



2450 Commerce Avenue, Duluth, GA 30096

SOIL SURVEY SUMMARY

PI 0004634

MCGINNIS FERRY ROAD WIDENING

(From Ronald Reagan BLVD/Union Road to Hospital Parkway)

Forsyth County, Georgia

REVISION No. 0

November 20, 2019

Soil Survey Summary
McGinnis Ferry Road Widening, Forsyth, Georgia
PI No. 0004634
November 20, 2019
Revision No. 0

- 1. Location / Description**

This project is for the widening of McGinnis Ferry Road. The project begins at Station 100+00 at Ronald Reagan BLVD and continues east to Station 350+30.62 at Hospital Parkway. The project lies north of the city limits of Johns Creek in Forsyth County.
- 2. Geology**

This project will be geologically sited in the Biotitic Gneiss / Mica Schist/ Amphibolite Formation of the Georgia Piedmont Region.
- 3. Rock**

No solid rock was encountered at or near the proposed roadway grade.
- 4. Removal**

No material requiring removal was encountered. However, the soils near the proposed grade in the following areas were found to have in-place moisture contents far above the optimum moisture contents. This condition has the potential to cause sever pumping and instability problems during subgrade and base construction. After excavation in these areas is complete, we recommend that 24 inches of subgrade soils beneath the pavement and shoulders be removed and either dried out and replaced, or replaced with drier soils:

<u>Station to Station</u>	<u>Location</u>
142+50± to 147+50±	Right & Left
166+00± to 169+50±	Right & Left
192+50± to 197+50±	Right & Left
282+50± to 287+50±	Right & Left

This work should be done at the direction of the Engineer, and may be eliminated if the subgrade soils are dry and stable at the time of construction.

- 5. Waste**

None of the materials found on this project will require wasting. However, high-volume change Class IIIC2 material excavated from the following areas should not be placed within three feet of the bottom of the subgrade directly beneath the pavement section:

Station to Station
152+50± to 157+50±

Location
Right

These soils may be used in the bottom of high fill sections, or used to flatten side slopes as directed by the Engineer. This work shall be done in accordance with Special Provision 205.

**6. Subgrade
Materials**

No additional subgrade material will be required for this project.

**7. Pavement
Design Values**

We recommend the following values for use in the pavement design calculations for this project:

Soil Support Value = 2.5

Graded aggregate base is the only base material recommended for use on this project.

8. Ditch Lining

We recommend the following values for use in the ditch lining calculations for this project:

Plasticity Index, PI = 22
D75 (mm) = 0.185
Unified Soils Classification
System (USCS) = CL, silty clay

Sample S-17 at Station 189+25 was used for ditch lining evaluation

9. Slopes

Maximum 2:1 slopes will be safe for this project.

10. Groundwater

Groundwater was not encountered at locations of subsurface borings on the project at the time of the investigation.

11. Shrinkage

We recommend an average shrinkage factor of 25 % for use in the earthwork calculations for this project.

12. Rock Swell

We recommend the use of an average swell factor of 25% for material shown as hard rock.

13. Culverts

We recommend that a 12-inch blanket of Type II Foundation Backfill material be placed under the barrel of all culverts and 48-inch diameter and larger cross-drains on this project

14. Corrosion

Reference should be made to the attached "Pipe Culvert Material Alternates" chart for materials allowable by the Laboratory

corrosion test.

15. Bench Detail

Where new fills are to be placed on existing slopes steeper than 3:1, the existing slope should be benched in accordance with the attached detail.

**16. Additional
Subgrade
Recommendations**

We recommend additional 4 inches of graded aggregate base be set up for use at the direction of Engineer in the following areas:

Station to Station
152+50± to 157+50±

Location
Right & Left

**17. Special
Problems**

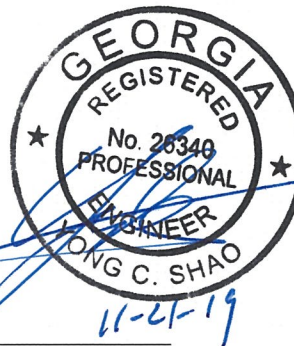
We recommend that all bridge approach slabs on this project be constructed in accordance with the notched detail on Georgia Standard 9017-R.

Prepared By:

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Approved By:

Yong Shao, PE



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Appendix A – Special Provisions and Details

**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA**

SPECIAL PROVISION

**PROJECT: MIGINNIS FERRY ROAD WIDENING, FORSYTH COUNTY
P.I. NO. 0004634**

SECTION 205 – ROADWAY EXCAVATION

Add the following to Sub-section 205.3.05.E:

The soils that will be excavated from the following cut sections are primarily Class IIIC2 soils with poor load carrying characteristics. Do not place these soils within 3 feet (915 mm) of the subgrade directly beneath the pavement in fill sections. These soils may be placed in the bottom of high fill sections or used to flatten slopes as directed by the Engineer:

