TIA

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
TIA PROJECT CONCEPT REPORT

Project Type: TIA–Bridge Replacement

P.I. Number: 0011373

GDOT District: 2

County: Columbia

Federal Route Number: US 221

MPO ID Number: N/A

State Route Number: 47

Proposed Improvements include an 86'-3" wide bridge on US 221 over I-20 and roundabouts at the I-20@US 221 ramp terminals.

Submitted for approval:

Local Government Representative	8/9/16 DATE
Project Manager – CALYX Engineers and Consultants	7/22/16 DATE
TIA Project Manager	8/15/16 DATE
GDOT TIA Regional Coordinator	8/15/16 DATE
TIA Program Manager	8/19/16 DATE
GDOT State TIA Administrator	8/19/2016 DATE

Approval:

Concur: GDOT Director of Engineering	8/22/2016 DATE
Approve: Margaret B. Pickell GDOT Chief Engineer	8/24/16 DATE

PROJECT LOCATION MAP

PLANNING & BACKGROUND DATA

Project Intended Benefit: This project would benefit the public by replacing a structurally deficient bridge. This project will provide a safer bridge for drivers to pass over as well as a safer intersection with improved sight distances. The preferred alternate will provide the intended benefit by providing a new bridge and roundabouts at the intersections of the I-20 exit/entrance ramps at SR 47/US 221.

Description of the proposed project:

Federal Oversight: ☐ Exempt ☐ State Funded ☒ TIA ☐ Other

MPO: N/A MPO Project ID

Regional Commission: Central Savannah River Area RC Project ID: RC07-000016

Congressional District(s): 10

Traffic: ADT
Current Year (2016): 4910 Open Year (2017): N/A Design Year (2037): N/A
Traffic Projections Performed by: Existing counts from GDOT

Functional Classification (Mainline): Rural Minor Arterial

Is this a 3R (Resurfacing, Restoration, & Rehabilitation) Project? ☒ No ☐ Yes

Will Context Sensitive Solutions procedures be utilized? ☒ No ☐ Yes

DESIGN AND STRUCTURAL DATA - Mainline Design Features: US 221/SR 47

Feature	Existing	Standard*	Proposed
Typical Section			
- Number of Lanes	2	N/A	2
- Lane Width(s)	12'	11'-12'	12'
- Median Width & Type	None	N/A	None
- Outside Shoulder or Border Area Width	8'	8' Rural	8'
- Outside Shoulder Slope	6%	6%	6%
- Inside Shoulder Width	N/A	N/A	N/A
- Sidewalks	None	N/A	None
- Auxiliary Lanes	None	None	None
- Bike Lanes	None	None	None
Posted Speed	55		35/45
Design Speed	55 mph	55 mph	35/45 mph
Min Horizontal Curve Radius	N/A	643'	1854'
Superelevation Rate	6%	6%	6%
Grade	4%	5%	4%
Access Control	By Permit	By Permit	By Permit
Right-of-Way Width	100'	60' to 100'	100'
Maximum Grade – Crossroad	6%	8%	8%
Design Vehicle	WB-40	SU	WB-67

Major Structures: SR 47/US 221 Bridge over I-20, existing Bridge ID-073-0003-0. Proposed bridge is 86'-3" wide to handle a future 4-lane section with 20' median and 8' outside shoulders. Proposed laneage will include 2-12' lanes, 12' raised inside median, 8' shoulders, 16' outside parapets.

Major Interchanges/Intersections: Interstate 20 @ US 221/SR 47

Utility Involvements:

- Columbia County Public Works – Water and Sewer
- AT&T - telecommunications
- Georgia Power (Distribution) – Power Distribution
- Georgia Power (Transmission) – Power Transmission
- Jefferson Energy Cooperative – Power Distribution
- Columbia County Broadband – Communications
- City of Harlem – Water and Sewer
- Comcast – Communications / Cable TV

Public Interest Determination Policy and Procedure recommended (Utilities)? ☒ No ☐ Yes

SUE Required: ☒ No ☐ Yes

Railroad Involvement: None

Complete Streets - Bicycle, Pedestrian, and/or Transit Warrants:

Warrants met: ☒ None ☐ Bicycle ☐ Pedestrian ☐ Transit

Right-of-Way:

Required Right-of-Way anticipated: ☐ No ☒ Yes ☐ Undetermined

Easements anticipated: ☐ None ☒ Temporary ☒ Permanent ☐ Utility ☐ Other

Anticipated number of impacted parcels:	6
Displacements Anticipated:	0
Businesses:	0
Residences:	0
Other:	0

Transportation Management Plan [TMP] Required: ☒ No ☐ Yes

If Yes: Project classified as: ☐ Non-Significant ☐ Significant

TMP Components Anticipated: ☐ TTC ☐ TO ☐ PI

Design Exceptions to FHWA/AASHTO controlling criteria anticipated: None.

Design Variances to GDOT Standard Criteria anticipated: None anticipated

ENVIRONMENTAL DATA

Anticipated Environmental Document:

GEPA: ☐ Type A Letter ☐ Type B Letter ☒ N/A

NEPA: ☐ CE ☐ EA/FONSI

Project Air Quality: *(On-system projects only)*

Is the project located in a PM 2.5 Non-attainment area? ☒ No ☐ Yes

Is the project located in an Ozone Non-attainment area? ☒ No ☐ Yes

Is a Carbon Monoxide hotspot analysis required? ☒ No ☐ Yes

MS4 Compliance – Is the project located in an MS4 area? ☐ No ☒ Yes

Environmental Permits/Variances/Commitments/Coordination anticipated:

USACE Nationwide 404 permit – impacts to jurisdictional waters

GA EPD Stream Buffer Variance, impacts to parallel waters

NEPA/GEPA Comments & Information:

GEPA document not required for state projects under $100 million in cost.

Ecology: There are three perennial streams that cross under US 221 in the project area, and one of these streams crosses under I-20 and its ramps west of the interchange. Two culverts will be lengthened and one culvert will be replaced. There are also some parallel ditches that will need to be studied further to determine jurisdiction. There are four small wetlands as well.
History: There are two properties north of the project limits that have potential. No impacts anticipated.
Archeology: Will be studied during the design phase.
Air/Noise: Air – Qualitative MSAT Analyis.
Public Involvement: Will be handled by locals. No public involvement is anticipated for this project.

PROJECT RESPONSIBILITIES

Project Activities:

Project Activity	Party Responsible for Performing Task(s)
Concept Development	CALYX
Design	CALYX
Right-of-Way Acquisition	TIA Program Manager
Utility Relocation	By owner / Columbia County
Letting to Contract	TIA Program Manager
Construction Supervision	TIA Program Manager
Providing Material Pits	Contractor
Providing Detours	Contractor
Environmental Studies, Documents, and Permits	CALYX
Environmental Mitigation	TIA Program Manager
Construction Inspection & Materials Testing	TIA Program Manager

Lighting required: ☐ No ☒ Yes Lighting is required for the proposed roundabouts.

Other projects in the area: I-20 at CR 576 / Louisville Road – IJR Study, PI #0008305
US 221/SR47 Resurfacing from Lincoln Co. Line to I-20, PI #M004979. 2017 Let Date.
I-20 Resurfacing from McDuffie Co. Line to SR 388, PI #M005196. 2016 Let Date.
I-20 Widening from McDuffie Co. Line to SR 288, PI #0008305. Long Range.

