

**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA**

**OFFICE OF DESIGN POLICY & SUPPORT
INTERDEPARTMENTAL CORRESPONDENCE**

FILE P.I. # 0007528 **OFFICE** Design Policy & Support
CSHPP-0007-00(528)
Greene County
GDOT District 2 - Tennille **DATE** 2/10/2015
I-20 at CR 178/Carey Station Road

FROM  Brent Story, State Design Policy Engineer

TO SEE DISTRIBUTION

SUBJECT APPROVED CONCEPT REPORT

Attached is the approved Concept Report for the above subject project.

Attachment

DISTRIBUTION:

Glenn Bowman, Director of Engineering
Joe Carpenter, Director of P3/Program Delivery
Genetha Rice-Singleton, Assistant Director of P3/Program Delivery
Albert Shelby, State Innovative Delivery Engineer
Bobby Hilliard, Program Control Administrator
Cindy VanDyke, State Transportation Planning Administrator
Hiral Patel, State Environmental Administrator
Ben Rabun, State Bridge Engineer
Andrew Heath, State Traffic Engineer
Angela Robinson, Financial Management Administrator
Lisa Myers, State Project Review Engineer
Charles "Chuck" Hasty, State Materials Engineer
Mike Bolden, State Utilities Engineer
Richard Cobb, Statewide Location Bureau Chief
Jimmy Smith, District Engineer
Neal O'Brien, District Preconstruction Engineer
Jaime Lindsey, District Utilities Engineer
Eric Wilkinson, Project Manager
BOARD MEMBER - 7th Congressional District

**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
PROJECT CONCEPT REPORT**

Project Type:	<u>Interchange</u>	P.I. Number:	<u>0007528</u>
GDOT District:	<u>District 2</u>	County:	<u>Greene</u>
Federal Route Number:	<u>I-20</u>	State Route Number:	<u>SR 402</u>
	Project Number:	<u>CSHPP-0007-00(528)</u>	

The proposed project consists of a new diamond interchange at I-20 and CR 178/Carey Station Road in Greene County. The project includes a new, 2-lane bridge on Carey Station Road over I-20, as well as 1.6 miles of relocated roadway.

Submitted for approval:

<u>OG Jenkins</u> Consultant Designer & Firm	McGee Partners, Inc.	<u>11/13/14</u> DATE
<u>Albert Shelby</u> State Program Delivery Engineer	<u>BNA</u>	<u>11/18/14</u> DATE
<u>Eric Williams</u> GDOT Project Manager		<u>11/13/14</u> DATE

Recommendation for approval:

* <u>HIRAL PATEL</u> State Environmental Administrator	<u>12/1/2014</u> DATE
* <u>KATHY ZAHUL</u> State Traffic Engineer	<u>12/10/2014</u> DATE
* <u>LISA MYERS</u> Project Review Engineer	<u>11/25/2014</u> DATE
* <u>JUD BIRNKAMMER</u> State Utilities Engineer	<u>12/1/2014</u> DATE
* <u>NEAL O'BRIEN</u> District Engineer	<u>11/25/2014</u> DATE
* <u>BEN LABUN</u> State Bridge Design Engineer	<u>1/5/2015</u> DATE

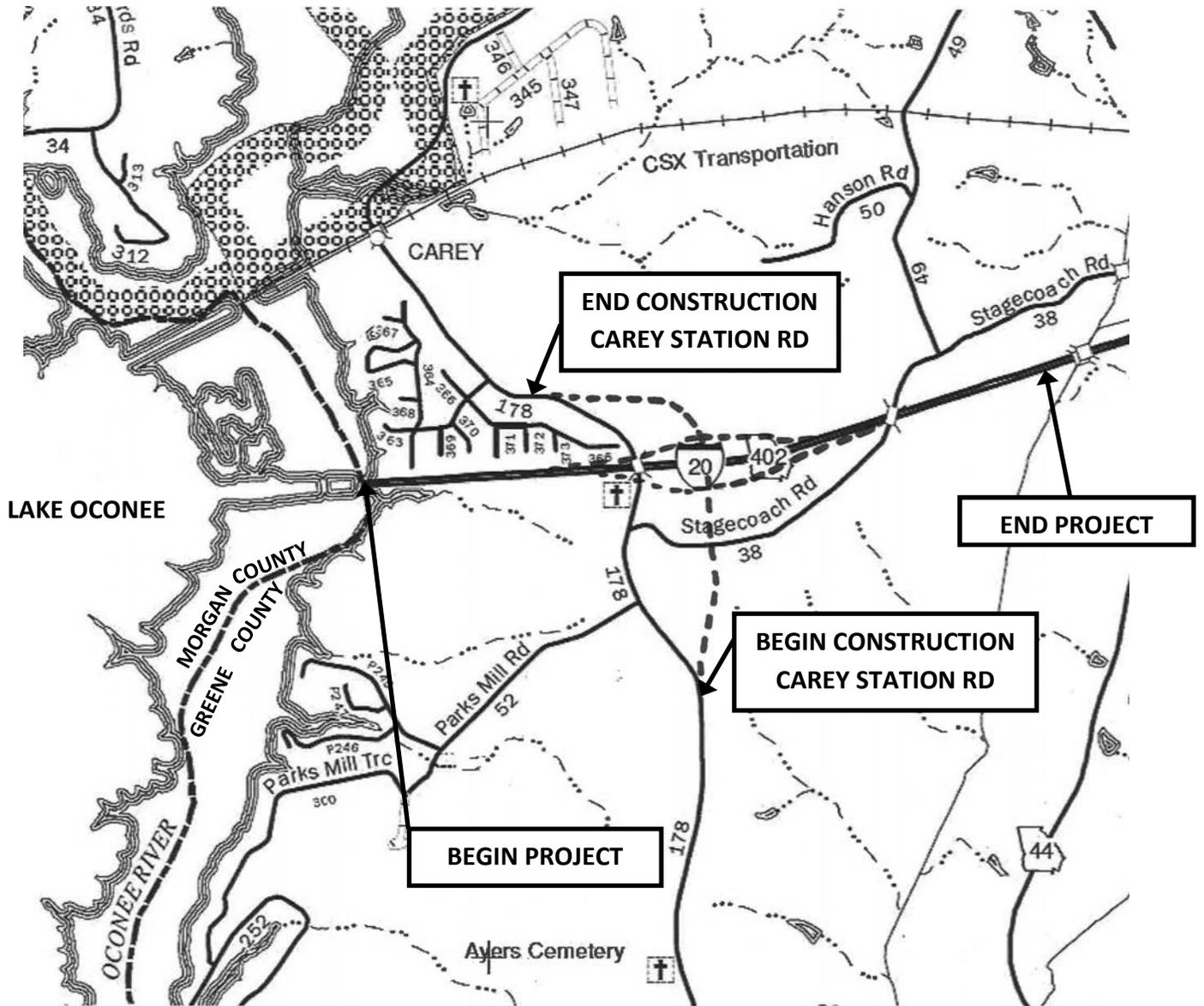
- MPO Area: This project is consistent with the MPO adopted Regional Transportation Plan (RTP)/Long Range Transportation Plan (LRTP).
- Rural Area: This project is consistent with the goals outlined in the Statewide Transportation Plan (SWTP) and/or is included in the State Transportation Improvement Program (STIP).

* <u>CYNTHIA L. VANDUKS</u> State Transportation Planning Administrator	<u>1/9/2015</u> DATE
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* RECOMMENDATION ON FILE - OG Jenkins

County: Greene

PROJECT LOCATION MAP



County: Greene

PLANNING AND BACKGROUND

Project Justification Statement:

CR 178/Carey Station Road is a two-lane north-south roadway classified as a rural major collector that is grade separated over I-20 in east central Georgia, between Atlanta and Augusta. CR 178/ Carey Station Road ultimately connects to SR 12/US 278 to the north and SR 44 to the south. There is no access to I-20 from Carey Station Road. CR 178/Carey Station Road is not listed as a designated bike route in the statewide Bicycle Plan.

In 2006, Greene County requested a study to examine the feasibility of a new I-20 access break at Carey Station Road. The proposed project was included as a recommendation in the Greene County Transportation Plan that the County adopted in 2007. An Interchange Feasibility Study (IFS) was later completed that cited the project as feasible and recommended that an Interchange Justification Report (IJR) could be pursued. An IJR study was subsequently completed and submitted to the Federal Highway Administration, who approved the IJR's request for an access break on August 30, 2011.

Citing year 2007 and 2035 traffic volumes, the IJR did not identify current or future traffic congestion or operational issues in the area. Analysis of the last three years of available crash data along CR 178/Carey Station Road in the area of I-20 revealed crash rates above the corresponding statewide average.

The main need identified by the IJR was for improved access and additional routing options to accommodate increasing residential, commercial and recreational traffic accessing the Interstate in that area of I-20. The proposed new access break would enhance the transportation system in the Lake Oconee region. Additionally, it would reduce vehicular travel times in the region by providing increased travel route options and improved access to the Lake Oconee region as a whole.

Based on this information, the proposed interchange accommodates the primary identified purpose of this project of providing improved access and additional routing options for the increasing residential and commercial traffic accessing I-20 and the Lake Oconee region in Greene County.

Existing conditions: Carey Station Road is currently a rural, two-lane roadway that crosses over I-20 just east of Lake Oconee. I-20 is four lanes with a 44' depressed median. There are two intersections on Carey Station Road south of the bridge over I-20, including Stagecoach Road and Parks Mill Road. The existing 265' bridge on Carey Station Road was built in 1967.

Other projects in the area: PI 0006252, SR 44 from West US 441 Bypass to CR 54/Linger Longer Road; PI 0006253, SR 44 from CR 54/Linger Longer Road to East Greensboro Bypass

MPO: N/A - Project not in MPO

TIP #: N/A

TIA Regional Commission: Northeast Georgia RC

Congressional District(s): 10

Federal Oversight: PoDI Exempt State Funded Other

Projected Traffic: ADT

I-20:

Current Year (2012): 10,475 Open Year (2020): 14,150 Design Year (2040): 25,500 24 HR T: 9%

Carey Station Road:

Current Year (2012): 625 Open Year (2020): 5,500 Design Year (2040): 9,950 24 HR T: 5%

Traffic Projections Performed by: GDOT Office of Planning

Functional Classification (Mainline): Rural Interstate Principal Arterial

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

Warrants met: None Bicycle Pedestrian Transit

Is this a 3R (Resurfacing, Restoration, & Rehabilitation) Project?

No Yes

Pavement Evaluation and Recommendations

Preliminary Pavement Evaluation Summary Report Required? No Yes

Preliminary Pavement Type Selection Report Required? No Yes

Feasible Pavement Alternatives: HMA PCC HMA & PCC

DESIGN AND STRUCTURAL

Description of the proposed project: The proposed project is a new, grade-separated diamond interchange at I-20 and Carey Station Road. A new bridge will be located 1300 feet east of the existing bridge, which will be removed. The project includes a new, 2-lane bridge on Carey Station Road over I-20, tapered entrance and exit ramps with roundabouts at each intersection with Carey Station Road, two cul-de-sacs adjacent to the existing bridge, and 1.6 miles of relocated roadway. The center of the proposed interchange is approximately 1.2 miles east of Lake Oconee, which serves as the county line between Morgan County and Greene County.

Major Structures:

Structure	Existing	Proposed
Structure ID: 133-0021-0; Carey Station Road over I-20	265' long; Two existing 11' lanes; 2' shoulders; 26' total horizontal clearance; 80.76 sufficiency rating; Existing bridge will be removed.	340' long; Two 12' lanes; 8' shoulders; 40' total horizontal clearance

Mainline Design Features: I-20, Rural Interstate Principal Arterial

Feature	Existing	Standard*	Proposed
Typical Section			
- Number of Lanes	4	4	4
- Lane Width(s)	12'	12'	12'
- Median Width & Type	44' depressed	44' depressed	44' depressed
- Outside Shoulder or Border Area Width	12'	12'	12'
- Outside Shoulder Slope	4%	4%	4%
- Inside Shoulder Width	10'	10'	10'
- Sidewalks	N/A	N/A	N/A
- Auxiliary Lanes	N/A	N/A	N/A
- Bike Lanes	N/A	N/A	N/A
Posted Speed	70		70
Design Speed	70	70	70
Min Horizontal Curve Radius	5729'	N/A	5729'
Maximum Superelevation Rate	8%	8%	8%
Maximum Grade	2.92%	N/A	2.92%
Access Control	Full	Full	Full
Design Vehicle	WB-67	WB-67	WB-67
Pavement Type	Concrete	Concrete	Concrete
<i>Additional Items as warranted</i>			

Design Features: Interchange Entrance/Exit Ramps

Feature	Existing	Standard*	Proposed
Typical Section			
- Number of Lanes	N/A		1
- Lane Width(s)	N/A	16'	16'
- Median Width & Type	N/A	N/A	N/A
- Outside Shoulder or Border Area Width	N/A	12'	12'
- Outside Shoulder Slope	N/A	4%	4%
- Inside Shoulder Width	N/A	8'	8'
- Sidewalks	N/A	N/A	N/A
- Auxiliary Lanes	N/A	N/A	N/A
- Bike Lanes	N/A	N/A	N/A
Posted Speed	N/A		55
Design Speed	N/A	55	55
Min Horizontal Curve Radius	N/A	960	960
Maximum Superelevation Rate	N/A	8%	8%
Maximum Grade	N/A	5%	4%
Access Control	N/A	Full	Full
Design Vehicle	N/A	WB-67	WB-67
Pavement Type	N/A	N/A	Concrete
<i>Additional Items as warranted</i>			

Roadway Design Features: CR 178/Carey Station Road, Rural Major Collector

Feature	Existing	Standard*	Proposed
Typical Section			
- Number of Lanes	2	2	2
- Lane Width(s)	11'	12'	12'
- Median Width & Type	N/A	N/A	N/A
- Outside Shoulder or Border Area Width	4'	8'	10'
- Outside Shoulder Slope	6%	6%	6%
- Inside Shoulder Width	N/A	N/A	N/A
- Sidewalks	N/A	N/A	N/A
- Auxiliary Lanes	N/A	N/A	N/A
- Bike Lanes	N/A	N/A	N/A
Posted Speed	50		50
Design Speed	50	50**	50
Min Horizontal Curve Radius	780	758	758
Maximum Superelevation Rate	8%	8%	8%
Maximum Grade	4.9%	7%	5.9%
Access Control	By Permit	By Permit	Full/Permit
Design Vehicle	SU	SU	SU
Pavement Type	Asphalt	Asphalt	Asphalt/Concrete
<i>Additional Items as warranted</i>			

* According to current GDOT design policy if applicable

** AASHTO minimum for a rural, major collector with over 2000 AADT is 50 mph; GDOT Design Policy Manual lists 55 mph as typical for a rural collector

Major Interchanges/Intersections: Proposed interchange at I-20 and CR 178/Carey Station Road, including roundabouts at both ramp intersections with Carey Station Road

Lighting required: No Yes

Need lighting commitment letter from Greene County to cover the cost of lighting for the interchange and the roundabouts.

Off-site Detours Anticipated: No Undetermined Yes

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:

FHWA/AASHTO Controlling Criteria	No	Undeter- mined	Yes	Appvl Date (if applicable)
1. Design Speed	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2. Lane Width	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3. Shoulder Width	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4. Bridge Width	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5. Horizontal Alignment	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6. Superelevation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7. Vertical Alignment	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
8. Grade	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
9. Stopping Sight Distance	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10. Cross Slope	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11. Vertical Clearance	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
12. Lateral Offset to Obstruction	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13. Bridge Structural Capacity	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Design Variances to GDOT Standard Criteria anticipated:

GDOT Standard Criteria	Reviewing Office	No	Undeter-- mined	Yes	Appvl Date (if applicable)
1. Access Control/Median Openings	DP&S	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2. Intersection Sight Distance	DP&S	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3. Intersection Skew Angle	DP&S	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4. Lateral Offset to Obstruction	DP&S	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5. Rumble Strips	DP&S	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6. Safety Edge	DP&S	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7. Median Usage	DP&S	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
8. Roundabout Illumination Levels	DP&S	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
9. Complete Streets	DP&S	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10. ADA & PROWAG	DP&S	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11. GDOT Construction Standards	DP&S	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
12. GDOT Drainage Manual	DP&S	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13. GDOT Bridge & Structural Manual	Bridges	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

VE Study anticipated: No Yes Completed – Date:

UTILITY AND PROPERTY

Temporary State Route needed: No Yes Undetermined

A temporary state route will need to be established along Carey Station Road from approximately 0.5 miles south of Parks Mill Road to about 0.3 miles east of Choo Choo Drive, for a distance of 1.6 miles.

