5.5	0	0	0.0-2.0	0-4
	21-27	—	0.3-3.8	3.5-5.5	0	0	0.0-2.0	0-4
	27-43	—	0.1-10	3.5-5.5	0	0	0.0-2.0	0-4
	43-70	0.2-5.0	0.1-5.0	3.5-5.5	0	0	0.0-2.0	0-4
	70-80	—	0.3-5.5	3.5-5.5	0	0	0.0-2.0	0-4
Leon, non-hydric	0-7	—	0.2-3.5	3.5-6.5	0	0	0.0-2.0	0-4
	7-20	—	0.0-1.9	3.5-6.5	0	0	0.0-2.0	0-4
	20-24	—	0.5-4.5	3.5-6.5	0	0	0.0-2.0	0-4
	24-37	—	0.0-2.3	3.5-6.5	0	0	0.0-2.0	0-4
	37-80	—	0.5-4.5	3.5-6.5	0	0	0.0-2.0	0-4
Leon, hydric	0-7	—	0.2-3.5	3.5-6.5	0	0	0.0-2.0	0-4
	7-20	—	0.0-1.9	3.5-6.5	0	0	0.0-2.0	0-4
	20-24	—	0.5-4.5	3.5-6.5	0	0	0.0-2.0	0-4
	24-37	—	0.0-2.3	3.5-6.5	0	0	0.0-2.0	0-4
	37-80	—	0.5-4.5	3.5-6.5	0	0	0.0-2.0	0-4
Sapelo, hydric	0-6	—	0.2-3.2	3.5-5.5	0	0	0.0-2.0	0-4
	6-21	—	0.1-4.6	3.5-5.5	0	0	0.0-2.0	0-4
	21-27	—	0.3-3.8	3.5-5.5	0	0	0.0-2.0	0-4
	27-43	—	0.1-10	3.5-5.5	0	0	0.0-2.0	0-4
	43-70	0.2-5.0	0.1-5.0	3.5-5.5	0	0	0.0-2.0	0-4
	70-80	—	0.3-5.5	3.5-5.5	0	0	0.0-2.0	0-4

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Chemical Soil Properties–Nassau County, Florida								
Map symbol and soil name	**Depth**	**Cation-exchange capacity**	**Effective cation-exchange capacity**	**Soil reaction**	**Calcium carbonate**	**Gypsum**	**Salinity**	**Sodium adsorption ratio**
	In	*meq/100g*	*meq/100g*	*pH*	*Pct*	*Pct*	*mmhos/cm*	
23—Ocilla fine sand, 0 to 5 percent slopes								
Ocilla	0-7	—	0.5-1.8	4.5-5.5	0	0	0.0-2.0	0-4
	7-34	—	0.1-3.9	4.5-5.5	0	0	0.0-2.0	0-4
	34-80	—	3.0-6.0	4.5-5.5	0	0	0.0-2.0	0-4
33—Goldhead-Meadowbrook fine sands, depressional								
Goldhead, depressional	0-8	0.6-2.8	—	4.5-7.8	0	0	0.0-2.0	0-4
	8-19	0.5-2.7	—	4.5-7.8	0	0	0.0-2.0	0-4
	19-80	6.6-18	—	4.5-8.4	0	0	0.0-2.0	0-4
Meadowbrook, depressional	0-6	0.0-0.6	—	3.5-7.3	0	0	0.0-2.0	0-4
	6-55	0.2-1.2	—	3.5-8.4	0	0	0.0-2.0	0-4
	55-80	15-25	—	4.5-8.4	0-5	0	0.0-2.0	0-4
51—Albany fine sand, 0 to 5 percent slopes								
Albany	0-2	—	0.1-1.8	3.5-6.5	0	0	0.0-2.0	0-4
	2-50	—	0.0-7.5	3.5-6.5	0	0	0.0-2.0	0-4
	50-80	—	0.4-4.7	4.5-6.0	0	0	0.0-2.0	0-4
53—Meadowbrook fine sand								
Meadowbrook, non-hydric	0-8	0.0-0.6	—	3.5-7.3	0	0	0.0-2.0	0-4
	8-44	0.2-1.2	—	3.5-8.4	0	0	0.0-2.0	0-4
	44-80	2.1-4.3	—	4.5-8.4	0-5	0	0.0-2.0	0-4
Meadowbrook, hydric	0-8	0.0-0.6	—	3.5-7.3	0	0	0.0-2.0	0-4
	8-44	0.2-1.2	—	3.5-8.4	0	0	0.0-2.0	0-4
	44-80	2.1-4.3	—	4.5-8.4	0-5	0	0.0-2.0	0-4

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Chemical Soil Properties–Nassau County, Florida								
Map symbol and soil name	**Depth**	**Cation-exchange capacity**	**Effective cation-exchange capacity**	**Soil reaction**	**Calcium carbonate**	**Gypsum**	**Salinity**	**Sodium adsorption ratio**
	In	*meq/100g*	*meq/100g*	*pH*	*Pct*	*Pct*	*mmhos/cm*	
54—Sapelo fine sand								
Sapelo, non-hydric	0-6	—	0.2-3.2	3.5-5.5	0	0	0.0-2.0	0-4
	6-21	—	0.1-3.6	3.5-5.5	0	0	0.0-2.0	0-4
	21-27	—	0.3-3.8	3.5-5.5	0	0	0.0-2.0	0-4
	27-43	—	0.3-3.9	3.5-5.5	0	0	0.0-2.0	0-4
	43-70	—	0.6-8.9	3.5-5.5	0	0	0.0-2.0	0-4
	70-80	—	0.1-3.1	3.5-5.5	0	0	0.0-2.0	0-4
Sapelo, hydric	0-6	—	0.2-3.2	3.5-5.5	0	0	0.0-2.0	0-4
	6-21	—	0.1-4.6	3.5-5.5	0	0	0.0-2.0	0-4
	21-27	—	0.3-3.8	3.5-5.5	0	0	0.0-2.0	0-4
	27-43	—	0.1-10	3.5-5.5	0	0	0.0-2.0	0-4
	43-70	0.2-5.0	0.1-5.0	3.5-5.5	0	0	0.0-2.0	0-4
	70-80	—	0.3-5.5	3.5-5.5	0	0	0.0-2.0	0-4
55—Meadowbrook-Goldhead-Meggett complex, 2 to 5 percent slopes								
Meadowbrook	0-8	0.0-1.2	—	3.5-7.3	0	0	0.0-2.0	0-4
	8-65	0.4-2.2	—	3.5-8.4	0	0	0.0-2.0	0-4
	65-80	3.7-7.7	—	4.5-8.4	0-5	0	0.0-2.0	0-4
Goldhead	0-2	0.6-2.8	—	4.5-7.8	0	0	0.0-2.0	0-4
	2-32	0.5-2.7	—	4.5-7.8	0	0	0.0-2.0	0-4
	32-80	6.6-18	—	4.5-8.4	0	0	0.0-2.0	0-4
Meggett	0-8	2.8-11	—	4.5-6.5	0	0	0.0-2.0	0-4
	8-40	16-32	—	5.1-8.4	0	0	0.0-2.0	0-4
	40-80	13-26	—	6.1-8.4	0-15	0	0.0-2.0	0-4

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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–Duval County, 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*
51—Pelham fine sand, 0 to 2 percent slopes														
Pelham	75	B/D	0-6	Loamy fine sand, fine sand	SM	A-2-4	0- 0- 0	0- 0- 0	100-100-100	94-100-100	87-99-100	21-27-36	0-0 -19	NP-0 -1
			6-26	Fine sand, loamy fine sand	SM	A-2-4	0- 0- 0	0- 0- 0	100-100-100	94-100-100	85-99-100	18-26-37	0-0 -19	NP-0 -3
			26-42	Sandy clay loam, fine sandy loam	SC	A-2, A-6	0- 0- 0	0- 0- 0	100-100-100	95-100-100	84-99-100	32-42-54	23-30-37	8-14-19
			42-83	Fine sandy loam, sandy clay loam	SC	A-2, A-6	0- 0- 0	0- 0- 0	100-100-100	95-100-100	86-100-100	34-43-54	27-32-38	12-15-20

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Engineering Properties–Nassau County, 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*
9—Leon fine sand, 0 to 2 percent slopes														
Leon, non-hydric	89	A/D	0-8	Fine sand	SP-SM	A-2-4, A-3	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	92-98-100	6- 9- 16	0-0 -34	NP-0 -6
			8-18	Fine sand	SP-SM, SP	A-2-4, A-3	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	93-97-100	4- 6- 14	0-0 -23	NP-0 -6
			18-37	Fine sand, loamy fine sand	SP-SM, SM	A-2-4, A-3	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	92-97-100	6- 9- 18	0-0 -32	NP-0 -9
			37-45	Fine sand, loamy fine sand	SP-SM	A-2-4, A-3	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	93-97-100	5- 7- 15	0-0 -24	NP-0 -6
			45-80	Fine sand, loamy fine sand	SP-SM	A-2-4, A-3	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	92-97-100	6- 9- 18	0-0 -30	NP-0 -9
11—Chaires fine sand														
Chaires	91	C/D	0-7	Fine sand	SP-SM, SP	A-2-4, A-3	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	85-93-100	2- 7- 12	0-7 -14	NP
			7-18	Fine sand	SP-SM, SP	A-2-4, A-3	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	85-93-100	2- 7- 12	0-7 -14	NP
			18-27	Sand, fine sand, loamy fine sand	SP-SM, SM	A-2-4, A-3	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	85-93-100	5-13- 20	0-7 -14	NP
			27-31	Sand, fine sand	SP-SM, SP	A-2-4, A-3	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	80-90-100	2- 7- 12	0-7 -14	NP
			31-80	Sandy clay loam, sandy clay	SC	A-2-6, A-2-7, A-6	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	85-93-100	25-38-50	25-38 -50	10-20-30

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Engineering Properties–Nassau County, 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*
13—Goldhead fine sand														
Goldhead, non-hydric	50	B/D	0-8	Fine sand	SP-SM, SP	A-3	0- 0- 0	0- 0- 0	100-100-100	100-100-100	90-95-99	2- 4- 6	0-7 -14	NP
			8-33	Sand, fine sand	SP-SM, SP	A-3	0- 0- 0	0- 0- 0	95-98-100	90-95-100	90-95-99	2- 4- 6	0-7 -14	NP
			33-69	Sandy loam, clay loam, sandy clay loam	SC-SM, SC, SM	A-2-4, A-2-6, A-6	0- 0- 0	0- 1- 3	75-88-100	65-83-100	60-80-100	15-28-40	20-30 -40	NP-13-25
			69-80	Fine sand, sand, loamy fine sand	SP-SM, SM, SP	A-2-4, A-3	0- 0- 0	0- 0- 0	100-100-100	100-100-100	90-95-100	1-11- 20	0-7 -14	NP
Goldhead, hydric	43	B/D	0-8	Fine sand	SP-SM, SP	A-3	0- 0- 0	0- 0- 0	100-100-100	100-100-100	90-95-99	2- 4- 6	0-7 -14	NP
			8-33	Sand, fine sand	SP-SM, SP	A-3	0- 0- 0	0- 0- 0	95-98-100	90-95-100	90-95-99	2- 4- 6	0-7 -14	NP
			33-69	Sandy loam, clay loam, sandy clay loam	SC-SM, SC, SM	A-2-4, A-2-6, A-6	0- 0- 0	0- 1- 3	75-88-100	65-83-100	60-80-100	15-28-40	20-30 -40	NP-13-25
			69-80	Fine sand, sand, loamy fine sand	SP-SM, SM, SP	A-2-4, A-3	0- 0- 0	0- 0- 0	100-100-100	100-100-100	90-95-100	1-11- 20	0-7 -14	NP

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Engineering Properties–Nassau County, 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*
16—Ellabelle mucky fine sand, frequently flooded														
Ellabelle	91	B/D	0-4	Mucky fine sand	SP-SM, SM	A-1, A-2	0- 0- 0	0- 0- 0	100-100 -100	95-98-1 00	48-62-75	11-19-26	0-7 -14	NP
			4-12	Fine sand	SP-SM, SM	A-1, A-2	0- 0- 0	0- 0- 0	100-100 -100	95-98-1 00	48-62-75	11-19-26	0-7 -14	NP
			12-36	Fine sand	SP-SM, SM	A-1, A-2	0- 0- 0	0- 0- 0	100-100 -100	95-98-1 00	48-62-75	11-19-26	0-7 -14	NP
			36-80	Sandy clay loam, sandy clay, fine sandy loam	CL, SC	A-6, A-7	0- 0- 0	0- 0- 0	100-100 -100	95-98-1 00	65-78-90	36-44-52	32-39 -46	15-20-25

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Engineering Properties–Nassau County, 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*
22—Sapelo-Leon fine sand														
Sapelo, non-hydric	49	B/D	0-6	Fine sand	SP-SM, SM, SP	A-2, A-3	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	85-93-100	4-11- 20	0-7 -14	NP
			6-21	Fine sand	SP-SM, SM, SP	A-2, A-3	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	85-93-100	4-11- 20	0-7 -14	NP
			21-27	Fine sand, sand, loamy fine sand	SP-SM, SM	A-2, A-3	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	80-90-100	8-14- 20	0-7 -14	NP
			27-43	Loamy fine sand, fine sand, sand	SP-SM, SM, SP	A-2, A-3	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	75-88-100	4-11- 20	0-7 -14	NP
			43-70	Fine sandy loam, sandy clay loam, sandy loam	SC-SM, SC, SM	A-2, A-4, A-6	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	80-90-100	20-35- 50	0-20 -40	NP-10-20
			70-80	Fine sand, loamy fine sand	SP-SM, SM, SP	A-2, A-3	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	85-93-100	4-12- 20	0-7 -14	NP
Leon, non-hydric	24	A/D	0-7	Fine sand	SP-SM, SP	A-2-4, A-3	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	80-90-100	2- 7- 12	0-7 -14	NP
			7-20	Fine sand, sand	SP-SM, SP	A-2-4, A-3	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	80-90-100	2- 7- 12	0-7 -14	NP
			20-24	Sand, fine sand, loamy sand	SP-SM, SM, SP	A-2-4, A-3	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	80-90-100	3-12- 20	0-7 -14	NP
			24-37	Sand, fine sand	SP-SM, SP	A-2-4, A-3	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	80-90-100	2- 7- 12	0-7 -14	NP
			37-80	Sand, fine sand, loamy sand	SP-SM, SM, SP	A-2-4, A-3	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	80-90-100	3-12- 20	0-7 -14	NP
Leon, hydric	10	A/D	0-7	Fine sand	SP-SM, SP	A-2-4, A-3	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	80-90-100	2- 7- 12	0-7 -14	NP
			7-20	Sand, fine sand	SP-SM, SP	A-2-4, A-3	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	80-90-100	2- 7- 12	0-7 -14	NP
			20-24	Sand, fine sand, loamy sand	SP-SM, SM, SP	A-2-4, A-3	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	80-90-100	3-12- 20	0-7 -14	NP

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Engineering Properties–Nassau County, 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*
			24-37	Sand, fine sand	SP-SM, SP	A-2-4, A-3	0- 0- 0	0- 0- 0	100-100-100	100-100-100	80-90-100	2- 7- 12	0-7 -14	NP
			37-80	Sand, fine sand, loamy sand	SP-SM, SM, SP	A-2-4, A-3	0- 0- 0	0- 0- 0	100-100-100	100-100-100	80-90-100	3-12- 20	0-7 -14	NP
Sapelo, hydric	10	B/D	0-6	Fine sand	SP-SM, SM, SP	A-2, A-3	0- 0- 0	0- 0- 0	100-100-100	100-100-100	85-93-100	4-11- 20	0-7 -14	NP
			6-21	Fine sand	SP-SM, SM, SP	A-2, A-3	0- 0- 0	0- 0- 0	100-100-100	100-100-100	85-93-100	4-11- 20	0-7 -14	NP
			21-27	Fine sand, sand, loamy fine sand	SP-SM, SM	A-2, A-3	0- 0- 0	0- 0- 0	100-100-100	100-100-100	80-90-100	8-14- 20	0-7 -14	NP
			27-43	Loamy fine sand, fine sand, sand	SP-SM, SM, SP	A-2, A-3	0- 0- 0	0- 0- 0	100-100-100	100-100-100	75-88-100	4-11- 20	0-7 -14	NP
			43-70	Fine sandy loam, sandy clay loam, sandy loam	SC-SM, SC, SM	A-2, A-4, A-6	0- 0- 0	0- 0- 0	100-100-100	100-100-100	80-90-100	20-35-50	0-20 -40	NP-10-20
			70-80	Loamy fine sand, fine sand	SP-SM, SM, SP	A-2, A-3	0- 0- 0	0- 0- 0	100-100-100	100-100-100	85-93-100	4-12- 20	0-7 -14	NP
23—Ocilla fine sand, 0 to 5 percent slopes														
Ocilla	94	B/D	0-7	Fine sand	SP-SM, SM	A-2, A-3	0- 0- 0	0- 0- 0	100-100-100	95-98-100	70-85-100	8-22- 35	0-7 -14	NP
			7-34	Fine sand	SP-SM, SM	A-2, A-3	0- 0- 0	0- 0- 0	100-100-100	95-98-100	70-85-100	8-22- 35	0-7 -14	NP
			34-80	Sandy loam, sandy clay loam, fine sandy loam	CL, ML, SC, SM	A-2, A-4, A-6	0- 0- 0	0- 0- 0	100-100-100	95-98-100	80-90-100	20-38-55	20-30 -40	NP-9 -18

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Engineering Properties–Nassau County, 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*
33—Goldhead-Meadowbrook fine sands, depressional														
Goldhead, depressional	64	B/D	0-8	Fine sand	SP-SM, SP	A-3	0- 0- 0	0- 0- 0	100-100-100	100-100-100	90-95-99	2- 4- 6	0-7 -14	NP
			8-19	Fine sand	SP-SM, SP	A-3	0- 0- 0	0- 0- 0	100-100-100	100-100-100	90-95-99	2- 4- 6	0-7 -14	NP
			19-80	Sandy loam, fine sandy loam, sandy clay loam	SC-SM, SC, SM	A-2-4, A-2-6	0- 0- 0	0- 2- 3	75-88-100	65-82-98	60-78-95	15-25-35	20-30 -40	NP-13-25
Meadowbrook, depressional	27	A/D	0-6	Fine sand	SP-SM, SP	A-3	0- 0- 0	0- 0- 0	100-100-100	95-98-100	70-83-95	2- 6- 10	0-7 -14	NP
			6-55	Sand, fine sand	SP-SM, SP	A-3	0- 0- 0	0- 0- 0	100-100-100	95-98-100	70-83-95	2- 6- 10	0-7 -14	NP
			55-80	Sandy loam, fine sandy loam, sandy clay loam	SC-SM, SC, SM	A-2-4, A-2-6	0- 0- 0	0- 0- 0	100-100-100	95-98-100	70-85-99	13-25-35	0-18 -35	NP-5 -12
51—Albany fine sand, 0 to 5 percent slopes														
Albany	86	A/D	0-2	Fine sand	SP-SM, SM	A-2	0- 0- 0	0- 0- 0	100-100-100	100-100-100	75-83-90	10-15-20	0-7 -14	NP
			2-50	Fine sand	SP-SM, SM	A-2	0- 0- 0	0- 0- 0	100-100-100	100-100-100	75-83-90	10-15-20	0-7 -14	NP
			50-80	Sandy clay loam, sandy loam, fine sandy loam	SC-SM, SC, SM	A-2, A-4, A-6	0- 0- 0	0- 0- 0	97-99-100	95-98-100	70-85-100	20-35-50	0-20 -40	NP-9 -17

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Engineering Properties–Nassau County, 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*
53—Meadowbrook fine sand														
Meadowbrook, non-hydric	55	A/D	0-8	Fine sand	SP-SM, SP	A-3	0- 0- 0	0- 0- 0	100-100 -100	95-98-100	70-83-95	2- 6- 10	0-7 -14	NP
			8-44	Sand, fine sand	SP-SM, SP	A-3	0- 0- 0	0- 0- 0	100-100 -100	95-98-100	70-83-95	2- 6- 10	0-7 -14	NP
			44-80	Sandy loam, fine sandy loam, sandy clay loam	SC-SM, SC, SM	A-2-4, A-2-6	0- 0- 0	0- 0- 0	100-100 -100	95-98-100	70-85-99	13-30-35	0-18 -35	NP-10-20
Meadowbrook, hydric	35	A/D	0-8	Fine sand	SP-SM, SP	A-3	0- 0- 0	0- 0- 0	100-100 -100	95-98-100	70-83-95	2- 6- 10	0-7 -14	NP
			8-44	Sand, fine sand	SP-SM, SP	A-3	0- 0- 0	0- 0- 0	100-100 -100	95-98-100	70-83-95	2- 6- 10	0-7 -14	NP
			44-80	Sandy loam, fine sandy loam, sandy clay loam	SC-SM, SC, SM	A-2-4, A-2-6	0- 0- 0	0- 0- 0	100-100 -100	95-98-100	70-85-99	13-30-35	0-18 -35	NP-10-20

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Engineering Properties–Nassau County, 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*
54—Sapelo fine sand														
Sapelo, non-hydric	80	B/D	0-6	Fine sand	SP-SM, SM, SP	A-2, A-3	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	85-93-100	4-12- 20	0-7 -14	NP
			6-21	Fine sand	SP-SM, SM, SP	A-2, A-3	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	85-93-100	4-12- 20	0-7 -14	NP
			21-27	Fine sand, sand, loamy fine sand	SP-SM, SM	A-2, A-3	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	80-90-100	8-14- 20	0-7 -14	NP
			27-43	Fine sand, sand, loamy fine sand	SP-SM, SM, SP	A-2, A-3	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	75-88-100	4-12- 20	0-7 -14	NP
			43-70	Fine sandy loam, sandy clay loam, sandy loam	SC-SM, SC, SM	A-2, A-4, A-6	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	80-90-100	20-35- 50	0-20 -40	NP-10-20
			70-80	Fine sand, loamy fine sand	SP-SM, SM, SP	A-2, A-3	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	85-93-100	4-12- 20	0-7 -14	NP
Sapelo, hydric	10	B/D	0-6	Fine sand	SP-SM, SM, SP	A-2, A-3	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	85-93-100	4-11- 20	0-7 -14	NP
			6-21	Fine sand	SP-SM, SM, SP	A-2, A-3	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	85-93-100	4-11- 20	0-7 -14	NP
			21-27	Fine sand, sand, loamy fine sand	SP-SM, SM	A-2, A-3	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	80-90-100	8-14- 20	0-7 -14	NP
			27-43	Loamy fine sand, fine sand, sand	SP-SM, SM, SP	A-2, A-3	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	75-88-100	4-11- 20	0-7 -14	NP
			43-70	Fine sandy loam, sandy clay loam, sandy loam	SC-SM, SC, SM	A-2, A-4, A-6	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	80-90-100	20-35- 50	0-20 -40	NP-10-20
			70-80	Fine sand, loamy fine sand	SP-SM, SM, SP	A-2, A-3	0- 0- 0	0- 0- 0	100-100 -100	100-100 -100	85-93-100	4-12- 20	0-7 -14	NP

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Engineering Properties–Nassau County, 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*
55—Meadowbrook-Goldhead-Meggett complex, 2 to 5 percent slopes														
Meadowbrook	41	A/D	0-8	Fine sand	SP-SM, SP	A-3	0- 0- 0	0- 0- 0	100-100-100	95-98-100	70-83-95	2- 6- 10	0-7 -14	NP
			8-65	Sand, fine sand	SP-SM, SP	A-3	0- 0- 0	0- 0- 0	100-100-100	95-98-100	70-83-95	2- 6- 10	0-7 -14	NP
			65-80	Sandy loam, fine sandy loam, sandy clay loam	SC-SM, SC, SM	A-2-4, A-2-6	0- 0- 0	0- 0- 0	100-100-100	95-98-100	70-85-99	13-24-35	0-18 -35	NP-10-20
Goldhead	31	B/D	0-2	Fine sand	SP-SM, SP	A-3	0- 0- 0	0- 0- 0	100-100-100	100-100-100	90-95-99	2- 4- 6	0-7 -14	NP
			2-32	Sand, fine sand	SP-SM, SP	A-3	0- 0- 0	0- 0- 0	95-98-100	90-95-100	90-95-99	2- 4- 6	0-7 -14	NP
			32-80	Sandy loam, gravelly sandy loam, sandy clay loam	SC-SM, SC, SM	A-2-4, A-2-6	—	0- 2- 3	75-88-100	65-83-100	60-78-95	15-25-35	20-30 -40	NP-13-25
Meggett	22	C/D	0-8	Fine sandy loam	ML, SM	A-2, A-4	0- 0- 0	0- 0- 0	100-100-100	95-98-100	50-68-85	15-35-55	0-7 -14	NP
			8-40	Clay, sandy clay, clay loam	CH, CL, MH	A-6, A-7	0- 0- 0	0- 0- 0	100-100-100	90-95-100	75-88-100	51-71-90	30-45 -60	11-21-30
			40-80	Sandy clay, sandy clay loam, clay	MH, ML, SC, SM	A-4, A-6, A-7	0- 0- 0	0- 0- 0	90-95-100	65-83-100	50-75-100	36-63-90	30-45 -60	7-16-25

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Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Physical Soil Properties–Duval County, Florida														
Map symbol and soil name	**Depth**	**Sand**	**Silt**	**Clay**	**Moist bulk density**	**Saturated hydraulic conductivity**	**Available water capacity**	**Linear extensibility**	**Organic matter**	**Erosion factors**			**Wind erodibility group**	**Wind erodibility index**
										Kw	**Kf**	**T**		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
51—Pelham fine sand, 0 to 2 percent slopes														
Pelham	0-6	82-87- 89	7-10- 16	2- 3- 4	1.10-1.20-1.56	42.00-92.00-141.00	0.06-0.07-0.11	0.1- 0.2- 0.3	0.8- 1.2-1.5	.20	.20	5	1	250
	6-26	82-88- 92	6- 9- 16	2- 3- 7	1.10-1.20-1.62	42.00-92.00-141.00	0.05-0.06-0.10	0.1- 0.2- 0.6	0.1- 0.2-0.4	.17	.17			
	26-42	66-71- 79	5- 8- 12	13-21- 28	1.55-1.62-1.64	1.40-9.00-42.00	0.14-0.16-0.17	0.4- 0.8- 1.1	0.0- 0.1-0.2	.24	.24			
	42-83	66-70- 75	3- 7- 11	18-23- 29	1.45-1.59-1.68	1.40-9.00-42.00	0.11-0.16-0.18	0.5- 0.8- 1.1	0.0- 0.1-0.5	.24	.24			

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Physical Soil Properties–Nassau County, Florida														
Map symbol and soil name	**Depth**	**Sand**	**Silt**	**Clay**	**Moist bulk density**	**Saturated hydraulic conductivity**	**Available water capacity**	**Linear extensibility**	**Organic matter**	**Erosion factors**			**Wind erodibility group**	**Wind erodibility index**
										Kw	**Kf**	**T**		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
9—Leon fine sand, 0 to 2 percent slopes														
Leon, non-hydric	0-8	85-94-100	0- 4- 15	0- 2- 10	1.54-1.55-1.56	42.35-92.00-141.18	0.05-0.06-0.08	0.0- 0.2- 1.0	0.5- 2.0-5.8	.02	.02	5	1	250
	8-18	85-97-100	0- 2- 15	0- 1- 10	1.55-1.58-1.61	42.35-92.00-141.18	0.05-0.06-0.08	0.0- 0.1- 0.9	0.0- 0.4-1.2	.02	.02			
	18-37	85-94-100	0- 3- 15	0- 3- 15	1.47-1.51-1.55	4.24-23.00-42.35	0.05-0.07-0.10	0.0- 0.3- 1.1	1.4- 2.3-3.0	.10	.10			
	37-45	85-95-100	0- 3- 15	0- 2- 10	1.53-1.57-1.61	14.12-78.00-141.18	0.05-0.07-0.10	0.0- 0.2- 1.0	0.0- 0.6-1.4	.02	.02			
	45-80	85-93-100	0- 4- 15	0- 3- 15	1.51-1.53-1.55	0.42-8.00-14.12	0.05-0.07-0.10	0.0- 0.3- 1.1	1.0- 1.5-2.4	.10	.10			
11—Chaires fine sand														
Chaires	0-7	-95-	0- 1- 15	1- 2- 3	1.10-1.28-1.45	42.00-92.00-141.00	0.05-0.10-0.15	0.0- 1.5- 2.9	2.0- 4.0-6.0	.05	.05	5	1	250
	7-18	-95-	0- 1- 15	1- 2- 3	1.10-1.28-1.45	42.00-92.00-141.00	0.05-0.10-0.15	0.0- 1.5- 2.9	0.0- 0.5-1.0	.05	.05			
	18-27	-95-	0- 1- 15	2- 8- 13	1.45-1.53-1.60	4.00-9.00-14.00	0.15-0.18-0.20	0.0- 1.5- 2.9	1.0- 2.0-3.0	.17	.17			
	27-31	-95-	0- 1- 15	0- 2- 3	1.45-1.50-1.55	42.00-92.00-141.00	0.02-0.04-0.05	0.0- 1.5- 2.9	0.0- 0.5-1.0	.20	.20			
	31-80	-56-	0-15- 28	20-30- 40	1.25-1.48-1.70	0.42-1.00-1.40	0.12-0.16-0.20	3.0- 4.5- 5.9	0.0- 0.3-0.5	.24	.24			

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Physical Soil Properties–Nassau County, Florida														
Map symbol and soil name	**Depth**	**Sand**	**Silt**	**Clay**	**Moist bulk density**	**Saturated hydraulic conductivity**	**Available water capacity**	**Linear extensibility**	**Organic matter**	**Erosion factors**			**Wind erodibility group**	**Wind erodibility index**
										Kw	**Kf**	**T**		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
13—Goldhead fine sand														
Goldhead, non-hydric	0-8	-95-	0- 9- 15	1- 3- 5	1.30-1.40-1.50	42.00-92.00-141.00	0.05-0.10-0.15	0.0- 1.5- 2.9	1.0- 2.5- 4.0	.05	.05	5	1	250
	8-33	-95-	0- 8- 15	1- 1- 5	1.35-1.43-1.50	42.00-92.00-141.00	0.02-0.04-0.05	0.0- 1.5- 2.9	0.1- 0.3- 0.5	.05	.05			
	33-69	-43-	14-24- 53	13-33- 34	1.45-1.55-1.65	4.00-9.00-14.00	0.10-0.15-0.20	0.0- 1.5- 2.9	0.0- 0.2- 0.3	.24	.24			
	69-80	-85-	0- 5- 30	0- 9- 10	1.30-1.45-1.60	42.00-92.00-141.00	0.05-0.07-0.08	0.0- 1.5- 2.9	0.0- 0.1- 0.2	.05	.05			
Goldhead, hydric	0-8	-95-	0- 9- 15	1- 3- 5	1.30-1.40-1.50	42.00-92.00-141.00	0.05-0.10-0.15	0.0- 1.5- 2.9	1.0- 2.5- 4.0	.05	.05	5	1	250
	8-33	-95-	0- 8- 15	1- 1- 5	1.35-1.43-1.50	42.00-92.00-141.00	0.02-0.04-0.05	0.0- 1.5- 2.9	0.1- 0.3- 0.5	.05	.05			
	33-69	-43-	14-24- 53	13-33- 34	1.45-1.55-1.65	4.00-9.00-14.00	0.10-0.15-0.20	0.0- 1.5- 2.9	0.0- 0.2- 0.3	.24	.24			
	69-80	-85-	0- 5- 30	0- 9- 10	1.30-1.45-1.60	42.00-92.00-141.00	0.05-0.07-0.08	0.0- 1.5- 2.9	0.0- 0.1- 0.2	.05	.05			
16—Ellabelle mucky fine sand, frequently flooded														
Ellabelle	0-4	-96-	0- 1- 15	0- 4- 7	1.40-1.55-1.70	14.00-28.00-42.00	0.05-0.07-0.08	0.0- 1.5- 2.9	10.0-15.0-20.0	.05	.05	5	1	250
	4-12	-95-	0- 1- 15	0- 4- 7	1.40-1.55-1.70	14.00-28.00-42.00	0.05-0.07-0.08	0.0- 1.5- 2.9	1.0- 3.0- 5.0	.02	.02			
	12-36	-95-	0- 1- 15	0- 4- 7	1.40-1.55-1.70	14.00-28.00-42.00	0.05-0.07-0.08	0.0- 1.5- 2.9	0.0- 0.3- 0.5	.02	.02			
	36-80	-51-	0- 8- 20	18-41- 45	1.30-1.40-1.50	4.00-9.00-14.00	0.12-0.15-0.18	0.0- 1.5- 2.9	0.0- 0.3- 0.5	.15	.15			

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

Physical Soil Properties–Nassau County, Florida														
Map symbol and soil name	**Depth**	**Sand**	**Silt**	**Clay**	**Moist bulk density**	**Saturated hydraulic conductivity**	**Available water capacity**	**Linear extensibility**	**Organic matter**	**Erosion factors**			**Wind erodibility group**	**Wind erodibility index**
										Kw	**Kf**	**T**		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
22—Sapelo-Leon fine sand														
Sapelo, non-hydric	0-6	-95-	0- 2- 15	2- 3- 5	1.40-1.53-1.65	42.34-91.74-141.14	0.03-0.05-0.07	0.0- 1.5- 2.9	0.2- 1.0- 3.0	.02	.02	5	1	250
	6-21	-95-	0- 2- 15	2- 3- 5	1.40-1.53-1.65	42.34-91.74-141.14	0.03-0.05-0.07	0.0- 1.5- 2.9	0.2- 0.5- 3.0	.05	.05			
	21-27	-95-	0- 2- 15	3- 3- 7	1.35-1.48-1.60	4.23-9.17-14.11	0.10-0.13-0.15	0.0- 1.5- 2.9	0.2- 0.8- 3.0	.15	.15			
	27-43	-85-	0-16- 30	3- 7- 10	1.50-1.60-1.70	42.34-91.74-141.14	0.03-0.05-0.07	0.0- 1.5- 2.9	0.2- 0.5- 3.0	.17	.17			
	43-70	-61-	0-19- 28	10-21- 30	1.55-1.65-1.75	1.41-7.76-14.11	0.12-0.15-0.17	0.0- 1.5- 2.9	0.2- 0.8- 3.0	.24	.24			
	70-80	-85-	0-16- 30	3- 7- 10	1.40-1.53-1.65	42.34-91.74-141.14	0.03-0.05-0.07	0.0- 1.5- 2.9	0.2- 0.5- 3.0	.15	.15			
Leon, non-hydric	0-7	-95-	0- 1- 15	1- 3- 5	1.30-1.38-1.45	42.00-92.00-141.00	0.05-0.10-0.15	0.0- 1.5- 2.9	0.5- 2.3- 4.0	.02	.02	5	1	250
	7-20	-95-	0- 1- 15	0- 2- 3	1.40-1.50-1.60	42.00-92.00-141.00	0.02-0.04-0.05	0.0- 1.5- 2.9	0.0- 0.3- 0.5	.02	.02			
	20-24	-95-	0- 1- 15	2- 5- 8	1.25-1.45-1.65	4.00-23.00-42.00	0.15-0.23-0.30	0.0- 1.5- 2.9	2.0- 3.0- 4.0	.10	.10			
	24-37	-95-	0- 1- 15	1- 3- 4	1.50-1.58-1.65	14.00-78.00-141.00	0.05-0.08-0.10	0.0- 1.5- 2.9	0.0- 0.3- 0.5	.02	.02			
	37-80	-95-	0- 1- 15	2- 5- 8	1.25-1.45-1.65	4.00-23.00-42.00	0.15-0.23-0.30	0.0- 1.5- 2.9	2.0- 3.0- 4.0	.10	.10			
Leon, hydric	0-7	-95-	0- 1- 15	1- 3- 5	1.30-1.38-1.45	42.00-92.00-141.00	0.05-0.10-0.15	0.0- 1.5- 2.9	0.5- 2.3- 4.0	.02	.02	5	1	250
	7-20	-95-	0- 1- 15	0- 2- 3	1.40-1.50-1.60	42.00-92.00-141.00	0.02-0.04-0.05	0.0- 1.5- 2.9	0.0- 0.3- 0.5	.02	.02			
	20-24	-95-	0- 1- 15	2- 5- 8	1.25-1.45-1.65	4.00-23.00-42.00	0.15-0.23-0.30	0.0- 1.5- 2.9	2.0- 3.0- 4.0	.10	.10			

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Physical Soil Properties–Nassau County, Florida														
Map symbol and soil name	**Depth**	**Sand**	**Silt**	**Clay**	**Moist bulk density**	**Saturated hydraulic conductivity**	**Available water capacity**	**Linear extensibility**	**Organic matter**	**Erosion factors**			**Wind erodibility group**	**Wind erodibility index**
										Kw	**Kf**	**T**		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
	24-37	-95-	0- 1- 15	1- 3- 4	1.50-1.58-1.65	14.00-78.00-141.00	0.05-0.08-0.10	0.0- 1.5- 2.9	0.0- 0.3-0.5	.02	.02			
	37-80	-95-	0- 1- 15	2- 5- 8	1.25-1.45-1.65	4.00-23.00-42.00	0.15-0.23-0.30	0.0- 1.5- 2.9	2.0- 3.0-4.0	.10	.10			
Sapelo, hydric	0-6	-95-	0- 2- 15	2- 3- 5	1.40-1.53-1.65	42.34-91.74-141.14	0.03-0.05-0.07	0.0- 1.5- 2.9	0.2- 1.0-3.0	.02	.02	5	1	250
	6-21	-95-	0- 2- 15	2- 3- 5	1.40-1.53-1.65	42.34-91.74-141.14	0.03-0.05-0.07	0.0- 1.5- 2.9	0.2- 0.5-3.0	.05	.05			
	21-27	-95-	0- 2- 15	3- 3- 7	1.35-1.48-1.60	4.23-9.17-14.11	0.10-0.13-0.15	0.0- 1.5- 2.9	0.2- 0.8-3.0	.15	.15			
	27-43	-85-	0-16- 30	3- 7- 10	1.50-1.60-1.70	42.34-91.74-141.14	0.03-0.05-0.07	0.0- 1.5- 2.9	0.2- 0.5-3.0	.17	.17			
	43-70	-61-	0-19- 28	10-21- 30	1.55-1.65-1.75	1.41-7.76-14.11	0.12-0.15-0.17	0.0- 1.5- 2.9	0.2- 0.8-3.0	.24	.24			
	70-80	-85-	0-16- 30	3- 7- 10	1.40-1.53-1.65	42.34-91.74-141.14	0.03-0.05-0.07	0.0- 1.5- 2.9	0.2- 0.5-3.0	.15	.15			
23—Ocilla fine sand, 0 to 5 percent slopes														
Ocilla	0-7	-95-	0- 4- 15	3- 4- 10	1.45-1.55-1.65	14.00-78.00-141.00	0.05-0.06-0.07	0.0- 1.5- 2.9	1.0- 1.5-2.0	.05	.05	5	1	250
	7-34	-95-	0- 2- 15	3- 3- 10	1.45-1.55-1.65	14.00-78.00-141.00	0.05-0.06-0.07	0.0- 1.5- 2.9	0.1- 0.3-0.5	.02	.02			
	34-80	-73-	0- 5- 28	15-23- 35	1.55-1.63-1.70	4.00-9.00-14.00	0.09-0.11-0.12	0.0- 1.5- 2.9	0.0- 0.2-0.3	.17	.17			

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Physical Soil Properties–Nassau County, Florida														
Map symbol and soil name	**Depth**	**Sand**	**Silt**	**Clay**	**Moist bulk density**	**Saturated hydraulic conductivity**	**Available water capacity**	**Linear extensibility**	**Organic matter**	**Erosion factors**			**Wind erodibility group**	**Wind erodibility index**
										Kw	**Kf**	**T**		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
33—Goldhead-Meadowbrook fine sands, depressional														
Goldhead, depressional	0-8	-95-	0- 9- 15	1- 3- 5	1.30-1.40-1.50	42.00-92.00-141.00	0.05-0.10-0.15	0.0- 1.5- 2.9	2.0- 2.4-4.0	.10	.10	5	1	250
	8-19	-95-	0- 8- 15	1- 1- 5	1.30-1.40-1.50	42.00-92.00-141.00	0.05-0.10-0.15	0.0- 1.5- 2.9	0.1- 0.3-0.5	.10	.10			
	19-80	-64-	0- 8- 28	13-27- 34	1.45-1.55-1.65	1.40-8.00-14.00	0.10-0.15-0.20	0.0- 1.5- 2.9	0.0- 0.2-0.3	.17	.17			
Meadowbrook, depressional	0-6	-95-	0- 1- 15	0- 2- 3	1.15-1.28-1.40	42.00-92.00-141.00	0.05-0.08-0.10	0.0- 1.5- 2.9	2.0- 3.0-4.0	.02	.02	5	1	250
	6-55	-95-	0- 1- 15	1- 4- 6	1.35-1.50-1.65	42.00-92.00-141.00	0.03-0.06-0.08	0.0- 1.5- 2.9	0.0- 0.3-0.5	.02	.02			
	55-80	-60-	0-18- 28	11-22- 32	1.50-1.58-1.65	1.40-8.00-14.00	0.10-0.13-0.15	0.0- 1.5- 2.9	0.0- 0.3-0.5	.24	.24			
51—Albany fine sand, 0 to 5 percent slopes														
Albany	0-2	-95-	0- 6- 15	1- 2- 10	1.40-1.48-1.55	42.34-91.74-141.14	0.02-0.03-0.04	0.0- 1.5- 2.9	1.0- 1.5-2.0	.05	.05	5	1	250
	2-50	-95-	0- 6- 15	1- 2- 10	1.40-1.48-1.55	42.34-91.74-141.14	0.02-0.03-0.04	0.0- 1.5- 2.9	0.0- 0.3-2.0	.02	.02			
	50-80	-67-	0-14- 50	13-20- 35	1.55-1.60-1.65	1.40-8.00-14.00	0.10-0.13-0.16	0.0- 1.5- 2.9	0.0- 0.3-0.5	.24	.24			

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Physical Soil Properties–Nassau County, Florida														
Map symbol and soil name	**Depth**	**Sand**	**Silt**	**Clay**	**Moist bulk density**	**Saturated hydraulic conductivity**	**Available water capacity**	**Linear extensibility**	**Organic matter**	**Erosion factors**			**Wind erodibility group**	**Wind erodibility index**
										Kw	**Kf**	**T**		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
53—Meadowbrook fine sand														
Meadowbrook, non-hydric	0-8	-95-	0- 7- 15	0- 3- 3	1.35-1.50-1.65	42.00-92.00-141.00	0.05-0.08-0.10	0.0- 1.5- 2.9	1.0- 2.5- 3.0	.05	.05	5	1	250
	8-44	-95-	0- 8- 15	1- 2- 6	1.35-1.50-1.65	42.00-92.00-141.00	0.03-0.06-0.08	0.0- 1.5- 2.9	0.3- 0.5- 0.8	.05	.05			
	44-80	-70-	0- 9- 28	11-21- 22	1.50-1.65-1.80	1.40-8.00-14.00	0.10-0.13-0.15	0.0- 1.5- 2.9	0.1- 0.2- 0.3	.20	.20			
Meadowbrook, hydric	0-8	-95-	0- 7- 15	0- 3- 3	1.35-1.50-1.65	42.00-92.00-141.00	0.05-0.08-0.10	0.0- 1.5- 2.9	1.0- 2.5- 3.0	.05	.05	5	1	250
	8-44	-95-	0- 8- 15	1- 2- 6	1.35-1.50-1.65	42.00-92.00-141.00	0.03-0.06-0.08	0.0- 1.5- 2.9	0.3- 0.5- 0.8	.05	.05			
	44-80	-70-	0- 9- 28	11-21- 22	1.50-1.65-1.80	1.40-8.00-14.00	0.10-0.13-0.15	0.0- 1.5- 2.9	0.1- 0.2- 0.3	.20	.20			

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Physical Soil Properties–Nassau County, Florida														
Map symbol and soil name	**Depth**	**Sand**	**Silt**	**Clay**	**Moist bulk density**	**Saturated hydraulic conductivity**	**Available water capacity**	**Linear extensibility**	**Organic matter**	**Erosion factors**			**Wind erodibility group**	**Wind erodibility index**
										Kw	**Kf**	**T**		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
54—Sapelo fine sand														
Sapelo, non-hydric	0-6	-95-	0- 2- 15	2- 3- 5	1.40-1.53-1.65	42.34-91.74-141.14	0.03-0.05-0.07	0.0- 1.5- 2.9	0.2- 1.0-3.0	.02	.02	5	1	250
	6-21	-95-	0- 2- 15	2- 3- 5	1.40-1.53-1.65	42.34-91.74-141.14	0.03-0.05-0.07	0.0- 1.5- 2.9	0.2- 1.0-1.5	.05	.05			
	21-27	-95-	0- 2- 15	3- 3- 7	1.35-1.48-1.60	4.23-9.17-14.11	0.10-0.13-0.15	0.0- 1.5- 2.9	0.2- 0.8-3.0	.15	.15			
	27-43	-85-	0-16- 30	3- 7- 10	1.50-1.60-1.70	42.34-91.74-141.14	0.03-0.05-0.07	0.0- 1.5- 2.9	0.2- 0.5-1.0	.17	.17			
	43-70	-75-	0- 8- 50	10-17- 30	1.55-1.65-1.75	1.41-7.76-14.11	0.12-0.15-0.17	0.0- 1.5- 2.9	0.2- 1.0-1.5	.20	.20			
	70-80	-85-	0-16- 30	3- 7- 10	1.40-1.53-1.65	42.34-91.74-141.14	0.03-0.05-0.07	0.0- 1.5- 2.9	0.0- 0.3-0.5	.15	.15			
Sapelo, hydric	0-6	-95-	0- 2- 15	2- 3- 5	1.40-1.53-1.65	42.34-91.74-141.14	0.03-0.05-0.07	0.0- 1.5- 2.9	0.2- 1.0-3.0	.02	.02	5	1	250
	6-21	-95-	0- 2- 15	2- 3- 5	1.40-1.53-1.65	42.34-91.74-141.14	0.03-0.05-0.07	0.0- 1.5- 2.9	0.2- 0.5-3.0	.05	.05			
	21-27	-95-	0- 2- 15	3- 3- 7	1.35-1.48-1.60	4.23-9.17-14.11	0.10-0.13-0.15	0.0- 1.5- 2.9	0.2- 0.8-3.0	.15	.15			
	27-43	-85-	0-16- 30	3- 7- 10	1.50-1.60-1.70	42.34-91.74-141.14	0.03-0.05-0.07	0.0- 1.5- 2.9	0.2- 0.5-3.0	.17	.17			
	43-70	-61-	0-19- 28	10-21- 30	1.55-1.65-1.75	1.41-7.76-14.11	0.12-0.15-0.17	0.0- 1.5- 2.9	0.2- 0.8-3.0	.24	.24			
	70-80	-85-	0-16- 30	3- 7- 10	1.40-1.53-1.65	42.34-91.74-141.14	0.03-0.05-0.07	0.0- 1.5- 2.9	0.2- 0.5-3.0	.15	.15			

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Physical Soil Properties–Nassau County, Florida														
Map symbol and soil name	**Depth**	**Sand**	**Silt**	**Clay**	**Moist bulk density**	**Saturated hydraulic conductivity**	**Available water capacity**	**Linear extensibility**	**Organic matter**	**Erosion factors**			**Wind erodibility group**	**Wind erodibility index**
										Kw	**Kf**	**T**		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
55—Meadowbrook-Goldhead-Meggett complex, 2 to 5 percent slopes														
Meadowbrook	0-8	-95-	0- 3- 15	0- 2- 3	1.35-1.50-1.65	42.00-92.00-141.00	0.05-0.08-0.10	0.0- 1.5- 2.9	1.0- 2.0- 3.0	.02	.02	5	1	250
	8-65	-95-	0- 3- 15	1- 2- 6	1.35-1.50-1.65	42.00-92.00-141.00	0.03-0.06-0.08	0.0- 1.5- 2.9	0.1- 0.3- 0.5	.02	.02			
	65-80	-75-	0- 9- 50	11-17- 22	1.50-1.65-1.80	1.40-8.00-14.00	0.10-0.13-0.15	0.0- 1.5- 2.9	0.0- 0.1- 0.3	.24	.24			
Goldhead	0-2	-95-	0- 6- 15	1- 3- 5	1.30-1.40-1.50	42.00-92.00-141.00	0.05-0.10-0.15	0.0- 1.5- 2.9	1.0- 2.5- 4.0	.05	.05	5	1	250
	2-32	-95-	0- 8- 15	1- 2- 5	1.35-1.43-1.50	42.00-92.00-141.00	0.02-0.04-0.05	0.0- 1.5- 2.9	0.1- 0.3- 0.5	.05	.05			
	32-80	-68-	0- 9- 28	13-24- 34	1.45-1.55-1.65	4.00-9.00-14.00	0.10-0.15-0.20	0.0- 1.5- 2.9	0.0- 0.1- 0.3	.20	.20			
Meggett	0-8	-71-	0-17- 50	5-13- 20	1.20-1.30-1.40	14.00-28.00-42.00	0.10-0.13-0.15	0.0- 1.5- 2.9	2.0- 5.0- 8.0	.20	.20	5	3	86
	8-40	-48-	0- 7- 20	30-45- 60	1.45-1.53-1.60	0.42-1.00-1.40	0.13-0.16-0.18	6.0- 7.5- 8.9	0.3- 0.5- 1.0	.17	.17			
	40-80	-52-	0-14- 28	25-35- 50	1.40-1.50-1.60	0.01-2.00-4.00	0.12-0.15-0.18	3.0- 4.5- 5.9	0.1- 0.3- 0.5	.20	.20			

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Soil Features–Duval County, Florida									
Map symbol and soil name	**Restrictive Layer**				**Subsidence**		**Potential for frost action**	**Risk of corrosion**	
	Kind	**Depth to top**	**Thickness**	**Hardness**	**Initial**	**Total**		**Uncoated steel**	**Concrete**
		Low-RV-High	*Range*		*Low-High*	*Low-High*			
		In	*In*		*In*	*In*			
51—Pelham fine sand, 0 to 2 percent slopes									
Pelham		—	—		0	0	None	High	High

Soil Features–Nassau County, Florida									
Map symbol and soil name	**Restrictive Layer**				**Subsidence**		**Potential for frost action**	**Risk of corrosion**	
	Kind	**Depth to top**	**Thickness**	**Hardness**	**Initial**	**Total**		**Uncoated steel**	**Concrete**
		Low-RV-High	*Range*		*Low-High*	*Low-High*			
		In	*In*		*In*	*In*			
9—Leon fine sand, 0 to 2 percent slopes									
Leon, non-hydric		—	—		0	0	None	High	High
11—Chaires fine sand									
Chaires		—	—		—	—	None	High	High
13—Goldhead fine sand									
Goldhead, non-hydric		—	—		—	—	None	High	High
Goldhead, hydric		—	—		—	—		High	High

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Soil Features–Nassau County, Florida									
Map symbol and soil name	**Restrictive Layer**				**Subsidence**		**Potential for frost action**	**Risk of corrosion**	
	Kind	**Depth to top**	**Thickness**	**Hardness**	**Initial**	**Total**		**Uncoated steel**	**Concrete**
		Low-RV-High	*Range*		*Low-High*	*Low-High*			
16—Ellabelle mucky fine sand, frequently flooded									
Ellabelle		—	—		—	—	None	High	Moderate
22—Sapelo-Leon fine sand									
Sapelo, non-hydric		—	—		—	—	None	High	High
Leon, non-hydric		—	—		—	—	None	High	High
Leon, hydric		—	—		—	—	None	High	High
Sapelo, hydric		—	—		—	—	None	High	High
23—Ocilla fine sand, 0 to 5 percent slopes									
Ocilla		—	—		—	—	None	High	High
33—Goldhead-Meadowbrook fine sands, depressional									
Goldhead, depressional		—	—		—	—	None	High	Low
Meadowbrook, depressional		—	—		—	—	None	High	Moderate
51—Albany fine sand, 0 to 5 percent slopes									
Albany		—	—		—	—	None	High	High