Other coordination to date:

Project Cost Estimate and Funding Responsibilities:

	Breakdown of PE	Breakdown of ROW	Breakdown of Reimbursable Utilities	Breakdown of CST	Breakdown of Environmental Mitigation	Total Cost
By Whom	TIA	TIA	N/A	TIA	TIA	
Date of Estimate	1/18/2016	2/24/2016	4/4/2016	7/18/2016	3/4/2016	
TIA Current Programmed Budget $	$1,000,000	$40,000.00	$0.00	$10,000,000	$0.00	$11,040,000.00
Estimated $ Amount	$1,000,000	$256,170.00	$143,643.90	$7,302,752.25	$71,146.00	
Budget Contingency $	$85,000.00	$3,400.00	$43,093.17	$850,000.00	$0.00	
Total Estimated Cost	$1,085,000	$259,570.00	$186,737.07	$8,152,752.25	$71,146.00	$9,755,205.32

Note: 1. All phases contain 1% Department Management costs and calculated project risk contingency in the Budget Contingency $ line item.

2. Construction phase contains 3% CEI in addition to other contingencies

ALTERNATIVES

Preferred Alternative: Proposed bridge replacement to allow for future traffic capacity allowing up to four through lanes of traffic with a 20' median and 8' outside shoulders, 86'-3" width. Intersection improvements consists of providing roundabouts at the I-20 exit/entrance ramps at US 221/SR 47. Adjacent Nature's Way to be relocated 700' north to increase limited access along US 221 @ I-20. Interstate 20 Ramps to be replaced as necessary to tie to new roundabouts.

Estimated Property Impacts:	**0.75 acres (esmt) / 3.50 acres (ROW)**	**Estimated Total Cost:**	**$9,755,205.32**
Estimated ROW Cost:	**$256,170.00**	**Estimated CST Time:**	**24 months**

Rationale: The proposed roundabouts provide the necessary current and future traffic capacity needs and corrects the current sight distance issue at a lower overall construction cost, allowing for a wider bridge for future accommodation of a 4-lane facility.

Alternative 1: Provide 24' rural roadway on new alignment and profile in order to meet sight distance requirements for 55 mph, for a total length of 3200'. Proposed bridge replacement to allow up to two through lanes of traffic with a 12' flush median and 8' outside shoulders, 55'-3" width. Nature's Way to be relocated 700' north to increase limited access along US 221 @ I-20. I-20 Ramps to be replaced as necessary to tie to new alignment and profile.

Estimated Property Impacts:	**1.5 acres (esmt)/ 4.9 acres (ROW)**	**Estimated Total Cost:**	**$11,598,147.11**
Estimated ROW Cost:	**$399,924.00**	**Estimated CST Time:**	**24 months**

Rationale: This alternative was based on a conventional diamond interchange. The roadway profile would resolve sight distance but would tie to the existing US 221 profile which is substandard for 55 mph. This alternate would impact more ecological resources, increase overall construction costs, resulting in less proposed bridge width to be constructed for future considerations. There is a risk that this alternate would not fit within the TIA budget.

Comments/additional information:

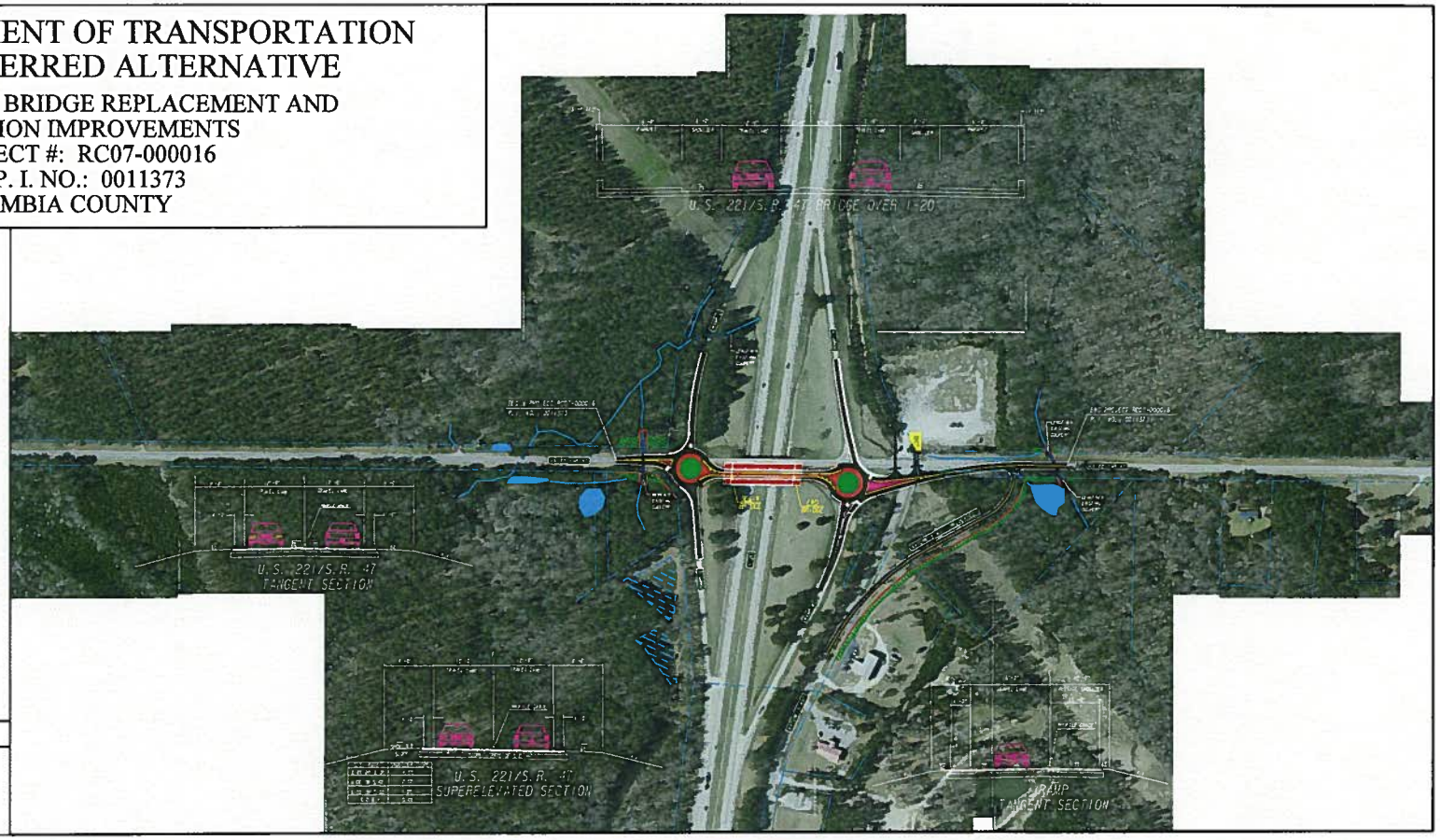
Attachments:

1. Concept Layout (Preferred Alternative and Alternative 1)
2. Typical sections (Preferred Alternative)
3. Cost Estimates
4. Concept Hydrology Study and Layout
5. Meeting Minutes
6. TIA Project Fact Sheet
7. Concept Preliminary Bridge Layout
8. Roundabout Lighting Agreement