Railroad Involvement: None

Utility Involvements:

- Telecom – AT&T
- Power Distribution – Georgia Power
- Water – Piedmont Water Company
- Power – Rayle EMC

SUE Required: No Yes Undetermined

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

Right-of-Way (ROW): **I-20:** Existing width: 300-345 ft Proposed width: 300-1000 ft
Carey Station Rd: Existing width: 80-115 ft Proposed width: 80 ft (typical)
Required Right-of-Way anticipated: None Yes Undetermined
Easements anticipated: None Temporary Permanent Utility Other
Anticipated total number of impacted parcels: 63
Displacements anticipated: Businesses: 0
Residences: 0
Other: 0
Total Displacements: 0

Location and Design approval: Not Required Required

ROUNDBABOUTS

Roundabout Lighting Agreement/Commitment Letter received: No Yes

Roundabout Planning Level Assessment: N/A

Roundabout Feasibility Study: Study has been prepared. An analysis of roundabouts has been addressed in the operational analysis memo. Roundabouts are appropriate at this interchange for multiple reasons. The interchange is new location, so an existing traffic pattern will not need to be modified. The cost of constructing roundabouts at the intersections will be similar to that of conventional intersections. The cost of lighting the roundabouts will be covered by the proposed agreement between GDOT and Greene County. Finally, the capacity of the roundabouts is double the design year traffic values.

Roundabout Peer Review Required: No Yes Completed – Date:

CONTEXT SENSITIVE SOLUTIONS

Issues of Concern: The Moore’s Chapel Baptist Church and cemetery is located adjacent to existing Carey Station Road, just south of the existing bridge over I-20.

Context Sensitive Solutions Proposed: The proposed interchange shifts the bridge on Carey Station Road approximately 1300 feet to the east to avoid impacting the church or cemetery. The proposed construction limits for the exit ramp off I-20 onto Carey Station Road are within the existing right of way for the interstate adjacent to the church and cemetery.

ENVIRONMENTAL & PERMITS

Anticipated Environmental Document:

GEPA: NEPA: CE EA/FONSI EIS

MS4 Permit Compliance – Is the project located in a MS4 area? No Yes

Environmental Permits/Variations/Commitments/Coordination anticipated:

Permit/ Variance/ Commitment/ Coordination Anticipated	No	Yes	Remarks
1. U.S. Coast Guard Permit	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. Forest Service/Corps Land	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3. CWA Section 404 Permit	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
4. Tennessee Valley Authority Permit	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5. Buffer Variance	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
6. Coastal Zone Management Coordination	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
7. NPDES	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
8. FEMA	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
9. Cemetery Permit	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
10. Other Permits	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
11. Other Commitments	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
12. Other Coordination	<input type="checkbox"/>	<input checked="" type="checkbox"/>	USFWS Coordination Act / DNR

Is a PAR required? No Yes Completed – Date:

Environmental Comments and Information:

NEPA/GEPA: An Environmental Assessment/Finding of No Significant Impact is anticipated due to change in access to the interstate system. NEPA document preparation pending completion of special studies.

Ecology: Ecology Resource Report complete and final copies submitted. One open water, 9 intermittent streams, 1 perennial stream, and 1 wetland identified. No protected species or suitable habitat identified. Ecology Assessment of Effect Report pending preliminary design.

History: Historic Resources Survey Report is complete. No eligible properties were identified within the project limits.

Archeology: Search of the Georgia Site Files identified 20 previously recorded sites within 1 kilometer of the project. One was eligible, one not eligible, and the remaining 18 of unknown eligibility. There is a high potential for precontact and historic archaeological resources to be present. A Phase I archaeological survey will be conducted. Survey pending preliminary plans. Moores Chapel cemetery is adjacent to Carey Station Road. Impacts to the cemetery are not anticipated, but given the age and maintenance of the cemetery, unmarked grave sites are possible.

Air Quality:

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

County: Greene

Noise Effects: A Type I Noise Assessment in accordance with GDOT Noise Abatement Policy is anticipated. The assessment is pending preliminary design and traffic studies.

Public Involvement: A PIOH is anticipated, along with a PHOH prior to submittal of the FONSI.

Major stakeholders: US Army Corps of Engineers, Greene County, City of Greensboro, Reynolds Plantation, Ironwood Family Holdings

CONSTRUCTION

Issues potentially affecting constructability/construction schedule: None.

Early Completion Incentives recommended for consideration: No Yes

COORDINATION, ACTIVITIES, RESPONSIBILITIES, AND COSTS

Initial Concept Meeting: July 18, 2014

Concept Meeting: October 20, 2014

Other coordination to date:

- Key Stakeholder Meetings – Meeting at Reynolds Plantation, April 15, 2014; Meeting with Jamie Reynolds, III (Ironwood Family Holdings), May 20, 2014

Project Activity	Party Responsible for Performing Task(s)
Concept Development	McGee Partners
Design	GDOT Consultant
Right-of-Way Acquisition	GDOT
Utility Relocation	Utility Companies
Letting to Contract	GDOT
Construction Supervision	GDOT
Providing Material Pits	Contractor
Providing Detours	Contractor
Environmental Studies, Documents, & Permits	GDOT Consultant
Environmental Mitigation	GDOT
Construction Inspection & Materials Testing	GDOT

Project Cost Estimate Summary and Funding Responsibilities:

	Breakdown of PE	ROW	Reimbursable Utility	CST*	Environmental Mitigation	Total Cost
Funded By	GDOT	GDOT/Greene County	Greene County	Greene County	GDOT	
\$ Amount	\$1,898,000	\$6,784,000	\$200,881	\$18,064,000	\$262,972	\$27,209,853
Date of Estimate	1/25/2012	10/15/2014	10/20/2014	10/20/2014	10/20/2014	

*CST Cost includes: Construction, Engineering and Inspection, and Liquid AC Cost Adjustment.

ALTERNATIVES DISCUSSION

Preferred Alternative: New Interchange at I-20 and Carey Station Road			
Estimated Property Impacts:	10	Estimated Total Cost:	\$27,209,853
Estimated ROW Cost:	\$6,784,000	Estimated CST Time:	24 months
Rationale: The preferred alternative meets the project goals of providing improved access and additional routing options for the increasing residential and commercial traffic accessing I-20 and the Lake Oconee region in Greene County.			

No-Build Alternative:			
Estimated Property Impacts:	None	Estimated Total Cost:	\$ 0
Estimated ROW Cost:	\$ 0	Estimated CST Time:	N/A
Rationale: This alternative was not selected as it does not accomplish the goals of the project.			

Comments:

LIST OF ATTACHMENTS/SUPPORTING DATA

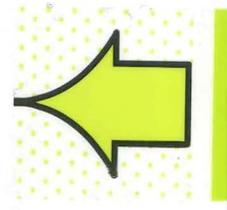
1. Concept Layout
2. Typical sections
3. Detailed Cost Estimates:
 - a. Construction including Engineering and Inspection
 - b. Completed Fuel & Asphalt Price Adjustment forms
 - c. Right-of-Way
 - d. Utilities
 - e. Environmental Mitigation (EPD, etc)
4. Traffic Diagrams
5. Traffic Analysis Summary, Including Roundabout Analysis and Freeway Operations Analysis
6. Indication of Roundabout Support (Lighting Commitment)
7. Pavement Type Selection – Email memo from GDOT Office of Materials & Testing, June 2014
8. Minutes of Initial Concept Meeting – July 18, 2014
9. Minutes of Concept Meeting – October 20, 2014

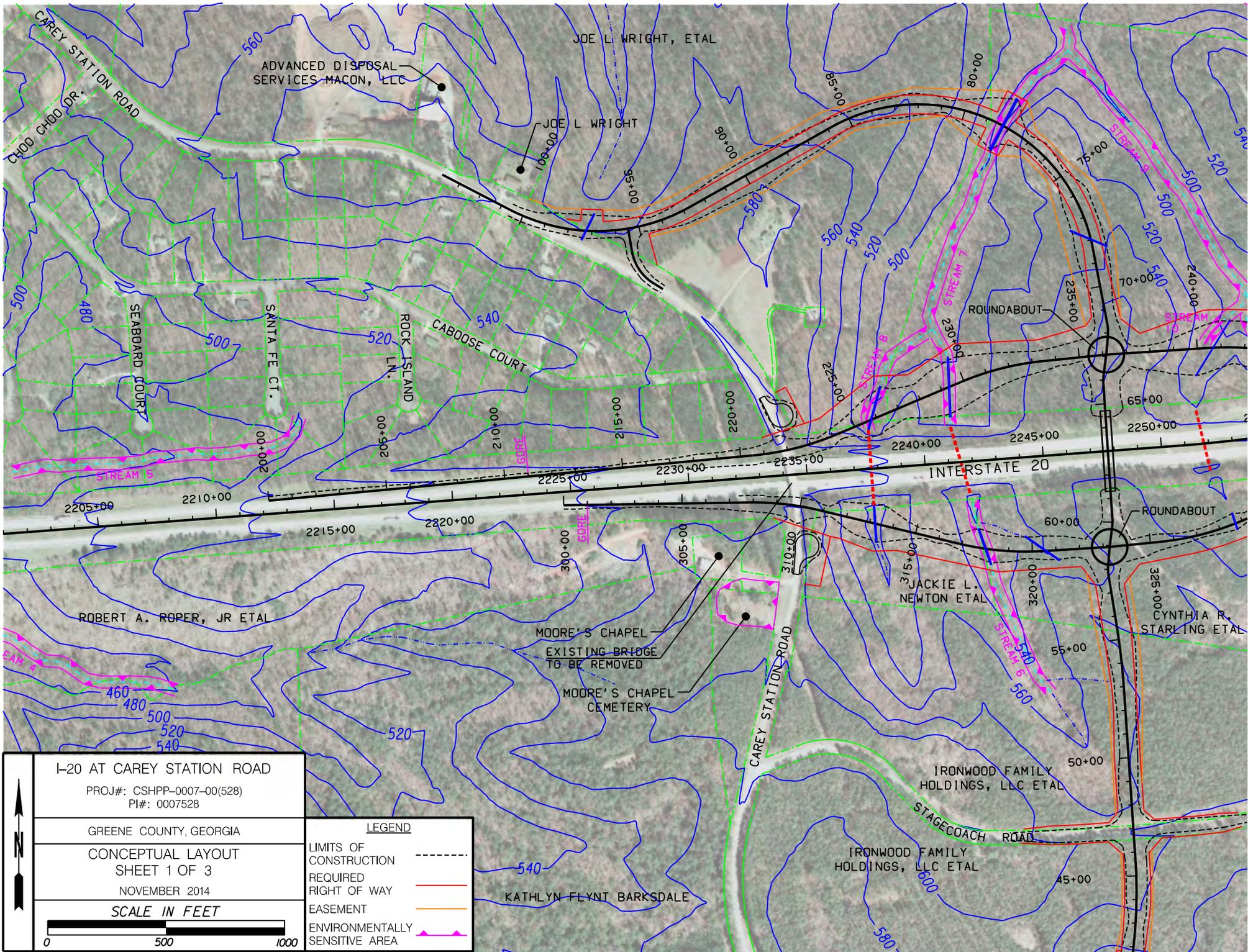
APPROVALS

Concur: 
Director of Engineering

Approve: 
Chief Engineer

2/2/15
Date



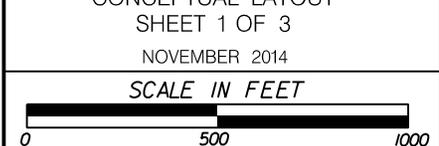


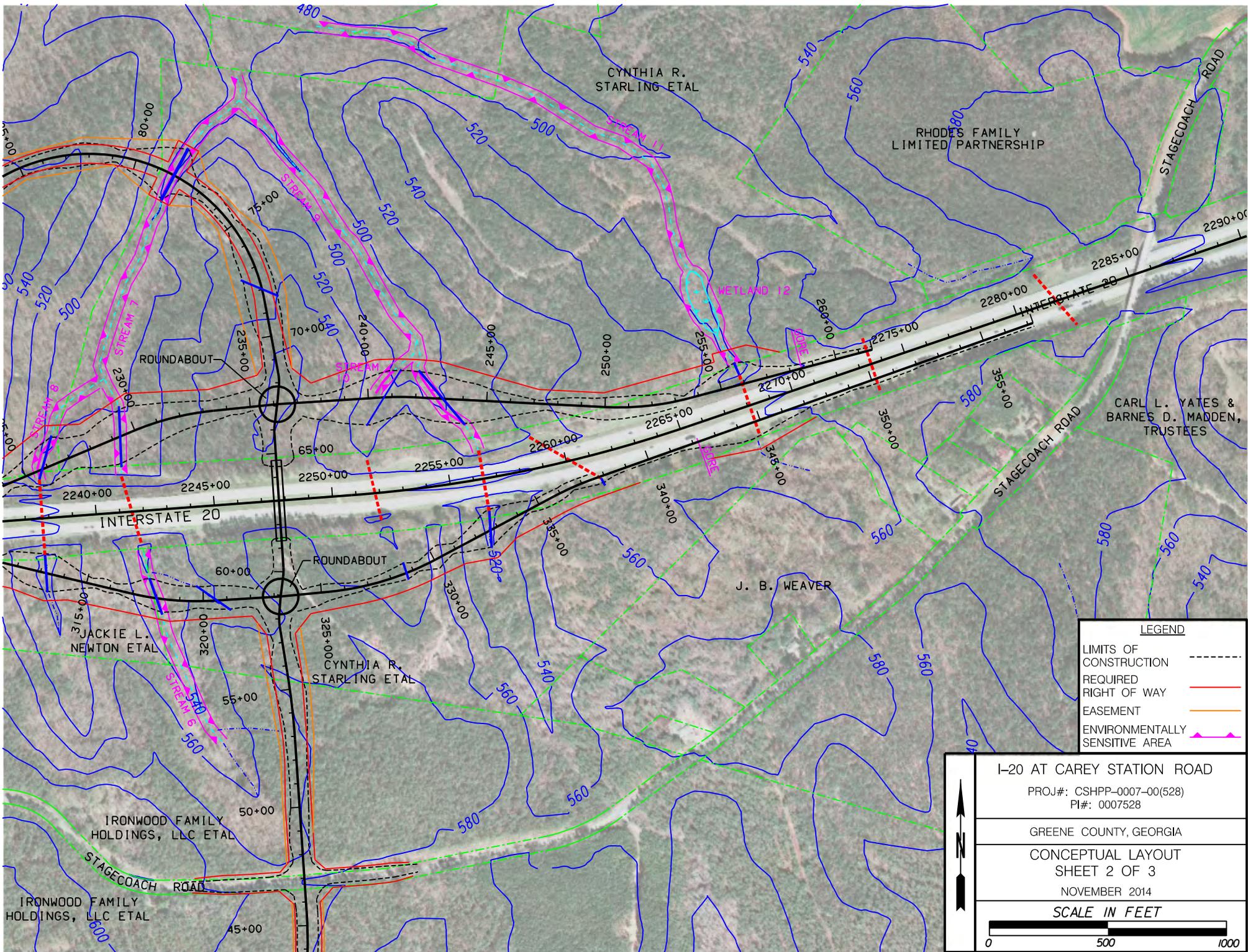
I-20 AT CAREY STATION ROAD
 PROJ#: CSHPP-0007-00(528)
 PI#: 0007528

