

Georgia Department of Transportation
MS4 Infeasibility Report for
Riverside Drive at I-285 Interchange Improvements

PI No. 0010925

Fulton County

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Prepared By:



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A handwritten signature in black ink, appearing to read "William Dial".

William Dial, PE
Senior Drainage Engineer

Executive Summary

In January 2012, the Georgia Department of Natural Resources Environmental Protection Division (EPD) issued Georgia Department of Transportation's (GDOT's) first Municipal Separate Storm Sewer System (MS4) Permit (General National Pollutant Discharge Elimination System [NPDES] Permit No. GAR041000) (Permit) for discharges from its MS4 designated areas.

The Permit regulates new and existing point source discharges of stormwater from roadways owned and operated by GDOT to waters of the State of Georgia. The Riverside Drive at I-285 Interchange Improvements project must meet the requirements of the Permit, which include incorporating permanent water quality control and detention measures (best management practices [BMPs]) into the design where appropriate, where those BMPs have not been determined to be infeasible based on the infeasibility criteria identified in Section 1.4 of the GDOT Guidelines for Design of Post-Construction BMPs (GDOT Guidelines) issued February 22, 2013, and where required in accordance with the GDOT Guidelines.

Project Description

The current roadway configuration of Riverside Drive consists of one 12-foot lane in each direction and traffic signals at the ramp termini. There are no turn lanes at the intersections with the I-285 entrance ramps, often resulting in traffic backups when turning vehicles block the through movements. The existing bridge provides for only two lanes of traffic, one northbound and one southbound. The eastbound and westbound I-285 off-ramps each consists of a single 16-foot lane. There are no existing sidewalks approaching the bridge; however, there are sidewalks on the bridge itself. The existing right of way along Riverside Drive varies from 50 to 100 feet.

The proposed Design-Build project will convert the signalized intersections at the ramp termini to single-lane roundabouts, one at each intersection. Each approach to the roundabout will be widened to two lanes with one lane entering the roundabout and the other serving as a right-turn lane. Sidewalks will be added to both sides of the roadway along Riverside Driveway within the project limits. The project length is approximately 0.5 mile. The project will also include routine rehabilitation of the existing bridge.

This project includes two drainage areas. Drainage Area 1 is located south of I-285 and Drainage Area 2 is located north of I-285. Both areas drain to the north to Heards Creek, which is a tributary to the Chattahoochee River.

Design Methodology

Water Quality Volume (WQv)

The Water Quality Volume is the volume of stormwater runoff required to treat the first 1.2 inches of rainfall for the removal of 80% of the average annual post-development total suspended solids. The 1.2-inch criterion is considered the 85th percentile event according to the Georgia Stormwater Management Manual and is sufficient for a majority of storm events to achieve the 80% reduction goal.

Channel Protection Volume (CPv)

The Channel Protection Volume is the volume of stormwater runoff generated by the 1-year, 24-hour rainfall event. The purpose of the Channel Protection Volume is to protect downstream channels from runoff generated by additional impervious surfaces and shall be detained for at least 24 hours.

Additionally, erosion prevention measures such as energy dissipation and velocity control will be provided at all outfalls to help protect the downstream channel. Where possible, the stream buffer will be preserved to minimize impacts to the stability of the channel bank.

Overland Flood Protection Volume (QP25)

The Overland Flood Protection Volume is the volume of stormwater runoff generated by the 25-year, 24-hour rainfall event. The purpose of the Overland Flood Protection Volume is to ensure that the post-development peak discharge does not exceed pre-development peak discharge. If the post-development peak volume is greater than the pre-development peak volume, the volume will be detained to release at pre-development levels. The detention is to ensure that the channel banks will be protected from an increase in the magnitude of runoff.

Extreme Flood Protection Volume (Qf)

The Extreme Flood Protection Volume is the volume of stormwater runoff generated by the 100-year, 24-hour rainfall event. Extreme Flood Protection Volume shall be provided such that downstream flooding is not exacerbated by the increase in impervious area.

Downstream Analysis

Two drainage areas were analyzed for this project: Drainage Area 1, and Drainage Area 2. Both drainage areas were found to be infeasible for Post-Construction Stormwater Management Design on State Routes. Therefore, a downstream analysis was not performed.

Infeasibility Criteria

There are ten criteria for determining Infeasibility of Post-Construction Stormwater Management Design on State Routes:

1. The cost of construction of the BMP equals or exceeds 10% of the combined cost of the right-of-way, construction, and utilities of the project area draining to the outfall in question.

2. The project is delayed by 90 days or more due to the implementation of post-construction BMPs.
3. The use of BMPs will impact threatened or endangered species habitat.
4. The use of BMPs will significantly damage a community resource such as a historical area, park, wildlife refuge, nature trail, or school facilities.
5. The use of BMPs will displace a business or residence.
6. Implementation of the BMP would result in the violation of a federal or state law.
7. The project has shallow bedrock, contaminated soils, high groundwater, utilities, or underground facilities and avoidance or relocation cost of the utility equals the cost of the BMP.
8. The soil hydraulic conductivity (K) is less than 10^{-4} centimeter/second (while 10^{-5} centimeter/second is the absolute lower limit) when considering infiltration BMPs.
9. The site is too small to infiltrate the necessary volume.
10. The site does not allow for gravity flow to the appropriate BMP.

Best Management Practices

In addition to the above criteria, an appropriate BMP must be available for construction. Current GDOT policy allows 10 BMPs for post-construction stormwater management.

BMP	Treatment Parameters				
	WQv	TSS Removal	CPv	QP25	Qf
Filter Strip	Yes	60%	No	No	No
Grass Channel	Yes	50%	No	No	No
Enhanced Swale	Yes	80%	In some Situations	No	No
Infiltration Trench	Yes	80%	In some Situations	No	No
Sand Filter	Yes	80%	In some Situations	No	No
Dry Detention Basin	Yes	65%	Yes	Yes	Yes
Wet Detention Pond	Yes	80%	Yes	Yes	Yes
Stormwater Wetland	Yes	80%	Yes	Yes	Yes
Bioslope	Yes	95%	No	No	No
Bioretention Area	Yes	85%	In some Situations	No	No
Open Graded Friction Coarse	No	50%	No	No	No

TSS = Total Suspended Solids

Certain BMPs do not provide all treatment required and would have to be used in a "treatment train."

Results/Conclusions

This project includes two drainage areas. Drainage Area 1 is located south of I-285 and Drainage Area 2 is located north of I-285. Both areas drain to the north to Heards Creek, which is a tributary to the Chattahoochee River. In the analysis, Drainage Area 3 is a combination of Drainage Areas 1 and 2. See Appendix A for Drainage Area Maps.

Drainage Area 1

Drainage Area 1 is located south of I-285 and drains to an existing pipe in the southeast quadrant of the interchange. This outfall also collects water from the existing church and conveys all water to the north side of I-285. Splitting the project into two drainage basins, one north of I-285 and one south of I-285, allows the large off-site impervious area associated with the church in the southeast quadrant of the interchange to be bypassed.

Physical Parameters of Drainage Area 1

Drainage Area	1.57	acres	
Existing Impervious (Roadway)	0.279	acres	
Existing Impervious (Non-Roadway)	0	acres	
Proposed Impervious (Roadway)	0.876	acres	
Time of Concentration	10	minutes	
New Impervious (Roadway)	0.597	acres	
Required WQv	0.06	acre feet	
Required WQv	2682	cubic feet	See Appendix B
Required CPv	5949	cubic feet	See Appendix C

BMP Evaluation for Drainage Area 1

Filter Strip – The typical section for this project is an urban section with curb and gutter. No sheet flow from impervious areas is present in the project limits. The filter strip is not an appropriate BMP for this project.

Grass Channel – The typical section for this project is an urban section with curb and gutter. No sheet flow from impervious areas is present in the project limits and the longitudinal slope exceeds 4% in most areas. The grass channel is not an appropriate BMP for this project.

Infiltration Trench – As indicated in the soil descriptions in Appendix D, the soil infiltration rate is less than 0.5 inch/hour and the soils have a high percentage of clay and silt. Soils with an infiltration rate greater than 0.5 inch/hour would be considered acceptable for sanitary drain fields. All soils in the project area are rated as very limited. All information shown in Appendix D was collected from the National Resource Conservation Service Web Soil Survey.

The infiltration trench is not an appropriate BMP for this project.

Sand Filter – The soils in the project area have a high percentage of clay and silt. This would cause a high rate of clogging in the sand filter. The sand filter is not an appropriate BMP for this project.

Dry Detention Basin – The dry detention basin can be built to control the CPv and the QP25 but will not provide a water quality component.

Wet Detention Pond – The drainage area for Drainage Area 1 is less than 10 acres; therefore, the wet detention pond is not an appropriate BMP for this project.

Stormwater Wetlands – The drainage area for Drainage Area 1 is less than 25 acres; therefore, the stormwater wetland is not an appropriate BMP for this project.

Bioslope – The typical section for this project is an urban section with curb and gutter. No sheet flow from impervious areas is present in the project limits. The bioslope is not an appropriate BMP for this project.

Enhanced Swales – An enhanced swale was sited and analyzed for Drainage Area 1. The swale could be located in either the southwest or the southeast quadrant of the intersection south of I-285. Based on the required water quality volume, an average depth of 1 foot, and an 8-foot bottom width, a 335-foot-long enhanced swale will be required.

The southwest quadrant was eliminated based on Infeasibility Criteria #4 – The use of BMPs will significantly damage a community resource such as a historical area, park, wildlife refuge, nature trail, or school facilities. Parcel 1 is a historical property and cannot be impacted to construct the BMP. As shown on the map in Appendix E, the historical boundary extends to the existing edge of pavement.

The southeast quadrant was eliminated based on Infeasibility Criteria #1 – The cost of construction of the BMP equals or exceeds 10% of the combined cost of the right of way, construction, and utilities of the project area draining to the outfall in question. The additional right of way and the construction of the swales increase the cost of the roadway construction by 15.8%. The proposed project acquires a small amount of right of way from the church in the southeast quadrant of the intersection, limiting the right of way to 2 feet behind the sidewalk and acquiring the remaining area as a permanent easement. Installing the enhanced swale requires the right of way take to include the swale and greatly increases the right of way area required. Detailed construction costs and right of way estimates are included in Appendix E.

	Proposed Project	Additional MS4 Cost
	Cost	Cost
Earthwork	\$150,000	\$16,000
Erosion control	\$75,000	
Signing and Marking	\$70,455	
Roadway Items	\$336,409	
Right of Way	\$190,000	\$80,000
Media for Enhanced Swales		\$33,500
Total	\$821,864	\$129,500
Total Increase	15.8%	

Bioretention Areas – A bioretention area was sited and analyzed for Drainage Area 1. The area could be located in either the southwest or southeast quadrant of the intersection south of I-285. Based on the required water quality volume, a depth of substrate of 4 feet, a median depth of 0.25 feet, a coefficient of permeability of 0.5 feet/day, and a detention time of 2 days, the required surface area of the bioretention area is 2,525 square feet. Utilizing a 12-foot-wide area, the required length of the bioretention area is 210 feet.

The southwest quadrant was eliminated based on Infeasibility Criteria #4 – The use of BMPs will significantly damage a community resource such as a historical area, park, wildlife refuge, nature trail, or school facilities. Parcel 1 is a historical property and cannot be impacted to construct the BMP. As shown on the map in Appendix F, the historical boundary extends to the existing edge of pavement.

The southeast quadrant was eliminated based on Infeasibility Criteria #1 – The cost of construction of the BMP equals or exceeds 10% of the combined cost of the right of way, construction, and utilities of the project area draining to the outfall in question. The additional right of way and the construction of the bioretention area increase the cost of the roadway construction by 13.7%. The proposed project acquires a small amount of right of way from the church in the southeast quadrant of the intersection, limiting the right of way to 2 feet behind the sidewalk and acquiring the remaining area as a permanent easement. Installing the bioretention area requires the right of way take to include the bioretention area and greatly increases the right of way area required. Detailed construction costs and right of way estimates are included in Appendix F.

	Proposed Project	Additional MS4 Cost
	Cost	Cost
Earthwork	\$150,000	\$8,000
Erosion control	\$75,000	
Signing and Marking	\$70,455	
Roadway Items	\$336,409	
Right of Way	\$190,000	\$50,000
Media for Bio retention Area	\$0	\$37,500
Bypass Structure	\$0	\$5,000
Landscaping	\$0	\$12,000
Total	\$821,864	\$112,500
Total Increase	13.7%	

No approved BMP is appropriate for Drainage Area 1.

Providing water quality treatment for Drainage Area 1 is infeasible.

Drainage Area 2

Drainage Area 2 is located north of I-285 and drains overland to Heards Creek. It includes the existing Riverside Drive bridge over I-285. Splitting the project into two drainage basins, one north of I-285 and one south of I-285, allows the large off-site impervious area associated with the church in the southeast quadrant of the interchange to be bypassed.

Physical Parameters of Drainage Area 2

Drainage Area	2.785	acres	
Existing Impervious (Roadway)	0.654	acres	
Existing Impervious (Non-Roadway)	0	acres	
Proposed Impervious (Roadway)	1.357	acres	
Time of Concentration	10	minutes	
New Impervious (Roadway)	0.703	acres	
WQv	0.07	acre feet	
WQv	3363	cubic feet	See Appendix B
CPv	9601	cubic feet	See Appendix C

BMP Evaluation

Filter Strip – The typical section for this project is an urban section with curb and gutter. No sheet flow from impervious areas is present in the project limits. The filter strip is not an appropriate BMP for this project.

Grass Channel – The typical section for this project is an urban section with curb and gutter. No sheet flow from impervious areas is present in the project limits and the longitudinal slope exceeds 4% in most areas. The grass channel is not an appropriate BMP for this project.

Infiltration Trench – As indicated in the soil descriptions in Appendix D, the soil infiltration rate is less than 0.5 inch/hour and the soils have a high percentage of clay and silt. Soils with an infiltration rate greater than 0.5 inch/hour would be considered acceptable for sanitary drain fields. All soils on the project area are rated as very limited. All information shown in Appendix D was collected from the National Resource Conservation Service Web Soil Survey. The infiltration trench is not an appropriate BMP for this project.

Sand Filter – The soils in the project area have a high percentage of clay and silt. This would cause a high rate of clogging in the sand filter. The sand filter is not an appropriate BMP for this project.

Dry Detention Basin – The dry detention basin can be built to control the CPv and the QP25 but will not provide a water quality component.

Wet Detention Pond – The drainage area for Drainage Area 2 is less than 10 acres; therefore, the wet detention pond is not an appropriate BMP for this project.

Stormwater Wetlands – The drainage area for Drainage Area 2 is less than 25 acres; therefore, the stormwater wetland is not an appropriate BMP for this project.

Bioslope – The typical section for this project is an urban section with curb and gutter. No sheet flow from impervious areas is present in the project limits. The bioslope is not an appropriate BMP for this project.