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Soil Features–Nassau County, Florida									
Map symbol and soil name	**Restrictive Layer**				**Subsidence**		**Potential for frost action**	**Risk of corrosion**	
	Kind	**Depth to top**	**Thickness**	**Hardness**	**Initial**	**Total**		**Uncoated steel**	**Concrete**
		Low-RV-High	*Range*		*Low-High*	*Low-High*			
53—Meadowbrook fine sand									
Meadowbrook, non-hydric		—	—		—	—	None	High	Moderate
Meadowbrook, hydric		—	—		—	—	None	High	Moderate
54—Sapelo fine sand									
Sapelo, non-hydric		—	—		—	—	None	High	High
Sapelo, hydric		—	—		—	—	None	High	High
55—Meadowbrook-Goldhead-Meggett complex, 2 to 5 percent slopes									
Meadowbrook		—	—		—	—	None	High	Moderate
Goldhead		—	—		—	—	None	High	Low
Meggett		—	—		—	—	None	High	Moderate

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Map unit symbol and soil name	Hydrologic group	Surface runoff	Most likely months	Water table			Ponding			Flooding	
				Upper limit	Lower limit	Kind	Surface depth	Duration	Frequency	Duration	Frequency
				Ft	*Ft*		*Ft*				
51—Pelham fine sand, 0 to 2 percent slopes											
Pelham	B/D	High	Jan-Oct	0.5-1.0	6.0	Apparent	—	—	None	—	None
			Nov-Dec	—	—	—	—	—	None	—	None

Map unit symbol and soil name	Hydrologic group	Surface runoff	Most likely months	Water table			Ponding			Flooding	
				Upper limit	Lower limit	Kind	Surface depth	Duration	Frequency	Duration	Frequency
				Ft	*Ft*		*Ft*				
9—Leon fine sand, 0 to 2 percent slopes											
Leon, non-hydric	A/D		Jan-May	0.5-1.5	6.0	Apparent	—	—	None	—	None
			Jun	2.0-4.0	6.0	Apparent	—	—	None	—	None
			Jul-Sep	—	—	—	—	—	None	—	None
			Oct	4.0-5.0	6.0	Apparent	—	—	None	—	None
			Nov-Dec	0.5-1.5	6.0	Apparent	—	—	None	—	None
11—Chaires fine sand											
Chaires	C/D	High	Jan-Apr	—	—	—	—	—	None	—	None
			May-Aug	0.5-1.5	6.0	Apparent	—	—	None	—	None
			Sep-Dec	—	—	—	—	—	None	—	None
13—Goldhead fine sand											
Goldhead, non-hydric	B/D	Very low	Jan-Feb	—	—	—	—	—	None	—	None
			Mar-Aug	0.5-1.5	6.0	Apparent	—	—	None	—	None
			Sep-Dec	—	—	—	—	—	None	—	None
Goldhead, hydric	B/D	Low	Jan-Feb	—	—	—	—	—	None	—	None
			Mar-Aug	0.0-0.5	6.0	Apparent	—	—	None	—	None
			Sep-Dec	—	—	—	—	—	None	—	None

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Map unit symbol and soil name	Hydrologic group	Surface runoff	Most likely months	Water table			Ponding			Flooding	
				Upper limit	Lower limit	Kind	Surface depth	Duration	Frequency	Duration	Frequency
				Ft	*Ft*		*Ft*				
16—Ellabelle mucky fine sand, frequently flooded											
Ellabelle	B/D	Very high	Jan-Sep	0.0-0.5	6.0	Apparent	0.0-1.0	Long (7 to 30 days)	Frequent	Long (7 to 30 days)	Frequent
			Oct-Dec	—	—	—	—	—	None	—	
22—Sapelo-Leon fine sand											
Sapelo, non-hydric	B/D	High	Jan-Apr	—	—	—	—	—	None	—	None
			May-Aug	0.5-1.5	6.0	Apparent	—	—	None	—	None
			Sep-Dec	—	—	—	—	—	None	—	None
Leon, non-hydric	A/D	High	Jan-Apr	—	—	—	—	—	None	—	None
			May-Aug	0.5-1.5	6.0	Apparent	—	—	None	—	None
			Sep-Dec	—	—	—	—	—	None	—	None
Leon, hydric	A/D		Jan-Apr	—	—	—	—	—	None	—	None
			May-Aug	0.0-0.5	6.0	Apparent	—	—	None	—	None
			Sep-Dec	—	—	—	—	—	None	—	None
Sapelo, hydric	B/D		Jan-Apr	—	—	—	—	—	None	—	None
			May-Aug	0.0-0.5	6.0	Apparent	—	—	None	—	None
			Sep-Dec	—	—	—	—	—	None	—	None
23—Ocilla fine sand, 0 to 5 percent slopes											
Ocilla	B/D	Very low	Jan-Feb	—	—	—	—	—	None	—	None
			Mar-Aug	1.0-2.5	6.0	Apparent	—	—	None	—	None
			Sep-Dec	—	—	—	—	—	None	—	None

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Map unit symbol and soil name	Hydrologic group	Surface runoff	Most likely months	Water table			Ponding			Flooding	
				Upper limit	Lower limit	Kind	Surface depth	Duration	Frequency	Duration	Frequency
				Ft	*Ft*		*Ft*				
33—Goldhead-Meadowbrook fine sands, depressional											
Goldhead, depressional	B/D	Negligible	Jan-Sep	0.0	6.0	Apparent	0.0-2.0	Very long (more than 30 days)	Frequent	—	None
			Oct-Dec	—	—	—	—	—	None	—	None
Meadowbrook, depressional	A/D	Negligible	Jan-Sep	0.0	6.0	Apparent	0.0-2.0	Very long (more than 30 days)	Frequent	—	None
			Oct-Dec	—	—	—	—	—	None	—	None
51—Albany fine sand, 0 to 5 percent slopes											
Albany	A/D	Very low	Jan-Apr	—	—	—	—	—	None	—	None
			May-Aug	1.0-2.5	6.0	Apparent	—	—	None	—	None
			Sep-Dec	—	—	—	—	—	None	—	None
53—Meadowbrook fine sand											
Meadowbrook, non-hydric	A/D	Very low	Jan-Feb	—	—	—	—	—	None	—	None
			Mar-Aug	0.5-1.5	6.0	Apparent	—	—	None	—	None
			Sep-Dec	—	—	—	—	—	None	—	None
Meadowbrook, hydric	A/D	Low	Jan-Feb	—	—	—	—	—	None	—	None
			Mar-Aug	0.0-0.5	6.0	Apparent	—	—	None	—	None
			Oct-Dec	—	—	—	—	—	None	—	None

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Map unit symbol and soil name	Hydrologic group	Surface runoff	Most likely months	Water table			Ponding			Flooding	
				Upper limit	Lower limit	Kind	Surface depth	Duration	Frequency	Duration	Frequency
				Ft	*Ft*		*Ft*				
54—Sapelo fine sand											
Sapelo, non-hydric	B/D	High	Jan-Apr	—	—	—	—	—	None	—	None
			May-Aug	0.5-1.5	6.0	Apparent	—	—	None	—	None
			Sep-Dec	—	—	—	—	—	None	—	None
Sapelo, hydric	B/D		Jan-Apr	—	—	—	—	—	None	—	None
			May-Aug	0.0-0.5	6.0	Apparent	—	—	None	—	None
			Sep-Dec	—	—	—	—	—	None	—	None
55—Meadowbrook-Goldhead-Meggett complex, 2 to 5 percent slopes											
Meadowbrook	A/D	Negligible	Jan-Feb	—	—	—	—	—	None	—	None
			Mar-Aug	0.0-0.5	6.0	Apparent	—	—	None	—	None
			Sep-Dec	—	—	—	—	—	None	—	None
Goldhead	B/D	Very low	Jan-Feb	—	—	—	—	—	None	—	None
			Mar-Aug	0.0-0.5	6.0	Apparent	—	—	None	—	None
			Sep-Dec	—	—	—	—	—	None	—	None
Meggett	C/D	Very high	Jan-Feb	—	—	—	—	—	None	—	None
			Mar-Aug	0.0-0.5	6.0	Apparent	—	—	None	—	None
			Sep-Dec	—	—	—	—	—	None	—	None

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APPENDIX F

LBR TEST DATA

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STRATUM 1

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LIMEROCK BEARING RATIO

MOISTURE-DENSITY-LBR RELATIONSHIP (FM 1-T180 & FM5-515)

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PROJECT: 23-54-23-01 **CLIENT:** EGS, Inc.

SAMPLE NO.: PK-5 **ANEVAY FILE NO:** **DATE:** 8/19/2023

MATERIAL DESCRIPTION: Dark Gray & Gray Silty Fine SAND with trace of Organics

COMPACTION FM1-T180

Mold No.	8	6	4	7	12	
Moisture Added (%)	7.75	9	10.25	11.5	12.75	
Wet Mass & Mold (lbs.)	16.3390	16.5666	16.7102	16.9550	16.9014	
Mold Mass (lbs.)	7.6728	7.7284	7.7928	7.8090	7.6830	
Wet Mass (lbs.)	8.6662	8.8382	8.9174	9.1460	9.2184	
Mold Calibration (cu.ft.)	0.0750	0.0750	0.0750	0.0750	0.0750	
Moist Density (lbs./cu.ft.)	115.5	117.8	118.9	121.9	122.9	
Ther. Dry Density (lbs./cu.ft.)	107.2	108.1	107.8	109.4	109.0	
Dry Density (lbs./cu.ft.)	106.6	106.7	106.6	108.4	107.6	

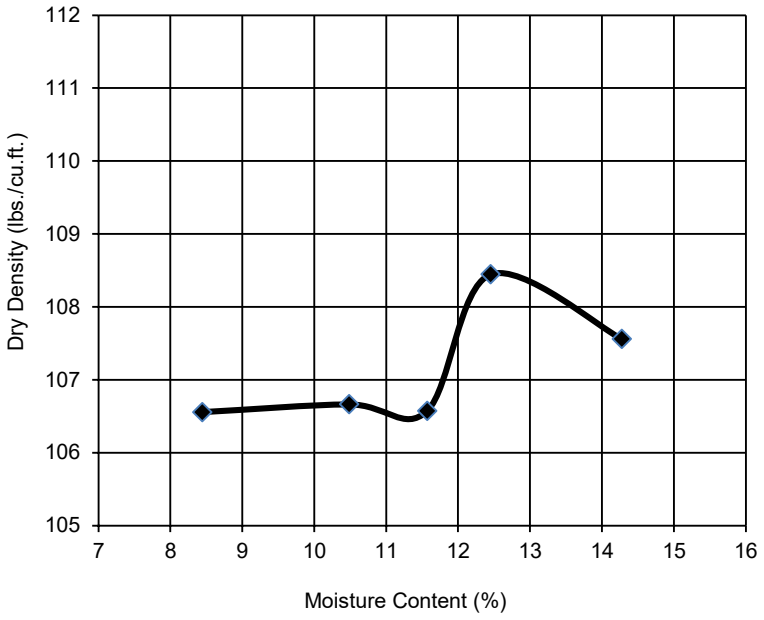
Sieve Size:	Wt. Ret. (lbs.)	% Ret.
2-in.	--	--
1.5-in.	--	--
1-in.	--	--
3/4-in.	0.65	0.7%
#4	3.65	3.9%
Pan	90.40	95.5%
Total	94.70	

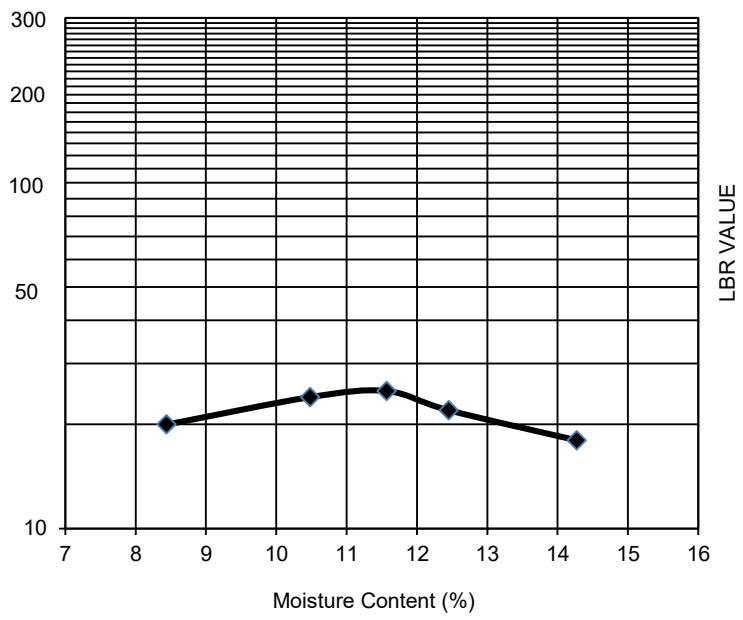
MOISTURE DETERMINATION:

Can Number	1A	5A	6A	10A	7A	
Can Mass (g.)	50.3	49.9	50.2	50.2	50.3	
Wet Soil & Can (g.)	435.8	424.1	382	439.5	393.8	
Dry Soil & Can (g.)	405.8	388.6	347.6	396.4	350.9	
Water Mass (g.)	30	35.5	34.4	43.1	42.9	
Dry Soil Mass (g.)	355.5	338.7	297.4	346.2	300.6	
Moisture Content (%)	8.4	10.5	11.6	12.4	14.3	

SUMMARY OF TEST RESULTS:

LBR Value	20	24	25	22	18	
Dry Density (lbs./cu.ft.)	106.6	106.7	106.6	108.4	107.6	
Moisture Content (%)	8.4	10.5	11.6	12.4	14.3	





MAXIMUM DRY DENSITY (lbs/cu.ft.): 108.4
OPTIMUM MOISTURE CONTENT (%): 12.4
MAXIMUM TESTED LBR: 25

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LIMEROCK BEARING RATIO

MOISTURE-DENSITY-LBR RELATIONSHIP (FM 1-T180 & FM5-515)

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PROJECT: 23-54-23-01 **CLIENT:** EGS, Inc.

SAMPLE NO.: PK-27 **ANEVAY FILE NO:** **DATE:** 8/19/2023

MATERIAL DESCRIPTION: Dark Gray Silty Clayey Fine SAND with trace of Organics and Gravel

COMPACTION FM1-T180

Mold No.	11	2	3	5		
Moisture Added (%)	7.75	9	10.25	11.5		
Wet Mass & Mold (lbs.)	16.0096	16.1820	16.4840	16.5268		
Mold Mass (lbs.)	7.8236	7.8140	7.7944	7.8022		
Wet Mass (lbs.)	8.1860	8.3680	8.6896	8.7246		
Mold Calibration (cu.ft.)	0.0750	0.0750	0.0750	0.0750		
Moist Density (lbs./cu.ft.)	109.1	111.6	115.9	116.3		
Ther. Dry Density (lbs./cu.ft.)	101.3	102.4	105.1	104.3		
Dry Density (lbs./cu.ft.)	99.4	100.4	103.5	102.4		

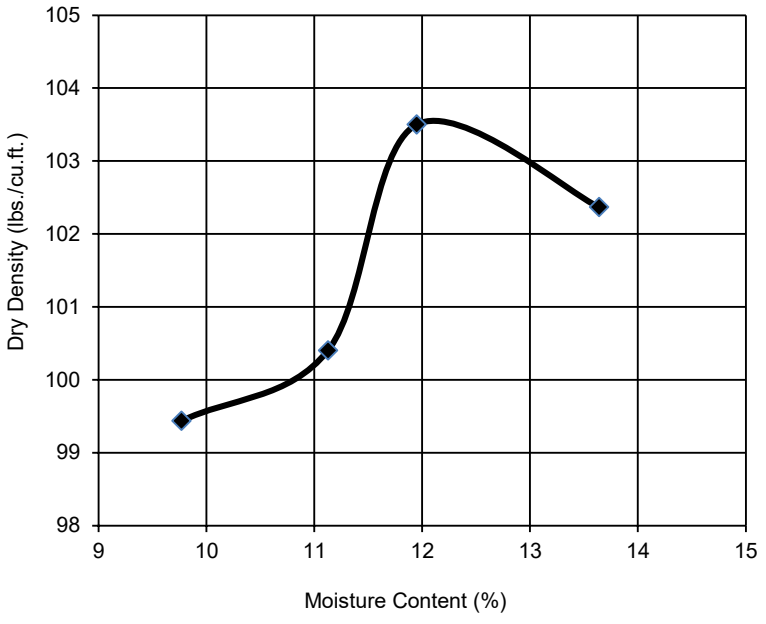
Sieve Size:	Wt. Ret. (lbs.)	% Ret.
2-in.	--	--
1.5-in.	--	--
1-in.	--	--
3/4-in.	3.6	4.4%
#4	6.05	7.5%
Pan	71.45	88.1%
Total	81.10	

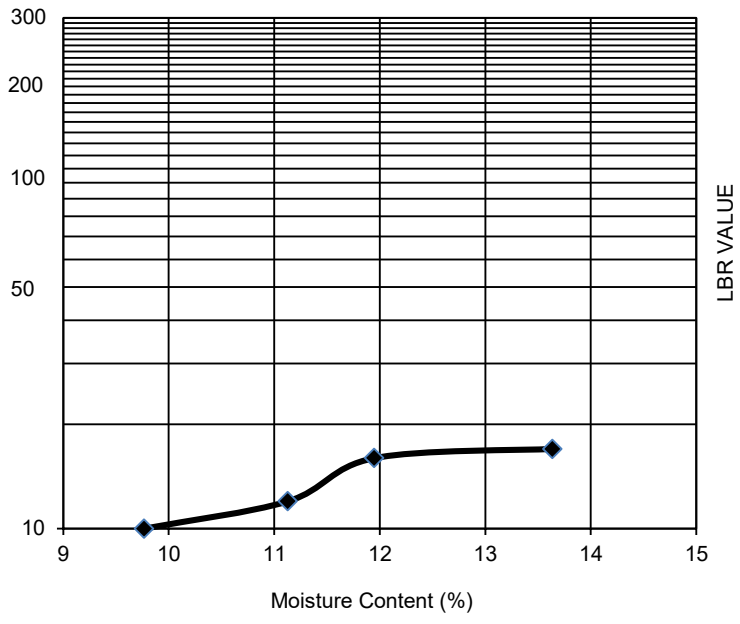
MOISTURE DETERMINATION:

Can Number	2A	8A	12A	3A		
Can Mass (g.)	50.1	50.7	50.3	50.3		
Wet Soil & Can (g.)	270.4	220.5	232.1	277.8		
Dry Soil & Can (g.)	250.8	203.5	212.7	250.5		
Water Mass (g.)	19.6	17	19.4	27.3		
Dry Soil Mass (g.)	200.7	152.8	162.4	200.2		
Moisture Content (%)	9.8	11.1	11.9	13.6		

SUMMARY OF TEST RESULTS:

LBR Value	10	12	16	17		
Dry Density (lbs./cu.ft.)	99.4	100.4	103.5	102.4		
Moisture Content (%)	9.8	11.1	11.9	13.6		





MAXIMUM DRY DENSITY (lbs/cu.ft.): 103.5
OPTIMUM MOISTURE CONTENT (%): 11.9
MAXIMUM TESTED LBR: 17

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MOISTURE-DENSITY-LBR RELATIONSHIP (FM 1-T180 & FM5-515)

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PROJECT: 23-54-23-01 **CLIENT:** EGS, Inc.

SAMPLE NO.: PK-38 **ANEVAY FILE NO:** **DATE:** 8/17/2023

MATERIAL DESCRIPTION: Gray Silty Clayey Fine SAND with trace of Organics

COMPACTION FM1-T180

Mold No.	5	2	3	1	10	9
Moisture Added (%)	10.25	11.5	12.75	14	15.25	16.5
Wet Mass & Mold (lbs.)	15.9798	16.1120	16.1770	16.3560	16.5072	16.4244
Mold Mass (lbs.)	7.8046	7.8172	7.8048	7.8032	7.8096	7.7758
Wet Mass (lbs.)	8.1752	8.2948	8.3722	8.5528	8.6976	8.6486
Mold Calibration (cu.ft.)	0.0750	0.0750	0.0750	0.0750	0.0750	0.0750
Moist Density (lbs./cu.ft.)	109.0	110.6	111.6	114.0	116.0	115.3
Ther. Dry Density (lbs./cu.ft.)	98.9	99.2	99.0	100.0	100.6	99.0
Dry Density (lbs./cu.ft.)	98.6	99.2	99.1	99.8	100.4	98.6

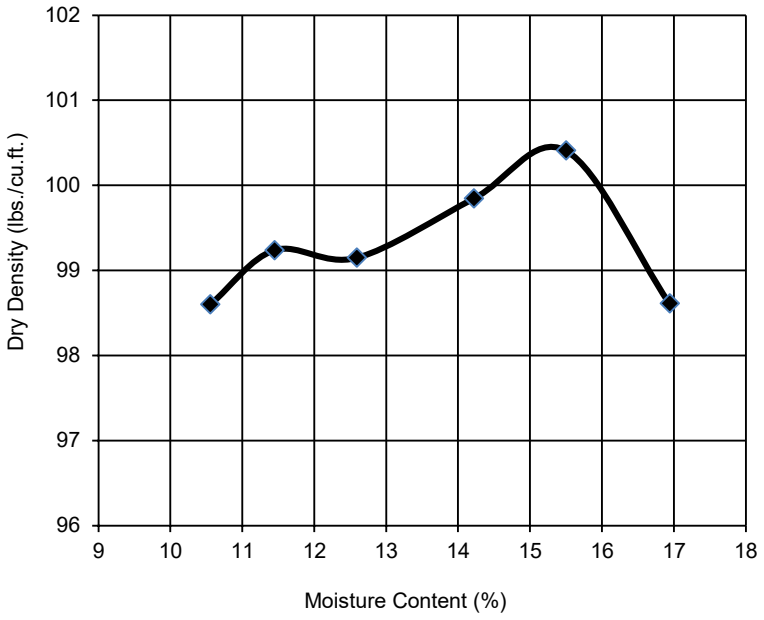
Sieve Size:	Wt. Ret. (lbs.)	% Ret.
2-in.	--	--
1.5-in.	--	--
1-in.	--	--
3/4-in.	0.55	0.6%
#4	2.45	2.5%
Pan	94.10	96.9%
Total	97.10	

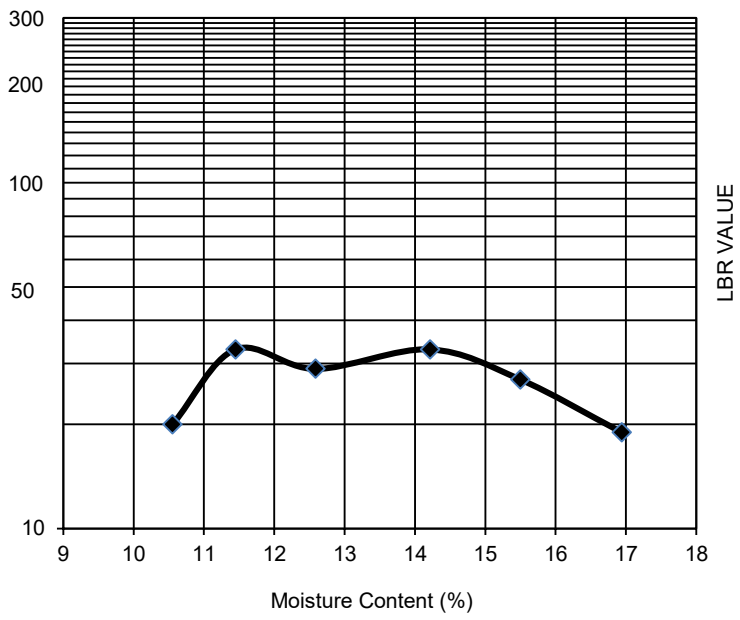
MOISTURE DETERMINATION:

Can Number	4A	8A	3A	7A	2A	8A
Can Mass (g.)	50.4	51	50.3	50.2	50.2	50.6
Wet Soil & Can (g.)	451.7	434.6	466.2	235	255.9	237
Dry Soil & Can (g.)	413.4	395.2	419.7	212	228.3	210
Water Mass (g.)	38.3	39.4	46.5	23	27.6	27
Dry Soil Mass (g.)	363	344.2	369.4	161.8	178.1	159.4
Moisture Content (%)	10.6	11.4	12.6	14.2	15.5	16.9

SUMMARY OF TEST RESULTS:

LBR Value	20	33	29	33	27	19
Dry Density (lbs./cu.ft.)	98.6	99.2	99.1	99.8	100.4	98.6
Moisture Content (%)	10.6	11.4	12.6	14.2	15.5	16.9





MAXIMUM DRY DENSITY (lbs/cu.ft.):	**100.4**
OPTIMUM MOISTURE CONTENT (%):	**15.5**
MAXIMUM TESTED LBR:	**33**

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PROJECT: 23-54-23-01 **CLIENT:** EGS, Inc.

SAMPLE NO.: PK-49 **ANEVAY FILE NO:** **DATE:** 8/14/2023

MATERIAL DESCRIPTION: Gray Silty Clayey Fine SAND with trace of Organics

COMPACTION FM1-T180

Mold No.	11	12	5	2	6	1
Moisture Added (%)	9	10.25	11.5	12.75	14	15.25
Wet Mass & Mold (lbs.)	15.9794	16.1422	16.2778	16.3320	16.4746	16.5656
Mold Mass (lbs.)	7.8050	7.8102	7.8016	7.8100	7.7320	7.8028
Wet Mass (lbs.)	8.1744	8.3320	8.4762	8.5220	8.7426	8.7628
Mold Calibration (cu.ft.)	0.0750	0.0750	0.0750	0.0750	0.0750	0.0750
Moist Density (lbs./cu.ft.)	109.0	111.1	113.0	113.6	116.6	116.8
Ther. Dry Density (lbs./cu.ft.)	100.0	100.8	101.4	100.8	102.3	101.4
Dry Density (lbs./cu.ft.)	98.5	99.9	100.8	99.7	101.5	100.3

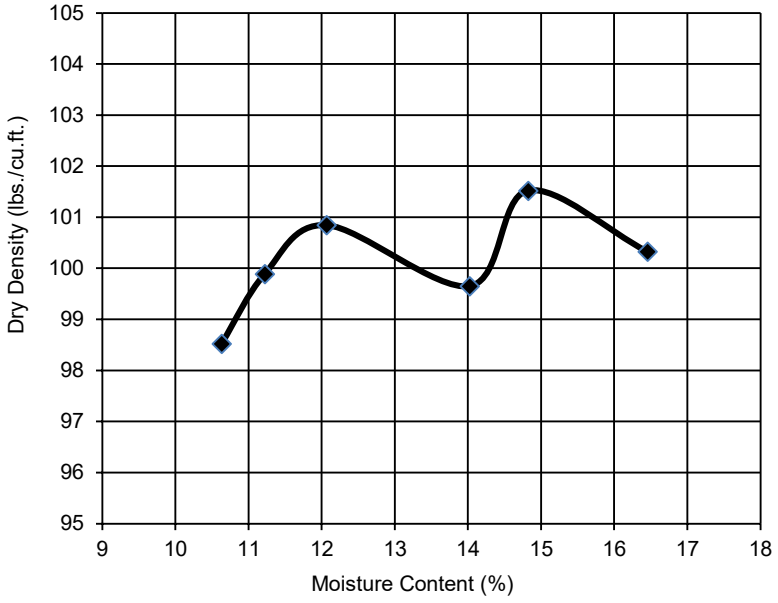
Sieve Size:	Wt. Ret. (lbs.)	% Ret.
2-in.	--	--
1.5-in.	--	--
1-in.	--	--
3/4-in.	0.55	0.6%
#4	2.45	2.5%
Pan	94.10	96.9%
Total	97.10	

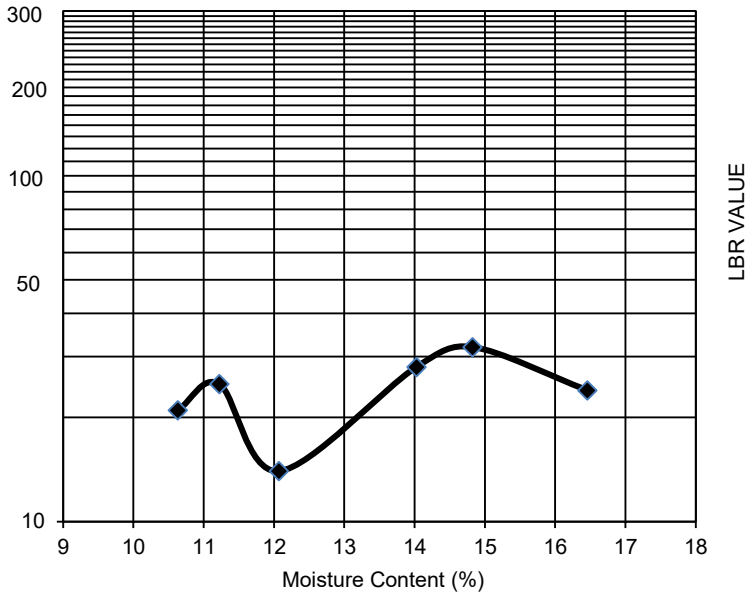
MOISTURE DETERMINATION:

Can Number	5A	1A	8A	2A	11A	9A
Can Mass (g.)	49.9	50.4	50.6	50	49.9	50.7
Wet Soil & Can (g.)	479.8	429.1	392.4	488.3	500	483.1
Dry Soil & Can (g.)	438.5	390.9	355.6	434.4	441.9	422
Water Mass (g.)	41.3	38.2	36.8	53.9	58.1	61.1
Dry Soil Mass (g.)	388.6	340.5	305	384.4	392	371.3
Moisture Content (%)	10.6	11.2	12.1	14.0	14.8	16.5

SUMMARY OF TEST RESULTS:

LBR Value	21	25	14	28	32	24
Dry Density (lbs./cu.ft.)	98.5	99.9	100.8	99.7	101.5	100.3
Moisture Content (%)	10.6	11.2	12.1	14.0	14.8	16.5





MAXIMUM DRY DENSITY (lbs/cu.ft.): 101.5
OPTIMUM MOISTURE CONTENT (%): 14.8
MAXIMUM TESTED LBR: 32

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LIMEROCK BEARING RATIO

MOISTURE-DENSITY-LBR RELATIONSHIP (FM 1-T180 & FM5-515)

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PROJECT: 23-54-23-01 **CLIENT:** EGS, Inc.

SAMPLE NO.: PK-62 **ANEVAY FILE NO:** **DATE:** 8/14/2023

MATERIAL DESCRIPTION: Dark Gray & Gray Slightly Silty to Silty Fine SAND with trace of Organics

COMPACTION FM1-T180

Mold No.	10	7	8	4	9	
Moisture Added (%)	7.75	9	10.25	11.5	12.25	
Wet Mass & Mold (lbs.)	16.6144	16.6016	16.9660	16.9510	16.9308	
Mold Mass (lbs.)	7.8106	7.6864	7.6768	7.7930	7.7764	
Wet Mass (lbs.)	8.8038	8.9152	9.2892	9.1580	9.1544	
Mold Calibration (cu.ft.)	0.0750	0.0750	0.0750	0.0750	0.0750	
Moist Density (lbs./cu.ft.)	117.4	118.9	123.9	122.1	122.1	
Ther. Dry Density (lbs./cu.ft.)	108.9	109.1	112.3	109.5	108.7	
Dry Density (lbs./cu.ft.)	108.8	108.8	111.9	109.2	107.8	

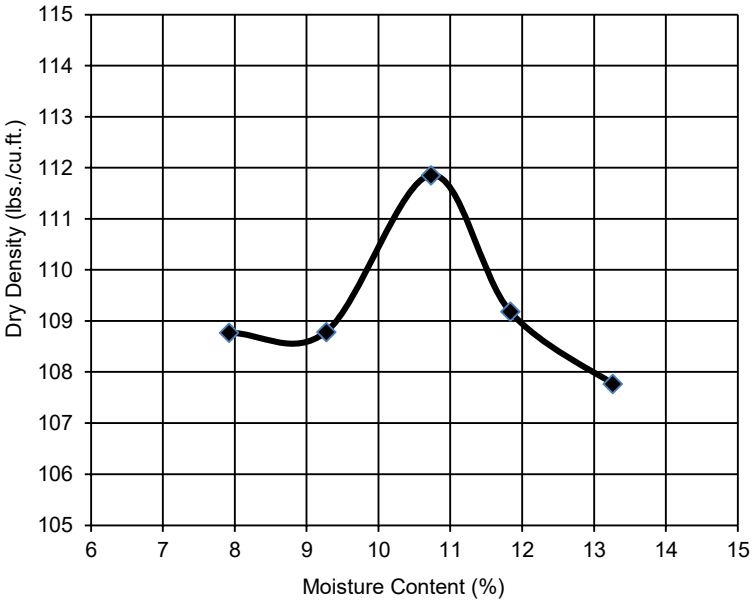
Sieve Size:	Wt. Ret. (lbs.)	% Ret.
2-in.	--	--
1.5-in.	--	--
1-in.	--	--
3/4-in.	0.5	0.4%
#4	4.45	3.7%
Pan	116.35	95.9%
Total	121.30	

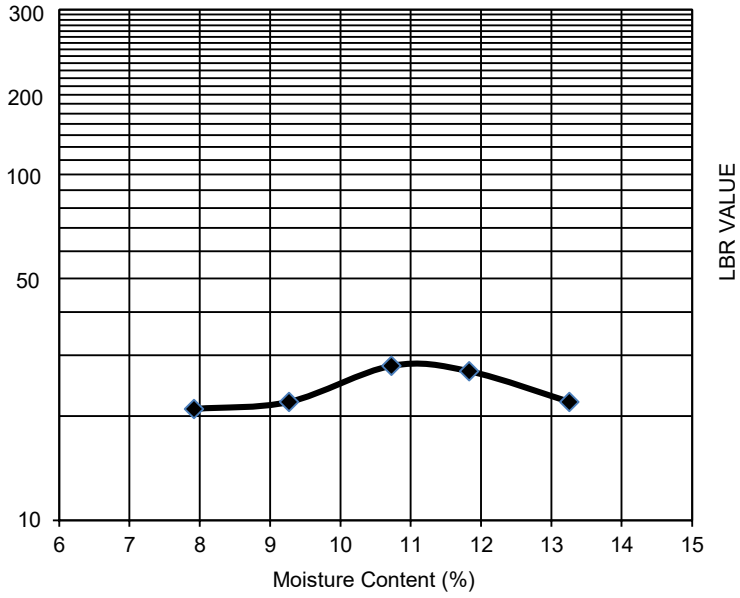
MOISTURE DETERMINATION:

Can Number	3A	7A	6A	10A	4A	
Can Mass (g.)	50.3	50.2	50.2	50.1	50.5	
Wet Soil & Can (g.)	444.2	519.4	505.4	484	558.8	
Dry Soil & Can (g.)	415.3	479.6	461.3	438.1	499.3	
Water Mass (g.)	28.9	39.8	44.1	45.9	59.5	
Dry Soil Mass (g.)	365	429.4	411.1	388	448.8	
Moisture Content (%)	7.9	9.3	10.7	11.8	13.3	

SUMMARY OF TEST RESULTS:

LBR Value	21	22	28	27	22	
Dry Density (lbs./cu.ft.)	108.8	108.8	111.9	109.2	107.8	
Moisture Content (%)	7.9	9.3	10.7	11.8	13.3	





MAXIMUM DRY DENSITY (lbs/cu.ft.): **111.9**
OPTIMUM MOISTURE CONTENT (%): **10.7**
MAXIMUM TESTED LBR: **28**

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STRATUM 2

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LIMEROCK BEARING RATIO

MOISTURE-DENSITY-LBR RELATIONSHIP (FM 1-T180 & FM5-515)

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PROJECT: 23-54-23-01 **CLIENT:** EGS, Inc.

SAMPLE NO.: PK-16 **ANEVAY FILE NO:** **DATE:** 8/17/2023

MATERIAL DESCRIPTION: Gray & Brown Clayey Fine SAND with trace of Organics

COMPACTION FM1-T180

Mold No.	4	6	8	7		
Moisture Added (%)	6.5	7.75	9	10.25		
Wet Mass & Mold (lbs.)	16.7676	16.8940	17.2508	17.2140		
Mold Mass (lbs.)	7.7928	7.7280	7.6768	7.6828		
Wet Mass (lbs.)	8.9748	9.1660	9.5740	9.5312		
Mold Calibration (cu.ft.)	0.0750	0.0750	0.0750	0.0750		
Moist Density (lbs./cu.ft.)	119.7	122.2	127.7	127.1		
Ther. Dry Density (lbs./cu.ft.)	112.4	113.4	117.1	115.3		
Dry Density (lbs./cu.ft.)	112.0	113.1	116.6	114.4		

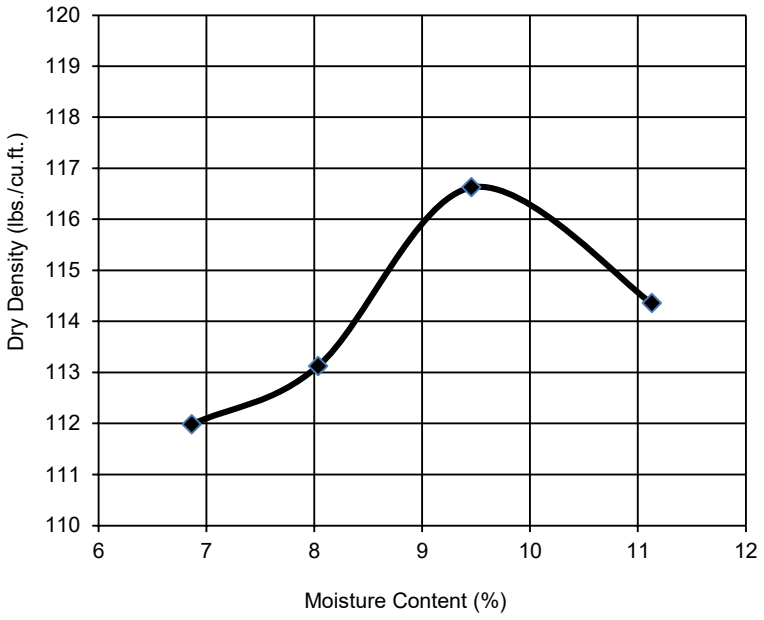
Sieve Size:	Wt. Ret. (lbs.)	% Ret.
2-in.	--	--
1.5-in.	--	--
1-in.	--	--
3/4-in.	3.5	4.3%
#4	16.55	20.1%
Pan	62.30	75.7%
Total	82.35	

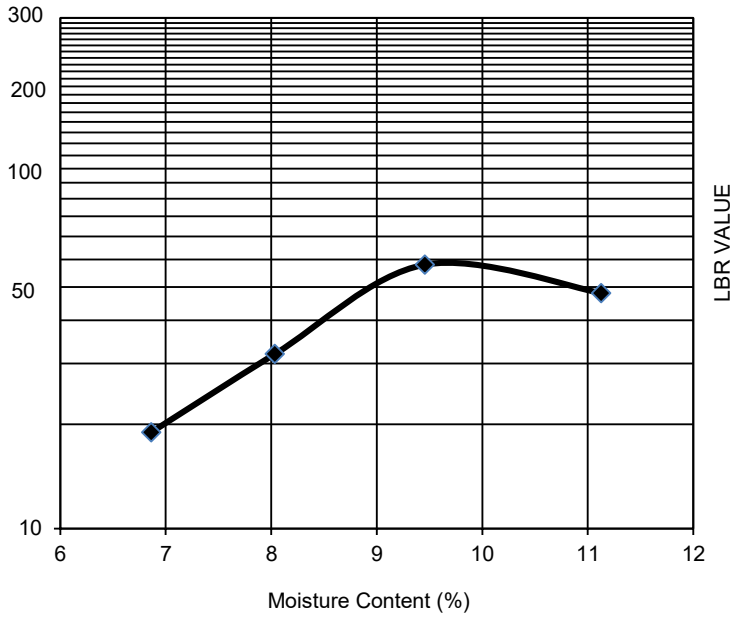
MOISTURE DETERMINATION:

Can Number	1A	2A	9A	5A		
Can Mass (g.)	50.3	50.1	50.8	49.9		
Wet Soil & Can (g.)	413.2	437.4	444.4	434.4		
Dry Soil & Can (g.)	389.9	408.6	410.4	395.9		
Water Mass (g.)	23.3	28.8	34	38.5		
Dry Soil Mass (g.)	339.6	358.5	359.6	346		
Moisture Content (%)	6.9	8.0	9.5	11.1		

SUMMARY OF TEST RESULTS:

LBR Value	19	32	58	48		
Dry Density (lbs./cu.ft.)	112.0	113.1	116.6	114.4		
Moisture Content (%)	6.9	8.0	9.5	11.1		





MAXIMUM DRY DENSITY (lbs/cu.ft.):	**116.6**
OPTIMUM MOISTURE CONTENT (%):	**9.5**
MAXIMUM TESTED LBR:	**58**

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REPORT OF
GEOTECHNICAL INVESTIGATION

CR 121 CULVERT EXTENSIONS
FROM DUVAL COUNTY LINE TO CR 119
NASSAU COUNTY, FLORIDA

Prepared For:

KIMLEY-HORN AND ASSOCIATES, INC.
12740 GRAN BAY PARKWAY WEST
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Prepared By:

ENVIRONMENTAL AND GEOTECHNICAL SPECIALISTS, INC.
3772 KORI ROAD
JACKSONVILLE, FLORIDA 32257
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September 2024
13-54-23-02

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

September 6, 2024

EGS File Number: 13-54-23-02

Kimley-Horn and Associates, Inc.
12740 Gran Bay Parkway West
Suite 2350
Jacksonville, Florida 32256

ATTN: Earl Wills, P.E.
Project Manager

SUBJECT: **Report of Geotechnical Investigation**
CR 121 Culvert Extensions
From Duval County Line to CR 119
Nassau County, Florida

Environmental and Geotechnical Specialists, Inc. (**EGS**) has completed the Geotechnical Investigation, as authorized by Kimley-Horn and Associates, Inc. (**KHA**), associated with proposed extension of 3 existing concrete box culvert structures located along a segment of CR 121 extending from the Duval County line to CR 119 in Nassau County, Florida. Based on preliminary discussions, **EGS** understands the proposed culvert modifications consist of full width replacement and extension of 2 of the existing culvert structures, and 1 extension onto an existing culvert structure to remain.

This Report includes a summary of the subsurface investigation conducted for this project, evaluation of field and laboratory test data, soil conditions encountered, groundwater measurements, geotechnical recommendations, and construction considerations.

SCOPE OF SERVICES

The Scope of Services authorized for this project consisted of the following:

- Performance of 6 Standard Penetration Test (**SPT**) soil borings to an approximate depth of 40 feet below grade to evaluate the subsurface conditions below the proposed culvert modification locations;
- Performance of 6 hand auger soil borings to approximate depths ranging from 2.5 to 4.5 feet below grade to evaluate the scourable soils that exist in the channel bottom;
- Performance of routine laboratory testing of representative soil samples to classify the subsoils;
- Development of geotechnical parameters, design recommendations, and construction considerations; and,
- Preparation of this Report.

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SITE LOCATION AND CONDITIONS

In general, the project site consists of a segment of the existing CR 121 roadway, beginning at the Duval County line and extending approximately 7.5 miles north to the CR 119 intersection. A Project Location Map is provided as **Figure 1**.

Prior to beginning the field investigation, **EGS** personnel performed a preliminary "desktop" review of the available site condition data. To facilitate the preliminary review, a copy of the United States Geological Survey (**USGS**) Topographic Map contours were superimposed on a recent aerial image of the project area which has been included as **Figures 2A** and **2B**. As depicted in the **Figures**, the project site is relatively flat with elevations ranging from approximately EL 60 feet to EL 75 feet within the study area. Based on a review of nearby water bodies, groundwater was anticipated to likely exist at or above existing grade within the footprints of the proposed culvert extension areas.

After completion of the preliminary "desktop" review, **EGS** personnel traveled to the project site to observe the existing field conditions. The existing segment of CR 121 at each culvert crossing consists of a two-lane asphalt paved roadway which receives relatively low to moderate levels of vehicular traffic, with a significant percentage of traffic consisting of large trucks based on visual observation. The area surrounding the project corridor was primarily being utilized for silviculture (i.e., tree farms) with some intermittent residential developments present. Photographs of the existing site conditions at the culvert locations have been provided as **Figures 3A** through **3F**.

PROPOSED STRUCTURES

The culverts associated with this study have been identified in this Report as follows:

CULVERT	APPROX. STATION	BRIDGE NO.	CROSSING DESCRIPTION
1	54+00	740044	Deep Creek Branch
2	90+50	N/A	Unnamed Crossing
3	407+00	N/A	St. Mary's River Tributary

Based on preliminary plans provided by **KHA**, **EGS** understands that while all 3 culverts are proposed to be extended away from the existing roadway shoulders by approximately 10 feet, the existing culvert structures at Deep Creek Branch (Culverts 1) and the St. Mary's River Tributary (Culvert 3) are planned to be replaced in full.

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SUBSURFACE INVESTIGATION

The subsurface investigation outlined in this Report was conducted in July 2024. Isabella Caporini, E.I., served as the Geotechnical Staff Engineer and Matthew Landschoot, P.E., served as the Senior Geotechnical Engineer of Record. Additional project oversight and quality assurance / quality control (**QA/QC**) was provided by Chandra Samakur, P.E., Senior Geotechnical Engineer.

EGS installed 6 **SPT** soil borings to a depth of 40 feet below the existing ground surface, and 6 hand auger soil borings to depths ranging from 2.5 to 4.5 feet below the existing ground surface to evaluate conditions below the proposed culvert extension areas. Soil borings were performed using both manual hand auger techniques and a truck mounted rotary drill rig equipped with an automatic hammer. To avoid impact to mismarked utilities, hand auger sampling coupled with Static Cone Penetrometer (**CPI**) tests was performed continuously to a depth of 5.5 feet below grade. Below 5.5 feet, **SPT**s were conducted continuously to a depth of 12 feet below grade, and then on 2.5-foot intervals thereafter until reaching the boring termination depth.

To facilitate uniformity of the subsurface data, the **CPI** "**C**" values have been converted to equivalent **SPT** "**N**" values using the correlation "**N**" = "**C**"/4. The soil boring location data is provided in **TABLE 1**, and depicted on the Soil Boring Location Map included as **Figures 4A** through **4C**.

Soil samples were collected and classified in the field by **EGS** personnel, and then sealed and transported to **EGS**' Geotechnical Laboratory for testing. The laboratory testing included water contents, grain-size distributions, Atterberg Limits, organic contents, and corrosion series. The soil borings were classified with respect to the Unified Soil Classification System (**USCS**).

GENERAL SUBSURFACE CONDITIONS

The results of the field and laboratory testing are summarized on the *Report of Culvert Borings* plan sheets provided in **APPENDIX A**. Detailed Soil Boring Logs and Soil Classification Data sheets provided in **APPENDICES B** and **C**, respectively.

The generalized subsurface conditions encountered during this investigation, as depicted in **APPENDIX A**, are as follows:

Soil Boring BCK-1

- EL 68.4 to 48.4 feet – Loose to Medium Dense Silty Fine Sand (**SM**)
- EL 48.4 to 45.9 feet – Stiff Plastic Sandy Clay (**CL**)
- EL 45.9 to 28.4 feet – Loose Silty Fine to Clayey Fine Sand (**SM** to **SC**)

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Soil Boring BCK-2

- EL 68.6 to 28.6 feet – Loose to Medium Dense Silty Fine Sand (**SM**)

Soil Boring BCK-3

- EL 73.9 to 58.9 feet – Loose to Medium Dense Silty Fine to Clayey Fine Sand (**SM** to **SC**)
- EL 58.9 to 51.4 feet – Soft to Firm Highly Plastic Sandy Clay (**CH**)
- EL 51.4 to 33.9 feet – Loose Silty Fine Sand (**SM**)

Soil Boring BCK-4

- EL 72.9 to 57.9 feet – Loose Silty Fine to Clayey Fine Sand (**SM** to **SC**)
- EL 57.9 to 37.9 feet – Soft to Firm Sandy Clay to Highly Plastic Sandy Clay (**CL** to **CH**)
- EL 37.9 to 32.9 feet – Loose Silty Fine Sand (**SM**)

Soil Boring BCK-5

- EL 57.7 to 37.7 feet – Very Loose to Loose Silty Fine Sand to Clayey Sand (**SM** to **SC**)
- EL 37.7 to 17.7 feet – Loose to Medium Dense Silty Fine Sand to Highly Plastic Clayey Sand (**SM** to **SC**)

Soil Boring BCK-6

- EL 60.0 to 35.0 feet – Very Loose to Loose Silty Fine Sand to Plastic Clayey Sand (**SM** to **SC**)
- EL 35.0 to 30.0 feet – Medium Dense to Dense Silty Fine Sand (**SM**)
- EL 30.0 to 20.0 feet – Soft to Firm Highly Plastic Sandy Silt (**MH**)

Based on hand auger Soil Borings **BCP-1** through **BCP-6**, the subsurface conditions encountered within the submerged areas immediately adjacent to the existing culvert headwalls primarily consisted of Fine to Silty Fine Sand (**SP-SM** to **SM**). However, it should be noted that a lens of surficial Muck (**OL**) underlain by Organic Silty Fine Sand (**SM**) and Plastic Clayey Sand (**SC**) was encountered at Soil Boring **BCP-2** to the boring termination depth. Additionally, a surficial lens of Fine Sand with Organics (**SP-SM**) was encountered at Soil Boring **BCP-5**.

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Groundwater – To facilitate use of groundwater data, **TABLE 1** includes a summary of the measured groundwater levels encountered during this investigation. Additionally, the measured groundwater is shown graphically on the *Report of Culvert Borings* provided in **APPENDIX A**.

As indicated in the **TABLE** and **APPENDIX**, groundwater was encountered at various depths ranging from at the ground surface to 7.0 feet below existing grade (EL 52.2 to 68.3 feet). The design high water level for the bridge culverts shall be determined from the hydraulic analysis to be conducted by others.

Environmental Classification – As part of this investigation, **EGS** performed corrosion series testing on representative soil and water samples collected during the subsurface investigation. These environmental tests included soil resistivity, pH, sulfate content, and chloride content. The environmental testing performed during this study has been conducted in accordance with the **FDOT** *Florida Method* (**FM**) and has been classified based on the **FDOT** *Structures Design Guidelines Table 1.3.2-1*. The results of the environmental testing have been summarized in **TABLE 2** and on the *Report of Culvert Borings* plan sheets provided in **APPENDIX A**.

Scour Considerations – To assist with the evaluation of the scour of the existing soils adjacent to the culvert locations, **EGS** conducted grain-size distribution determinations on representative soil samples. Copies of the grain-size distribution curves have been provided in **APPENDIX D**, and pertinent grain-size parameters needed for a scour analysis are summarized on **TABLE 3**.

GEOTECHNICAL RECOMMENDATIONS

Geotechnical Design Parameters – Based on the soil boring results and understanding that the bearing surface will be prepared as outlined below, **EGS** recommends the following parameters be used in the design of the proposed culvert replacements and extension:

Culvert 1 (Approx. Sta. 54+00):

Total Unit Weight (**γ**)	115	pcf
Effective Unit Weight (γ_{eff})	52.6	pcf
Friction Angle (**ϕ**)	35	deg
Cohesion (**c**)	0	psf
Rankine Effective Earth Pressure Coefficient (K_a)	0.27	
Rankine Passive Earth Pressure Coefficient (K_p)	3.68	
Allowable Bearing Pressure (q_a)	2,100	psf
Modulus of Subgrade Reaction (K_s)	132,000	pcf

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Total Settlement (**y**)	1.6	inches
Differential Settlement (Δ**y**)	0.3	inches
Effective Length along Box Culvert (**L**)	12	feet

Culvert 2 (Approx. Sta. 90+50):

Total Unit Weight (**γ**)	115	pcf
Effective Unit Weight (γ_{eff})	52.6	pcf
Friction Angle (**ϕ**)	35	deg
Cohesion (**c**)	0	psf
Rankine Effective Earth Pressure Coefficient (K_a)	0.27	
Rankine Passive Earth Pressure Coefficient (K_p)	3.69	
Allowable Bearing Pressure (q_a)	1,800	psf
Modulus of Subgrade Reaction (K_s)	120,000	pcf
Total Settlement (**y**)	1.7	inches
Differential Settlement (Δ**y**)	0.4	inches
Effective Length along Box Culvert (**L**)	15	feet

Culvert 3 (Approx. Sta. 407+00):

Total Unit Weight (**γ**)	110	pcf
Effective Unit Weight (γ_{eff})	47.6	pcf
Friction Angle (**ϕ**)	35	deg
Cohesion (**c**)	0	psf
Rankine Effective Earth Pressure Coefficient (K_a)	0.27	
Rankine Passive Earth Pressure Coefficient (K_p)	3.69	
Allowable Bearing Pressure (q_a)	2,100	psf
Modulus of Subgrade Reaction (K_s)	84,000	pcf
Total Settlement (**y**)	1.2	inches
Differential Settlement (Δ**y**)	0.3	inches
Effective Length along Box Culvert (**L**)	11	feet

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It should be noted that the above parameters are based on 24 inches of subsoil excavation below the proposed bearing surface and replacement with a suitable compacted coarse aggregate (No. 57 Stone). Sample calculations used to develop the geotechnical design parameters are provided in ***APPENDIX E****.*

Preparation of Bearing Surface – Based on the subsurface conditions encountered for this study, **EGS** recommends the following for the preparation of the bearing surface:

- **Concrete Box Culvert Structure – EGS recommends** the following to prepare the subgrade for the culvert replacements:
    - Overexcavate the existing subsoils to a minimum depth of 24 inches below the bottom of the proposed box culvert bearing surface, and place a separation geotextile (Type D-4 filter fabric) as defined by the **FDOT** *Standard Specifications.* Filter fabric should be uniformly placed over the excavated surface and free of wrinkles prior to fill placement. Splicing of the geotextile, if needed, shall be in accordance with manufacturer recommendations;
    - Place and compact 4, 6-inch lifts (compacted thickness) of coarse aggregate (No. 57 Stone) onto the filter fabric to achieve a firm and unyielding bearing surface as determined by visual inspection by a qualified on-site materials testing representative; and,
    - Fully wrap the filter fabric around the coarse aggregate bedding layer to prevent the inflow of fines.