GREENE COUNTY, GEORGIA
 CONCEPTUAL LAYOUT
 SHEET 1 OF 3
 NOVEMBER 2014

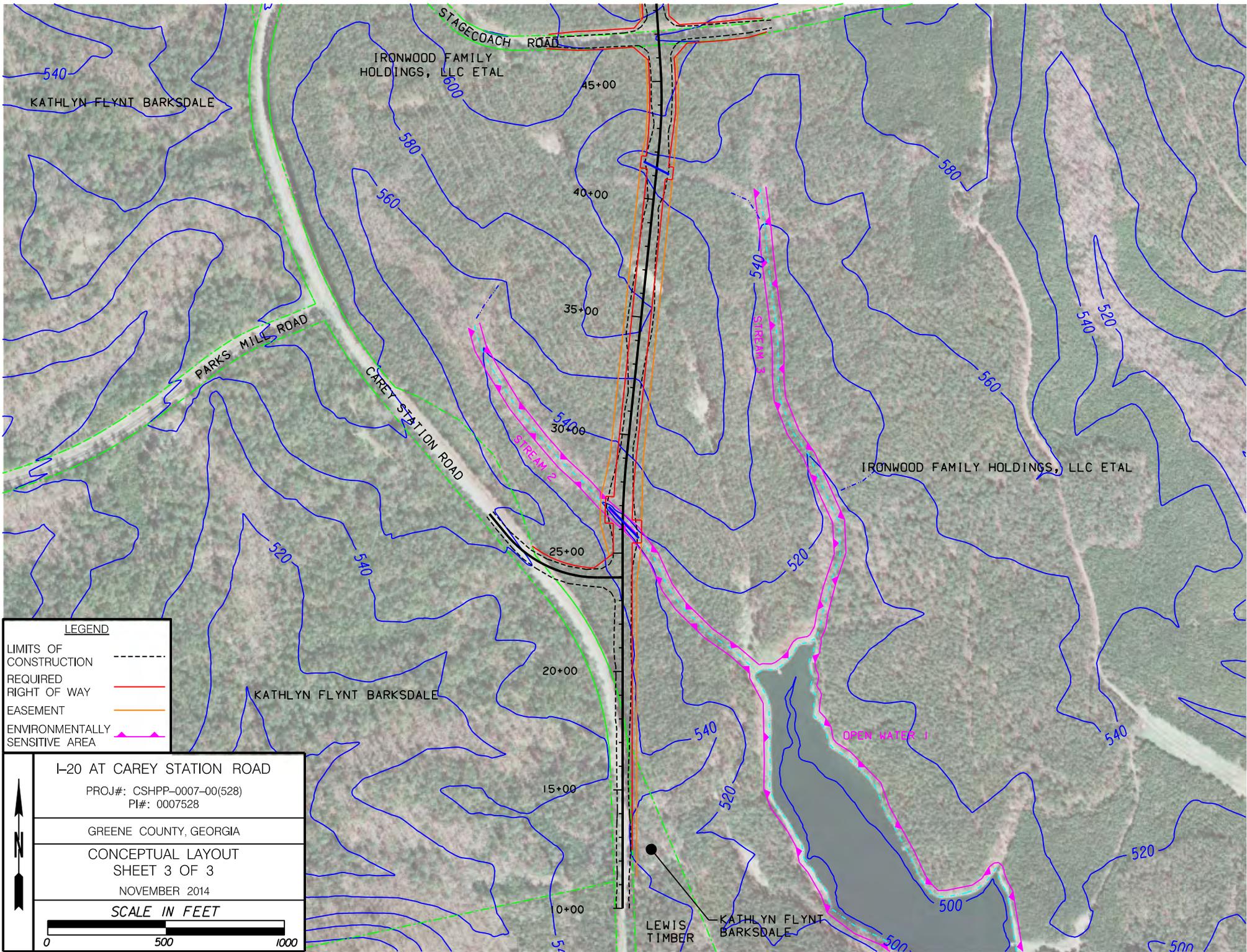
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LEGEND	
LIMITS OF CONSTRUCTION	-----
REQUIRED RIGHT OF WAY	-----
EASEMENT	-----
ENVIRONMENTALLY SENSITIVE AREA	-----





	I-20 AT CAREY STATION ROAD PROJ#: CSHPP-0007-00(528) PI#: 0007528
	GREENE COUNTY, GEORGIA CONCEPTUAL LAYOUT SHEET 2 OF 3 NOVEMBER 2014
SCALE IN FEET 	



LEGEND

- LIMITS OF CONSTRUCTION
- REQUIRED RIGHT OF WAY
- EASEMENT
- ENVIRONMENTALLY SENSITIVE AREA

I-20 AT CAREY STATION ROAD

PROJ#: CSHPP-0007-00(528)
PI#: 0007528

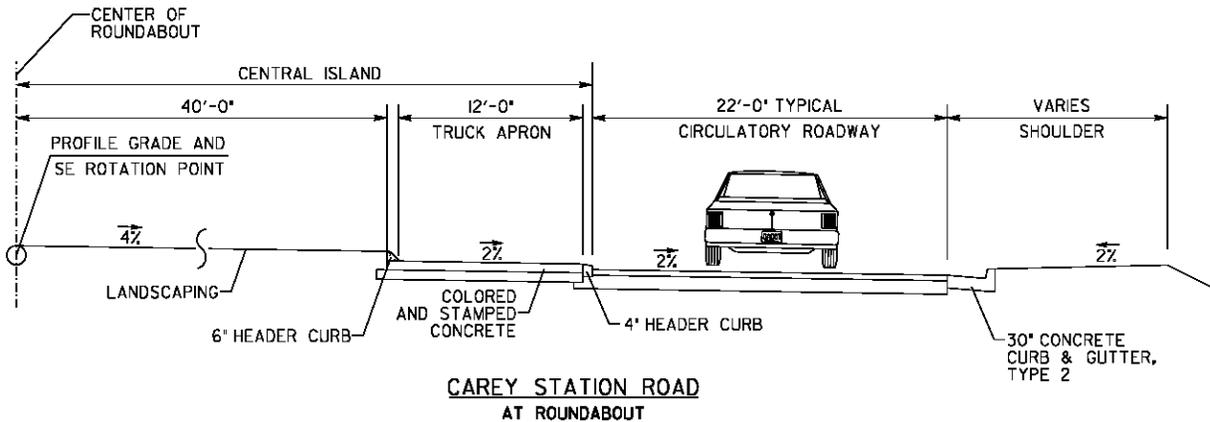
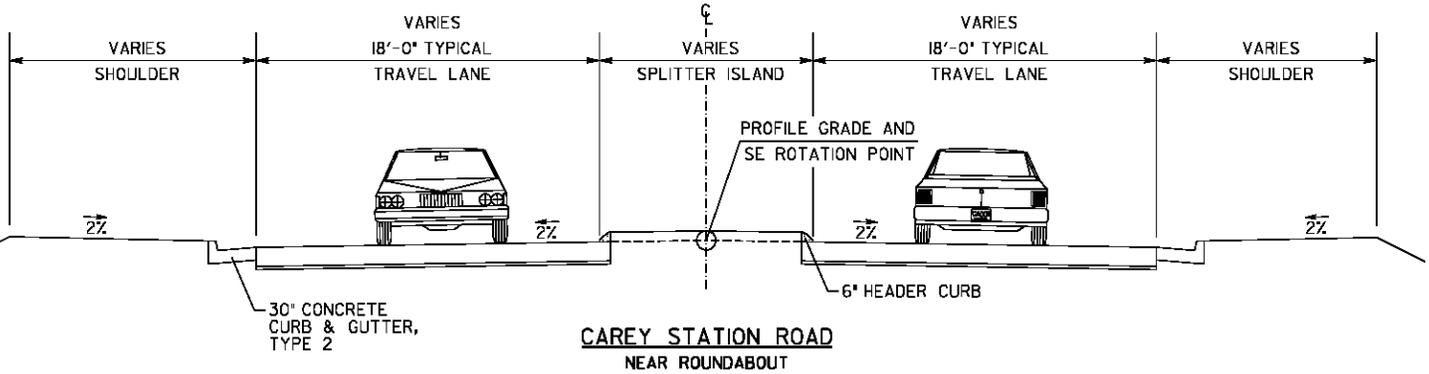
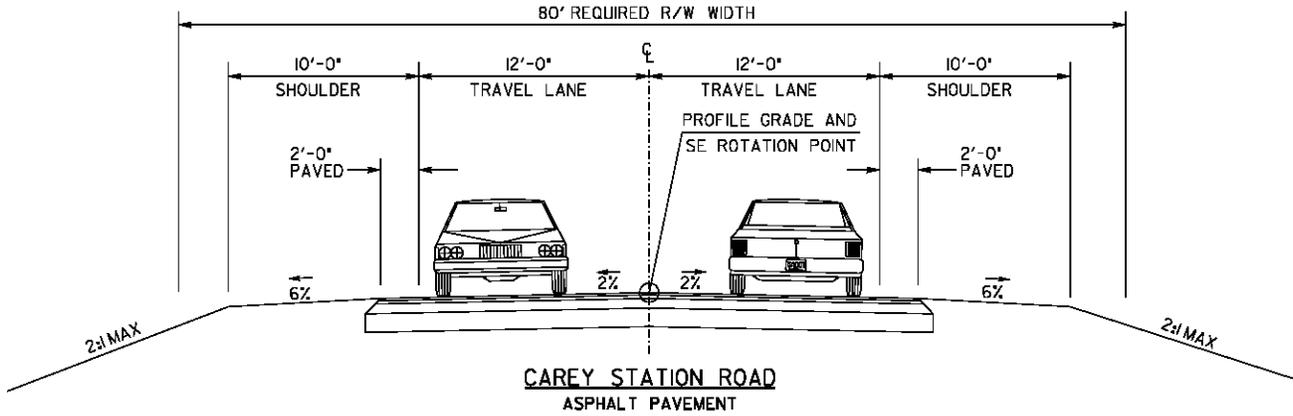
GREENE COUNTY, GEORGIA

CONCEPTUAL LAYOUT
SHEET 3 OF 3

NOVEMBER 2014

SCALE IN FEET



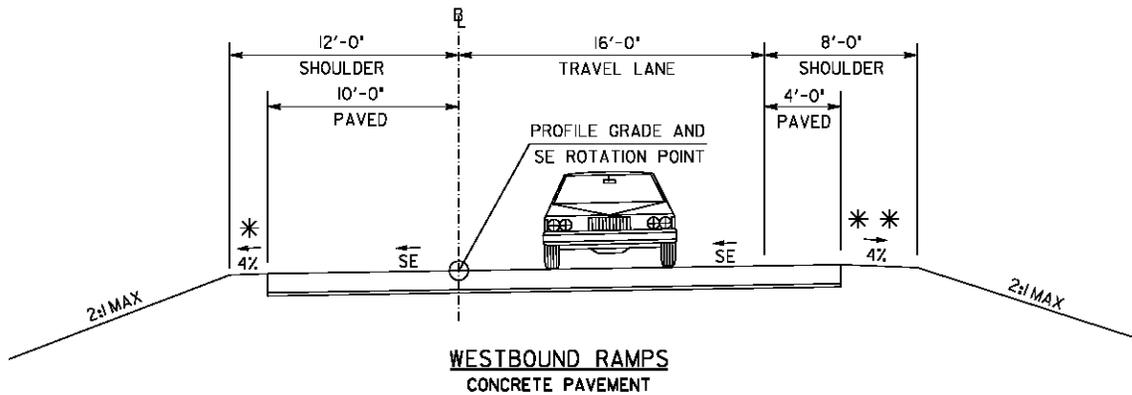
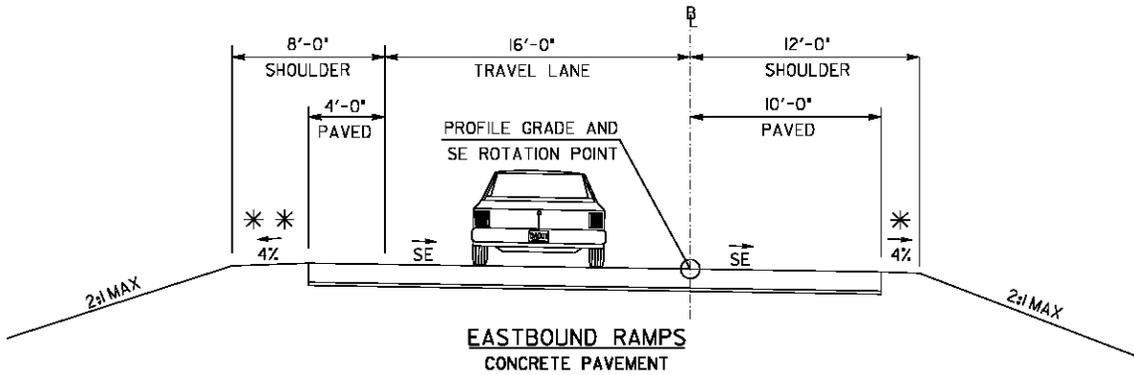
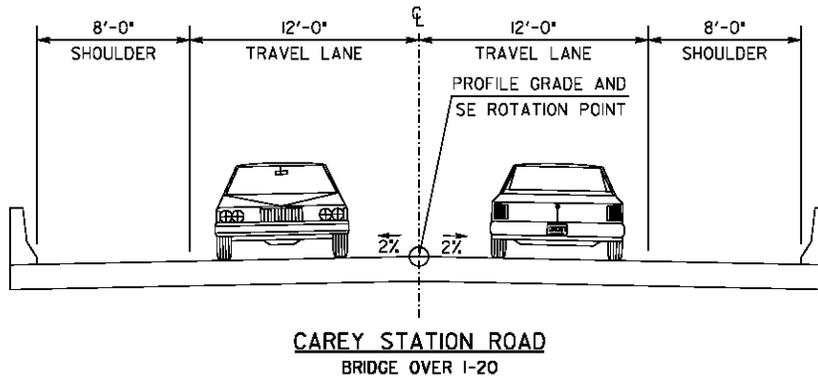


* SHOULDER TO SLOPE AT NORMAL RATE OR SUPERELEVATION RATE, WHICHEVER IS GREATER.

* * SHOULDER TO SLOPE AT NORMAL RATE, HOWEVER, THE ALGEBRAIC DIFFERENCE IN PAVING SLOPE AND SHOULDER SLOPE SHALL NOT EXCEED 8%. MINIMUM SHOULDER SLOPE SHALL BE 2%.

I-20 AT CAREY STATION ROAD
PROJ#: CSHPP-0007-00(528) PI#: 0007528
GREENE COUNTY, GEORGIA
TYPICAL SECTIONS
DECEMBER 2014
SHEET 1 OF 2

N.T.S.



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I-20 AT CAREY STATION ROAD

PROJ#: CSHPP-0007-00(528)
PI#: 0007528

GREENE COUNTY, GEORGIA

TYPICAL SECTIONS

DECEMBER 2014
SHEET 2 OF 2

N.T.S.