Enhanced Swales – The slope of Riverside Drive exceeds 9% in this drainage area. Construction of an enhanced swale at the maximum allowable grade of 4% would require a drop of 5 feet every 100 feet. Sufficient area to construct an enhanced swale is not available without impacting existing homes. The enhanced swale is not an appropriate BMP for this drainage area.

Bioretention Area – A bioretention area was located and analyzed for Drainage Area 2. The area would be located in the northwest quadrant of the intersection north of I-285. Based on the required water quality volume, a depth of substrate of 4 feet, a median depth of 0.25 feet, a coefficient of permeability of 0.5 feet/day, and a detention time of 2 days, the required surface area of the bioretention area is 3,165 square feet. The bioretention area location is shown in Appendix G.

The bioretention area was eliminated based on Infeasibility Criteria #1 – The cost of construction of the BMP equals or exceeds 10% of the combined cost of the right of way, construction, and utilities of the project area draining to the outfall in question. The additional right of way and the construction of the swales increase the cost of the roadway construction by 13.0%.

	Proposed Project	Additional MS4 Cost
	Cost	Cost
Earthwork	\$250,000	\$22,000
Erosion control	\$56,472	\$2,500
Signing and Marking	\$140,910	
Roadway Items	\$855,456	
Right of Way	\$150,000	\$30,000
Media for Bioretention Area	\$0	\$46,900
Bypass Structure	\$0	\$5,000
Landscaping	\$0	\$14,000
Wall		\$71,365
Total	\$1,452,838	\$189,265
Total Increase	13.0%	

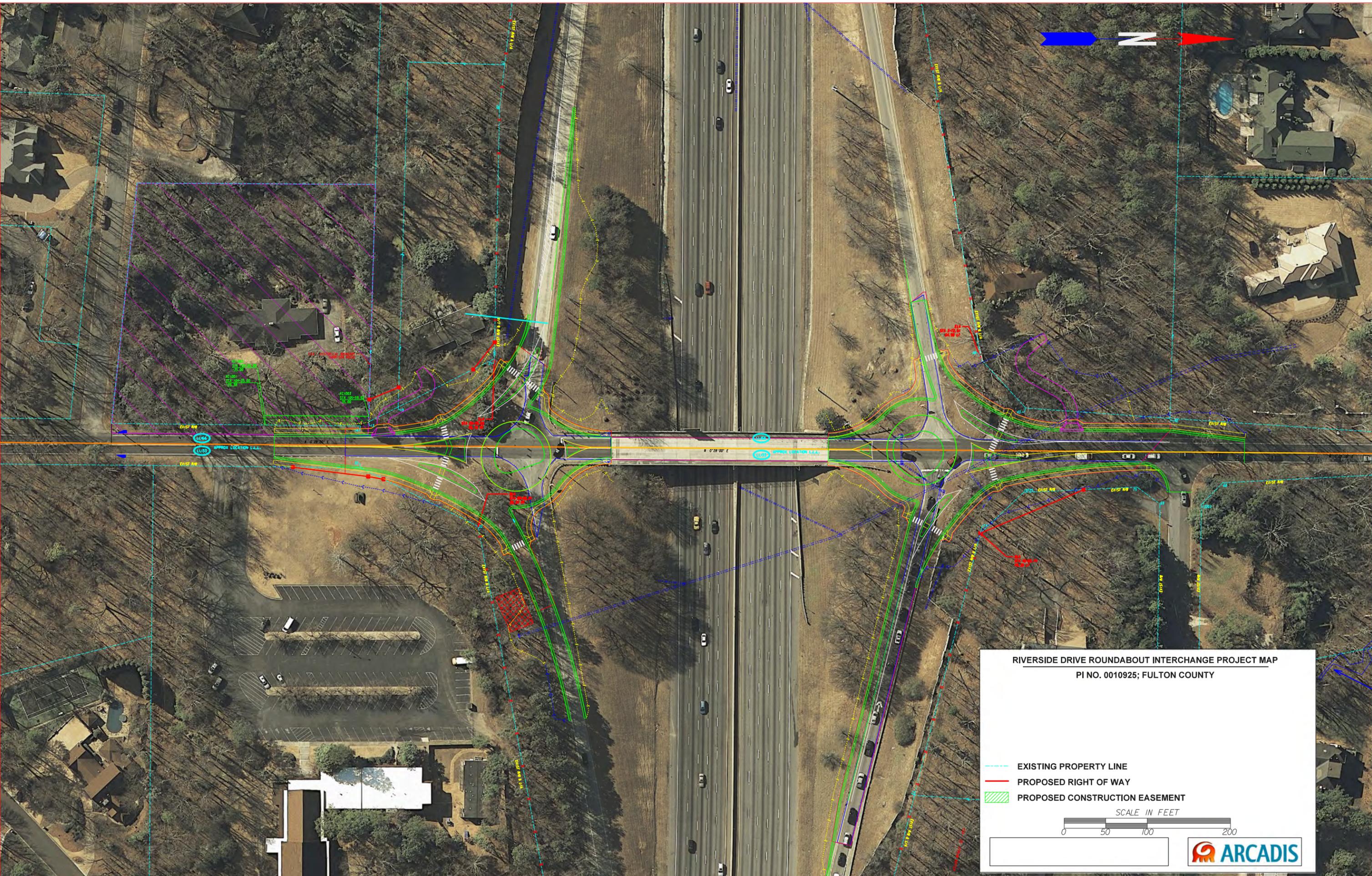
No approved BMP is appropriate for Drainage Area 2.

Providing water quality treatment for Drainage Area 2 is infeasible.

Increases in 25-year and 100-year Peak Flows

Increasing the total impervious area in both Drainage Area 1 and Drainage Area 2 will increase both the 25-year and 100-year peak flows from the site. Both drainage areas are connected by a pipe that crosses under I-285. If the design/build contractor determines that the increase in peak flows is detrimental to the downstream areas, the design/build contractor will be required to design and construct a detention basin to control these flows. Areas inside the existing right of way were examined for the installation of wet detention ponds and while not feasible for the construction of wet detention ponds due to the small drainage areas, they would be suitable for dry detention ponds to control peak flow.

Appendix A – Project Map



RIVERSIDE DRIVE ROUNDABOUT INTERCHANGE PROJECT MAP
PI NO. 0010925; FULTON COUNTY

- EXISTING PROPERTY LINE
- PROPOSED RIGHT OF WAY
- PROPOSED CONSTRUCTION EASEMENT



Appendix B - Water Quality Calculations

The water quality volume for the project was calculated using the Unified Stormwater Sizing Criteria from the *Georgia Stormwater Management Manual Volume 2*. Water quality will only be provided for new impervious areas.

$$WQ_v = \frac{1.2R_vA}{12}$$

Where:

WQv = water quality volume (in acre feet)

Rv = 0.05+0.009(I) where I is percent impervious cover

A = site area in acres

Drainage Area 1

Area (A)	1.57	acres
New Impervious Area	0.597	acres
Percent Impervious Cover	0.380	
Rv	0.392	
WQv	0.06158	acre-ft
WQv	2682	cubic feet

Drainage Area 2

Area (A)	2.785	acres
New Impervious Area	0.703	acres
Percent Impervious Cover	0.252	%
Rv	0.277	
WQv	0.077195	acre-ft
WQv	3363	cubic feet

Appendix C – Channel Protection Calculations

Drainage Area 1

Channel protection volume for 1 year, 24 hour storm using simplified SCS method		
Composite curve number, CN	81	
Ia (initial abstraction, inches)	0.469	From SCS CN vs. Ia table
P (1 yr, 24 hour rainfall, in.)	3.36	From rainfall table
Ia/P	0.14	
Tc, hours	0.17	
Qu (unit peak discharge, csm/in)	875	CFS per inch of runoff, per square mile, from SCS graph
S (max retention in soil, in.)	2.35	SCS formula
Direct runoff, inches	1.60	SCS formula
Total DA to channel, AC	1.57	DA to pond
Q (1 yr peak discharge, CFS)	3.4	Unit peak discharge*inches of runoff*square miles
Qo/Qi	0.02	From graph 2.2.5-1
Vstorage/Vrunoff	0.65	Formula 2.2.9
CPv, cu. ft.	5949	Formula 2.2.10

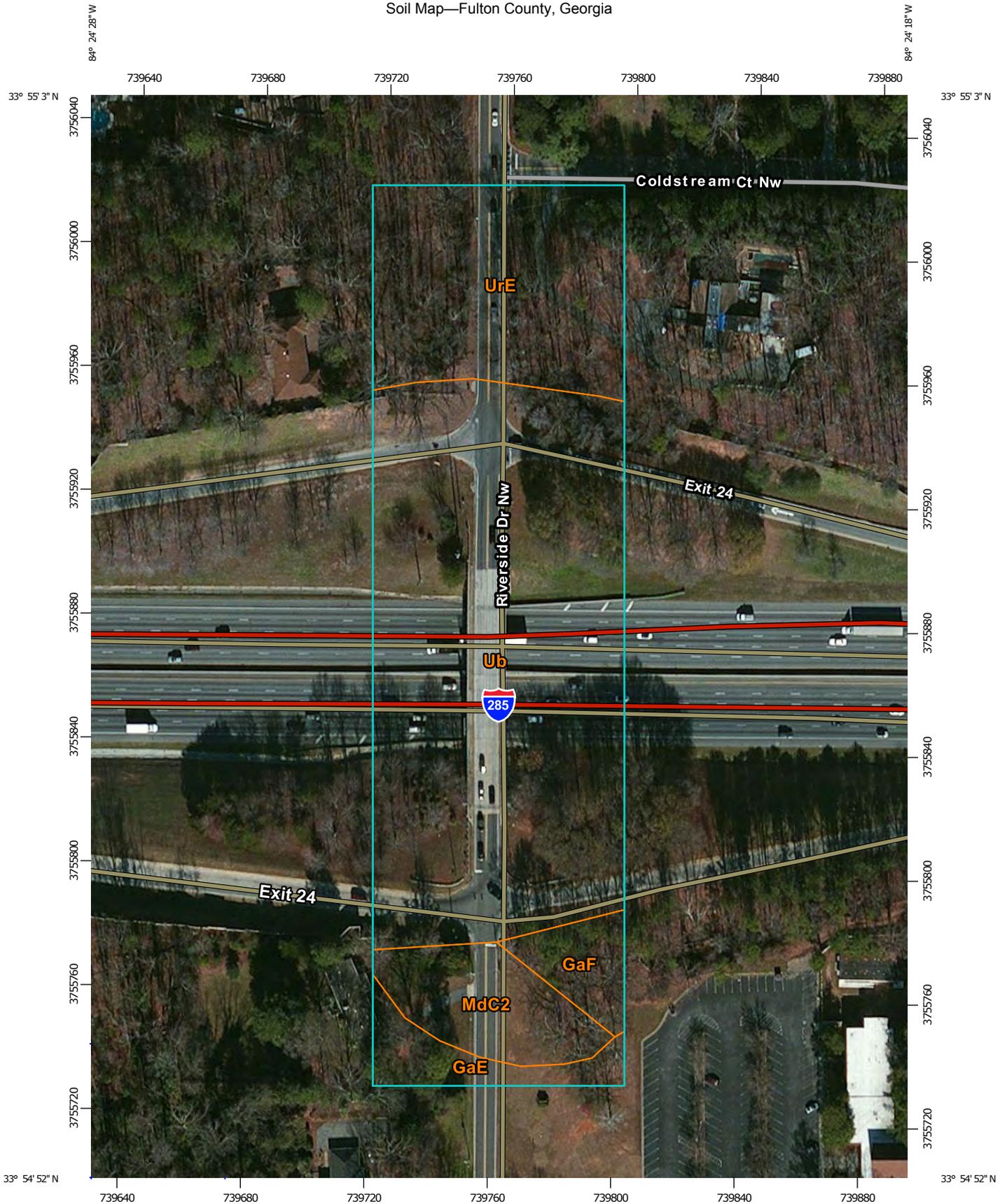
Drainage Area 2

Channel protection volume for 1 year, 24 hour storm using simplified SCS method		
Composite curve number, CN	79	
Ia (initial abstraction, inches)	0.532	From SCS CN vs. Ia table
P (1 yr, 24 hour rainfall, in.)	3.36	From rainfall table
Ia/P	0.16	
Tc, hours	0.17	
Qu (unit peak discharge, csm/in)	780	CFS per inch of runoff, per square mile, from SCS graph
S (max retention in soil, in.)	2.66	SCS formula
Direct runoff, inches	1.46	SCS formula
Total DA to channel, AC	2.785	DA to pond
Q (1 yr peak discharge, CFS)	4.9	Unit peak discharge*inches of runoff*square miles
Qo/Qi	0.022	From graph 2.2.5-1
Vstorage/Vrunoff	0.65	Formula 2.2.9
CPv, cu. ft.	9601	Formula 2.2.10

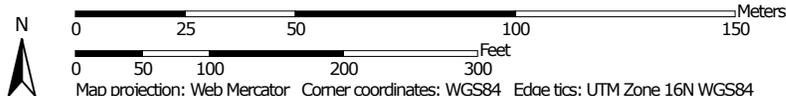
Appendix D – Soil Information

All information shown in Appendix D was collected from the National Resource Conservation Service Web Soil Survey.