It should also be noted that the proposed excavations will likely extend below the existing water table. Therefore, dewatering in accordance with **FDOT** *Standard Specifications*, *Section 455-28* should be anticipated to prepare a stable bearing surface during construction. Additionally, temporary shoring (i.e. sheet piles, trench box, etc.) will likely be required to facilitate the excavation. Perform temporary shoring in accordance with **FDOT** *Standard Specifications*.

EGS recommends that reuse of any materials excavated as backfill shall be in accordance with **FDOT** Standard Plans Index 120-001. Removal of any unsuitable materials encountered shall be in accordance with **FDOT** Standard Plans Index 120-002 when appropriate. Placement and compaction of backfill materials should be performed in accordance with **FDOT** Standard Specifications for Road and Bridge Construction.

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Additional Settlement Considerations – EGS performed the settlement analysis at the three culvert locations using the computer modeling program **FoSSA 2.0**. **Figures E1** through **E3** illustrating the settlement analysis results, along with computer "outputs" of the settlement analyses are provided in **APPENDIX E**.

*As previously noted, **EGS** estimates that approximately **1.2 to 1.7 inches** of total settlement, and approximately **0.3 to 0.4 inches** of differential settlement may occur due to the additional load of the culvert extensions and fill required. If the estimated settlement magnitude exceeds the allowable structural tolerances, **EGS** recommends to consider either design of a cast-in-place link slab system, as depicted on **FDOT** Standard Plans Index 400-291, or completion of an initial preload program prior to construction of the permanent culvert structures. **EGS** believes that a temporary preload program of the "native" subsoils beyond the existing culvert headwalls could be an economical option to pre-settle and stabilize compressible subsoils prior to construction of the permanent box culvert structures. The temporary preload program would require installation of temporary drainage pipes and temporary embankment fill to provide a comparable overburden load to that of the proposed permanent structure and fill. The preload program would need to continue for a period of approximately 30 days and may be monitored by installation of a settlement plate at each culvert location to confirm when settlement has fully stabilized. Once the settlement has stabilized, the temporary fill and temporary pipes would be removed, and the permanent culvert structure and fill can be installed. **EGS** would be pleased to provide additional assistance with development of special Plan details and a Technical Special Provision (**TSP**) if preloading is considered necessary to reduce settlements to a tolerable level for the permanent culvert structures.*

Temporary Critical Wall – EGS understands that the proposed culvert replacements are likely to be constructed near traffic flow along CR 121; therefore, it should be noted that temporary Critical Sheet Pile Walls, as defined by **FDOT** standard, will likely be needed to facilitate excavation and dewatering. **EGS** has provided soil parameters for analysis and design of a temporary steel sheet pile wall in **TABLE 4**.

Construction Plans – EGS recommends the following be included in the Construction Plans:

- Geotechnical Plan Sheets:
    - *Report of Culvert Borings* included in **APPENDIX A** of this Report.
- Recommended Plan Notes:
    - *"Dewatering in accordance with **FDOT** Standard Specifications for Road and Bridge Construction shall be anticipated to prepare a stable surface condition for construction of the proposed culvert structures. Cost of such dewatering shall be incidental to the pay item for the construction of the proposed culvert structures."*

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- *"All costs associated with temporary non-critical sheet piling not shown in the Plans, if needed to perform excavations and facilitate dewatering, shall be incidental to the pay item for the construction of the proposed culvert structures."*

CLOSURE

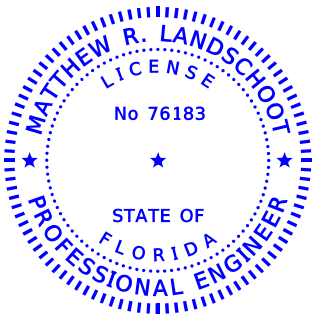
The data and results presented in this Geotechnical Investigation Report are intended for use by **Kimley-Horn and Associates, Inc.**, for evaluation of 3 proposed culvert extensions located along a segment of CR 121 in Nassau County, Florida as identified herein. This data may not be used without the expressed written consent of **Kimley-Horn and Associates, Inc.** This Report is not intended for any other use and will likely not be applicable. This Report shall not be reproduced, except in full, without the written approval of **Environmental and Geotechnical Specialists, Inc.** The data and recommendations presented in this Report are based on the soil borings made at the specific locations and depths noted. Subsurface conditions at other locations may vary significantly from those presented herein. Should data become available which is different from the data presented herein, **Environmental and Geotechnical Specialists, Inc.** requests the opportunity to review the data and make any modifications to the design recommendations that may be appropriate.

If you have any questions concerning the information contained in this Report, please do not hesitate to call at (904) 329-7180.

Very truly yours,
Environmental and Geotechnical Specialists, Inc.

Matthew R Landschoot 2024.11.26 15:28:15 -05'00'

Matthew Landschoot, P.E.
Geotechnical Project Engineer
Florida PE No. 76183



Environmental and Geotechnical Specialists, Inc.
3772 Kori Drive
Jacksonville, FL 32257

This Report has been digitally signed and sealed by Matthew Landschoot on the date adjacent to the seal.

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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TABLES

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TABLE 1
SOIL BORING LOCATION AND GROUNDWATER DATA
CR 121 CULVERT EXTENSIONS
FROM DUVAL COUNTY LINE TO CR 119
NASSAU COUNTY, FLORIDA

BORING NUMBER	BORING DEPTH [1]	GROUND SURFACE ELEVATION [2]	MEASURED GROUNDWATER		STATION [3]	OFFSET FROM STATION [3]	GLOBAL POSITIONING SYSTEM (GPS) COORDINATES [4]			
			DEPTH [1]	ELEVATION [2]			LATITUDE		LONGITUDE	
	(FEET)	(FEET)	(FEET)	(FEET)	(FEET)	(FEET)	DEG	MIN	DEG	MIN
CULVERT 1 (STA. 54+00)										
BCK-1	40.0	68.4	2.0	66.4	53+92	31 LEFT	30	18.886	82	0.514
BCP-1	2.5	66.3	0.0 [5]	66.3 [5]	54+06	32 LEFT	30	18.888	82	0.514
BCK-2	40.0	68.6	1.5	67.1	53+79	44 RIGHT	30	18.884	82	0.500
BCP-2	4.5	67.0	0.0 [5]	67.0 [5]	54+02	28 RIGHT	30	18.888	82	0.503
CULVERT 2 (STA. 90+50)										
BCK-3	40.0	73.9	7.0	66.9	90+48	40 LEFT	30	19.489	82	0.528
BCP-3	2.5	67.2	0.0 [5]	67.2 [5]	90+39	51 LEFT	30	19.487	82	0.530
BCK-4	40.0	72.9	5.0	67.9	90+11	37 RIGHT	30	19.483	82	0.513
BCP-4	4.5	68.3	0.0 [5]	68.3 [5]	90+35	47 RIGHT	30	19.487	82	0.511
CULVERT 3 (STA. 407+00)										
BCK-5	40.0	57.7	5.5	52.2	406+83	35 LEFT	30	24.330	82	1.900
BCP-5	4.5	52.7	0.0 [5]	52.7 [5]	406+54	37 LEFT	30	24.326	82	1.902
BCK-6	40.0	60.0	5.0	55.0	406+96	35 RIGHT	30	24.330	82	1.887
BCP-6	2.5	54.9	0.0 [5]	54.9 [5]	406+69	36 RIGHT	30	24.326	82	1.887

NOTES: 1. DEPTH IS MEASURED BELOW EXISTING GROUND SURFACE.
2. ELEVATIONS APPROXIMATE AND DETERMINED FROM ELECTRONIC FILES PROVIDED BY **KIMLEY-HORN AND ASSOCIATES, INC**.
3. STATION AND OFFSETS BASED ON ELECTRONIC FILES PROVIDED BY **KIMLEY-HORN AND ASSOCIATES, INC.**
4. COORDINATES ARE APPROXIMATE AND BASED ON FIELD MEASUREMENTS AND MAPPING SOFTWARE.
5. SEASONAL SURFACE WATER CONDITIONS SHOULD BE ANTICIPATED.

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TABLE 2
ENVIRONMENTAL CLASSIFICATION DATA
CR 121 CULVERT EXTENSIONS
FROM DUVAL COUNTY LINE TO CR 119
NASSAU COUNTY, FLORIDA

MATERIAL	LOCATION	DEPTH [1] (FEET)	pH	RESISTIVITY (OHM-CM)	SULFATES (PPM)	CHLORIDES (PPM)	CLASSIFICATION [2]	
							STEEL	CONCRETE
SOIL	BCK-2	1.0 - 4.5	7.2	5,600	3	105	**SLIGHTLY AGGRESSIVE**	**SLIGHTLY AGGRESSIVE**
WATER	NEAR BCP-2		6.7	8,900	<1	150	**MODERATELY AGRRESSIVE**	**SLIGHTLY AGGRESSIVE**
WATER	NEAR BCP-3		6.3	8,200	<1	210	**MODERATELY AGRRESSIVE**	**SLIGHTLY AGGRESSIVE**
SOIL	BCK-4	2.0 - 3.5	4.5	3,000	204	135	**EXTREMELY AGGRESSIVE**	**EXTREMELY AGGRESSIVE**
SOIL	BCK-5	2.0 - 4.5	5.5	7,600	165	135	**EXTREMELY AGGRESSIVE**	**MODERATELY AGGRESSIVE**
WATER	NEAR BCP-6		6.5	4,700	<1	195	**MODERATELY AGRRESSIVE**	**SLIGHTLY AGGRESSIVE**
SUBSTRUCTURE							**EXTREMELY AGGRESSIVE**	**EXTREMELY AGGRESSIVE**
SUPERSTRUCTURE							**SLIGHTLY AGGRESSIVE**	**SLIGHTLY AGGRESSIVE**

NOTE: 1. DEPTHS ARE MEASURED BELOW EXISTING GROUND SURFACE.
2. CLASSIFICATIONS IN ACCORDANCE WITH FDOT *STRUCTURES DESIGN GUIDELINES* (TABLE 1.3.2-1).

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TABLE 3
GRAIN-SIZE DATA FOR SCOUR CONSIDERATION
CR 121 CULVERT EXTENSIONS
FROM DUVAL COUTY LINE TO CR 119
NASSAU COUNTY, FLORIDA

BORING NUMBER	DEPTH BELOW GROUND SURFACE [1] (FEET)	ELEVATION [2] (FEET)	GRAIN-SIZE PARAMETER	RECOMMENDED VALUE (MILLIMETERS)	MATERIAL CLASSIFICATION (USCS)
BCP-1	1.0 - 1.5	65.3 - 64.8	D_{10}	0.065[3]	SILTY FINE SAND (SM)
			D_{50}	0.14	
			D_{60}	0.16	
			D_{85}	0.21	
			C_u	2.5	
BCP-2	2.0 - 2.5	65.0 - 64.5	D_{10}	0.018[3]	PLASTIC CLAYEY SAND WITH ORGANICS (SC)
			D_{50}	0.080	
			D_{60}	0.10	
			D_{85}	0.17	
			C_u	5.6	
BCP-3	1.0 - 1.5	66.2 - 65.7	D_{10}	0.090	FINE SAND (SP-SM)
			D_{50}	0.17	
			D_{60}	0.18	
			D_{85}	0.28	
			C_u	2.0	
BCP-4	1.0 - 1.5	67.3 - 66.8	D_{10}	0.090	FINE SAND (SP-SM)
			D_{50}	0.17	
			D_{60}	0.18	
			D_{85}	0.21	
			C_u	2.0	
BCP-5	1.0 - 1.5	51.7 - 51.2	D_{10}	0.080	FINE SAND (SP-SM)
			D_{50}	0.14	
			D_{60}	0.16	
			D_{85}	0.22	
			C_u	2.0	
BCP-6	1.0 - 1.5	53.9 - 53.4	D_{10}	0.065[3]	SILTY FINE SAND (SM)
			D_{50}	0.14	
			D_{60}	0.15	
			D_{85}	0.20	
			C_u	2.3	

NOTES: 1. DEPTHS ARE MEASURED BELOW EXISTING GROUND SURFACE.
2. ELEVATIONS DETERMINED FROM ELECTRONIC FILES PROVIDED BY **KIMLEY-HORN AND ASSOCIATES, INC**.
3. GRAIN-SIZE PARAMETER EXTRAPOLATED BASED ON SIEVE ANALYSIS.

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TABLE 4
PRELIMINARY GEOTECHNICAL DESIGN PARAMETERS
CR 121 CULVERT EXTENSIONS
FROM DUVAL COUNTY LINE TO CR 119
NASSAU COUNTY, FLORIDA

SOIL DESCRIPTION	AVERAGE LAYER ELEVATION [1] (FEET)	AVERAGE LAYER DEPTH [2] (FEET)	CORRECTED SPT 'N' VALUE [3]	SOIL UNIT WEIGHT [4] TOTAL (LB/FT^3) (γ)	SOIL UNIT WEIGHT [4] EFFECTIVE (LB/FT^3) (γ')	COHESION (LB/FT^2) (c)	ADHESION (LB/FT^2) (α)	INTERNAL FRICTION ANGLE (DEGREES) (ϕ)	RANKINE EARTH PRESSURE COEFFICIENT ACTIVE (K_a)	RANKINE EARTH PRESSURE COEFFICIENT PASSIVE (K_p)	STEEL SHEET PILE WALL WALL FRICTION ANGLE (DEGREES) (δ)	STEEL SHEET PILE WALL COULOMB EARTH PRESSURE COEFFICIENT [5] ACTIVE (K_a)	STEEL SHEET PILE WALL COULOMB EARTH PRESSURE COEFFICIENT [5] PASSIVE (K_p)
CULVERT 1 - STA. 54+00 (SOIL BORINGS BCK-1 AND BCK-2)													
LOOSE to MEDIUM DENSE SILTY FINE SAND (**SM**)	68.6 to 48.4	0.0 to 20.0	11	115	53	- -	- -	30	0.33	3.00	15	0.30	4.98
STIFF PLASTIC SANDY CLAY (**CL**)	48.4 to 45.9	20.0 to 22.5	10	120	58	1,500	1,350	- -	1.00	1.00	- -	1.00	1.00
LOOSE SILTY FINE to CLAYEY FINE SAND (**SM** to **SC**)	45.9 to 28.4	22.5 to 40.0	6	110	48	- -	- -	29	0.35	2.88	15	0.31	4.63
CULVERT 2 - STA. 90+50 (SOIL BORINGS BCK-3 AND BCK-4)													
LOOSE to MEDIUM DENSE SILTY FINE to CLAYEY FINE SAND (**SM** to **SC**)	73.9 to 58.9	0.0 to 15.0	10	115	53	- -	- -	30	0.33	3.00	15	0.30	4.98
SOFT to FIRM HIGHLY PLASTIC SANDY CLAY (**CH**)	58.9 to 46.4	15.0 to 27.5	5	115	53	950	855	- -	1.00	1.00	- -	1.00	1.00
LOOSE SILTY FINE SAND (**SM**)	46.4 to 32.9	27.5 to 40.0	7	110	48	- -	- -	29	0.35	2.88	15	0.31	4.63

NOTES: 1. ELEVATIONS ARE APPROXIMATE AND BASED ON ELECTRONIC FILES PROVIDED BY **KIMLEY-HORN AND ASSOCIATES**.
2. DEPTH IS MEASURED BELOW GROUND SURFACE.
3. N-VALUES HAVE BEEN CORRECTED FOR HAMMER EFFICIENCY AND DEPTH.
4. DESIGN GROUNDWATER LEVEL ASSUMED TO BE AT GROUND SURFACE. EFFECTIVE UNIT WEIGHT SHOULD BE USED BELOW RECOMMENDED DESIGN GROUNDWATER.
5. COULOMB ACTIVE AND PASSIVE EARTH PRESSURE COEFFICIENTS HAVE BEEN CALCULATED ASSUMING THE BACKFILL IS NON-SLOPED (β=0°) AND THE WALL FACE IS VERTICAL (λ=90°).

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TABLE 4
PRELIMINARY GEOTECHNICAL DESIGN PARAMETERS
CR 121 CULVERT EXTENSIONS
FROM DUVAL COUNTY LINE TO CR 119
NASSAU COUNTY, FLORIDA

SOIL DESCRIPTION	AVERAGE LAYER ELEVATION [1] (FEET)	AVERAGE LAYER DEPTH [2] (FEET)	CORRECTED SPT 'N' VALUE [3]	SOIL UNIT WEIGHT [4] TOTAL (LB/FT^3) (γ)	SOIL UNIT WEIGHT [4] EFFECTIVE (LB/FT^3) (γ')	COHESION (LB/FT^2) (c)	ADHESION (LB/FT^2) (α)	INTERNAL FRICTION ANGLE (DEGREES) (ϕ)	RANKINE EARTH PRESSURE COEFFICIENT ACTIVE (K_a)	RANKINE EARTH PRESSURE COEFFICIENT PASSIVE (K_p)	STEEL SHEET PILE WALL WALL FRICTION ANGLE (DEGREES) (δ)	STEEL SHEET PILE WALL COULOMB EARTH PRESSURE COEFFICIENT [5] ACTIVE (K_a)	STEEL SHEET PILE WALL COULOMB EARTH PRESSURE COEFFICIENT [5] PASSIVE (K_p)
CULVERT 3 - STA. 407+00 (SOIL BORINGS BCK-5 AND BCK-6)													
LOOSE SILTY FINE to PLASTIC CLAYEY FINE SAND (**SM** to **SC**)	60.0 to 35.0	0.0 to 25.0	6	110	48	- -	- -	29	0.35	2.88	15	0.31	4.63
MEDIUM DENSE SILTY FINE SAND (**SM**)	35.0 to 30.0	25.0 to 30.0	11	115	53	- -	- -	30	0.33	3.00	15	0.30	4.98
SOFT HIGHLY PLASTIC SANDY SILT (**MH**)	30.0 to 22.0	30.0 to 38.0	2	110	48	450	405	- -	1.00	1.00	- -	1.00	1.00
LOOSE to MEDIUM DENSE FINE SAND (**SP-SM**)	22.0 to 17.7	38.0 to 40.0	14	115	53	- -	- -	30	0.33	3.00	15	0.30	4.98

NOTES: 1. ELEVATIONS ARE APPROXIMATE AND BASED ON ELECTRONIC FILES PROVIDED BY **KIMLEY-HORN AND ASSOCIATES**.
2. DEPTH IS MEASURED BELOW GROUND SURFACE.
3. N-VALUES HAVE BEEN CORRECTED FOR HAMMER EFFICIENCY AND DEPTH.
4. DESIGN GROUNDWATER LEVEL ASSUMED TO BE AT GROUND SURFACE. EFFECTIVE UNIT WEIGHT SHOULD BE USED BELOW RECOMMENDED DESIGN GROUNDWATER.
5. COULOMB ACTIVE AND PASSIVE EARTH PRESSURE COEFFICIENTS HAVE BEEN CALCULATED ASSUMING THE BACKFILL IS NON-SLOPED (β=0°) AND THE WALL FACE IS VERTICAL (λ=90°).

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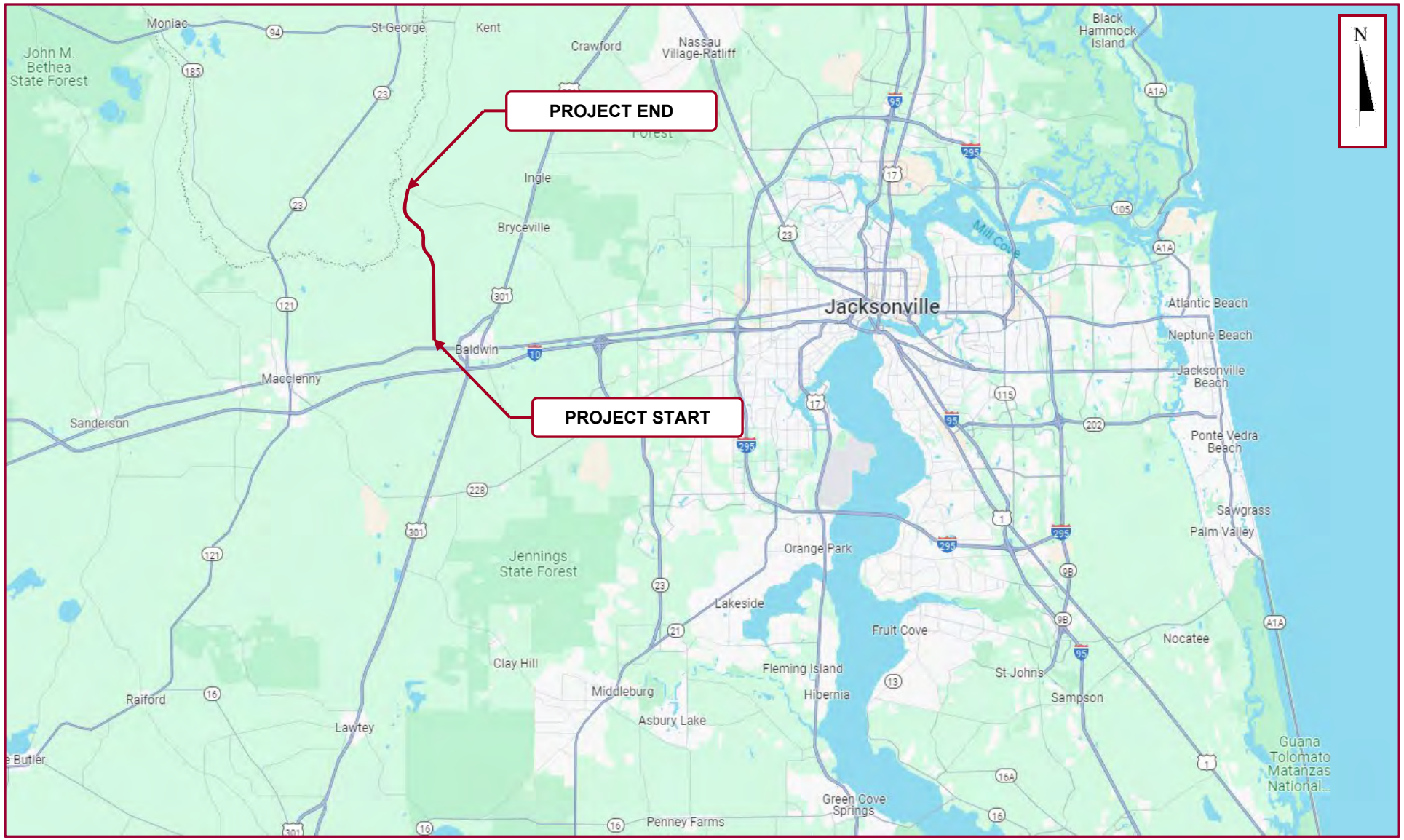
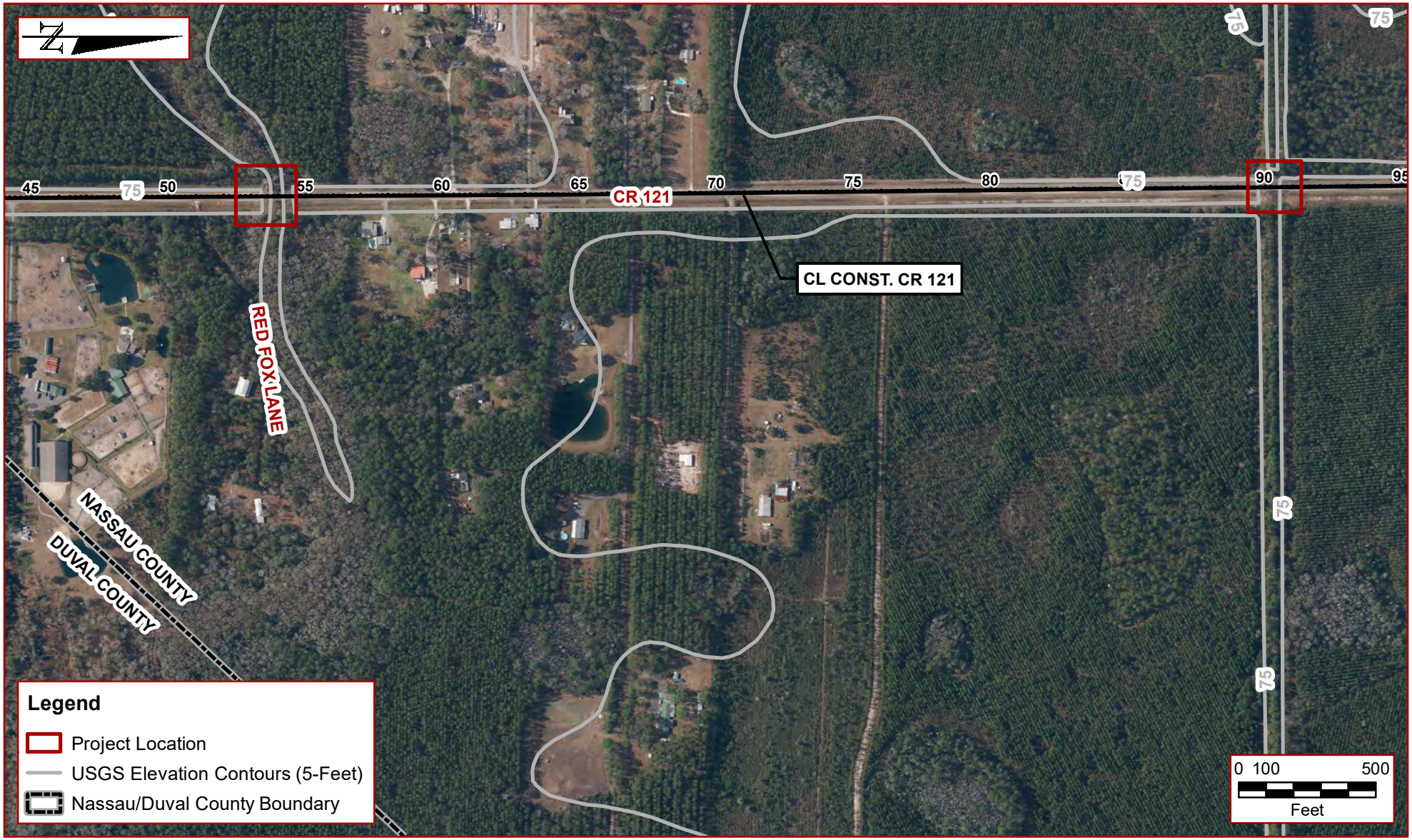
FIGURES

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E



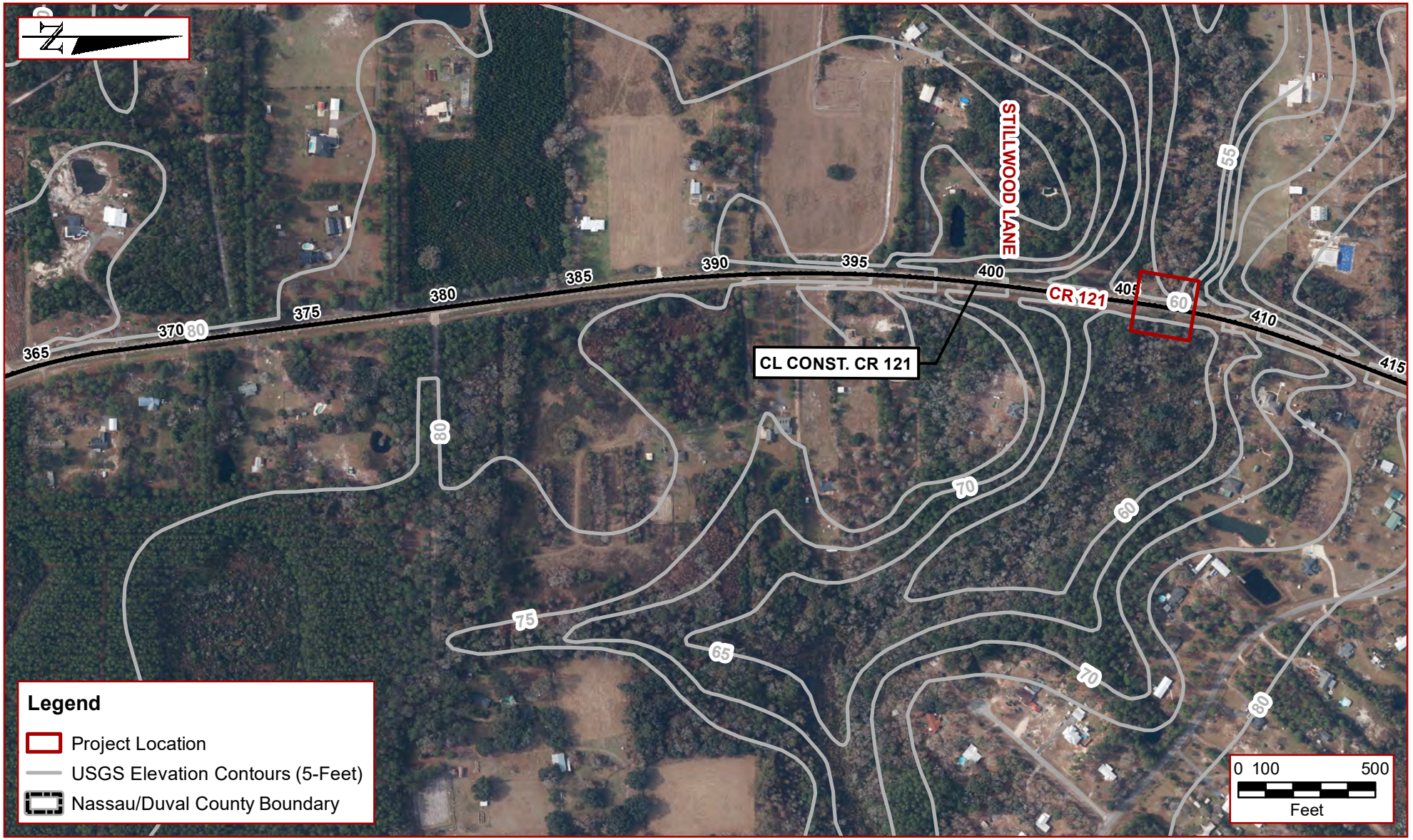
DRAWN: B. NAUGHTON, E.I.	CHECKED: K. MORALES, P.E.	Environmental & Geotechnical Specialists, Inc. 3772 Kori Road Jacksonville, FL 32257 Office: (904)329-7180	TITLE: PROJECT LOCATION MAP CR 121 CULVERT EXTENSIONS FROM DUVAL COUNTY LINE TO CR 119 NASSAU COUNTY, FLORIDA	
ENGINEER: M. LANDSCHOOT, P.E.				
CLIENT: KIMLEY-HORN AND ASSOCIATES, INC.				
PROJ. NO.: 13-54-23-02	SCALE:		DATE: AUGUST 2024	FIGURE NO.: 1

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E



DRAWN: B. NAUGHTON, E.I.	CHECKED: K. MORALES, P.E.	Environmental and Geotechnical Specialists, Inc. 3772 Kori Road Jacksonville, Florida 32257 Office: (904) 329-7180	TITLE: USGS TOPOGRAPHIC MAP CR 121 CULVERT EXTENSIONS FROM DUVAL COUNTY LINE TO CR 119 NASSAU COUNTY, FLORIDA
ENGINEER: M. LANDSCHOOT, P.E.			
CLIENT: KIMLEY-HORN AND ASSOCIATES, INC.			
PROJ. NO.: 13-54-23-02	SCALE: AS SHOWN		DATE: AUGUST 2024 / FIGURE NO.: 2A

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E



DRAWN: B. NAUGHTON, E.I.	CHECKED: K. MORALES, P.E.	Environmental and Geotechnical Specialists, Inc. 3772 Kori Road Jacksonville, Florida 32257 Office: (904) 329-7180	TITLE: USGS TOPOGRAPHIC MAP CR 121 CULVERT EXTENSIONS FROM DUVAL COUNTY LINE TO CR 119 NASSAU COUNTY, FLORIDA
ENGINEER: M. LANDSCHOOT, P.E.			
CLIENT: KIMLEY-HORN AND ASSOCIATES, INC.			
PROJ. NO.: 13-54-23-02	SCALE: AS SHOWN		DATE: AUGUST 2024 / FIGURE NO.: 2B

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FIGURE 3A: PHOTOGRAPH OF EXISTING SITE CONDITIONS NEAR SOIL BORING **BCK-1** (FACING NORTH)

FIGURE 3B: PHOTOGRAPH OF EXISTING SUBSTRUCTURE CONDITIONS NEAR SOIL BORING **BCK-1** (FACING EAST)

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FIGURE 3C: PHOTOGRAPH OF EXISTING SITE CONDITIONS NEAR SOIL BORING **BCK-3** (FACING NORTH)

FIGURE 3D: PHOTOGRAPH OF EXISTING SITE CONDITIONS NEAR SOIL BORING **BCK-3** (FACING SOUTH)

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

FIGURE 3E: PHOTOGRAPH OF EXISTING SITE CONDITIONS NEAR SOIL BORING **BCK-5** (FACING NORTH)

FIGURE 3F: PHOTOGRAPH OF EXISTING SUBSTRUCTURE CONDITIONS NEAR SOIL BORING **BCK-5** (FACING SOUTHEAST)

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LEGEND

SPT SOIL BORING LOCATION

SOIL PROBE LOCATION

PREPARED:	B. NAUGHTON, E.I.
CHECKED:	K. MORALES, P.E.
REVISED:	B. NAUGHTON, E.I.
ENGINEER:	M. LANDSCHOOT, P.E.

Environmental & Geotechnical Specialists, Inc.

3772 Kori Road
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FIELD TEST LOCATION MAP
CR 121 CULVERT EXTENSIONS
FROM DUVAL COUNTY LINE TO CR 119
NASSAU COUNTY, FLORIDA

SCALE:	AS SHOWN	DATE:	AUGUST 2024
PROJ. NO.:	13-54-23-02	FIGURE NO.:	4A

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

LEGEND

SPT SOIL BORING LOCATION

SOIL PROBE LOCATION

PREPARED:	B. NAUGHTON, E.I.
CHECKED:	K. MORALES, P.E.
REVISED:	B. NAUGHTON, E.I.
ENGINEER:	M. LANDSCHOOT, P.E.

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FIELD TEST LOCATION MAP
CR 121 CULVERT EXTENSIONS
FROM DUVAL COUNTY LINE TO CR 119
NASSAU COUNTY, FLORIDA

SCALE:	AS SHOWN	DATE:	AUGUST 2024
PROJ. NO.:	13-54-23-02	FIGURE NO.:	4B

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

LEGEND

SPT SOIL BORING LOCATION

SOIL PROBE LOCATION

PREPARED:	B. NAUGHTON, E.I.
CHECKED:	K. MORALES, P.E.
REVISED:	B. NAUGHTON, E.I.
ENGINEER:	M. LANDSCHOOT, P.E.

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FIELD TEST LOCATION MAP
CR 121 CULVERT EXTENSIONS
FROM DUVAL COUNTY LINE TO CR 119
NASSAU COUNTY, FLORIDA

SCALE:	AS SHOWN	DATE:	AUGUST 2024
PROJ. NO.:	13-54-23-02	FIGURE NO.:	4C

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

APPENDIX A

REPORT OF CORE BORINGS

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

NOTES

1. NUMBERS LEFT OF BORING INDICATE STANDARD PENETRATION TEST (SPT) N-VALUES OR EQUIVALENT FOR 12-INCH PENETRATION.
2. GROUNDWATER ELEVATIONS SHOWN ARE THE GROUNDWATER ELEVATIONS ENCOUNTERED. FLUCTUATIONS IN THE ELEVATION OF GROUNDWATER SHOULD BE EXPECTED.
3. SOIL DESCRIPTIONS, TEST DATA, AND STANDARD PENETRATION VALUES SHOWN ARE FOR THE SOIL BORING ONLY AND MAY NOT APPLY TO ANY OTHER LOCATIONS EXCEPT AT THE LOCATION OF THE SOIL BORING. EXTRAPOLATION OF THE SOIL BORING DATA TO OTHER LOCATIONS IS THE SOLE RESPONSIBILITY OF THE PERSON PERFORMING THE EXTRAPOLATION.
4. ASTERISK (*) INDICATES EQUIVALENT SPT N-VALUE CONVERTED FROM CONE PENETROMETER INDEX (CPI) VALUES.

SAFETY HAMMER

GRANULAR MATERIALS RELATIVE DENSITY	SPT (BLOWS/12 IN.)	SILTS AND CLAYS CONSISTENCY	SPT (BLOWS/12 IN.)
VERY LOOSE	LESS THAN 4	VERY SOFT	LESS THAN 2
LOOSE	4 - 10	SOFT	2 - 4
MEDIUM DENSE	10 - 30	FIRM	4 - 8
DENSE	30 - 50	STIFF	8 - 15
VERY DENSE	GREATER THAN 50	VERY STIFF	15 - 30
		HARD	GREATER THAN 30

AUTOMATIC HAMMER

GRANULAR MATERIALS RELATIVE DENSITY	SPT (BLOWS/12 IN.)	SILTS AND CLAYS CONSISTENCY	SPT (BLOWS/12 IN.)
VERY LOOSE	LESS THAN 3	VERY SOFT	LESS THAN 1
LOOSE	3 - 8	SOFT	1 - 3
MEDIUM DENSE	8 - 24	FIRM	3 - 6
DENSE	24 - 40	STIFF	6 - 12
VERY DENSE	GREATER THAN 40	VERY STIFF	12 - 24
		HARD	GREATER THAN 24

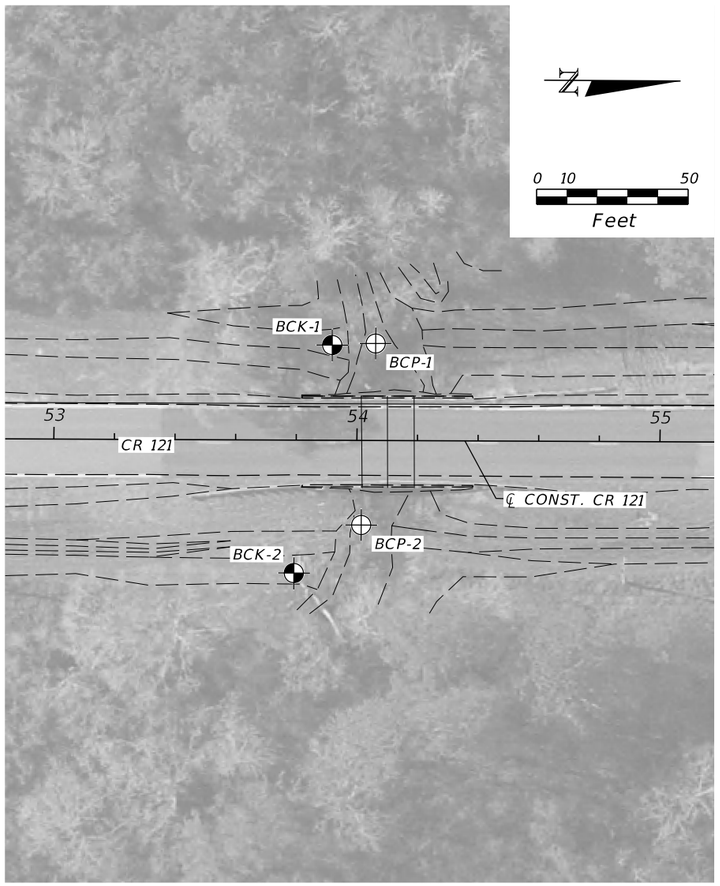
SPLIT-SPOON: INSIDE DIAMETER: 1.375 IN
OUTSIDE DIAMETER: 2.0 IN
AVG. HAMMER DROP: 30.0 IN
HAMMER WEIGHT: 140 LBS

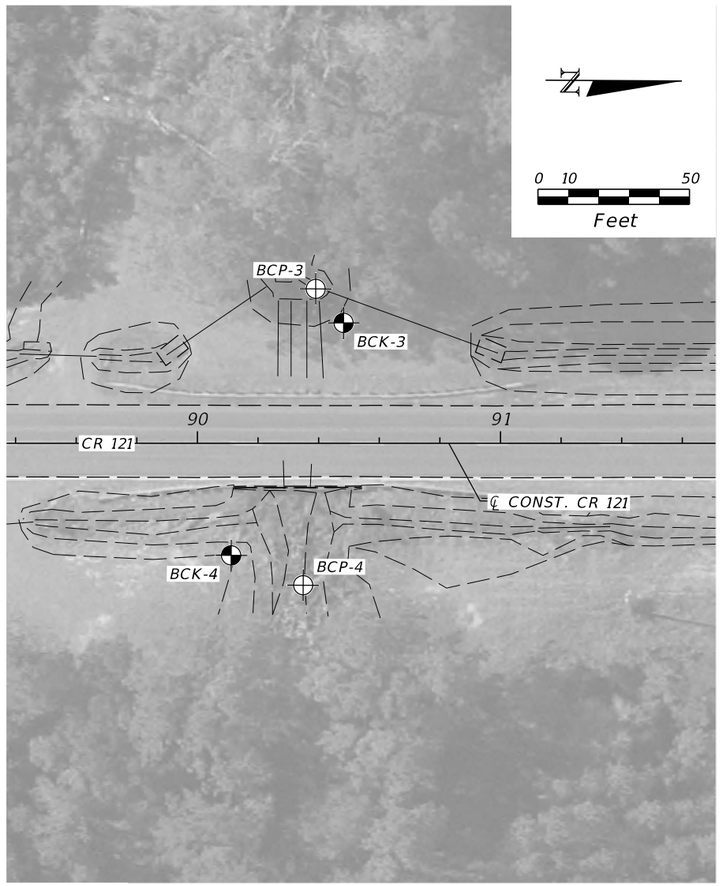
LEGEND

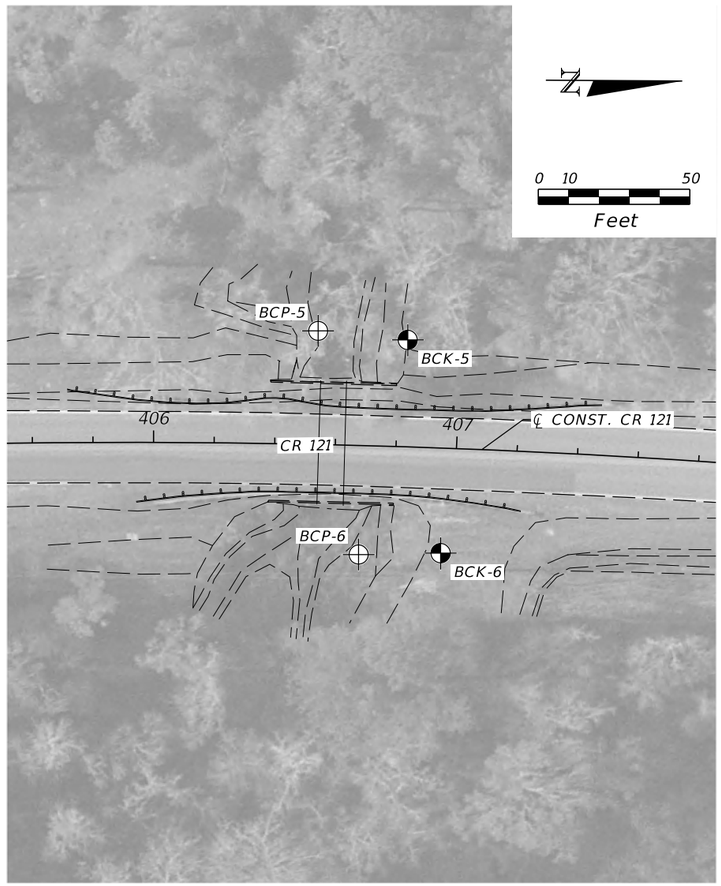
SOIL BORING LOCATION	
HAND AUGER SOIL BORING LOCATION	
MEASURED WATER LEVEL	
LABORATORY TESTING RESULTS	
WATER CONTENT	Wc=
-200 SIEVE	-200=
PLASTICITY INDEX	PI=
LIQUID LIMIT	LL=
ORGANIC CONTENT	OC%=
USCS GROUP SYMBOL	(SP-SM)

- MEDIUM SAND TO FINE SAND WITH ORGANICS (SP-SM)
- SILTY FINE SAND TO SILTY FINE SAND WITH ORGANICS (SM)
- CLAYEY FINE SAND TO PLASTIC CLAYEY SAND WITH ORGANICS (SC)
- HIGHLY PLASTIC SANDY SILT (MH)
- SANDY CLAY TO HIGHLY PLASTIC SANDY CLAY (CL TO CH)
- ORGANIC SILTY FINE SAND (SM)
- MUCK (OL)

SOIL BORING LOCATION MAPS







No.	REVISIONS	DATE	BY

EGS
Environmental & Geotechnical Specialists, Inc.
3772 Kori Road
Jacksonville, Florida 32257
Phone: (904) 329-7180

LICENSED PROFESSIONAL
MATTHEW R. LANDSCHOOT, P.E.
FL LICENSE NUMBER 76183
FL

EGS PROJECT 13-54-23-02
DATE AUGUST 2024
SCALE AS SHOWN
DESIGNED BY MRL
DRAWN BY BPN
CHECKED BY KJM
DATE: ____

REPORT OF CULVERT BORINGS

CR 121
NASSAU COUNTY

SHEET NUMBER

Plotted By:Novak, Jessica Sheet Set:Kha Layout:Model October 20, 2023 10:07:31am U:\1 - active projects\dot\13-54-23-02\geotechnical\rptbrd01.dgn
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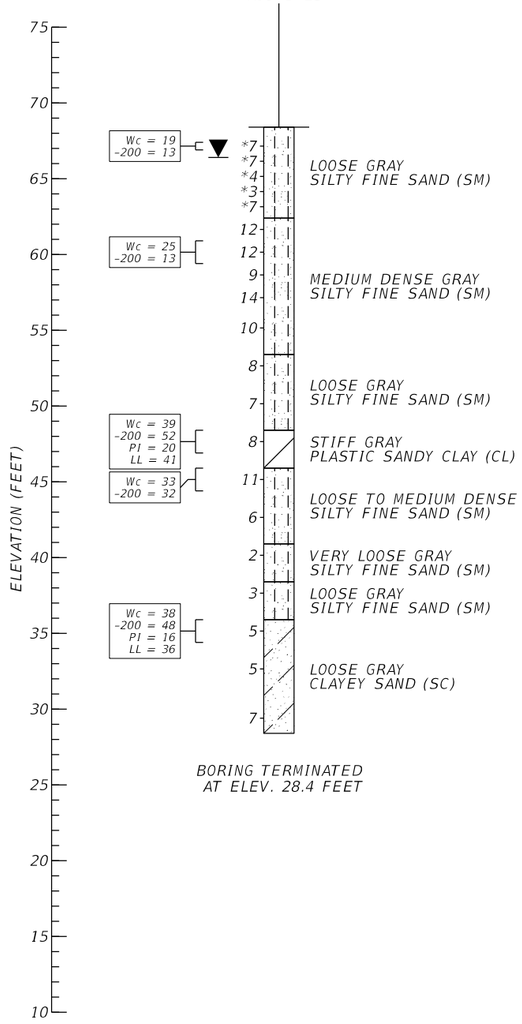
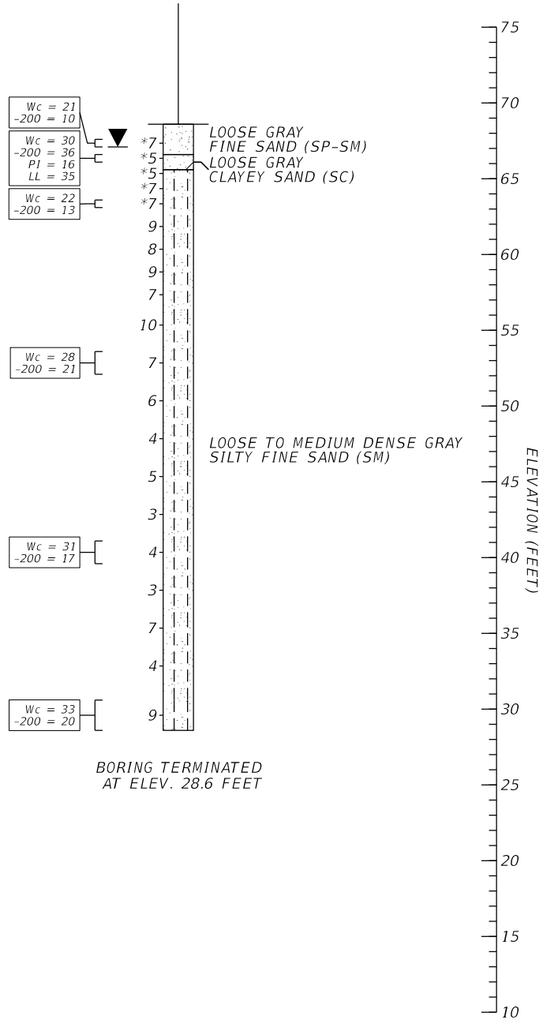
BORE # BCK-1
REFERENCE ℄ CONST. CR 121
STATION 53+92
OFFSET 31 FEET LEFT
ELEVATION 68.4 FEET
DATE 7/8/2024
DRILLER W. CHOMAT
HAMMER AUTOMATIC
RIG D-25

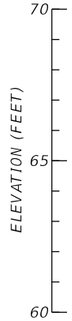


BORING TERMINATED
AT ELEV. 28.4 FEET

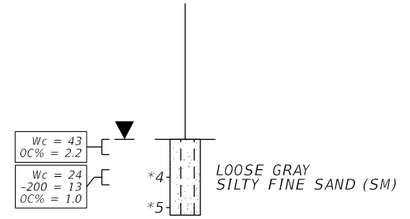
BORE # BCK-2
REFERENCE ℄ CONST. CR 121
STATION 53+79
OFFSET 44 FEET RIGHT
ELEVATION 68.6 FEET
DATE 7/8/2024
DRILLER W. CHOMAT
HAMMER AUTOMATIC
RIG D-25



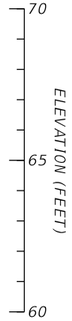
BORING TERMINATED
AT ELEV. 28.6 FEET



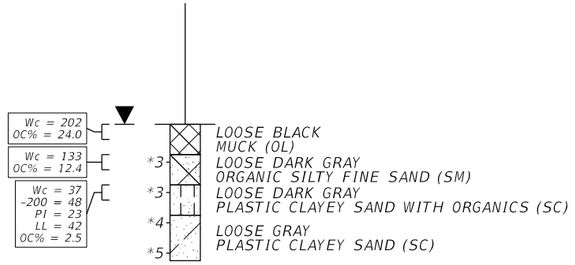
BORE # BCP-1
REFERENCE ℄ CONST. CR 121
STATION 54+06
OFFSET 32 FEET LEFT
ELEVATION 66.3 FEET
DATE 7/10/2024
DRILLER W. CHOMAT
HAMMER AUTOMATIC
RIG D-25