GEORGIA DEPARTMENT OF TRANSPORTATION
CONCEPT PREFERRED ALTERNATIVE

I-20@U.S. 221/S.R. 47 BRIDGE REPLACEMENT AND INTERSECTION IMPROVEMENTS

TIA PROJECT #: RC07-000016
GDOT P. I. NO.: 0011373
COLUMBIA COUNTY



LEGEND

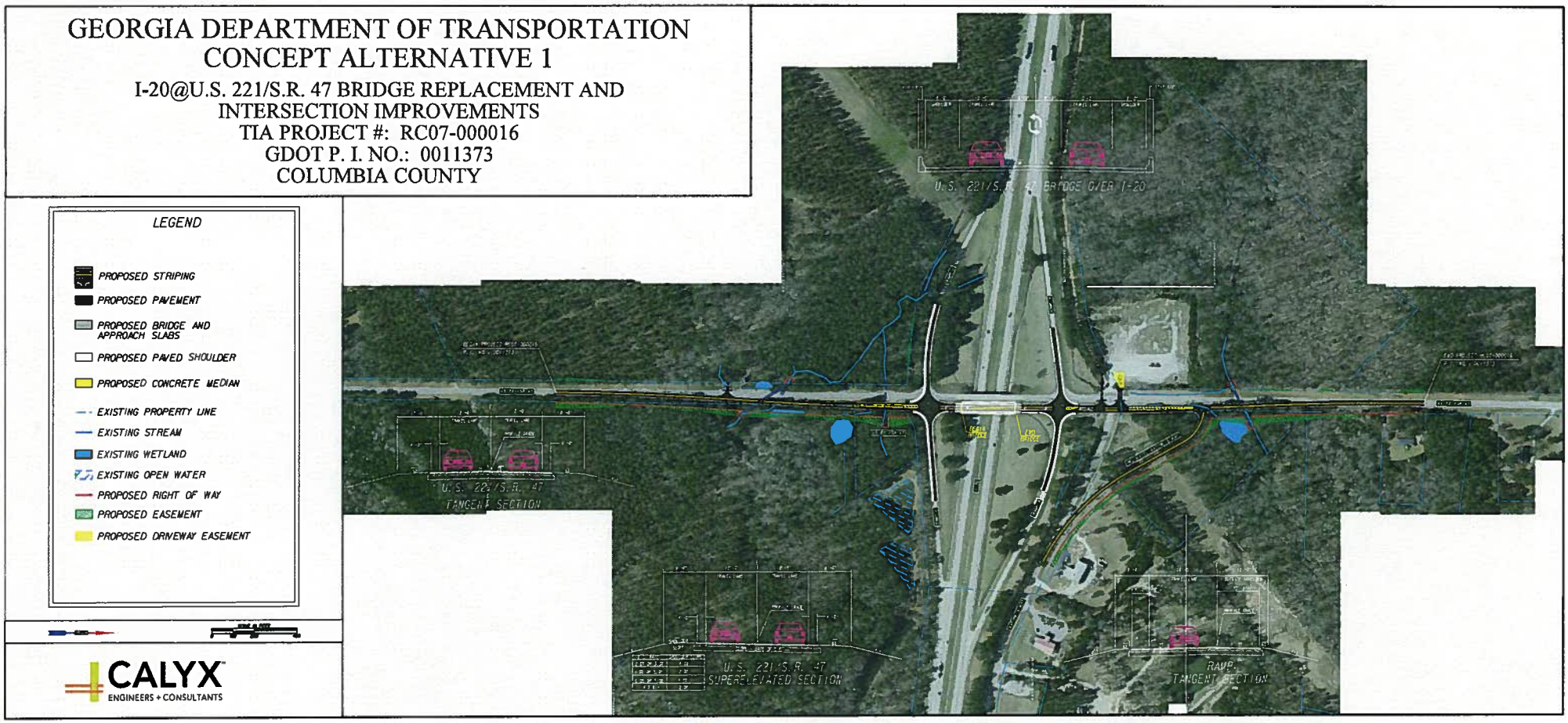
- PROPOSED STRIPING
- PROPOSED PAVEMENT
- PROPOSED BRIDGE AND APPROACH SLABS
- PROPOSED CURB AND GUTTER
- PROPOSED PAVED SHOULDER
- PROPOSED LANDSCAPE AREA
- PROPOSED CONCRETE MEDIAN
- PROPOSED TRUCK APRON/ STAMPED CONCRETE
- EXISTING PROPERTY LINE
- EXISTING STREAM
- EXISTING WETLAND
- EXISTING OPEN WATER
- PROPOSED RIGHT OF WAY
- PROPOSED EASEMENT
- PROPOSED DRIVEWAY EASEMENT

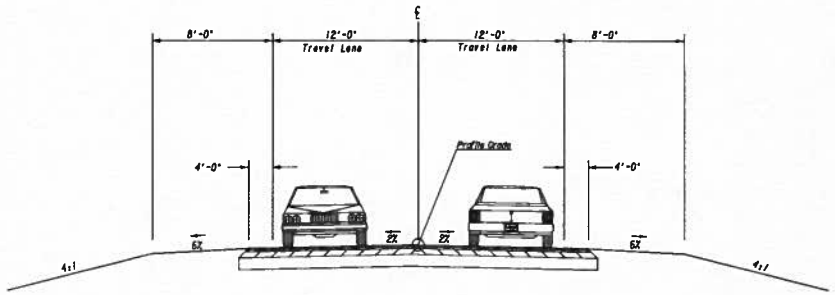
CALYX™
ENGINEERS + CONSULTANTS

GEORGIA DEPARTMENT OF TRANSPORTATION
CONCEPT ALTERNATIVE 1

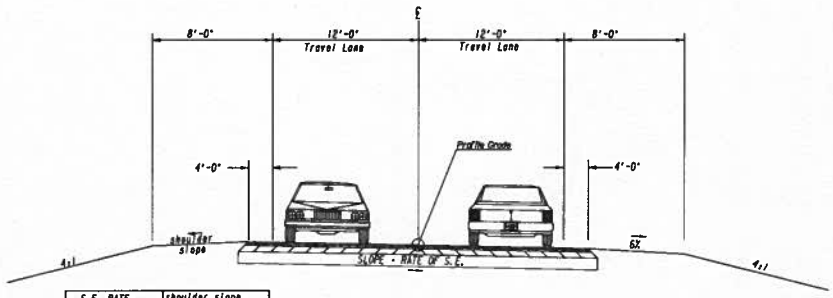
I-20@U.S. 221/S.R. 47 BRIDGE REPLACEMENT AND INTERSECTION IMPROVEMENTS

TIA PROJECT #: RC07-000016
GDOT P. I. NO.: 0011373
COLUMBIA COUNTY





TS-01 R. 47/ U. S. 221 TANGENT SECTION



S.E. RATE	shoulder slope
2.0% OR 3.0%	4.0%
4.0% OR 5.0%	2.0%
6.0% OR 7.0%	1.0%
8.0 % +	0.0%

TS-02: S. R. 47/U. S. 221 SUPERELEVATED SECTION

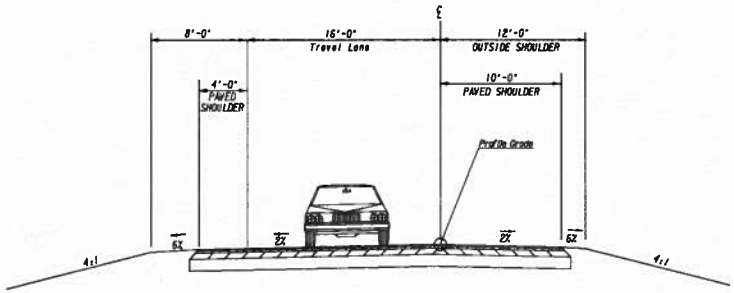
REVISION DATES

TYPICAL SECTIONS

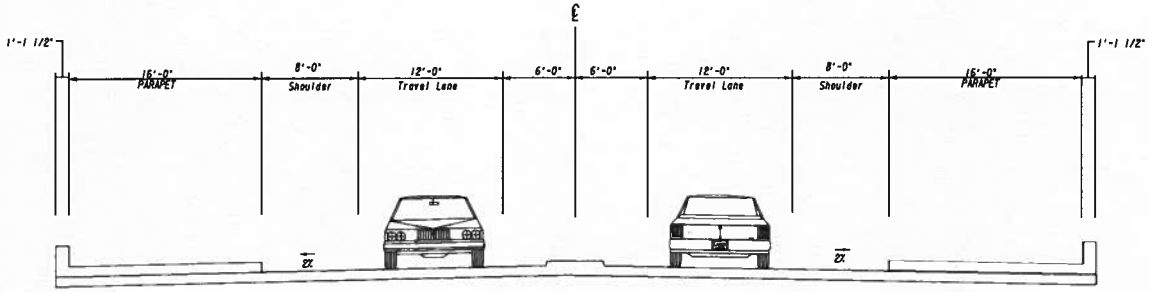
CHECKED: DATE:
BACKCHECKED: DATE:
CORRECTED: DATE:
VERIFIED: DATE:

DRAWING No. 05-0001

7/21/2016 11:52:13 AM GPLOT-V8 ALT 2 - TYP.dgn P.I. No. 0011373



TS-03: S. R. 47/U. S. 221 RAMP TANGENT SECTION



TS-04: S. R. 47/ U. S. 221 BRIDGE OVER I-20

REVISION DATES

TYPICAL SECTIONS

CHECKED: DATE:
BACKCHECKED: DATE:
CONNECTED: DATE:
VERIFIED: DATE:

DRAWING No. 05-0002

Project Cost Estimate
PI: 0011373
County: Columbia

I20 AT U.S 221/S.R. 47 INTERCHANGE CONCEPT CONSTRUCTION COST ESTIMATE-PREFERRED ALTERNATIVE					
Pay Item Number	Item	Unit	Quantity	Price	Cost
153-1300	FIELD ENGINEERS OFFICE TP 3	EA	1	100000	$ 100,000.00
210-0100	GRADING COMPLETE	LS	1	490000	$ 490,000.00
207-0203	FOUND BKFILL MATL, TP II	CY	2783	60	$ 167,001.60
310-1101	GR AGGR BASE CRS, INCL MATL	TN	15833	22	$ 348,326.00
318-3000	AGGR SURF CRS	TN	200	24	$ 4,800.00
402-1812	RECYL AC LEVELING,INC BM&HL	TN	180	90	$ 16,200.00
402-3121	RECYL AC 25MM SP,GP1/2,BM&HL	TN	4569	90	$ 411,210.00
402-3130	RECYL AC 12.5MM SP,GP2,BM&HL	TN	2416	90	$ 217,440.00
402-3190	RECYL AC 19 MM SP,GP 1 OR 2 ,INC BM&HL	TN	784	90	$ 70,560.00
413-1000	BITUM TACK COAT	GL	1210	2.32	$ 2,807.20
430-0600	PLAIN PC CONC PVMT, CL HES CONC, 10 IN THK	SY	1322	100.00	$ 132,200.00
430-0620	PLAIN PC CONC PVMT, CL HES CONC, 12 IN THK	SY	6171	110	$ 678,810.00
432-5010	MILL ASPH CONC PVMT,VARIABLE DEPTH	SY	550	1.82	$ 1,001.00
433-1100	REINF CONC APPROACH SLAB, INCL CURB	SY	560	181.7	$ 101,752.00
441-5008	Concrete Header Curb, 6 IN, TY 7	LF	566	17	$ 9,622.00
441-5025	Concrete Header Curb, 4 IN, TY 9	LF	921	17	$ 15,657.00
441-6222	CONC CURB & GUTTER/ 8"X30" TP2	LF	519	16.18	$ 8,397.42
441-6740	CONC CURB & GUTTER/ 8"X30" TP7	LF	684	23	$ 15,732.00
441-0748	CONC MEDIAN, 6 IN	SY	1115	50	$ 55,750.00
444-1000	SAWED JOINTS IN EXIST PAVEMENTS - PCC	LF	120	4.14	$ 496.80
500-3101	CLASS A CONCRETE	CY	214	719.76	$ 153,688.19
511-1000	BAR REINF STEEL	LB	22690	1	$ 22,689.80
522-1000	SHORING	LS	1	50,000	$ 50,000.00
540-1101	REMOVAL OF EXISTING BR, STA NO-XXX+XX.XX	LS	1	150,000	$ 150,000.00
550-2180	SIDE DRAIN DR. PIPE 18 IN, - H1-10	LF	105	28.09	$ 2,949.45
550-3418	SAFETY END SECTION 18 IN, SIDE DRAIN, 4:1 SLOPE	EA	3	624.97	$ 1,874.91
550-4218	FLARED END SECTION 18 IN, STORM	EA	3	617.12	$ 1,851.36
603-2182	STN DUMPED RIP RAP, TP 3, 24"	SY	300	65.94	$ 19,782.00
603-7000	PLASTIC FILTER FABRIC	SY	300	3.77	$ 1,131.00
620-0100	TEMP BARRIER, METHOD NO. 1	LF	3321	29	$ 96,309.00
620-0100	TEMP BARRIER, METHOD NO. 2	LF	252	49.31	$ 12,426.12
632-0003	CHANGEABLE MESS SIGN,PORT,TP 3	EA	2	7654	$ 15,308.00
634-1200	RIGHT OF WAY MARKERS	EA	25	115.44	$ 2,886.00
641-1100	GUARDRAIL, TP T	LF	84	31.71	$ 2,663.64
641-1200	GUARDRAIL, TP W	LF	3321	17.61	$ 58,482.81
641-5001	GUARDRAIL ANCHORAGE, TP 1	EA	6	990.87	$ 5,945.22
641-5012	GUARDRAIL ANCHORAGE, TP 12	EA	7	2315.72	$ 16,210.04
643-0010	FIELD FENCE WOVEN WIRE	LF	1720	7.98	$ 13,725.60
643-8200	BARRIER FENCE (ORANGE), 4 FT	LF	1000	1.36	$ 1,360.00
				SUBTOTAL:	$ 3,477,046.16
	LUMP ITEMS		COST		
	BRIDGE COST		$ 3,269,378.70		
	TRAFFIC CONTROL (10%)		$ 347,704.62		
	STRIPING / SIGNING (1%)		$ 34,770.46		
	EROSION CONTROL (5%)		$ 173,852.31		
				TOTAL COST:	$ 7,302,752.25

Preliminary ROW Cost Estimate

TRANSPORTATION INVESTMENT ACT
TIA PROGRAM MANAGEMENT

PI No. 0011373
Project Name: I-20 @ SR 47 - Alternate 2
Date: Enter Date of Estimate: February 24, 2016

Land and Improvements	Agriculture	Residential	Commercial	Industrial	Notes
Estimate ($/ac)	$0	$15,000	$35,000	$0	Enter Cost / Acre
Fee Simple Area (ac)	0.00	0.00	3.49	0.00	Enter Acreage
Fee Simple Estimate	$0	$0	$122,150	$0	CALCULATED FIELD
Perm Easement Area (ac)	0.00	0.00	0.74	0.00	Enter Acreage
Perm Easement Factor	0%	50%	50%	0%	Adjust Percentage as Appropriate
Perm Easement Estimate	$0	$0	$12,950	$0	CALCULATED FIELD
Temp Easement Area (ac)	0.00	0.00	0.00	0.00	Enter Acreage
Temp Easement Factor	0%	25%	25%	0%	Adjust Percentage as Appropriate
Temp Easement Estimate	$0	$0	$0	$0	CALCULATED FIELD
City Land Available for Swap (ac)	0.00	0.00	0.00	0.00	Enter Acreage (If required)
City Land Available for Swap Estimate	$0	$0	$0	$0	Enter Estimated Value (If required)
Proximity Damages	$0	$0	$0	$0	Enter Fees and Provide Notes as Appropriate
Consequential Damages	$0	$0	$0	$0	Enter Fees and Provide Notes as Appropriate
Cost to Cures	$0	$0	$0	$0	Enter Fees and Provide Notes as Appropriate
Improvements	$0	$0	$0	$0	Enter Fees and Provide Notes as Appropriate
Trade Fixtures	$0	$0	$0	$0	Enter Fees and Provide Notes as Appropriate
PROPERTY TYPE TOTALS	**$0**	**$0**	**$135,100**	**$0**	CALCULATED FIELD
	Land and Improvements Sub Total		**$135,100**		CALCULATED FIELD