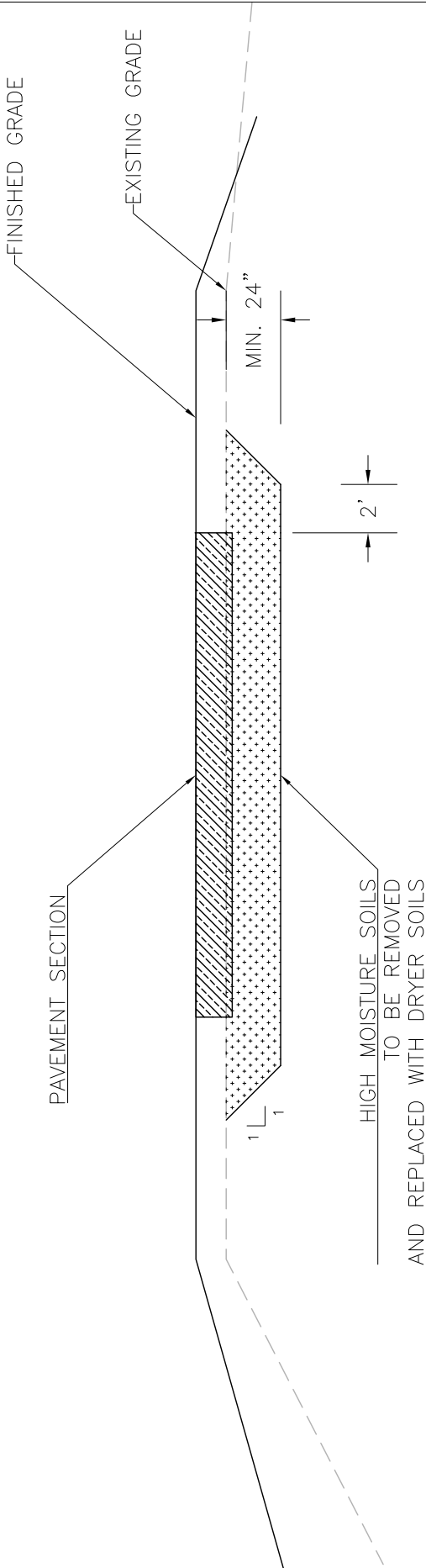
Station to Station

152+50± to 157+50±

Location

Right & Left

PROJECT NAME: MCGINNIS FERRY ROAD, ROCKDALE COUNTY
GDOT P.I.NO.: 0004634



NOTES:

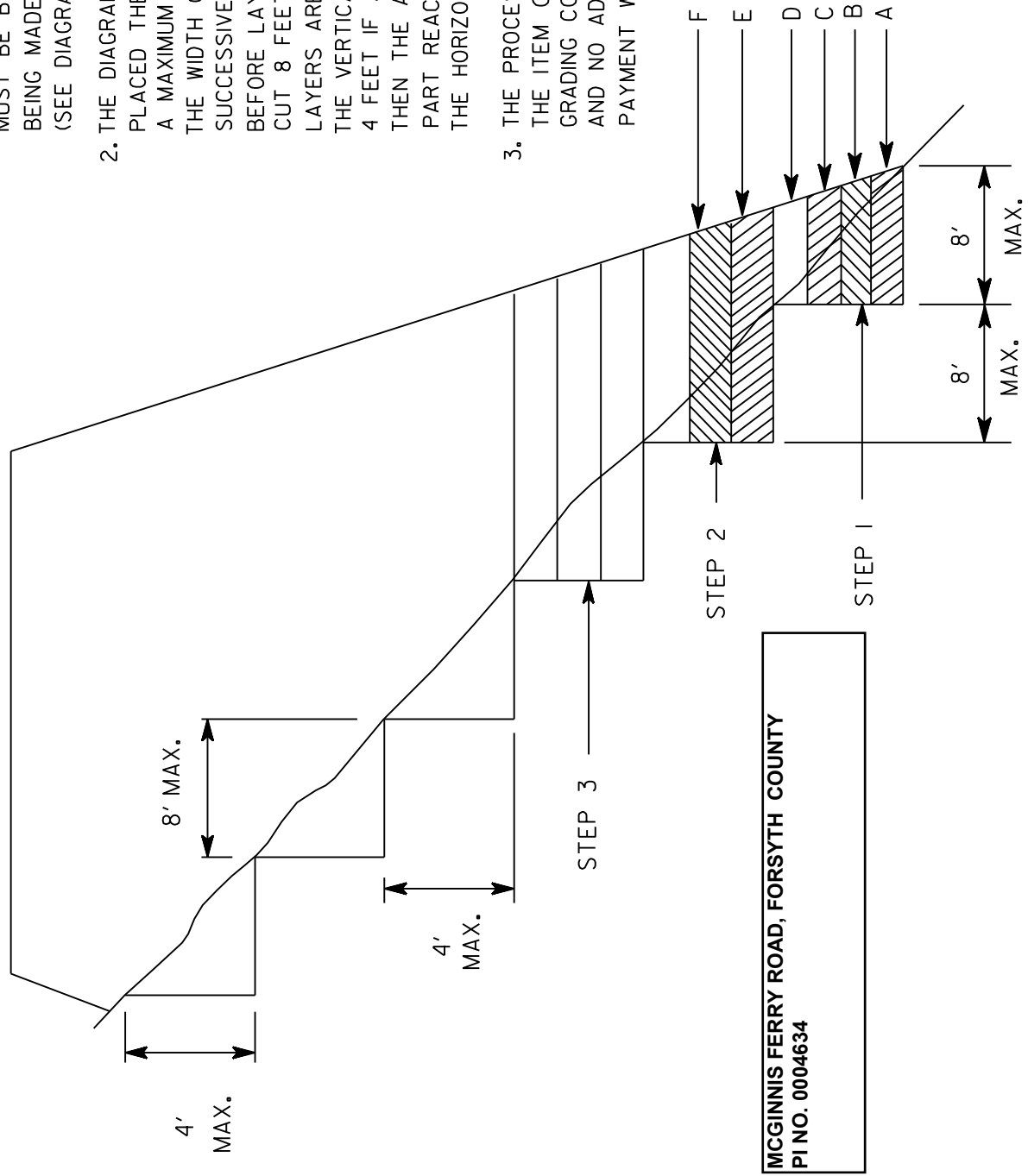
1. THIS DETAIL APPLIES TO THE FOLLOWING STATIONS:

<u>STATION TO STATION</u>	<u>LOCATION</u>
142+50± to 147+50±	RIGHT & LEFT
166+00± to 169+50±	RIGHT & LEFT
192+50± to 197+50±	RIGHT & LEFT
282+50± to 287+50±	RIGHT & LEFT

2. THIS WORK SHOULD BE DONE AT THE DIRECTION OF THE ENGINEER, AND MAY BE ELIMINATED IF THE SUBGRADE SOILS ARE DRY AND STABLE AT THE TIME OF CONSTRUCTION

REMOVAL DETAIL

1. WHERE THE EMBANKMENT IS TO BE PLACED ON A HILLSIDE OR ANOTHER EXISTING EMBANKMENT HAVING A SLOPE OF 3 TO 1 OR STEEPER, THE FOUNDATION MUST BE BENCHED WHILE THE EMBANKMENT IS BEING MADE.
(SEE DIAGRAM AT LEFT.)
2. THE DIAGRAM SHOWS THAT BEFORE LAYER "A" IS PLACED THE FIRST STEP (1) IS CUT INTO THE SLOPE A MAXIMUM DISTANCE OF ABOUT 8 FEET (ABOUT $\frac{3}{4}$ THE WIDTH OF THE TYPICAL D-8 BULLDOZER BLADE). SUCCESSIVE LAYERS B, C, AND D ARE THEN PLACED BEFORE LAYER "E" IS PLACED, THE SECOND STEP IS CUT 8 FEET INTO THE SLOPE AND SUCCESSIVE LAYERS ARE AGAIN PLACED. IF IT IS ANTICIPATED THAT THE VERTICAL PART OF THE STEP WILL EXCEED 4 FEET IF A 8 FEET HORIZONTAL CUT IS MADE, THEN THE ACTUAL CUT STOPS WHEN THE VERTICAL PART REACHES A MAXIMUM OF 4 FEET ALLOWING THE HORIZONTAL DISTANCE TO VARY.
3. THE PROCESS OF BENCHING IS CONSIDERED INCIDENTAL TO THE ITEM OF UNCLASSIFIED EXCAVATION AND BORROW OR GRADING COMPLETE IN CONSTRUCTION OF THE EMBANKMENT AND NO ADDITIONAL MEASUREMENT OF QUANTITY OR PAYMENT WILL BE MADE FOR BENCHING.



BENCHING DETAIL

pH	6.1
Resistivity	11000

Project Number:

County: Forsyth

P.I. Number: 0004634

Pipe Culvert Material Alternates

PIPE TYPE											
TYPE OF INSTALLATION		CONCRETE		STEEL			ALUMINUM	THERMOPLASTIC			
		REINFORCED CONCRETE AASHTO M-170	CORRUGATED STEEL ALUMINUM COATED (TYPE 2) AASHTO M-36	CORRUGATED STEEL PLAIN ZINC COATED AASHTO M-36	POLYMER COATED STEEL AASHTO M-245	CORRUGATED ALUMINUM AASHTO M-196	CORRUGATED HDPE AASHTO M-252	CORRUGATED SMOOTHED LINED HDPE TYPE "S" AASHTO M-294	CORRUGATED SMOOTH LINED POLYPROPYLENE AASHTO M-330	PVC CORRUGATED SMOOTH INTERIOR ASTM F-949	PVC Profile Wall Drain Pipe AASHTO M-304
S T O R M D R A I N	NON-TRAVEL BEARING (OUTSIDE ROADBED)	INTERSTATE	X								
		NON INTERSTATE	X	X		X	X		X	X	X
		ADT < 1,500	X	X		X	X		X	X	X
	TRAVEL BEARING (INSIDE ROADBED)	1,500 < ADT < 5,000	X	X		X	X		X	X	X
		5,000 < ADT < 15,000	X						X	X	X
		ADT > 15,000 & INTERSTATES	X								
	GRADE > 10%				X				X	X	X
			X	X	X	X			X	X	X
	SIDE DRAIN			X	X	X			X	X	X
	PERMANENT SLOPE DRAIN			X	X	X			X	X	X
PERFORATED UNDERDRAIN			X	X			X	X	X	X	

NOTES:

- 1 Allowable materials are indicated by an "X".
- 2 Structural, installation, fill height and backfill requirements of storm drain pipe will be in accordance with Georgia Standard 1030-D or 1030-P and the Standard Specifications
- 3 The Contractor shall provide additional storm sewer capacity calculations if a pipe material other than concrete is selected.
- 4 Pipe used under mechanically stabilized earth (MSE) walls, within MSE wall backfill, or within five feet of an MSE wall face shall be Class V Concrete Pipe.