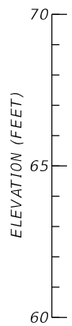
BORING TERMINATED
AT ELEV. 63.8 FEET

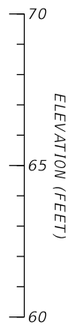


BORE # BCP-2
REFERENCE ℄ CONST. CR 121
STATION 54+02
OFFSET 28 FEET RIGHT
ELEVATION 67.0 FEET
DATE 7/10/2024
DRILLER W. CHOMAT
HAMMER AUTOMATIC
RIG D-25



BORING TERMINATED
AT ELEV. 62.5 FEET





No.	REVISIONS	DATE	BY

EGS
Environmental & Geotechnical Specialists, Inc.
3772 Kori Road
Jacksonville, Florida 32257
Phone: (904) 329-7180

LICENSED PROFESSIONAL
MATTHEW R. LANDSCHOOT, P.E.
FL LICENSE NUMBER 76183
DATE: ----

EGS PROJECT 13-54-23-02
DATE AUGUST 2024
SCALE AS SHOWN
DESIGNED BY MRL
DRAWN BY BPN
CHECKED BY K.M

REPORT OF CULVERT BORINGS

CR 121
NASSAU COUNTY
FL

SHEET NUMBER

Plotted By:Novak, Jessica Sheet Set:Kha Layout:Model October 20, 2023 10:07:31am U:\1 - active projects\dot\13-54-23-02\geotechnical\rptbrd01.dgn
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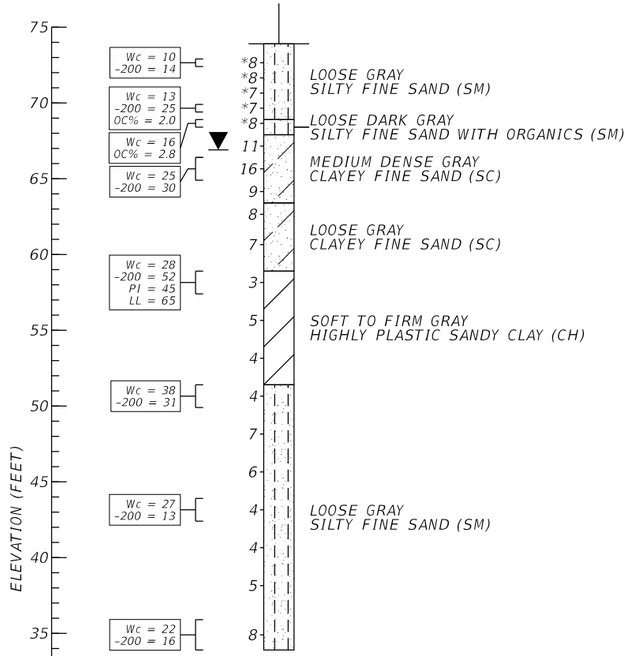
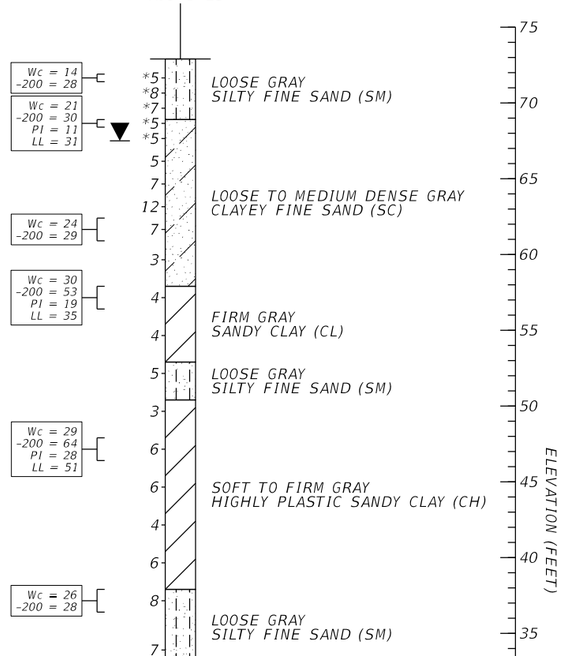
BORE # BCK-3
REFERENCE ℄ CONST. CR 121
STATION 90+48
OFFSET 40 FEET LEFT
ELEVATION 73.9 FEET
DATE 7/9/2024
DRILLER W. CHOMAT
HAMMER AUTOMATIC
RIG D-25



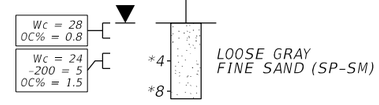
BORING TERMINATED
AT ELEV. 33.9 FEET

BORE # BCK-4
REFERENCE ℄ CONST. CR 121
STATION 90+11
OFFSET 37 FEET RIGHT
ELEVATION 72.9 FEET
DATE 7/9/2024
DRILLER W. CHOMAT
HAMMER AUTOMATIC
RIG D-25



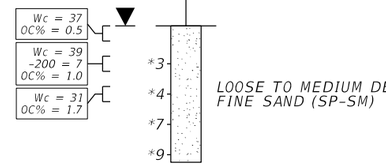
BORING TERMINATED
AT ELEV. 32.9 FEET

BORE # BCP-3
REFERENCE ℄ CONST. CR 121
STATION 90+39
OFFSET 51 FEET LEFT
ELEVATION 67.2 FEET
DATE 7/9/2024
DRILLER W. CHOMAT
HAMMER AUTOMATIC
RIG D-25



BORING TERMINATED
AT ELEV. 64.7 FEET

BORE # BCP-4
REFERENCE ℄ CONST. CR 121
STATION 90+35
OFFSET 47 FEET RIGHT
ELEVATION 68.3 FEET
DATE 7/9/2024
DRILLER W. CHOMAT
HAMMER AUTOMATIC
RIG D-25



BORING TERMINATED
AT ELEV. 63.8 FEET

No.	REVISIONS	DATE	BY

EGS
Environmental & Geotechnical Specialists, Inc.
3772 Kori Road
Jacksonville, Florida 32257
Phone: (904) 329-7180

LICENSED PROFESSIONAL
MATTHEW R. LANDSCHOOT, P.E.
FL LICENSE NUMBER 76183
DATE: ____

EGS PROJECT 13-54-23-02
DATE AUGUST 2024
SCALE AS SHOWN
DESIGNED BY MRL
DRAWN BY BPN
CHECKED BY KJM

FL

REPORT OF CULVERT BORINGS

CR 121
NASSAU COUNTY

SHEET NUMBER

Plotted By:Novak, Jessica Sheet Set:Kha Layout:Model October 20, 2023 10:07:31am U:\1 - active projects\dot\13-54-23-02\geotechnical\rptbrd01.dgn
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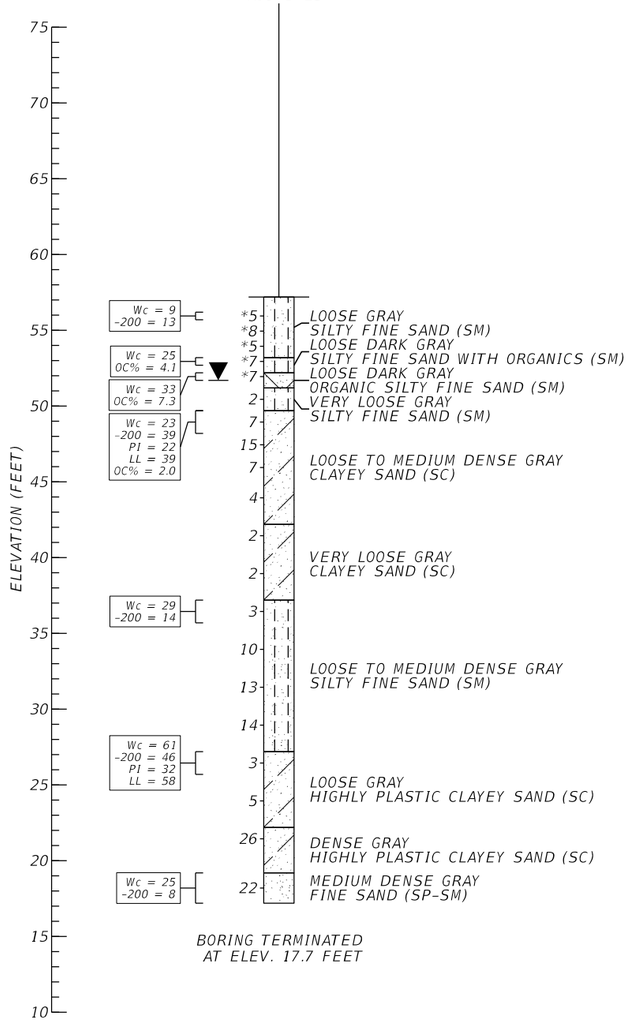
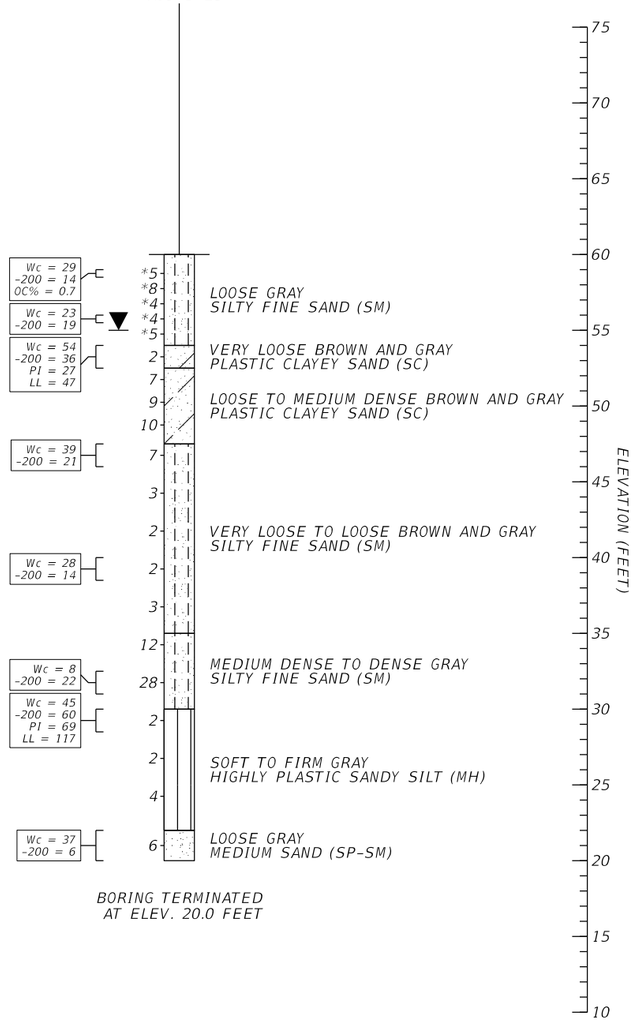
BORE # BCK-5
REFERENCE ℄ CONST. CR 121
STATION 406+83
OFFSET 35 FEET LEFT
ELEVATION 57.7 FEET
DATE 7/9/2024
DRILLER W. CHOMAT
HAMMER AUTOMATIC
RIG D-25



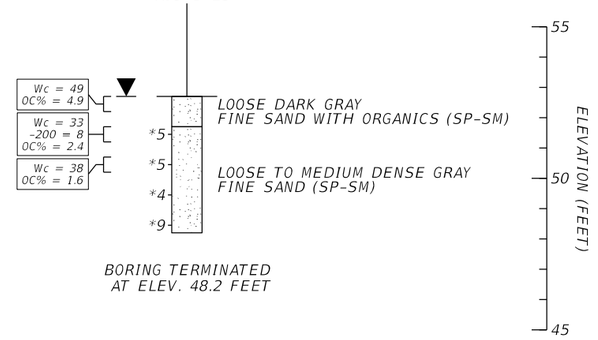
BORING TERMINATED
AT ELEV. 17.7 FEET

BORE # BCK-6
REFERENCE ℄ CONST. CR 121
STATION 406+95
OFFSET 35 FEET RIGHT
ELEVATION 60.0 FEET
DATE 7/9/2024
DRILLER W. CHOMAT
HAMMER AUTOMATIC
RIG D-25



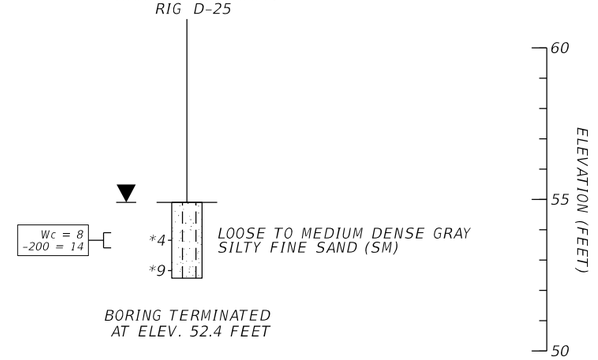
BORING TERMINATED
AT ELEV. 20.0 FEET

BORE # BCP-5
REFERENCE ℄ CONST. CR 121
STATION 406+54
OFFSET 37 FEET LEFT
ELEVATION 52.7 FEET
DATE 7/9/2024
DRILLER W. CHOMAT
HAMMER AUTOMATIC
RIG D-25



BORING TERMINATED
AT ELEV. 48.2 FEET

BORE # BCP-6
REFERENCE ℄ CONST. CR 121
STATION 406+69
OFFSET 36 FEET RIGHT
ELEVATION 54.9 FEET
DATE 7/9/2024
DRILLER W. CHOMAT
HAMMER AUTOMATIC
RIG D-25



BORING TERMINATED
AT ELEV. 52.4 FEET

No.	REVISIONS	DATE	BY

EGS
Environmental & Geotechnical Specialists, Inc.
3772 Kori Road
Jacksonville, Florida 32257
Phone: (904) 329-7180

LICENSED PROFESSIONAL
MATTHEW R. LANDSCHOOT, P.E.
FL LICENSE NUMBER 76183
DATE: ----

EGS PROJECT 13-54-23-02
DATE AUGUST 2024
SCALE AS SHOWN
DESIGNED BY MRL
DRAWN BY BPN
CHECKED BY K.JM

FL

REPORT OF CULVERT BORINGS

CR 121
NASSAU COUNTY

SHEET NUMBER

Plotted By:Novak, Jessica Sheet Set:Kha Layout:Model October 20, 2023 10:07:31am U:\1 - active projects\fdot\13-54-23-02\geotechnical\rptbrd01.dgn
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APPENDIX B
SOIL BORING LOGS

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

ENVIRONMENTAL & GEOTECHNICAL SPECIALISTS, INC.
3772 Kori Road
Jacksonville, Florida 32257
Office: (904) 329-7180

PROJECT: CR 121 TO CR 119 BOX CULVERT EXTENSIONS
CLIENT: KIMLEY-HORN AND ASSOCIATES, INC
PROJECT NO.: 13-54-23-02
PROJECT LOCATION: NASSAU COUNTY, FLORIDA
BORING NO.: BCK-1
DRILLER: W. CHOMAT
DEPTH TO WATER: INITIAL: 3.0' **24 HR:** 2.0'

HAMMER TYPE: AUTOMATIC
STATIONING: 53+92
OFFSET: 31 FEET LEFT
ELEVATION (FEET): 68.4'
DATE: 07/08/2024
FLUID LOSS: NONE
CAVING: NONE

DEPTH (METERS)	DEPTH (FEET)	SAMPLE	SYMBOL	DESCRIPTION	USCS	TEST RESULTS	Wc (%)	N
0	0						32	--
						-200%=13	19	7
							18	7
				LOOSE GRAY SILTY FINE SAND	SM		26	4
							28	3
1.5							31	7
	6						28	12
						-200%=13	25	12
	9						22	9
3				MEDIUM DENSE GRAY SILTY FINE SAND	SM		24	14
	12						39	10
4.5	15						40	8
				LOOSE GRAY SILTY FINE SAND	SM			
	18						29	7
6								
	21			STIFF GRAY	CL	-200%=52 LL=41 PI=20	39	8

Wc (%) scale: 10, 20, 30, 40, 60
N-Value scale: 10, 20, 30, 40, 60, 80

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

NOTES: N/A MEANS NOT AVAILABLE
N/M MEANS NOT MEASURED

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

ENVIRONMENTAL & GEOTECHNICAL SPECIALISTS, INC.
3772 Kori Road
Jacksonville, Florida 32257
Office: (904) 329-7180

PROJECT: CR 121 TO CR 119 BOX CULVERT EXTENSIONS
CLIENT: KIMLEY-HORN AND ASSOCIATES, INC
PROJECT NO.: 13-54-23-02
PROJECT LOCATION: NASSAU COUNTY, FLORIDA
BORING NO.: BCK-1
DRILLER: W. CHOMAT
DEPTH TO WATER: INITIAL: ▽ 3.0' **24 HR:** ▼ 2.0'

HAMMER TYPE: AUTOMATIC
STATIONING: 53+92
OFFSET: 31 FEET LEFT
ELEVATION (FEET): 68.4'
DATE: 07/08/2024
FLUID LOSS: NONE
CAVING: C NONE

DEPTH (METERS)	DEPTH (FEET)	SAMPLE	SYMBOL	DESCRIPTION	USCS	TEST RESULTS	Wc (%)	N	N-Value
				PLASTIC SANDY CLAY					
7.5	24			MEDIUM DENSE GRAY SILTY FINE SAND	SM	-200%=32	33	11	
	27			LOOSE GRAY SILTY FINE SAND	SM		31	6	
9	30			VERY LOOSE GRAY SILTY FINE SAND	SM		33	2	
				LOOSE GRAY SILTY FINE SAND	SM		30	3	
10.5	33			LOOSE GRAY CLAYEY SAND	SC	-200%=48 LL=36 PI=16	38	5	
	36						29	5	
12	39						30	7	
	42								

Wc (%) scale: 10, 20, 30, 40, 60
N-Value scale: 10, 20, 30, 40, 60, 80

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NOTES: N/A MEANS NOT AVAILABLE
N/M MEANS NOT MEASURED

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

ENVIRONMENTAL & GEOTECHNICAL SPECIALISTS, INC.
3772 Kori Road
Jacksonville, Florida 32257
Office: (904) 329-7180

PROJECT: CR 121 TO CR 119 BOX CULVERT EXTENSIONS
CLIENT: KIMLEY-HORN AND ASSOCIATES, INC
PROJECT NO.: 13-54-23-02
PROJECT LOCATION: NASSAU COUNTY, FLORIDA
BORING NO.: BCK-2
DRILLER: W. CHOMAT
DEPTH TO WATER: INITIAL: 2.5' **24 HR:** 1.5'

HAMMER TYPE: AUTOMATIC
STATIONING: 53+79
OFFSET: 44 FEET RIGHT
ELEVATION (FEET): 68.6'
DATE: 07/08/2024
FLUID LOSS: NONE
CAVING: NONE

DEPTH (METERS)	DEPTH (FEET)	SAMPLE	SYMBOL	DESCRIPTION	USCS	TEST RESULTS	Wc (%)	N
0	0			LOOSE GRAY FINE SAND	SP-SM	-200%=10	26 21	-- 7
				LOOSE GRAY CLAYEY SAND	SC	-200%=36 LL=35 PI=16	30	5
1.5	3			LOOSE GRAY SILTY FINE SAND	SM	-200%=13	24 23 22	5 7 7
	6			MEDIUM DENSE GRAY SILTY FINE SAND	SM		28	9
				LOOSE GRAY SILTY FINE SAND	SM		31	8
3	9			MEDIUM DENSE GRAY SILTY FINE SAND	SM		25	9
				LOOSE GRAY SILTY FINE SAND	SM		27	7
4.5	12			MEDIUM DENSE GRAY SILTY FINE SAND	SM		28	10
	15					-200%=21	28	7
6	18						30	6
	21						32	4

Wc (%) scale: 10, 20, 30, 40, 60
N-Value scale: 10, 20, 30, 40, 60, 80

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

NOTES: N/A MEANS NOT AVAILABLE
N/M MEANS NOT MEASURED

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

ENVIRONMENTAL & GEOTECHNICAL SPECIALISTS, INC.
3772 Kori Road
Jacksonville, Florida 32257
Office: (904) 329-7180

PROJECT: CR 121 TO CR 119 BOX CULVERT EXTENSIONS
CLIENT: KIMLEY-HORN AND ASSOCIATES, INC
PROJECT NO.: 13-54-23-02
PROJECT LOCATION: NASSAU COUNTY, FLORIDA
BORING NO.: BCK-2
DRILLER: W. CHOMAT
DEPTH TO WATER: INITIAL: ▽ 2.5' **24 HR:** ▼ 1.5'

HAMMER TYPE: AUTOMATIC
STATIONING: 53+79
OFFSET: 44 FEET RIGHT
ELEVATION (FEET): 68.6'
DATE: 07/08/2024
FLUID LOSS: NONE
CAVING: C NONE

DEPTH (METERS)	DEPTH (FEET)	SAMPLE	SYMBOL	DESCRIPTION	USCS	TEST RESULTS	Wc (%)	N	N-Value
	24			LOOSE GRAY SILTY FINE SAND	SM		29	5	
7.5							31	3	
	27					-200%=17	31	4	
9									
	30						30	3	
	33						31	7	
10.5									
	36						28	4	
	39			MEDIUM DENSE GRAY SILTY FINE SAND	SM	-200%=20	33	9	
12									
	42								

Wc (%): 10 20 30 40 60
N-Value: 10 20 30 40 60 80

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

NOTES: N/A MEANS NOT AVAILABLE
N/M MEANS NOT MEASURED

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

ENVIRONMENTAL & GEOTECHNICAL SPECIALISTS, INC.
3772 Kori Road
Jacksonville, Florida 32257
Office: (904) 329-7180

PROJECT: CR 121 TO CR 119 BOX CULVERT EXTENSIONS
CLIENT: KIMLEY-HORN AND ASSOCIATES, INC
PROJECT NO.: 13-54-23-02
PROJECT LOCATION: NASSAU COUNTY, FLORIDA
BORING NO.: BCK-3
DRILLER: W. CHOMAT
DEPTH TO WATER: INITIAL: ▽ 7.5' **24 HR:** ▽ 7.0'

HAMMER TYPE: AUTOMATIC
STATIONING: 90+48
OFFSET: 40 FEET LEFT
ELEVATION (FEET): 73.9'
DATE: 07/09/2024
FLUID LOSS: NONE
CAVING: ℄ NONE

DEPTH (METERS)	DEPTH (FEET)	SAMPLE	SYMBOL	DESCRIPTION	USCS	TEST RESULTS	Wc (%)	N
0	0			LOOSE GRAY SILTY FINE SAND	SM	-200%=14	10	--
							10	8
							3	8
	3						8	7
1.5						-200%=25 ORG%= 2.0	13	7
	6			LOOSE DARK GRAY SILTY FINE SAND WITH ORGANICS	SM	ORG%= 2.8	16	8
				MEDIUM DENSE GRAY CLAYEY FINE SAND	SC	ORG%= 1.8	28	11
						-200%=30	25	16
3	9						27	9
				LOOSE GRAY CLAYEY FINE SAND	SC		31	8
	12						31	7
4.5	15			SOFT GRAY HIGHLY PLASTIC SANDY CLAY	CH	-200%=52 LL=65 PI=45	28	3
	18			FIRM GRAY HIGHLY PLASTIC SANDY CLAY	CH		35	5
6	21						31	4

Wc (%) scale: 10, 20, 30, 40, 60
N-Value scale: 10, 20, 30, 40, 60, 80

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

NOTES: N/A MEANS NOT AVAILABLE
N/M MEANS NOT MEASURED

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ENVIRONMENTAL & GEOTECHNICAL SPECIALISTS, INC.
3772 Kori Road
Jacksonville, Florida 32257
Office: (904) 329-7180

PROJECT: CR 121 TO CR 119 BOX CULVERT EXTENSIONS
CLIENT: KIMLEY-HORN AND ASSOCIATES, INC
PROJECT NO.: 13-54-23-02
PROJECT LOCATION: NASSAU COUNTY, FLORIDA
BORING NO.: BCK-3
DRILLER: W. CHOMAT
DEPTH TO WATER: INITIAL: ▽ 7.5' **24 HR:** ▼ 7.0'

HAMMER TYPE: AUTOMATIC
STATIONING: 90+48
OFFSET: 40 FEET LEFT
ELEVATION (FEET): 73.9'
DATE: 07/09/2024
FLUID LOSS: NONE
CAVING: ℄ NONE

DEPTH (METERS)	DEPTH (FEET)	SAMPLE	SYMBOL	DESCRIPTION	USCS	TEST RESULTS	Wc (%)	N	N-Value
7.5	24					-200%=31	38	4	
	27						33	7	
9	30			LOOSE GRAY SILTY FINE SAND	SM	-200%=13	36	6	
	33						27	4	
10.5	36						28	4	
12	39					-200%=16	29	5	
	42						22	8	

Wc (%) axis: 10, 20, 30, 40, 60
N-Value axis: 10, 20, 30, 40, 60, 80

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

NOTES: N/A MEANS NOT AVAILABLE
N/M MEANS NOT MEASURED

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ENVIRONMENTAL & GEOTECHNICAL SPECIALISTS, INC.
3772 Kori Road
Jacksonville, Florida 32257
Office: (904) 329-7180

PROJECT: CR 121 TO CR 119 BOX CULVERT EXTENSIONS
CLIENT: KIMLEY-HORN AND ASSOCIATES, INC
PROJECT NO.: 13-54-23-02
PROJECT LOCATION: NASSAU COUNTY, FLORIDA
BORING NO.: BCK-4
DRILLER: W. CHOMAT
DEPTH TO WATER: INITIAL: ▽ 6.5' **24 HR:** ▼ 5.0'

HAMMER TYPE: AUTOMATIC
STATIONING: 90+11
OFFSET: 37 FEET RIGHT
ELEVATION (FEET): 72.9'
DATE: 07/09/2024
FLUID LOSS: NONE
CAVING: ℄ NONE

DEPTH (METERS)	DEPTH (FEET)	SAMPLE	SYMBOL	DESCRIPTION	USCS	TEST RESULTS	Wc (%)	N
0	0			LOOSE GRAY SILTY FINE SAND	SM	-200%=28	7	--
							14	5
							18	8
	3						24	7
1.5						-200%=30 LL=31 PI=11	21	5
	6			LOOSE GRAY CLAYEY FINE SAND	SC		23	5
							22	5
							22	7
	9			MEDIUM DENSE GRAY CLAYEY FINE SAND	SC		27	12
3						-200%=29	24	7
	12			LOOSE GRAY CLAYEY FINE SAND	SC		22	3
4.5	15			FIRM GRAY SANDY CLAY	CL	-200%=53 LL=35 PI=19	30	4
							31	4
6	18							
	21			LOOSE GRAY	SM		31	5

Wc (%) axis: 10, 20, 30, 40, 60
N-Value axis: 10, 20, 30, 40, 60, 80

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

NOTES: N/A MEANS NOT AVAILABLE
N/M MEANS NOT MEASURED

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CLIENT: KIMLEY-HORN AND ASSOCIATES, INC
PROJECT NO.: 13-54-23-02
PROJECT LOCATION: NASSAU COUNTY, FLORIDA
BORING NO.: BCK-4
DRILLER: W. CHOMAT
DEPTH TO WATER: INITIAL: ▽ 6.5' **24 HR:** ▼ 5.0'

HAMMER TYPE: AUTOMATIC
STATIONING: 90+11
OFFSET: 37 FEET RIGHT
ELEVATION (FEET): 72.9'
DATE: 07/09/2024
FLUID LOSS: NONE
CAVING: ℄ NONE

DEPTH (METERS)	DEPTH (FEET)	SAMPLE	SYMBOL	DESCRIPTION	USCS	TEST RESULTS	Wc (%)	N
				SILTY FINE SAND				
	24			SOFT GRAY HIGHLY PLASTIC SANDY CLAY	CH		47	3
7.5						-200%=64 LL=51 PI=28	29	6
	27						21	6
9				FIRM GRAY HIGHLY PLASTIC SANDY CLAY	CH			
	30						26	4
	33						29	6
10.5						-200%=28		
	36			LOOSE GRAY SILTY FINE SAND	SM		26	8
	39						32	7
12								
	42							

Wc (%): 10 20 30 40 60
N-Value: 10 20 30 40 60 80

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

NOTES: N/A MEANS NOT AVAILABLE
N/M MEANS NOT MEASURED

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

ENVIRONMENTAL & GEOTECHNICAL SPECIALISTS, INC.
3772 Kori Road
Jacksonville, Florida 32257
Office: (904) 329-7180

PROJECT: CR 121 TO CR 119 BOX CULVERT EXTENSIONS
CLIENT: KIMLEY-HORN AND ASSOCIATES, INC
PROJECT NO.: 13-54-23-02
PROJECT LOCATION: NASSAU COUNTY, FLORIDA
BORING NO.: BCK-5
DRILLER: W. CHOMAT
DEPTH TO WATER: INITIAL: 6.0' **24 HR:** 5.5' **CAVING:** NONE

HAMMER TYPE: AUTOMATIC
STATIONING: 406+83
OFFSET: 35 FEET LEFT
ELEVATION (FEET): 57.7'
DATE: 07/09/2024
FLUID LOSS: NONE

DEPTH (METERS)	DEPTH (FEET)	SAMPLE	SYMBOL	DESCRIPTION	USCS	TEST RESULTS	Wc (%)	N
0	0			LOOSE GRAY SILTY FINE SAND	SM	-200%=13	9	--
							9	5
							5	8
	3					ORG%= 1.5	9	5
1.5				LOOSE DARK GRAY SILTY FINE SAND WITH ORGANICS	SM	ORG%= 4.1	25	7
				LOOSE DARK GRAY ORGANIC SILTY FINE SAND	SM	ORG%= 7.3	33	7
				VERY LOOSE GRAY SILTY FINE SAND	SM	ORG%= 1.9	25	2
				LOOSE GRAY CLAYEY SAND	SC	-200%=39 LL=39 PI=22 ORG%= 2.0	23	7
3	9			MEDIUM DENSE GRAY CLAYEY SAND	SC		28	15
							31	7
	12			LOOSE GRAY CLAYEY SAND	SC		36	4
4.5	15						34	2
				VERY LOOSE GRAY CLAYEY SAND	SC			
	18						32	2
6								
	21			LOOSE GRAY	SM	-200%=14	29	3

NOTES: N/A MEANS NOT AVAILABLE
N/M MEANS NOT MEASURED

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ENVIRONMENTAL & GEOTECHNICAL SPECIALISTS, INC.
3772 Kori Road
Jacksonville, Florida 32257
Office: (904) 329-7180

PROJECT: CR 121 TO CR 119 BOX CULVERT EXTENSIONS
CLIENT: KIMLEY-HORN AND ASSOCIATES, INC
PROJECT NO.: 13-54-23-02
PROJECT LOCATION: NASSAU COUNTY, FLORIDA
BORING NO.: BCK-5
DRILLER: W. CHOMAT
DEPTH TO WATER: INITIAL: ▽ 6.0' **24 HR:** ▼ 5.5'

HAMMER TYPE: AUTOMATIC
STATIONING: 406+83
OFFSET: 35 FEET LEFT
ELEVATION (FEET): 57.7'
DATE: 07/09/2024
FLUID LOSS: NONE
CAVING: ℄ NONE

DEPTH (METERS)	DEPTH (FEET)	SAMPLE	SYMBOL	DESCRIPTION	USCS	TEST RESULTS	Wc (%)	N	N-Value
				SILTY FINE SAND					
7.5	24			MEDIUM DENSE GRAY SILTY FINE SAND	SM		30	10	
	27						29	13	
9	30						27	14	
				LOOSE GRAY HIGHLY PLASTIC CLAYEY SAND	SC	-200%=46 LL=58 PI=32	61	3	
10.5	33						31	5	
	36			DENSE GRAY HIGHLY PLASTIC CLAYEY SAND	SC		24	26	
12	39			MEDIUM DENSE GRAY FINE SAND	SP-SM	-200%=8	25	22	
	42								

Wc (%) axis: 10, 20, 30, 40, 60
N-Value axis: 10, 20, 30, 40, 60, 80

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

NOTES: N/A MEANS NOT AVAILABLE
N/M MEANS NOT MEASURED

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

ENVIRONMENTAL & GEOTECHNICAL SPECIALISTS, INC.
3772 Kori Road
Jacksonville, Florida 32257
Office: (904) 329-7180

PROJECT: CR 121 TO CR 119 BOX CULVERT EXTENSIONS
CLIENT: KIMLEY-HORN AND ASSOCIATES, INC
PROJECT NO.: 13-54-23-02
PROJECT LOCATION: NASSAU COUNTY, FLORIDA
BORING NO.: BCK-6
DRILLER: W. CHOMAT
DEPTH TO WATER: INITIAL: ▽ 4.5' **24 HR:** ▼ 5.0'

HAMMER TYPE: AUTOMATIC
STATIONING: 406+96
OFFSET: 35 FEET RIGHT
ELEVATION (FEET): 60.0'
DATE: 07/09/2024
FLUID LOSS: NONE
CAVING: ℄ NONE

DEPTH (METERS)	DEPTH (FEET)	SAMPLE	SYMBOL	DESCRIPTION	USCS	TEST RESULTS	Wc (%)	N
0	0							
				LOOSE GRAY SILTY FINE SAND	SM	ORG%= 1.9	31	--
						-200%=14 ORG%= 0.7	29	5
							27	8
	3						25	4
						-200%=19	23	4
1.5		▽ ▼					16	5
	6			VERY LOOSE BROWN AND GRAY PLASTIC CLAYEY SAND	SC	-200%=36 LL=47 PI=27	54	2
				LOOSE BROWN AND GRAY PLASTIC CLAYEY SAND	SC		41	7
3	9			MEDIUM DENSE BROWN AND GRAY PLASTIC CLAYEY SAND	SC		35	9
	12						28	10
4.5				LOOSE BROWN AND GRAY SILTY FINE SAND	SM	-200%=21	39	7
	15						33	3
	18			VERY LOOSE GRAY SILTY FINE SAND	SM	-200%=14	31	2
6							28	2
	21							

Wc (%) scale: 10, 20, 30, 40, 60
N-Value scale: 10, 20, 30, 40, 60, 80

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NOTES: N/A MEANS NOT AVAILABLE
N/M MEANS NOT MEASURED

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ENVIRONMENTAL & GEOTECHNICAL SPECIALISTS, INC.
3772 Kori Road
Jacksonville, Florida 32257
Office: (904) 329-7180

PROJECT: CR 121 TO CR 119 BOX CULVERT EXTENSIONS
CLIENT: KIMLEY-HORN AND ASSOCIATES, INC
PROJECT NO.: 13-54-23-02
PROJECT LOCATION: NASSAU COUNTY, FLORIDA
BORING NO.: BCK-6
DRILLER: W. CHOMAT
DEPTH TO WATER: INITIAL: ▽ 4.5' **24 HR:** ▼ 5.0'

HAMMER TYPE: AUTOMATIC
STATIONING: 406+96
OFFSET: 35 FEET RIGHT
ELEVATION (FEET): 60.0'
DATE: 07/09/2024
FLUID LOSS: NONE
CAVING: C NONE

DEPTH (METERS)	DEPTH (FEET)	SAMPLE	SYMBOL	DESCRIPTION	USCS	TEST RESULTS	Wc (%)	N	N-Value
7.5	24			LOOSE GRAY SILTY FINE SAND	SM		28	3	
	27			MEDIUM DENSE GRAY SILTY FINE SAND	SM		26	12	
9				DENSE GRAY SILTY FINE SAND	SM	-200%=22	8	28	
	30			SOFT GRAY HIGHLY PLASTIC SANDY SILT	MH	-200%=60 LL=117 PI=69	45	2	
10.5	33						92	2	
	36			FIRM GRAY HIGHLY PLASTIC SANDY SILT	MH		33	4	
12	39			LOOSE GRAY MEDIUM SAND	SP-SM	-200%=6	37	6	
	42								

Wc (%) scale: 10, 20, 30, 40, 60
N-Value scale: 10, 20, 30, 40, 60, 80

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NOTES: N/A MEANS NOT AVAILABLE
N/M MEANS NOT MEASURED

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

ENVIRONMENTAL & GEOTECHNICAL SPECIALISTS, INC.
3772 Kori Road
Jacksonville, Florida 32257
Office: (904) 329-7180

PROJECT: CR 121 TO CR 119 BOX CULVERT EXTENSIONS
CLIENT: KIMLEY-HORN AND ASSOCIATES, INC
PROJECT NO.: 13-54-23-02
PROJECT LOCATION: NASSAU COUNTY, FLORIDA
BORING NO.: BCP-1
DRILLER: W. CHOMAT
DEPTH TO WATER: INITIAL: 0.0' **24 HR:** N/M

HAMMER TYPE: AUGER
STATIONING: 54+06
OFFSET: 32 FEET LEFT
ELEVATION (FEET): 66.3'
DATE: 07/10/2024
FLUID LOSS: NONE
CAVING: NONE

DEPTH (METERS)	DEPTH (FEET)	SAMPLE	SYMBOL	DESCRIPTION	USCS	TEST RESULTS	Wc (%)	N	N-Value
0	0					ORG%= 2.2	43	--	--
				LOOSE GRAY SILTY FINE SAND	SM	-200%=13 ORG%= 1.0	24	4	
							--	5	
	3								
1.5	6								
	9								
3									
	12								
4.5	15								
	18								
6	21								

Wc (%): 10 20 30 40 60
N-Value: 10 20 30 40 60 80

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

NOTES: N/A MEANS NOT AVAILABLE
N/M MEANS NOT MEASURED

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

ENVIRONMENTAL & GEOTECHNICAL SPECIALISTS, INC.
3772 Kori Road
Jacksonville, Florida 32257
Office: (904) 329-7180

PROJECT: CR 121 TO CR 119 BOX CULVERT EXTENSIONS
CLIENT: KIMLEY-HORN AND ASSOCIATES, INC
PROJECT NO.: 13-54-23-02
PROJECT LOCATION: NASSAU COUNTY, FLORIDA
BORING NO.: BCP-2
DRILLER: W. CHOMAT
DEPTH TO WATER: INITIAL: 0.0' **24 HR:** N/M

HAMMER TYPE: AUGER
STATIONING: 54+02
OFFSET: 28 FEET RIGHT
ELEVATION (FEET): 67.0'
DATE: 07/10/2024
FLUID LOSS: NONE
CAVING: NONE

DEPTH (METERS)	DEPTH (FEET)	SAMPLE	SYMBOL	DESCRIPTION	USCS	TEST RESULTS	Wc (%)	N	N-Value
0	0			LOOSE BLACK MUCK	OL	ORG%= 24.0	202	--	--
				LOOSE DARK GRAY ORGANIC SILTY FINE SAND	SM	ORG%= 12.4	133	3	
						-200%=48 LL=42 PI=23	37	3	
1.5	3			LOOSE DARK GRAY PLASTIC CLAYEY SAND WITH ORGANICS	SC	ORG%= 2.5	--	4	
	6						--	5	
3	9								
4.5	12								
	15								
6	18								
	21								

Wc (%) scale: 10, 20, 30, 40, 60
N-Value scale: 10, 20, 30, 40, 60, 80

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

NOTES: N/A MEANS NOT AVAILABLE
N/M MEANS NOT MEASURED

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

ENVIRONMENTAL & GEOTECHNICAL SPECIALISTS, INC.
3772 Kori Road
Jacksonville, Florida 32257
Office: (904) 329-7180

PROJECT: CR 121 TO CR 119 BOX CULVERT EXTENSIONS
CLIENT: KIMLEY-HORN AND ASSOCIATES, INC
PROJECT NO.: 13-54-23-02
PROJECT LOCATION: NASSAU COUNTY, FLORIDA
BORING NO.: BCP-3
DRILLER: W. CHOMAT
DEPTH TO WATER: **INITIAL:** 0.0' **24 HR:** N/M **CAVING:** NONE

HAMMER TYPE: AUGER
STATIONING: 90+39
OFFSET: 51 FEET LEFT
ELEVATION (FEET): 67.2'
DATE: 07/09/2024
FLUID LOSS: NONE

DEPTH (METERS)	DEPTH (FEET)	SAMPLE	SYMBOL	DESCRIPTION	USCS	TEST RESULTS	Wc (%)	N	N-Value
0	0					ORG%= 0.8	28	--	
				LOOSE GRAY FINE SAND	SP-SM	-200%=5 ORG%= 1.5	24	4	
							--	8	
	3								
1.5	6								
	9								
3									
	12								
4.5	15								
	18								
6	21								

Wc (%): 10 20 30 40 60
N-Value: 10 20 30 40 60 80

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NOTES: N/A MEANS NOT AVAILABLE
N/M MEANS NOT MEASURED

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

ENVIRONMENTAL & GEOTECHNICAL SPECIALISTS, INC.
3772 Kori Road
Jacksonville, Florida 32257
Office: (904) 329-7180

PROJECT: CR 121 TO CR 119 BOX CULVERT EXTENSIONS
CLIENT: KIMLEY-HORN AND ASSOCIATES, INC
PROJECT NO.: 13-54-23-02
PROJECT LOCATION: NASSAU COUNTY, FLORIDA
BORING NO.: BCP-4
DRILLER: W. CHOMAT
DEPTH TO WATER: INITIAL: 0.0' **24 HR:** N/M **CAVING:** NONE

HAMMER TYPE: AUGER
STATIONING: 90+35
OFFSET: 47 FEET RIGHT
ELEVATION (FEET): 68.3'
DATE: 07/09/2024
FLUID LOSS: NONE

DEPTH (METERS)	DEPTH (FEET)	SAMPLE	SYMBOL	DESCRIPTION	USCS	TEST RESULTS	Wc (%)	N	N-Value
0	0			LOOSE GRAY FINE SAND	SP-SM	ORG%= 0.5	37	--	--
						-200%=7 ORG%= 1.0	39	3	
	3					ORG%= 1.7	31	4	
							--	7	
1.5				MEDIUM DENSE GRAY FINE SAND	SP-SM		--	9	
	6								
	9								
3									
	12								
4.5	15								
	18								
6	21								

Wc (%): 10, 20, 30, 40, 60
N-Value: 10, 20, 30, 40, 60, 80

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

NOTES: N/A MEANS NOT AVAILABLE
N/M MEANS NOT MEASURED

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

ENVIRONMENTAL & GEOTECHNICAL SPECIALISTS, INC.
3772 Kori Road
Jacksonville, Florida 32257
Office: (904) 329-7180

PROJECT: CR 121 TO CR 119 BOX CULVERT EXTENSIONS
CLIENT: KIMLEY-HORN AND ASSOCIATES, INC
PROJECT NO.: 13-54-23-02
PROJECT LOCATION: NASSAU COUNTY, FLORIDA
BORING NO.: BCP-5
DRILLER: W. CHOMAT
DEPTH TO WATER: INITIAL: 0.0' **24 HR:** N/M **CAVING:** NONE

HAMMER TYPE: AUGER
STATIONING: 406+54
OFFSET: 37 FEET RIGHT
ELEVATION (FEET): 52.7'
DATE: 07/09/2024
FLUID LOSS: NONE

DEPTH (METERS)	DEPTH (FEET)	SAMPLE	SYMBOL	DESCRIPTION	USCS	TEST RESULTS	Wc (%)	N	N-Value
0	0			LOOSE DARK GRAY FINE SAND WITH ORGANICS	SP-SM	ORG%= 4.9	49	--	--
						-200%=8 ORG%= 2.4	33	5	
				LOOSE GRAY FINE SAND	SP-SM	ORG%= 1.6	38	5	
	3						--	4	
1.5				MEDIUM DENSE GRAY FINE SAND	SP-SM		--	9	
	6								
	9								
3									
	12								
4.5	15								
	18								
6									
	21								

Wc (%): 10, 20, 30, 40, 60
N-Value: 10, 20, 30, 40, 60, 80

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

NOTES: N/A MEANS NOT AVAILABLE
N/M MEANS NOT MEASURED

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

ENVIRONMENTAL & GEOTECHNICAL SPECIALISTS, INC.
3772 Kori Road
Jacksonville, Florida 32257
Office: (904) 329-7180

PROJECT: CR 121 TO CR 119 BOX CULVERT EXTENSIONS
CLIENT: KIMLEY-HORN AND ASSOCIATES, INC
PROJECT NO.: 13-54-23-02
PROJECT LOCATION: NASSAU COUNTY, FLORIDA
BORING NO.: BCP-6
DRILLER: W. CHOMAT
DEPTH TO WATER: INITIAL: 0.0' **24 HR:** N/M **CAVING:** NONE

HAMMER TYPE: AUGER
STATIONING: 406+69
OFFSET: 36 FEET RIGHT
ELEVATION (FEET): 54.9'
DATE: 07/09/2024
FLUID LOSS: NONE

DEPTH (METERS)	DEPTH (FEET)	SAMPLE	SYMBOL	DESCRIPTION	USCS	TEST RESULTS	Wc (%)	N	N-Value
0	0			LOOSE GRAY SILTY FINE SAND	SM	-200%=14	9	--	--
							8	4	
				MEDIUM DENSE GRAY SILTY FINE SAND	SM		14	9	
	3								
1.5	6								
	9								
3									
	12								
4.5	15								
	18								
6	21								

Wc (%): 10 20 30 40 60
N-Value: 10 20 30 40 60 80

NOTES: N/A MEANS NOT AVAILABLE
N/M MEANS NOT MEASURED

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

APPENDIX C

SOIL CLASSIFICATION DATA

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

SOIL CLASSIFICATION DATA

Project: CR 121 TO CR 119 BOX CULVERT EXTENSIONS

Client: KIMLEY-HORN AND ASSOCIATES, INC **Project No.: 13-54-23-02**

Boring: BCK-1 **Location: NASSAU COUNTY, FLORIDA**

DEPTH (FEET)	Wc (%)	-4 (%)	-10 (%)	-20 (%)	-40 (%)	-60 (%)	-100 (%)	-200 (%)	LL	PI	Org. (%)	N Value	USCS	Description
0.0-0.5	32											--	SM	LOOSE GRAY SILTY FINE SAND
1.0-1.5	19	100	100	99	99	98	38	13				7	SM	LOOSE GRAY SILTY FINE SAND
2.0-2.5	18											7	SM	LOOSE GRAY SILTY FINE SAND
3.0-3.5	26											4	SM	LOOSE GRAY SILTY FINE SAND
4.0-4.5	28											3	SM	LOOSE GRAY SILTY FINE SAND
5.0-5.5	31											7	SM	LOOSE GRAY SILTY FINE SAND
6.0-7.5	28											12	SM	MEDIUM DENSE GRAY SILTY FINE SAND
7.5-9.0	25	100	100	100	99	99	30	13				12	SM	MEDIUM DENSE GRAY SILTY FINE SAND
9.0-10.5	22											9	SM	MEDIUM DENSE GRAY SILTY FINE SAND
10.5-12.0	24											14	SM	MEDIUM DENSE GRAY SILTY FINE SAND
12.5-14.0	39											10	SM	MEDIUM DENSE GRAY SILTY FINE SAND
15.0-16.5	40											8	SM	LOOSE GRAY SILTY FINE SAND
17.5-19.0	29											7	SM	LOOSE GRAY

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

SOIL CLASSIFICATION DATA

Project: CR 121 TO CR 119 BOX CULVERT EXTENSIONS

Client: KIMLEY-HORN AND ASSOCIATES, INC **Project No.: 13-54-23-02**

Boring: BCK-1 **Location: NASSAU COUNTY, FLORIDA**

DEPTH (FEET)	Wc (%)	-4 (%)	-10 (%)	-20 (%)	-40 (%)	-60 (%)	-100 (%)	-200 (%)	LL	PI	Org. (%)	N Value	USCS	Description
														SILTY FINE SAND
20.0-21.5	39	100	100	100	99	98	88	52	41	20		8	CL	STIFF GRAY PLASTIC SANDY CLAY
22.5-24.0	33	100	100	100	99	99	81	32				11	SM	MEDIUM DENSE GRAY SILTY FINE SAND
25.0-26.5	31											6	SM	LOOSE GRAY SILTY FINE SAND
27.5-29.0	33											2	SM	VERY LOOSE GRAY SILTY FINE SAND
30.0-31.5	30											3	SM	LOOSE GRAY SILTY FINE SAND
32.5-34.0	38	100	100	100	100	99	87	48	36	16		5	SC	LOOSE GRAY CLAYEY SAND
35.0-36.5	29											5	SC	LOOSE GRAY CLAYEY SAND
38.0-40.0	30											7	SC	LOOSE GRAY CLAYEY SAND

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

SOIL CLASSIFICATION DATA

Project: CR 121 TO CR 119 BOX CULVERT EXTENSIONS

Client: KIMLEY-HORN AND ASSOCIATES, INC **Project No.: 13-54-23-02**

Boring: BCK-2 **Location: NASSAU COUNTY, FLORIDA**

DEPTH (FEET)	Wc (%)	-4 (%)	-10 (%)	-20 (%)	-40 (%)	-60 (%)	-100 (%)	-200 (%)	LL	PI	Org. (%)	N Value	USCS	Description
0.0-0.5	26											--	SP-SM	LOOSE GRAY FINE SAND
1.0-1.5	21	100	100	100	98	94	63	10				7	SP-SM	LOOSE GRAY FINE SAND
2.0-2.5	30	100	100	99	98	96	59	36	35	16		5	SC	LOOSE GRAY CLAYEY SAND
3.0-3.5	24											5	SM	LOOSE GRAY SILTY FINE SAND
4.0-4.5	23											7	SM	LOOSE GRAY SILTY FINE SAND
5.0-5.5	22	100	100	100	99	94	42	13				7	SM	LOOSE GRAY SILTY FINE SAND
6.0-7.5	28											9	SM	MEDIUM DENSE GRAY SILTY FINE SAND
7.5-9.0	31											8	SM	LOOSE GRAY SILTY FINE SAND
9.0-10.5	25											9	SM	MEDIUM DENSE GRAY SILTY FINE SAND
10.5-12.0	27											7	SM	LOOSE GRAY SILTY FINE SAND
12.5-14.0	28											10	SM	MEDIUM DENSE GRAY SILTY FINE SAND
15.0-16.5	28	100	100	100	100	99	50	21				7	SM	LOOSE GRAY SILTY FINE SAND
17.5-19.0	30											6	SM	LOOSE GRAY

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

SOIL CLASSIFICATION DATA

Project: CR 121 TO CR 119 BOX CULVERT EXTENSIONS

Client: KIMLEY-HORN AND ASSOCIATES, INC **Project No.: 13-54-23-02**

Boring: BCK-2 **Location: NASSAU COUNTY, FLORIDA**

DEPTH (FEET)	Wc (%)	-4 (%)	-10 (%)	-20 (%)	-40 (%)	-60 (%)	-100 (%)	-200 (%)	LL	PI	Org. (%)	N Value	USCS	Description
														SILTY FINE SAND
20.0-21.5	32											4	SM	LOOSE GRAY SILTY FINE SAND
22.5-24.0	29											5	SM	LOOSE GRAY SILTY FINE SAND
25.0-26.5	31											3	SM	LOOSE GRAY SILTY FINE SAND
27.5-29.0	31	100	100	100	99	96	44	17				4	SM	LOOSE GRAY SILTY FINE SAND
30.0-31.5	30											3	SM	LOOSE GRAY SILTY FINE SAND
32.5-34.0	31											7	SM	LOOSE GRAY SILTY FINE SAND
35.0-36.5	28											4	SM	LOOSE GRAY SILTY FINE SAND
38.0-40.0	33	100	100	100	99	98	44	20				9	SM	MEDIUM DENSE GRAY SILTY FINE SAND

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

SOIL CLASSIFICATION DATA

Project: CR 121 TO CR 119 BOX CULVERT EXTENSIONS

Client: KIMLEY-HORN AND ASSOCIATES, INC **Project No.: 13-54-23-02**

Boring: BCK-3 **Location: NASSAU COUNTY, FLORIDA**

DEPTH (FEET)	Wc (%)	-4 (%)	-10 (%)	-20 (%)	-40 (%)	-60 (%)	-100 (%)	-200 (%)	LL	PI	Org. (%)	N Value	USCS	Description
0.0-0.5	10											--	SM	LOOSE GRAY SILTY FINE SAND
1.0-1.5	10	99	99	99	99	97	43	14				8	SM	LOOSE GRAY SILTY FINE SAND
2.0-2.5	3											8	SM	LOOSE GRAY SILTY FINE SAND
3.0-3.5	8											7	SM	LOOSE GRAY SILTY FINE SAND
4.0-4.5	13	100	99	99	99	98	66	25			2.0	7	SM	LOOSE GRAY SILTY FINE SAND
5.0-5.5	16										2.8	8	SM	LOOSE DARK GRAY SILTY FINE SAND WITH ORGANICS
6.0-7.5	28										1.8	11	SC	MEDIUM DENSE GRAY CLAYEY FINE SAND
7.5-9.0	25	100	100	100	99	99	81	30				16	SC	MEDIUM DENSE GRAY CLAYEY FINE SAND
9.0-10.5	27											9	SC	MEDIUM DENSE GRAY CLAYEY FINE SAND
10.5-12.0	31											8	SC	LOOSE GRAY CLAYEY FINE SAND
12.5-14.0	31											7	SC	LOOSE GRAY CLAYEY FINE SAND
15.0-16.5	28	100	100	100	100	100	94	52	65	45		3	CH	SOFT GRAY HIGHLY PLASTIC SANDY CLAY
17.5-19.0	35											5	CH	FIRM GRAY