Soil Map—Fulton County, Georgia



Map Scale: 1:1,710 if printed on A portrait (8.5" x 11") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

MAP LEGEND

-  Area of Interest (AOI)
-  Soil Map Unit Polygons
-  Soil Map Unit Lines
-  Soil Map Unit Points
- Special Point Features**
 -  Blowout
 -  Borrow Pit
 -  Clay Spot
 -  Closed Depression
 -  Gravel Pit
 -  Gravelly Spot
 -  Landfill
 -  Lava Flow
 -  Marsh or swamp
 -  Mine or Quarry
 -  Miscellaneous Water
 -  Perennial Water
 -  Rock Outcrop
 -  Saline Spot
 -  Sandy Spot
 -  Severely Eroded Spot
 -  Sinkhole
 -  Slide or Slip
 -  Sodic Spot
- Water Features**
 -  Streams and Canals
- Transportation**
 -  Rails
 -  Interstate Highways
 -  US Routes
 -  Major Roads
 -  Local Roads
- Background**
 -  Aerial Photography
-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.
 Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
 Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Fulton County, Georgia
 Survey Area Data: Version 9, Dec 30, 2013

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

Date(s) aerial images were photographed: Apr 29, 2010—Jan 15, 2012

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

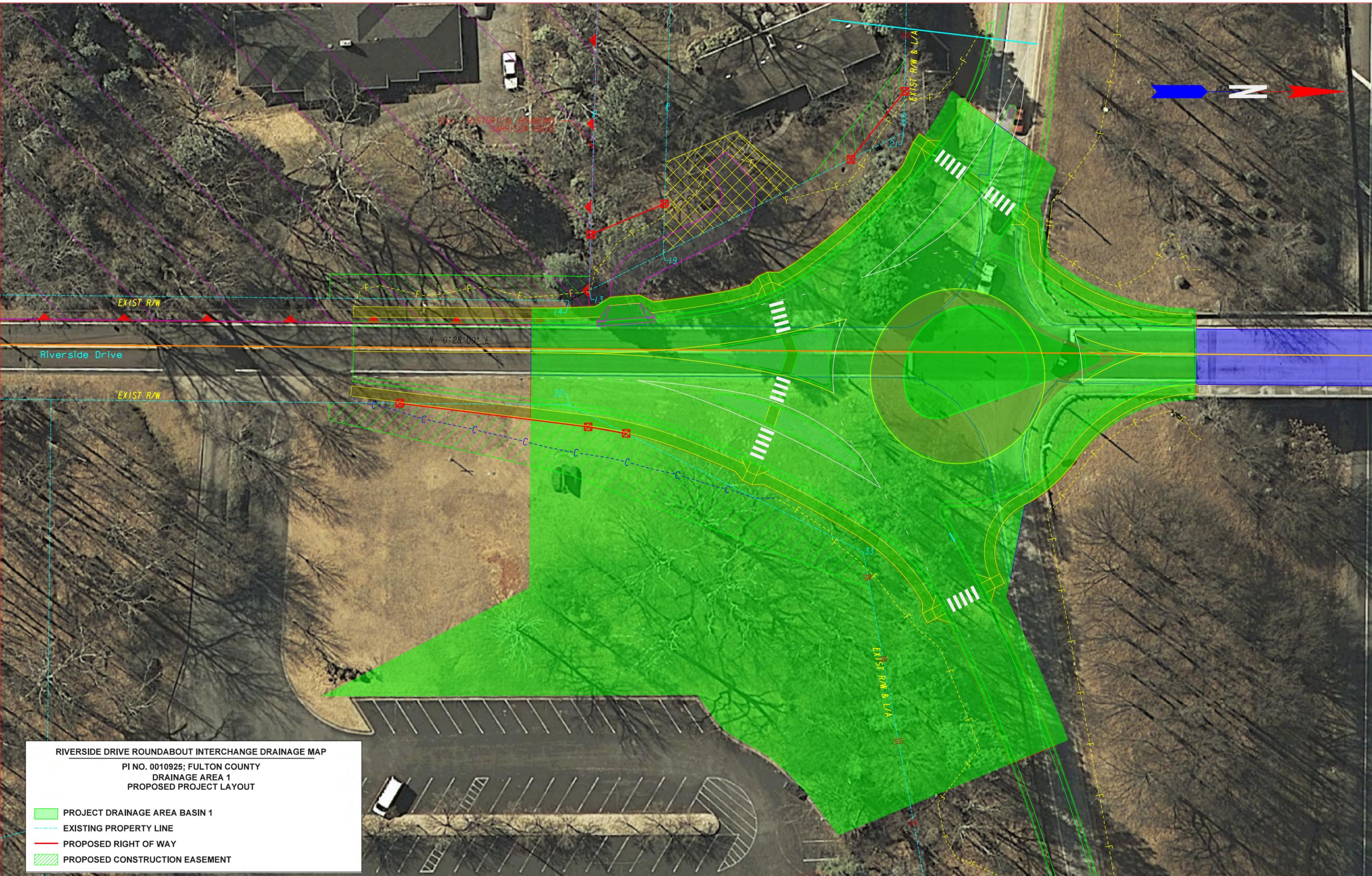
Map Unit Legend

Fulton County, Georgia (GA121)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
GaE	Grover-Mountain Park complex, 10 to 20 percent slopes, stony	0.3	4.5%
GaF	Grover-Mountain Park complex, 20 to 60 percent slopes, stony	0.2	3.8%
MdC2	Madison-Bethlehem complex, 6 to 10 percent slopes, moderately eroded	0.5	8.4%
Ub	Urban land	3.6	61.0%
UrE	Urban land-Rion complex, 10 to 25 percent slopes	1.3	22.4%
Totals for Area of Interest		5.9	100.0%

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields	
		Rating class and limiting features	Value
GaE—Grover-Mountain Park complex, 10 to 20 percent slopes, stony			
Grover	50	Very limited	
		Slope	1
		Slow water movement	0.32
Mountain park	40	Very limited	
		Depth to bedrock	1
		Slope	1
		Slow water movement	0.32
GaF—Grover-Mountain Park complex, 20 to 60 percent slopes, stony			
Grover	55	Very limited	
		Slope	1
		Slow water movement	0.32
Mountain park	30	Very limited	
		Slope	1
		Depth to bedrock	1
		Slow water movement	0.32
MdC2—Madison-Bethlehem complex, 6 to 10 percent slopes, moderately eroded			
Madison	50	Somewhat limited	
		Slow water movement	0.5
Bethlehem	35	Very limited	
		Depth to bedrock	1
		Slow water movement	0.5
Ub—Urban land			
Urban land	100	Not rated	
UrE—Urban land-Rion complex, 10 to 25 percent slopes			
Urban land	65	Not rated	
Rion	35	Very limited	
		Slope	1
		Slow water movement	0.32

Appendix E – Enhanced Swale Plans and Cost Estimate Drainage Area 1

- 1. Proposed Project Map**
- 2. Enhanced Swale Location Map**
- 3. Detailed Proposed Project Cost Estimate**
- 4. Additional MS4 Cost Estimate**
- 5. Proposed Project Right of Way Cost Estimate**
- 6. Right of Way Cost Estimate with Enhanced Swale Impacts**



EXIST HISTORICAL BOUNDARY
BARRISON HOUSE

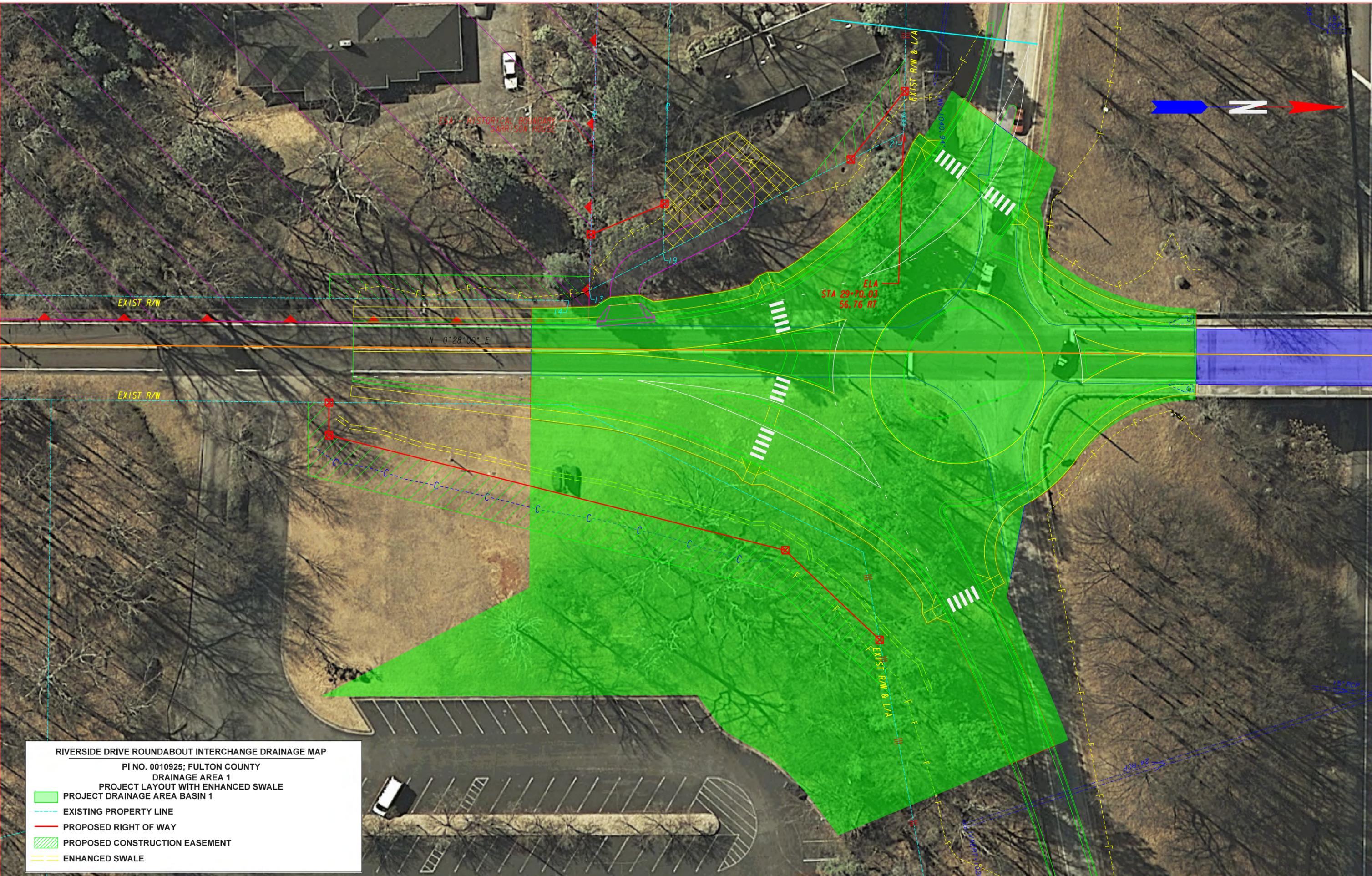


Riverside Drive

N 0°28'00" E

RIVERSIDE DRIVE ROUNDABOUT INTERCHANGE DRAINAGE MAP
 PI NO. 0010925; FULTON COUNTY
 DRAINAGE AREA 1
 PROPOSED PROJECT LAYOUT

- PROJECT DRAINAGE AREA BASIN 1
- EXISTING PROPERTY LINE
- PROPOSED RIGHT OF WAY
- PROPOSED CONSTRUCTION EASEMENT



RIVERSIDE DRIVE ROUNDABOUT INTERCHANGE DRAINAGE MAP
 PI NO. 0010925; FULTON COUNTY
 DRAINAGE AREA 1
 PROJECT LAYOUT WITH ENHANCED SWALE
 PROJECT DRAINAGE AREA BASIN 1

- PROJECT DRAINAGE AREA BASIN 1
- EXISTING PROPERTY LINE
- PROPOSED RIGHT OF WAY
- PROPOSED CONSTRUCTION EASEMENT
- ENHANCED SWALE

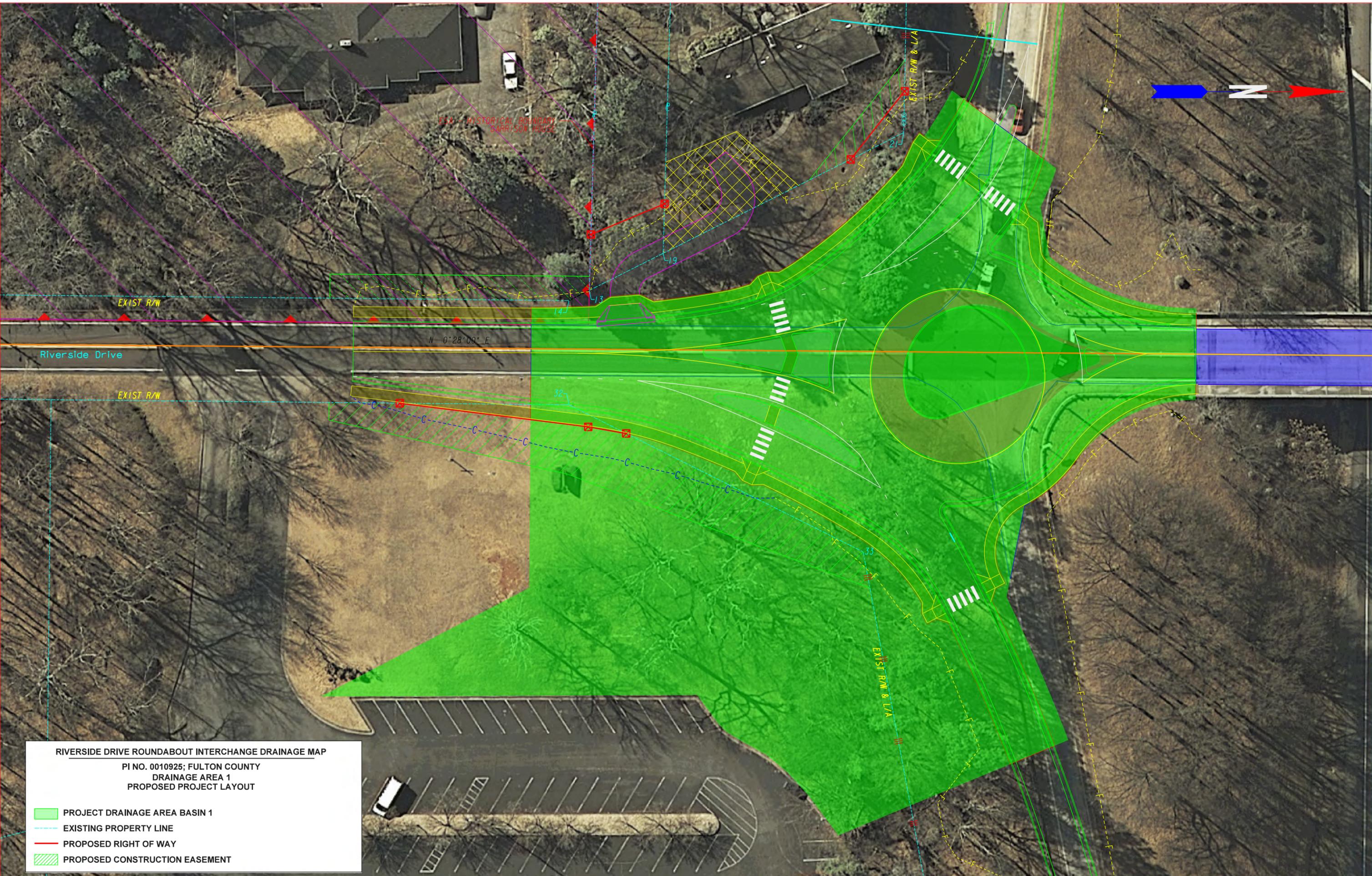
Drainage Area 1 Detailed Cost Estimate -- Proposed Project