**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA**

INTERDEPARTMENT CORRESPONDENCE

FILE P.I. No. 0007528

OFFICE Program Delivery

PROJECT DESCRIPTION

I-20 at Carey Station Road

DATE December 22, 2014

From: Tommy Crochet, McGee Partners

To: Lisa L. Myers, State Project Review Engineer

Subject: **REVISIONS TO PROGRAMMED COSTS**

PROJECT MANAGER Eric Wilkinson

MGMT LET DATE Long Range

MGMT ROW DATE Long Range

PROGRAMMED COSTS (TPro W/OUT INFLATION)

LAST ESTIMATE UPDATE

CONSTRUCTION \$ 18,902,334.77

DATE 10/1/2014

RIGHT OF WAY \$ 8,994,000.00

DATE 10/1/2014

UTILITIES \$

DATE

REVISED COST ESTIMATES

CONSTRUCTION* \$ 18,063,924.90

RIGHT OF WAY \$ 6,784,000.00

UTILITIES \$ 200,881.00

*Cost Contains 20 % Contingency

REASONS FOR COST INCREASE AND CONTINGENCY JUSTIFICATION:

CONTINGENCY SUMMARY

A. CONSTRUCTION COST ESTIMATE:	\$	14,007,171.24	Base Estimate From CES
B. ENGINEERING AND INSPECTION (E & I):	\$	700,358.56	Base Estimate (A) x 5 %
C. CONTINGENCY:	\$	2,941,505.96	Base Estimate (A) + E & I (B) x 20 % See % Table in "Risk Based Cost Estimation" Memo
D. TOTAL LIQUID AC ADJUSTMENT:	\$	414,889.14	Total From Liquid AC Spreadsheet
E. CONSTRUCTION TOTAL:	\$	18,063,924.90	(A + B + C + D = E)

REIMBURSABLE UTILITY COSTS

UTILITY OWNER	REIMBURSABLE COST
Georgia Power (Dist.)	\$ 100,000.00
Piedmont Water Company	\$ 32,850.00
Rayle EMC	\$ 44,031.01
AT&T	\$ 24,000.00
TOTAL	\$ 200,881.01

ATTACHMENTS:

Detailed Cost Estimate Printout From TRAQS Liquid AC Adjustment Spreadsheet

PROJ. NO. [REDACTED]
P.I. NO. 0007528
DATE 10/20/2014

CALL NO. 9/29/2009

INDEX (TYPE)	DATE	INDEX
REG. UNLEADED	Oct-14	\$ 3.312
DIESEL		\$ 3.718
LIQUID AC		\$ 615.00

Link to Fuel and AC Index:
<http://www.dot.ga.gov/doingbusiness/Materials/Pages/asphaltcementindex.aspx>

LIQUID AC ADJUSTMENTS

PA=[((APM-APL)/APL)]xTMTxAPL

Asphalt

Price Adjustment (PA)				402210	\$	402,210.00
Monthly Asphalt Cement Price month placed (APM)	Max. Cap	60%	\$	984.00		
Monthly Asphalt Cement Price month project let (APL)			\$	615.00		
Total Monthly Tonnage of asphalt cement (TMT)				1090		

ASPHALT	Tons	%AC	AC ton
Leveling	0	5.0%	0
12.5 OGFC	0	5.0%	0
12.5 mm	3000	5.0%	150
9.5 mm SP	0	5.0%	0
25 mm SP	7600	5.0%	380
19 mm SP	11200	5.0%	560
	21800		1090

BITUMINOUS TACK COAT

Price Adjustment (PA)				\$	12,679.14	\$	12,679.14
Monthly Asphalt Cement Price month placed (APM)	Max. Cap	60%	\$	984.00			
Monthly Asphalt Cement Price month project let (APL)			\$	615.00			
Total Monthly Tonnage of asphalt cement (TMT)				34.36080738			

Bitum Tack

Gals	gals/ton	tons
8000	232.8234	34.3608074

BITUMINOUS TACK COAT (surface treatment)

Price Adjustment (PA)					\$	0	\$	-
Monthly Asphalt Cement Price month placed (APM)	Max. Cap	60%	\$	984.00				
Monthly Asphalt Cement Price month project let (APL)			\$	615.00				
Total Monthly Tonnage of asphalt cement (TMT)				0				

Bitum Tack

	SY	Gals/SY	Gals	gals/ton	tons
Single Surf. Trmt.	0	0.20	0	232.8234	0
Double Surf.Trmt.	0	0.44	0	232.8234	0
Triple Surf. Trmt	0	0.71	0	232.8234	0

TOTAL LIQUID AC ADJUSTMENT \$ **414,889.14**

DATE : 10/17/2014

PAGE : 1

JOB DETAIL ESTIMATE

JOB NUMBER : 0007528 SPEC YEAR: 01
 DESCRIPTION: NEW INTERCHANGE ON I-20 AT CAREY STATION ROAD IN GREENE CO.

ITEMS FOR JOB 0007528

ITEM	UNITS	DESCRIPTION	QUANTITY	PRICE	AMOUNT
150-1000	LS	TRAFFIC CONTROL - CSHPP-0007-00(528)	1.000	480000.00	480000.00
153-1300	EA	FIELD ENGINEERS OFFICE TP 3	1.000	77452.41	77452.41
202-1000	AC	CLEARING AND GRUBBING	60.000	12000.00	720000.00
207-0203	CY	FOUND BKFILL MATL, TP II	150.000	51.09	7663.74
208-0100	CY	IN PLACE EMBANKMENT	412200.000	7.60	3132720.00
310-1101	TN	GR AGGR BASE CRS, INCL MATL	55600.000	23.00	1278800.00
402-3121	TN	RECYL AC 25MM SP,GP1/2,BM&HL	7600.000	75.00	570000.00
402-3130	TN	RECYL AC 12.5MM SP,GP2,BM&HL	3000.000	85.00	255000.00
402-3190	TN	RECYL AC 19 MM SP,GP 1 OR 2 ,INC BM&HL	11200.000	80.00	896000.00
413-1000	GL	BITUM TACK COAT	8000.000	2.84	22772.40
430-0210	SY	PLN PC CONC PVMT/CL1C/ 11" TK	44700.000	40.00	1788000.00
433-1000	SY	REINF CONC APPROACH SLAB	300.000	160.53	48160.96
441-0104	SY	CONC SIDEWALK, 4 IN	40.000	47.82	1912.97
441-5008	LF	CONC HEADER CURB, 6 IN, TP 7	2700.000	12.68	34253.82
441-5025	LF	CONC HEADER CURB, 4", TP 9	700.000	11.28	7896.00
441-6222	LF	CONC CURB & GUTTER/ 8"X30"TP2	3800.000	15.57	59178.12
500-3101	CY	CLASS A CONCRETE	580.000	396.44	229940.07
511-1000	LB	BAR REINF STEEL	77700.000	0.67	52387.67
550-1241	LF	STM DR PIPE 24",H 10-15	380.000	49.77	18915.40
550-1242	LF	STM DR PIPE 24",H 15-20	480.000	51.75	24840.00
550-1247	LF	STM DR PIPE 24",H 40-50	280.000	55.00	15400.00
550-1300	LF	STM DR PIPE 30",H 1-10	35.000	76.35	2672.43
550-1363	LF	STM DR PIPE 36",H 20-25	230.000	79.00	18170.00
550-1366	LF	STM DR PIPE 36",H 35-40	360.000	82.00	29520.00
550-1425	LF	STM DR PIPE 42",H 30-35	160.000	85.00	13600.00
550-1427	LF	STM DR PIPE 42",H 40-50	280.000	87.50	24500.00
550-4224	EA	FLARED END SECT 24 IN, ST DR	20.000	624.93	12498.78
550-4230	EA	FLARED END SECT 30 IN, ST DR	5.000	713.15	3565.78
550-4236	EA	FLARED END SECT 36 IN, ST DR	7.000	1103.29	7723.05
550-4242	EA	FLARED END SECT 42 IN, ST DR	3.000	1501.77	4505.31
634-1200	EA	RIGHT OF WAY MARKERS	110.000	105.28	11580.82
643-0010	LF	FIELD FENCE WOVEN WIRE	11300.000	3.66	41469.42
641-1100	LF	GUARDRAIL, TP T	90.000	67.09	6038.40
641-1200	LF	GUARDRAIL, TP W	10600.000	15.87	168255.60
641-5001	EA	GUARDRAIL ANCHORAGE, TP 1	26.000	796.22	20701.94
641-5012	EA	GUARDRAIL ANCHORAGE, TP 12	30.000	2028.92	60867.65
643-8200	LF	BARRIER FENCE (ORANGE), 4 FT	2000.000	1.35	2701.90
668-1100	EA	CATCH BASIN, GP 1	10.000	2219.67	22196.76
668-1110	LF	CATCH BASIN, GP 1, ADDL DEPTH	20.000	183.76	3675.37
500-3104	CY	CL A CONC, SIGNS	12.000	579.79	6957.53
636-1020	SF	HWY SGN,TP1MAT,REFL SH TP3	120.000	15.05	1806.24
636-1029	SF	HWY SGN,TP2 MATL,REFL SH TP 3	140.000	15.40	2156.63
636-1033	SF	HWY SIGNS, TP1MAT,REFL SH TP 9	300.000	17.89	5369.18
636-1041	SF	HWY SIGNS,TP 2MAT,REFL SH TP 9	200.000	34.39	6879.43
636-1072	SF	HWY SIGNS,ALUM EXTRD PNLs, RS TP 3	180.000	27.25	4906.27
636-2070	LF	GALV STEEL POSTS, TP 7	700.000	6.48	4536.46
636-2080	LF	GALV STEEL POSTS, TP 8	340.000	9.18	3123.41
636-2090	LF	GALV STEEL POSTS, TP 9	370.000	7.74	2865.48
636-3000	LB	GALV STEEL STR SHAPE POST	1800.000	5.18	9337.91
636-9094	LF	P-IN-PL,SIGNS,STL H,HP 12 X 53	90.000	87.72	7895.69
653-0120	EA	THERM PVMT MARK, ARROW, TP 2	14.000	88.56	1239.88

653-1501	LF	THERMO SOLID TRAF ST 5 IN, WHI	19500.000	0.43	8410.16
653-1502	LF	THERMO SOLID TRAF ST, 5 IN YEL	17600.000	0.40	7081.18
653-1704	LF	THERM SOLID TRAF STRIPE,24",WH	120.000	6.69	803.95
653-1804	LF	THERM SOLID TRAF STRIPE, 8",WH	1000.000	2.37	2370.78
653-3501	GLF	THERMO SKIP TRAF ST, 5 IN, WHI	500.000	0.46	230.40
653-6004	SY	THERM TRAF STRIPING, WHITE	220.000	5.55	1222.06
653-6006	SY	THERM TRAF STRIPING, YELLOW	550.000	4.12	2269.80
654-1001	EA	RAISED PVMT MARKERS TP 1	440.000	4.12	1816.94
654-1003	EA	RAISED PVMT MARKERS TP 3	200.000	4.37	875.41
657-1085	LF	PRF PL SD PVT MKG,8",B/W,TP PB	13800.000	5.12	70775.51
657-1110	LF	PRF PL SD PVMT MKG, 11",B/W,TPPB	360.000	10.00	3600.00
657-1130	LF	PRF PL SD PVMT MKG, 13",B/W,TPPB	2600.000	8.71	22646.00
657-3085	GLF	PRF PL SK PVMT MKG,8",B/W,TPPB	1600.000	3.81	6107.49
657-5005	EA	PRF PL PVT MKG,WD/SYM,B/W,TPPB	16.000	110.00	1760.00
657-6085	LF	PRF PL SD PVMT MKG,8",B/Y,TPPB	6900.000	5.48	37846.36
540-1102	LS	REM OF EX BR, BR NO - EX	1.000	152250.00	152250.00
543-9000	LS	CONSTR OF BRIDGE COMPLETE - 1	1.000	1800000.00	1800000.00
682-9030	LS	LIGHTING SYSTEM	1.000	1000000.00	1000000.00
441-0204	SY	PLAIN CONC DITCH PAVING, 4 IN	30.000	43.06	1292.05
603-2181	SY	STN DUMPED RIP RAP, TP 3, 18"	290.000	40.57	11767.59
603-7000	SY	PLASTIC FILTER FABRIC	290.000	3.67	1065.77
700-6910	AC	PERMANENT GRASSING	34.000	1009.25	34314.58
700-7000	TN	AGRICULTURAL LIME	110.000	93.68	10305.85
700-8000	TN	FERTILIZER MIXED GRADE	15.000	522.89	7843.44
700-8100	LB	FERTILIZER NITROGEN CONTENT	1700.000	2.31	3937.81
716-1000	SY	EROSION CONTROL MATS,WATERWAYS	8000.000	2.11	16946.08
716-2000	SY	EROSION CONTROL MATS, SLOPES	88700.000	0.83	74146.99
163-0232	AC	TEMPORARY GRASSING	17.000	563.61	9581.51
163-0240	TN	MULCH	660.000	157.78	104139.82
163-0300	EA	CONSTRUCTION EXIT	10.000	1451.45	14514.59
163-0503	EA	CONSTR AND REMOVE SILT CONTROL GATE,TP3	25.000	382.27	9556.86
163-0527	EA	CNST/REM RIP RAP CKDM,STN P RIPRAP/SN	50.000	245.13	12256.58
163-0528	LF	CONSTR AND REM FAB CK DAM -TP C SLT FN	2000.000	3.42	6852.08
163-0531	EA	CONSTR & REM SEDIMENT BASIN,TP 1	17.000	11120.14	189042.42
163-0550	EA	CONS & REM INLET SEDIMENT TRAP	10.000	140.14	1401.42
165-0010	LF	MAINT OF TEMP SILT FENCE, TP A	4100.000	0.44	1842.99
165-0030	LF	MAINT OF TEMP SILT FENCE, TP C	11000.000	0.49	5420.69
165-0041	LF	MAINT OF CHECK DAMS - ALL TYPES	1300.000	1.44	1884.79
165-0060	EA	MAINT OF TEMP SEDIMENT BASIN,STA NO -	17.000	2123.44	36098.55
165-0087	EA	MAINT OF SILT CONTROL GATE, TP 3	25.000	73.34	1833.55
165-0101	EA	MAINT OF CONST EXIT	8.000	471.82	3774.62
165-0105	EA	MAINT OF INLET SEDIMENT TRAP	10.000	79.80	798.04
167-1000	EA	WATER QUALITY MONITORING AND SAMPLING	10.000	188.59	1885.95
167-1500	MO	WATER QUALITY INSPECTIONS	24.000	706.76	16962.29
171-0010	LF	TEMPORARY SILT FENCE, TYPE A	8100.000	1.81	14721.91
171-0030	LF	TEMPORARY SILT FENCE, TYPE C	22000.000	2.74	60305.52

ITEM TOTAL					14007171.24
INFLATED ITEM TOTAL					14007171.24

**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA**

INTERDEPARTMENT CORRESPONDENCE

FILE CSHPP-0007-00(528) Greene **OFFICE** Tennille - Utilities
P.I. No. 0007528
I-20 @ CR 178/CAREY STATION ROAD **DATE** October 20, 2014

FROM James Lindsey, District Utilities Engineer

TO Eric Ryan Wilkinson, Project Manager

SUBJECT **CONCEPT UTILITY COST ESTIMATE**

We are furnishing you with a Concept Utility Cost Estimate for each utility with facilities located within the project limits.

<u>Facility Owner</u>	<u>Non- Reimbursable</u>	<u>Reimbursable</u>
Georgia Power (Dist.)	\$0.00	\$100,000.00
Piedmont Water Company	\$0.00	\$32,850.00
Rayle EMC	\$0.00	\$44,031.01
<u>AT&T</u>	<u>\$293,601.00</u>	<u>\$24,000.00</u>
Totals	\$293,601.00	\$200,881.01

Rayle EMC advises that additional costs may be incurred if span crossing I-20 needs to be replaced to meet NESC Grade B construction.

This estimate was compiled using information provided by the various utility owners. Please be advised this is an estimate and may be revised when project plans are developed and prior rights research is complete. If you should have questions, please contact Michael D. Thomas in the Utilities Section of this office at 478-552-4606.

JL: MDT

Attachment

cc: Mike Bolden, State Utilities Engineer
Lee Upkins, Assistant State Utilities Engineer
Angela D. Robinson, Office of Financial Management
Christopher Dills, Area Engineer



October 21, 2014

Tommy Crochet
McGee Partners
13 Corporate Boulevard, Suite 200
Atlanta, Georgia 30329

Subject: Stream Mitigation Costs, GDOT Project No. CSHPP-0007-00(528),
PI No. 0007528, Greene County

Dear Tommy,

The Georgia Department of Transportation (GDOT) provides average mitigation costs, by Hydrologic Unit Code (HUC), to aide in estimation of stream, wetland, and open water mitigation costs. The latest list is from July 2014.

Based on the impacts per stream that you provided as shown in the table below, approximately 7,662.4 mitigation credits would be needed. Project PI No. 0007528 in Greene County is located within the Upper Oconee Drainage, HUC 03070101. The current average cost per stream credit is \$34.50.