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

SOIL CLASSIFICATION DATA

Project: CR 121 TO CR 119 BOX CULVERT EXTENSIONS

Client: KIMLEY-HORN AND ASSOCIATES, INC **Project No.: 13-54-23-02**

Boring: BCK-3 **Location: NASSAU COUNTY, FLORIDA**

DEPTH (FEET)	Wc (%)	-4 (%)	-10 (%)	-20 (%)	-40 (%)	-60 (%)	-100 (%)	-200 (%)	LL	PI	Org. (%)	N Value	USCS	Description
														HIGHLY PLASTIC SANDY CLAY
20.0-21.5	31											4	CH	FIRM GRAY HIGHLY PLASTIC SANDY CLAY
22.5-24.0	38	100	100	100	100	99	77	31				4	SM	LOOSE GRAY SILTY FINE SAND
25.0-26.5	33											7	SM	LOOSE GRAY SILTY FINE SAND
27.5-29.0	36											6	SM	LOOSE GRAY SILTY FINE SAND
30.0-31.5	27	100	100	100	99	89	28	13				4	SM	LOOSE GRAY SILTY FINE SAND
32.5-34.0	28											4	SM	LOOSE GRAY SILTY FINE SAND
35.0-36.5	29											5	SM	LOOSE GRAY SILTY FINE SAND
38.0-40.0	22	100	100	100	100	99	27	16				8	SM	LOOSE GRAY SILTY FINE SAND

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

SOIL CLASSIFICATION DATA

Project: CR 121 TO CR 119 BOX CULVERT EXTENSIONS

Client: KIMLEY-HORN AND ASSOCIATES, INC **Project No.: 13-54-23-02**

Boring: BCK-4 **Location: NASSAU COUNTY, FLORIDA**

DEPTH (FEET)	Wc (%)	-4 (%)	-10 (%)	-20 (%)	-40 (%)	-60 (%)	-100 (%)	-200 (%)	LL	PI	Org. (%)	N Value	USCS	Description
0.0-0.5	7											--	SM	LOOSE GRAY SILTY FINE SAND
1.0-1.5	14	100	100	100	100	99	77	28				5	SM	LOOSE GRAY SILTY FINE SAND
2.0-2.5	18											8	SM	LOOSE GRAY SILTY FINE SAND
3.0-3.5	24											7	SM	LOOSE GRAY SILTY FINE SAND
4.0-4.5	21	100	100	100	99	99	85	30	31	11		5	SC	LOOSE GRAY CLAYEY FINE SAND
5.0-5.5	23											5	SC	LOOSE GRAY CLAYEY FINE SAND
6.0-7.5	22											5	SC	LOOSE GRAY CLAYEY FINE SAND
7.5-9.0	22											7	SC	LOOSE GRAY CLAYEY FINE SAND
9.0-10.5	27											12	SC	MEDIUM DENSE GRAY CLAYEY FINE SAND
10.5-12.0	24	100	100	100	100	100	93	29				7	SC	LOOSE GRAY CLAYEY FINE SAND
12.5-14.0	22											3	SC	LOOSE GRAY CLAYEY FINE SAND
15.0-16.5	30	100	100	100	100	100	98	53	35	19		4	CL	FIRM GRAY SANDY CLAY
17.5-19.0	31											4	CL	FIRM GRAY

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

SOIL CLASSIFICATION DATA

Project: CR 121 TO CR 119 BOX CULVERT EXTENSIONS

Client: KIMLEY-HORN AND ASSOCIATES, INC **Project No.: 13-54-23-02**

Boring: BCK-4 **Location: NASSAU COUNTY, FLORIDA**

DEPTH (FEET)	Wc (%)	-4 (%)	-10 (%)	-20 (%)	-40 (%)	-60 (%)	-100 (%)	-200 (%)	LL	PI	Org. (%)	N Value	USCS	Description
														SANDY CLAY
20.0-21.5	31											5	SM	LOOSE GRAY SILTY FINE SAND
22.5-24.0	47											3	CH	SOFT GRAY HIGHLY PLASTIC SANDY CLAY
25.0-26.5	29	100	100	100	100	99	84	64	51	28		6	CH	FIRM GRAY HIGHLY PLASTIC SANDY CLAY
27.5-29.0	21											6	CH	FIRM GRAY HIGHLY PLASTIC SANDY CLAY
30.0-31.5	26											4	CH	FIRM GRAY HIGHLY PLASTIC SANDY CLAY
32.5-34.0	29											6	CH	FIRM GRAY HIGHLY PLASTIC SANDY CLAY
35.0-36.5	26	100	100	100	99	98	40	28				8	SM	LOOSE GRAY SILTY FINE SAND
38.0-40.0	32											7	SM	LOOSE GRAY SILTY FINE SAND

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

SOIL CLASSIFICATION DATA

Project: CR 121 TO CR 119 BOX CULVERT EXTENSIONS

Client: KIMLEY-HORN AND ASSOCIATES, INC **Project No.: 13-54-23-02**

Boring: BCK-5 **Location: NASSAU COUNTY, FLORIDA**

DEPTH (FEET)	Wc (%)	-4 (%)	-10 (%)	-20 (%)	-40 (%)	-60 (%)	-100 (%)	-200 (%)	LL	PI	Org. (%)	N Value	USCS	Description
0.0-0.5	9											--	SM	LOOSE GRAY SILTY FINE SAND
1.0-1.5	9	99	99	99	98	97	57	13				5	SM	LOOSE GRAY SILTY FINE SAND
2.0-2.5	5											8	SM	LOOSE GRAY SILTY FINE SAND
3.0-3.5	9										1.5	5	SM	LOOSE GRAY SILTY FINE SAND
4.0-4.5	25										4.1	7	SM	LOOSE DARK GRAY SILTY FINE SAND WITH ORGANICS
5.0-5.5	33										7.3	7	SM	LOOSE DARK GRAY ORGANIC SILTY FINE SAND
6.0-7.5	25										1.9	2	SM	VERY LOOSE GRAY SILTY FINE SAND
7.5-9.0	23	100	100	99	99	99	79	39	39	22	2.0	7	SC	LOOSE GRAY CLAYEY SAND
9.0-10.5	28											15	SC	MEDIUM DENSE GRAY CLAYEY SAND
10.5-12.0	31											7	SC	LOOSE GRAY CLAYEY SAND
12.5-14.0	36											4	SC	LOOSE GRAY CLAYEY SAND
15.0-16.5	34											2	SC	VERY LOOSE GRAY CLAYEY SAND
17.5-19.0	32											2	SC	VERY LOOSE GRAY

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

SOIL CLASSIFICATION DATA

Project: CR 121 TO CR 119 BOX CULVERT EXTENSIONS

Client: KIMLEY-HORN AND ASSOCIATES, INC **Project No.: 13-54-23-02**

Boring: BCK-5 **Location: NASSAU COUNTY, FLORIDA**

DEPTH (FEET)	Wc (%)	-4 (%)	-10 (%)	-20 (%)	-40 (%)	-60 (%)	-100 (%)	-200 (%)	LL	PI	Org. (%)	N Value	USCS	Description
														CLAYEY SAND
20.0-21.5	29	100	100	100	98	92	44	14				3	SM	LOOSE GRAY SILTY FINE SAND
22.5-24.0	30											10	SM	MEDIUM DENSE GRAY SILTY FINE SAND
25.0-26.5	29											13	SM	MEDIUM DENSE GRAY SILTY FINE SAND
27.5-29.0	27											14	SM	MEDIUM DENSE GRAY SILTY FINE SAND
30.0-31.5	61	100	99	95	88	78	67	46	58	32		3	SC	LOOSE GRAY HIGHLY PLASTIC CLAYEY SAND
32.5-34.0	31											5	SC	LOOSE GRAY HIGHLY PLASTIC CLAYEY SAND
35.0-36.5	24											26	SC	DENSE GRAY HIGHLY PLASTIC CLAYEY SAND
38.0-40.0	25	99	99	96	88	44	14	8				22	SP-SM	MEDIUM DENSE GRAY FINE SAND

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

SOIL CLASSIFICATION DATA

Project: CR 121 TO CR 119 BOX CULVERT EXTENSIONS

Client: KIMLEY-HORN AND ASSOCIATES, INC **Project No.: 13-54-23-02**

Boring: BCK-6 **Location: NASSAU COUNTY, FLORIDA**

DEPTH (FEET)	Wc (%)	-4 (%)	-10 (%)	-20 (%)	-40 (%)	-60 (%)	-100 (%)	-200 (%)	LL	PI	Org. (%)	N Value	USCS	Description
0.0-0.5	31										1.9	--	SM	LOOSE GRAY SILTY FINE SAND
1.0-1.5	29	99	98	97	96	95	59	14			0.7	5	SM	LOOSE GRAY SILTY FINE SAND
2.0-2.5	27											8	SM	LOOSE GRAY SILTY FINE SAND
3.0-3.5	25											4	SM	LOOSE GRAY SILTY FINE SAND
4.0-4.5	23	100	100	100	99	99	77	19				4	SM	LOOSE GRAY SILTY FINE SAND
5.0-5.5	16											5	SM	LOOSE GRAY SILTY FINE SAND
6.0-7.5	54	100	100	100	99	98	84	36	47	27		2	SC	VERY LOOSE BROWN AND GRAY PLASTIC CLAYEY SAND
7.5-9.0	41											7	SC	LOOSE BROWN AND GRAY PLASTIC CLAYEY SAND
9.0-10.5	35											9	SC	MEDIUM DENSE BROWN AND GRAY PLASTIC CLAYEY SAND
10.5-12.0	28											10	SC	MEDIUM DENSE BROWN AND GRAY PLASTIC CLAYEY SAND
12.5-14.0	39	100	100	100	100	99	48	21				7	SM	LOOSE BROWN AND GRAY SILTY FINE SAND
15.0-16.5	33											3	SM	LOOSE GRAY SILTY FINE SAND
17.5-19.0	31											2	SM	VERY LOOSE GRAY

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

SOIL CLASSIFICATION DATA

Project: CR 121 TO CR 119 BOX CULVERT EXTENSIONS

Client: KIMLEY-HORN AND ASSOCIATES, INC **Project No.: 13-54-23-02**

Boring: BCK-6 **Location: NASSAU COUNTY, FLORIDA**

DEPTH (FEET)	Wc (%)	-4 (%)	-10 (%)	-20 (%)	-40 (%)	-60 (%)	-100 (%)	-200 (%)	LL	PI	Org. (%)	N Value	USCS	Description
														SILTY FINE SAND
20.0-21.5	28	100	100	100	99	98	40	14				2	SM	VERY LOOSE GRAY SILTY FINE SAND
22.5-24.0	28											3	SM	LOOSE GRAY SILTY FINE SAND
25.0-26.5	26											12	SM	MEDIUM DENSE GRAY SILTY FINE SAND
27.5-29.0	8	100	100	100	99	97	38	22				28	SM	DENSE GRAY SILTY FINE SAND
30.0-31.5	45	100	100	100	99	99	96	60	117	69		2	MH	SOFT GRAY HIGHLY PLASTIC SANDY SILT
32.5-34.0	92											2	MH	SOFT GRAY HIGHLY PLASTIC SANDY SILT
35.0-36.5	33											4	MH	FIRM GRAY HIGHLY PLASTIC SANDY SILT
38.0-40.0	37	100	99	83	38	16	9	6				6	SP-SM	LOOSE GRAY MEDIUM SAND

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

SOIL CLASSIFICATION DATA

Project: CR 121 TO CR 119 BOX CULVERT EXTENSIONS

Client: KIMLEY-HORN AND ASSOCIATES, INC **Project No.: 13-54-23-02**

Boring: BCP-1 **Location: NASSAU COUNTY, FLORIDA**

DEPTH (FEET)	Wc (%)	-4 (%)	-10 (%)	-20 (%)	-40 (%)	-60 (%)	-100 (%)	-200 (%)	LL	PI	Org. (%)	N Value	USCS	Description
0.0-0.5	43										2.2	--	SM	LOOSE GRAY SILTY FINE SAND
1.0-1.5	24	98	98	98	96	92	56	13			1.0	4	SM	LOOSE GRAY SILTY FINE SAND
2.0-2.5	--											5	SM	LOOSE GRAY SILTY FINE SAND

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

SOIL CLASSIFICATION DATA

Project: CR 121 TO CR 119 BOX CULVERT EXTENSIONS

Client: KIMLEY-HORN AND ASSOCIATES, INC **Project No.: 13-54-23-02**

Boring: BCP-2 **Location: NASSAU COUNTY, FLORIDA**

DEPTH (FEET)	Wc (%)	-4 (%)	-10 (%)	-20 (%)	-40 (%)	-60 (%)	-100 (%)	-200 (%)	LL	PI	Org. (%)	N Value	USCS	Description
0.0-0.5	202										24.0	--	OL	LOOSE BLACK MUCK
1.0-1.5	133										12.4	3	SM	LOOSE DARK GRAY ORGANIC SILTY FINE SAND
2.0-2.5	37	100	100	99	98	96	82	48	42	23	2.5	3	SC	LOOSE DARK GRAY PLASTIC CLAYEY SAND WITH ORGANICS
3.0-3.5	--											4	SC	LOOSE GRAY PLASTIC CLAYEY SAND
4.0-4.5	--											5	SC	LOOSE GRAY PLASTIC CLAYEY SAND

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

SOIL CLASSIFICATION DATA

Project: CR 121 TO CR 119 BOX CULVERT EXTENSIONS

Client: KIMLEY-HORN AND ASSOCIATES, INC **Project No.: 13-54-23-02**

Boring: BCP-3 **Location: NASSAU COUNTY, FLORIDA**

DEPTH (FEET)	Wc (%)	-4 (%)	-10 (%)	-20 (%)	-40 (%)	-60 (%)	-100 (%)	-200 (%)	LL	PI	Org. (%)	N Value	USCS	Description
0.0-0.5	28										0.8	--	SP-SM	LOOSE GRAY FINE SAND
1.0-1.5	24	88	88	88	87	83	44	5			1.5	4	SP-SM	LOOSE GRAY FINE SAND
2.0-2.5	--											8	SP-SM	LOOSE GRAY FINE SAND

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

SOIL CLASSIFICATION DATA

Project: CR 121 TO CR 119 BOX CULVERT EXTENSIONS

Client: KIMLEY-HORN AND ASSOCIATES, INC **Project No.: 13-54-23-02**

Boring: BCP-4 **Location: NASSAU COUNTY, FLORIDA**

DEPTH (FEET)	Wc (%)	-4 (%)	-10 (%)	-20 (%)	-40 (%)	-60 (%)	-100 (%)	-200 (%)	LL	PI	Org. (%)	N Value	USCS	Description
0.0-0.5	37										0.5	--	SP-SM	LOOSE GRAY FINE SAND
1.0-1.5	39	99	98	98	97	95	32	7			1.0	3	SP-SM	LOOSE GRAY FINE SAND
2.0-2.5	31										1.7	4	SP-SM	LOOSE GRAY FINE SAND
3.0-3.5	--											7	SP-SM	LOOSE GRAY FINE SAND
4.0-4.5	--											9	SP-SM	MEDIUM DENSE GRAY FINE SAND

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

SOIL CLASSIFICATION DATA

Project: CR 121 TO CR 119 BOX CULVERT EXTENSIONS

Client: KIMLEY-HORN AND ASSOCIATES, INC **Project No.: 13-54-23-02**

Boring: BCP-5 **Location: NASSAU COUNTY, FLORIDA**

DEPTH (FEET)	Wc (%)	-4 (%)	-10 (%)	-20 (%)	-40 (%)	-60 (%)	-100 (%)	-200 (%)	LL	PI	Org. (%)	N Value	USCS	Description
0.0-0.5	49										4.9	--	SP-SM	LOOSE DARK GRAY FINE SAND WITH ORGANICS
1.0-1.5	33	94	93	92	90	89	58	8			2.4	5	SP-SM	LOOSE GRAY FINE SAND
2.0-2.5	38										1.6	5	SP-SM	LOOSE GRAY FINE SAND
3.0-3.5	--											4	SP-SM	LOOSE GRAY FINE SAND
4.0-4.5	--											9	SP-SM	MEDIUM DENSE GRAY FINE SAND

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

SOIL CLASSIFICATION DATA

Project: CR 121 TO CR 119 BOX CULVERT EXTENSIONS

Client: KIMLEY-HORN AND ASSOCIATES, INC **Project No.: 13-54-23-02**

Boring: BCP-6 **Location: NASSAU COUNTY, FLORIDA**

DEPTH (FEET)	Wc (%)	-4 (%)	-10 (%)	-20 (%)	-40 (%)	-60 (%)	-100 (%)	-200 (%)	LL	PI	Org. (%)	N Value	USCS	Description
0.0-0.5	9											--	SM	LOOSE GRAY SILTY FINE SAND
1.0-1.5	8	100	100	99	98	96	60	14				4	SM	LOOSE GRAY SILTY FINE SAND
2.0-2.5	14											9	SM	MEDIUM DENSE GRAY SILTY FINE SAND

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

APPENDIX D

GRAIN-SIZE DISTRIBUTION CURVES

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

MECHANICAL GRAIN-SIZE ANALYSIS
(ASTM D1140-54)

TEST INFORMATION:

PROJECT NO.: 13-54-23-02 **DATE:** 8/8/2024

BORING NO.: BCP-1 **DEPTH:** 1.0 - 1.5 (FEET)

SOIL DESCRIPTION: SILTY FINE SAND (SM)

TEST RESULTS:

Sieve No.	Diameter (Millimeters)	Percent Passing (%)
4	4.750	98
10	2.000	98
20	0.850	98
40	0.425	96
60	0.250	92
100	0.150	56
200	0.075	13

NOTE: THE FOLLOWING VALUES ARE ESTIMATED FROM THE GRAIN-SIZE DATA

* D_{10} = 0.065 mm

D_{50} = 0.14 mm

D_{60} = 0.16 mm

D_{85} = 0.21 mm

C_u = 2.5

Where:
N/A = Not Available
***** = Estimated Value
Cu = Coefficient Of Uniformity

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

MECHANICAL GRAIN-SIZE ANALYSIS
(ASTM D1140-54)

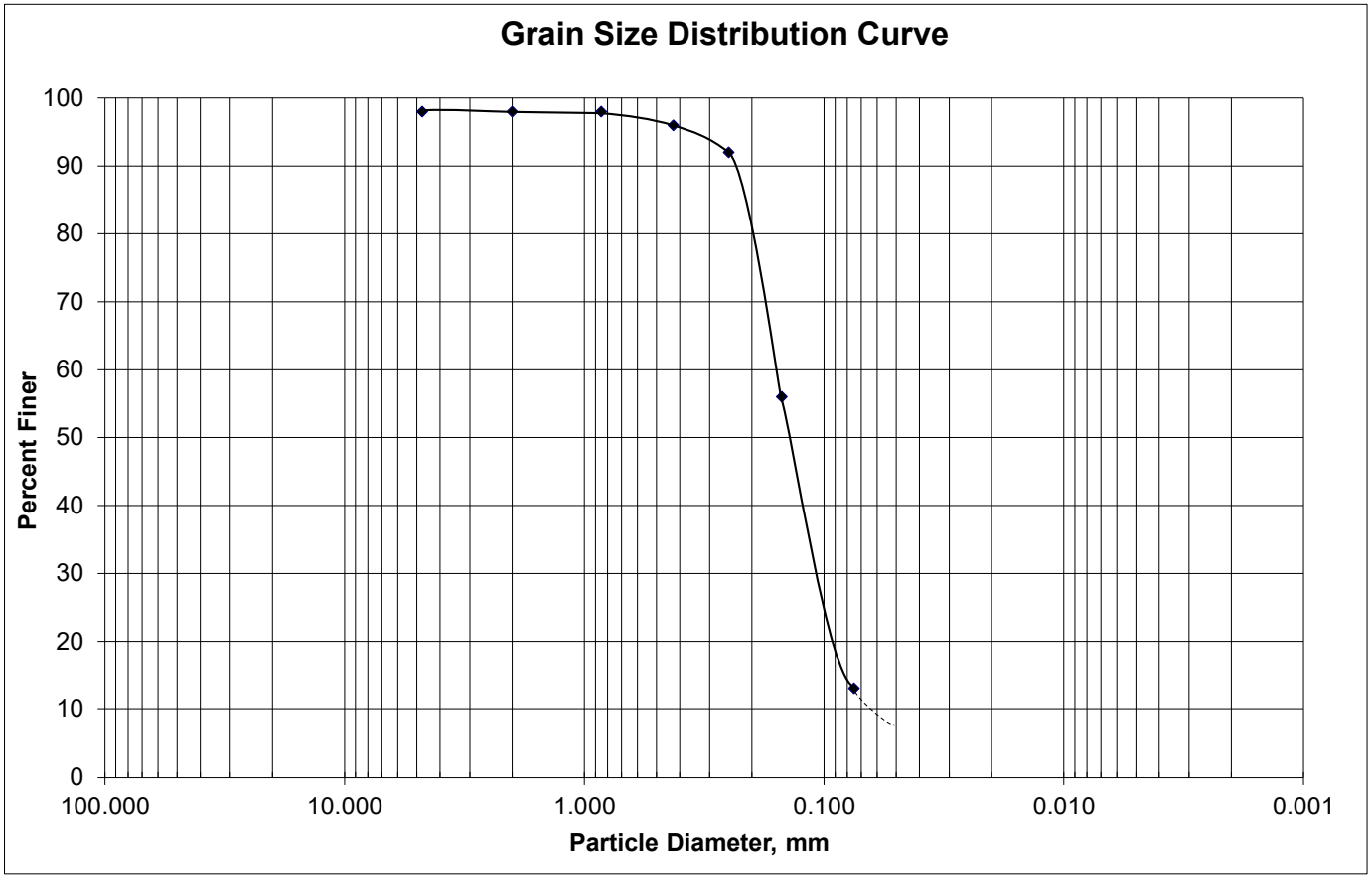
TEST INFORMATION:

PROJECT NO.: 13-54-23-02 **DATE:** 8/8/2024

BORING NO.: BCP-1 **DEPTH:** 1.0 - 1.5 (FEET)

SOIL DESCRIPTION: SILTY FINE SAND
(SM)

GRAPHICAL REPRESENTATION OF TEST RESULTS



ENVIRONMENTAL AND GEOTECHNICAL SPECIALISTS, INC.

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

MECHANICAL GRAIN-SIZE ANALYSIS
(ASTM D1140-54)

TEST INFORMATION:

PROJECT NO.: 13-54-23-02 **DATE:** 8/8/2024

BORING NO.: BCP-2 **DEPTH:** 2.0 - 2.5 (FEET)

SOIL DESCRIPTION: PLASTIC CLAYEY SAND WITH ORGANICS (SC)

TEST RESULTS:

Sieve No.	Diameter (Millimeters)	Percent Passing (%)
4	4.750	100
10	2.000	100
20	0.850	99
40	0.425	98
60	0.250	96
100	0.150	82
200	0.075	48

NOTE: THE FOLLOWING VALUES ARE ESTIMATED FROM THE GRAIN-SIZE DATA

* D_{10} = 0.018 mm

D_{50} = 0.080 mm

D_{60} = 0.10 mm

D_{85} = 0.17 mm

C_u = 5.6

Where:
N/A = Not Available
***** = Estimated Value
Cu = Coefficient Of Uniformity

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

MECHANICAL GRAIN-SIZE ANALYSIS
(ASTM D1140-54)

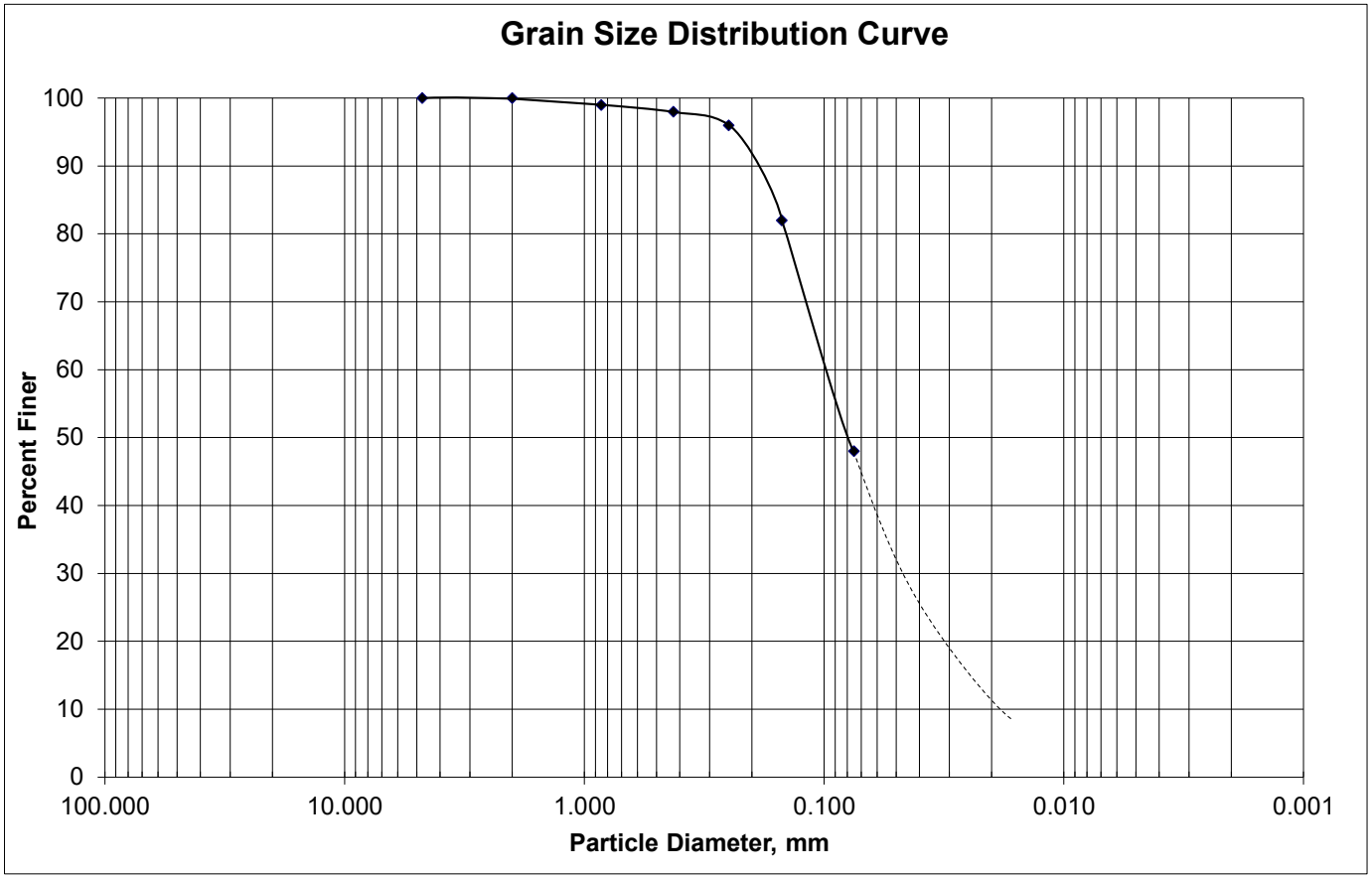
TEST INFORMATION:

PROJECT NO.: 13-54-23-02 **DATE:** 8/8/2024

BORING NO.: BCP-2 **DEPTH:** 2.0 - 2.5 (FEET)

SOIL DESCRIPTION: PLASTIC CLAYEY SAND WITH ORGANICS
(SC)

GRAPHICAL REPRESENTATION OF TEST RESULTS



ENVIRONMENTAL AND GEOTECHNICAL SPECIALISTS, INC.

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

MECHANICAL GRAIN-SIZE ANALYSIS
(ASTM D1140-54)

TEST INFORMATION:

PROJECT NO.: 13-54-23-02 **DATE:** 8/8/2024

BORING NO.: BCP-3 **DEPTH:** 1.0 - 1.5 (FEET)

SOIL DESCRIPTION: FINE SAND (SP-SM)

TEST RESULTS:

Sieve No.	Diameter (Millimeters)	Percent Passing (%)
4	4.750	88
10	2.000	88
20	0.850	88
40	0.425	87
60	0.250	83
100	0.150	44
200	0.075	5

NOTE: THE FOLLOWING VALUES ARE ESTIMATED FROM THE GRAIN-SIZE DATA

D_{10} = 0.090 mm

D_{50} = 0.17 mm

D_{60} = 0.18 mm

D_{85} = 0.28 mm

C_u = 2.0

Where:
N/A = Not Available
***** = Estimated Value
Cu = Coefficient Of Uniformity

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

MECHANICAL GRAIN-SIZE ANALYSIS
(ASTM D1140-54)

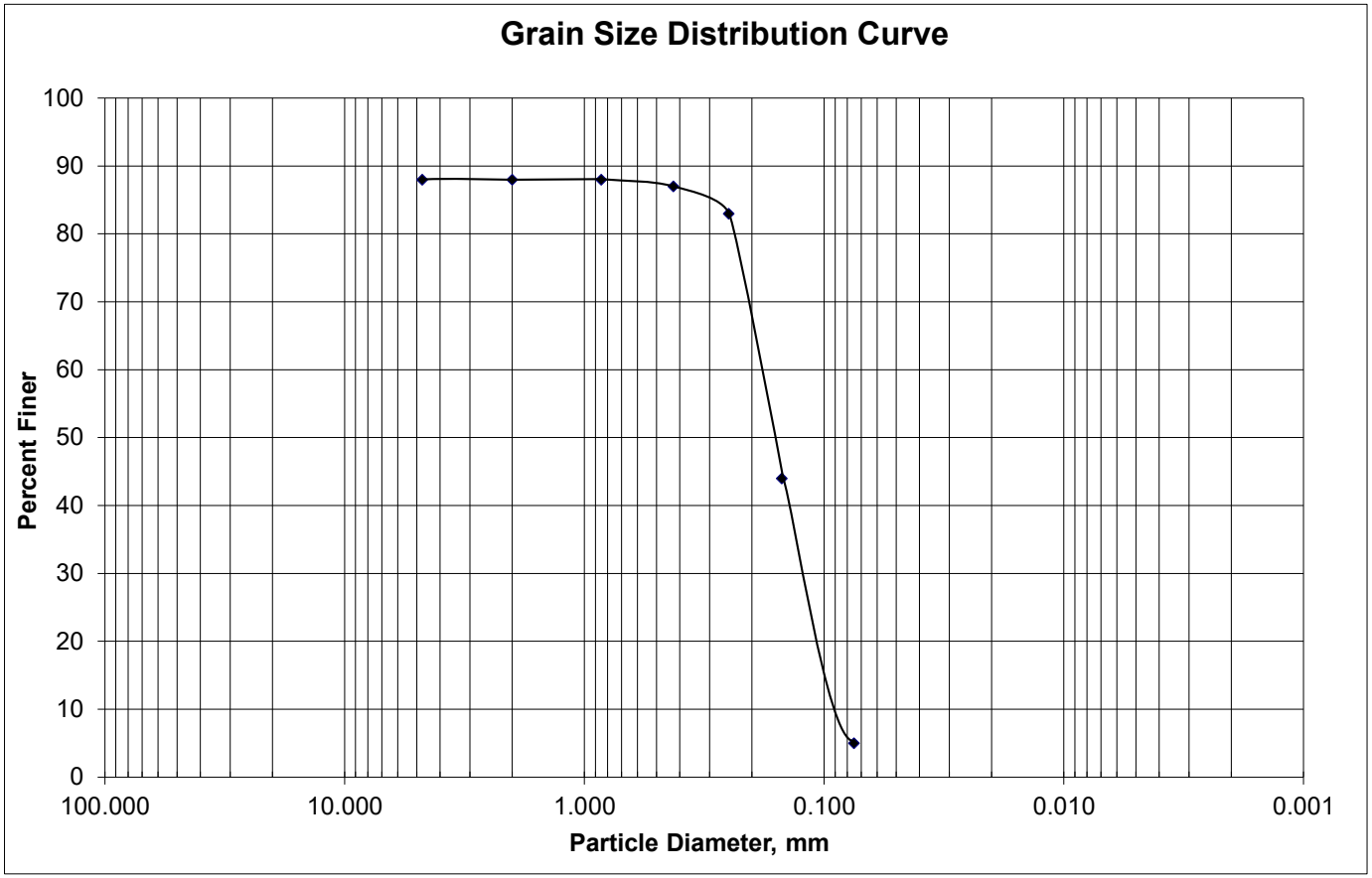
TEST INFORMATION:

PROJECT NO.: 13-54-23-02 **DATE:** 8/8/2024

BORING NO.: BCP-3 **DEPTH:** 1.0 - 1.5 (FEET)

SOIL DESCRIPTION: FINE SAND
(SP-SM)

GRAPHICAL REPRESENTATION OF TEST RESULTS



ENVIRONMENTAL AND GEOTECHNICAL SPECIALISTS, INC.

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

MECHANICAL GRAIN-SIZE ANALYSIS
(ASTM D1140-54)

TEST INFORMATION:

PROJECT NO.: 13-54-23-02 **DATE:** 8/8/2024

BORING NO.: BCP-4 **DEPTH:** 1.0 - 1.5 (FEET)

SOIL DESCRIPTION: FINE SAND (SP-SM)

TEST RESULTS:

Sieve No.	Diameter (Millimeters)	Percent Passing (%)
4	4.750	99
10	2.000	98
20	0.850	98
40	0.425	97
60	0.250	95
100	0.150	32
200	0.075	7

NOTE: THE FOLLOWING VALUES ARE ESTIMATED FROM THE GRAIN-SIZE DATA

D_{10} = 0.090 mm

D_{50} = 0.17 mm

D_{60} = 0.18 mm

D_{85} = 0.21 mm

C_u = 2.0

Where:
N/A = Not Available
***** = Estimated Value
Cu = Coefficient Of Uniformity

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

MECHANICAL GRAIN-SIZE ANALYSIS
(ASTM D1140-54)

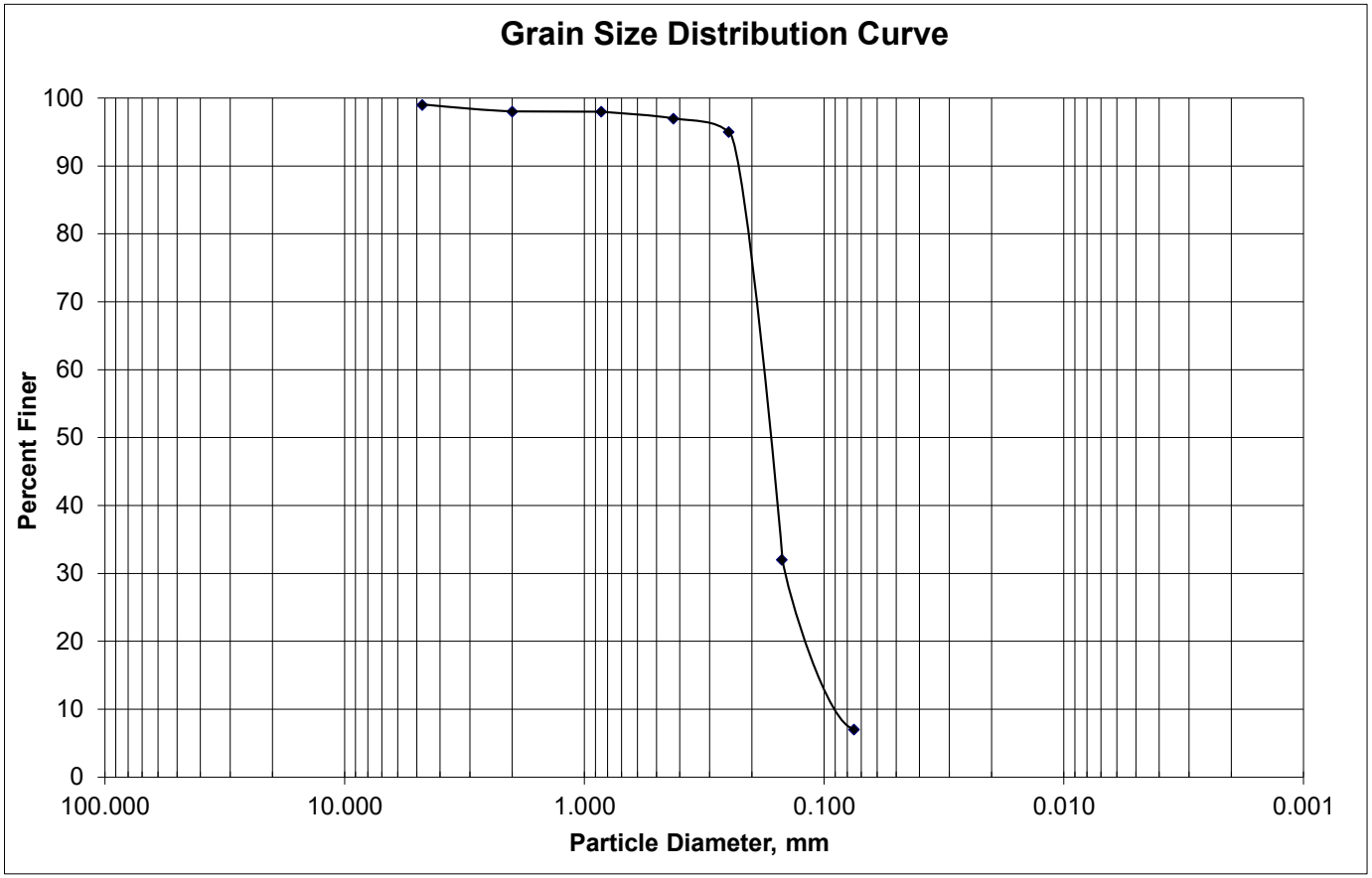
TEST INFORMATION:

PROJECT NO.: 13-54-23-02 **DATE:** 8/8/2024

BORING NO.: BCP-4 **DEPTH:** 1.0 - 1.5 (FEET)

SOIL DESCRIPTION: FINE SAND
(SP-SM)

GRAPHICAL REPRESENTATION OF TEST RESULTS



ENVIRONMENTAL AND GEOTECHNICAL SPECIALISTS, INC.

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

MECHANICAL GRAIN-SIZE ANALYSIS
(ASTM D1140-54)

TEST INFORMATION:

PROJECT NO.: 13-54-23-02 **DATE:** 8/8/2024

BORING NO.: BCP-5 **DEPTH:** 1.0 - 1.5 (FEET)

SOIL DESCRIPTION: FINE SAND (SP-SM)

TEST RESULTS:

Sieve No.	Diameter (Millimeters)	Percent Passing (%)
4	4.750	94
10	2.000	93
20	0.850	92
40	0.425	90
60	0.250	89
100	0.150	58
200	0.075	8

NOTE: THE FOLLOWING VALUES ARE ESTIMATED FROM THE GRAIN-SIZE DATA

D_{10} = 0.080 mm

D_{50} = 0.14 mm

D_{60} = 0.16 mm

D_{85} = 0.22 mm

C_u = 2.0

Where:
N/A = Not Available
***** = Estimated Value
Cu = Coefficient Of Uniformity

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

MECHANICAL GRAIN-SIZE ANALYSIS
(ASTM D1140-54)

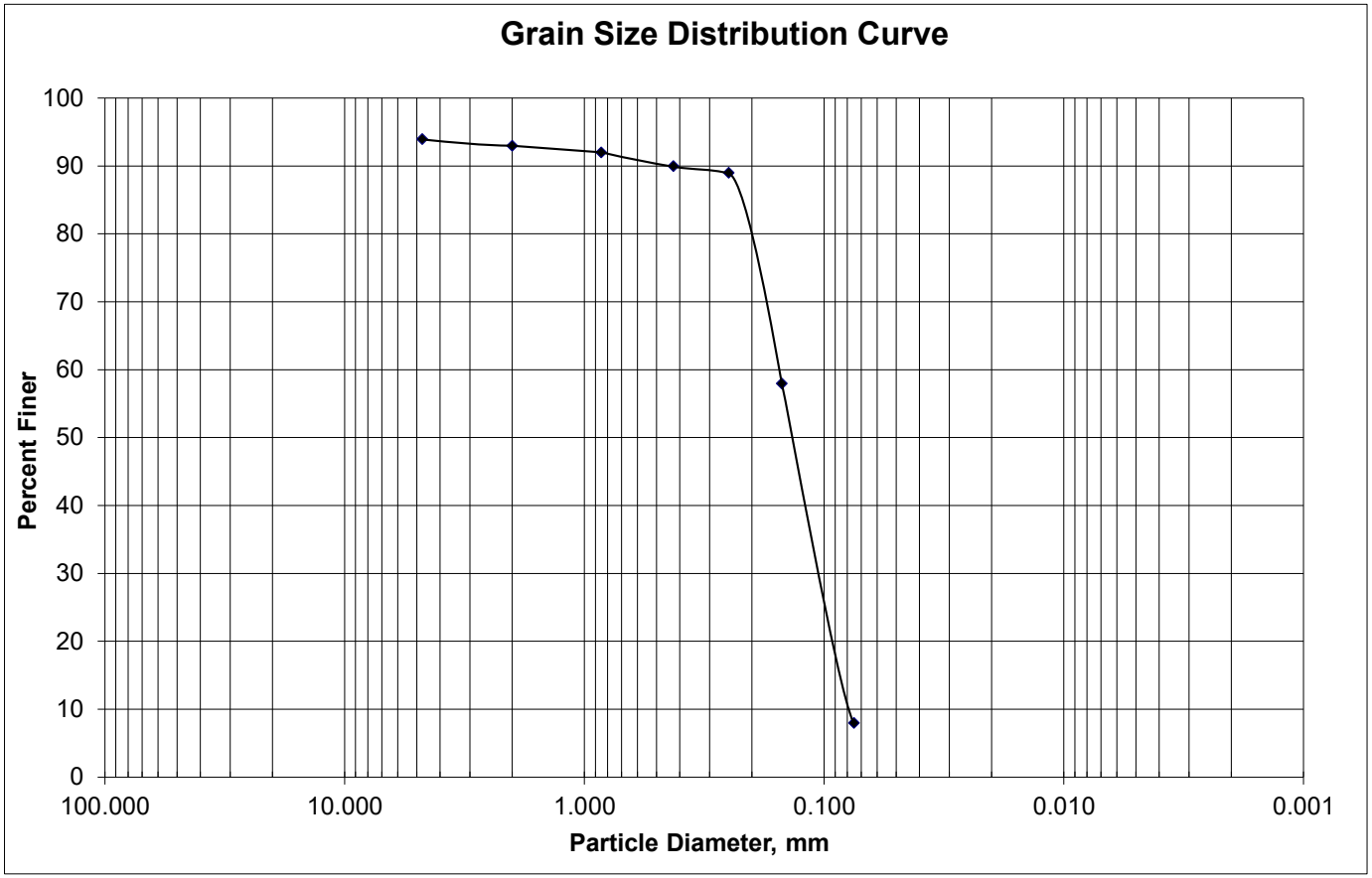
TEST INFORMATION:

PROJECT NO.: 13-54-23-02 **DATE:** 8/8/2024

BORING NO.: BCP-5 **DEPTH:** 1.0 - 1.5 (FEET)

SOIL DESCRIPTION: FINE SAND
(SP-SM)

GRAPHICAL REPRESENTATION OF TEST RESULTS



ENVIRONMENTAL AND GEOTECHNICAL SPECIALISTS, INC.

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

MECHANICAL GRAIN-SIZE ANALYSIS
(ASTM D1140-54)

TEST INFORMATION:

PROJECT NO.: 13-54-23-02 **DATE:** 8/8/2024

BORING NO.: BCP-6 **DEPTH:** 1.0 - 1.5 (FEET)

SOIL DESCRIPTION: SILTY FINE SAND (SM)

TEST RESULTS:

Sieve No.	Diameter (Millimeters)	Percent Passing (%)
4	4.750	100
10	2.000	100
20	0.850	99
40	0.425	98
60	0.250	96
100	0.150	60
200	0.075	14

NOTE: THE FOLLOWING VALUES ARE ESTIMATED FROM THE GRAIN-SIZE DATA

* D_{10} = 0.065 mm

D_{50} = 0.14 mm

D_{60} = 0.15 mm

D_{85} = 0.20 mm

C_u = 2.3

Where:
N/A = Not Available
***** = Estimated Value
Cu = Coefficient Of Uniformity

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

MECHANICAL GRAIN-SIZE ANALYSIS
(ASTM D1140-54)

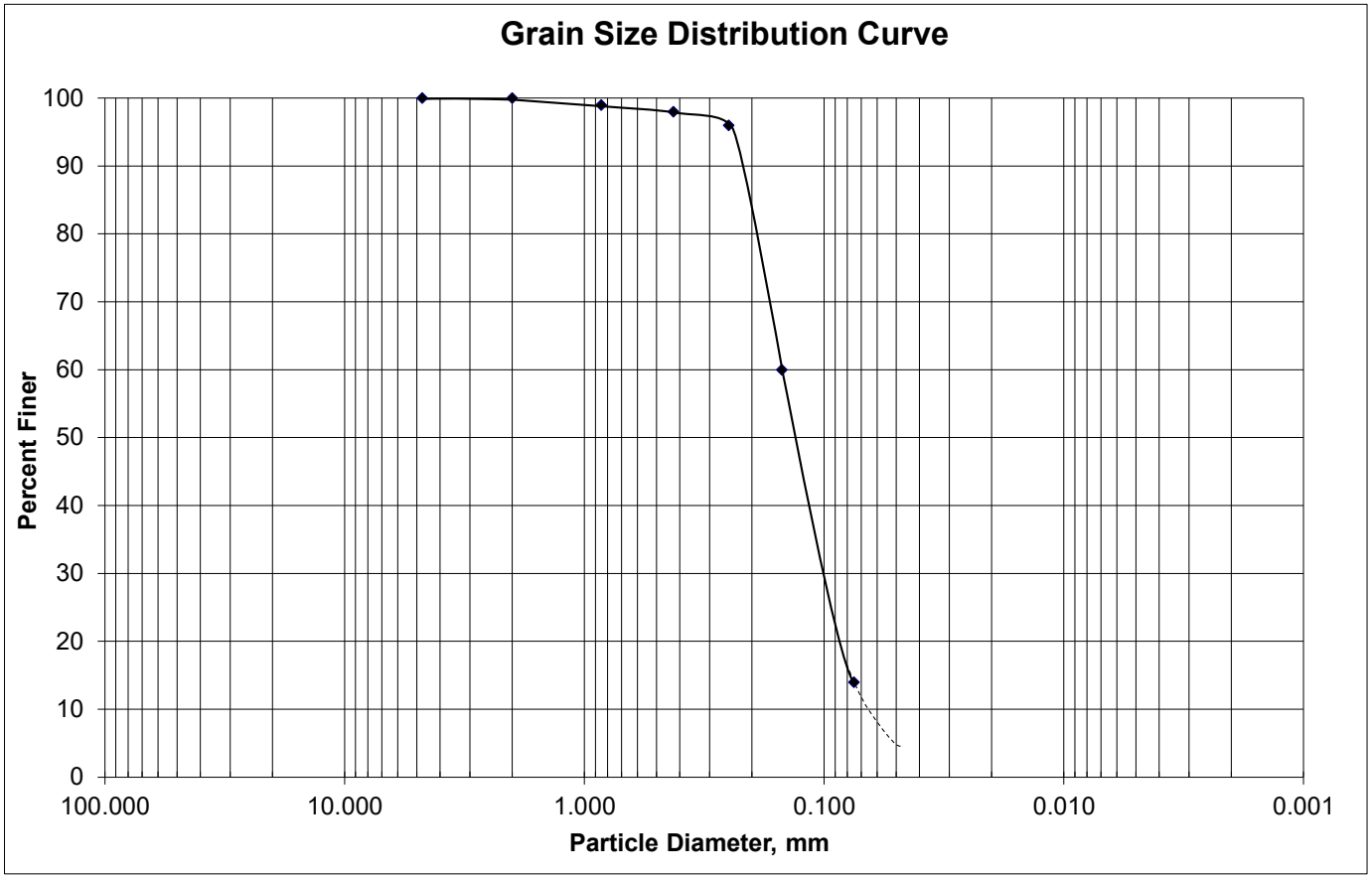
TEST INFORMATION:

PROJECT NO.: 13-54-23-02 **DATE:** 8/8/2024

BORING NO.: BCP-6 **DEPTH:** 1.0 - 1.5 (FEET)

SOIL DESCRIPTION: SILTY FINE SAND
(SM)

GRAPHICAL REPRESENTATION OF TEST RESULTS



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Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

APPENDIX E

SAMPLE CALCULATIONS

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

BEARING CAPACITY CALCULATIONS

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

CULVERT EXTENSION SHALLOW FOUNDATION BEARING CAPACITY CALCULATIONS SOIL BORINGS BCK-1 AND BCK-2

BEARING SURFACE PROPERTIES

COARSE AGGREGATE UNDERLAIN BY LOOSE to MEDIUM DENSE SILTY FINE SAND (SM)

$N_{cor} := 11$ $\phi := 35 \cdot deg$ $c := 0 \cdot \frac{lb}{ft^2}$ $D_w := 0 \cdot ft$ $\gamma := 52.6 \cdot \frac{lb}{ft^3}$

N_{cor} = Corrected N-Value
ϕ = Soil Angle of Friction
D_w = Depth to Design Water
γ = Effective Unit Weight
c = Undrained Shear Strength
B = Foundation Width
L = Foundation Length
D_f = Depth of Foundation
d_q = Depth Correction Factor

FOUNDATION PARAMETERS (Approximate)

$B := 8 \cdot ft$ $L := 50 \cdot ft$ $D_f := 0.5 \cdot ft$ $d_q := 1$ $C_{w\gamma} := 0.5$ $C_{wq} := 0.5$

BEARING CAPACITY INDEX FACTORS

See AASHTO LRFD Bridge Specifications (10.6.3.1.2) for Bearing Capacity Index Factors and Theory.

$N_q := 33.3$ $N_\gamma := 48.0$ $N_c := 46.1$

$s_q := 1 + \left(\frac{B}{L}\right) \cdot \tan(\phi)$ $s_\gamma := 1 - 0.4 \cdot \left(\frac{B}{L}\right)$ $s_c := 1 + \left(\frac{B}{L}\right) \cdot \left(\frac{N_q}{N_c}\right)$

$s_q = 1.1$ $s_\gamma = 0.9$ $s_c = 1.1$

NOTE: Inclination factors not applicable.

LATERAL SOIL PROPERTIES

$K_a := \frac{1 - \sin(\phi)}{1 + \sin(\phi)}$ $K_a = 0.27$ $K_p := \frac{1 + \sin(\phi)}{1 - \sin(\phi)}$ $K_p = 3.69$

MODULUS OF SUBGRADE REACTION (Scott 1981)

$K_s := 6 \cdot N_{cor} \cdot \frac{ton}{ft^3}$ $\boxed{K_s = 132000 \frac{lb}{ft^3}}$ **<~** *Modulus of Subgrade Reaction*

ALLOWABLE BEARING RESISTANCE (Munfakh 2001)

$q_{n\_munfakh} := c \cdot N_c \cdot s_c + \gamma \cdot D_f \cdot N_q \cdot s_q \cdot d_q \cdot C_{wq} + 0.5 \cdot \gamma \cdot B \cdot N_\gamma \cdot s_\gamma \cdot C_{w\gamma}$

$q_{n\_munfakh} = 5213.4\,psf$

$\phi_b := 0.45$ **<~** *Resistance Factor (LRFD)*

$q_{a\_munfakh} := \phi_b \cdot q_{n\_munfakh}$

$q_{a\_munfakh} = 2346\,psf$ **<~** *Allowable Bearing Resistance*

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

CULVERT EXTENSION SHALLOW FOUNDATION BEARING CAPACITY CALCULATIONS SOIL BORINGS BCK-3 AND BCK-4

BEARING SURFACE PROPERTIES

COARSE AGGREGATE UNDERLAIN BY LOOSE to MEDIUM DENSE SILTY FINE to CLAYEY FINE SAND (SM to SC)

$N_{cor} := 10$ $\phi := 35 \cdot deg$ $c := 0 \cdot \frac{lb}{ft^2}$ $D_w := 0 \cdot ft$ $\gamma := 52.6 \cdot \frac{lb}{ft^3}$

N_{cor} = Corrected N-Value
ϕ = Soil Angle of Friction
D_w = Depth to Design Water
γ = Effective Unit Weight
c = Undrained Shear Strength
B = Foundation Width
L = Foundation Length
D_f = Depth of Foundation
d_q = Depth Correction Factor

FOUNDATION PARAMETERS (Approximate)

$B := 8 \cdot ft$ $L := 10 \cdot ft$ $D_f := 0.5 \cdot ft$ $d_q := 1$ $C_{w\gamma} := 0.5$ $C_{wq} := 0.5$

BEARING CAPACITY INDEX FACTORS

See AASHTO LRFD Bridge Specifications (10.6.3.1.2) for Bearing Capacity Index Factors and Theory.