Project Cost	Quantity	Unit Price	Cost
Earthwork	7500	\$20.00	\$150,000.00
Erosion control	1	\$75,000.00	\$75,000.00
Signing and Marking	1	\$70,455.00	\$70,455.00
Right of Way	1	\$190,000.00	\$190,000.00
GR AGGR BASE CRS, INCL MATL	1450	\$20.47	\$29,681.50
GR AGGR BASE CRS, 6 INCH, INCL MATL	200	\$11.68	\$2,336.00
RECYCLED ASPH CONC LEVELING, INCL BITUM MATL & H LIME	180	\$67.32	\$12,117.60
RECYCLED ASPH CONC 25 MM SUPERPAVE, GP 1 OR 2, INCL BITUM	650	\$62.68	\$40,742.00
RECYCLED ASPH CONC 12.5 MM SUPERPAVE, GP 2 ONLY, INCL BITUM	320	\$62.42	\$19,974.40
RECYCLED ASPH CONC 19 MM SUPERPAVE, GP 1 OR 2, INCL BITUM	215	\$60.47	\$13,001.05
BITUM TACK COAT	335	\$1.93	\$646.55
MILL ASPH CONC PVMT, VARIABLE DEPTH	1500	\$1.61	\$2,415.00
PLAIN PC CONC PVMT, CL 3 CONC, 12 INCH THK	700	\$71.66	\$50,162.00
DRIVEWAY CONCRETE, 6 IN TK	10	\$39.54	\$395.40
CONC SIDEWALK, 4 IN	600	\$36.14	\$21,684.00
CONCRETE MEDIAN, 6 IN	205	\$58.33	\$11,957.65
CONCRETE V GUTTER	265	\$22.77	\$6,034.05
CONC CURB & GUTTER, 8 IN X 30 IN, TP 2	1700	\$16.13	\$27,421.00
CONC CURB & GUTTER, 8 IN X 30 IN, TP 7	850	\$13.22	\$11,237.00
PVMT REINF FABRIC STRIPS, TP 2, 18 INCH WIDTH	300	\$2.15	\$645.00
STORM DRAIN PIPE, 18 IN, H 1-10	300	\$40.16	\$12,048.00
REMOVE SOUND BARRIER	1500	\$4.00	\$6,000.00
REM GUARDRAIL	0	\$2.79	\$0.00
REM GUARDRAIL ANCH, ALL TYPES	0	\$138.99	\$0.00
RECONSTRUCT MISC DRAINAGE STRUCTURE	1	\$1,500.00	\$1,500.00
ADJUST CATCH BASIN TO GRADE	1	\$2,069.48	\$2,069.48
SOUND BARRIER, TYPE-	1000	\$30.00	\$30,000.00
GUARDRAIL, TP T	50	\$42.77	\$2,138.50
GUARDRAIL, TP W	325	\$15.47	\$5,027.75
GUARDRAIL ANCHORAGE, TP 1	1	\$622.69	\$622.69
GUARDRAIL ANCHORAGE, TP 12	3	\$1,856.51	\$5,569.53
CATCH BASIN, GP 1	2	\$2,612.83	\$5,225.66
CATCH BASIN, GP 1, ADDL DEPTH	5	\$292.04	\$1,460.20
DROP INLET, GP 1	1	\$2,506.71	\$2,506.71
DROP INLET, GP 1, ADDL DEPTH	3	\$340.69	\$1,022.07
STORM SEWER MANHOLE, TP 1	1	\$2,346.99	\$2,346.99
STORM SEWER MANHOLE, TP 1, ADDL DEPTH, CL 1	5	\$332.65	\$1,663.25
IRRIGATION SYSTEM	1	\$5,790.02	\$5,790.02
FOUND BKFILL MATL, TP II	19	\$50.05	\$967.63
Total			\$821,863.68

Additional MS4 Cost (Enhanced Swale) Drainage Area 1	Quantity	Unit Price	Cost
Earthwork	800	\$20.00	\$16,000.00
Right of Way	1	\$80,000.00	\$80,000.00
Media for Enhanced Swales	335	\$100.00	\$33,500.00
Total			\$129,500.00

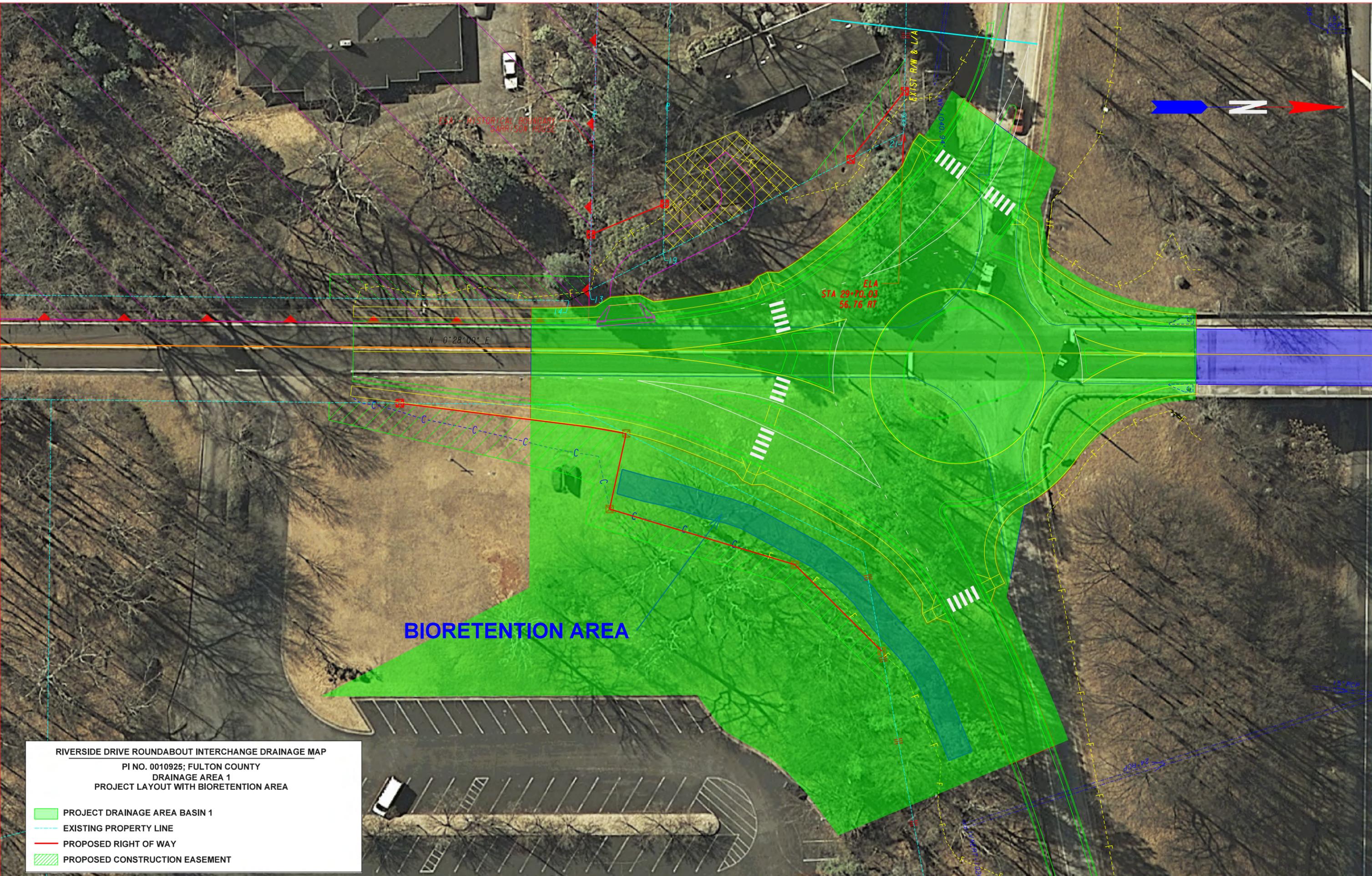
Appendix F – Bioretention Plans and Cost Estimates Drainage Area 1

- 1. Proposed Project Map**
- 2. Bioretention Location Map**
- 3. Detailed Proposed Project Cost Estimate**
- 4. Additional MS4 Cost Estimate**
- 5. Proposed Project Right of Way Cost Estimate**
- 6. Right of Way Cost Estimate with Bioretention Impacts**



RIVERSIDE DRIVE ROUNDABOUT INTERCHANGE DRAINAGE MAP
 PI NO. 0010925; FULTON COUNTY
 DRAINAGE AREA 1
 PROPOSED PROJECT LAYOUT

- PROJECT DRAINAGE AREA BASIN 1
- EXISTING PROPERTY LINE
- PROPOSED RIGHT OF WAY
- PROPOSED CONSTRUCTION EASEMENT



EX - HISTORICAL BOUNDARY
BARRISON HOUSE

E1A
STA 29+70.03
56.76 RT

N 0°28'00" E

BIORETENTION AREA

RIVERSIDE DRIVE ROUNDABOUT INTERCHANGE DRAINAGE MAP
 PI NO. 0010925; FULTON COUNTY
 DRAINAGE AREA 1
 PROJECT LAYOUT WITH BIORETENTION AREA

- PROJECT DRAINAGE AREA BASIN 1
- EXISTING PROPERTY LINE
- PROPOSED RIGHT OF WAY
- PROPOSED CONSTRUCTION EASEMENT

Drainage Area 1 Detailed Cost Estimate -- Proposed Project

Project Cost	Quantity	Unit Price	Cost
Earthwork	7500	\$20.00	\$150,000.00
Erosion control	1	\$75,000.00	\$75,000.00
Signing and Marking	1	\$70,455.00	\$70,455.00
Right of Way	1	\$190,000.00	\$190,000.00
GR AGGR BASE CRS, INCL MATL	1450	\$20.47	\$29,681.50
GR AGGR BASE CRS, 6 INCH, INCL MATL	200	\$11.68	\$2,336.00
RECYCLED ASPH CONC LEVELING, INCL BITUM MATL & H LIME	180	\$67.32	\$12,117.60
RECYCLED ASPH CONC 25 MM SUPERPAVE, GP 1 OR 2, INCL BITUM	650	\$62.68	\$40,742.00
RECYCLED ASPH CONC 12.5 MM SUPERPAVE, GP 2 ONLY, INCL BITUM	320	\$62.42	\$19,974.40
RECYCLED ASPH CONC 19 MM SUPERPAVE, GP 1 OR 2, INCL BITUM	215	\$60.47	\$13,001.05
BITUM TACK COAT	335	\$1.93	\$646.55
MILL ASPH CONC PVMT, VARIABLE DEPTH	1500	\$1.61	\$2,415.00
PLAIN PC CONC PVMT, CL 3 CONC, 12 INCH THK	700	\$71.66	\$50,162.00
DRIVEWAY CONCRETE, 6 IN TK	10	\$39.54	\$395.40
CONC SIDEWALK, 4 IN	600	\$36.14	\$21,684.00
CONCRETE MEDIAN, 6 IN	205	\$58.33	\$11,957.65
CONCRETE V GUTTER	265	\$22.77	\$6,034.05
CONC CURB & GUTTER, 8 IN X 30 IN, TP 2	1700	\$16.13	\$27,421.00
CONC CURB & GUTTER, 8 IN X 30 IN, TP 7	850	\$13.22	\$11,237.00
PVMT REINF FABRIC STRIPS, TP 2, 18 INCH WIDTH	300	\$2.15	\$645.00
STORM DRAIN PIPE, 18 IN, H 1-10	300	\$40.16	\$12,048.00
REMOVE SOUND BARRIER	1500	\$4.00	\$6,000.00
REM GUARDRAIL	0	\$2.79	\$0.00
REM GUARDRAIL ANCH, ALL TYPES	0	\$138.99	\$0.00
RECONSTRUCT MISC DRAINAGE STRUCTURE	1	\$1,500.00	\$1,500.00
ADJUST CATCH BASIN TO GRADE	1	\$2,069.48	\$2,069.48
SOUND BARRIER, TYPE-	1000	\$30.00	\$30,000.00
GUARDRAIL, TP T	50	\$42.77	\$2,138.50
GUARDRAIL, TP W	325	\$15.47	\$5,027.75
GUARDRAIL ANCHORAGE, TP 1	1	\$622.69	\$622.69
GUARDRAIL ANCHORAGE, TP 12	3	\$1,856.51	\$5,569.53
CATCH BASIN, GP 1	2	\$2,612.83	\$5,225.66
CATCH BASIN, GP 1, ADDL DEPTH	5	\$292.04	\$1,460.20
DROP INLET, GP 1	1	\$2,506.71	\$2,506.71
DROP INLET, GP 1, ADDL DEPTH	3	\$340.69	\$1,022.07
STORM SEWER MANHOLE, TP 1	1	\$2,346.99	\$2,346.99
STORM SEWER MANHOLE, TP 1, ADDL DEPTH, CL 1	5	\$332.65	\$1,663.25
IRRIGATION SYSTEM	1	\$5,790.02	\$5,790.02
FOUND BKFILL MATL, TP II	19	\$50.05	\$967.63
Total			\$821,863.68

Additional MS4 Cost (Bioretention Area) Drainage Area 1	Quantity	Unit Price	Cost
Earthwork	400	\$20.00	\$8,000.00
Right of Way	1	\$50,000.00	\$50,000.00
Media for Bioretention Area	375	\$100	\$37,500.00
Bypass Structure	1	\$5,000	\$5,000.00
Landscaping	1	\$12,000	\$12,000.00
Total			\$112,500.00

GEORGIA DEPARTMENT OF TRANSPORTATION
 DETAILED ROW COST ESTIMATE SUMMARY

Date (MM/YYYY): July-14 Project: Riverside Drive Roundabouts
 Revised: County: Fulton
 PI: 10925
 Description: Estimate for Proposed Project
 Parcels: 4 R/W Plan Date: 9/1/2014

CONTRACT

Land and Improvements _____ \$70,915.28
 Valuation Services _____ \$15,125.00
 Legal Services _____ \$40,200.00
 Relocation _____ \$11,500.00
 Demolition _____ \$0.00
TOTAL CONTRACT _____ \$137,740.28