Stream	Length of Impact
8	190
7	452
10	127
9	304
11	25
6	150
2	157
TOTAL	1405

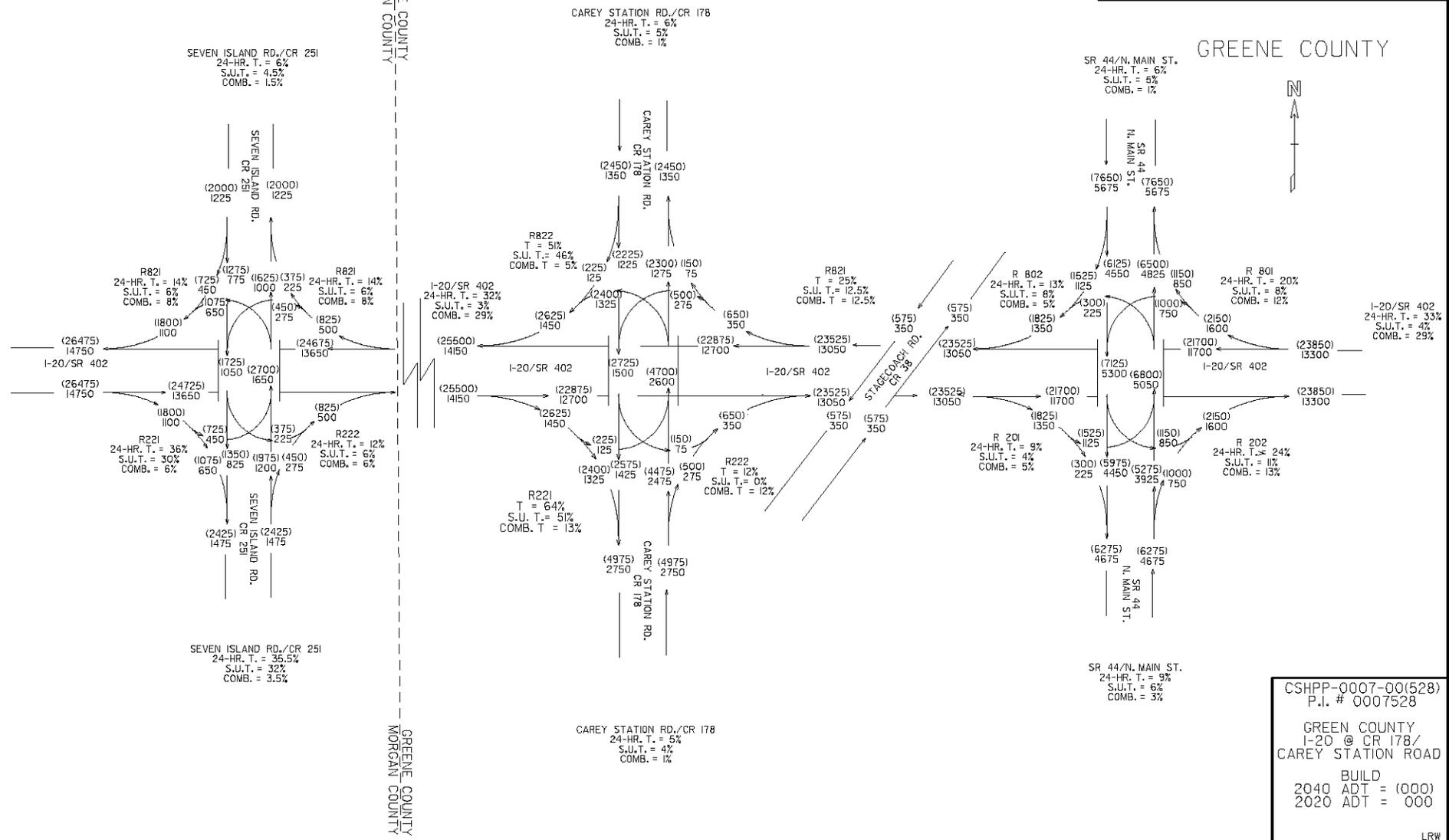
The total estimated mitigation costs for PI No. 0007528 would be \$262,972.00. Please note that the cost per n credit fluctuates based on the availability of banks and mitigation credits. The cost provided here may be different than the actual cost required at the time of purchase.

If you have any questions or need anything further, please let us know.

Sincerely,
Edwards-Pitman Environmental, Inc.


Josh Earhart
NEPA Planner

GREENE COUNTY



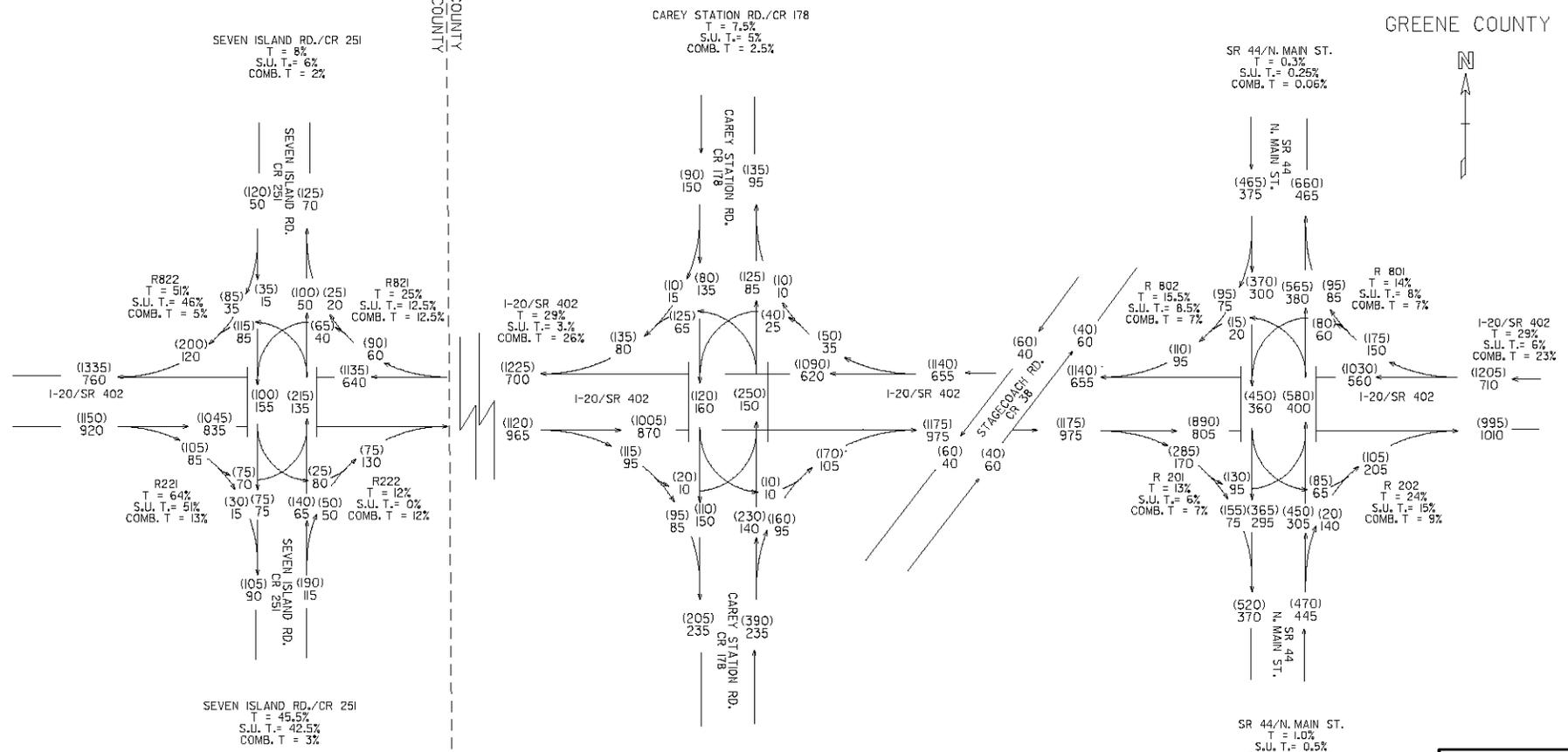
CSHPP-0007-00(528)
P.I. # 0007528

GREEN COUNTY
I-20 @ CR 178/
CAREY STATION ROAD

BUILD
2040 ADT = (000)
2020 ADT = 000

GREENE COUNTY
MORGAN COUNTY

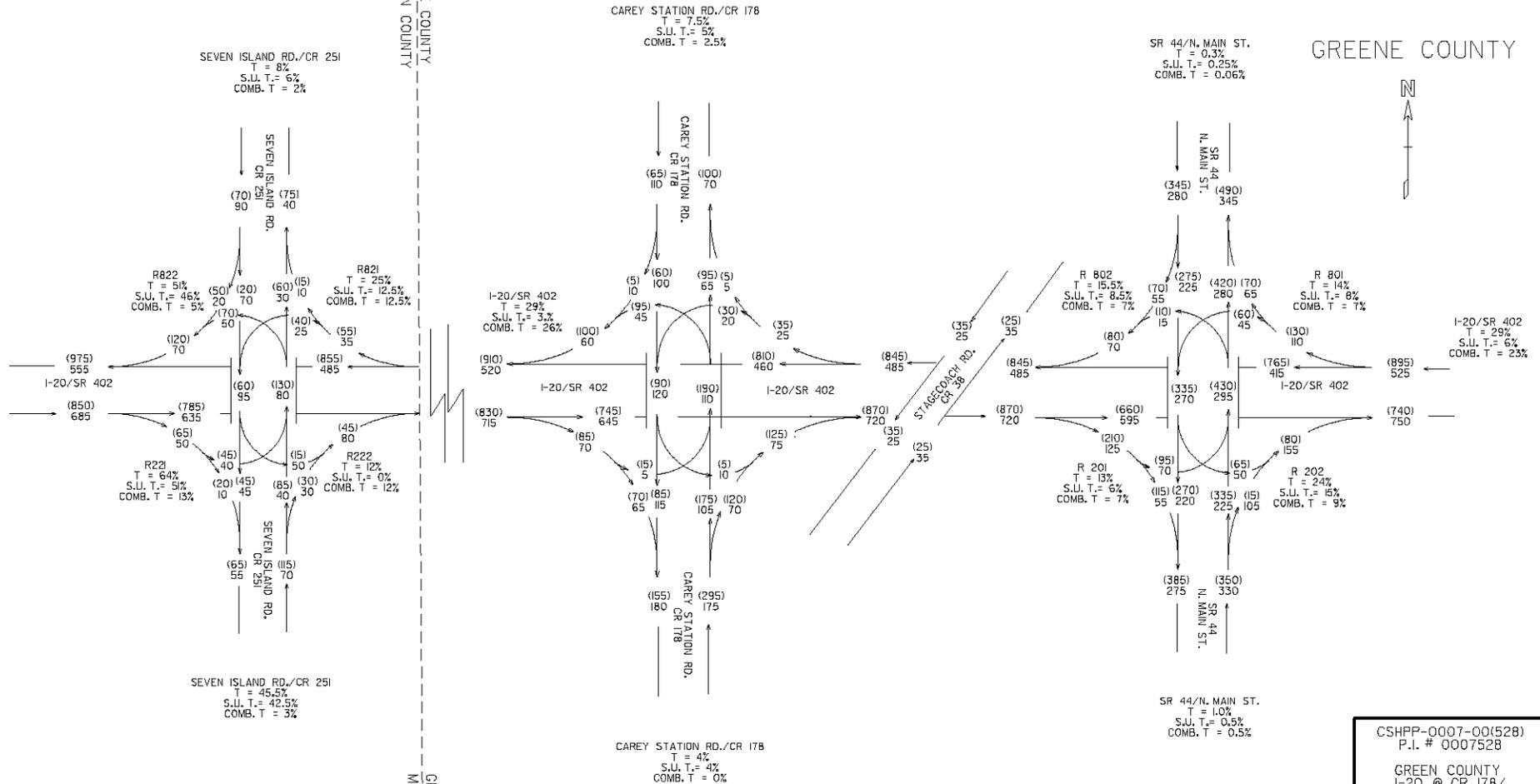
GREENE COUNTY



CSHPP-0007-00(528)
P.L. # 0007528
GREEN COUNTY
I-20 @ CR 178/
CAREY STATION ROAD
BUILD
DESIGN YEAR 2040 DHV
PM = (000)
AM = 000