$N_q := 33.3$ $N_\gamma := 48.0$ $N_c := 46.1$

$s_q := 1 + \left(\frac{B}{L}\right) \cdot \tan(\phi)$ $s_\gamma := 1 - 0.4 \cdot \left(\frac{B}{L}\right)$ $s_c := 1 + \left(\frac{B}{L}\right) \cdot \left(\frac{N_q}{N_c}\right)$

$s_q = 1.6$ $s_\gamma = 0.7$ $s_c = 1.6$

NOTE: Inclination factors not applicable.

LATERAL SOIL PROPERTIES

$K_a := \frac{1 - \sin(\phi)}{1 + \sin(\phi)}$ $K_a = 0.27$ $K_p := \frac{1 + \sin(\phi)}{1 - \sin(\phi)}$ $K_p = 3.69$

MODULUS OF SUBGRADE REACTION (Scott 1981)

$K_s := 6 \cdot N_{cor} \cdot \frac{ton}{ft^3}$ $\boxed{K_s = 120000 \frac{lb}{ft^3}}$ **<~** *Modulus of Subgrade Reaction*

ALLOWABLE BEARING RESISTANCE (Munfakh 2001)

$q_{n\_munfakh} := c \cdot N_c \cdot s_c + \gamma \cdot D_f \cdot N_q \cdot s_q \cdot d_q \cdot C_{wq} + 0.5 \cdot \gamma \cdot B \cdot N_\gamma \cdot s_\gamma \cdot C_{w\gamma}$

$q_{n\_munfakh} = 4116.9\,psf$

$\phi_b := 0.45$ **<~** *Resistance Factor (LRFD)*

$q_{a\_munfakh} := \phi_b \cdot q_{n\_munfakh}$

$q_{a\_munfakh} = 1853\,psf$ **<~** *Allowable Bearing Resistance*

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

CULVERT EXTENSION SHALLOW FOUNDATION BEARING CAPACITY CALCULATIONS SOIL BORINGS BCK-5 AND BCK-6

BEARING SURFACE PROPERTIES

COARSE AGGREGATE UNDERLAIN BY LOOSE SILTY FINE SAND (SM)

$N_{cor} := 7$ $\phi := 35 \cdot deg$ $c := 0 \cdot \frac{lb}{ft^2}$ $D_w := 0 \cdot ft$ $\gamma := 47.6 \cdot \frac{lb}{ft^3}$

N_{cor} = Corrected N-Value
ϕ = Soil Angle of Friction
D_w = Depth to Design Water
γ = Effective Unit Weight
c = Undrained Shear Strength
B = Foundation Width
L = Foundation Length
D_f = Depth of Foundation
d_q = Depth Correction Factor

FOUNDATION PARAMETERS (Approximate)

$B := 8 \cdot ft$ $L := 60 \cdot ft$ $D_f := 0.5 \cdot ft$ $d_q := 1$ $C_{w\gamma} := 0.5$ $C_{wq} := 0.5$

BEARING CAPACITY INDEX FACTORS

See AASHTO LRFD Bridge Specifications (10.6.3.1.2) for Bearing Capacity Index Factors and Theory.

$N_q := 33.3$ $N_\gamma := 48.0$ $N_c := 46.1$

$s_q := 1 + \left(\frac{B}{L}\right) \cdot \tan(\phi)$ $s_\gamma := 1 - 0.4 \cdot \left(\frac{B}{L}\right)$ $s_c := 1 + \left(\frac{B}{L}\right) \cdot \left(\frac{N_q}{N_c}\right)$

$s_q = 1.1$ $s_\gamma = 0.9$ $s_c = 1.1$

NOTE: Inclination factors not applicable.

LATERAL SOIL PROPERTIES

$K_a := \frac{1 - \sin(\phi)}{1 + \sin(\phi)}$ $K_a = 0.27$ $K_p := \frac{1 + \sin(\phi)}{1 - \sin(\phi)}$ $K_p = 3.69$

MODULUS OF SUBGRADE REACTION (Scott 1981)

$K_s := 6 \cdot N_{cor} \cdot \frac{ton}{ft^3}$ $\boxed{K_s = 84000 \frac{lb}{ft^3}}$ **<~** *Modulus of Subgrade Reaction*

ALLOWABLE BEARING RESISTANCE (Munfakh 2001)

$q_{n\_munfakh} := c \cdot N_c \cdot s_c + \gamma \cdot D_f \cdot N_q \cdot s_q \cdot d_q \cdot C_{wq} + 0.5 \cdot \gamma \cdot B \cdot N_\gamma \cdot s_\gamma \cdot C_{w\gamma}$

$q_{n\_munfakh} = 4759.2\,psf$

$\phi_b := 0.45$ **<~** *Resistance Factor (LRFD)*

$q_{a\_munfakh} := \phi_b \cdot q_{n\_munfakh}$

$q_{a\_munfakh} = 2142\,psf$ **<~** *Allowable Bearing Resistance*

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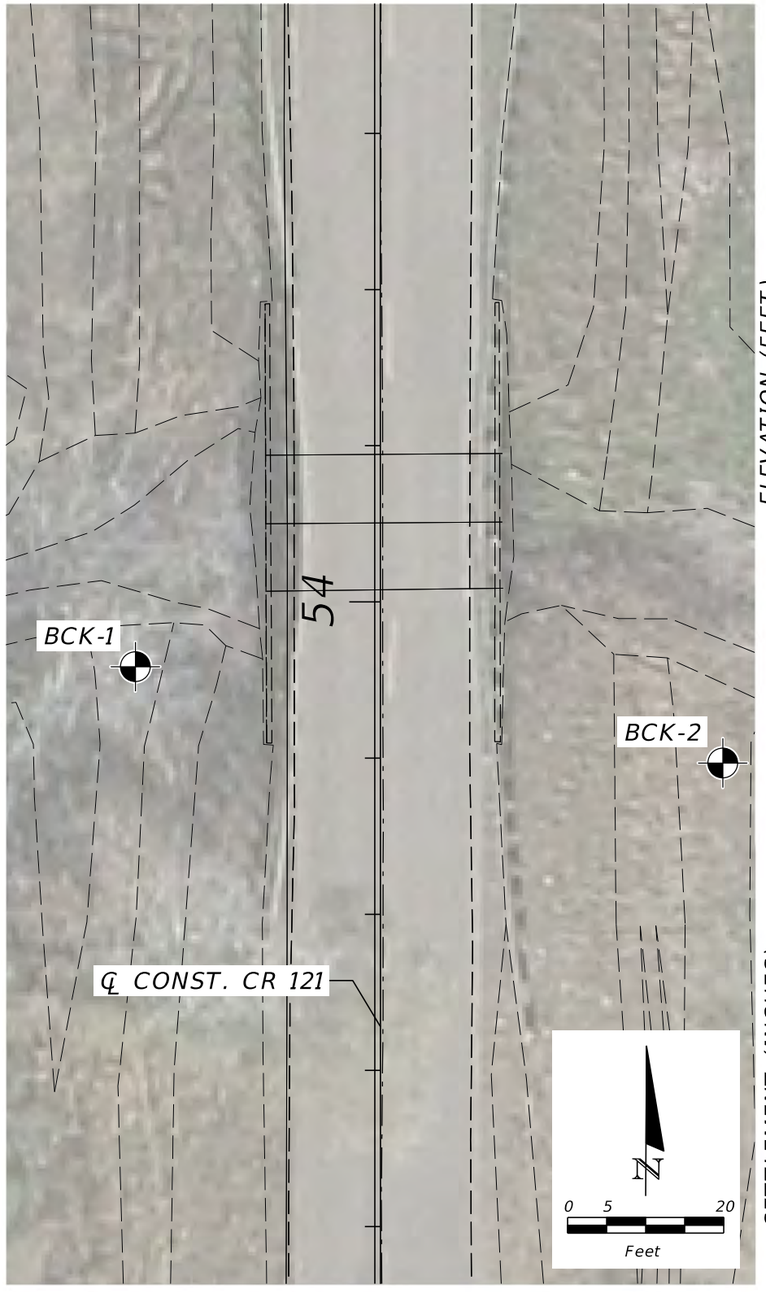
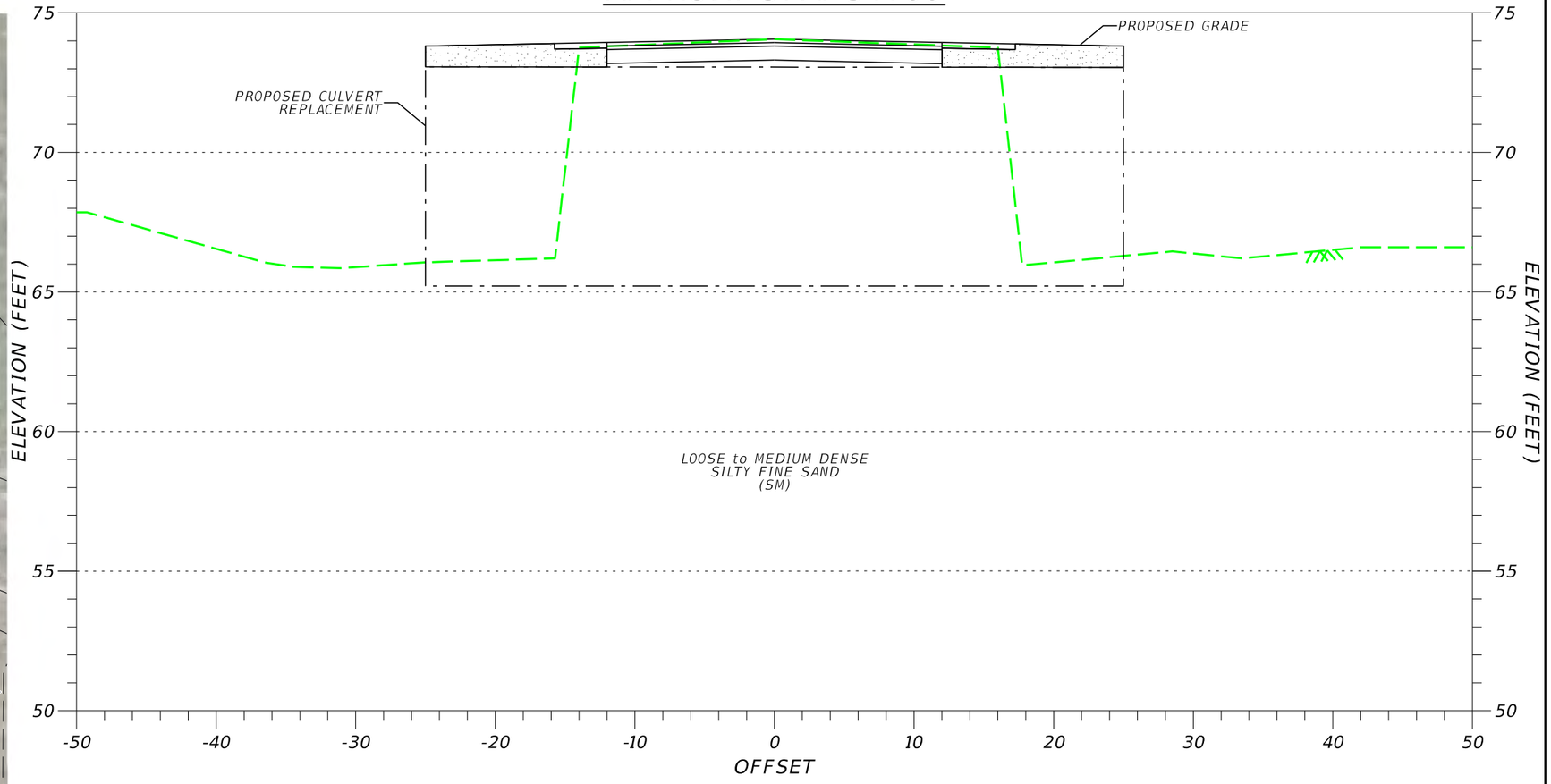
SETTLEMENT CALCULATIONS

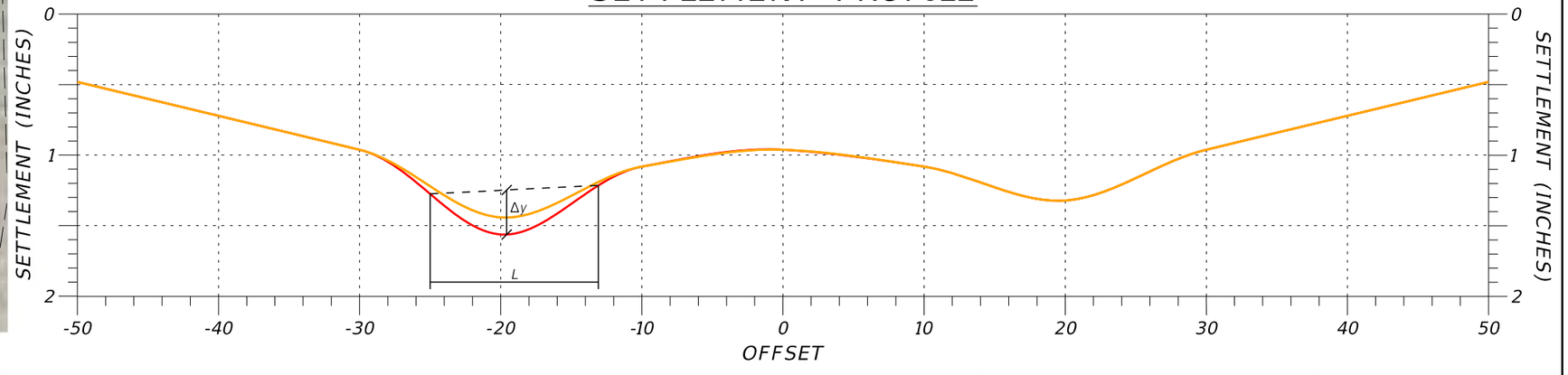
Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E



APPROX. STA. 54+00



SETTLEMENT PROFILE



CULVERT 1 - FULL REPLACEMENT

NOTE

ELEVATIONS DETERMINED FROM FILES PROVIDED BY KHA.

LEGEND

- EXISTING GROUND SURFACE
- ELASTIC SETTLEMENT
- CONSOLIDATION SETTLEMENT

PREPARED:	I. CAPORINI, E.I.
CHECKED:	K. MORALES, P.E.
REVISED:	I. CAPORINI, E.I.
ENGINEER:	M. LANDSCHOOT, P.E.

Environmental & Geotechnical Specialists, Inc.
3772 Kori Road
Jacksonville, Florida 32257
Office: (904) 329-7180

DESIGN FIGURE
CR 121 CULVERT EXTENSIONS
FROM DUVAL COUNTY LINE TO CR 119
NASSAU COUNTY, FLORIDA

SCALE:	AS SHOWN	DATE:	AUGUST 2024
PROJ. NO.:	13-54-23-02	FIGURE NO.:	E1

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CR 121 CULVERT EXTENSIONS

Report created by FoSSA(2.0): Copyright (c) 2003-2012, ADAMA Engineering, Inc.

PROJECT IDENTIFICATION

Title: CR 121 CULVERT EXTENSIONS
Project Number: 13-54-23 - 02
Client: KIMLEY HORN & ASSOCIATES, INC.
Designer: M. LANDSCHOOT, P.E.
Station Number: 54+00

Description:
SETTLEMENT ANALYSIS FOR CULVERT EXTENSION AT CULVERT 1 (APPROX. STA. 54+00)

Company's information:

Name: ENVIRONMENTAL AND GEOTECHNICAL SPECIALISTS, INC.
Street: 3772 KORI ROAD
JACKSONVILLE, FL 32257
Telephone #: (904) 329-7180
Fax #:
E-Mail:

Original file path and name: U:\1 - Act ..... Settlement Analysis\Settlement Analysis 54+00.2ST
Original date and time of creating this file: Thu Aug 08 13:40:56 2024

GEOMETRY: Analysis of a 2D geometry

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INPUT DATA – FOUNDATION LAYERS – 4 layers

	Wet Unit Weight, γ [lb/ft³]	Poisson's Ratio μ	Description of Soil
1	150.00	0.50	EXISTING CULVERT
2	115.00	0.25	LOOSE to MED DENSE SILTY FINE SAND (SM)
3	120.00	0.40	STIFF PLASTIC SANDY CLAY (CL)
4	110.00	0.20	LOOSE SILTY FINE to CLAYEY FINE SAND (SM to SC)

INPUT DATA – EMBANKMENT LAYERS -- 1 layers

	Wet Unit Weight, γ [lb/ft³]	Description of Soil
1	150.00	CULVERT EXTENSION

INPUT DATA OF WATER

Point #	Coordinates (X, Z) : (X) [ft.]	(Z) [ft.]
1	-31.00	66.40
2	44.00	67.10

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DRAWING OF SPECIFIED GEOMETRY

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INPUT DATA FOR CONSOLIDATION –– $\alpha = 1/2$

Layer #	Underging Consolidation [Yes/No]	OCR = Pc / Po	Cc	Cr	e0	Cv [ft ²/day]	Drains at :
1	No	N/A	N/A	N/A	N/A	N/A	N/A
2	No	N/A	N/A	N/A	N/A	N/A	N/A
3	Yes	9.30	0.150	0.030	0.400	0.2153	Top & Bot.
4	No	N/A	N/A	N/A	N/A	N/A	N/A

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IMMEDIATE SETTLEMENT, Si

Node #	Settlement along section: X [ft.]	Y [ft.]	Layer (k)	Young's Modulus, E [lb/ft ²]	Poisson's Ratio, μ	Settlement of each layer, Si(k) [ft.]	Initial Z [ft.]	Final Z * [ft.]	Total Settlement Sum of Si(k), [ft.]
1	-50.00	0.00	1	5000000	0.5000	0.0000	67.85	67.81	0.04
			2	368653	0.2500	-0.0004			
			3	456644	0.4000	-0.0001			
			4	221070	0.2000	0.0437			
2	-40.00	0.00	1	5000000	0.5000	0.0000	66.55	66.49	0.06
			2	368653	0.2500	-0.0001			
			3	456644	0.4000	0.0001			
			4	221070	0.2000	0.0565			
3	-30.00	0.00	1	5000000	0.5000	0.0000	65.89	65.81	0.08
			2	368653	0.2500	0.0044			
			3	456644	0.4000	0.0008			
			4	221070	0.2000	0.0720			
4	-20.00	0.00	1	5000000	0.5000	0.0000	66.14	66.02	0.12
			2	368653	0.2500	0.0300			
			3	456644	0.4000	0.0015			
			4	221070	0.2000	0.0850			
5	-10.00	0.00	1	5000000	0.5000	-0.0001	73.84	73.74	0.09
			2	368653	0.2500	0.0048			
			3	456644	0.4000	0.0007			
			4	221070	0.2000	0.0856			
6	0.00	0.00	1	5000000	0.5000	-0.0001	74.05	73.97	0.08
			2	368653	0.2500	0.0001			
			3	456644	0.4000	0.0001			
			4	221070	0.2000	0.0818			
7	10.00	0.00	1	5000000	0.5000	-0.0001	73.86	73.78	0.09
			2	368653	0.2500	0.0025			
			3	456644	0.4000	0.0003			
			4	221070	0.2000	0.0827			
8	20.00	0.00	1	5000000	0.5000	0.0000	65.98	65.87	0.11
			2	368653	0.2500	0.0259			
			3	456644	0.4000	0.0006			
			4	221070	0.2000	0.0841			
9	30.00	0.00	1	5000000	0.5000	0.0000	66.38	66.30	0.08
			2	368653	0.2500	0.0034			
			3	456644	0.4000	0.0002			
			4	221070	0.2000	0.0726			
10	40.00	0.00	1	5000000	0.5000	0.0000	66.51	66.45	0.06
			2	368653	0.2500	-0.0002			
			3	456644	0.4000	0.0000			
			4	221070	0.2000	0.0555			
11	50.00	0.00	1	5000000	0.5000	0.0000	66.60	66.56	0.04
			2	368653	0.2500	-0.0004			
			3	456644	0.4000	0.0000			
			4	221070	0.2000	0.0422			

*Note: Final Z is calculated assuming only 'Immediate Settlement' exists.

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ULTIMATE SETTLEMENT, Sc

Node #	X [ft.]	Y [ft.]	Original Z [ft.]	Settlement Sc [ft.]	Final Z * [ft.]
1	-50.00	0.00	67.85	0.00	67.85
2	-40.00	0.00	66.55	0.00	66.55
3	-30.00	0.00	65.89	0.00	65.88
4	-20.00	0.00	66.14	0.01	66.13
5	-10.00	0.00	73.84	0.00	73.83
6	0.00	0.00	74.05	0.00	74.05
7	10.00	0.00	73.86	0.00	73.86
8	20.00	0.00	65.98	0.00	65.98
9	30.00	0.00	66.38	0.00	66.37
10	40.00	0.00	66.51	0.00	66.51
11	50.00	0.00	66.60	0.00	66.60

*Note: Final Z is calculated assuming only 'Ultimate Settlement' exists.

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TABULATED GEOMETRY: INPUT OF FOUNDATION SOILS

Found. Soil #	Point #	Coordinates (X, Z) : (X) [ft.]	(Z) [ft.]	DESCRIPTION
1	1	-49.25	67.85	EXISTING CULVERT
	2	-40.00	66.55	
	3	-36.50	66.05	
	4	-34.50	65.90	
	5	-31.00	65.85	
	6	-25.00	66.06	
	7	-15.75	66.20	
	8	-14.00	73.75	
	9	0.00	74.05	
	10	16.00	73.75	
	11	17.75	65.95	
	12	25.00	66.04	
	13	28.50	66.45	
	14	33.50	66.20	
	15	42.00	66.60	
2	1	-49.25	67.85	LOOSE to MED DENSE SILTY FINE SAND (SM)
	2	-40.00	66.55	
	3	-36.50	66.05	
	4	-34.50	65.90	
	5	-31.00	65.85	
	6	-25.00	66.06	
	7	-15.75	66.20	
	8	17.75	65.95	
	9	25.00	66.04	
	10	28.50	66.45	
	11	33.50	66.20	
	12	42.00	66.60	
3	1	-31.00	48.40	STIFF PLASTIC SANDY CLAY (CL)
	2	44.00	51.10	
4	1	-31.00	45.90	LOOSE SILTY FINE to CLAYEY FINE SAND (SM to SC)
	2	44.00	51.10	

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TABULATED GEOMETRY: INPUT OF EMBANKMENT SOILS

Embank. Soil #		Point #	Coordinates (X, Z) : (X) [ft.]	(Z) [ft.]	DESCRIPTION
1	X1 = -25.00 [ft]	1	-25.00	66.06	CULVERT EXTENSION
	X2 = 25.00 [ft]	2	-24.99	73.80	
		3	0.00	74.05	
		4	24.99	73.80	
		5	25.00	66.04	

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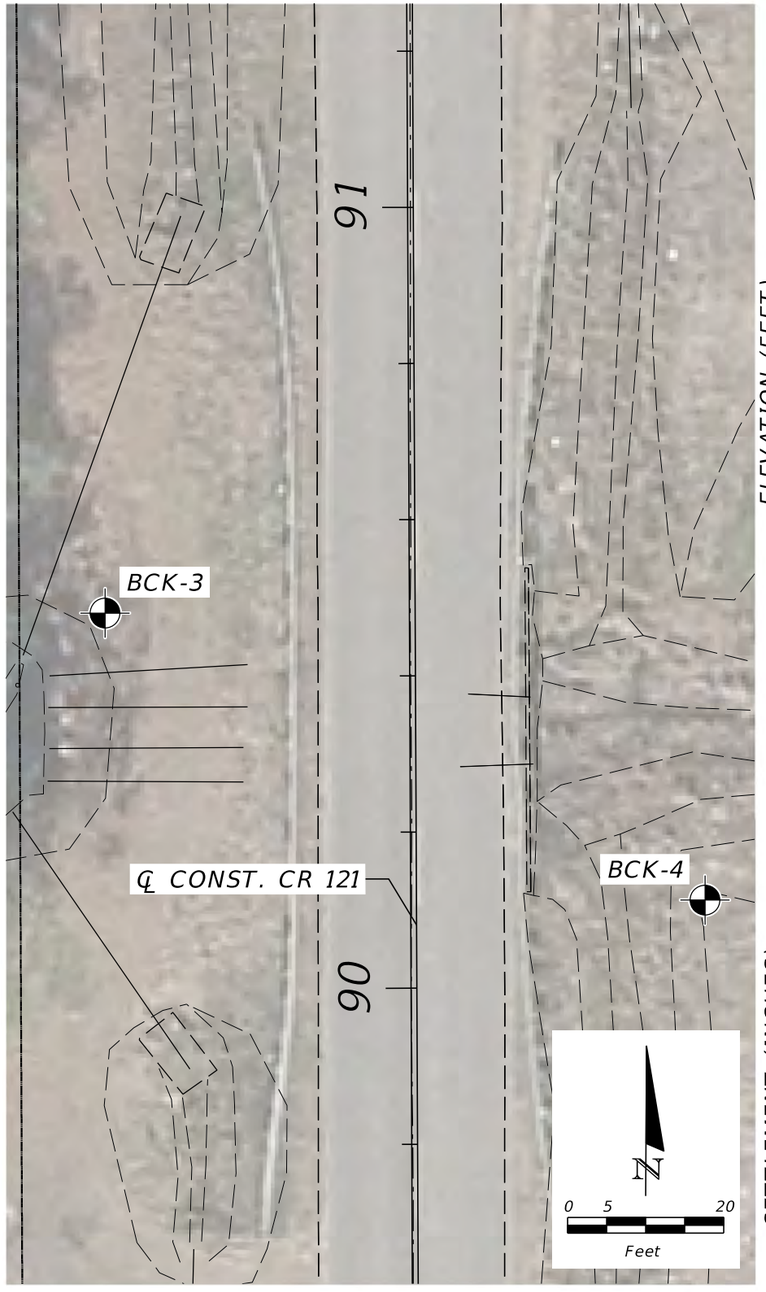

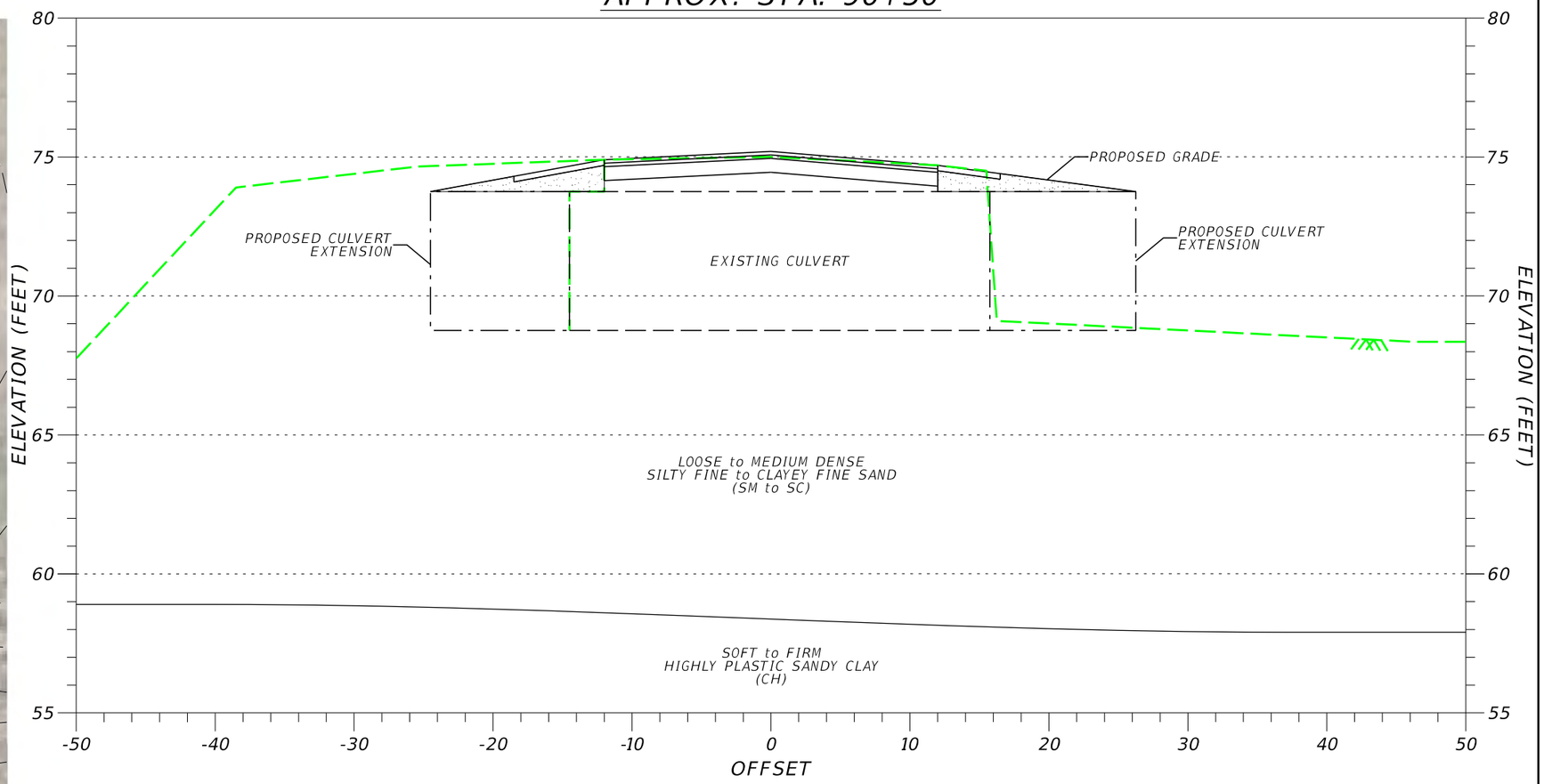

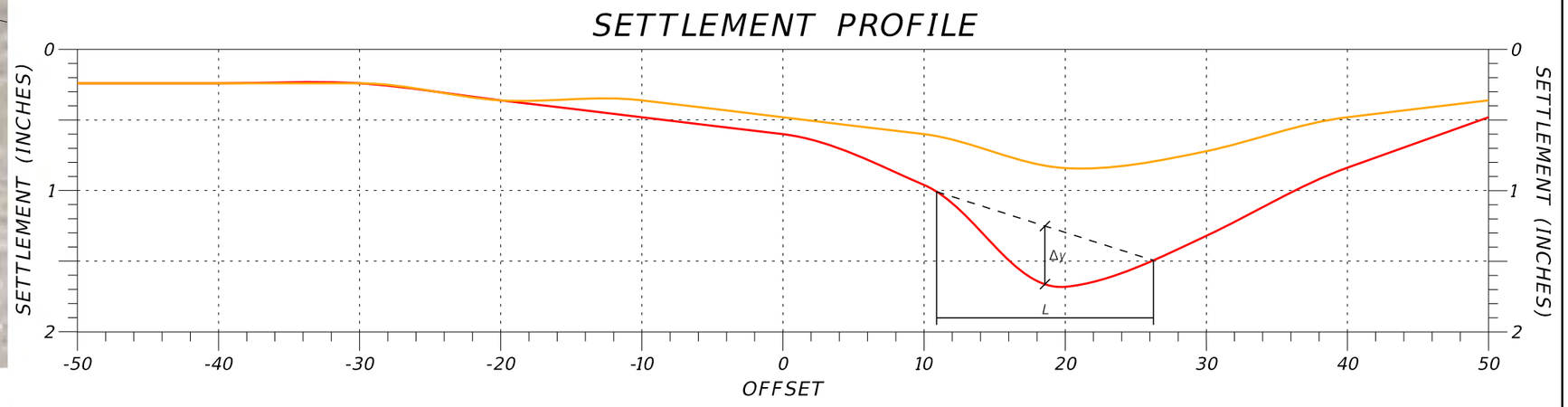

CULVERT 2 - EXTENSION

NOTE

ELEVATIONS DETERMINED FROM FILES PROVIDED BY KHA.

LEGEND

- EXISTING GROUND SURFACE
- ELASTIC SETTLEMENT
- CONSOLIDATION SETTLEMENT

PREPARED:	I. CAPORINI, E.I.
CHECKED:	K. MORALES, P.E.
REVISED:	I. CAPORINI, E.I.
ENGINEER:	M. LANDSCHOOT, P.E.

Environmental & Geotechnical Specialists, Inc.
3772 Kori Road
Jacksonville, Florida 32257
Office: (904) 329-7180

DESIGN FIGURE
CR 121 CULVERT EXTENSIONS
FROM DUVAL COUNTY LINE TO CR 119
NASSAU COUNTY, FLORIDA

SCALE:	AS SHOWN	DATE:	AUGUST 2024
PROJ. NO.:	13-54-23-02	FIGURE NO.:	E2

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CR 121 CULVERT EXTENSIONS

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PROJECT IDENTIFICATION

Title: CR 121 CULVERT EXTENSIONS
Project Number: 13-54-23 - 02
Client: KIMLEY-HORN & ASSOCIATES, INC.
Designer: M. LANDSCHOOT, P.E.
Station Number: 90+50

Description:
SETTLEMENT ANALYSIS FOR CULVERT EXTENSION AT CULVERT 2 (APPROX. STA. 90+50)

Company's information:

Name: ENVIRONMENTAL AND GEOTECHNICAL SPECIALISTS, INC.
Street: 3772 KORI ROAD
JACKSONVILLE, FL 32257
Telephone #: (904) 329-7180
Fax #:
E-Mail:

Original file path and name: U:\1 - Act ..... \Settlement Analysis\Settlement Analysis 90+50.2ST
Original date and time of creating this file: Fri Aug 09 16:08:30 2024

GEOMETRY: Analysis of a 2D geometry

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INPUT DATA – FOUNDATION LAYERS – 5 layers

	Wet Unit Weight, γ [lb/ft³]	Poisson's Ratio μ	Description of Soil
1	115.00	0.25	LOOSE to MED DENSE SI FI to CL FI SAND (SM to SC)
2	150.00	0.50	EXISTING CULVERT
3	115.00	0.25	LOOSE to MED DENSE SI FI to CL FI SAND (SM to SC)
4	115.00	0.35	SOFT to FIRM HI PL SANDY CLAY (CH)
5	110.00	0.20	LOOSE SILTY FINE SAND (SM)

INPUT DATA – EMBANKMENT LAYERS -- 1 layers

	Wet Unit Weight, γ [lb/ft³]	Description of Soil
1	150.00	CULVERT EXTENSION

INPUT DATA OF WATER

Point #	Coordinates (X, Z) : (X) [ft.]	(Z) [ft.]
1	-40.00	66.90
2	37.00	67.90

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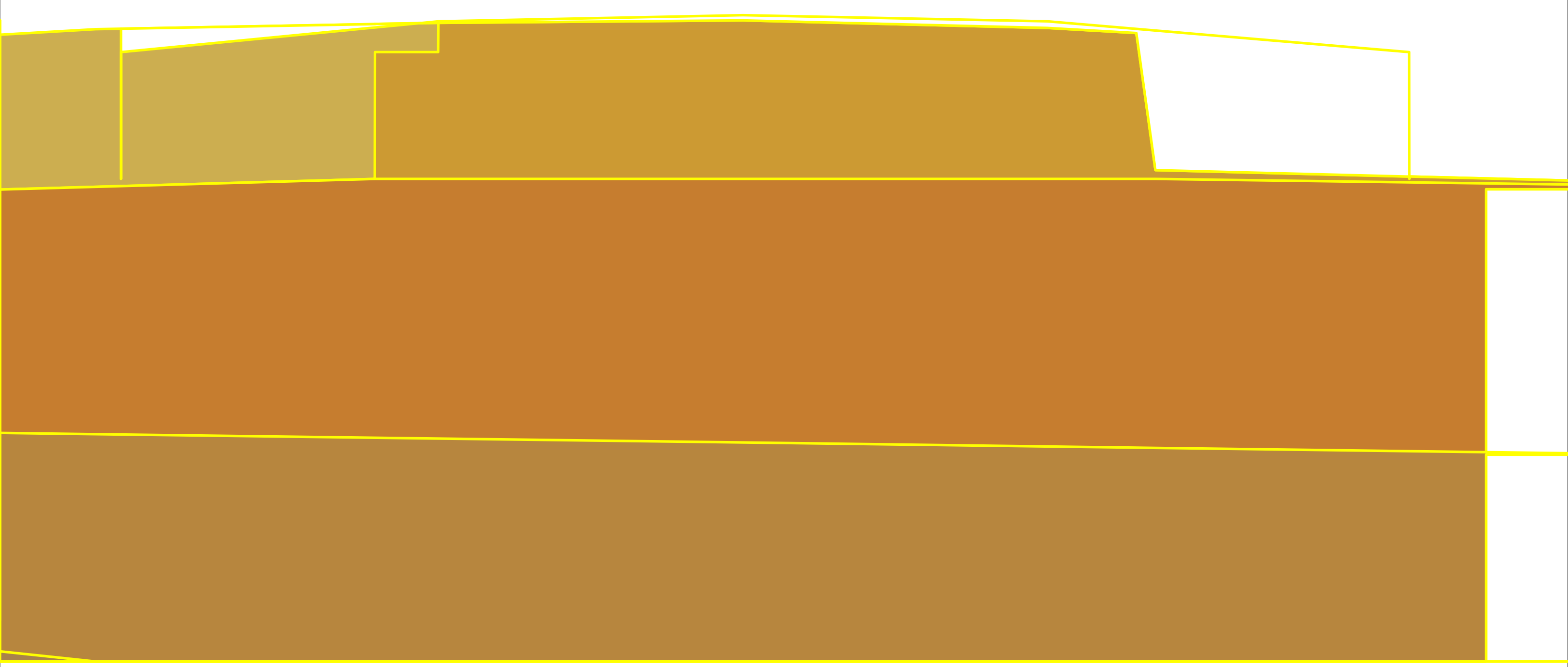
DRAWING OF SPECIFIED GEOMETRY



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INPUT DATA FOR CONSOLIDATION –– $\alpha = 1/2$

Layer #	Underging Consolidation [Yes/No]	OCR = Pc / Po	Cc	Cr	e0	Cv [ft ²/day]	Drains at :
1	No	N/A	N/A	N/A	N/A	N/A	N/A
2	No	N/A	N/A	N/A	N/A	N/A	N/A
3	No	N/A	N/A	N/A	N/A	N/A	N/A
4	Yes	5.20	0.380	0.080	0.600	0.2153	Top & Bot.
5	No	N/A	N/A	N/A	N/A	N/A	N/A

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IMMEDIATE SETTLEMENT, Si

Node #	Settlement along section: X [ft.]	Y [ft.]	Layer (k)	Young's Modulus, E [lb/ft ²]	Poisson's Ratio, μ	Settlement of each layer, Si(k) [ft.]	Initial Z [ft.]	Final Z * [ft.]	Total Settlement Sum of Si(k), [ft.]
1	-50.00	0.00	1	324632	0.2500	0.0000	67.75	67.73	0.02
			2	5000000	0.5000	0.0000			
			3	324632	0.2500	-0.0001			
			4	174983	0.3500	-0.0003			
			5	252752	0.2000	0.0154			
2	-40.00	0.00	1	324632	0.2500	-0.0000	73.10	73.08	0.02
			2	5000000	0.5000	0.0000			
			3	324632	0.2500	-0.0001			
			4	174983	0.3500	-0.0003			
			5	252752	0.2000	0.0181			
3	-30.00	0.00	1	324632	0.2500	-0.0000	74.39	74.37	0.02
			2	5000000	0.5000	0.0000			
			3	324632	0.2500	-0.0001			
			4	174983	0.3500	-0.0005			
			5	252752	0.2000	0.0216			
4	-20.00	0.00	1	324632	0.2500	-0.0000	74.75	74.73	0.03
			2	5000000	0.5000	0.0000			
			3	324632	0.2500	-0.0002			
			4	174983	0.3500	-0.0003			
			5	252752	0.2000	0.0257			
5	-10.00	0.00	1	324632	0.2500	0.0000	74.92	74.89	0.03
			2	5000000	0.5000	-0.0000			
			3	324632	0.2500	0.0001			
			4	174983	0.3500	0.0007			
			5	252752	0.2000	0.0305			
6	0.00	0.00	1	324632	0.2500	0.0000	75.00	74.96	0.04
			2	5000000	0.5000	-0.0000			
			3	324632	0.2500	0.0007			
			4	174983	0.3500	0.0039			
			5	252752	0.2000	0.0356			
7	10.00	0.00	1	324632	0.2500	0.0000	74.75	74.70	0.05
			2	5000000	0.5000	-0.0001			
			3	324632	0.2500	0.0037			
			4	174983	0.3500	0.0112			
			5	252752	0.2000	0.0394			
8	20.00	0.00	1	324632	0.2500	0.0000	69.01	68.94	0.07
			2	5000000	0.5000	0.0000			
			3	324632	0.2500	0.0126			
			4	174983	0.3500	0.0181			
			5	252752	0.2000	0.0399			
9	30.00	0.00	1	324632	0.2500	0.0000	68.76	68.70	0.06
			2	5000000	0.5000	-0.0000			
			3	324632	0.2500	0.0044			
			4	174983	0.3500	0.0135			
			5	252752	0.2000	0.0373			
10	40.00	0.00	1	324632	0.2500	0.0000	68.51	68.47	0.04
			2	5000000	0.5000	-0.0000			
			3	324632	0.2500	0.0003			
			4	174983	0.3500	0.0057			
			5	252752	0.2000	0.0331			

*Note: Final Z is calculated assuming only 'Immediate Settlement' exists.

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IMMEDIATE SETTLEMENT, Si

Node #	Settlement along section: X [ft.]	Y [ft.]	Layer (k)	Young's Modulus, E [lb/ft ²]	Poisson's Ratio, μ	Settlement of each layer, Si(k) [ft.]	Initial Z [ft.]	Final Z * [ft.]	Total Settlement Sum of Si(k), [ft.]
11	50.00	0.00	1	324632	0.2500	0.0000	68.35	68.32	0.03
			2	5000000	0.5000	0.0000			
			3	324632	0.2500	-0.0002			
			4	174983	0.3500	0.0014			
			5	252752	0.2000	0.0283			

*Note: Final Z is calculated assuming only 'Immediate Settlement' exists.

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ULTIMATE SETTLEMENT, Sc

Node #	X [ft.]	Y [ft.]	Original Z [ft.]	Settlement Sc [ft.]	Final Z * [ft.]
1	-50.00	0.00	67.75	0.00	67.75
2	-40.00	0.00	73.10	0.00	73.10
3	-30.00	0.00	74.39	0.00	74.39
4	-20.00	0.00	74.75	0.00	74.75
5	-10.00	0.00	74.92	0.01	74.91
6	0.00	0.00	75.00	0.01	74.99
7	10.00	0.00	74.75	0.03	74.72
8	20.00	0.00	69.01	0.07	68.94
9	30.00	0.00	68.76	0.05	68.70
10	40.00	0.00	68.51	0.03	68.47
11	50.00	0.00	68.35	0.01	68.34

*Note: Final Z is calculated assuming only 'Ultimate Settlement' exists.

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TABULATED GEOMETRY: INPUT OF FOUNDATION SOILS

Found. Soil #	Point #	Coordinates (X, Z) : (X) [ft.]	(Z) [ft.]	DESCRIPTION
1	1	-50.00	67.75	LOOSE to MED DENSE SI FI to CL FI SAND (SM to SC)
	2	-38.50	73.90	
	3	-25.50	74.65	
	4	-12.00	74.90	
	5	0.00	75.00	
	6	12.00	74.70	
	7	15.50	74.50	
	8	16.25	69.10	
	9	46.25	68.35	
	10	50.00	68.35	
2	1	-50.00	67.75	EXISTING CULVERT
	2	-14.51	68.76	
	3	-14.50	73.75	
	4	-12.01	73.75	
	5	-12.00	74.90	
	6	0.00	75.00	
	7	12.00	74.70	
	8	15.50	74.50	
	9	16.25	69.10	
	10	46.25	68.35	
	11	50.00	68.35	
3	1	-50.00	67.75	LOOSE to MED DENSE SI FI to CL FI SAND (SM to SC)
	2	-14.51	68.76	
	3	16.25	68.76	
	4	46.25	68.35	
4	1	-40.00	58.90	SOFT to FIRM HI PL SANDY CLAY (CH)
	2	37.00	57.90	
5	1	-40.00	51.40	LOOSE SILTY FINE SAND (SM)
	2	37.00	37.90	

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TABULATED GEOMETRY: INPUT OF EMBANKMENT SOILS

Embank. Soil #		Point #	Coordinates (X, Z) : (X) [ft.]	(Z) [ft.]	DESCRIPTION
1	X1 = -24.51 [ft]	1	-24.51	68.76	CULVERT EXTENSION
	X2 = 26.26 [ft]	2	-24.50	73.75	
		3	-12.00	74.96	
		4	0.00	75.20	
		5	12.00	74.96	
		6	26.25	73.75	
		7	26.26	68.76	

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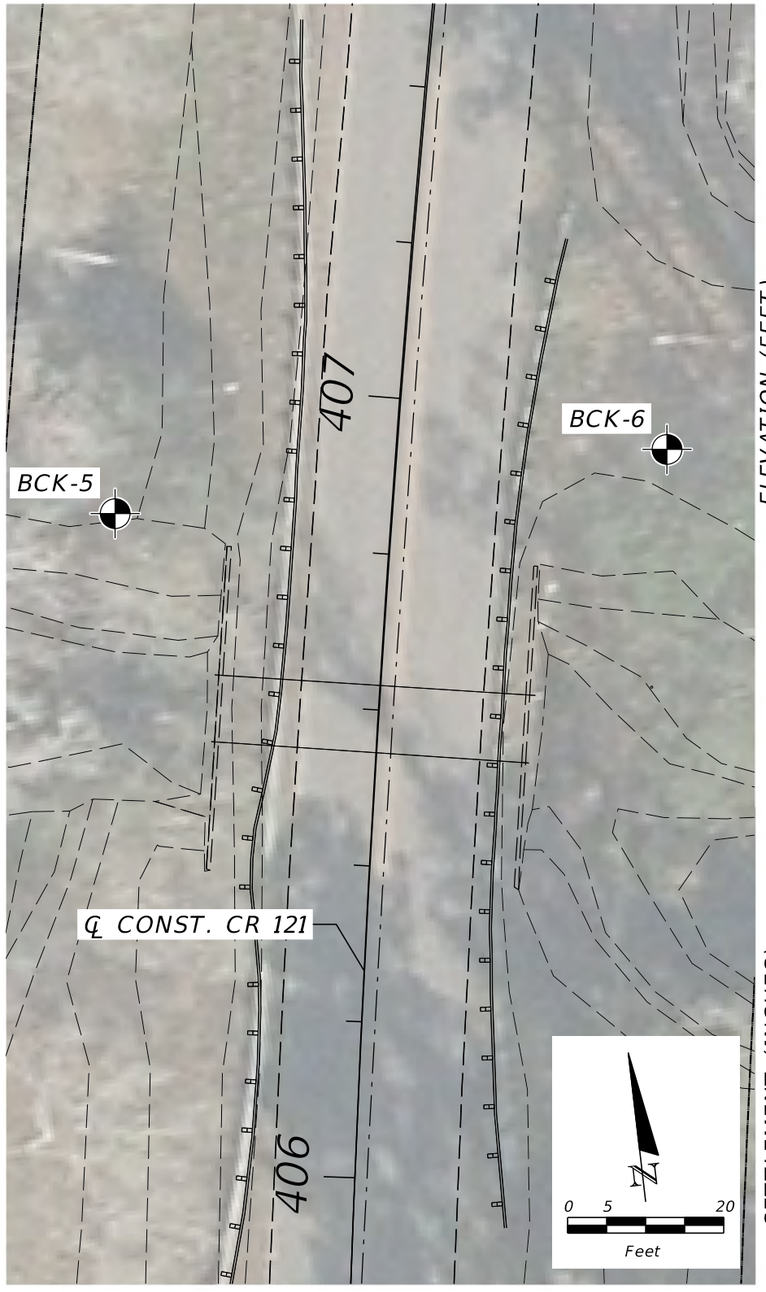

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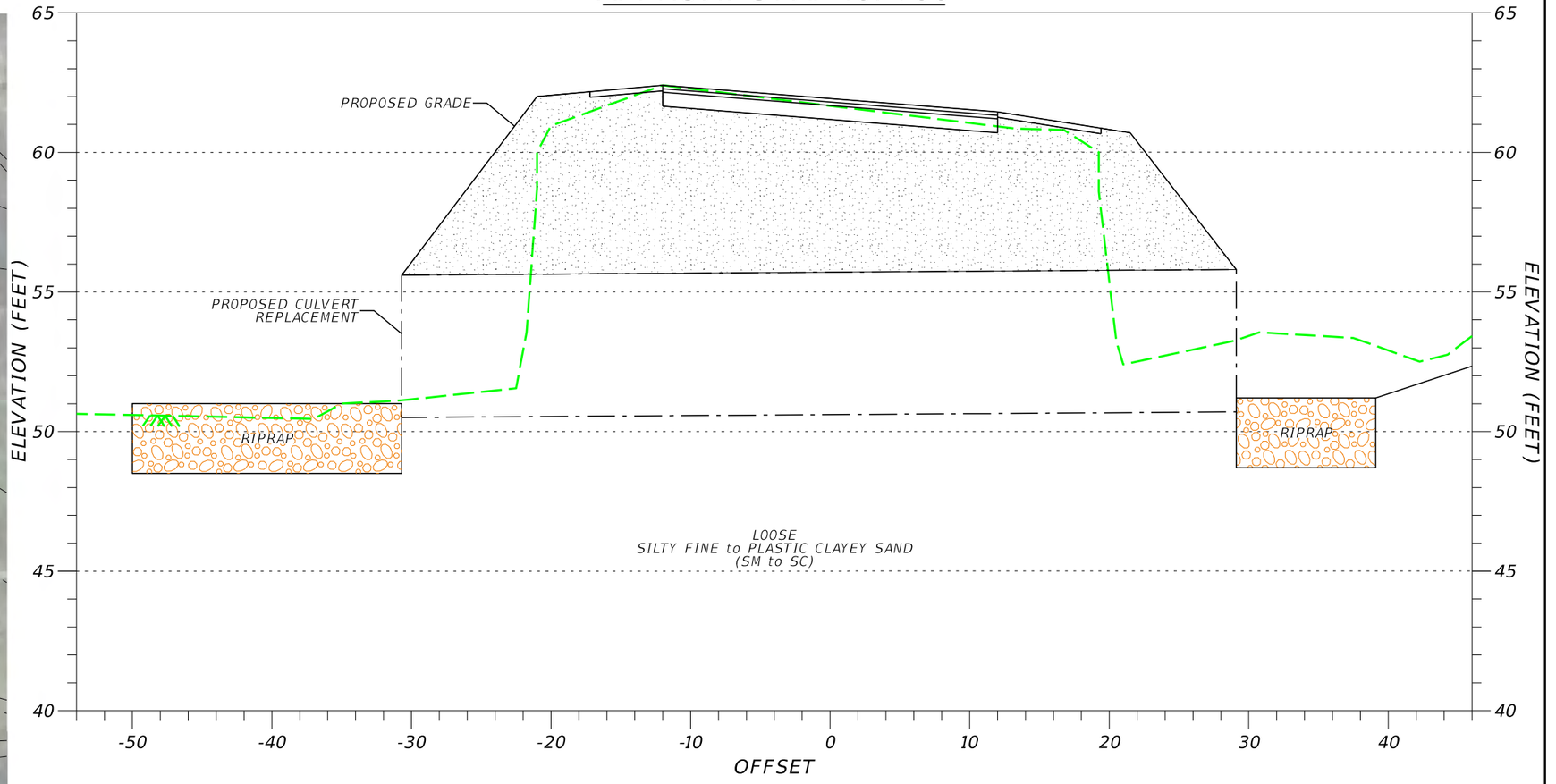
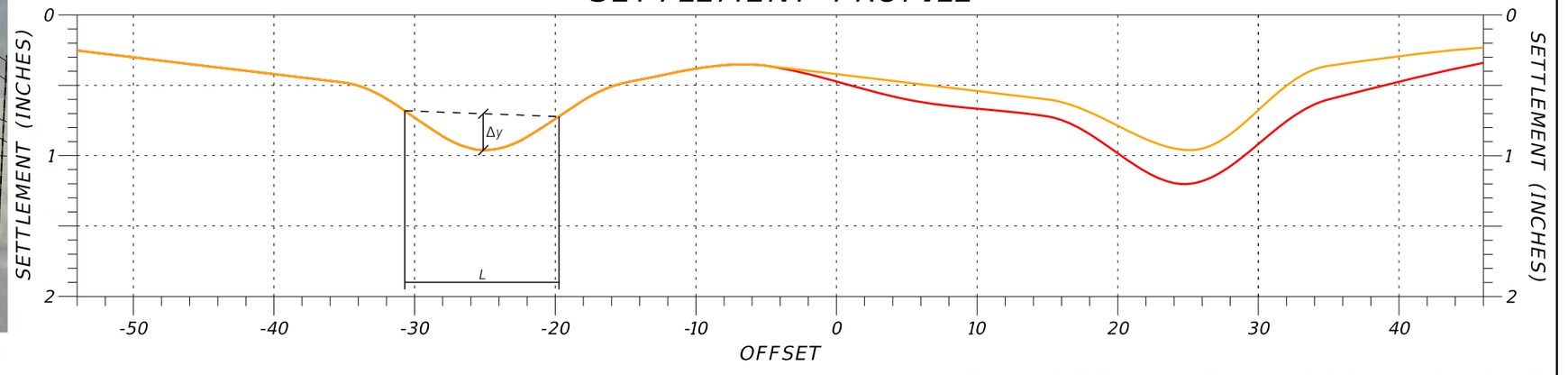


SETTLEMENT PROFILE



CULVERT 3 - FULL REPLACEMENT

NOTE

ELEVATIONS DETERMINED FROM FILES PROVIDED BY KHA.