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Appendix B – Field Notes

Soil Survey Field Notes
 McGinnis Ferry Road Widening

Borings	Line	Station	Offset to Centerline	Approx. Cut/Fill*, ft	Boring Depth, ft	Ground water table, ft	Lab Number	Field Moisture	GDOT	Field Soil Description and Comments
S-1	McGinnis Ferry Road	110+00	20'R	0' Fill	BT at 5'	NE	6936	25.0%	IIB4	0' to 3" Top soil
										3" to 2' Red clay, moist
										2' to 3' Orange/gold loose fine silty clay
										3' to 5' Little red, then gold again fine silty clay
S-2	McGinnis Ferry Road	115+00	20'L	0' Fill	BT at 5'	NE	6936	23.5%	IIB4	0' to 3" Top soil
										3" to 5' Dark brown wet clay w/ little orange
S-3	McGinnis Ferry Road	120+00	20'R	1' Fill	BT at 5'	NE	6937	20.5%	IIB4	0' to 3" Top soil
										3" to 2' Red brown silty loam, moist
										2' to 4' Red brown silty clay, damp, black landscape fabric
										4' to 5' Same as 2'-4' but powdered rock; 5' is dark brown silty clay
S-4	McGinnis Ferry Road	125+00	20'L	1' Fill	BT at 5'	NE	3937	19.0%	IIB4	0' to 3" Top soil
										3" to 3' Loose dry maroon sandy clay
										3' to 4' Light purple silt
										4' to 5' Light purple silt w/ some white sand
S-5	McGinnis Ferry Road	130+00	CL	0' Fill	BT at 5'	NE	6938	16.3%	IIB4	0' to 3" Top soil
										3" to 1.5' Brown damp sandy silt, gravel
										1.5' to 2' Brown orange sand
										2' to 4' Light brown clay loam
S-6	McGinnis Ferry Road	140+00	30'L	0' Fill	BT at 5'	NE	6938	15.2%	IIB4	4' to 4.5' Dark brown clay, moist
										0' to 3" Top soil
										3" to 3.5' Dry sandy clay, red brown
										3.5' to 5' Dry sandy clay, gold color

BT - Boring Termination
 AR - Auger Refusal
 HAR - Hand Auger Refusal
 NE - Not Encountered

Soil Survey Field Notes
 McGinnis Ferry Road Widening

Borings	Line	Station	Offset to Centerline	Approx. Cut/Fill*, ft	Boring Depth, ft	Ground water table, ft	Lab Number	Field Moisture	GDOT	Field Soil Description and Comments
S-7	McGinnis Ferry Road	145+00	20'R	0' Fill	BT at 5'	NE	6939	23.8%	IIB3	0' to 3" Top soil
										3" to 1.5' Silty clay, red
										1.5' to 2' Silty clay, mottled red and gold
										2' to 3' Black hard pieces briefly to a dark brown soft clay
										3' to 5' Sandy clay loam, dark brown, loose, moist
S-8	McGinnis Ferry Road	150+00	20'L	0' Fill	BT at 5'	NE	6940	12.6%	IIIC2	0' to 3" Top soil
										3" to 1.5' Brown silty sand; gravel encountered for 3 offsets
S-9	McGinnis Ferry Road	155+00	20'R	1' Fill	BT at 5'	NE	6940	16.6%	IIIC2	0' to 3" Top soil
										3" to 2.5' Silty sand, red brown
										2.5' to 5' Moist, purple silty clay with some white
S-10	McGinnis Ferry Road	161+00	20'R	1' Fill	BT at 5'	NE	6940	22.7%	IIIC1	0' to 3" Top soil
										3" to 2' Red silty loam, dry
										2' to 4.5' Light brown silt, mica
										4.5' to 5' Red/purple silt w/ clay & some black color
S-12	McGinnis Ferry Road	167+00	50'L	0' Fill	BT at 5'	NE	6941	29.5%	IIIC1	0' to 3" Top soil
										3" to 2.5' Brown silty clay wet
										4 offsets, rocks on sides of hole all 4

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Borings	Line	Station	Offset to Centerline	Approx. Cut/Fill*, ft	Boring Depth, ft	Ground water table, ft	Lab Number	Field Moisture	GDOT	Field Soil Description and Comments
S-13	McGinnis Ferry Road	170+00	20'R	0' Fill	BT at 5'	NE	6942	19.3%	IIIC1	0' to 3" Top soil 3" to 4.5' Brown sandy clay, damp
S-14	McGinnis Ferry Road	175+00	25'L	0' Fill	BT at 5'	NE	6942	17.2%	IIIC1	0' to 3" Top soil 3" to 2' Brown sandy clay, damp, gravel 2' to 3' Brown sandy clay w/ larger clay pieces 3' to 5' Red clay, moist, w/ tinge of orange/gold 0' to 3" Top soil 3" to 1.5' Red, dry silty loam Small slabs of rocks encountered at 1.5'; 5 offsets
S-15	McGinnis Ferry Road	182+00	20'R	1' Fill	BT at 5'	NE	6942	13.4%	IIIC1	0' to 3" Top soil 3" to 0.5' Orange red sandy clay Large pieces of rock and white rock in hole preventing greater depth, 5 offsets
S-16	McGinnis Ferry Road	185+00	25'L	1' Fill	BT at 5'	NE	6943	12.4%	IIIC1	0' to 3" Top soil 3" to 1' Dark brown silty sand 1' to 2.5' Dry red silty clay 2.5' to 5' Red brown fine silty clay
S-17	McGinnis Ferry Road	189+25	30'R	1' Fill	BT at 5'	NE	6944	16.4%	IIB4	0' to 3" Top soil 3" to 1' Dark brown silty sand 1' to 2.5' Dry red silty clay 2.5' to 5' Red brown fine silty clay
S-18	McGinnis Ferry Road	195+00	20'L	0' Fill	BT at 5'	NE	6944	31.9%	IIB4	0' to 3" Top soil 3" to 4.5' Orange clay, wet 4.5' to 5' Lighter orange/gold clay, moist