INHOUSE

TOTAL INHOUSE _____ \$43,750.00
 TOTAL ESTIMATED COSTS _____ \$181,490.28

TOTAL ESTIMATED COSTS (ROUNDED) _____ \$190,000.00

Preparation Credits	Hours	Signature

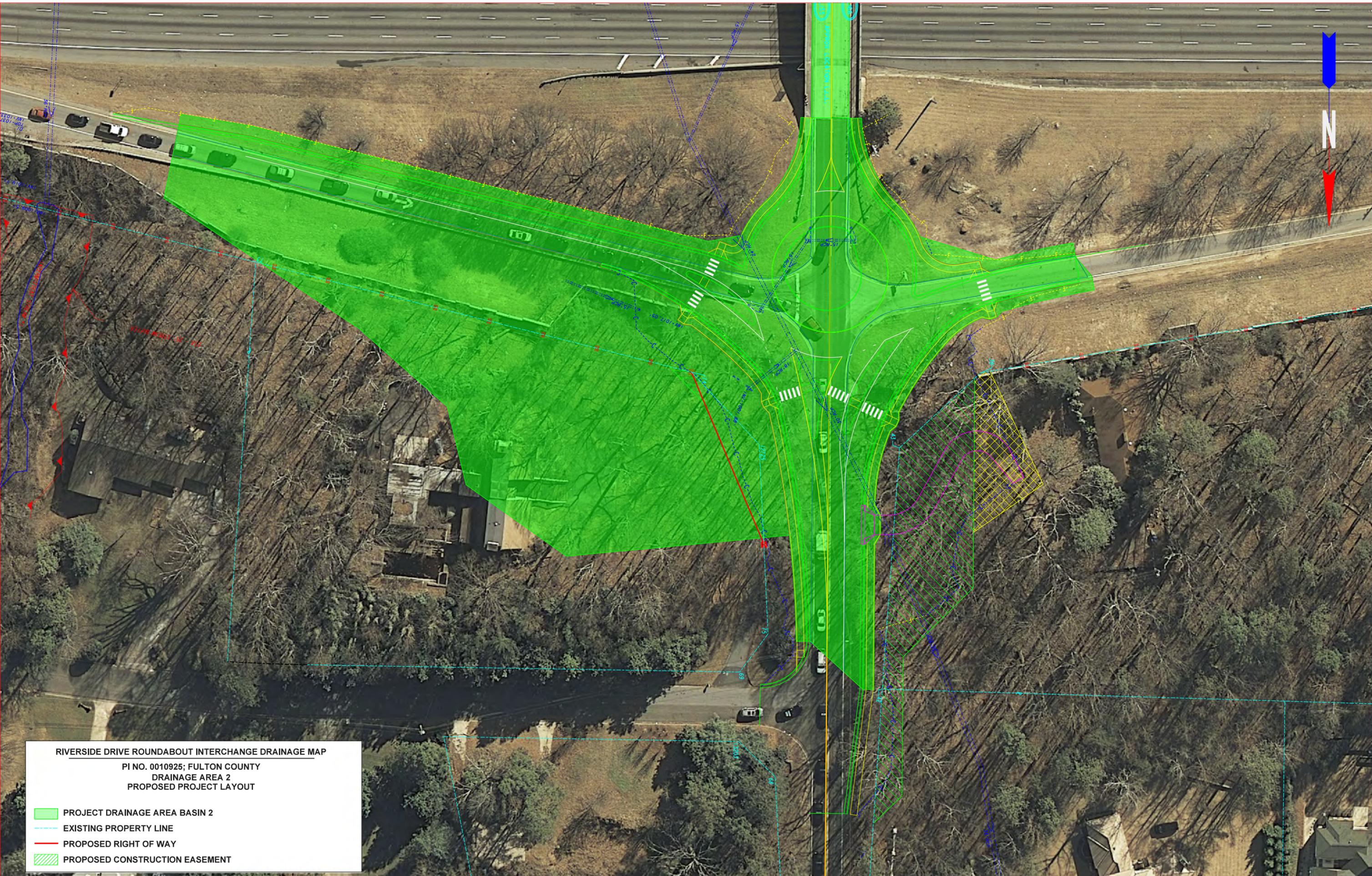
 CG#: _____ (DATE)

 CG#: _____ (DATE)

Attachment(s): **Project Location Map; Subject/Comp Location Map; Comparable Sales Data**

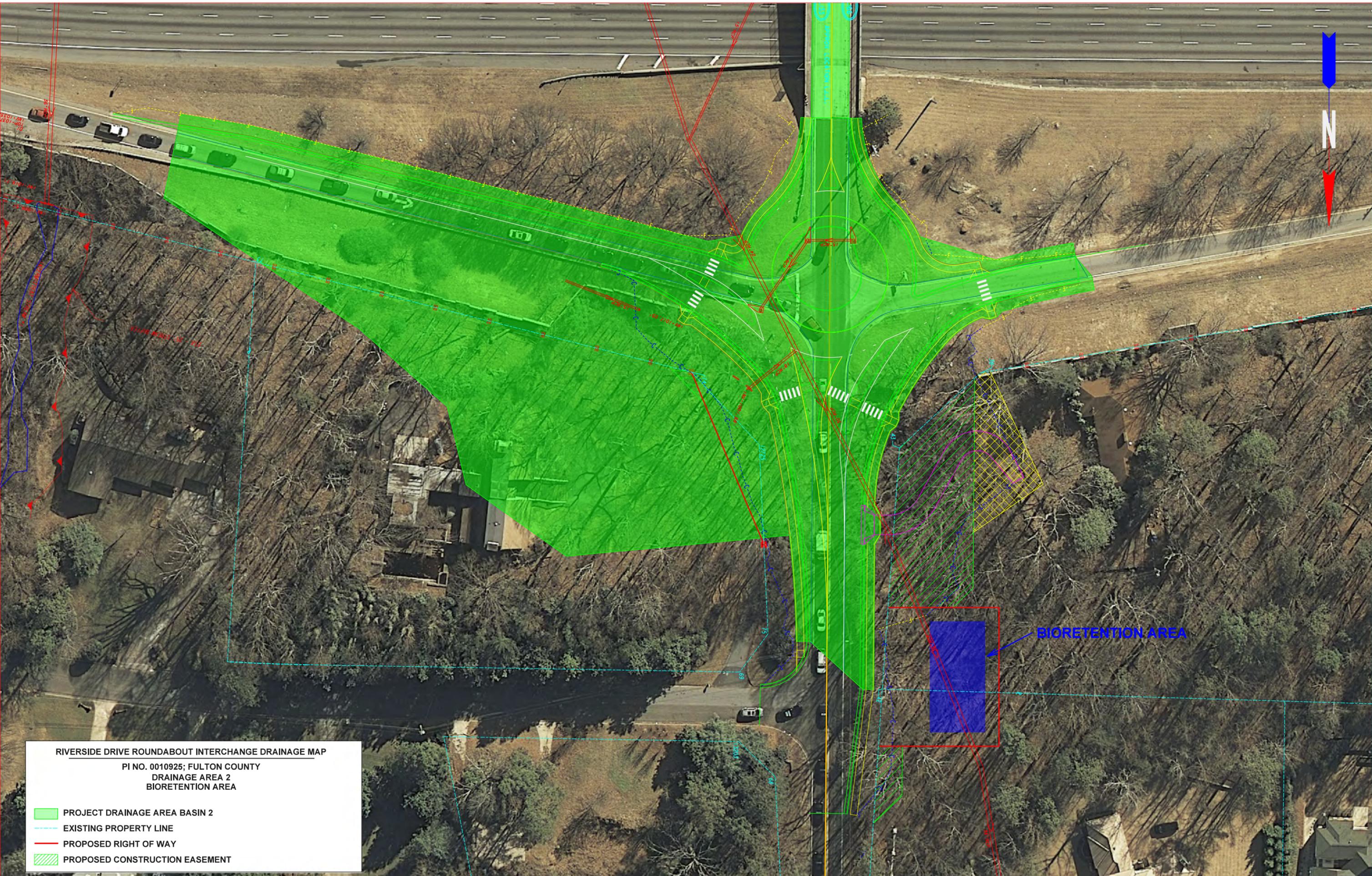
Appendix G – Bioretention Plans and Cost Estimates Drainage Area 2

- 1. Proposed Project Map**
- 2. Bioretention Location Map**
- 3. Detailed Proposed Project Cost Estimate**
- 4. Additional MS4 Cost Estimate**
- 5. Proposed Project Right of Way Cost Estimate**
- 6. Right of Way Cost Estimate with Bioretention Impacts**



RIVERSIDE DRIVE ROUNDABOUT INTERCHANGE DRAINAGE MAP
PI NO. 0010925; FULTON COUNTY
DRAINAGE AREA 2
PROPOSED PROJECT LAYOUT

 PROJECT DRAINAGE AREA BASIN 2
 EXISTING PROPERTY LINE
 PROPOSED RIGHT OF WAY
 PROPOSED CONSTRUCTION EASEMENT



RIVERSIDE DRIVE ROUNDABOUT INTERCHANGE DRAINAGE MAP
PI NO. 0010925; FULTON COUNTY
DRAINAGE AREA 2
BIORETENTION AREA

- PROJECT DRAINAGE AREA BASIN 2
- EXISTING PROPERTY LINE
- PROPOSED RIGHT OF WAY
- PROPOSED CONSTRUCTION EASEMENT

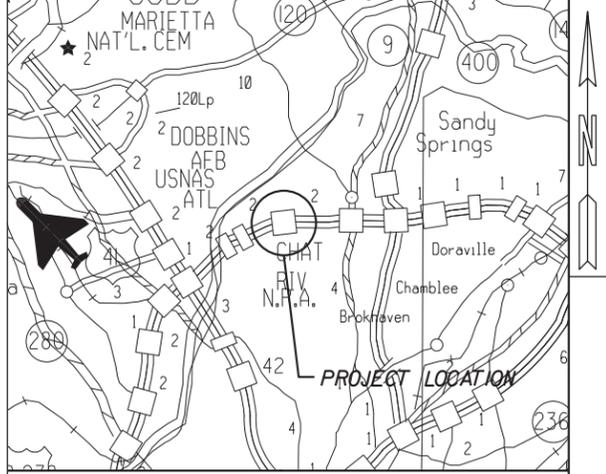
BIORETENTION AREA

Drainage Area 2 Detailed Cost Estimate -- Proposed Project

Project Cost	Quantity	Unit Price	Cost
Earthwork	12500	\$20.00	\$250,000.00
Erosion control	1	\$56,471.69	\$56,471.69
Signing and Marking	1	\$140,910.10	\$140,910.10
Right of Way	1	\$150,000.00	\$150,000.00
GR AGGR BASE CRS, INCL MATL	1850	\$20.47	\$37,869.50
GR AGGR BASE CRS, 6 INCH, INCL MATL	220	\$11.68	\$2,569.60
RECYCLED ASPH CONC LEVELING, INCL BITUM MATL & H LIME	2920	\$67.32	\$196,574.40
RECYCLED ASPH CONC 25 MM SUPERPAVE, GP 1 OR 2, INCL BITUM	950	\$62.68	\$59,546.00
RECYCLED ASPH CONC 12.5 MM SUPERPAVE, GP 2 ONLY, INCL BITUM	280	\$62.42	\$17,477.60
RECYCLED ASPH CONC 19 MM SUPERPAVE, GP 1 OR 2, INCL BITUM	435	\$60.47	\$26,304.45
BITUM TACK COAT	325	\$1.93	\$627.25
MILL ASPH CONC PVMT, VARIABLE DEPTH	900	\$1.61	\$1,449.00
PLAIN PC CONC PVMT, CL 3 CONC, 12 INCH THK	1600	\$71.66	\$114,656.00
DRIVEWAY CONCRETE, 6 IN TK	25	\$39.54	\$988.50
CONC SIDEWALK, 4 IN	600	\$36.14	\$21,684.00
CONCRETE MEDIAN, 6 IN	235	\$58.33	\$13,707.55
CONCRETE V GUTTER	265	\$22.77	\$6,034.05
CONC CURB & GUTTER, 8 IN X 30 IN, TP 2	2100	\$16.13	\$33,873.00
CONC CURB & GUTTER, 8 IN X 30 IN, TP 7	850	\$13.22	\$11,237.00
PVMT REINF FABRIC STRIPS, TP 2, 18 INCH WIDTH	300	\$2.15	\$645.00
CLASS A CONCRETE	1	\$376.75	\$376.75
CLASS A CONCRETE, INCL REINF STEEL	10	\$848.10	\$8,481.00
CLASS B CONCRETE, RETAINING WALL	257	\$673.25	\$173,025.25
CLASS B CONC, BASE OR PVMT WIDENING	24	\$213.67	\$5,128.08
STORM DRAIN PIPE, 18 IN, H 1-10	175	\$40.16	\$7,028.00
FLARED END SECTION 18 IN, SIDE DRAIN	2	\$433.42	\$866.84
STN DUMPED RIP RAP, TP 3, 12 IN	30	\$32.83	\$984.90
PLASTIC FILTER FABRIC	30	\$5.24	\$157.20
FLOWABLE FILL	50	\$243.18	\$12,159.00
REMOVE SOUND BARRIER	1735	\$4.00	\$6,940.00
REM GUARDRAIL	420	\$2.79	\$1,171.80
REM GUARDRAIL ANCH, ALL TYPES	9	\$138.99	\$1,250.91
ADJUST CATCH BASIN TO GRADE	2	\$2,069.48	\$4,138.96
SOUND BARRIER, TYPE-	2214	\$21.02	\$46,538.28
GUARDRAIL, TP T	50	\$42.77	\$2,138.50
GUARDRAIL, TP W	175	\$15.47	\$2,707.25
GUARDRAIL ANCHORAGE, TP 1	4	\$622.69	\$2,490.76
GUARDRAIL ANCHORAGE, TP 12	1	\$1,856.51	\$1,856.51
CATCH BASIN, GP 1	4	\$2,612.83	\$10,451.32
CATCH BASIN, GP 1, ADDL DEPTH	7	\$292.04	\$2,044.28
DROP INLET, GP 1	3	\$2,506.71	\$7,520.13
DROP INLET, GP 1, ADDL DEPTH	3	\$340.69	\$1,022.07
STORM SEWER MANHOLE, TP 1	1	\$2,346.99	\$2,346.99
STORM SEWER MANHOLE, TP 1, ADDL DEPTH, CL 1	5	\$332.65	\$1,663.25
IRRIGATION SYSTEM	1	\$5,790.02	\$5,790.02
FOUND BK FILL MATL, TP II	39	\$50.05	\$1,935.27
Total			\$1,452,838.01

Additional MS4 Cost (Bioretention Area) Drainage Area 2	Quantity	Unit Price	Cost
Earthwork	1100	\$20	\$22,000
Right of Way	1	\$30,000	\$30,000
Media for Bioretention Area	469	\$100	\$46,900
Bypass Structure	1	\$5,000	\$5,000
Landscaping	1	\$14,000	\$14,000
Wall	106	\$673.25	\$71,365
Total			\$189,265.00

Appendix H – Costing Plans



LOCATION SKETCH

DESIGN DATA:
 TRAFFIC A.D.T.: 19,350 (2015)
 TRAFFIC A.D.T.: 21,580 (2035)
 TRAFFIC D.H.V.: 1745 (2035)
 DIRECTIONAL DIST: 0.50/0.50 (N.B./S.B.)
 % TRUCKS: 8.5%
 24 HR. TRUCKS %: 8%
 SPEED DESIGN: 35 MPH

LOCATION & DESIGN APPROVAL DATE:
FUNCTIONAL CLASS:
 URBAN MINOR ARTERIAL
 THIS PROJECT IS 100% IN FULTON COUNTY AND IS 44% IN CONG. DIST. NO. 11 & 56% IN CONG. DIST. 6
PROJECT DESIGNATION: EXEMPT
 DESIGNED IN ENGLISH UNITS.

THIS PROJECT HAS BEEN PREPARED USING THE HORIZONTAL GEORGIA COORDINATE SYSTEM OF 1984 (NAD 1983/94 WEST ZONE, AND THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988.