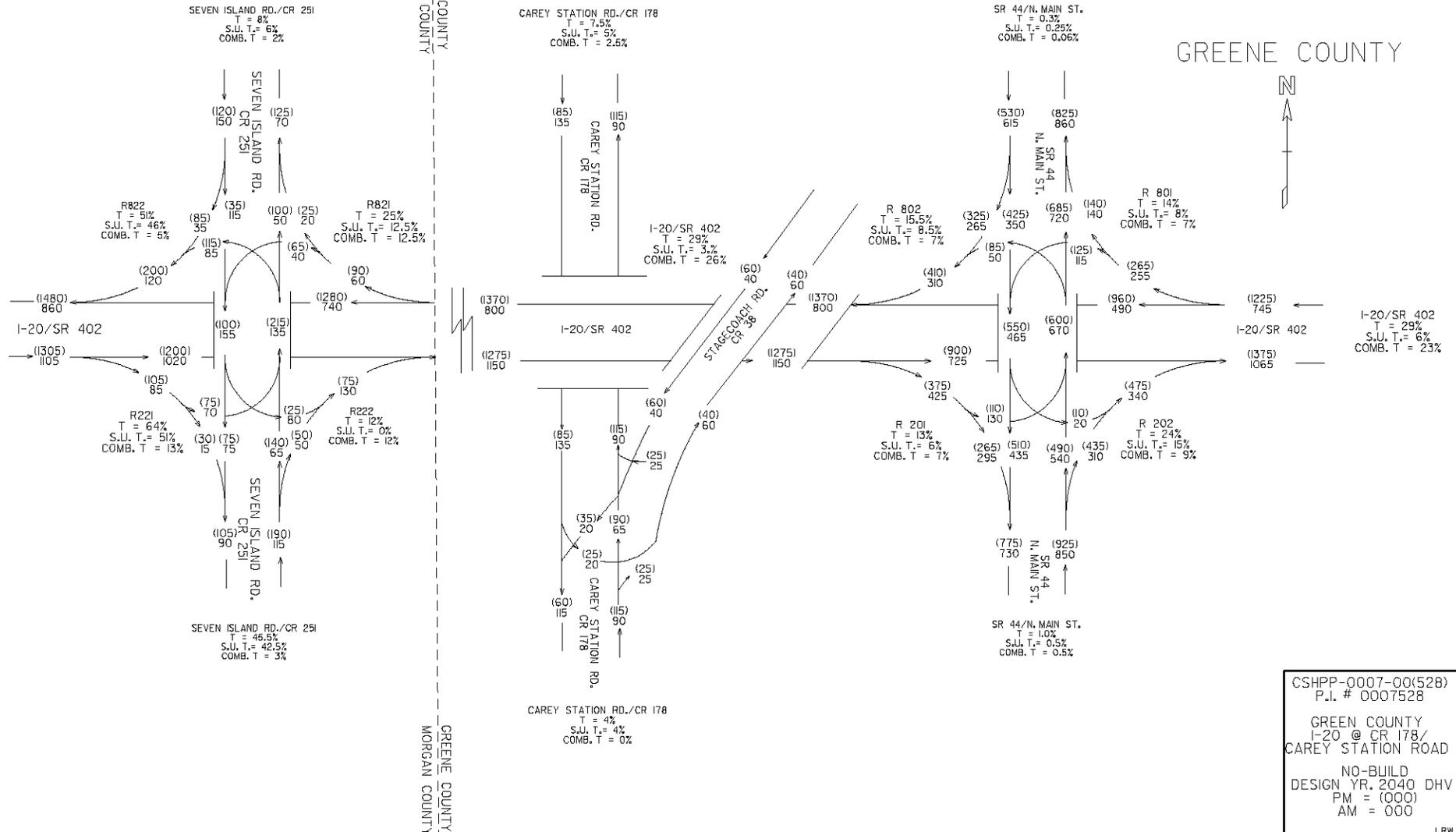
GREENE COUNTY
MORGAN COUNTY
GREENE COUNTY
MORGAN COUNTY

GREENE COUNTY



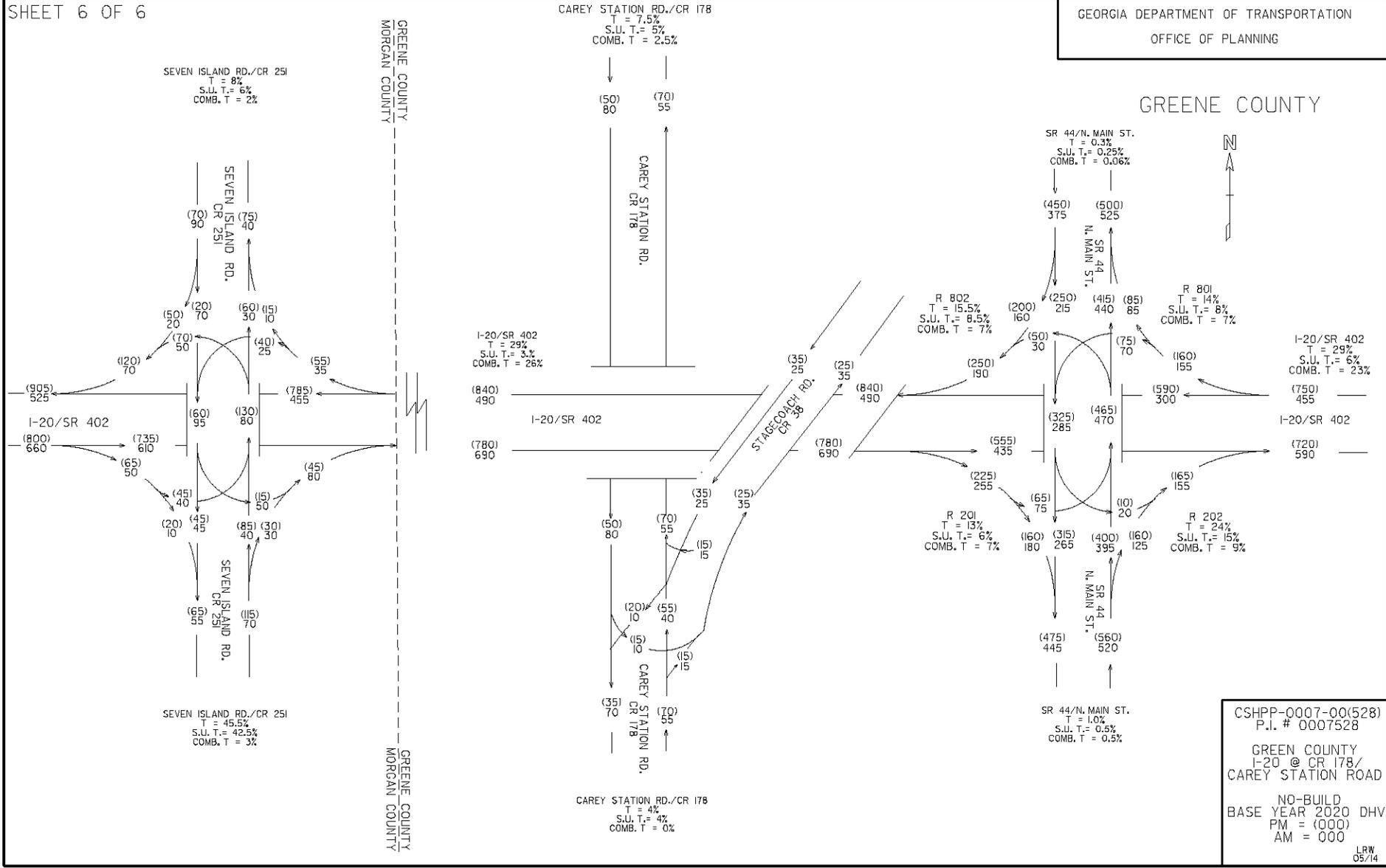
CSHPP-0007-00(528)
P.I. # 0007528
GREEN COUNTY
I-20 @ CR 178/
CAREY STATION ROAD
BUILD
BASE YEAR 2020 DHV
PM = (000)
AM = 000
LRW
05/14

GREENE COUNTY

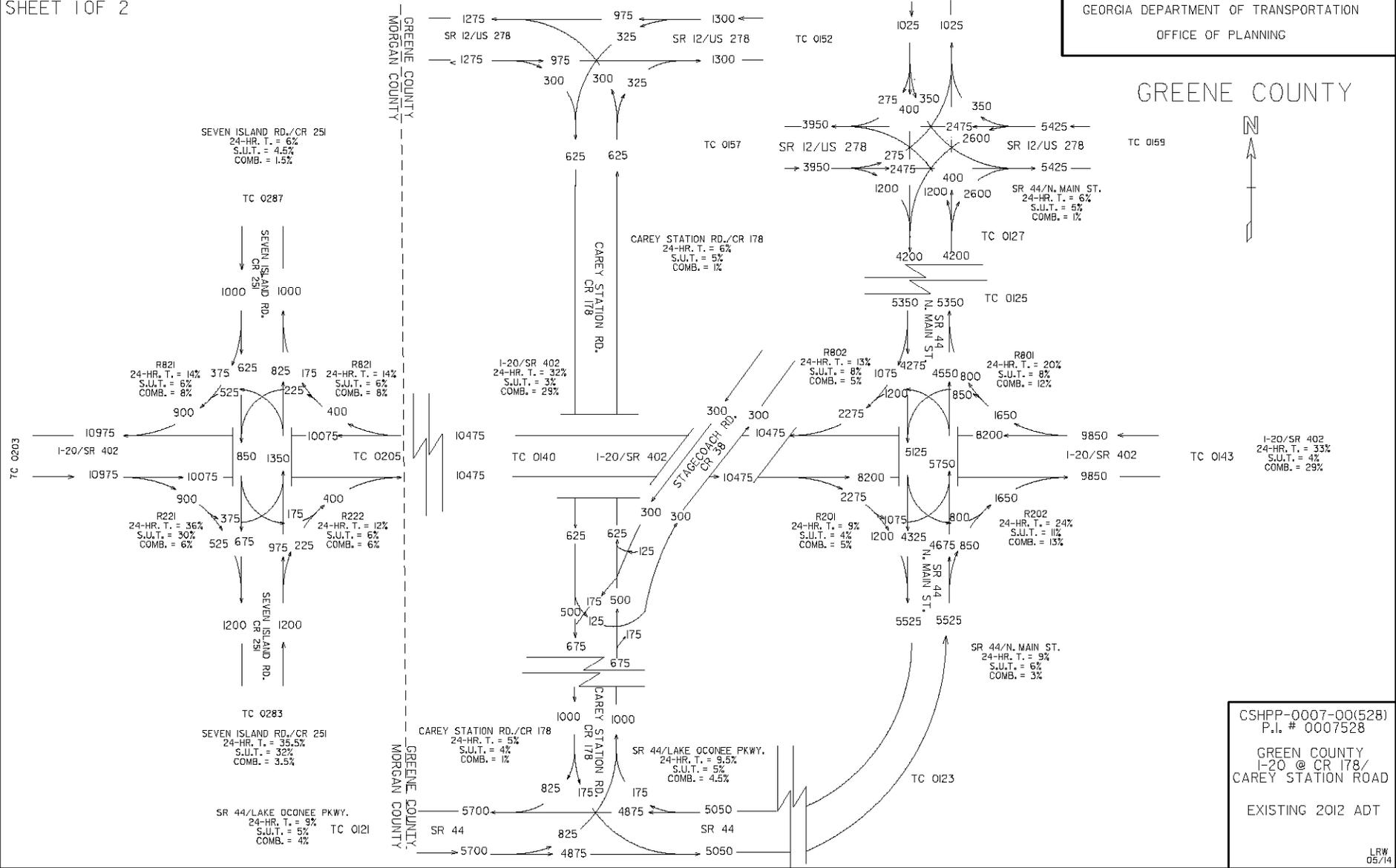


CSHPP-0007-00(528)
P.L. # 0007528
GREEN COUNTY
I-20 @ CR 178/
CAREY STATION ROAD
NO-BUILD
DESIGN YR. 2040 DHV
PM = (000)
AM = 000

GREENE COUNTY

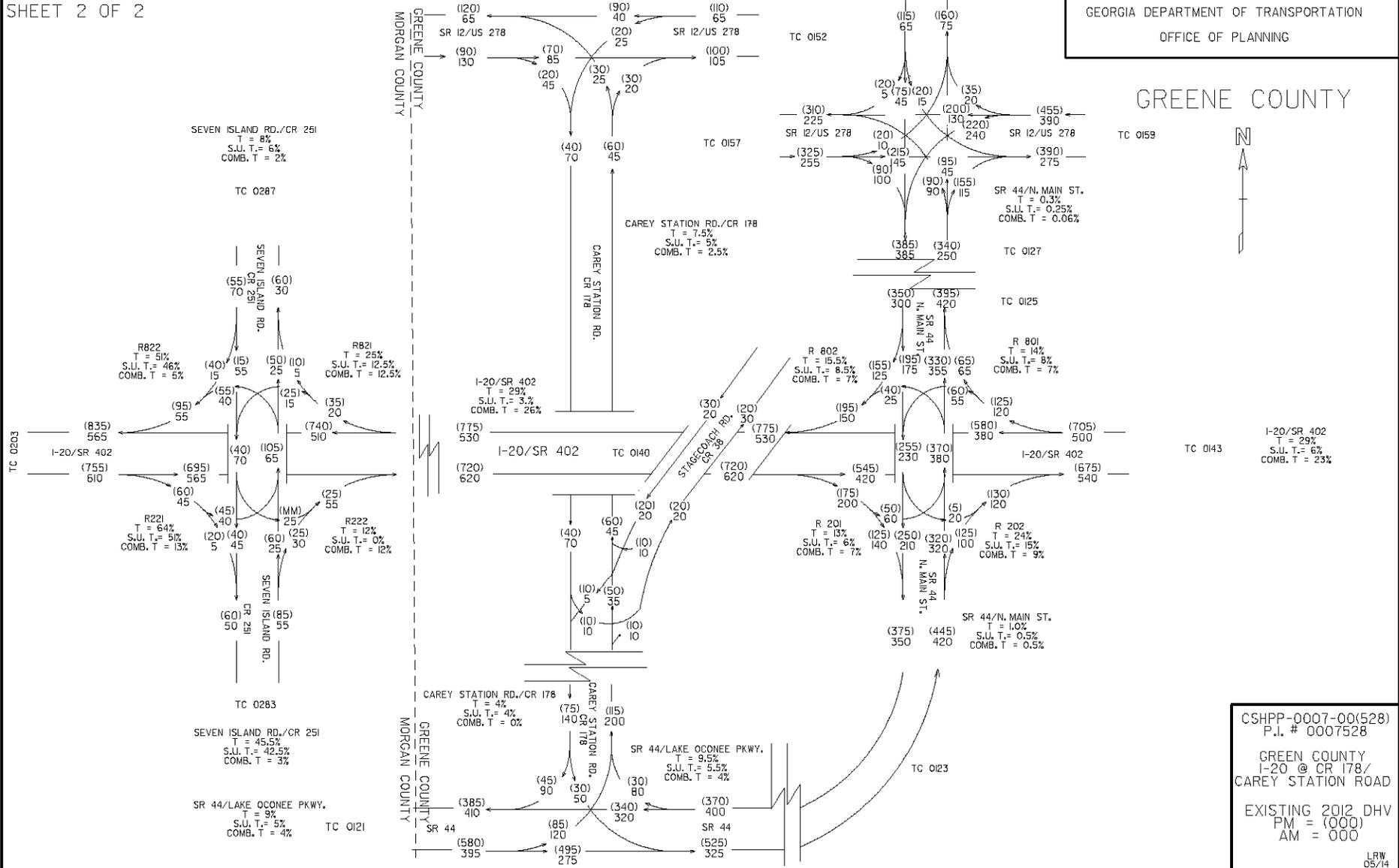


GREENE COUNTY



CSHPP-0007-00(528)
P.L. # 0007528
GREEN COUNTY
I-20 @ CR 178/
CAREY STATION ROAD
EXISTING 2012 ADT

GREENE COUNTY



CSHPP-0007-00(528)
P.I. # 0007528
GREEN COUNTY
I-20 @ CR 178/
CAREY STATION RD
EXISTING 2012 DHV
PM = (000)
AM = 000
LRW
05/14



Memorandum

July 9, 2014

To	Tommy Crochet, P.E. – McGee Partners, Inc.		
From	Andrew Duerr, P.E. James Des Jarlais, E.I.T.	Tel	(717) 460-8958
Subject	I-20 / Carey Station Road Interchange Traffic Analysis (Carey Station Rd Interchange Only) Greene County, GA PI # 0007528	Job no.	86/16/659

1 INTRODUCTION

At the request of McGee Partners and the Georgia Department of Transportation (GDOT), GHD evaluated a range of improvement alternatives for ramp intersections for the proposed interchange at I-20 and Carey Station Road in Greene County, Georgia. GHD performed analyses of unsignalized (TWSC) alternatives and roundabout alternatives for the base (2020) and design (2040) years. Preliminary signal warrant analyses (Warrant 1 only) suggested that signals would not be warranted under the base or design year conditions.

At the request of McGee partners, we also completed similar analyses for traffic volumes totalling the 2040 volumes plus 200% to estimate the performance of the various alternatives under conditions equalling or exceeding those predicted for Alternative 2 (Build Interchange) included in Figure 6.3.3 and Appendix B-3b of the Interchange Justification Report for I-20 and Carey Station Road. The intent of this additional analysis was evaluate the lifespans of the various alternatives and to identify lane requirements that could affect other elements of the interchange design. The following is a summary of our findings and recommendations.

2 TECHNICAL BACKGROUND & ASSUMPTIONS

GHD performed roundabout analyses in accordance with Chapter 8, Section 8.2.2 of the GDOT Design Policy Manual (DPM). Roundabouts were analyzed with GDOT's Roundabout Analysis Tool v. 2.1 and ARCADY. In order to account for lower capacities experienced in the US compared to the UK, the ARCADY analyses included a capacity reduction of 15% for the 2020 peak hour volumes and 10% for the 2040 peak hour volumes.

The Levels of Service discussed herein are based on the 2010 Highway Capacity Manual for unsignalized intersections. Queues listed represent the 95th percentile queue per lane assuming average vehicle lengths of 25 feet. Delay is presented in seconds.

3 TRAFFIC VOLUMES AND CHARACTERISTICS

GDOT's Office of Planning provided traffic volumes for the existing year (2012), the base year (2020) and the design year (2040) for build and no-build conditions. This information is summarized in **Tables 1 and 2** below and included in **Appendix A**. Given the rural nature of the proposed interchange, GHD assumed a peak hour factor of 0.88 (all movements) for the purpose of this study.

Table 1: 2020 Peak Hour Turning Movements I-20 Westbound Ramps at Carey Station Road													
		NB Carey Station			WB I-20 On-Ramp			SB Carey Station			WB I-20 Off-Ramp		
		L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	Volumes	45	65	0	-	-	-	0	100	10	20	0	5
	PHF	0.88			-			0.88			0.88		
PM Peak	Volumes	95	95	0	-	-	-	0	60	5	30	0	5
	PHF	0.88			-			0.88			0.88		
I-20 Eastbound Ramps at Carey Station Road													
		NB Carey Station			EB I-20 Off-Ramp			SB Carey Station			WB I-20 On-Ramp		
		L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	Volumes	0	105	70	5	0	65	5	115	0	-	-	-
	PHF	0.88			0.88			0.88			-		
PM Peak	Volumes	0	175	120	15	0	70	5	85	0	-	-	-
	PHF	0.88			0.88			0.88			-		

Table 2: 2040 Peak Hour Turning Movements I-20 Westbound Ramps at Carey Station Road													
		NB Carey Station			WB I-20 On-Ramp			SB Carey Station			WB I-20 Off-Ramp		
		L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	Volumes	65	85	0	-	-	-	0	135	15	25	0	10
	PHF	0.88			-			0.88			0.88		
PM Peak	Volumes	125	125	0	-	-	-	0	80	10	40	0	10
	PHF	0.88			-			0.88			0.88		
I-20 Eastbound Ramps at Carey Station Road													
		NB Carey Station			EB I-20 Off-Ramp			SB Carey Station			WB I-20 On-Ramp		
		L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	Volumes	0	140	95	10	0	85	10	150	0	-	-	-
	PHF	0.88			0.88			0.88			-		
PM Peak	Volumes	0	230	160	20	0	95	10	110	0	-	-	-
	PHF	0.88			0.88			0.88			-		

In order to gage the ability of the various alternatives to accommodate the potential for future growth beyond the design year projections provided by GDOT, GHD compared the 2040 projections to the traffic projections included in the Interchange Justification Report (IJR) developed for the I-20/Carey Station Road interchange dated July 2011. Tripling the 2040 PM design hour volumes generally approximates the 2035 Peak Hour Turning Movement Volumes included in Appendix B of the IJR. Turning movements for the 2040 + 200% condition are summarized in **Table 3** below and the details from the IJR are included in **Appendix A**.