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S-13	McGinnis Ferry Road	170+00	20'R	0' Fill	BT at 5'	NE	6942	19.3%	IIIC1	0' to 3" Top soil 3" to 4.5' Brown sandy clay, damp
S-14	McGinnis Ferry Road	175+00	25'L	0' Fill	BT at 5'	NE	6942	17.2%	IIIC1	0' to 3" Top soil 3" to 2' Brown sandy clay, damp, gravel 2' to 3' Brown sandy clay w/ larger clay pieces 3' to 5' Red clay, moist, w/ tinge of orange/gold
S-15	McGinnis Ferry Road	182+00	20'R	1' Fill	BT at 5'	NE	6942	13.4%	IIIC1	0' to 3" Top soil 3" to 1.5' Red, dry silty loam Small slabs of rocks encountered at 1.5'; 5 offsets
S-16	McGinnis Ferry Road	185+00	25'L	1' Fill	BT at 5'	NE	6943	12.4%	IIIC1	0' to 3" Top soil 3" to 0.5' Orange red sandy clay Large pieces of rock and white rock in hole preventing greater depth, 5 offsets
S-17	McGinnis Ferry Road	189+25	30'R	1' Fill	BT at 5'	NE	6944	16.4%	IIB4	0' to 3" Top soil 3" to 1' Dark brown silty sand 1' to 2.5' Dry red silty clay 2.5' to 5' Red brown fine silty clay
S-18	McGinnis Ferry Road	195+00	20'L	0' Fill	BT at 5'	NE	6944	31.9%	IIB4	0' to 3" Top soil 3" to 4.5' Orange clay, wet 4.5' to 5' Lighter orange/gold clay, moist

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Soil Survey Field Notes McGinnis Ferry Road Widening

Borings	Line	Station	Offset to Centerline	Approx. Cut/Fill*, ft	Boring Depth, ft	Ground water table, ft	Lab Number	Field Moisture	GDOT	Field Soil Description and Comments
S-19	McGinnis Ferry Road	200+00	10'L	0' Fill	BT at 5'	NE	6945	16.0%	IIB4	0' to 3" Top soil 3" to 1.5' Red sandy clay, dry 1.5' to 2.5' Red sandy clay, but with small cinderblock looking pieces; sandy silt by 2.5'
S-20	McGinnis Ferry Road	205+00	40'R	0' Fill	BT at 5'	NE	6945	19.8%	IIB4	0' to 3" Top soil 3" to 2' Brown sand w/ clay & gravel 2' to 5' Brown sand w/ white/pink sand (Left side of road instead)
S-21	McGinnis Ferry Road	210+00	20'L	0' Fill	BT at 5'	NE	6945	14.8%	IIB4	0' to 3" Top soil 3" to 1.5' Red silty sand, mica 1.5' to 4' Light-dark brown silt, small frags of rock
S-22	McGinnis Ferry Road	216+00	35'R	0' Fill	BT at 5'	NE	6946	12.1%	IIB3	0' to 3" Top soil 3" to 2' Red sand, dry 2' to 4' Brown silty sand, dry Gravel on sides of bore hole at 4'
S-23	McGinnis Ferry Road	222+00	30'L	0' Fill	BT at 6'	NE	6945	16.0%	IIB4	0' to 3" Top soil 3" to 1.5' Slightly moist brown silt w/gravel 1.5' to 5' Lighter brown sandy silt w/white rock fragments & small clay
S-24	McGinnis Ferry Road	230+00	20'R	0' Fill	BT at 5'	NE	6947	18.6%	IIB4	0' to 3" Top soil 3" to 1' Moist brown loam, some clay chunks 1' to 3' Red brown sandy clay, moist, w/ few white rock 3' to 4' Sandy red clay, moist 4' to 5' A little black artificial looking fibrous material for 2 augers, otherwise silty red clay with some sand and silver flecks

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Soil Survey Field Notes
McGinnis Ferry Road Widening

Borings	Line	Station	Offset to Centerline	Approx. Cut/Fill*, ft	Boring Depth, ft	Ground water table, ft	Lab Number	Field Moisture	GDOT	Field Soil Description and Comments
S-25	McGinnis Ferry Road	235+00	20'L	0' Fill	BT at 5'	NE	6948	18.1%	IIB4	0' to 3" Top soil 3" to 1' Brown loam w/ gravel; 5 offsets
S-26	McGinnis Ferry Road	240+00	40'R	0' Fill	BT at 5'	NE	6948	13.8%	IIB4	0' to 3" Top soil 3" to 5' Brown loam w/ small fragments of clay
S-27	McGinnis Ferry Road	245+00	20'L	0' Fill	BT at 5'	NE	6948	17.1%	IIB4	0' to 3" Top soil 3" to 3' Red brown silty loam, damp 3' to 5' Red brown silty clay, damp
S-28	McGinnis Ferry Road	250+00	40'R	0' Fill	BT at 5'	NE	6949	14.4%	IIB3	0' to 3" Top soil 3" to 3' Rich brown sandy silt; small clumps of orange white by 2.5' 5 offsets, rocks on sides of holes
S-29	McGinnis Ferry Road	255+00	40'R	0' Fill	BT at 6'	NE	6950	13.1%	IIB3	0' to 3" Top soil 3" to 1.5' Red clay loam, slightly moist 1.5' to 3' Brown clay loam, mica, slight moist 3' to 4.5' Same as 1.5'-3' but large clay chunks with brick red in middle 4.5' to 5' Same as 1.5'-4.5' but grey in middle of clay, black fibrous material at 5'
S-30	McGinnis Ferry Road	260+00	20'L	0' Fill	BT at 5'	NE	6950	19.9%	IIB4	0' to 3" Top soil 3" to 2.5' Moist brown clay loam w/ some gravel 2.5' to 4.5' Red brown silty clay 4.5' to 5' Tan brown silty clay, moist