LENGTH OF PROJECT	COUNTY No. 121
	Project No. 0010925
	MILES
NET LENGTH OF ROADWAY	0.194
NET LENGTH OF BRIDGES	0.049
NET LENGTH OF PROJECT	0.246
NET LENGTH OF EXCEPTIONS	0.000
GROSS LENGTH OF PROJECT	0.239

PROJECT IS LOCATED IN LAND LOTS 133, 166 LAND DISTRICT 17 FULTON COUNTY, GA

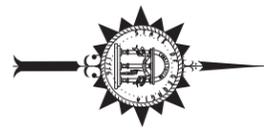
THE DATA, TOGETHER WITH ALL OTHER INFORMATION SHOWN ON THESE PLANS OR IN ANYWAY INDICATED THEREBY, WHETHER BY DRAWINGS OR NOTES, OR IN ANY OTHER MANNER, ARE BASED UPON FIELD INVESTIGATIONS AND ARE BELIEVED TO BE INDICATIVE OF ACTUAL CONDITIONS. HOWEVER, THE SAME ARE SHOWN AS INFORMATION ONLY, ARE NOT GUARANTEED, AND DO NOT BIND THE DEPARTMENT OF TRANSPORTATION IN ANY WAY. THE ATTENTION OF BIDDER IS SPECIFICALLY DIRECTED TO SUBSECTIONS 102.04, 102.05, AND 104.03 OF THE SPECIFICATIONS.

DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA

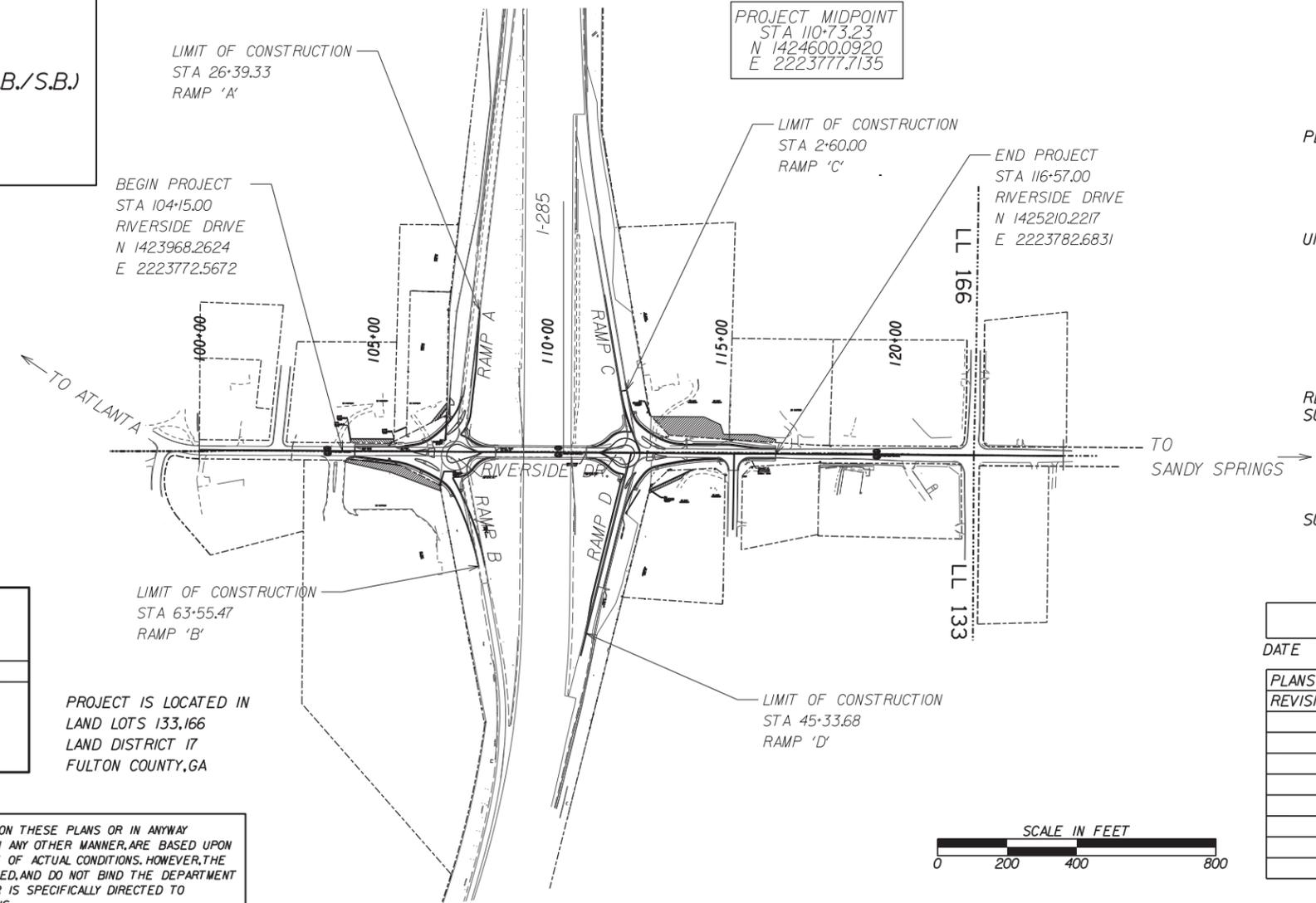
COSTING PLANS OF PROPOSED RIVERSIDE DRIVE AT I-285 INTERCHANGE IMPROVEMENTS

FEDERAL AID PROJECT

FEDERAL ROUTE * N/A
 STATE ROUTE * N/A
 P.J. NO. 0010925 FULTON COUNTY



NOTE:
 ALL REFERENCES IN THIS DOCUMENT, WHICH INCLUDES ALL PAPERS, WRITINGS, DOCUMENTS, DRAWINGS, OR PHOTOGRAPHS USED, OR TO BE USED IN CONNECTION WITH THIS DOCUMENT, TO "STATE HIGHWAY DEPARTMENT OF GEORGIA"; "STATE HIGHWAY DEPARTMENT"; "GEORGIA STATE HIGHWAY DEPARTMENT"; "HIGHWAY DEPARTMENT"; OR "DEPARTMENT" WHEN THE CONTEXT THEREOF MEANS THE "STATE HIGHWAY DEPARTMENT OF GEORGIA" AND SHALL BE DEEMED TO MEAN THE DEPARTMENT OF TRANSPORTATION.



PLANS PREPARED BY: **ARCADIS**
 Infrastructure, environment, buildings

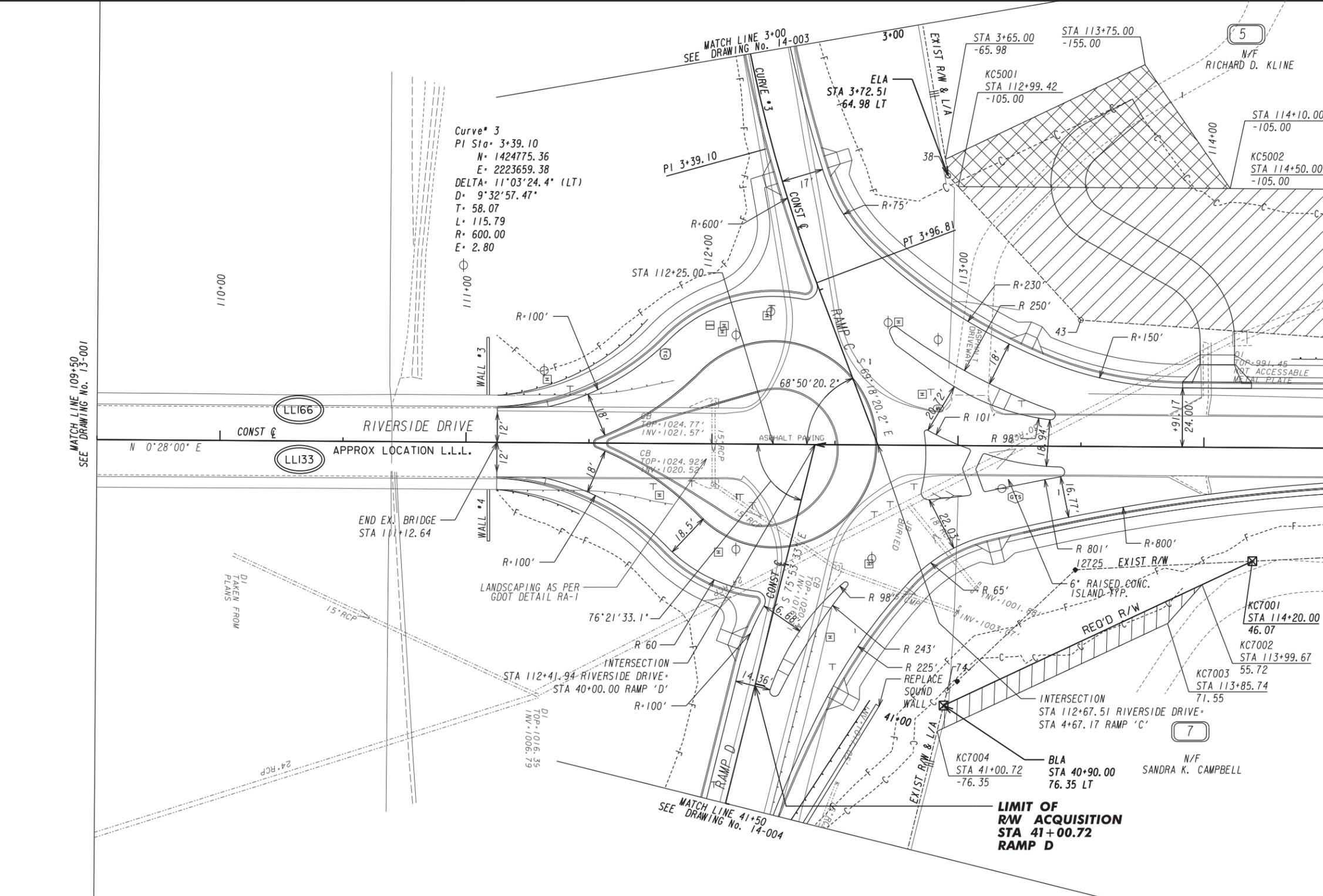
UNDER THE SUPERVISION OF:
 SHAMIR POUDEL, P.E.

RECOMMENDED FOR SUBMISSION BY:
 DESIGN

SUBMITTED BY:
 STATE DESIGN ENGINEER

DATE	CHIEF ENGINEER
PLANS COMPLETED	- -
REVISIONS	





PROPERTY AND EXISTING R/W LINE	---
REQUIRED R/W LINE	---
CONSTRUCTION LIMITS	---
EASEMENT FOR CONSTR & MAINTENANCE OF SLOPES	---
EASEMENT FOR CONSTR OF SLOPES	---
EASEMENT FOR CONSTR OF DRIVES	---

BEGIN LIMIT OF ACCESS.....BLA	---
END LIMIT OF ACCESS.....ELA	---
LIMIT OF ACCESS	---
REQ'D R/W & LIMIT OF ACCESS	---

ARCADIS
 Infrastructure · Water · Environment · Buildings

SCALE IN FEET
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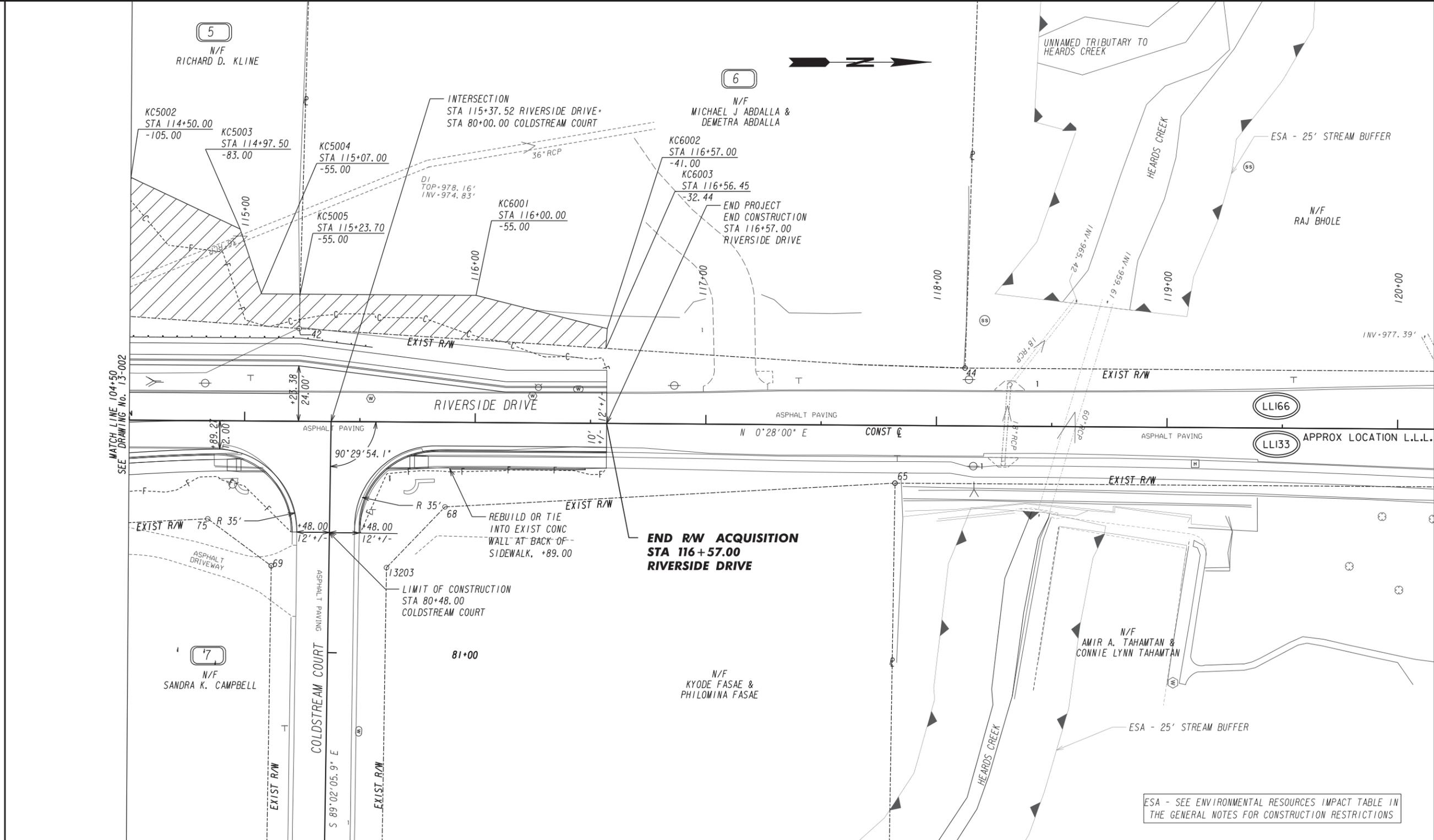
COSTING PLANS
 FOR DESIGN-BUILD

REVISION DATES

STATE OF GEORGIA
 DEPARTMENT OF TRANSPORTATION
 OFFICE: INNOVATIVE DELIVERY
MAINLINE PLAN

PROJECT: PI 0010925
 COUNTY: FULTON

DRAWING No.
13-002



MATCH LINE 104+50
SEE DRAWING NO. 13-002

ESA - SEE ENVIRONMENTAL RESOURCES IMPACT TABLE IN THE GENERAL NOTES FOR CONSTRUCTION RESTRICTIONS

PROPERTY AND EXISTING R/W LINE	---
REQUIRED R/W LINE	---
CONSTRUCTION LIMITS	---
EASEMENT FOR CONSTR & MAINTENANCE OF SLOPES	▨
EASEMENT FOR CONSTR OF SLOPES	▩
EASEMENT FOR CONSTR OF DRIVES	▧