Table 3: 2040 + 200% Peak Hour Turning Movements (Estimated)													
I-20 Westbound Ramps at Carey Station Road													
		NB Carey Station			WB I-20 On-Ramp			SB Carey Station			WB I-20 Off-Ramp		
		L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	Volumes	195	255	0	-	-	-	0	405	45	75	0	30
	PHF	0.88			-			0.88			0.88		
PM Peak	Volumes	375	375	0	-	-	-	0	240	30	120	0	30
	PHF	0.88			-			0.88			0.88		
I-20 Eastbound Ramps at Carey Station Road (Estimated)													
		NB Carey Station			EB I-20 Off-Ramp			SB Carey Station			WB I-20 On-Ramp		
		L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	Volumes	0	420	285	30	0	255	30	450	0	-	-	-
	PHF	0.88			0.88			0.88			-		
PM Peak	Volumes	0	690	480	60	0	285	30	330	0	-	-	-
	PHF	0.88			0.88			0.88			-		

4 OPERATIONAL ANALYSIS

GHD performed analyses of unsignalized (two-way stop control) conditions and roundabout alternatives for the base and design years. GHD also performed a signal warrant analysis, based on guidance provided in GDOT’s DPM and the Federal Highway Administration’s *Manual on Uniform Traffic Control Devices (MUTCD)*, to identify the potential need for signals at the ramp termini. The unsignalized analyses were performed using HCS+ v. 5.6, which is based on the analysis methodology contained in the *Highway Capacity Manual (HCM)*. Roundabout analyses were performed using GDOT’s Roundabout Analysis Tool v. 2.1 and ARCADY in accordance with GDOT policy.

4.1 Two-Way Stop Controlled Intersection Analyses

Operational analyses for the base (2020) and design (2040) year conditions are summarized in **Tables 4** and **5**, respectively. Operational analyses for the design (2040) year conditions + 200% are summarized in **Table 6**. Detailed *HCM* Unsignalized Capacity Analysis reports are included in **Appendix B**. The level of service (LOS) and delay per vehicle are only reported for the stop-controlled approaches.

As indicated below, the stop-controlled approaches to the unsignalized ramp termini are expected to operate at acceptable levels of service during the base (2020) and design (2040) years. However, at some point approaching the 2040 + 200% traffic volumes, the left turn movement from the westbound off-ramp is projected to fail.

Table 4: 2020 Unsignalized Conditions Capacity Analysis I-20 Westbound Ramps at Carey Station Road					
		SB Carey Station Road	NB Carey Station Rd (LT)	WB I-20 Off-Ramp (LT)	WB I-20 Off-Ramp (RT)
AM Peak	Approach LOS	-	A	B	A
	Delay (seconds)	-	7.6	10.5	8.7
PM Peak	Approach LOS	-	A	B	A
	Delay (seconds)	-	7.6	11.6	8.9
I-20 Eastbound Ramps at Carey Station Road					
		SB Carey Station Road (LT)	NB Carey Station Road	EB I-20 Off-Ramp (LT)	EB I-20 Off-Ramp (RT)
AM Peak	Approach LOS	A	-	B	A
	Delay (seconds)	7.7	-	10.2	9.3
PM Peak	Approach LOS	A	-	B	A
	Delay (seconds)	8.0	-	10.7	9.2

Table 5: 2040 Unsignalized Conditions Capacity Analysis I-20 Westbound Ramps at Carey Station Road					
		SB Carey Station Road	NB Carey Station Rd (LT)	WB I-20 Off-Ramp (LT)	WB I-20 Off-Ramp (RT)
AM Peak	Approach LOS	-	A	B	A
	Delay (seconds)	-	7.7	11.3	8.9
PM Peak	Approach LOS	-	A	B	A
	Delay (seconds)	-	7.7	12.9	9.1
I-20 Eastbound Ramps at Carey Station Road					
		SB Carey Station Road (LT)	NB Carey Station Road	EB I-20 Off-Ramp (LT)	EB I-20 Off-Ramp (RT)
AM Peak	Approach LOS	A	-	B	A
	Delay (seconds)	7.9	-	10.8	9.7
PM Peak	Approach LOS	A	-	B	A
	Delay (seconds)	8.3	-	11.5	9.5

Table 6: 2040 + 200% Unsignalized Conditions Capacity Analysis I-20 Westbound Ramps at Carey Station Road					
		SB Carey Station Road	NB Carey Station Rd (LT)	WB I-20 Off-Ramp (LT)	WB I-20 Off-Ramp (RT)
AM Peak	Approach LOS	-	A	B	A
	Delay (seconds)	-	9.4	11.3	8.9
PM Peak	Approach LOS	-	A	F	A
	Delay (seconds)	-	9.4	154.7	11.2
I-20 Eastbound Ramps at Carey Station Road					
		SB Carey Station Road (LT)	NB Carey Station Road	EB I-20 Off-Ramp (LT)	EB I-20 Off-Ramp (RT)
AM Peak	Approach LOS	A	-	B	A
	Delay (seconds)	7.9	-	10.8	9.7
PM Peak	Approach LOS	A	-	C	C
	Delay (seconds)	12.7	-	27.8	15.6

4.2 Signal Warrant Analysis

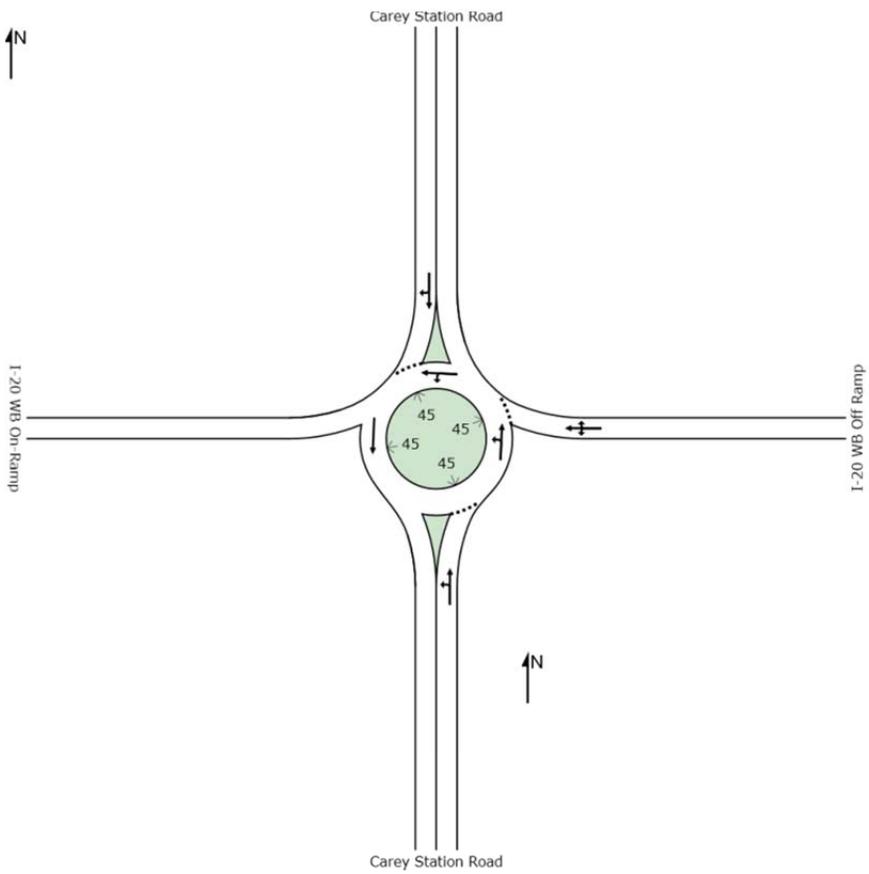
GHD performed signal warrant analyses in accordance with Section 13.5.3 in GDOT’s DPM. As directed by McGee Partners, the analyses were limited to Warrant 1 and assumed that the eighth-highest volumes can be estimated to be 5.6% of the daily volume. Given that existing posted speeds on existing Carey Station Road are greater than 40 mph, we also utilized 70% thresholds for the analysis. The warrant analysis worksheets are included in **Appendix C**.

Our findings indicate that signals are not warranted in the base (2020) or design (2040) years for either ramp termini. However, Warrant 1 will likely be satisfied at the westbound ramp terminus by the time traffic volumes reach the 2040 + 200% levels. Because signals were not warranted by the design year (2040), GHD did not complete operational analyses for signalized intersections as part of this study.

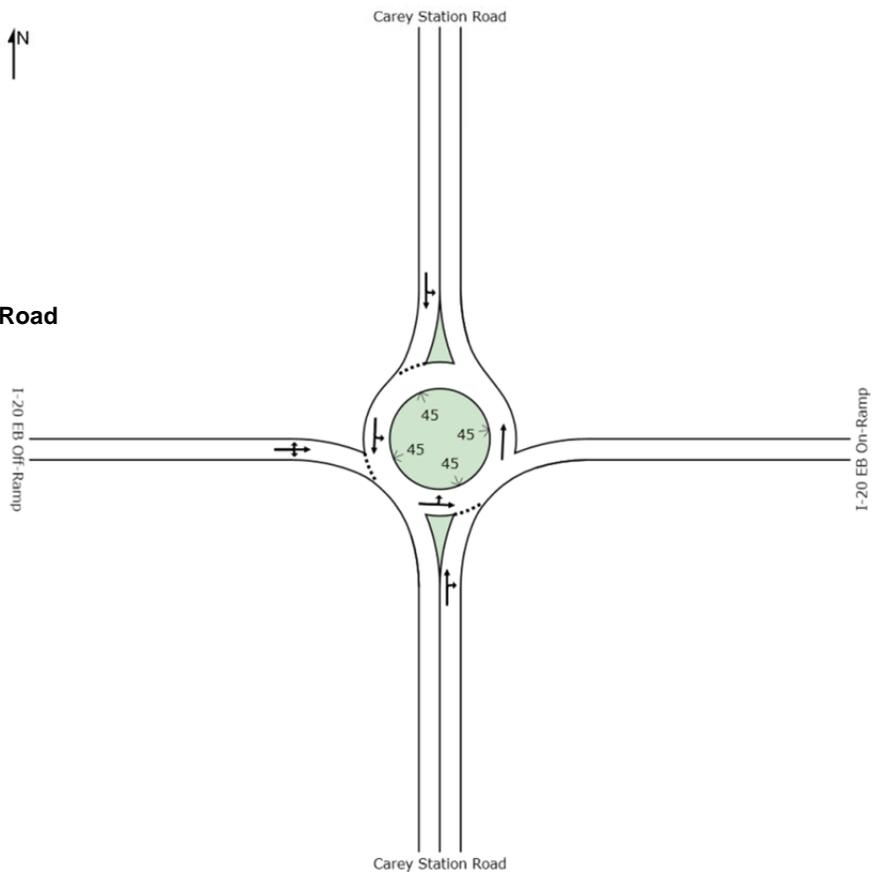
4.3 Roundabout Analyses

GHD developed schematic roundabouts sized to accommodate anticipated design vehicles (WB-67) and the design year traffic volumes. The initial roundabout configurations are depicted on the following page in **Figures 1 and 2**.

The results of the roundabout analyses are summarized in **Tables 7 and 8** for the base (2020) and design (2040) years, respectively. Detailed reports are included in **Appendix D**. The approach LOS, volume-to-capacity (v/c) ratio, 95th percentile queue length (back-of-queue, in feet), and average delay per vehicle (in seconds) is reported for each leg of the roundabout. A v/c ratio of 0.85 is generally considered to be the threshold for acceptable roundabout operations.



**Figure 1: Single Lane Roundabout
I-20 Westbound Ramps at Carey Station Road**



**Figure 2: Single Lane Roundabout
I-20 Eastbound Ramps at Carey Station Road**

Table 7. 2020 Single Lane Roundabout Capacity Analysis I-20 Westbound Ramps at Carey Station Road					
			SB Carey Station Road	NB Carey Station Road	I-20 WB Off-Ramp
			TH/RT	LT/TH	LT/RT
GDOT Tool (Calibrated)	AM	LOS	A	A	A
		v/c	0.13	0.12	0.03
		Queue	25	25	25
		Delay	5.0	4.0	4.0
	PM	LOS	A	A	A
		v/c	0.08	0.20	0.05
		Queue	25	25	25
		Delay	5.0	5.0	5.0
ARCADY	AM	LOS	A	A	A
		v/c	0.12	0.11	0.03
		Queue	25	25	25
		Delay	4.0	3.7	3.8
	PM	LOS	A	A	A
		v/c	0.07	0.19	0.04
		Queue	25	25	25
		Delay	4.0	4.1	4.0
I-20 Eastbound Ramps at Carey Station Road					
			SB Carey Station Road	I-20 EB Off-Ramp	NB Carey Station Road
			LT/TH	LT/RT	TH/RT
GDOT Tool (Calibrated)	AM	LOS	A	A	A
		v/c	0.13	0.09	0.19
		Queue	25	25	25
		Delay	5.0	5.0	5.0
	PM	LOS	A	A	A
		v/c	0.10	0.10	0.32
		Queue	25	25	50
		Delay	4.0	5.0	7.0
ARCADY	AM	LOS	A	A	A
		v/c	0.13	0.08	0.18
		Queue	25	25	25
		Delay	3.9	4.0	4.0
	PM	LOS	A	A	A
		v/c	0.09	0.09	0.30
		Queue	25	25	25
		Delay	3.8	4.0	4.8

Table 8. 2040 Single Lane Roundabout Capacity Analysis I-20 Westbound Ramps at Carey Station Road					
			SB Carey Station Road	NB Carey Station Road	I-20 WB Off-Ramp
			TH/RT	LT/TH	LT/RT
GDOT Tool (Calibrated)	AM	LOS	A	A	A
		v/c	0.16	0.14	0.04
		Queue	25	25	25
		Delay	5.0	4.0	4.0
	PM	LOS	A	A	A
		v/c	0.10	0.23	0.06
		Queue	25	25	25
		Delay	4.0	5.0	4.0
ARCADY	AM	LOS	A	A	A
		v/c	0.16	0.14	0.04
		Queue	25	25	25
		Delay	4.0	3.6	3.7
	PM	LOS	A	A	A
		v/c	0.10	0.24	0.06
		Queue	25	25	25
		Delay	3.9	4.1	4.0
I-20 Eastbound Ramps at Carey Station Road					
			SB Carey Station Road	I-20 EB Off-Ramp	NB Carey Station Road
			LT/TH	LT/RT	LT/RT
GDOT Tool (Calibrated)	AM	LOS	A	A	A
		v/c	0.16	0.11	0.22
		Queue	25	25	25
		Delay	4.0	4.0	5.0
	PM	LOS	A	A	A
		v/c	0.12	0.13	0.37
		Queue	25	25	50
		Delay	4.0	4.0	6.0
ARCADY	AM	LOS	A	A	A
		v/c	0.16	0.10	0.23
		Queue	25	25	25
		Delay	3.8	4.0	4.1
	PM	LOS	A	A	A
		v/c	0.12	0.12	0.38
		Queue	25	25	25
		Delay	3.7	3.9	5.1

As the data in **Tables 7 and 8** indicate, single lane roundabouts are expected to operate well below capacity (maximum v/c ratio 0.38) through the design (2040) year for both ramp termini. A review of the residual capacity in ARCADY suggests that the single lane roundabout at the I-20 Eastbound ramps can accommodate traffic levels 294% and 138% beyond the 2040 volumes for the AM and PM peak periods, respectively.