Relocation	Quantity	Estimated Cost		Totals	
Residential Tenant (Qty of Tenants)	0	$30,000		$0	Adjust Qty / Costs as required
Residential Owner	0	$50,000		$0	Adjust Qty / Costs as required
Business Displacement (Qty)	0	$45,000		$0	Adjust Qty / Costs as required
Pro Rata Taxes	0	$1,000		$0	Adjust Qty / Costs as required
Prop Pin Replacement	0	$1,250		$0	Adjust Qty / Costs as required
PROPERTY TYPE TOTALS	**0**			**$0**	CALCULATED FIELD
	Relocation Sub Total		**$0**		CALCULATED FIELD

Valuation Services	Agriculture	Residential	Commercial	Industrial	
Appraisals (# of Parcels)	0	0	5	0	Adjust Parcels as required
Estimated Fee (per Parcel)	$0	$1,500	$1,500	$0	Enter Estimated Fee per Parcel
Total Appraisals	$0	$0	$7,500	$0	CALCULATED FIELD
Specialty Reports	$0	$0	$0	$0	Enter Estimated Costs and Provide Notes
Estimated Fees	$0	$0	$0	$0	Enter Estimated Fees and Provide Notes
PROPERTY TYPE TOTALS	**$0**	**$0**	**$7,500**	**$0**	CALCULATED FIELD
	Valuation Services Sub Total		**$7,500**		CALCULATED FIELD

Legal Services	Parcels	Estimated Fees		Totals	
Meeting with Attorney	5	$125		$625	Adjust Parcels / Fees as required (using best judgement)
Preliminary Titles	5	$200		$1,000	Adjust Parcels / Fees as required
Closing and Final Title	5	$300		$1,500	Adjust Parcels / Fees as required
Recording Fees	5	$50		$250	Adjust Parcels / Fees as required
Condemnation	1	$30,000		$30,000	Adjust Parcels / Fees as required
	Legal Services Sub Total		**$33,375**		CALCULATED FIELD

Administrative	Parcels	Man Hours/Parcel		Totals	
Pre-Acquisition	5	40		$10,000	Adjust Parcels / Fees as required
Acquisition	5	100		$25,000	Adjust Parcels / Fees as required
Administrative Appeals	1	50		$2,500	Calculates as 15% of Acq Parcel Count (Adjust if Necessary)
	Administrative Sub Total		**$37,500**		CALCULATED FIELD

Contingency					
Overall Contingency	20%	$42,695			Enter Percentage for Contingency (Default = 20%)

Total Estimated Costs **$256,170** CALCULATED FIELD

Updated 23Jan2015

PI 0011373 - I-20 @ US 221 Bridge Replacement - Concept Utility Estimate (Reimbursable)

April 4, 2016

GEORGIA POWER (TRANSMISSION)

ITEM NO	QUANTITY	UNIT	DESCRIPTION	UNIT PRICE	TOTAL COST
1	2	EA	Steel Lattice Tower Structures and Guys	$500,000.00	$1,000,000.00
2		Lump	Preliminary & Construction Engineering		**$20,000.00**
*** No Conflict with Structures or Guys					
				TOTAL COST	**$0.00**

GEORGIA POWER (DISTRIBUTION)

ITEM NO	QUANTITY	UNIT	DESCRIPTION	UNIT PRICE	TOTAL COST
1	4	EA	Wood Power Poles (located off R/W or spliltting R/W)	$20,000.00	$80,000.00
				TOTAL COST	**$80,000.00**

COLUMBIA COUNTY BROADBAND

ITEM NO	QUANTITY	UNIT	DESCRIPTION	UNIT PRICE	TOTAL COST
1	1000	LF	Install 144 CT FIBER (labor & material)	$2.45	$2,450.00
2	1000	LF	Relocate Fiber & Conduit	$6.00	$6,000.00
3	4	EA	Relocate Handhole	$1,000.00	$4,000.00
4	1000	LF	Directional Bore	$17.35	$17,350.00
5		Lump	Preliminary & Construction Engineering	$12,000.00	$12,000.00
				TOTAL COST	**$41,800.00**

CITY OF HARLEM WATER/SEWER

ITEM NO	QUANTITY	UNIT	DESCRIPTION	UNIT PRICE	TOTAL COST
1	165	LF	8" DIP water main	$85.00	$14,025.00
2	2	EA	Cap/Remove existing water main	$3,909.45	$7,818.90
				TOTAL COST	**$21,843.90**

COLUMBIA COUNTY PUBLIC WORKS

ITEM NO	QUANTITY	UNIT	DESCRIPTION	UNIT PRICE	TOTAL COST
1	0	LF	8" Sanitary Sewer	$0.00	$0.00
**No Conflict based on concept				**TOTAL COST**	**$0.00**

TOTAL PRELIMINARY REIMBURSABLE UTILITY COSTS FOR PI 0011373	$143,643.90
TOTAL (INCLUDING 10% INFLATION PER YEAR)	**$186,737.07**

NOTES:

1. NOT INCLUDED: EASEMENT REPLACEMENT COSTS FOR GEORGIA POWER TRANSMISSION, WHICH WILL BE INCLUDED IN THE RIGHT OF WAY ACQUISITION COSTS

2. TOTAL INCLUDES 10% PER YEAR COST INFLATION. FROM TIME OF ESTIMATE TO TIME OF LETTING.

I-20 Interchange at US 221

Ecology Mitigation Credit Estimate

Based on a preliminary screening of resources located along the proposed project corridor and concept level drawings, the following estimated cost for mitigation can be found in the table below. Once field delineations have been performed and design progresses, the amount of credits needed for the proposed project are subject to change along with the price per credit as market demand influences the per credit cost.

Table 1. Estimated Mitigation Cost

Credit Type	Estimated Credits	Estimated Cost
Stream	1,096	$62,746.00
Wetland	0.4	$8,400.00
	Total Estimated Mitigation Cost	**$71,146.00**

Please let me know if you have any questions or concerns.

Thanks,

Matt Chamblee

I-20 at US 221

Concept Hydrology Report

The proposed project is within a designated MS4 (Municipal Separate storm Sewer System) area and, as such, it is important that stormwater runoff from the project is evaluated to ensure that structures are put in place to reduce, treat, and/or minimize stormwater pollution. The purpose of this memo is to present a preliminary assessment of the existing drainage basin features within the project limits and to provide a general approach to ensuring this project meets GDOT MS4 requirements. Although this project is located within Columbia County, this is a GDOT funded project and, hence, GDOT MS4 guidelines will be followed for the design. That said, the details of the design will be coordinated with the County and GDOT as needed.

As of this date, site visits have been conducted and initial survey data collected to begin a preliminary hydrology study. Existing drainage basins have been delineated and will be finalized once additional survey features have been finalized. This report presents our field observations as well as our general approach to the MS4 design. Once the survey is finalized and a concept roadway layout is selected, the hydrology study will be refined and presented along with the cost estimate.

Existing Conditions

The project corridor runs approximately 3,000 LF along US221 / SR47, 1500' north and south from the I-20 interchange. The corridor includes the interchange ramps, and includes 1250' of a relocated Nature's Way. The interchange is a typical rural diamond interchange, with a 2-lane bridge over I-20, one-lane ramps, and a 2-lane undivided rural section for US 221.