LEGEND

- EXISTING GROUND SURFACE
- ELASTIC SETTLEMENT
- CONSOLIDATION SETTLEMENT

PREPARED:	I. CAPORINI, E.I.
CHECKED:	K. MORALES, P.E.
REVISED:	I. CAPORINI, E.I.
ENGINEER:	M. LANDSCHOOT, P.E.

Environmental & Geotechnical Specialists, Inc.
3772 Kori Road
Jacksonville, Florida 32257
Office: (904) 329-7180

DESIGN FIGURE
CR 121 CULVERT EXTENSIONS
FROM DUVAL COUNTY LINE TO CR 119
NASSAU COUNTY, FLORIDA

SCALE:	AS SHOWN	DATE:	AUGUST 2024
PROJ. NO.:	13-54-23-02	FIGURE NO.:	E3

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CR 121 CULVERT EXTENSIONS

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PROJECT IDENTIFICATION

Title:	CR 121 CULVERT EXTENSIONS
Project Number:	13-54-23 - 02
Client:	KIMLEY HORN & ASSOCIATES, INC.
Designer:	M. LANDSCHOOT, P.E.
Station Number:	407+00

Description:

SETTLEMENT ANALYSIS FOR PROPOSED CULVERT REPLACEMENT AT CULVERT 3 (APPROX. STA. 407+00)

Company's information:

Name:	ENVIRONMENTAL AND GEOTECHNICAL SPECIALISTS, INC.
Street:	3772 KORI ROAD JACKSONVILLE, FL 32257
Telephone #:	(904) 329-7180
Fax #:	
E-Mail:	

Original file path and name: U:\1 - Act ..... Settlement Analysis\Settlement Analysis 407+00.2ST
Original date and time of creating this file: Thu Aug 08 14:57:17 2024

GEOMETRY: Analysis of a 2D geometry

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INPUT DATA – FOUNDATION LAYERS – 5 layers

	Wet Unit Weight, γ [lb/ft³]	Poisson's Ratio μ	Description of Soil
1	150.00	0.50	EXISTING CULVERT
2	110.00	0.20	LOOSE SI FI to PL CL SAND (SM to SC)
3	115.00	0.25	MED DENSE SILTY FINE SAND (SM)
4	110.00	0.30	SOFT HIGHLY PLASTIC SANDY SILT (MH)
5	115.00	0.25	LOOSE to MED DENSE FINE SAND (SP-SM)

INPUT DATA – EMBANKMENT LAYERS -- 1 layers

	Wet Unit Weight, γ [lb/ft³]	Description of Soil
1	150.00	CULVERT REPLACEMENT

INPUT DATA OF WATER

Point #	Coordinates (X, Z) : (X) [ft.]	(Z) [ft.]
1	-35.00	52.20
2	35.00	55.00

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DRAWING OF SPECIFIED GEOMETRY

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INPUT DATA FOR CONSOLIDATION –– $\alpha = 1/2$

Layer #	Underging Consolidation [Yes/No]	OCR = Pc / Po	Cc	Cr	e0	Cv [ft ²/day]	Drains at :
1	No	N/A	N/A	N/A	N/A	N/A	N/A
2	No	N/A	N/A	N/A	N/A	N/A	N/A
3	No	N/A	N/A	N/A	N/A	N/A	N/A
4	Yes	1.60	0.380	0.080	0.600	0.2153	Top & Bot.
5	No	N/A	N/A	N/A	N/A	N/A	N/A

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IMMEDIATE SETTLEMENT, Si

Node #	Settlement along section: X [ft.]	Y [ft.]	Layer (k)	Young's Modulus, E [lb/ft ²]	Poisson's Ratio, μ	Settlement of each layer, Si(k) [ft.]	Initial Z [ft.]	Final Z * [ft.]	Total Settlement Sum of Si(k), [ft.]
1	-55.00	0.00	1	5000000	0.5000	0.0000	50.60	50.58	0.02
			2	259071	0.2000	-0.0001			
			3	438974	0.2500	0.0010			
			4	103832	0.3000	0.0000			
			5	602406	0.2500	0.0164			
2	-45.00	0.00	1	5000000	0.5000	0.0000	50.54	50.52	0.03
			2	259071	0.2000	0.0022			
			3	438974	0.2500	0.0035			
			4	103832	0.3000	0.0000			
			5	602406	0.2500	0.0202			
3	-35.00	0.00	1	5000000	0.5000	0.0000	51.00	50.96	0.04
			2	259071	0.2000	0.0048			
			3	438974	0.2500	0.0084			
			4	103832	0.3000	0.0000			
			5	602406	0.2500	0.0240			
4	-25.00	0.00	1	5000000	0.5000	0.0000	51.44	51.36	0.08
			2	259071	0.2000	0.0402			
			3	438974	0.2500	0.0118			
			4	103832	0.3000	0.0029			
			5	602406	0.2500	0.0267			
5	-15.00	0.00	1	5000000	0.5000	-0.0001	61.86	61.81	0.04
			2	259071	0.2000	0.0060			
			3	438974	0.2500	0.0066			
			4	103832	0.3000	0.0042			
			5	602406	0.2500	0.0272			
6	-5.00	0.00	1	5000000	0.5000	-0.0001	61.97	61.94	0.03
			2	259071	0.2000	0.0012			
			3	438974	0.2500	0.0026			
			4	103832	0.3000	0.0044			
			5	602406	0.2500	0.0263			
7	5.00	0.00	1	5000000	0.5000	-0.0001	61.36	61.32	0.04
			2	259071	0.2000	0.0030			
			3	438974	0.2500	0.0023			
			4	103832	0.3000	0.0053			
			5	602406	0.2500	0.0255			
8	15.00	0.00	1	5000000	0.5000	-0.0000	60.83	60.78	0.05
			2	259071	0.2000	0.0081			
			3	438974	0.2500	0.0039			
			4	103832	0.3000	0.0096			
			5	602406	0.2500	0.0248			
9	25.00	0.00	1	5000000	0.5000	0.0000	52.83	52.75	0.08
			2	259071	0.2000	0.0366			
			3	438974	0.2500	0.0041			
			4	103832	0.3000	0.0127			
			5	602406	0.2500	0.0232			
10	35.00	0.00	1	5000000	0.5000	0.0000	53.42	53.39	0.03
			2	259071	0.2000	0.0027			
			3	438974	0.2500	0.0014			
			4	103832	0.3000	0.0090			
			5	602406	0.2500	0.0199			

*Note: Final Z is calculated assuming only 'Immediate Settlement' exists.

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IMMEDIATE SETTLEMENT, Si

Node #	Settlement along section: X [ft.]	Y [ft.]	Layer (k)	Young's Modulus, E [lb/ft ²]	Poisson's Ratio, μ	Settlement of each layer, Si(k) [ft.]	Initial Z [ft.]	Final Z * [ft.]	Total Settlement Sum of Si(k), [ft.]
11	45.00	0.00	1	5000000	0.5000	0.0000	53.04	53.02	0.02
			2	259071	0.2000	-0.0001			
			3	438974	0.2500	0.0003			
			4	103832	0.3000	0.0028			
			5	602406	0.2500	0.0158			

*Note: Final Z is calculated assuming only 'Immediate Settlement' exists.

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ULTIMATE SETTLEMENT, Sc

Node #	X [ft.]	Y [ft.]	Original Z [ft.]	Settlement Sc [ft.]	Final Z * [ft.]
1	-55.00	0.00	50.60	0.00	50.60
2	-45.00	0.00	50.54	0.00	50.54
3	-35.00	0.00	51.00	0.00	51.00
4	-25.00	0.00	51.44	0.00	51.44
5	-15.00	0.00	61.86	0.00	61.85
6	-5.00	0.00	61.97	0.00	61.97
7	5.00	0.00	61.36	0.01	61.35
8	15.00	0.00	60.83	0.01	60.81
9	25.00	0.00	52.83	0.02	52.80
10	35.00	0.00	53.42	0.02	53.40
11	45.00	0.00	53.04	0.01	53.03

*Note: Final Z is calculated assuming only 'Ultimate Settlement' exists.

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TABULATED GEOMETRY: INPUT OF FOUNDATION SOILS

Found. Soil #	Point #	Coordinates (X, Z) : (X) [ft.]	(Z) [ft.]	DESCRIPTION
1	1	-50.00	50.60	EXISTING CULVERT
	2	-37.00	50.45	
	3	-35.00	51.00	
	4	-22.50	51.55	
	5	-21.75	53.35	
	6	-21.00	60.00	
	7	-20.00	60.95	
	8	-12.00	62.40	
	9	13.25	60.85	
	10	16.75	60.80	
	11	19.25	60.00	
	12	20.50	53.25	
	13	21.00	52.40	
	14	29.00	53.25	
	15	30.75	53.55	
	16	37.50	53.35	
	17	42.25	52.50	
	18	44.25	52.75	
	19	50.00	54.95	
2	1	-37.00	50.45	LOOSE SI FI to PL CL SAND (SM to SC)
	2	-35.00	51.00	
	3	-22.50	51.55	
	4	-21.75	53.35	
	5	20.50	53.25	
	6	21.00	52.40	
	7	29.00	53.25	
	8	30.75	53.55	
	9	37.50	53.35	
	10	42.25	52.50	
	11	44.25	52.75	
	12	50.00	54.95	
3	1	-35.00	37.70	MED DENSE SILTY FINE SAND (SM)
	2	35.00	35.00	
4	1	-35.00	19.70	SOFT HIGHLY PLASTIC SANDY SILT (MH)
	2	35.00	30.00	
5	1	-35.00	19.70	LOOSE to MED DENSE FINE SAND (SP-SM)
	2	35.00	22.00	

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TABULATED GEOMETRY: INPUT OF EMBANKMENT SOILS

Embank. Soil #		Point #	Coordinates (X, Z) : (X) [ft.]	(Z) [ft.]	DESCRIPTION
1	X1 = -50.00 [ft]	1	-50.00	51.00	CULVERT REPLACEMENT
	X2 = 29.50 [ft]	2	-30.71	51.00	
		3	-30.70	55.60	
		4	-21.00	62.00	
		5	-12.00	62.40	
		6	12.00	61.50	
		7	21.50	60.70	
		8	29.10	55.80	
		9	29.11	53.30	

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APPENDIX G

Utility Work Schedules

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

NASSAU COUNTY
UTILITY WORK SCHEDULE

Nassau County	4504600-5		
		County Road No.:	CR121 from
CIP Number:			Duval Co line to CR119
Utility Agency/Owner (UAO):	AT&T Distribution		

A. Summary of Utility Work and Execution

NON-CONSTRUCTION ITEMS	ESTIMATED *CALENDAR DAYS	CONSTRUCTION ITEMS	ESTIMATED *CALENDAR DAYS
Total Preliminary	0	Prior to Nassau County Project Construction	0
Total Material Procurement	0	During Nassau County Project Construction	45
Total Right-of-Way Acquisition	0		
Total Other	0		

*** Calendar Days = UAO Work Days x 7/5 and takes into consideration simultaneous activities listed on Part "C" of this Schedule**

This document has been developed as the method for a Utility Agency/Owner (UAO) to transmit to NASSAU COUNTY, the roadway contractor, and other right-of-way users, the location, relocation, adjustment, installation, and/or protection of their facilities, on this NASSAU COUNTY project. The following data is based on NASSAU COUNTY final design phase construction plans dated 01/21/202.5 Any deviation by NASSAU COUNTY or its contractor from the plans, as provided, may render this work schedule null and void. Upon notification by NASSAU COUNTY of such change, this utility may require additional days for assessment and negotiation of a new work schedule. This UAO is not responsible for events beyond the control of the UAO that could not reasonably be anticipated by the UAO and which could not be avoided by the UAO with the exercise of due diligence at the time of the occurrence. The UAO agrees to notify NASSAU COUNTY in writing prior to starting, stopping, resuming, or completing work.

UAO Project Representative: Amber Megowan Telephone Number: 904-699-7805

UAO Field Representative: Rachael Gregory Telephone Number: 904-882-6031

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You MUST signify by selecting or checking which of the following applies:

☑ No changes to forms document.

☐ Appendix "Changes to Forms Document" is attached. ___Number of Attachment Pages.

Authorized Utility Agent:	Engineer of Record:	Contractor:
Kenneth W Cameron (Signature)	(Signature)	(Signature)
Kenny Cameron (Printed Name)	(Printed Name)	(Printed Name)
Area Manager - ENG (Title)	(Title)	(Title)
1/21/2025 (Date)	(Date)	(Date)

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NASSAU COUNTY
UTILITY WORK SCHEDULE

Nassau County	4504600-5		
		County Road No.:	CR121 from
CIP Number:			Duval Co line to CR119
Utility Agency/Owner (UAO):	AT&T Distribution		

B. Special Conditions / Constraints

1) AT&T normal working hours are five (5) day work week, Monday thru Friday, 8 hours a day. Any request for work activities outside that time frame will need to be coordinated at least one week in advance of required work.

2) Hold/Guard/Protect may include the use of Sheeting, Shoring & Bracing of AT&T Florida facilities by AT&T Florida Master Contractor

and should be decided upon by AT&T Florida field representitive in coordination with FDOT's Contractor on a case by case basis.

3) Expose & Adjust activity will include AT&T Florida Master Contractor physically exposing the undergroundd facilities and adjusting the facilities horizontally and/or vertically to aid construction.

4) This Utility Work Schedule is contingent on weather / storms which affect AT&T Florida's construction personnel. AT&T Florida resources can also be affected by weather not directly contacting the Florida region as the company supports other states & other AT&T districts in florida.

5) AT&T Florida requests access by AT&T Florida vehicles, equipment & personnel to all facilities within the limits of this project as maybe required for normal and emergency operation and maintenance of existing and proposed facilities.

6) All cable damages must be reported to the repair department at 1.877.737.2478.

7) All correspondence and coordination herein is with regards to BellSouth Telecommunications, LLC d/b/a AT&T Florida (AT&T-D) which is not affiliated with or responsible for facilities owned and managed by AT&T CORP (AT&T-T). Any questions with regards to AT&T-T facilities should be addressed to "inquiries@pea-inc.net.

Definitions:

Locating: The use of test holes by vacuum excavation or comparable non-destructive equipment at critical point along a subsurface utility facility's path thus exposing the underground facility and allowing the precise measurements of the depth and horizontal position to be made.

Designating: Utilizing electromagnetic, magnetic, sonic, and other energy fields for determining the existence and approximate horizontal location of underground utility facilities. Underground facilities will be marked by stakes, flags, paint or other suitable materials in varying combinations dependent upon surface conditions using American Public Works Association Utility Location Coordination Council Color Codes.

Protect: Shall include, but not be limited to, permittee's use of an onsite representative during active construction operations. During excavation operations, Representative may be required to physically expose underground facilities, provide any necessary support to the Facilities, and/or cover aerial facilities as deemed necessary to aid construction

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NASSAU COUNTY
UTILITY WORK SCHEDULE

Nassau County	4504600-5		
		County Road No.:	CR121 from
CIP Number:			Duval Co line to CR119
Utility Agency/Owner (UAO):	AT&T Distribution		

C. Disposition of Facilities (List All Existing & Proposed) on Project

UTILITY FACILITIES by STATUS/ TYPE / SIZE / MATERIAL / OFFSET TO BASELINE FROM STA TO STA	DESCRIPTION OF UTILITY WORK	DEPENDENT ACTIVITIES	M.O.T. PHASE NUMBER	CONSECUTIVE CALENDAR DAYS
1. BT-FIB-216 52+70 - 55+50 / 20' RT	Monitor & Protect	Roadway contractor to notify AT&T 72 hours prior		5
2. ATT Handhole 54+64 / 20' RT	Monitor & Protect Adjust HH as needed	See Page 2, Notes 1-4)		5
3. BT FOC 12, BT COP 50, BT COP 400 89+50 - 92+00 / 50' RT	Monitor & Protect /Lower in place	Roadway contractor to notify AT&T 72 hours prior		5
4. BT FOC 6, BT FOC 144, BT COP 600 186+72 / 40' RT	Monitor & Protect	See Page 2, Notes 1-4)		5
5. BT FOC 6, BT FOC 144, BT COP 600 218+13 / 40' RT	Monitor & Protect	Roadway contractor to notify AT&T 72 hours prior See Page 2, Notes 1-4)		5
6. BT FOC 144, FOC 6, BT COP 300 406+25 - 406+90 / 30' and 50' RT	Monitor & Protect	Roadway contractor to notify AT&T 72 hours prior		5
7. ATT Handhole 406+50 / 30' RT	Monitor & Protect	See Page 2, Notes 1-4)		5
8. BT FOC 144, FOC 6, BT COP 300 426+47 / 40' RT	Monitor & Protect	Roadway contractor to notify AT&T 72 hours prior See Page 2, Notes 1-4)		5
9. BT COP 300, BT COP 150 431+52 / 43' RT	Monitor & Protect	Roadway contractor to notify AT&T 72 hours prior See Page 2, Notes 1-4)		5

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NASSAU COUNTY
UTILITY WORK SCHEDULE

Nassau County			
		County Road No.:	CR 121
CIP Number: 45046005			
Utility Agency/Owner (UAO):	Okefenoke EMC		

A. Summary of Utility Work and Execution

NON-CONSTRUCTION ITEMS	ESTIMATED *CALENDAR DAYS	CONSTRUCTION ITEMS	ESTIMATED *CALENDAR DAYS
Total Preliminary	0	Prior to Nassau County Project Construction	0
Total Material Procurement	0	During Nassau County Project Construction	0
Total Right-of-Way Acquisition	0		
Total Other	0		

* Calendar Days = UAO Work Days x 7/5 and takes into consideration simultaneous activities listed on Part "C" of this Schedule

This document has been developed as the method for a Utility Agency/Owner (UAO) to transmit to NASSAU COUNTY, the roadway contractor, and other right-of-way users, the location, relocation, adjustment, installation, and/or protection of their facilities, on this NASSAU COUNTY project. The following data is based on NASSAU COUNTY final design phase construction plans dated _____. Any deviation by NASSAU COUNTY or its contractor from the plans, as provided, may render this work schedule null and void. Upon notification by NASSAU COUNTY of such change, this utility may require additional days for assessment and negotiation of a new work schedule. This UAO is not responsible for events beyond the control of the UAO that could not reasonably be anticipated by the UAO and which could not be avoided by the UAO with the exercise of due diligence at the time of the occurrence. The UAO agrees to notify NASSAU COUNTY in writing prior to starting, stopping, resuming, or completing work.

UAO Project Representative: Roy Sikes Telephone Number: 912-390-1459
UAO Field Representative: Randy Thomas Telephone Number: 912-390-9763

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You MUST signify by selecting or checking which of the following applies:

☒ No changes to forms document.

☐ Appendix "Changes to Forms Document" is attached. ___ Number of Attachment Pages.

Authorized Utility Agent:	Engineer of Record:	Contractor:
Roy Sikes (Signature)	_____ (Signature)	_____ (Signature)
Roy Sikes (Printed Name)	_____ (Printed Name)	_____ (Printed Name)
Staking Project Coordinator (Title)	_____ (Title)	_____ (Title)
11-27-24 (Date)	_____ (Date)	_____ (Date)

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NASSAU COUNTY
UTILITY WORK SCHEDULE

Nassau County			
		County Road No.:	CR 121
CIP Number: 45046005			
Utility Agency/Owner (UAO):			

B.	**Special Conditions / Constraints**

None-All poles look to be far enough away from the project.

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NASSAU COUNTY
UTILITY WORK SCHEDULE

Nassau County			
		County Road No.:	CR 121
CIP Number: 45046005			
Utility Agency/Owner (UAO):			

C. Disposition of Facilities (List All Existing & Proposed) on Project

UTILITY FACILITIES by STATUS/ TYPE / SIZE / MATERIAL / OFFSET TO BASELINE FROM STA TO STA	DESCRIPTION OF UTILITY WORK	DEPENDENT ACTIVITIES	M.O.T. PHASE NUMBER	CONSECUTIVE CALENDAR DAYS
None				

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Utility Contact Form

Date:	1/3/2025
Company Name:	Florida Power and Light
Phone Number:	904-629-9346
Email Address:	kent.logue@fpl.com
Project:	CR 121 ROW improvements
Emergency number to be inserted on plans	1-800-4outage

Existing facilities are located:

_____ Within existing Right-of-Way **(between Station: _____ to Station: _____)**
_____ Within existing County/City Right-of-Way
_____ Within railroad Right-of-Way
_____ Within an easement or fee title property
_____ Not within project limits *(Has no facilities within limits)*
__x__ No Utility Work Schedule *(Has facilities within limits but is not affected)*
_____ There will not be a claim for reimbursement
_____ There will be a claim for reimbursement *
_____ Facilities located along Interstate corridor

*** Please provide any document(s) [i.e. fee title property deed or easement document(s)] within the project limits that formulates the basis for your entitlement to be reimbursed for your utility work. NOTE: A preliminary cost estimate for any utility work within this entitled area is required.**

Enclosed please find:

_____ Marked Roadway Plans
_____ Legal Documents
_____ Company Utility Plans
_____ Preliminary Cost Estimate

POLE OWNERS: List Joint Pole Users

COMMENTS:

Signed: Kent Logue
Title: Engineer II

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Novak, Jessica

From:	Novak, Jessica
Sent:	Wednesday, December 18, 2024 11:48 AM
To:	Hickernell, Robert; Mobley, Jordan
Subject:	FW: Required Utility Work Schedule or Letter of No Conflict – CR 121 Right-of-Way Improvements
Attachments:	NASSAU 2024-08-05_60% Marked Plans to Utilities-compressed.pdf

From: Jordan, David N <David.Jordan@windstream.com>
Sent: Wednesday, December 18, 2024 11:22 AM
To: Robert Companion <rcompanion@nassaucountyfl.com>
Cc: Novak, Jessica <Jessica.Novak@kimley-horn.com>; Raymond C. Albury <ralbury@nassaucountyfl.com>
Subject: RE: Required Utility Work Schedule or Letter of No Conflict – CR 121 Right-of-Way Improvements

You don't often get email from david.jordan@windstream.com. Learn why this is important

Good morning Robert,

I don't see any conflicts with this project. Please use this as my LETTER OF NO CONFLICT. See marked sheets attached where we have facilities on project.

Thanks,

kinetic

David Jordan, Sr. Engineer-OSP Engineering
C: 386.208.9965 | GoKinetic.com

Sensitivity: Internal

From: Robert Companion <rcompanion@nassaucountyfl.com>
Sent: Tuesday, December 17, 2024 4:16 PM
To: Jordan, David N <David.Jordan@windstream.com>
Cc: Novak, Jessica <Jessica.Novak@kimley-horn.com>; Raymond C. Albury <ralbury@nassaucountyfl.com>
Subject: Required Utility Work Schedule or Letter of No Conflict – CR 121 Right-of-Way Improvements

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NASSAU COUNTY
UTILITY WORK SCHEDULE

Nassau County			
		County Road No.:	121
CIP Number:			
Utility Agency/Owner (UAO):	Southern Natural Gas Company		

A. Summary of Utility Work and Execution

NON-CONSTRUCTION ITEMS	ESTIMATED *CALENDAR DAYS	CONSTRUCTION ITEMS	ESTIMATED *CALENDAR DAYS
Total Preliminary		**Prior to Nassau County Project Construction**	
Total Material Procurement		**During Nassau County Project Construction**	
Total Right-of-Way Acquisition			
Total Other			

*** Calendar Days = UAO Work Days x 7/5 and takes into consideration simultaneous activities listed on Part "C" of this Schedule**

This document has been developed as the method for a Utility Agency/Owner (UAO) to transmit to NASSAU COUNTY, the roadway contractor, and other right-of-way users, the location, relocation, adjustment, installation, and/or protection of their facilities, on this NASSAU COUNTY project. The following data is based on NASSAU COUNTY final design phase construction plans dated _____. Any deviation by NASSAU COUNTY or its contractor from the plans, as provided, may render this work schedule null and void. Upon notification by NASSAU COUNTY of such change, this utility may require additional days for assessment and negotiation of a new work schedule. This UAO is not responsible for events beyond the control of the UAO that could not reasonably be anticipated by the UAO and which could not be avoided by the UAO with the exercise of due diligence at the time of the occurrence. The UAO agrees to notify NASSAU COUNTY in writing prior to starting, stopping, resuming, or completing work.

UAO Project Representative: Trey Brown Telephone Number: 205-325-7287
UAO Field Representative: James Thames Telephone Number: 912-658-5114

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☐ No changes to forms document.

☐ Appendix "Changes to Forms Document" is attached. ___ Number of Attachment Pages.

Authorized Utility Agent:	**Engineer of Record:**	**Contractor:**
(Signature)	(Signature)	(Signature)
Trey Brown (Printed Name)	(Printed Name)	(Printed Name)
Sr. Project Manager (Title)	(Title)	(Title)
2/13/2025 (Date)	(Date)	(Date)

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NASSAU COUNTY
UTILITY WORK SCHEDULE

Nassau County			
		County Road No.:	121
CIP Number:			
Utility Agency/Owner (UAO):	Southern Natural Gas Company		

B.	**Special Conditions / Constraints**

No Conflict

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NASSAU COUNTY

UTILITY WORK SCHEDULE

Nassau County			
		County Road No.:	
CIP Number:			
Utility Agency/Owner (UAO):			

C. Disposition of Facilities (List All Existing & Proposed) on Project

UTILITY FACILITIES by STATUS/ TYPE / SIZE / MATERIAL / OFFSET TO BASELINE FROM STA TO STA	DESCRIPTION OF UTILITY WORK	DEPENDENT ACTIVITIES	M.O.T. PHASE NUMBER	CONSECUTIVE CALENDAR DAYS

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St. Johns River
Water Management District
Michael A. Register, P.E., Executive Director

4049 Reid Street • P.O. Box 1429 • Palatka, FL 32178-1429 • 386-329-4500 • www.sjrwmd.com

December 20, 2024

Robert Companion
Nassau County
96135 Nassau Pl
Yulee, FL 32097-8634

SUBJECT: General Permit 223695-2

Dear Sir/Madam:

The District has received your notice to use a general permit. Based on the submitted information, the proposed activity qualifies for a General Environmental Resource Permit pursuant to section 62-330.447, Florida Administrative Code, provided it is constructed and operated in accordance with that general permit and the general and special conditions set forth in section 62-330.447, Florida Administrative Code (attached).

Please be advised that the St. Johns River Water Management District will not publish a notice in the newspaper advising the public that it has determined your project qualifies for this general permit. Newspaper publication, using the District's notice form, notifies members of the public of their right to challenge the use of the general permit. If proper notice is given by newspaper publication, then there is a 21-day time limit for someone to file a petition for an administrative hearing to challenge the use of the permit. To close the point of entry for filing a petition, you may publish (at your own expense) a one-time notice of the District's decision in a newspaper of general circulation within the affected area as defined in Section 50.11 of the *Florida Statutes*. If you do not publish a newspaper notice to close the point of entry, the time to challenge your use of the permit will not expire and someone could file a petition even after your project is constructed. Please refer to the attached Notice of Rights to determine any legal rights you may have concerning the District's agency action.

The proposed activity as outlined on your exemption determination **does not** qualify for federal authorization pursuant to the State Programmatic General Permit VI-R1 (SPGP VI-R1) Coordination Agreement, therefore a SEPARATE permit or authorization may be required from the U.S. Army Corps of Engineers (Corps).You may need to apply separately to the Corps using the appropriate federal application form. More information about the Corps permitting may be found online in the *JacksonvilleDistrict*. Failure to obtain Corps authorization prior to construction could subject you to federal enforcement action by that agency.

A copy of the notice form and a partial list of newspapers of general circulation are attached for your convenience. However, you are not limited to those listed newspapers. If you choose to close the point of entry and the notice is published, the newspaper will return to you an affidavit of publication. In that event, it is important that you either submit a scanned copy of the affidavit by

GOVERNING BOARD

Rob Bradley, CHAIR, FLEMING ISLAND
Maryam H. Ghyabi-White, VICE CHAIR, ORMOND BEACH
J. Chris Peterson, SECRETARY, WINTER PARK
Cole Oliver, TREASURER, MERRITT ISLAND
Ryan Atwood, MOUNT DORA
Doug Bournique, VERO BEACH
Douglas Burnett, ST. AUGUSTINE
Ron Howse, COCOA
Janet Price, FERNANDINA BEACH

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emailing it to compliancesupport@sjrwmd.com (preferred method) or send a copy of the original affidavit to:

Margaret Daniels, Office Director
Office of Records and Regulatory Support
4049 Reid Street
Palatka, FL 32177

A copy of your application was transmitted to the U.S. Army Corps of Engineers for review. This authorization to use a general environmental resource permit does not obviate the need for obtaining all necessary permits or approval from other agencies.

Sincerely,

Jeff Prather, Division Director
Division of Regulatory Services

Enclosures: Permit
Notice of Rights
List of Newspapers for Publication

cc: District Permit File
Deborah Lynn Knighton
Kimley-Horn
201 North Franklin St.
Suite 1400
Tampa, FL 33602

Alyssa Noelle Davidson
Kimley-Horn
201 North Franklin St.
Suite 1400
Tampa, FL 33602

Steven Brighton
Kimley-Horn
2619 Centennial Blvd.
Suite 200
Tallahassee, FL 32308

Jessica Novak
Kimley-Horn
12740 Gran Bay Parkway West
Suite 2350
Jacksonville, FL 32258

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ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
GENERAL ENVIRONMENTAL RESOURCE PERMIT

PERMIT NO: 223695-2 **DATE ISSUED:** December 20, 2024
PROJECT NAME: CR 121 from Duval County Line to CR 119
A PERMIT AUTHORIZING:
Use of the General Permit for Minor Activities Within Existing Rights-of-Way or Easements per 62-330.447(4)(c, d) for the construction of paved shoulders, two cross drain culvert replacements, and one cross drain culvert extension to be constructed as per plans received by the District on November 22, 2024.

LOCATION:

Section(s):	4, 21, 16, 9 32, 33, 37, 29, 28, 20, 17	Township(s):	2S 1S	Range(s):	23E 23E

Nassau County

Receiving Water Body:

Name	Class
Saint Marys River	III Fresh

ISSUED TO:
Nassau County
96135 Nassau Pl
Yulee, FL 32097-8634

The District received your notice to use a General Environmental Resource Permit pursuant to Chapter 62-330, Florida Administrative Code (F.A.C.).

Based on the forms, design plans, and other documents submitted with your notice, it appears that the project meets the requirements for a General Environmental Resource Permit. Any activities performed under a General Environmental Resource Permit are subject to the general conditions and special conditions specified in rules 62-330.405 and 62-330.447, F.A.C. respectively (attached). Any deviations from these conditions may subject you to enforcement action and possible penalties.

Please be advised that the General Environmental Resource Permit expires 5 years from the date on which the notice of intent to use a General Environmental Resource Permit was received by the District.

The proposed activity as outlined on your exemption determination **does not** qualify for federal authorization pursuant to the State Programmatic General Permit VI-R1 (SPGP VI-R1) Coordination Agreement, therefore a SEPARATE permit or authorization may be required from the U.S. Army Corps of Engineers (Corps).You may need to apply separately to the Corps using the appropriate federal application form. More information about the Corps permitting may be found online in the *JacksonvilleDistrict*. Failure to obtain Corps authorization prior to construction could subject you to federal enforcement action by that agency.

A copy of your notice also has been sent to the U.S. Army Corps of Engineers (USACOE) for review. The USACOE may require a separate permit. Failure to obtain this authorization prior to construction could subject you to enforcement action and possible penalties.

AUTHORIZED BY: St. Johns River Water Management District
Division of Regulatory Services

By: 

Craig McCammon
Supervising Regulatory Scientist

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"EXHIBIT A"
CONDITIONS FOR ISSUANCE OF PERMIT NUMBER 223695-2
CR 121 from Duval County Line to CR 119
DATED December 20, 2024

1. The general permit is valid only for the specific activity indicated. Any deviation from the specified activity and the conditions for undertaking that activity shall constitute a violation of the permit and may subject the permittee to enforcement action and revocation of the permit under Chapter 373, F.S.

2. The general permit does not eliminate the necessity to obtain any required federal, state, local and special district authorizations prior to the start of any construction, alteration, operation, maintenance, removal or abandonment authorized by this permit; and it does not authorize any violation of any other applicable federal, state, local, or special district laws (including, but not limited to, those governing the “take” of listed species).

3. The general permit does not convey to the permittee or create in the permittee any property right, or any interest in real property, nor does it authorize any entrance upon or activities on property which is not owned or controlled by the permittee, or convey any rights or privileges other than those specified in the general permit.

4. The general permit does not relieve the permittee from liability and penalties when the permitted activity causes harm or injury to: human health or welfare; animal, plant or aquatic life; or property. It does not allow the permittee to cause pollution that violates state water quality standards.

5. Section 253.77, F.S., provides that a person may not commence any excavation, construction, or other activity involving the use of state-owned or other lands of the state, the title to which is vested in the Board of Trustees of the Internal Improvement Trust Fund without obtaining the required consent, lease, easement, or other form of authorization authorizing the proposed use. Therefore, the permittee is responsible for obtaining any necessary authorizations from the Board of Trustees prior to commencing activity on state-owned lands.

6. The authorization to conduct activities under a general permit may be modified, suspended or revoked in accordance with Chapter 120, F.S., and Section 373.429, F.S.

7. The general permit is not transferable to a third party. To be used by a different permittee, a new notice to use a general permit must be submitted in accordance with Rule 62-330.402, F.A.C. Activities constructed in accordance with the terms and conditions of a general permit are automatically authorized to be operated and maintained by the permittee and subsequent owners in accordance with subsection 62-330.340(1), F.A.C. Any person holding the general permit, persons working under the general permit, and owners of land while work is conducted under the general permit shall remain liable for any corrective actions that may be required as a result of any permit violations prior to sale, conveyance, or other transfer of ownership or control of the permitted project, activity, or the real property at which the permitted project or activity is located.

8. Upon reasonable notice to the permittee, Agency staff with proper identification shall have permission to enter, inspect, sample and test the permitted system to ensure conformity with the plans and specifications approved by the general permit.

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9. The permittee shall maintain any permitted project or activity in accordance with the plans submitted to the Agency and authorized in the general permit.

10. A permittee's right to conduct a specific activity under the general permit is authorized for a duration of five years.

11. Activities shall be conducted in a manner that does not cause or contribute to violations of state water quality standards. Performance-based erosion and sediment control best management practices shall be implemented and maintained immediately prior to, during, and after construction as needed to stabilize all disturbed areas, including other measures specified in the permit to prevent adverse impacts to the water resources and adjacent lands. Erosion and sediment control measures shall be installed and maintained in accordance with the State of Florida Erosion and Sediment Control Designer and Reviewer Manual (Florida Department of Environmental Protection and Florida Department of Transportation June 2007), available at https://www.flrules.org/Gateway/reference.asp?No=Ref-04227, and the Florida Stormwater Erosion and Sedimentation Control Inspector's Manual (Florida Department of Environmental Protection, Nonpoint Source Management Section, Tallahassee, Florida, July 2008), available at http://publicfiles.dep.state.fl.us/DEAR/Stormwater_Training_Docs/erosion-inspectors-manual.pdf.

12. Unless otherwise specified in the general permit, temporary vehicular access within wetlands during construction shall be performed using vehicles generating minimum ground pressure to minimize rutting and other environmental impacts. Within forested wetlands, the permittee shall choose alignments that minimize the destruction of mature wetland trees to the greatest extent practicable. When needed to prevent rutting or soil compaction, access vehicles shall be operated on wooden, composite, metal, or other non-earthen construction mats. In all cases, access in wetlands shall comply with the following:
    a. Access within forested wetlands shall not include the cutting or clearing of any native wetland tree having a diameter 4 inches or greater at breast height;
    b. The maximum width of the construction access area shall be limited to 15 feet;
    c. All mats shall be removed as soon as practicable after equipment has completed passage through, or work has been completed, at any location along the alignment of the project, but in no case longer than seven days after equipment has completed work or passage through that location; and
    d. Areas disturbed for access shall be restored to natural grades immediately after the maintenance or repair is completed.

13. Barges or other work vessels used to conduct in-water activities shall be operated in a manner that prevents unauthorized dredging, water quality violations, and damage to submerged aquatic communities.

14. The construction, alteration, or use of the authorized project shall not adversely impede navigation or create a navigational hazard in the water body.

15. Except where specifically authorized in the general permit, activities must not:
    a. Impound or obstruct existing water flow, cause adverse impacts to existing surface water storage and conveyance capabilities, or otherwise cause adverse water quantity or flooding impacts to receiving water and adjacent lands; or
    b. Cause an adverse impact to the maintenance of surface or ground water levels or surface water flows established pursuant to Section 373.042, F.S., or a Works of the District established pursuant to Section 373.086, F.S.

16. If prehistoric or historic artifacts, such as pottery or ceramics, projectile points, stone tools, dugout canoes, metal implements, historic building materials, or any other physical remains

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that could be associated with Native American, early European, or American settlement are encountered at any time within the project site area, the permitted project shall cease all activities involving subsurface disturbance in the vicinity of the discovery. The permittee or other designee shall contact the Florida Department of State, Division of Historical Resources, Compliance Review Section (DHR), at (850) 245-6333, as well as the appropriate permitting agency office. Project activities shall not resume without verbal or written authorization from the Division of Historical Resources. If unmarked human remains are encountered, all work shall stop immediately and the proper authorities notified in accordance with Section 872.05, F.S.

17. The activity must be capable, based on generally accepted engineering and scientific principles, of being performed and of functioning as proposed, and must comply with any applicable District special basin and geographic area criteria.

18. The permittee shall comply with the following when performing work within waters accessible to federally- or state-listed aquatic species, such as manatees, marine turtles, smalltooth sawfish, and Gulf sturgeon:
(a) All vessels associated with the project shall operate at “Idle Speed/No Wake” at all times while in the work area and where the draft of the vessels provides less than a four-foot clearance from the bottom. All vessels will follow routes of deep water whenever possible.
(b) All deployed siltation or turbidity barriers shall be properly secured, monitored, and maintained to prevent entanglement or entrapment of listed species.
(c) All in-water activities, including vessel operation, must be shut down if a listed species comes within 50 feet of the work area. Activities shall not resume until the animal(s) has moved beyond a 50-foot radius of the in-water work, or until 30 minutes elapses since the last sighting within 50 feet. Animals must not be herded away or harassed into leaving. All on-site project personnel are responsible for observing water-related activities for the presence of listed species.
(d) Any listed species that is killed or injured by work associated with activities performed shall be reported immediately to the Florida Fish and Wildlife Conservation Commission (FWC) Hotline at 1(888)404-3922 and ImperiledSpecies@myFWC.com.
(e) Whenever there is a spill or frac-out of drilling fluid into waters accessible to the above species during a directional drilling operation, the FWC shall be notified at imperiledspecies@myfwc.com with details of the event within 24 hours following detection of the spill or frac-out.

19. The permittee shall hold and save the Agency harmless from any and all damages, claims, or liabilities which may arise by reason of the construction, alteration, operation, maintenance, removal, abandonment or use of any activity authorized by the general permit.

20. The permittee shall immediately notify the Agency in writing of any submitted information that is discovered to be inaccurate.

21. The permittee shall limit stream channel relocation to streams which have an average discharge of 10 cubic feet per second or less. The length of relocated channels or those significantly altered shall be limited to 200 feet per stream. A stream channel shall be altered only when such a measure will reduce the long term adverse water quality impacts and will maintain or restore the stream's natural hydraulic capability; and

22. This general permit shall not apply to ditch construction in Class I or Class II surface waters, Outstanding National Resource Waters or waters designated as Outstanding Florida Waters.

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23. Activities under this general permit must not diminish existing stormwater treatment, attenuation, or conveyance capacity.

24. This general permit does not authorize the construction of additional traffic lanes. Activities that require additional traffic lanes must first obtain an individual environmental resource permit under this chapter, as applicable, before the start of construction.

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Notice Of Rights

1. A person whose substantial interests are or may be affected has the right to request an administrative hearing by filing a written petition with the St. Johns River Water Management District (District). Pursuant to Chapter 28-106 and Rule 40C-1.1007, Florida Administrative Code, the petition must be filed (received) either by delivery at the office of the District Clerk at District Headquarters, P. O. Box 1429, Palatka Florida 32178-1429 (4049 Reid St., Palatka, FL 32177) or by e-mail with the District Clerk at Clerk@sjrwmd.com, within twenty-six (26) days of the District depositing the notice of District decision in the mail (for those persons to whom the District mails actual notice), within twenty-one (21) days of the District emailing the notice of District decision (for those persons to whom the District emails actual notice), or within twenty-one (21) days of newspaper publication of the notice of District decision (for those persons to whom the District does not mail or email actual notice). A petition must comply with Sections 120.54(5)(b)4. and 120.569(2)(c), Florida Statutes, and Chapter 28-106, Florida Administrative Code. The District will not accept a petition sent by facsimile (fax), as explained in paragraph no. 4 below.

2. Please be advised that if you wish to dispute this District decision, mediation may be available and that choosing mediation does not affect your right to an administrative hearing. If you wish to request mediation, you must do so in a timely-filed petition. If all parties, including the District, agree to the details of the mediation procedure, in writing, within 10 days after the time period stated in the announcement for election of an administrative remedy under Sections 120.569 and 120.57, Florida Statutes, the time limitations imposed by Sections 120.569 and 120.57, Florida Statutes, shall be tolled to allow mediation of the disputed District decision. The mediation must be concluded within 60 days of the date of the parties' written agreement, or such other timeframe agreed to by the parties in writing. Any mediation agreement must include provisions for selecting a mediator, a statement that each party shall be responsible for paying its pro-rata share of the costs and fees associated with mediation, and the mediating parties' understanding regarding the confidentiality of discussions and documents introduced during mediation. If mediation results in settlement of the administrative dispute, the District will enter a final order consistent with the settlement agreement. If mediation terminates without settlement of the dispute, the District will notify all the parties in writing that the administrative hearing process under Sections 120.569 and 120.57, Florida Statutes, is resumed. Even if a party chooses not to engage in formal mediation, or if formal mediation does not result in a settlement agreement, the District will remain willing to engage in informal settlement discussions.

3. A person whose substantial interests are or may be affected has the right to an informal administrative hearing pursuant to Sections 120.569 and 120.57(2), Florida Statutes, where no material facts are in dispute. A petition for an informal hearing must also comply with the requirements set forth in Rule 28-106.301, Florida Administrative Code.

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Notice Of Rights

4. A petition for an administrative hearing is deemed filed upon receipt of the complete petition by the District Clerk at the District Headquarters in Palatka, Florida during the District's regular business hours. The District's regular business hours are 8:00 a.m. – 5:00 p.m., excluding weekends and District holidays. Petitions received by the District Clerk after the District's regular business hours shall be deemed filed as of 8:00 a.m. on the District's next regular business day. The District's acceptance of petitions filed by e-mail is subject to certain conditions set forth in the District's Statement of Agency Organization and Operation (issued pursuant to Rule 28-101.001, Florida Administrative Code), which is available for viewing at sjrwmd.*com*. These conditions include, but are not limited to, the petition being in the form of a PDF or TIFF file and being capable of being stored and printed by the District. Further, pursuant to the District's Statement of Agency Organization and Operation, attempting to file a petition by facsimile is prohibited and shall not constitute filing.

5. Failure to file a petition for an administrative hearing within the requisite timeframe shall constitute a waiver of the right to an administrative hearing. (Rule 28-106.111, Florida Administrative Code).

6. The right to an administrative hearing and the relevant procedures to be followed are governed by Chapter 120, Florida Statutes, Chapter 28-106, Florida Administrative Code, and Rule 40C-1.1007, Florida Administrative Code. Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means the District's final action may be different from the position taken by it in this notice. A person whose substantial interests are or may be affected by the District's final action has the right to become a party to the proceeding, in accordance with the requirements set forth above.

7. Pursuant to Section 120.68, Florida Statutes, a party to the proceeding before the District who is adversely affected by final District action may seek review of the action in the District Court of Appeal by filing a notice of appeal pursuant to Rules 9.110 and 9.190, Florida Rules of Appellate Procedure, within 30 days of the rendering of the final District action.

8. A District action is considered rendered, as referred to in paragraph no. 7 above, after it is signed on behalf of the District and filed by the District Clerk.

9. Failure to observe the relevant timeframes for filing a petition for judicial review as described in paragraph no. 7 above will result in waiver of that right to review.

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NOTICING INFORMATION

Please be advised that the St. Johns River Water Management District will not publish a notice in the newspaper advising the public that it has issued a permit for this project.

Newspaper publication, using the District's notice form, notifies members of the public of their right to challenge the issuance of the permit. If proper notice is given by newspaper publication, then there is a 21-day time limit for someone to file a petition for an administrative hearing to challenge the issuance of the permit.

To close the point of entry for filing a petition, you may publish (at your own expense) a one-time notice of the District's decision in a newspaper of general circulation within the affected area as defined in Section 50.011 of the Florida Statutes. If you do not publish a newspaper notice to close the point of entry, the time to challenge the issuance of your permit will not expire and someone could file a petition even after your project is constructed.

A copy of the notice form and a partial list of newspapers of general circulation are attached for your convenience. However, you are not limited to those listed newspapers. If you choose to close the point of entry and the notice is published, the newspaper will return to you an affidavit of publication. In that event, it is important that you either submit a scanned copy of the affidavit by emailing it to *compliancesupport@sjrwmd.com* (preferred method) **or** send a copy of the original affidavit to:

Office of Records and Regulatory Support
4049 Reid Street
Palatka, FL 32177

If you have any questions, please contact the Office of Records and Regulatory Support at (386) 329-4570.

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NOTICE OF AGENCY ACTION TAKEN BY THE
ST. JOHNS RIVER WATER MANAGEMENT DISTRICT

Notice is given that the following permit was issued on _____:

(Name and address of applicant)_____
permit#_____. The project is located in _____County, Section _____, Township _____ South, Range _____ East. The permit authorizes a surface water management system on _____ acres for _____ known as _____. The receiving water body is _____.

A person whose substantial interests are or may be affected has the right to request an administrative hearing by filing a written petition with the St. Johns River Water Management District (District). Pursuant to Chapter 28-106 and Rule 40C-1.1007, Florida Administrative Code (F.A.C.), the petition must be filed (received) either by delivery at the office of the District Clerk at District Headquarters, P.O. Box 1429, Palatka FL 32178-1429 (4049 Reid St, Palatka, FL 32177) or by e-mail with the District Clerk at Clerk@sjrwmd.com, within twenty-one (21) days of newspaper publication of the notice of District decision (for those persons to whom the District does not mail or email actual notice). A petition must comply with Sections 120.54(5)(b)4. and 120.569(2)(c), Florida Statutes (F.S.), and Chapter 28-106, F.A.C. The District will not accept a petition sent by facsimile (fax). Mediation pursuant to Section 120.573, F.S., may be available and choosing mediation does not affect your right to an administrative hearing.

A petition for an administrative hearing is deemed filed upon receipt of the complete petition by the District Clerk at the District Headquarters in Palatka, Florida during the District's regular business hours. The District's regular business hours are 8 a.m. – 5 p.m., excluding weekends and District holidays. Petitions received by the District Clerk after the District's regular business hours shall be deemed filed as of 8 a.m. on the District's next regular business day. The District's acceptance of petitions filed by e-mail is subject to certain conditions set forth in the District's Statement of Agency Organization and Operation (issued pursuant to Rule 28-101.001, Florida Administrative Code), which is available for viewing at www.sjrwmd.com. These conditions include, but are not limited to, the petition being in the form of a PDF or TIFF file and being capable of being stored and printed by the District. Further, pursuant to the District's Statement of Agency Organization and Operation, attempting to file a petition by facsimile (fax) is prohibited and shall not constitute filing.

The right to an administrative hearing and the relevant procedures to be followed are governed by Chapter 120, Florida Statutes, Chapter 28-106, Florida Administrative Code, and Rule 40C-1.1007, Florida Administrative Code. Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means the District's final action may be different from the position taken by it in this notice. **Failure to file a petition for an administrative hearing within the requisite time frame shall constitute a waiver of the right to an administrative hearing. (Rule 28-106.111, F.A.C.).**

If you wish to do so, please visit http://www.sjrwmd.com/nor_dec/ to read the complete Notice of Rights to determine any legal rights you may have concerning the District's decision(s) on the permit application(s) described above. You can also request the Notice of Rights by contacting the Director of Records and Regulatory Support, 4049 Reid St., Palatka, FL 32177-2529, tele. no. (386)329-4570.