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McGinnis Ferry Road Widening

Borings	Line	Station	Offset to Centerline	Approx. Cut/Fill*, ft	Boring Depth, ft	Ground water table, ft	Lab Number	Field Moisture	GDOT	Field Soil Description and Comments
S-31	McGinnis Ferry Road	265+00	40'R	0' Fill	BT at 5'	NE	6951	12.0%	IIB4	0' to 3" Top soil 3" to 1.5' Rich brown loam, dry 1.5' to 4' Orange/gold clay to sandy mottled gray clay 4' to 4.5' Some quartz fragments & sand 4.5' to 5' Orange & dark brown silty clay, mica, moist 0' to 3" Top soil 3" to 1' Red brown sand, dry; gravel and large rock fragments encountered, 3 offsets
S-32	McGinnis Ferry Road	270+00	30'R	0' Fill	BT at 5'	NE	6951	9.3%	IIB4	0' to 3" Top soil 3" to 1' Red brown sand, dry; gravel and large rock fragments encountered, 3 offsets
S-33	McGinnis Ferry Road	275+00	40'L	0' Fill	BT at 5'	NE	6951	10.6%	IIB4	0' to 3" Top soil 3" to 1.5' Light brown sand 1.5' to 2.5' Red sand, pinkish white sand at 2.5' Auger refusal at 2.5'
S-34	McGinnis Ferry Road	280+00	CL	0' Fill	BT at 5'	NE	6952	12.2%	IIB3	0' to 3" Top soil 3" to 1.5' Dark brown sandy clay, w/gravel, moist 1.5' to 2' Black gravelly silt w/red brown clay, moist 2' to 3.5' Black/grey wet clay 3.5' to 4' Brown silt w/small fragments clay, moist 4' to 5' Red brown silty clay, slightly moist
S-35	McGinnis Ferry Road	285+00	30'L	0' Fill	BT at 6'	NE	6953	25.3%	IIB4	0' to 3" Top soil 3" to 3' Red sandy clay, slightly moist 3.0' to 4.5' Brown sand w/pink-white sand, moist 4.5' to 5' White sand w/pink-orange, moist
S-36	McGinnis Ferry Road	295+00	30'L	0' Fill	BT at 5'	NE	6953	12.9%	IIB4	0' to 1' Cobble, brown silt, dry 1' to 1.5' Rich brown silty clay w/ little red, moist 1.5' to 2.5' Wet silty clay, some grey in clay 2.5' to 3' Wet red clay 3' to 5' Damp, light brown silty clay

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 McGinnis Ferry Road Widening

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S-37	McGinnis Ferry Road	300+00	20'R	0' Fill	BT at 5'	NE	6954	27.2%	IIB4	0' to 3" Top soil 3" to 4' Brown silty clay, mica, moist 4' to 5' Brown sandy clay, more mica, some small black pieces
S-38	McGinnis Ferry Road	305+00	30'L	0' Fill	BT at 5'	NE	6954	19.6%	IIB4	0' to 3" Top soil 3" to 1.5' Brown silty clay, moist 1.5' to 4' Brown clay loam
S-39	McGinnis Ferry Road	310+00	20'R	0' Fill	BT at 5'	NE	6954	14.7%	IIB4	0' to 3" Top soil 3" to 1' Brown loam, mica, moist 1.0' to 1.5' Orange white sand 1.5' to 3.5' Khaki/white sand 3.5' to 4' Sandy clay 4' to 5' Dark grey sand with some white
S-40	McGinnis Ferry Road	315+00	20'R	0' Fill	BT at 5'	NE	6955	9.6%	IIB3	0' to 3" Top soil 3" to 1' Brown silt, mica 1' to 1.5' Red brown silty clay, mica 1.5' to 2.5' Red brown clay loam 2.5' to 4' Light tan/white sand 4' to 4.5' Orange white sand 4.5' to 5' Orange white sand, little clay at bottom
S-41	McGinnis Ferry Road	320+00	30'L	4' cut	BT at 7'	NE	6956	19.3%	IIIC1	0' to 3" Top soil 3" to 5' Orange brown silty clay, mica 5' to 5.5' Orange silty clay, mica, moist 5.5' to 6.5' Orange grey silty sand, mica 6.5' to 7' Dark grey silty sand, mica
S-42	McGinnis Ferry Road	327+00	20'R	0' Fill	BT at 5'	NE	6956	12.4%	IIIC1	0' to 5' Brown silt clay, loose & dry

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November 20, 2019
Revision No. 0