There is one distinct watershed for the project area, as tributary to Hawes Branch, and ultimately, Kiokee Creek, runs through the project area. This tributary crosses US221 approximately 1100' south of the center of the interchange (8'X7' Box Culvert), running northwest, crossing the I-20 EB exit ramp (Double 5'X5' Box Culvert), the I-20 mainline, and the I-20 WB entrance ramp (Double 5'X5' Box Culverts) . All other sub-watersheds within the project area ultimately tie to this tributary, including two streams that cross under US221. Approximately 500' south of the center of the interchange, there is a small stream that crosses underneath US 221 (5'X4' Box Culvert). This stream drains a system of private ponds that are located southeast of the project area, and ties to the main tributary approximately 300' west of US221. The second stream crosses underneath US221 approximately 1200' north of the interchange (6'X6' Box Culvert). The other outfalls consist of roadside ditches along US221, Nature's Way (frontage road), the I-20 ramps, and along the I-20 mainline, all which flow either to the main tributary on the west side of the project, or to the culvert on the north side of the project.

Proposed MS4 Approach

The proposed roadway improvements call for additional impervious areas from the proposed roundabouts, a wider proposed bridge and approaches between the roundabouts, and wider approaches / exits. The total additional impervious area is approximately 4.6 acres. The existing impervious area is approximately 2.7 acres within the project area. Thus, the project will need to mitigate the 1.9 acres of additional impervious area and associated runoff. GDOT MS4 compliance

requires all stormwater runoff from new pavement areas be effectively treated and directed into structures that not only provide stormwater quality but also be evaluated to determine the control of stormwater quantity. To this end, GDOT has stipulated a number of preferred stormwater BMPs that are suitable for GDOT projects and they are as follows:

1. Filter Strips
2. Grass Channels
3. Enhanced Swales (dry & wet)
4. Infiltration Trenches
5. Detention Basins (dry & wet)
6. Stormwater Wetlands

Preliminary Project Specific MS4

Looking at this project specifically, there are several points of approach that will generally be followed when possible. First, existing drainage patterns will be maintained when the specific area or outfall allows. For instance, many of the current outfalls drain into existing ditch lines that were developed when the interchange was constructed. In these areas, the approach will be to conduct a pre and post analysis on these outfall ditches to determine the best course of action. We will analyze whether these existing ditches are candidates for MS4 improvements, such as treatment trains using a combination of filter strips, grassed channels, enhanced swales and infiltration trenches.

In addition, there is ample space between the ramps and I-20 (gore areas) to add detention ponds or other BMP's. Thus, we will review the existing and proposed grading, and proposed flows, to determine whether these are necessary and/or feasible. GDOT analyzes stormwater on a basin by basin basis and has exemptions for MS4 compliance. Specifically, an exemption that will be applicable in some areas of this project is where sheet flow will discharge from the project site.

The Mulkey team proposes to layout and design MS4 structures within the existing landscape maintaining existing drainage patterns.

GEORGIA DEPARTMENT OF TRANSPORTATION

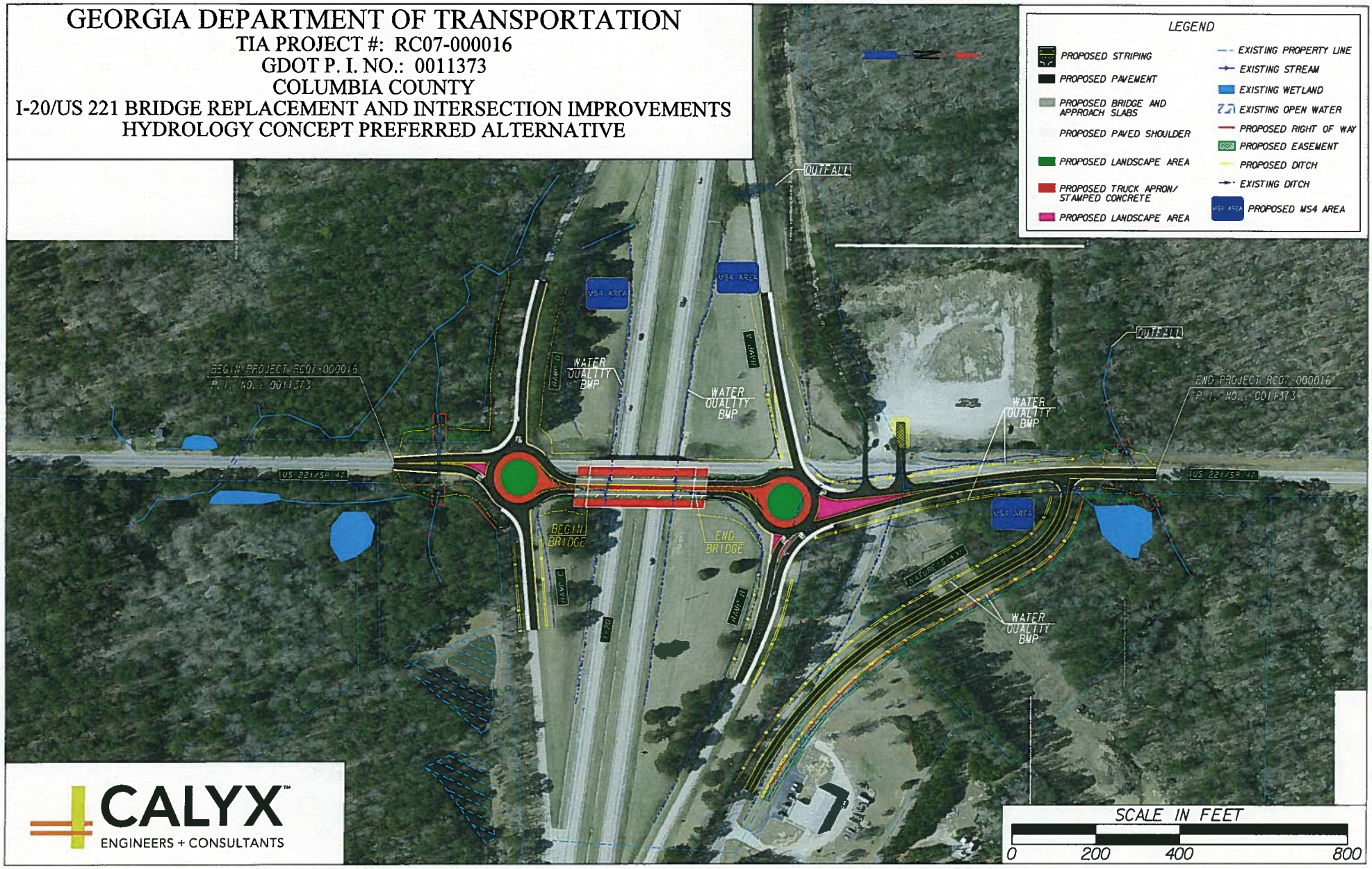
TIA PROJECT #: RC07-000016

GDOT P. I. NO.: 0011373

COLUMBIA COUNTY

I-20/US 221 BRIDGE REPLACEMENT AND INTERSECTION IMPROVEMENTS

HYDROLOGY CONCEPT PREFERRED ALTERNATIVE



CALYX™
ENGINEERS + CONSULTANTS

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e-mail: astone@mulkeyinc.com

KICKOFF MEETING: PMP and Minutes

I-20 at US 221 Interchange Improvement – TO #1
PI # 0011373

DATE: 1/8/16, 10:30 AM (follow up Conference Call on 1/12/16, 4pm)

SUBJECT: Kickoff Meeting

ATTENDEES:

George Brewer	TIA Project Manager
Eric Wilkinson	TIA Regional Coordination
Alex Stone	Mulkey
John Karnowski	Mulkey (meeting only)
Steve Exley	Columbia County – Engineering Manager
Randy Prickett	Columbia County – Traffic Director
Matt Schlachter	Columbia County – Engineering Director

Project Management Plan:

- **Introductions:**
  - **Team Members / Subconsultants:**
    - TIA Regional Coordinator – Eric Wilkinson
    - TIA Project Manager: George Brewer
    - Project Manager: Alex Stone – Mulkey
    - Lead Engineer: Ken McDuff - Mulkey
    - Survey / SUE: Junior Tunnell – Mulkey
    - Bridge Design: Robbie Frizzell – Moffat and Nichol
    - Environmental: Beau Marshall – Mulkey
    - Environmental / Archeology: Todd Hill – GT Hill Planners
    - Geotechnical: Peggy McGee - Ranger
  - **Stakeholders:**
    - Client – TIA Program Manager
    - Columbia County – TIA Sponsor

- **Project Description / Discussion:** Replacement of existing bridge on US 221 / SR 47 over I-20, and reconstruction of US 221 / SR 47 to improve sight distance at interchange. Ramp terminals and Nature's Way will be adjusted as necessary.

  - **Job Number / File Locations:**
    - GDOT PI Number 0011373
    - TIA Project Number – RC07-000016
    - Mulkey Project Numbers:
      - 2015152.00 – Master Contract - $1,000,000
      - 2015152.01 – Task Order #1: Concept Development and Survey Database ($189,000)
      - 2015152.02 – Task Order #2 (future)
    - Files are under: F:\Project\2015\2015152.00\

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KICKOFF MEETING: PMP and Minutes

I-20 at US 221 Interchange Improvement – TO #1
PI # 0011373

- **Phases:**
  - Phase 1: Concept Development
  - Phase 2: Database Preparation
  - Phase 3: Environmental Documentation
  - Phase 4: Preliminary Design
  - Phase 5: Right of Way Plans
  - Phase 6: Final Design

- **Scope of Work:**
  - **Conceptual Development (TO #1)**
    - Conceptual Development:
      - PM tasks, site visits, meetings
      - Concept Design (alignments, profiles, cross sections, sideroads)
      - Concept Layouts – 2 main alternates
      - Concept Report
      - Cost estimating
      - Environmental Screening
    - Deliverable – approved TIA Concept Report (March 2016)
  - **Database Preparation (TO #1)**
    - Survey Control
    - Property Survey
    - Topographic Survey
    - Hydro Surveys
    - Utility survey
  - **Environmental Documentation (future TO)**
    - Special studies – ecology / history / archeology
    - Environmental Documentation – GEPA Type B Document
    - Permitting – possible 404 permit
  - **Preliminary Design (future TO)**
    - Typical sections
    - Road Geometry
    - Drainage design
    - Driveway / sidestreet / I-20 Ramp tie-ins
    - Cross Sections and construction limits
    - Utility Coordination
    - Preliminary marking plans
    - Preliminary erosion layout
    - Staging / Staging Cross Sections (as necessary)

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        - Preliminary Bridge Layout
        - Soil Surveys
        - Construction Plan Sheets
        - Preliminary Cost estimates
        - Submittal for 60% review
    - **Right of Way Plans (future TO)**
        - Right of Way Plans
        - ROW Tables
        - Deed output
        - ROW Revisions
    - **Final Design (Future TO)**
        - Final Construction Plans
        - Quantities and Cost estimates
        - Final Signing and Marking Plans
        - Erosion Control Plans
        - Specifications / Special Provisions
        - Final submittal for bid
- **Milestones / Schedule:**
    - NTP – December 2015
    - Concept Development: December 2015 – March 2016
    - Preliminary Design / Environmental Documentation: April 2016 – September 2017
    - ROW Plan Approval: November 2017
    - Final Design: November 2017 – April 2018
    - Let to Construction: June 2018

- **Kickoff Meeting - Meeting Minutes / Discussion**
    - Attendees were introduced by George
    - Alex introduced the project and showed a pre-concept map of the project area, project team, possible alternates.
    - Alex stated the project would:
        - Improve the existing sight distance problem
        - Provide a 3-lane bridge with 8' shoulders.
        - Tie-ins with existing ramps and Nature's Way.
        - To fix the sight distance, the roadway will need to be re-graded to the north and the south for a significant distance (still to be developed).
    - Alex asked the County what their concerns / priorities were for the project:
        - Steve stated that the County wants to control access for future development around the interchange. This includes realignment of Nature's Way, preferably 1000' away.
        - Alex / John stated that 500-700' might be more feasible, 1000' would have to cross the creek at that location.

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- Steve stated that Larry Prather owns most of the properties in the area.
- The County would also like to have high mast lighting in the project.
- Eric stated that the project has $11 million for design, management, right of way, and construction. Approximately $9 million would be for the actual construction costs. The project can include any combination of elements as long as it stays within budget.
- Alex / John mentioned that Mulkey proposed roundabout intersections during the RFQ. The County was interested in this alternate and would like to include this as one of the main alternates studied in the concept.
- John stated that he developed an approved concept of a similar project at SR 211 at I-85 in Braselton. The concept included 3 roundabout intersections, two at the ramp terminal and one for the frontage road. This would allow the project to minimize grading, solve the sight distance issue and avoid relocation of Nature's Way.
- The County stated they would like to see Nature's Way relocated in either concept.
- The team discussed driveway / access management / permitting along US 221. George and Eric said that it would need to be permitted / coordinated through the GDOT District office.
- Alex / John said that a 3-lane bridge would not be necessary for the roundabout alternate.
- Steve said that he would need to verify with his supervisor, Mark, to see what the County would like to see at the bridge. They will follow up with Mulkey in the following week to discuss further.
- Steve will provide contact information to Mulkey for utility coordination and GIS.

- **Follow up conference call – meeting minutes / discussion**
  - Purpose of call to clarify the County's priorities and for them to better understand Mulkey's scope of work.
  - Alex stated the project's purpose – to replace the existing bridge structure and to improve the existing sight distance issues for the exit ramps.
  - Alex presented scope of work based on Friday's meeting – 1 alternate that would address the existing US 221 profile in order to improve sight distance and relocate the bridge structure; another alternate that would propose roundabouts at the ramp terminals to resolve sight distance issues. Both alternates would propose to relocate Nature's Way.
  - Matt stated that the County feels that this interchange is the future SR 388 interchange, and this TIA project was to construct as much bridge as possible in order to handle a future traffic needs and a much larger interchange. The budget numbers that were used for the project were similar to a full interchange upgrade. He said that land is being cleared for a new

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school, and sewer lines have been added in the area. This will spur residential development in the near future. The County predicts that their overall population will grow to 200,000 in the next 20 years, and most of that development will occur on the west side of the county, where this interchange is located. The TIA project gives the County the opportunity to get out ahead of the traffic needs.

- Thus, the County's priorities are as follows:
  - Fix the existing sight distance for the short-term solution.
  - Construct as much bridge width as possible (as budget allows) for a future 4-lane route and expanded interchange.
- Matt reiterated that the roundabout concept is a good alternate, and they would like to see the results, as long as the bridge width is still maximized and Nature's Way is relocated. Even though this alternate will not fully fix the sight distance, a future 4-lane project could improve the US 221 profile to meet standards, if necessary.
- Matt said that the County is not requesting any high mast lighting at the interchange.
- Alex said that the main problem with the intersection sight distance is the location of the bridge barrier in the way of the sight line. By constructing a wider bridge than necessary, this would alleviate the sight distance issues in the short term.
- The group agreed that if the road is widened long-term, the sight distance could be an issue as the barrier could be at the edge of pavement of a wider road.
- Alex (after the meeting was over) would like to reconsider this thought, as a four-lane roadway interchange would surely warrant signals at the ramp terminals, and thus the sight distance requirements would be greatly reduced for only right turns from the ramps to I-20 and would probably not be an issue.
- The group decided that traffic services is not necessary to justify the roundabouts and/or the ultimate bridge width at this time.