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NEWSPAPER ADVERTISING

ALACHUA
Gainesville Sun, Legal Advertising
2700 SW 13th Street
Gainesville, FL 32608
866-858-9652

BAKER
Baker County Press, Legal Advertising
P. O. Box 598
Maclenny, FL 3206 3
904-259-2400/ fax 904-259-6502

BRADFORD
Bradford County Telegraph, Legal Advertising
P. O. Drawer A
Starke, FL 32901
904-964-6305/ fax 904-964-8628

BREVARD
Florida Today, Legal Advertising
P. O. Box 419000
Melbourne, FL 32941-9000
321-242-3832/ fax 321-242-6618

CLAY
Clay Today, Legal Advertising
1560 Kinsley Ave., Suite 1
Orange Park, FL 32073
904-264-3200/ fax 904-264-3285

DUVAL
Daily Record, Legal Advertising
P. O. Box 1769
Jacksonville, FL 32201
904-356-2466 / fax 904-353-2628

FLAGLER
Flagler Tribune, c/o News Journal
P. O. Box 2831
Daytona Beach, FL 32120-2831
386- 681-2322

INDIAN RIVER
Treasure Coast News
760 NW Enterprise Dr.
Port St. Lucie, Fl 34986
772-283-5252

LAKE
Daily Commercial, Legal Advertising
P. O. Drawer 490007
Leesburg, FL 34749
352-365-8235/fax 352-365-1951

MARION
Ocala Star Banner, Legal Advertising
2121 SW 19th Avenue Road
Ocala, FL 34474
352-867-4010/fax 352-867-4126

NASSAU
News-Leader, Legal Advertising
P. O. Box 766
Fernandina Beach, FL 32035
904-261-3696/fax 904-261-3698

OKEECHOBEE
Okeechobee News, Legal Advertising
P. O. Box 639
Okeechobee, FL 34973-0639
863-763-3134/fax 863-763-5901

ORANGE
Sentinel Communications, Legal Advertising
633 N. Orange Avenue
Orlando, FL 32801
407-420-5160/ fax 407-420-5011

OSCEOLA
Little Sentinel, Legal Advertising
633 N. Orange Avenue
Orlando, FL 32801
407-420-5160/ fax 407-420-5011

PUTNAM
Palatka Daily News, Legal Advertising
P. O. Box 777
Palatka, FL 32178
386-312-5200/ fax 386-312-5209

ST. JOHNS
St. Augustine Record, Legal Advertising
P. O. Box 1630
St. Augustine, FL 32085
904-819-3439

SEMINOLE
Sanford Herald, Legal Advertising
300 North French Avenue
Sanford, FL 32771
407-323-9408

VOLUSIA
News Journal Corporation, Legal Advertising
P. O. Box 2831
Daytona Beach, FL 32120-2831
(386) 681-2322

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APPENDIX I

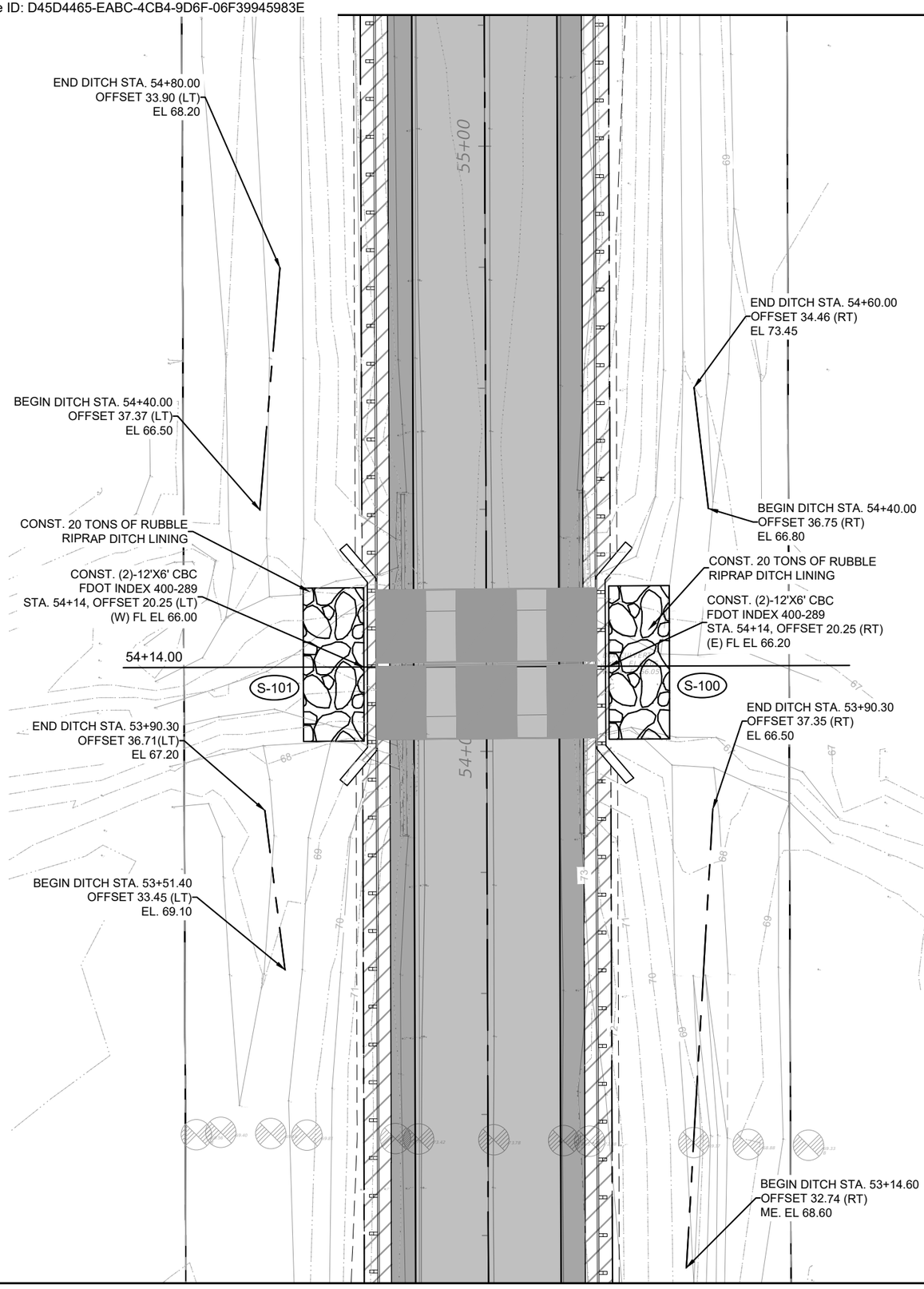
Structure Number Request Form No. 850-000-28, 09-18-2019

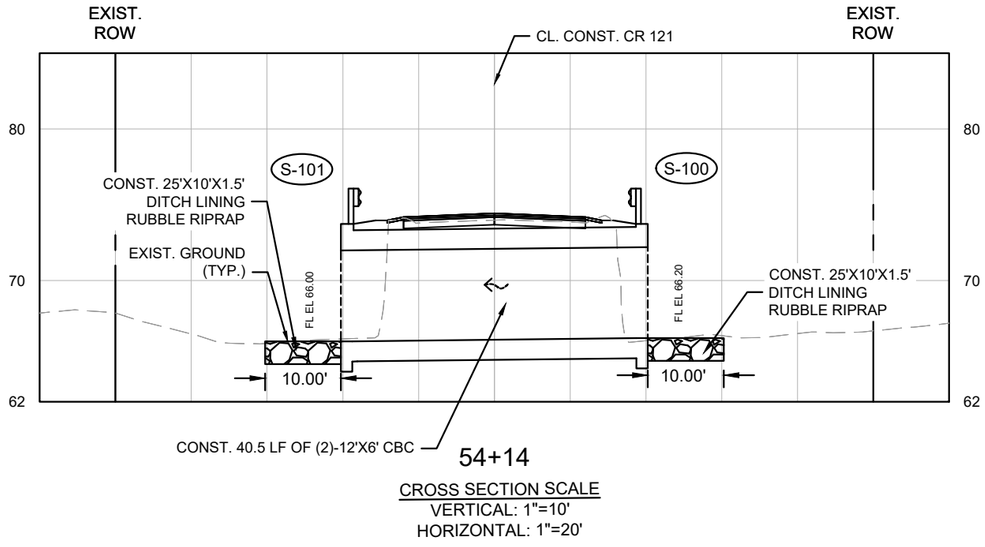
Name, Submitter:	Isabelle Geiger	Date:	10/24/2024
Email address:	isabelle.geiger@kimley-horn.com	Phone No.:	813-528-0918
Engineer, EOR:	Joseph A. Roberts Jr., P.E.		
Firm:	Kimley Horn & Associates		
Firm Address:	200 S. Orange Ave. Suite 600 Orlando FL 32801		

Data submitted must be for proposed, not existing structure.
The plan and elevation sheet must be included with this request form.
Data shall be accurate but may be estimated for items not yet determined. If estimated, so indicate.

NBI Item	Item Description	Item Code / Comment	Coding Help
1	FIPS State/Region	12-Florida/4-Atlanta	
2	District	02 District 2	
	FDOT Financial Project Numer	449196-1-54-01	
3	County	74 Nassau	See Coding Guide Tab
6a	Feature intersected	Branch of Deep Creek	See Coding Guide Tab
7	Facility Carried	CR 121	See Coding Guide Tab
9	Location	0.9 mi N/O US-90	See Coding Guide Tab
11	Mile Point, Route on the Structure	Not Applicable	
11	Mile Point, Route under the Structure	Not Applicable	If Applicable
13a/b	LRS Inventory Route on Structure	74 550 000	Section/Subsection
13a/b	LRS Inventory Route under Structure	Not Applicable	Section/Subsection
21	Maintenance Responsibility	02 County Highway Agency	See Coding Guide Tab
22	Owner	02 County Highway Agency	See Coding Guide Tab
26	Functional Class, Route on the Structure	07 Rural Major Collector	See Coding Guide Tab
26	Functional Class, Route under the Structure	09 Rural Other	See Coding Guide Tab
41	Open/Posted/Closed	F=Proposed	For bridge only
42a	Type of Service, Route on the Structure	1 Highway	See Coding Guide Tab
42b	Type of Service, Route under the Structure	9 Relief for Waterway	See Coding Guide Tab
43a	Main Span Material	1 Concrete	See Coding Guide Tab
43b	Main Span Design	19 Culvert (includes Frame Culverts)	See Coding Guide Tab
48	Legth of Maximum Span (ft.)	12.0	For bridge only
49	Structure Length (ft.)	Approx. 45ft	For bridge only
52	Deck Width (out to out, ft.)	Not Applicable	For bridge only
	Local Bridge Name	CR-121/Branch of Deep Crk	For bridge only
	Type of Sign (If Applicable)		See Coding Guide Tab
	Bridge Height	Low Level (less than 20')	See Coding Guide Tab
	Bridge Use	Carrying two way traffic	See Coding Guide Tab
8x	Previous (Existing) Structure Number	740044	If replacement
8	New Structure Number Assignment	744321	Assigned by FDOT

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E





CROSS SECTION SCALE
VERTICAL: 1"=10'
HORIZONTAL: 1"=20'

NORTH

GRAPHIC SCALE IN FEET
0 5 10 20

No.	REVISIONS	DATE	BY

Kimley»Horn
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JACKSONVILLE, FLORIDA 32258
PHONE: 904-828-3900
WWW.KIMLEY-HORN.COM REGISTRY No. 35106

LICENSED PROFESSIONAL
DEBORAH LYNN KNIGHTON, P.E.
FLORIDA LICENSE NUMBER
43920
DATE:

KHA PROJECT
045046005
DATE
SEPTEMBER 2024
SCALE AS SHOWN
DESIGNED BY —
DRAWN BY —
CHECKED BY —

BOX CULVERT DETAILS

CR 121 PHASE 1
NASSAU COUNTY
FLORIDA

SHEET NUMBER
109

Plotted By: Davidson, Alyssa Sheet Set: CR 121 Phase 1 Layout: 54+14 October 18, 2024 02:27:17pm \\kimley-horn.com\FL_JAX1\JAX_Roadway\045046005_CR 121\CADD\drainage\PLAND801.dwg
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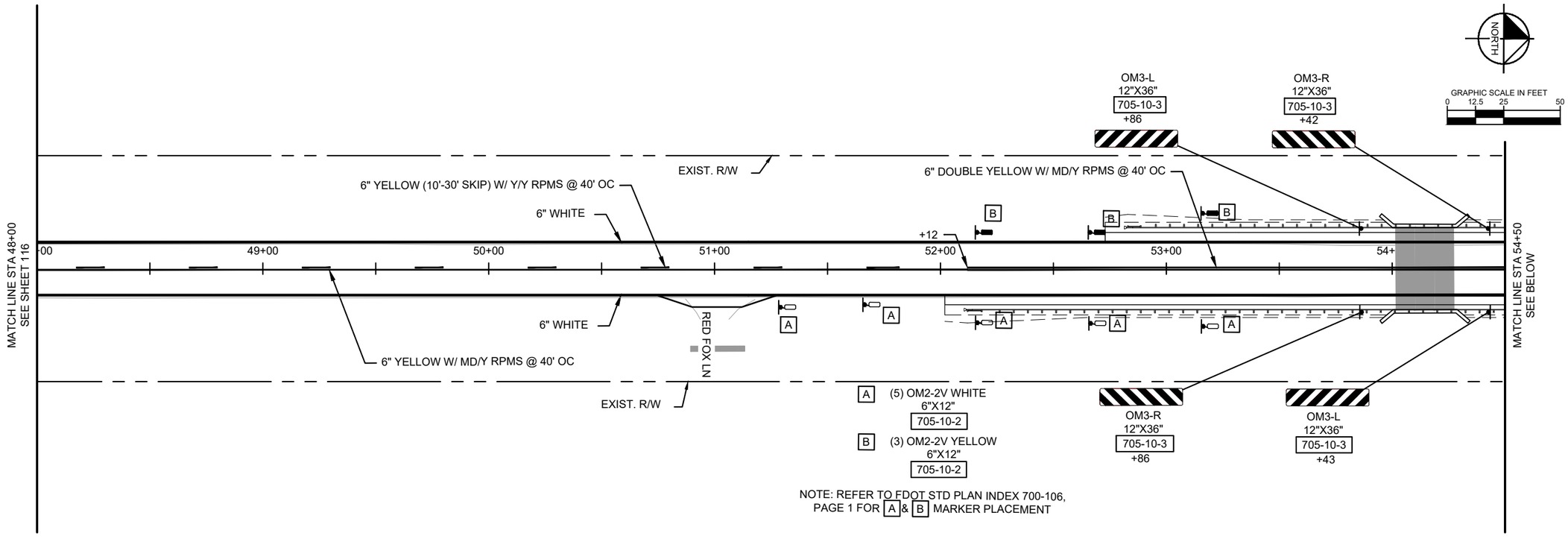

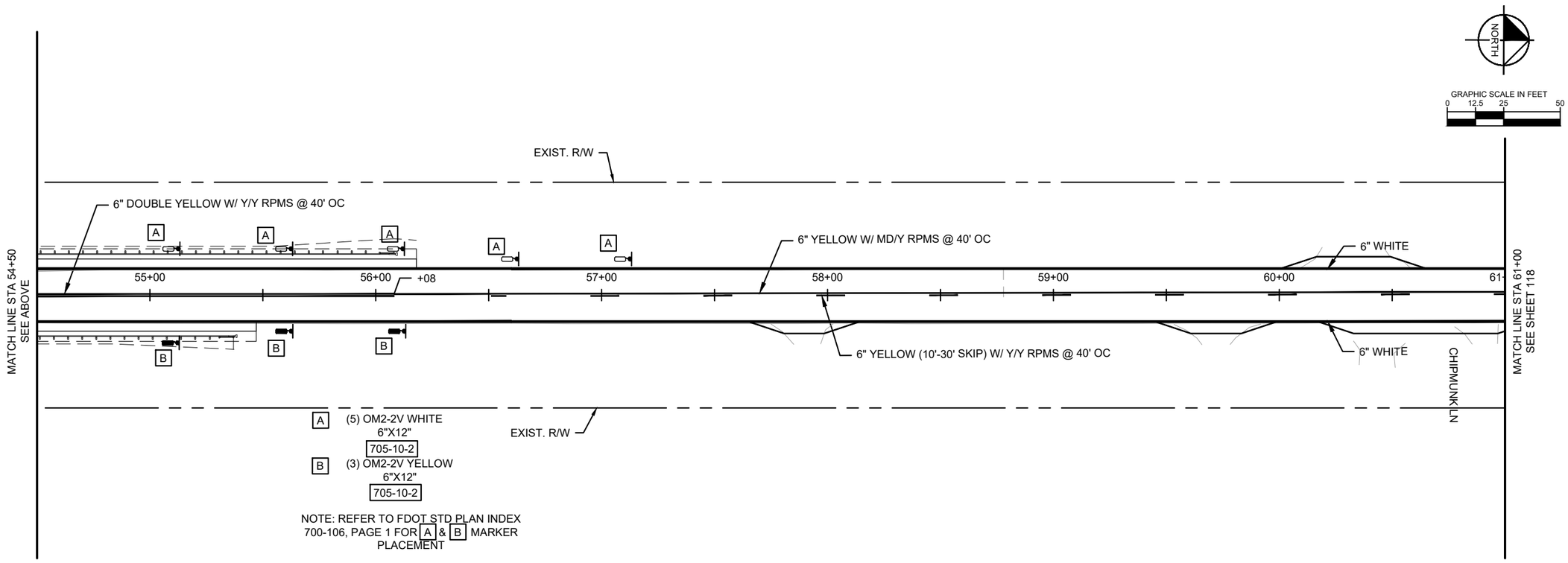

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Plotted By:Cremains, Alex Sheet Set:CR 121 Phase 1 Layout:Sheet -02 September 20, 2024 02:13:14pm K:\JAX_Roadway\045046005_CR 121\CADD\signing\PLANSP01.dwg

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LICENSED PROFESSIONAL
JESSICA NOVAK, P.E.
FLORIDA LICENSE NUMBER
90848
DATE: ____

KHA PROJECT 045046005	DATE SEPTEMBER 2024	SCALE AS SHOWN	DESIGNED BY ___	DRAWN BY ___	CHECKED BY ___

SIGNING AND PAVEMENT MARKING

CR 121 PHASE 1
NASSAU COUNTY
FLORIDA

SHEET NUMBER
117

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

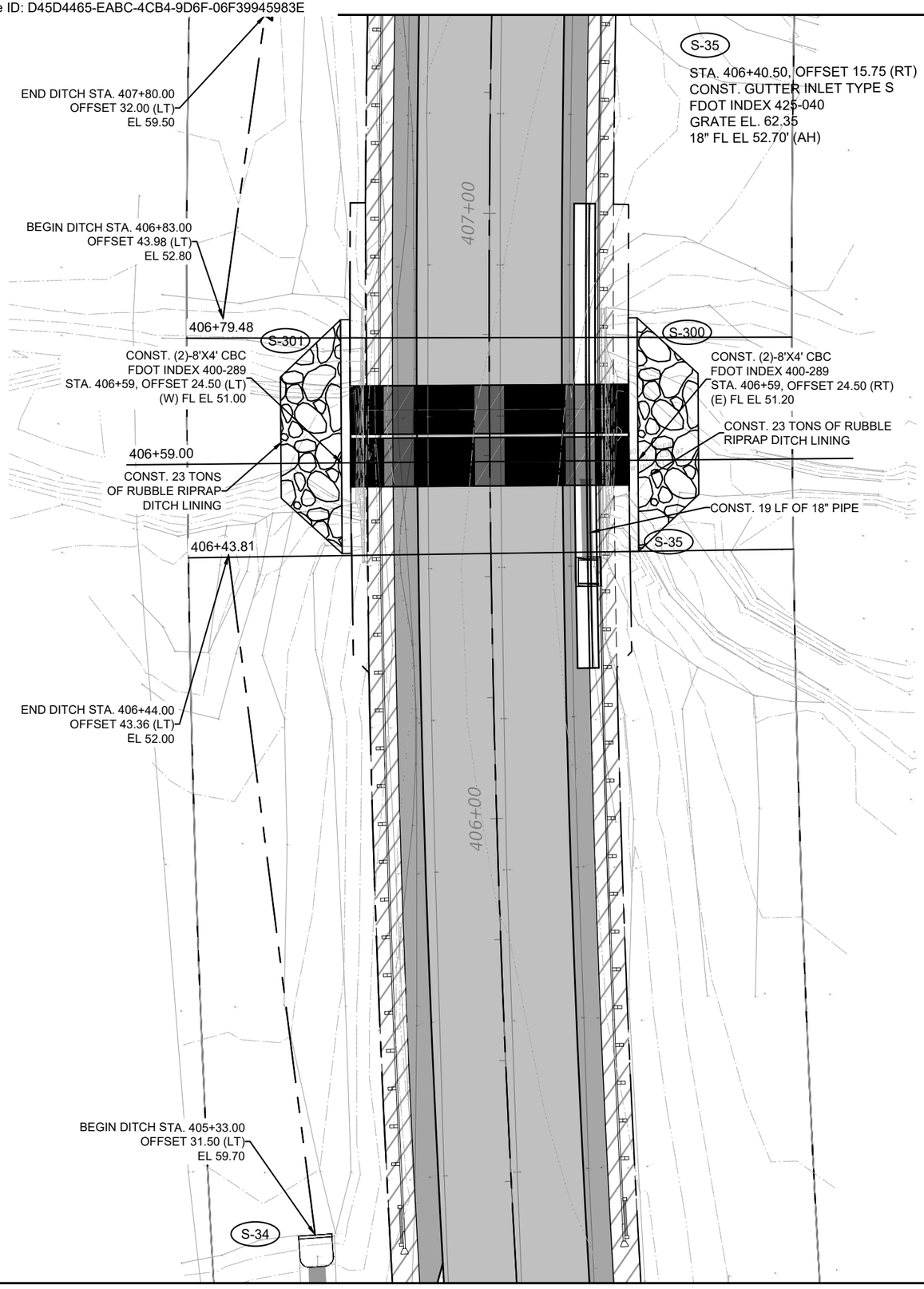
APPENDIX J

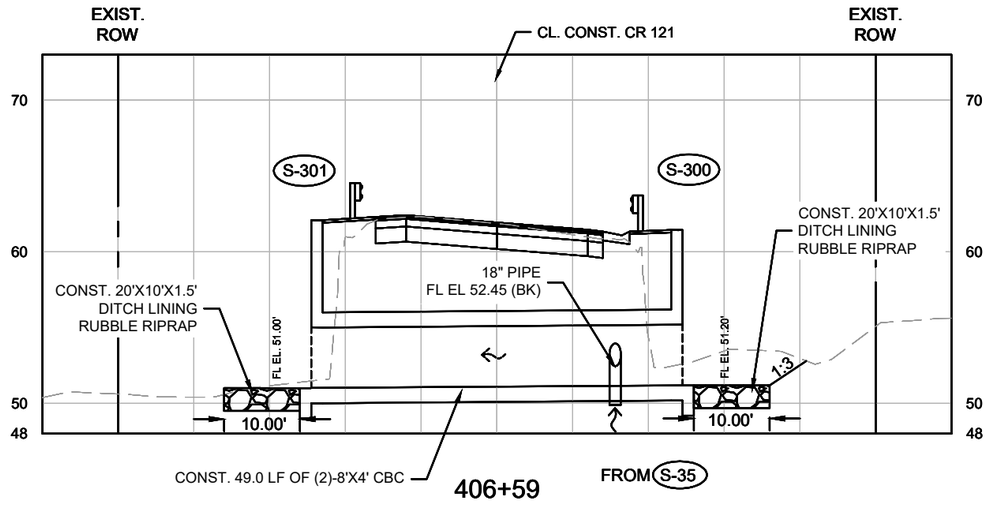
Name, Submitter:	Isabelle Geiger	Date:	11/12/2024
Email address:	isabelle.geiger@kimley-horn.com	Phone No.:	813-528-0918
Engineer, EOR:	Joseph A. Roberts, P.E.		
Firm:	Kimley Horn & Associates		
Firm Address:	200 S. Orange Ave Suite 600 Orlando, FL 32801		

Data submitted must be for proposed, not existing structure.
The plan and elevation sheet must be included with this request form.
Data shall be accurate but may be estimated for items not yet determined. If estimated, so indicate.

NBI Item	Item Description	Item Code / Comment	Coding Help
1	FIPS State/Region	12-Florida/4-Atlanta	
2	District	02 District 2	
	FDOT Financial Project Numer	449196-1-54-01	
3	County	74 Nassau	See Coding Guide Tab
6a	Feature intersected	Creek	See Coding Guide Tab
7	Facility Carried	CR 121	See Coding Guide Tab
9	Location	0.45 Mi S/O CR 119	See Coding Guide Tab
11	Mile Point, Route on the Structure	Not Applicable	
11	Mile Point, Route under the Structure	Not Applicable	If Applicable
13a/b	LRS Inventory Route on Structure	74 550 000	Section/Subsection
13a/b	LRS Inventory Route under Structure	Not Applicable	Section/Subsection
21	Maintenance Responsibility	02 County Highway Agency	See Coding Guide Tab
22	Owner	02 County Highway Agency	See Coding Guide Tab
26	Functional Class, Route on the Structure	07 Rural Major Collector	See Coding Guide Tab
26	Functional Class, Route under the Structure	09 Rural Other	See Coding Guide Tab
41	Open/Posted/Closed	F=Proposed	For bridge only
42a	Type of Service, Route on the Structure	1 Highway	See Coding Guide Tab
42b	Type of Service, Route under the Structure	9 Relief for Waterway	See Coding Guide Tab
43a	Main Span Material	1 Concrete	See Coding Guide Tab
43b	Main Span Design	19 Culvert (includes Frame Culverts)	See Coding Guide Tab
48	Legth of Maximum Span (ft.)	8.0	For bridge only
49	Structure Length (ft.)	17.0	For bridge only
52	Deck Width (out to out, ft.)	Not Applicable	For bridge only
	Local Bridge Name	CR-121 Over Creek	For bridge only
	Type of Sign (If Applicable)		See Coding Guide Tab
	Bridge Height	Low Level (less than 20')	See Coding Guide Tab
	Bridge Use	Carrying two way traffic	See Coding Guide Tab
8x	Previous (Existing) Structure Number	NQ7415	If replacement
8	New Structure Number Assignment	7436	Assigned by Nassau County

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E





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LICENSED PROFESSIONAL
DEBORAH LYNN KNIGHTON, P.E.
FLORIDA LICENSE NUMBER 43920
DATE: —

KHA PROJECT 045046005
DATE SEPTEMBER 2024
SCALE AS SHOWN
DESIGNED BY —
DRAWN BY —
CHECKED BY —

BOX CULVERT DETAILS

CR 121 PHASE 1
NASSAU COUNTY FLORIDA

SHEET NUMBER
111

Plotted By:DeSanno Okwa (Unsaid) Sheet Set:CR 121 Phase 1 Layout:406+59 November 05, 2024 05:05:59pm K:\JAX_Roadway\045046005_CR 121\CADD\drainage\PLANDR01.dwg
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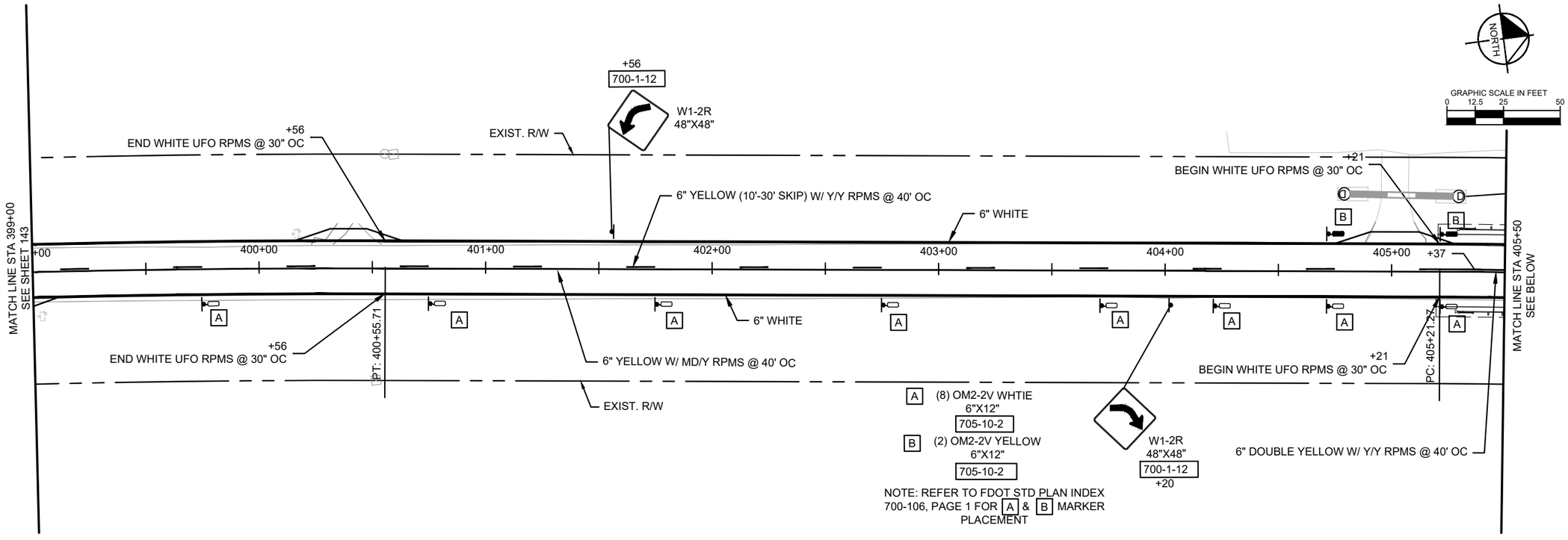

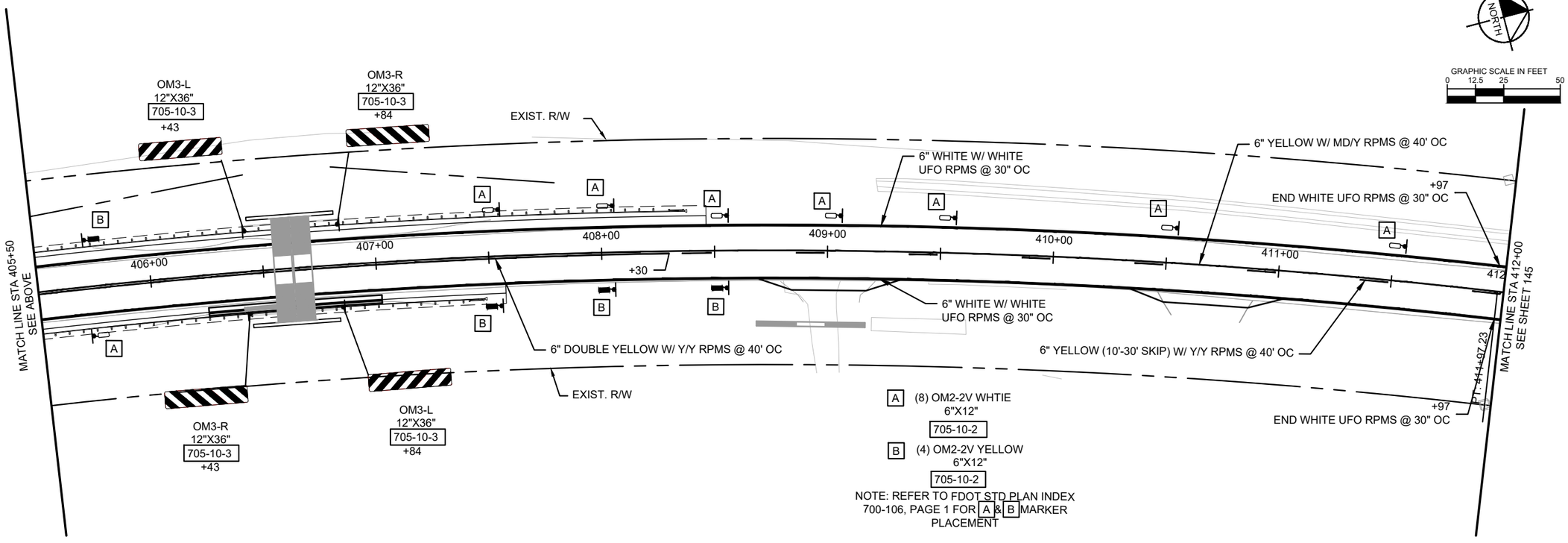

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LICENSED PROFESSIONAL
JESSICA NOVAK, P.E.
FLORIDA LICENSE NUMBER 90848
DATE:

KHA PROJECT 045046005
DATE SEPTEMBER 2024
SCALE AS SHOWN
DESIGNED BY
DRAWN BY
CHECKED BY

FLORIDA

SIGNING AND PAVEMENT MARKING

CR 121 PHASE 1
NASSAU COUNTY

SHEET NUMBER
144

Plotted By:Cremasms, Alex Sheet Set:CR 121 Phase 1 Layout:Sheet -29 September 20, 2024 02:14:40pm K:\JAX_Roadway\045046005_CR 121\CADD\signing\PLANSP03.dwg
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APPENDIX K
Technical Specifications

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TECHNICAL SPECIFICATIONS

1. GENERAL

1.1. Except as may be otherwise specified on the plans or herein, the applicable sections of the Florida Department of Transportation (FDOT), FY 2024-25 Standard Specifications for Road and Bridge Construction and applicable Interim Revisions (Irs), referred to hereinafter as the Standard Specifications, shall apply. All references in the Standard Specifications to the Department or Department's State Materials and Research Engineer at Gainesville shall be deleted and Nassau County Engineer or Authorized Representative inserted. Online versions of the Standard Specifications are available at the following website: https://www.fdot.gov/programmanagement/Implemented/SpecBooks.

1.2. Except as may be otherwise shown in the plans or specified herein, the applicable details of the State of Florida Department of Transportation, Design Standards, FY 2023-2024, shall apply. Online versions of the Design Standards eBook (DSeB) and applicable Design Standards Revisions (DSRs) are available at the following website: https://www.fdot.gov/design/standardplans/.

1.3. Contractor shall pay for the services of an independent testing laboratory to perform all tests required by the contract documents.

1.4. No additional payment will be made for Superpave Asphalt Concrete installed thicker than what is shown on the plans, nor will any increased pay factors be accepted. Tonnage will be calculated by plan area multiplied by a density of 110 pounds per square yard per inch thickness.

END OF SECTION

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APPENDIX E

GENERAL INFORMATION AND MINIMUM INSURANCE REQUIREMENTS

COMMERCIAL GENERAL LIABILITY INSURANCE

The Vendor/Contractor shall purchase and maintain at the Contractor's expense Commercial General Liability insurance coverage (ISO or comparable Occurrence Form) for the life of this Contract. Modified Occurrence or Claims Made forms are not acceptable.

The Limits of this insurance shall not be less than the following limits:

Each Occurrence Limit	$1,000,000
Personal & Advertising Injury Limit	$1,000,000
Products & Completed Operations Aggregate Limit	$2,000,000
General Aggregate Limit (other than Products & Completed Operations) Applies Per Project	$2,000,000

General liability coverage shall continue to apply to "bodily injury" and to "property damage" occurring after all work on the Site of the covered operations to be performed by or on behalf of the additional insureds has been completed and shall continue after that portion of "your work" out of which the injury or damage arises has been put to its intended use.

WORKERS' COMPENSATION AND EMPLOYER'S LIABILITY INSURANCE

The Vendor/Contractor shall purchase and maintain at the Contractor's expense Workers' Compensation and Employer's Liability insurance coverage for the life of this Contract.

The Limits of this insurance shall not be less than the following limits:

Part One – Workers' Compensation Insurance – Unlimited Statutory Benefits as provided in the Florida Statutes and	
Part Two – Employer's Liability Insurance	
Bodily Injury By Accident	$500,000 Each Accident
Bodily Injury By Disease	$500,000 Policy Limit
Bodily Injury By Disease	$500,000 Each Employee

*If leased employees are used, policy must include an Alternate Employer's Endorsement

AUTOMOBILE LIABILITY INSURANCE

The Vendor/Contractor shall purchase and maintain at the Contractor's expense Automobile Liability insurance coverage for the life of this Contract.

The Limits of this insurance shall not be less than the following limits:

Combined Single Limit – Each Accident	$1,000,000

Covered Automobiles shall include any auto owned or operated by the insured Vendor/Contractor, including autos which are leased, hired, rented or borrowed, including autos owned by their employees which are used in connection with the business of the respective Vendor/Contractor.

UMBRELLA (EXCESS) LIABILITY INSURANCE

The Vendor/Contractors hall purchase and maintain at the Subcontractor's expense Excess Liability (Umbrella Form) insurance coverage for the life of this Subcontract.

The Limits of this insurance shall not be less than the following limits:

Each Occurrence Limit	$2,000,000
Aggregate Limit	$2,000,000

ENVIRONMENTAL LIABILITY INSURANCE

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This additional coverage will be required by any Contractor performing environmental and/or other investigations involving excavation, drilling, or other site disturbance activities.

The Contractor shall purchase and maintain at the Contractor's expense Environmental Liability insurance (Contractors Pollution Liability) coverage for the life of this Contract.

The Limits of insurance shall not be less than the following limits: $1,000,000 Each Loss/Aggregate

Such Coverage will include bodily injury, sickness, and disease, mental anguish or shock sustained by any person, including death; property damage including physical injury to destruction of tangible property including resulting loss of use thereof, cleanup costs, and the loss of use of tangible property that has not been physically injured or destroyed; defense including costs charges and expenses incurred in the investigation, adjustment or defense of claims for such compensatory damages; coverage for losses caused by pollution conditions that arises from the operations of the contractor including transportation.

Vendor/Contractor shall require each of his Subcontractors to likewise purchase and maintain at their expense Commercial General Liability insurance, Workers' Compensation, Employer's Liability, Auto Liability, Umbrella Liability & Environmental Liability insurance coverage meeting the same limit and requirements as the Contractors insurance.

Certificates of Insurance and the insurance policies required for this Agreement shall contain –

- **Endorsement that coverage afforded under the policies will not be cancelled or allowed to expire until at least thirty (30) days prior written notice has been given to Nassau County Board of County Commissioners.**
  - **Nassau County Board of County Commissioners must be named as an Additional Insured and endorsed onto the Commercial General Liability (CGL), Auto Liability and Umbrella Liability policy (ies).**
  - **CGL policy for construction related contracts –**
    - **Additional Insured Endorsement must include Ongoing and Completed**
    - **CGL policy shall not be endorsed with Contractual Liability Limitation Endorsement or Amendment of Insured Contract Definition**
    - **CGL policy shall include broad form contractual liability coverage for the Contractors covenants to and indemnification of the Authority under this Contract**
- **Provision under General Liability, Auto Liability and Workers' Compensation to include a Waiver of Subrogation clause in favor of Nassau County Board of County Commissioners.**
- **Provision that policies, except Workers' Compensation, are primary and noncontributory.**

All Insurers must be authorized to transact insurance business in the State of Florida as provided by Florida Statute 624.09(1) and the most recent Rating Classification/Financial Category of the insurer as published in the latest edition of "Best's Key Rating Guide' (Property-Casualty) must be at least A- or above.

All of the above referenced Insurance coverage is required to remain in force for the duration of this Agreement and for the duration of the warranty period. Accordingly, at the time of submission of final application for payment, Vendor/Contractor shall submit an additional Certificate of Insurance evidencing continuation of such coverage.

If the Vendor/Contractor fails to procure, maintain or pay for the required insurance, Nassau County Board of County Commissioners shall have the right (but not the obligation) to secure same in the name of and for the account of Vendor/Contractor, in which event, Vendor/Contractor shall pay the cost thereof and shall furnish upon demand, all information required to procure such insurance. Nassau County Board of County Commissioners shall have the right to back-charge Vendor/Contractor for the cost of procuring such insurance. The failure of Nassau County Board of County Commissioners to demand certificates of insurance and endorsements evidencing the required insurance or to identify any deficiency in Vendor/Contractors coverage based on the evidence of insurance provided by the Vendor/Contractor shall not be construed as a waiver by Nassau County Board of County Commissioners of Vendor/Contractor's obligation to procure, maintain and pay for required insurance.

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The insurance requirements set forth herein shall in no way limit Vendor/Contractors liability arising out of the work performed under the Agreement or related activities. The inclusions, coverage and limits set forth herein are minimum inclusion, coverage and limits. The required minimum policy limits set forth shall not be construed as a limitation of Vendor/Contractor's right under any policy with higher limits, and no policy maintained by the Vendor/Vendor/Contractor shall be construed as limiting the type, quality or quantity of insurance coverage that Vendor/Vendor/Contractor should maintain. Vendor/Vendor/Contractor shall be responsible for determining appropriate inclusions, coverage and limits, which may be in excess of the minimum requirements set forth herein.

If the insurance of any Vendor/Vendor/Contractor or any Sub-Vendor/Vendor/Contractor contains deductible(s), penalty(ies) or self-insured retention(s), the Vendor/Vendor/Contractor or Sub-Vendor/Vendor/Contractor whose insurance contains such provision(s) shall be solely responsible for payment of such deductible(s), penalty(ies) or self-insured retention(s).

The failure of Vendor/Vendor/Contractor to fully and strictly comply at all times with the insurance requirements set forth herein shall be deemed a material breach of the Agreement.

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APPENDIX - M

Nassau County Bid Schedule

Line Items for Project Resurfacing and Safety Improvements (Phase 1) CR 121 From Duval County Line to CR 119 (NC25-012-ITB)

Issued on 04/04/2025

Bid Due on May 07, 2025 10:00 AM (EDT)

Item Num	Section	Item Code	Item Description	Unit of Measure	Quantity
1	Roadway Components	101-1	MOBILIZATION	LS	1
2	Roadway Components	102-1	MAINTENANCE OF TRAFFIC	LS	1
3	Roadway Components	104-10-3	SEDIMENT BARRIER	LF	72279
4	Roadway Components	110-1-1	CLEARING & GRUBBING	AC	42.774449
5	Roadway Components	110-3	REMOVAL OF EXISTING STRUCTURES/BRIDGES	SF	2300
6	Roadway Components	110-7-1	MAILBOX, F&I SINGLE	EA	98
7	Roadway Components	120-1	REGULAR EXCAVATION	CY	1174
8	Roadway Components	120-4	SUBSOIL EXCAVATION	CY	2814.814815
9	Roadway Components	120-6	EMBANKMENT	CY	5715
10	Roadway Components	160-4	TYPE B STABILIZATION	SY	131671.8667
11	Roadway Components	285-709	OPTIONAL BASE, BASE GROUP 09	SY	107997.3111
12	Roadway Components	327-70-7	MILLING EXISTING ASPHALT PAVEMENT, 4" AVG DEPTH	SY	8900
13	Roadway Components	334-1-52	SUPERPAVE ASPHALTIC CONCRETE, TRAFFIC B, PG76-22	TN	9375.74
14	Roadway Components	337-7-81	ASPHALT CONCRETE FRICTION COURSE,TRAFFIC B, FC-12.5, PG 76-22	TN	8995.483333
15	Roadway Components	339-1	MISCELLANEOUS ASPHALT PAVEMENT	TN	62.344444
16	Roadway Components	520-6	SHOULDER GUTTER- CONCRETE	LF	77
17	Roadway Components	522-2	CONCRETE SIDEWALK AND DRIVEWAYS, 6" THICK	SY	86.8
18	Roadway Components	536-1-1	GUARDRAIL -ROADWAY, GENERAL TL-3	LF	1219
19	Roadway Components	536-7-2	SPECIAL GUARDRAIL POST- SPECIAL STEEL POST FOR CONCRETE STRUCTURE MOUNT	EA	26
20	Roadway Components	536-73	GUARDRAIL REMOVAL	LF	868.05
21	Roadway Components	536-85-24	GUARDRAIL END TREATMENT- PARALLEL APPROACH TERMINAL	EA	12
22	Roadway Components	570-1-2	PERFORMANCE TURF, SOD	SY	74548
23	Roadway Components	N/A	MISC DRIVEWAY TIE-IN MATERIAL	SY	670
24	DRAINAGE COMPONENTS	400-4-1	CONCRETE CLASS IV, CULVERTS	CY	359.4
25	DRAINAGE COMPONENTS	415-1-1	REINFORCING STEEL- ROADWAY	LB	65309
26	DRAINAGE COMPONENTS	425-1-701	INLETS, GUTTER, TYPE S, <10'	EA	1
27	DRAINAGE COMPONENTS	425-2-41	MANHOLES, P-7, <10'	EA	1
28	DRAINAGE COMPONENTS	425-2-71	MANHOLES, J-7, <10'	EA	1
29	DRAINAGE COMPONENTS	430-94-1	DESILTING PIPE, 0-24"	LF	553
30	DRAINAGE COMPONENTS	430-94-2	DESILTING PIPE, 25"-36"	LF	514
31	DRAINAGE COMPONENTS	430-94-3	DESILTING PIPE, 37"-48"	LF	120
32	DRAINAGE COMPONENTS	430-175-115	PIPE CULVERT,OPTIONAL MATERIAL,ROUND, 15"S/CD	LF	27
33	DRAINAGE COMPONENTS	430-175-118	PIPE CULVERT,OPTIONAL MATERIAL,ROUND, 18"S/CD	LF	31
34	DRAINAGE COMPONENTS	430-175-124	PIPE CULVERT,OPTIONAL MATERIAL,ROUND, 24"S/CD	LF	128
35	DRAINAGE COMPONENTS	430-175-130	PIPE CULVERT, OPT MATERIAL, ROUND, 30"S/CD	LF	38
36	DRAINAGE COMPONENTS	430-175-136	PIPE CULVERT, OPT MATERIAL, ROUND, 36"S/CD	LF	58
37	DRAINAGE COMPONENTS	430-536-200	STRAIGHT CONCRETE ENDWALLS, 36", DOUBLE, 0 DEGREES, ROUND	EA	2
38	DRAINAGE COMPONENTS	430-982-123	MITERED END SECTION, OPTIONAL ROUND, 15" CD	EA	2

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39	DRAINAGE COMPONENTS	430-982-125	MITERED END SECTION, OPTIONAL ROUND, 18" CD	EA	2
40	DRAINAGE COMPONENTS	430-982-129	MITERED END SECTION, OPTIONAL ROUND, 24" CD	EA	36
41	DRAINAGE COMPONENTS	430-982-133	MITERED END SECTION, OPTIONAL ROUND, 30" CD	EA	5
42	DRAINAGE COMPONENTS	530-3-4	RIPRAP, RUBBLE, F&I, DITCH LINING	TN	149.6
43	DRAINAGE COMPONENTS	530-74	BEDDING STONE	TN	107.41
44	SIGNING AND PAVEMENT MARKING	700-1-11	SINGLE POST SIGN, F&I GROUND MOUNT, UP TO 12 SF	AS	21
45	SIGNING AND PAVEMENT MARKING	700-1-12	SINGLE POST SIGN, F&I GROUND MOUNT, 12-20 SF	AS	4
46	SIGNING AND PAVEMENT MARKING	700-1-50	SINGLE POST SIGN, RELOCATE	EA	40
47	SIGNING AND PAVEMENT MARKING	700-1-60	SINGLE POST SIGN, REMOVE	EA	9
48	SIGNING AND PAVEMENT MARKING	700-13-15	RETROREFLECTIVE SIGN STRIP- FURNISH AND INSTALL, 5'	EA	6
49	SIGNING AND PAVEMENT MARKING	705-10-1	OBJECT MARKER, TYPE 1	EA	3
50	SIGNING AND PAVEMENT MARKING	705-10-2	OBJECT MARKER, TYPE 2	EA	105
51	SIGNING AND PAVEMENT MARKING	705-10-3	OBJECT MARKER, TYPE 3	EA	12
52	SIGNING AND PAVEMENT MARKING	706-1-3	RAISED PAVEMENT MARKER, TYPE B	EA	9024
53	SIGNING AND PAVEMENT MARKING	711-11-125	THERMOPLASTIC, STANDARD, WHITE, SOLID, 24" FOR STOP LINE AND CROSSWALK	LF	155
54	SIGNING AND PAVEMENT MARKING	711-14-160	THERMOPLASTIC, PREFORMED, WHITE, MESSAGE	EA	1
55	SIGNING AND PAVEMENT MARKING	711-16-101	THERMOPLASTIC, STANDARD-OTHER SURFACES, WHITE, SOLID, 6"	GM	14.969864
56	SIGNING AND PAVEMENT MARKING	711-16-201	THERMOPLASTIC, STANDARD-OTHER SURFACES, YELLOW, SOLID, 6"	GM	4.823114
57	SIGNING AND PAVEMENT MARKING	711-16-231	THERMOPLASTIC, STANDARD-OTHER SURFACES, YELLOW, SKIP, 6"	GM	6.414939
58	SIGNING AND PAVEMENT MARKING	710-90	PAINTED PAVEMENT MARKINGS, FINAL SURFACE	LS	1
59	BRANDY BRANCH PLACE PAVING	334-1-12	SUPERPAVE ASPHALTIC CONC, TRAFFIC B	TN	56.466667
60	BRANDY BRANCH PLACE PAVING	570-1-2	PERFORMANCE TURF, SOD	SY	2026.654

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APPENDIX N

CONTRACTOR E-VERIFY AFFIDAVIT

I hereby certify that _____(Contractor Company Name) does not employ, contract with, or subcontract with an unauthorized alien, and is otherwise in full compliance with Section 448.095, Florida Statutes.

All employees hired on or after January 1, 2021 have had their work authorization status verified through the E-Verify system.

A true and correct copy of _____ (Contractor Company Name) proof of registration in the E-Verify system is attached to this Affidavit.

_____

Print Name:_____

Date:_____

STATE OF FLORIDA

COUNTY OF _____

The foregoing instrument was acknowledged before me by means of □physical presence or □online notarization, this _____ (Date) by _____(Name of Officer or Agent, Title of Officer or Agent) of _____(Name of Contractor Company Acknowledging), a _____(State or Place of Incorporation) Corporation, on behalf of the Corporation. He/She is personally known to me or has produced _____ as identification.

_____
Notary Public

_____
Printed Name

My Commission Expires: _____

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

APPENDIX N-1

SUBCONTRACTOR E-VERIFY AFFIDAVIT

I hereby certify that _____(Subcontractor Company Name) does not employ, contract with, or subcontract with an unauthorized alien, and is otherwise in full compliance with Section 448.095, Florida Statutes.

All employees hired on or after January 1, 2021 have had their work authorization status verified through the E-Verify system.

A true and correct copy of _____ (Subcontractor Company Name) proof of registration in the E-Verify system is attached to this Affidavit.

_____

Print Name:_____

Date:_____

STATE OF FLORIDA

COUNTY OF _____

The foregoing instrument was acknowledged before me by means of □physical presence or □online notarization, this _____ (Date) by _____(Name of Officer or Agent, Title of Officer or Agent) of _____(Name of Contractor Company Acknowledging), a _____(State or Place of Incorporation) Corporation, on behalf of the Corporation. He/She is personally known to me or has produced _____ as identification.

_____
Notary Public

_____
Printed Name

My Commission Expires: _____

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

COMPLIANCE WITH ANTI-HUMAN TRAFFICKING LAWS AFFIDAVIT
Section 787.06, Florida Statutes
Contract, contract renewals and contract extensions

Before me the undersigned authority, personally appeared _____, whom after being duly sworn, deposes and states:
Affiant

1. I am over the age of 18 years of age and I have personal knowledge of the matters set forth herein.
2. I am a corporate officer or other authorized person with _____, a non-governmental entity. I assert and acknowledge that I have legal authorization to contractually bind the non-governmental entity.
3. The non-governmental entity does not use coercion for labor or services, as defined in Section 787.06, Florida Statutes.
4. This declaration is made pursuant to Section 92.525, Florida Statutes. I understand that making a false statement in this declaration may subject me to criminal penalties.

Under penalties of perjury, I declare that I have read the foregoing Anti-Human Trafficking Laws Affidavit and that the facts stated in it are true.

Signature: _____

Firm Name: _____

Title: _____

Date: _____

Acknowledgment

STATE OF _____
COUNTY OF _____

The foregoing Affidavit was acknowledged before me by means of [ ] physical presence or [ ] online notarization this _____ day of _____, 20__, by _____ who is personally known to me or who has produced _____ as identification.

[Notary Seal] Signature:_____

Docusign Envelope ID: D45D4465-EABC-4CB4-9D6F-06F39945983E

CONTRACTING WITH FOREIGN ENTITIES OF CONCERN
COMPLIANCE AFFIDAVIT
Section 287.138, Florida Statutes
Contract, contract renewals and contract extensions

Before me the undersigned authority, personally appeared _____, whom after being duly sworn, deposes and states:
Affiant

1. I am over the age of 18 years of age and I have personal knowledge of the matters set forth herein.
2. I am a corporate officer or other authorized person with _____, a non-governmental entity hereinafter "Vendor". I assert and acknowledge that I have legal authorization to contractually bind the non-governmental entity.
3. I hereby certify that pursuant to Section 287.138, Florida Statues:
    a. Vendor is not owned by a government of a foreign country of concern;
    b. a government of a foreign country of concern does not have a "controlling interest" in Vendor, as defined by Section 287.138(1)(a), Florida Statutes; and
    c. Vendor is not organized under the law of nor has its principal place of business in a foreign country of concern.
    d. For the purposes of this affidavit, foreign country of concern means the People's Republic of China, the Russian Federation, the Islamic Republic of Iran, the Democratic People's Republic of Korea, the Republic of Cuba, the Venezuelan regime of Nicolás Maduro, or the Syrian Arab Republic, including any agency of or any other entity of significant control of such foreign country of concern, as defined in Section 287.138(1)(c), Florida Statutes.
4. This Affidavit is executed in accordance with Section 287.138, Florida Statutes, for the purposes of preventing the County from entering contracts with foreign entities of concern which would provide Vendor access to an individual's personal identifying information.

Signature: _____

Firm Name: _____

Title: _____

Date: _____

Acknowledgment

STATE OF _____
COUNTY OF _____

The foregoing Affidavit was acknowledged before me by means of [ ] physical presence or [ ] online notarization this _____ day of _____, 20__, by _____ who is personally known to me or who has produced _____ as identification.

[Notary Seal] Signature:_____