BEGIN LIMIT OF ACCESS.....BLA	---
END LIMIT OF ACCESS.....ELA	---
LIMIT OF ACCESS	---
REQ'D R/W & LIMIT OF ACCESS	---

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SCALE IN FEET
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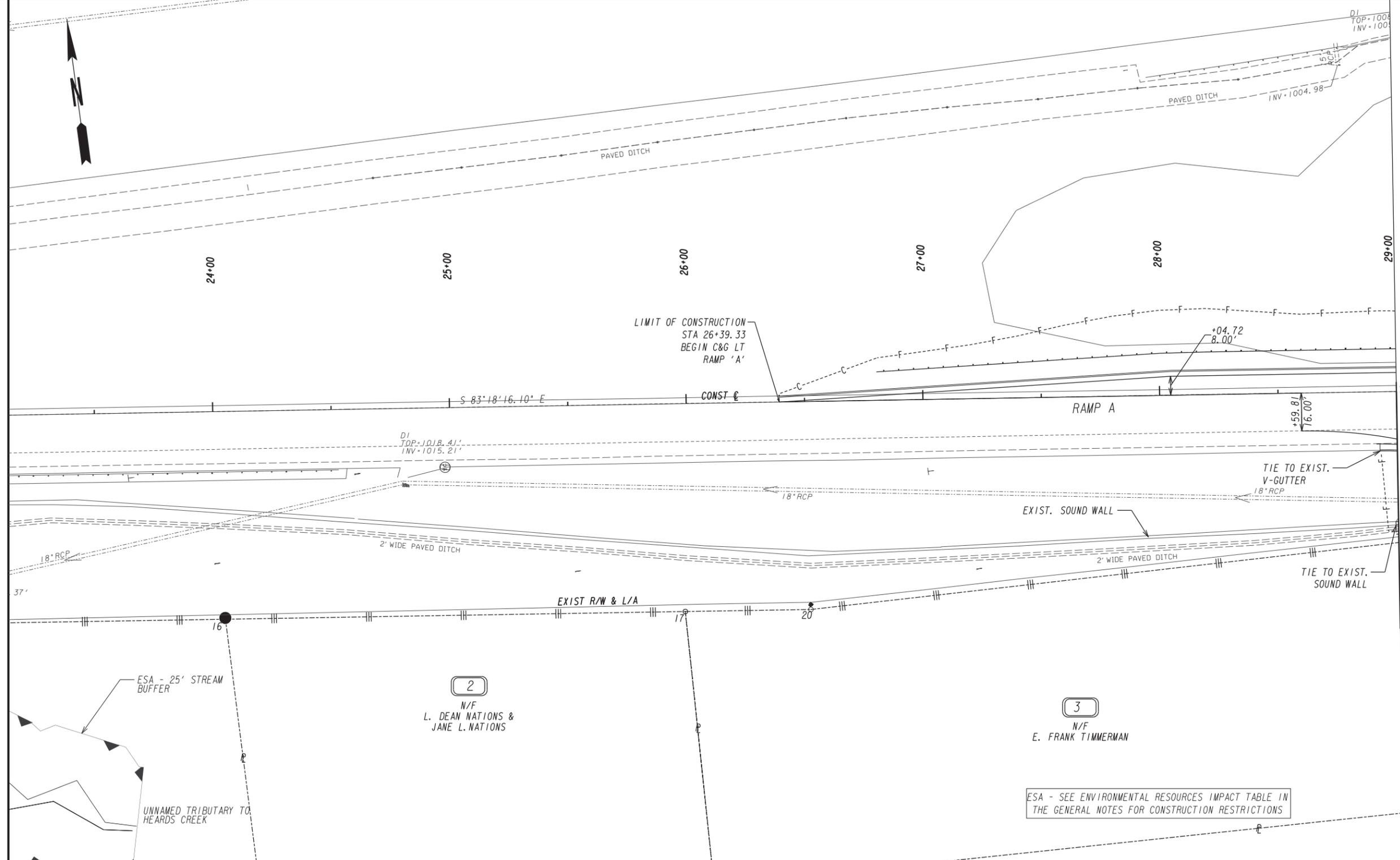
COSTING PLANS
 FOR DESIGN-BUILD

REVISION DATES		

STATE OF GEORGIA
 DEPARTMENT OF TRANSPORTATION
 OFFICE: INNOVATIVE DELIVERY
MAINLINE PLAN

PROJECT: PI 0010925
 COUNTY: FULTON

DRAWING No.
13-003



MATCH LINE 29+00
 SEE DRAWING NO. 13-001

PROPERTY AND EXISTING R/W LINE	-----e-----
REQUIRED R/W LINE	-----
CONSTRUCTION LIMITS	-C--F--
EASEMENT FOR CONSTR & MAINTENANCE OF SLOPES	[Hatched Box]
EASEMENT FOR CONSTR OF SLOPES	[Hatched Box]
EASEMENT FOR CONSTR OF DRIVES	[Hatched Box]

BEGIN LIMIT OF ACCESS.....BLA	-----o-----
END LIMIT OF ACCESS.....ELA	-----o-----
LIMIT OF ACCESS	-----
REQ'D R/W & LIMIT OF ACCESS	

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SCALE IN FEET
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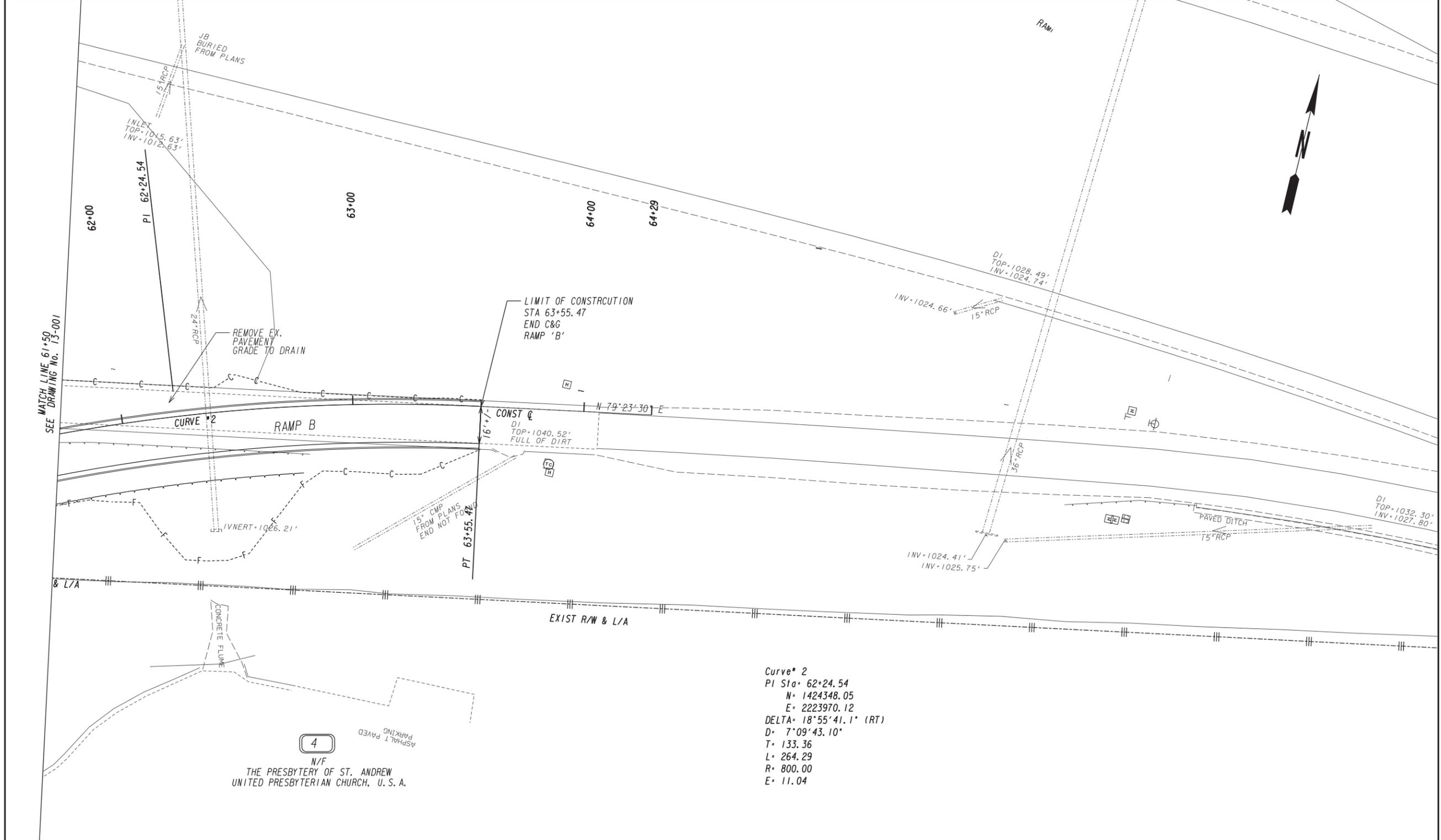
COSTING PLANS
 FOR DESIGN-BUILD

REVISION DATES

STATE OF GEORGIA
 DEPARTMENT OF TRANSPORTATION
 OFFICE: INNOVATIVE DELIVERY
CROSSROAD PLAN

PROJECT: PI 0010925
 COUNTY: FULTON

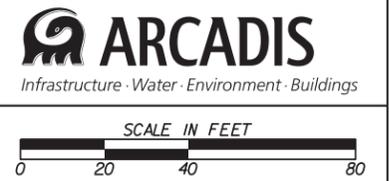
DRAWING No.
14-001



Curve* 2
 PI Sta* 62+24.54
 N* 1424348.05
 E* 2223970.12
 DELTA* 18°55'41.1" (RT)
 D* 7'09"43.10"
 T* 133.36
 L* 264.29
 R* 800.00
 E* 11.04

PROPERTY AND EXISTING R/W LINE
 REQUIRED R/W LINE
 CONSTRUCTION LIMITS
 EASEMENT FOR CONSTR
 & MAINTENANCE OF SLOPES
 EASEMENT FOR CONSTR OF SLOPES
 EASEMENT FOR CONSTR OF DRIVES

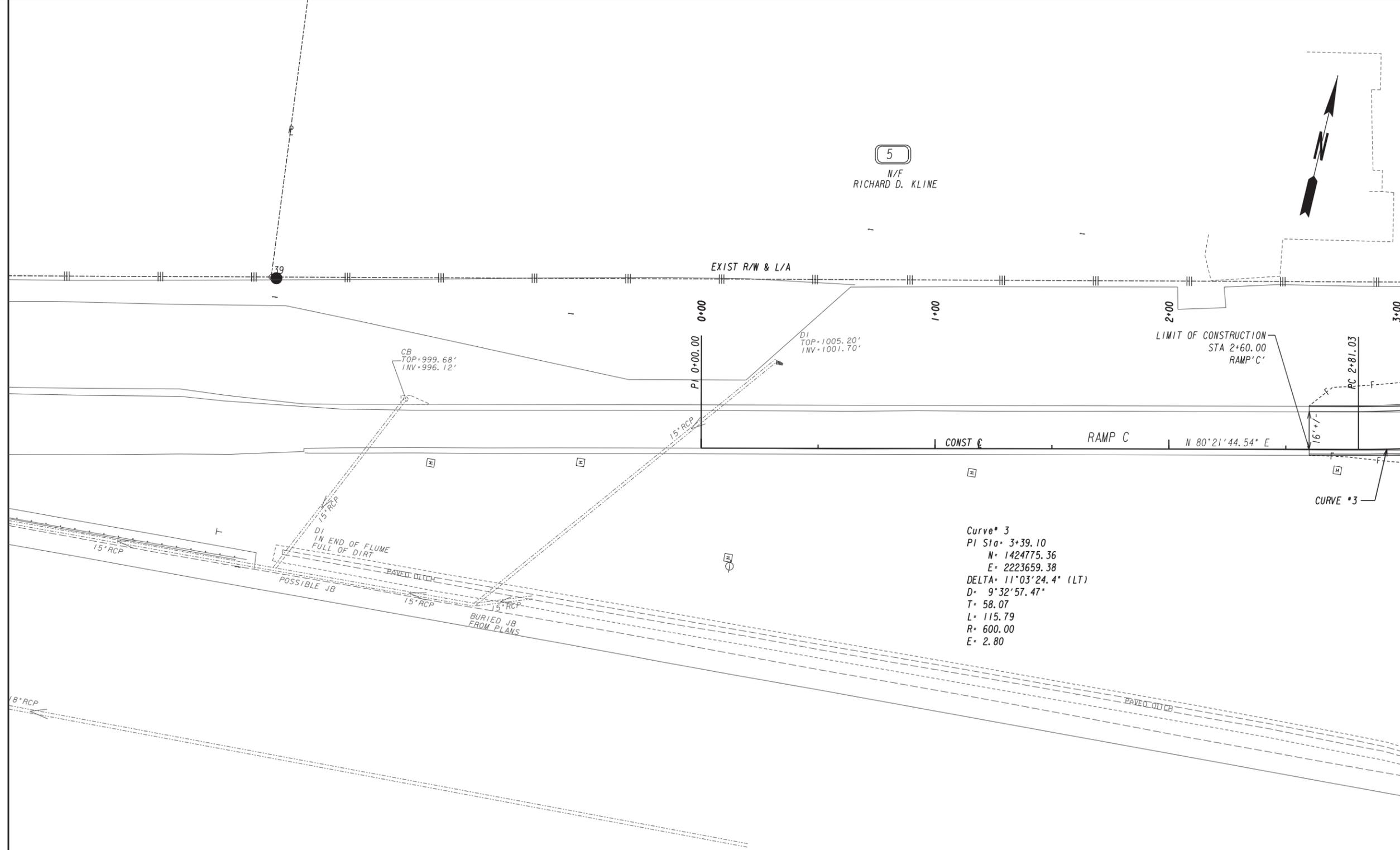
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 --- ELA END LIMIT OF ACCESS.....ELA
 -C-F- LIMIT OF ACCESS
 REQ'D R/W & LIMIT OF ACCESS



COSTING PLANS
 FOR DESIGN-BUILD

REVISION DATES	

STATE OF GEORGIA
 DEPARTMENT OF TRANSPORTATION
 OFFICE: INNOVATIVE DELIVERY
CROSSROAD PLAN
 PROJECT: PI 0010925
 COUNTY: FULTON
 DRAWING No. 14-002



MATCH LINE 3+00
SEE DRAWING No. 13-002

PROPERTY AND EXISTING R/W LINE	-----e-----
REQUIRED R/W LINE	-----
CONSTRUCTION LIMITS	-C-F-
EASEMENT FOR CONSTR & MAINTENANCE OF SLOPES	[Hatched Box]
EASEMENT FOR CONSTR OF SLOPES	[Hatched Box]
EASEMENT FOR CONSTR OF DRIVES	[Hatched Box]