Project Sheet

Project Number: RC07-000016 ***Project Name:*** I-20/SR 221 Bridge Replacement and Intersection Improvements

GDOT ID: 0011373

Project Description: Bridge replacement and intersection safety improvements at the junction of I-20 and SR 221 and to correct sight distance issue.

Regional Commission: Central Savannah River Area

County: Columbia County

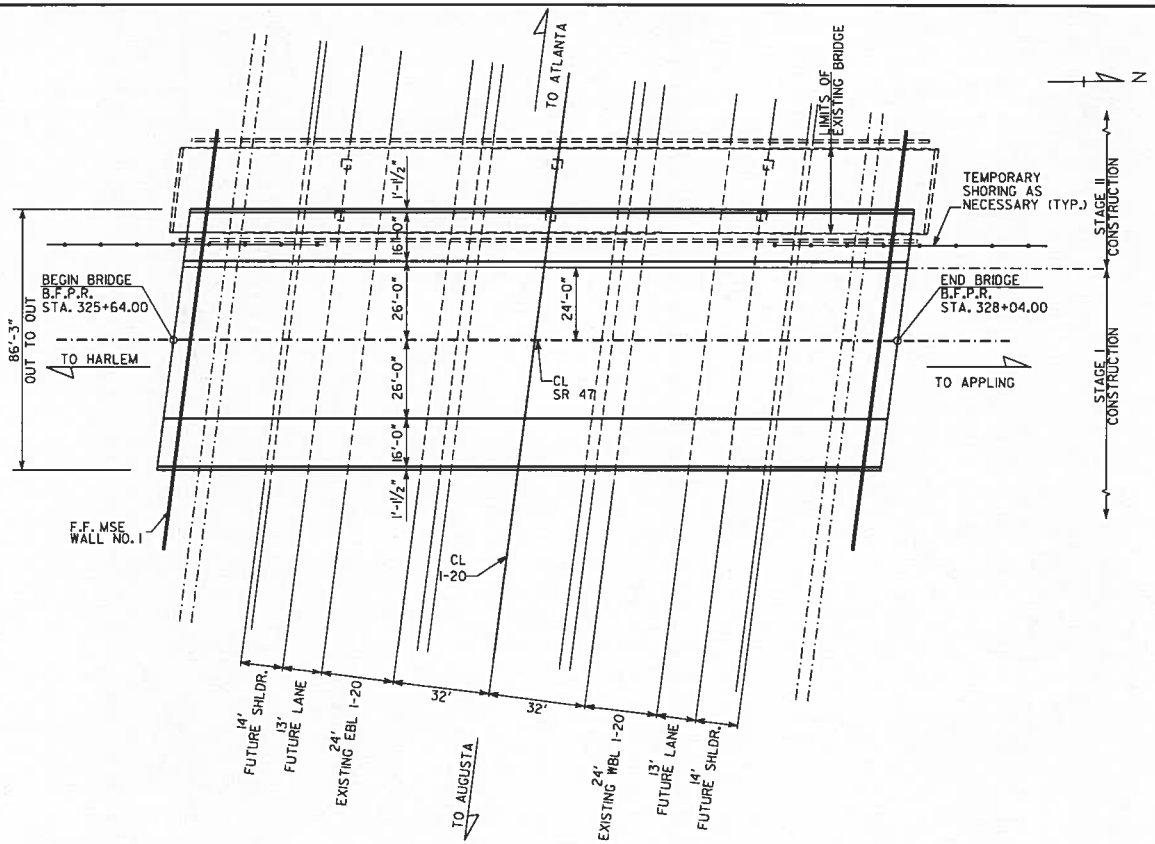
Phase	Total Project Cost	Total TIA Amount
PE	$1,000,000	$1,000,000
ROW	$40,000	$40,000
CST	$10,000,000	$10,000,000
Total	**$11,040,000**	**$11,040,000**

Comments (Please note all cost estimates are in 2011 dollars and actual costs for all phases at year of expenditure will be higher):

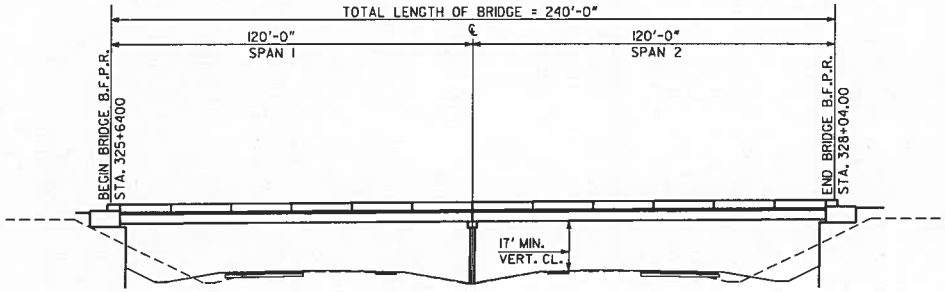
Public Benefit	Notes
Maximizing the value of Georgia's Assets	This project could potentially maximize the full utility of an existing transportation facility(s). In some cases, bypasses will be necessary. Example benefits could be: mitigating congestion (e.g. operational improvements) and optimizing capital asset management (e.g. resurfacing, rehabilitation). The impacts would apply to this roadway segment, corridor, and/or intersection.
Ensuring Safety and Security	This project would benefit the public by potentially reducing the incidence of crashes along this roadway segment, corridor, and/or intersection.
Additional Benefits	This project would benefit the public by replacing a structurally deficient bridge. This project will provide a safer bridge for drivers to pass over as well as a safer intersection with improved sight distances.

Project Location

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.	0011373		



PLAN



ELEVATION

BRIDGE NO. 1

moffatt & nichol

MOFFATT & NICHOL, INC.
1201 PEACHTREE STREET, NE
SUITE 1106
ATLANTA, GA 30361
404-205-8530

GEORGIA
DEPARTMENT OF TRANSPORTATION

CONCEPTUAL PLAN AND ELEVATION
SR 47/US 221 OVER
INTERSTATE 20

COLUMBIA COUNTY 0011373

SCALE: MARCH 2016

BRIDGE SHEET 35-

BY	REVISIONS	DATE

DESIGNED ____ CHECKED ____ REVIEWED ____
DRAWN ____ CODE7 LEADER ____ APPROVED ____

COLUMBIA COUNTY
GEORGIA
Board of Commissioners

Indication of Roundabout Support

Georgia Department of Transportation
ATTN: Eric Wilkerson
P O Box 8
Tennille, GA 31089

Location

The Board of Commissioners in Columbia County supports the consideration of a roundabout at the location specified below.

Local Street Names: Appling Harlem Road at I-20 interchange

State/County Route Numbers: SR 47/US 221 at I-20

Associated Conditions

In the event that the roundabout is selected as the preferred concept alternative, the undersigned agrees to participate in the following maintenance of the intersection.

- The full and entire cost of the electric energy used for any lighting installed (if need)

Upon approval of the concept, we agree to participate in a formal Local Government Lighting Project Agreement during the preliminary design phase. This indication of support is submitted and all of the conditions are hereby agreed to. The undersigned are duly authorized to execute this agreement.

This 19 day of April /2016

By: [signature]

Title: Chairman

Attest:

[signature]
Deputy Clerk