Appendix C – Summary of Soil Laboratory Tests

Summary of Soil Laboratory Tests

Project Name:	McGinnis Ferry Road Widening (from Ronald Reagan Blvd/Union Hill Road to Hospital Pkwy)				
GDOT Project No.:	N/A				
GDOT P.I. No.:	0004634				
MA Project No.:	FOR095				
Sample location:	Station 110+00, S-1	Station 120+00, S-3	Station 130+00, S-5	Station 145+00, S-7	Station 155+00, S-9
Sample depth:	1' to 5'	1' to 5'	1' to 4.5'	1' to 5'	1' to 5'
Lab No.:	6936	6937	6938	6939	6940
Date sampled:	8/11/2019	8/19/2019	8/11/2019	8/2/2019	8/13/2019
Date tested:	9/25/2019	8/9/2019	9/24/2019	9/24/2019	9/6/2019
Soil description:	Red silty sand	Red brn sandy silt	Brn sandy silt	Brn sandy silt	Red dark brn silt loam;mica
% Passing No. 10:	99.8	99.8	100.0	100.0	100.0
% Passing No. 20:	95.2	94.7	94.1	96.6	97.2
% Passing No. 40:	89.5	86.3	85.2	89.7	92.6
% Passing No. 60:	85.7	78.6	76.4	83.4	86.3
% Passing No. 100:	74.4	61.0	61.5	63.7	70.8
% Passing No. 200:	61.6	45.3	45.3	45.4	50.8
% Clay:	39.8	28.2	26.0	23.7	24.8
D ₇₅ (mm)	0.154	0.225	0.238	0.201	0.172
Total volume change:	18.0	20.6	23.2	17.6	30.5
% Swell:	12.7	17.2	18.2	16.2	28.7
% Shrinkage:	5.3	3.4	5.0	1.4	1.8
Max. Dry Density (pcf):	95.6	102.6	94.7	107.6	100.6
% Optimal Moisture:	22.2	18.3	22.9	15.8	19.3
Liquid Limit:	53	36			
Plastic Limit:	33	26			
Plasticity Index:	20	10			
Erosion index	2.63	4.59	4.59	4.59	3.98
CBR					
Resistivity					
In-situ Moist Content, %	25.0%	20.5%	16.3%	23.8%	16.6%
Ph					
Organic					
GDOT Class:	IIB4	IIB4	IIB4	IIB3	IIC2

Remarks: GDOT Methods GDT-4, GDT-6, GDT-67

Summary of Soil Laboratory Tests

Project Name:	McGinnis Ferry Road Widening (from Ronald Reagan Blvd/Union Hill Road to Hospital Pkwy)					
GDOT Project No.:	N/A					
GDOT P.I. No.:	0004634					
MA Project No.:	FOR095					
Sample location:	Station 167+00, S-12	Station 175+00, S-14	Station 189+25, S-17	Station 195+00, S-18	Station 205+00, S-20	
Sample depth:	1' to 2.5'	1' to 5'	1' to 5'	1' to 5'	1' to 5'	
Lab No.:	6941	6942	6943	6944	6945	
Date sampled:	8/15/2019	8/1/2019	7/31/2019	7/31/2019	7/31/2019	
Date tested:	9/25/2019	8/22/2019	10/7/2019	9/30/2019	10/2/2019	
Soil description:	Brn sandy silt	Red brn sandy silt	Orange sandy silt	Tan sandy silt; mica	Light purple sand silt; mica	
% Passing No. 10:	100.0	100.0	99.8	100.0	99.8	
% Passing No. 20:	94.9	95.9	95.3	95.7	85.7	
% Passing No. 40:	87.1	89.2	87.6	87.8	64.6	
% Passing No. 60:	80.0	83.7	83.5	82.2	51.5	
% Passing No. 100:	62.8	68.3	69.0	66.9	36.8	
% Passing No. 200:	44.8	52.5	57.6	53.9	25.2	
% Clay:	24.9	33.0	41.8	35.3	9.5	
D ₇₅ (mm)	0.216	0.187	0.185	0.197	0.598	
Total volume change:	28.6	27.7	19.0	18.2	20.3	
% Swell:	25.4	24.7	14.9	14.1	19.9	
% Shrinkage:	3.2	3.0	4.1	4.1	0.4	
Max. Dry Density (pcf):	98.0	102.7	101.0	95.6	102.5	
% Optimal Moisture:	20.8	18.2	19.0	22.2	18.3	
Liquid Limit:			49	46		
Plastic Limit:			27	30		
Plasticity Index:			22	16		
Erosion index	4.72	3.73	3.12	3.61	7.06	
CBR						
Resistivity						
In-situ Moist Content, %	29.5%	17.2%	16.4%	31.9%	19.8%	
Ph						
Organic						
GDOT Class:	IIIC1	IIIC1	IIB4	IIB4	IIB4	

Remarks: GDOT Methods GDT-4, GDT-6, GDT-67

Summary of Soil Laboratory Tests

Project Name:	McGinnis Ferry Road Widening (from Ronald Reagan Blvd/Union Hill Road to Hospital Pkwy)					
GDOT Project No.:	N/A					
GDOT P.I. No.:	0004634					
MA Project No.:	FOR095					
Sample location:	Station 216+00, S-22	Station 230+00, S-24	Station 240+00, S-26	Station 250+00, S-28	Station 260+00, S-30	
Sample depth:	1' to 4'	1' to 5'	1' to 5'	1' to 3'	1' to 5'	
Lab No.:	6946	6947	6948	6949	6950	
Date sampled:	7/31/2019	7/30/2019	7/30/2019	8/15/2019	7/29/2019	
Date tested:	8/9/2019	9/24/2019	8/22/2019	9/23/2019	10/7/2019	
Soil description:	Tan sandy silt; mica	Red sandy silt	brn sandy silt; mica	Brn sandy silt	Tan sandy silt	
% Passing No. 10:	99.6	100.0	100.0	99.8	99.6	
% Passing No. 20:	90.7	93.1	96.0	88.8	92.3	
% Passing No. 40:	79.5	83.5	87.7	77.0	83.3	
% Passing No. 60:	69.9	75.8	81.1	70.3	77.2	
% Passing No. 100:	53.7	63.3	63.7	55.0	62.0	
% Passing No. 200:	39.6	53.6	50.7	42.4	49.0	
% Clay:	23.8	40.3	34.8	22.0	31.7	
D₇₅ (mm)	0.331	0.242	0.209	0.363	0.232	
Total volume change:	18.3	18.0	19.9	17.4	19.7	
% Swell:	15.7	15.1	15.7	15.9	15.5	
% Shrinkage:	2.6	2.9	4.2	1.5	4.2	
Max. Dry Density (pcf):	106.1	96.3	104.5	109.4	104.3	
% Optimal Moisture:	16.5	21.7	17.3	15.0	17.4	
Liquid Limit:		46	36	54	41	
Plastic Limit:		25	22	37	25	
Plasticity Index:		21	14	14	16	
Erosion index	5.33	3.61	3.98	4.96	4.10	
CBR						
Resistivity						
In-situ Moist Content, %	12.1%	18.6%	13.8%	14.4%	19.9%	
Ph						
Organic						
GDOT Class:	IIB3	IIB4	IIB4	IIB3	IIB4	