BEGIN LIMIT OF ACCESS.....BLA	-----o-----
END LIMIT OF ACCESS.....ELA	-----o-----
LIMIT OF ACCESS	-----
REQ'D R/W & LIMIT OF ACCESS	

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SCALE IN FEET

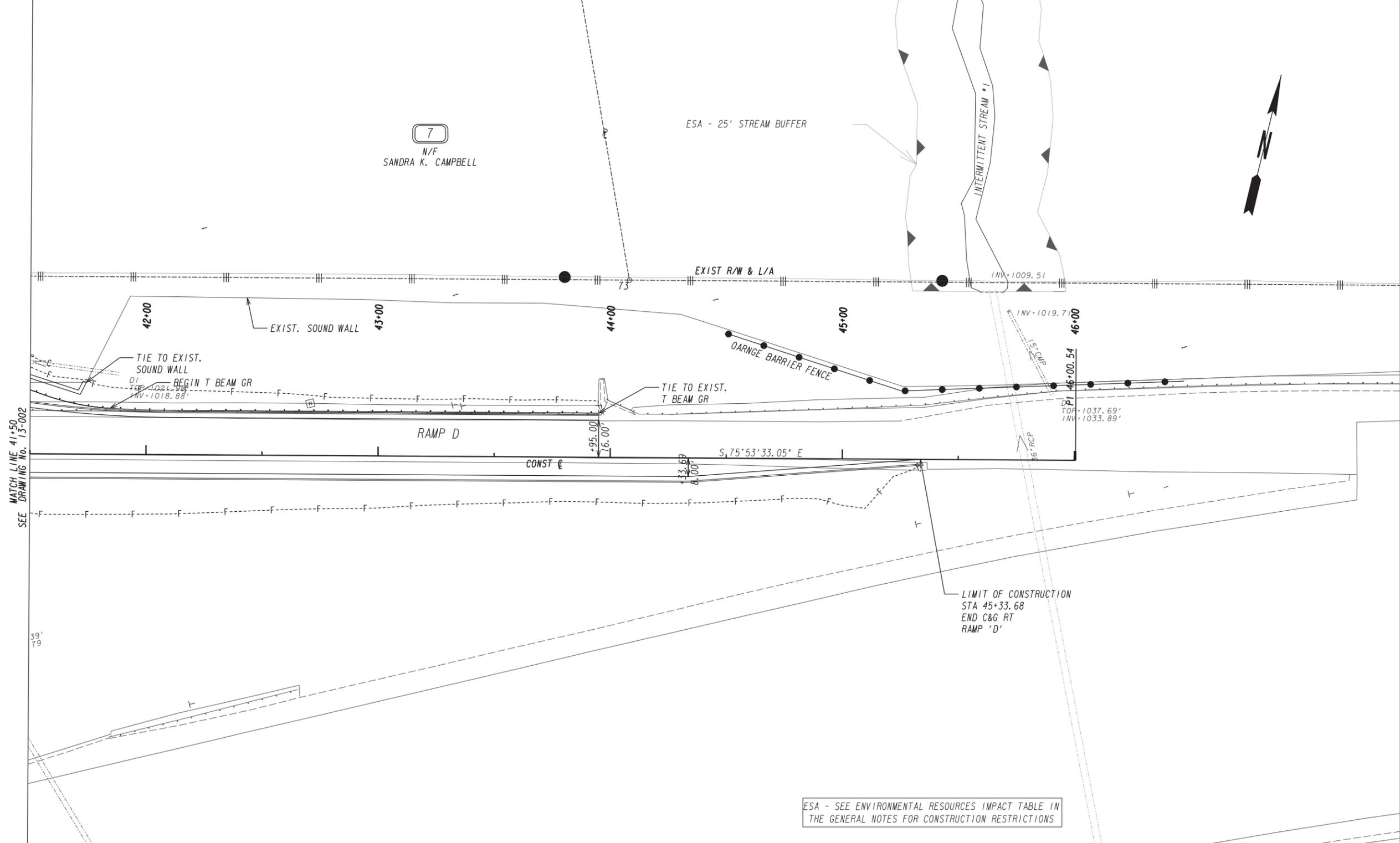
COSTING PLANS
 FOR DESIGN-BUILD

REVISION DATES		

STATE OF GEORGIA
 DEPARTMENT OF TRANSPORTATION
 OFFICE: INNOVATIVE DELIVERY
CROSSROAD PLAN

PROJECT: PI 0010925
 COUNTY: FULTON

DRAWING No.
14-003



PROPERTY AND EXISTING R/W LINE	-----e-----
REQUIRED R/W LINE	-----
CONSTRUCTION LIMITS	-C-F-
EASEMENT FOR CONSTR & MAINTENANCE OF SLOPES	[Hatched Box]
EASEMENT FOR CONSTR OF SLOPES	[Hatched Box]
EASEMENT FOR CONSTR OF DRIVES	[Hatched Box]

BEGIN LIMIT OF ACCESS.....BLABLA
END LIMIT OF ACCESS.....ELAELA
LIMIT OF ACCESS
REQ'D R/W & LIMIT OF ACCESS	

ARCADIS
 Infrastructure · Water · Environment · Buildings

SCALE IN FEET
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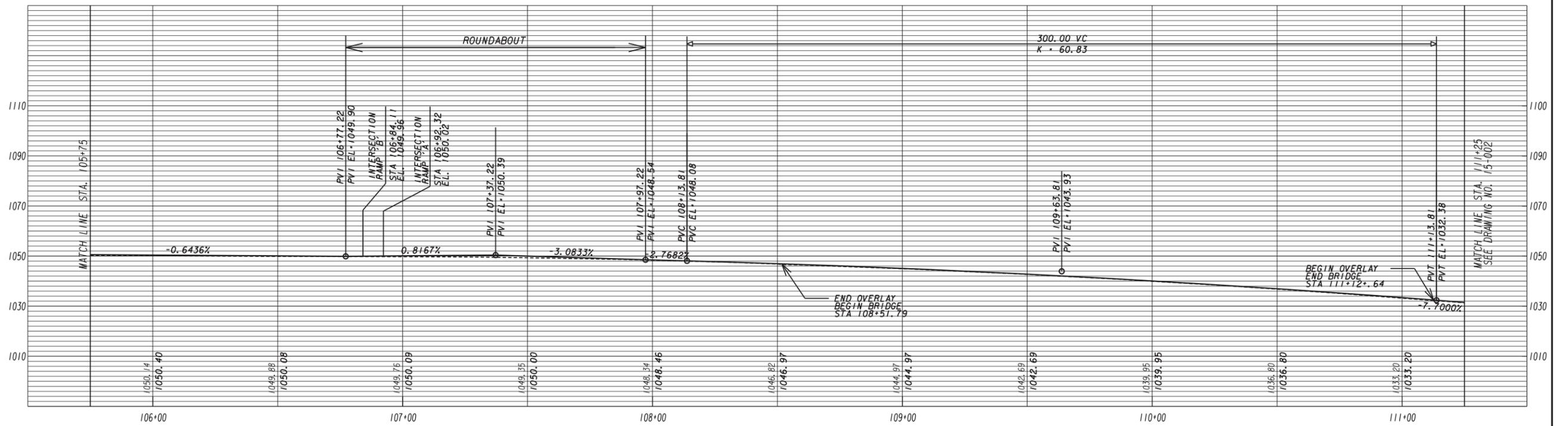
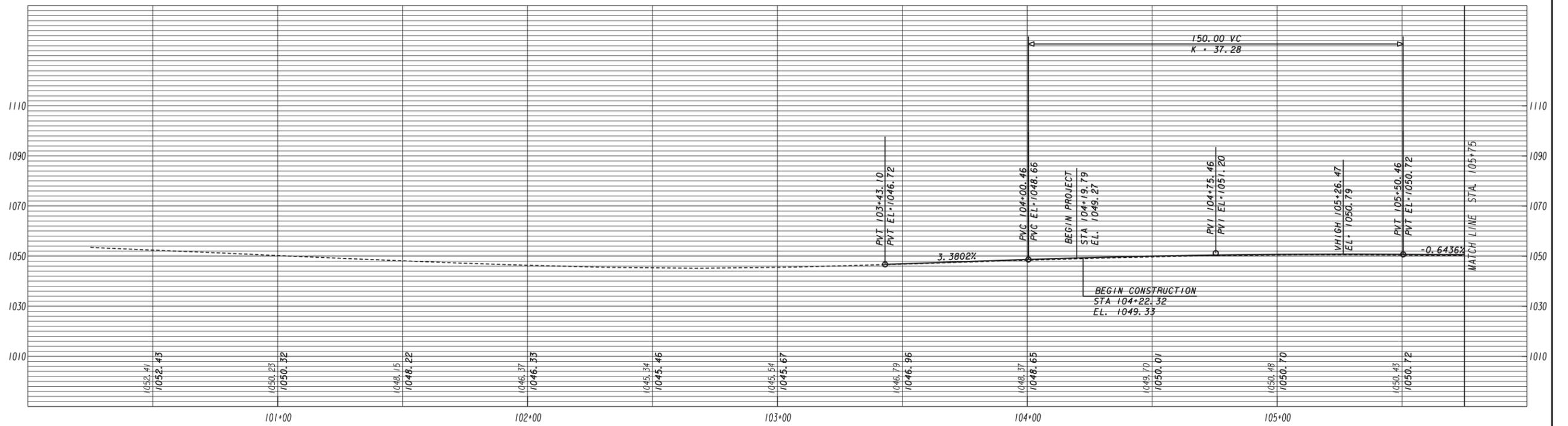
COSTING PLANS
 FOR DESIGN-BUILD

REVISION DATES

STATE OF GEORGIA
 DEPARTMENT OF TRANSPORTATION
 OFFICE: INNOVATIVE DELIVERY
CROSSROAD PLAN

PROJECT: PI 0010925
 COUNTY: FULTON

DRAWING No.
14-004



HORIZONTAL SCALE: 1" = 20'
 VERTICAL SCALE: 1" = 20'

COSTING PLANS
 FOR DESIGN-BUILD

REVISION DATES

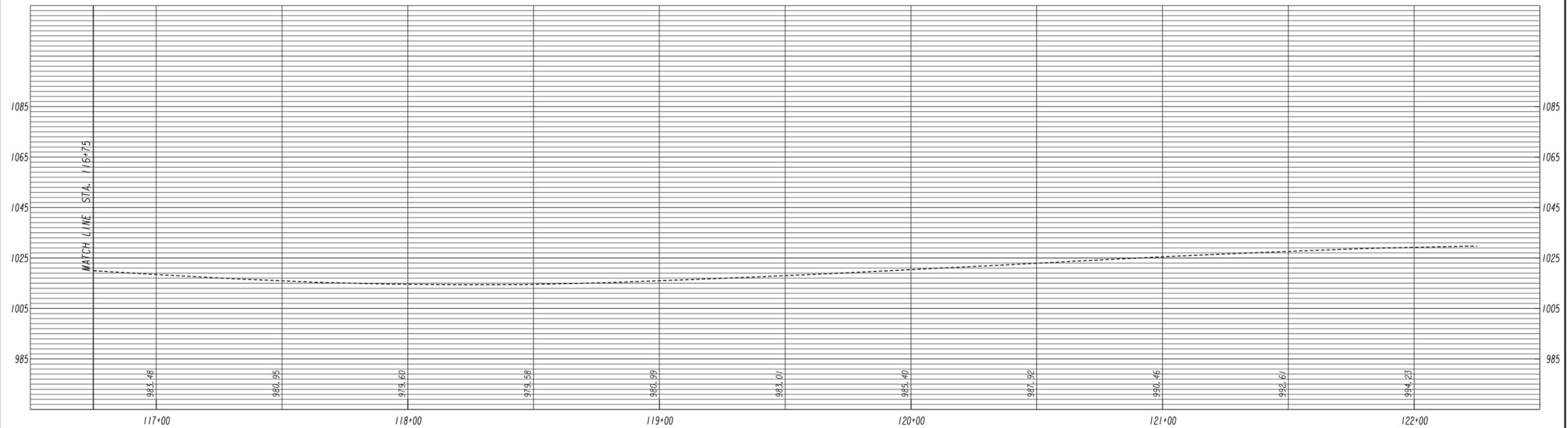
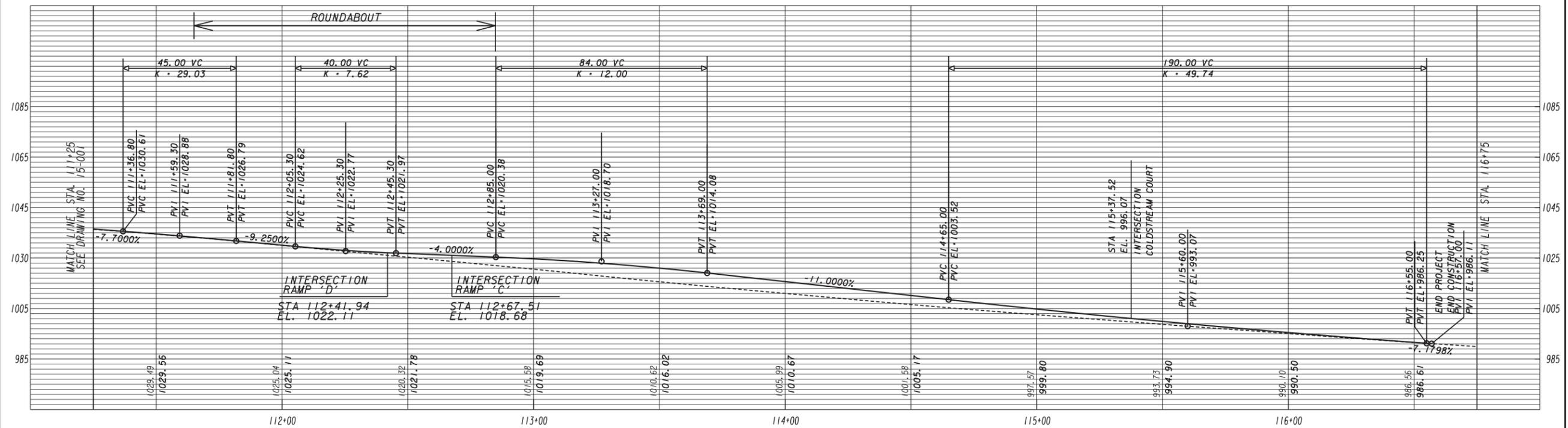
STATE OF GEORGIA
 DEPARTMENT OF TRANSPORTATION

OFFICE:

MAINLINE PROFILE

RIVERSIDE DRIVE

DRAWING No.
15-001



COSTING PLANS
 FOR DESIGN-BUILD

HORIZONTAL SCALE: 1" = 20'
 VERTICAL SCALE: 1" = 20'

REVISION DATES

STATE OF GEORGIA
 DEPARTMENT OF TRANSPORTATION

OFFICE:

MAINLINE PROFILE

RIVERSIDE DRIVE

DRAWING No.
15-002