Remarks: GDOT Methods GDT-4, GDT-6, GDT-67

Summary of Soil Laboratory Tests

Project Name:	McGinnis Ferry Road Widening (from Ronald Reagan Blvd/Union Hill Road to Hospital Pkwy)						
GDOT Project No.:	N/A						
GDOT P.I. No.:	0004634						
MA Project No.:	FOR095						
Sample location:	Station 270+00, S-32	Station 280+00, S-34	Station 295+00, S-36	Station 305+00, S-38	Station 315+00, S-40		
Sample depth:	0' to 1'	1' to 5'	1' to 5'	1' to 4'	1' to 5'		
Lab No.:	6951	6952	6953	6954	6955		
Date sampled:	8/13/2019	7/26/2019	7/31/2019	7/30/2019	7/25/2019		
Date tested:	8/9/2019	8/9/2019	9/30/2019	8/27/2019	10/2/2019		
Soil description:	Tan sand	Brn sandy silt	Tan sandy silt	Brn sandy silt	Tan sandy silt; mica		
% Passing No. 10:	99.8	99.6	100.0	100.0	99.6		
% Passing No. 20:	90.1	92.5	91.4	92.2	90.3		
% Passing No. 40:	76.8	82.6	79.8	81.3	72.5		
% Passing No. 60:	67.4	75.7	72.4	71.8	59.7		
% Passing No. 100:	51.5	59.8	57.8	59.7	42.5		
% Passing No. 200:	35.9	48.1	45.5	46.9	29.4		
% Clay:	18.1	31.0	29.8	29.5	15.6		
D ₇₅ (mm)	0.384	0.244	0.301	0.299	0.468		
Total volume change:	21.1	13.1	7.3	19.9	12.6		
% Swell:	19.3	9.3	4.9	16.4	11.2		
% Shrinkage:	1.8	3.8	2.4	3.5	1.4		
Max. Dry Density (pcf):	106.2	110.0	102.7	101.8	105.5		
% Optimal Moisture:	16.5	14.8	18.2	18.6	16.7		
Liquid Limit:		31					
Plastic Limit:		19					
Plasticity Index:		12					
Erosion index	5.83	4.23	4.59	4.47	6.57		
CBR							
Resistivity							
In-situ Moist Content, %	9.3%	12.2%	12.9%	19.6%	9.6%		
Ph							
Organic							
GDOT Class:	IIB4	IIB3	IIB4	IIB4	IIB3		

Remarks: GDOT Methods GDT-4, GDT-6, GDT-67

Summary of Soil Laboratory Tests

Project Name:	McGinnis Ferry Road Widening (from Ronald Reagan Blvd/Union Hill Road to Hospital Pkwy)				
GDOT Project No.:	N/A				
GDOT P.I. No.:	0004634				
MA Project No.:	FOR095				
Sample location:	Station 327+00, S-42	Station 161+00, S-10	Station 170+00, S-13	Station 255+00, S-29	Station 285+00, S-35
Sample depth:	1' to 5'	1' to 5'	1' to 5'	1' to 5'	1' to 5'
Lab No.:	6956	6959	6960	6961	6962
Date sampled:	7/30/2019				
Date tested:	9/6/2019		10/22/2019	10/22/2019	10/22/2019
Soil description:	Brown silty sand				
% Passing No. 10:	100.0	100.0	100.0	100.0	100.0
% Passing No. 20:	91.4	95.9	96.1	92.9	92.3
% Passing No. 40:	80.1	88.2	89.5	83.3	77.2
% Passing No. 60:	70.6	80.8	84.8	76.7	65.1
% Passing No. 100:	56.5	62.0	68.6	61.0	48.1
% Passing No. 200:	44.8	42.7	50.5	48.4	34.1
% Clay:	28.3	18.2	31.0	31.6	22.0
D₇₅ (mm)	0.320	0.214	0.184	0.237	0.386
Total volume change:	27.5	27.5	25.9	19.1	23.5
% Swell:	25.4	25.4	22.0	14.8	22.1
% Shrinkage:	2.1	2.1	3.9	4.3	1.4
Max. Dry Density (pcf):	115.3	100.1	99.1	113.3	104.1
% Optimal Moisture:	12.8	19.7	20.2	13.5	17.4
Liquid Limit:					
Plastic Limit:					
Plasticity Index:					
Erosion index	4.72	4.96	3.98	4.23	5.95
CBR					
Resistivity					
In-situ Moist Content, %	12.4%	22.7%	19.3%	13.1%	25.3%
Ph					
Organic					
GDOT Class:	III C1	III C1	III C1	II B3	II B4

Remarks: GDOT Methods GDT-4, GDT-6, GDT-67