Next, GHD analysed the performance of the single lane roundabouts for the 2040 +200% traffic volumes. Our analyses focused solely on the PM peak period for both roundabouts because the results for 2040

indicated that highest v/c ratios occurred on the critical approaches during the PM peak. The results are summarized in **Table 9** and detailed reports are included in **Appendix D**.

Table 9. 2040 +200% Single Lane Roundabout Capacity Analysis					
I-20 Westbound Ramps at Carey Station Road					
			SB Carey Station Road	NB Carey Station Road	I-20 WB Off-Ramp
			TH/RT	LT/TH	LT/RT
GDOT Tool (Calibrated)	AM	LOS	-	-	-
		v/c	-	-	-
		Queue	-	-	-
		Delay	-	-	-
	PM	LOS	B	B	A
		v/c	0.43	0.69	0.30
		Queue	50	150	25
		Delay	10.0	12.0	10.0
ARCADY	AM	LOS	-	-	-
		v/c	-	-	-
		Queue	-	-	-
		Delay	-	-	-
	PM	LOS	A	B	A
		v/c	0.36	0.71	0.25
		Queue	25	100	25
		Delay	6.9	10.9	7.2
I-20 Eastbound Ramps at Carey Station Road					
			SB Carey Station Road	I-20 EB Off-Ramp	NB Carey Station Road
			LT/TH	LT/RT	LT/RT
GDOT Tool (Calibrated)	AM	LOS	-	-	-
		v/c	-	-	-
		Queue	-	-	-
		Delay	-	-	-
	PM	LOS	A	B	F
		v/c	0.35	0.49	1.18
		Queue	50	75	1025
		Delay	6.0	10.0	105.0
ARCADY	AM	LOS	-	-	-
		v/c	-	-	-
		Queue	-	-	-
		Delay	-	-	-
	PM	LOS	A	A	F
		v/c	0.35	0.43	1.17
		Queue	25	25	4200
		Delay	5.0	7.1	332.0

As expected, the roundabout at the I-20 Westbound Ramp terminus will operate well even with the 2040 + 200% traffic volumes. However, the performance of the roundabout at the I-20 Eastbound Ramp terminus degrades to a LOS F with a v/c ratio of 1.18.

Additional analyses, summarized in **Table 10**, indicate that the addition of a partial right turn bypass on Northbound Carey Station Road provides the additional capacity necessary for the roundabout at the I-20 Eastbound Ramp terminus to operate acceptably with 2040 + 200% traffic volumes. A schematic for the proposed roundabout is included in **Figure 3** on the following page.

Table 10. 2040+200% Single Lane Roundabout w/ Partial Bypass Capacity Analysis I-20 Eastbound Ramps at Carey Station Road						
			SB Carey Station Road	EB I-20 Off-Ramp	NB Carey Station Road	
			LT/TH	LT/RT	TH	RT
GDOT Tool (Calibrated)	AM	LOS	-	-	-	-
		v/c	-	-	-	-
		Queue	-	-	-	-
		Delay	-	-	-	-
	PM	LOS	A	B	B	A
		v/c	0.35	0.49	0.69	0.52
		Queue	50	75	150	75
		Delay	6.0	10.0	13.0	9.7
ARCADY	AM	LOS	-	-	-	-
		v/c	-	-	-	-
		Queue	-	-	-	-
		Delay	-	-	-	-
	PM	LOS	A	A	B	A
		v/c	0.35	0.43	0.69	0.48
		Queue	25	25	75	25
		Delay	5.0	7.1	10.6	6.3

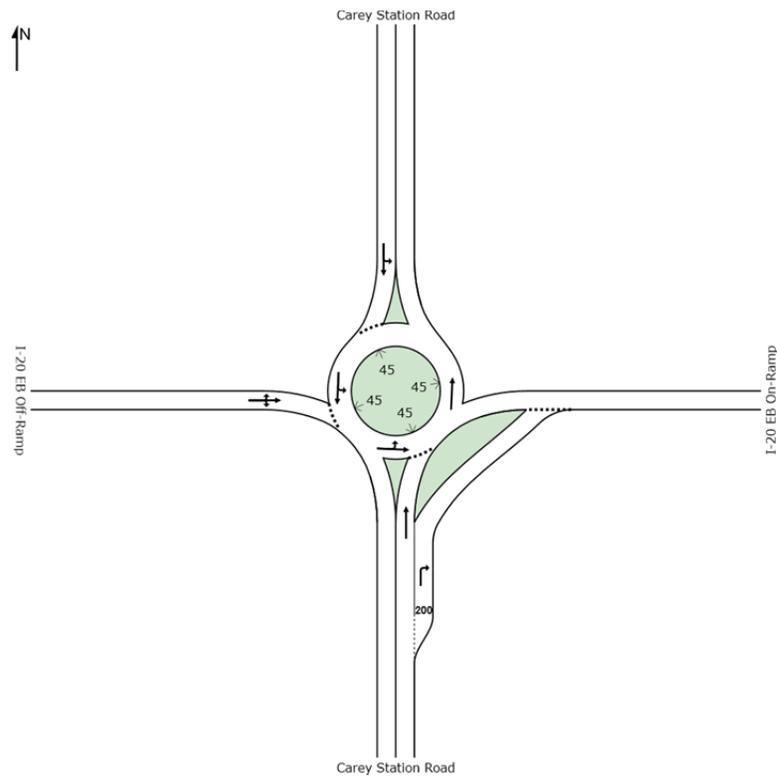


Figure 3: Single Lane Roundabout with Partial Right Turn Bypass I-20 Eastbound Ramps at Carey Station Road

5 FINDINGS & CONCLUSIONS

A brief summary of our findings is as follows:

1. Stop control on the off-ramps will operate efficiently for both ramp termini through 2040.
2. Stop control is predicted to fail for the I-20 westbound ramp terminus under 2040 + 200% traffic volumes.
3. Signal Warrant 1 is not met for either ramp terminus through 2040.
4. Single lane roundabouts should operate well at both ramp termini to some point beyond 2040.
5. A single lane roundabout is anticipated to operate with LOS A or B for the I-20 westbound ramp terminus under 2040 + 200% traffic volumes.
6. A single lane roundabout with a partial right turn bypass on the northbound approach is anticipated to operate with a LOS A for the I-20 Eastbound Ramp terminus under 2040 + 200% traffic volumes.
7. Given the safety and operational benefits of roundabouts compared to stop controlled intersections, single lane roundabouts are recommended for both ramp termini.
8. The roundabout at the I-20 Eastbound Ramp terminus can be constructed with or without the partial bypass on opening day (i.e. there is little detriment to safety by providing it before it is needed).



Memorandum

October 15, 2014

To	Tommy Crochet, PE – McGee Partners, Inc.		
From	Eric Frailing Andrew Duerr, PE	Tel	(717) 460-8958
Subject	I-20 / Carey Station Road Interchange Corridor & Interchange Operations Analyses Greene County, GA PI # 0007528	Job no.	8616659

1 INTRODUCTION

GHD performed analyses for a range of ramp terminal alternatives previously. The findings of these analyses are summarized in a Technical Memorandum dated July 9, 2014. The purpose of the current study is to extend the analyses to estimate the potential impact of the proposed I-20/Carey Station Road interchange on the larger I-20 corridor. The following memorandum summarizes the study methodology and results for 1) merge/diverge analyses for the existing and proposed ramps between the eastern side of CR 251 (Seven Island Road) and the western side of SR 44 (Lake Oconee Parkway), 2) signalized analyses for the existing signal at the SR 44 interchange, and 3) unsignalized analyses for the existing stop controlled intersections at the Seven Island Road interchange.

2 OPERATIONAL ANALYSIS

GHD performed analyses for the 2040 design year utilizing traffic volumes (ADTs and DHVs) provided by GDOT's Office of Planning dated May 2014. The volumes are summarized in Appendix A of the July 9, 2014 memorandum.

Freeway corridor segment analyses (merge/diverge) were performed using the *HCS2010* ramps module that is based on *Highway Capacity Manual (HCM)* analysis methodologies. Signalized and unsignalized analyses were performed using Synchro 8 rev. 881, which is also based on HCM analysis methodologies.

2.1 Freeway Merge and Diverge Analyses

GHD approximated the merge and diverge areas from aerial photographs and GDOT standard ramp design details. Ramp free-flow speeds were estimated based on GDOT ramp design guidance. Freeway segment free-flow speeds were based on design and posted speed limits. Output from the operational analyses is summarized in **Table 1** and the detailed analysis reports for each segment are provided in **Appendix A**.

Table 1 Ramp Merge and Diverge Analysis Results

Freeway Segment	Peak	Merge/Diverge LOS	Density in the Ramp Influence Area (pc/mi/ln)
CR 251 @ I-20 EB On-ramp	AM	B	10.0
CR 251 @ I-20 EB On-ramp	PM	B	11.7
CR 251 @ I-20 WB Off-ramp	AM	A	7.6
CR 251 @ I-20 WB Off-ramp	PM	B	13.1
Carey Station @ I-20 EB Off-ramp	AM	A	8.4
Carey Station @ I-20 EB Off-ramp	PM	A	8.8
Carey Station @ I-20 EB On-ramp	AM	A	5.8
Carey Station @ I-20 EB On-ramp	PM	A	7.7
Carey Station @ I-20 WB Off-ramp	AM	A	4.5
Carey Station @ I-20 WB Off-ramp	PM	A	9.8
Carey Station @ I-20 WB On-ramp	AM	A	3.1
Carey Station @ I-20 WB On-ramp	PM	A	8.3
SR 44 @ I-20 EB Off-ramp	AM	A	9.6
SR 44 @ I-20 EB Off-ramp	PM	B	10.5
SR 44 @ I-20 WB On-ramp	AM	A	6.9
SR 44 @ I-20 WB On-ramp	PM	B	11.8

LOS Source: 2010 Highway Capacity Manual – Merge and Diverge Segments

As illustrated in Table 1 above, the existing and proposed merge and diverge segments are expected to operate at LOS B or better in the 2040 design year. The expected operations meet or exceed the GDOT design criteria, LOS B or C, for freeways as outlined in Table 6.7 of the *Design Policy Manual*.

2.2 Signal Control Analysis – I-20 at SR 44

GHD performed signal analyses for the I-20 ramp terminals the SR 44 interchange. A network of two intersections was created in Synchro assuming the existing geometry and lane configurations. Signal phases were input based on signal head configurations presently at the site (e.g., protected-permissive phasing for SR 44 traffic turning left onto the on-ramps). Signals were analyzed using a pre-timed cycle length to provide “worse-case” results (partially or fully-actuated signals would result in better overall operations). The two ramp terminal intersections were then optimized together for cycle length and splits using Synchro’s built-in optimization tools. Operational analyses are summarized in **Table 2** and **Table 3**. Detailed analysis reports are included in **Appendix B**.

Table 2 Signalized Analysis Results – I-20 WB Ramps at SR 44

Peak	Intersection		Average Delay By Approach					
			SB SR 44		NB SR 44		WB I-20 Off-ramp	
	LOS	Average Delay	LOS	Average Delay	LOS	Average Delay	LOS	Average Delay
AM	A	8.0	B	14.1	A	1.6	B	12.6
PM	A	9.1	B	15.8	A	3.2	B	13.0

LOS Source: 2010 Highway Capacity Manual – Signalized Intersections

Delay in Seconds

Table 3 Signalized Analysis Results – I-20 EB Ramps at SR 44

Peak	Intersection		Average Delay By Approach					
			SB SR 44		NB SR 44		EB I-20 Off-ramp	
	LOS	Average Delay	LOS	Average Delay	LOS	Average Delay	LOS	Average Delay
AM	A	9.3	A	2.1	B	14.2	B	13.2
PM	B	11.9	A	2.8	B	20.0	B	14.0

LOS Source: 2010 Highway Capacity Manual – Signalized Intersections

Delay in Seconds

As illustrated in Tables 2 and 3 above, the existing traffic signals at the SR 44 interchange are expected to operate at LOS B or better in the 2040 design year. The expected operations meet or exceed the GDOT design criteria, LOS B, for rural arterials as outlined in Table 6.6 of the *Design Policy Manual*.

2.3 Two-Way Stop Control Analysis – I-20 at CR 251/Seven Mile Road

GHD performed unsignalized (two-way stop) analyses for the ramp terminals at the Seven Island Road interchange. A network of two intersections was created in Synchro based on the existing geometry and lane configurations. Operational analyses are summarized in **Table 4** and **Table 5**. Detailed analysis reports are included in **Appendix C**.

Table 4 Unsignalized Analysis Results – I-20 WB at CR 251

Peak	Intersection		Average Delay By Approach					
			SB CR 251		NB CR 251		WB I-20 Off-ramp	
	Average Delay	LOS	Average Delay	LOS	Average Delay	LOS	Average Delay	
AM	6.1	--	--	N/A	4.9	B	10.3	
PM	5.9	--	--	N/A	4.3	B	12.1	

LOS Source: 2010 Highway Capacity Manual – Unsignalized Intersections

Delay in Seconds

Table 5 Unsignalized Analysis Results – I-20 EB at CR 251

Peak	Average Delay By Approach							
	Intersection		SB CR 251		NB CR 251		EB I-20 Off-ramp	
	Average Delay	LOS	Average Delay	LOS	Average Delay	LOS	Average Delay	
AM	5.4	N/A	3.9	--	--	B	12.4	
PM	4.1	N/A	1.9	--	--	B	11.5	

LOS Source: 2010 Highway Capacity Manual – Unsignalized Intersections

Delay in Seconds

As illustrated in Tables 4 and 5 above, the existing stop controlled intersections at the Seven Island Road interchange are expected to operate at LOS B or better in the 2040 design year. The expected operations meet or exceed the GDOT design criteria, LOS C, for rural collectors as outlined in Table 6.5 of the *Design Policy Manual*.

3 FINDINGS & CONCLUSIONS

A brief summary of our findings is as follows:

1. No merging or diverging issues are predicted through the 2040 design year at the I-20 interchanges with CR 251 or SR 44 with the addition of the Carey Station interchange. The existing and proposed merge and diverge segments are expected to operate at LOS B or better in the 2040 design year. The expected operations meet or exceed the GDOT design criteria, LOS B or C, for freeways as outlined in Table 6.7 of the *Design Policy Manual*.
2. Signalized intersection control is predicted to operate acceptably at the SR 44 interchange ramp terminals through the 2040 design year without any geometric modifications. The expected operations meet or exceed the GDOT design criteria, LOS B, for rural arterials as outlined in Table 6.6 of the *Design Policy Manual*.
3. Unsignalized (two-way stop) control is predicted to operate acceptably at the Seven Island Road interchange ramp terminals through the 2040 design year without any geometric modifications. The expected operations meet or exceed the GDOT design criteria, LOS C, for rural collectors as outlined in Table 6.5 of the *Design Policy Manual*.

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INDICATION OF ROUNDABOUT SUPPORT

To the Georgia Department of Transportation:

Attn: State Traffic Engineer
935 E. Confederate Ave, Building 24
Atlanta, GA 30316

Location

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

Local Street Names: N/A at Carey Station Road

State/County Route Numbers: I-20 WB Ramps at CR 178

Associated Conditions

The undersigned agrees to participate in the following maintenance of the intersection in the event that the roundabout is selected as the preferred concept alternative:

- The full and entire cost of the electric energy used for any lighting installed (if needed)
- Any maintenance costs associated with the landscaping (after construction is complete)

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 is the 15th day of AUGUST, 2014

Attest:

Sylvia Hill
Clerk

By:

[Signature]

Title:

CHAIRMAN
GREENE COUNTY BOARD OF
COMMISSIONERS

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

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This is the 15th day of AUGUST, 20 14

Attest:

Sybil Hill
Clerk

By:

[Signature]

Title:

CHAIRMAN
GREENE COUNTY BOARD OF
COMMISSIONERS

Jenny Jenkins

From: Wilkinson, Eric <ewilkinson@dot.ga.gov>
Sent: Thursday, June 19, 2014 10:01 AM
To: Tommy Crochet; Jenny Jenkins
Subject: FW: 0007528_Carey Station Interchange

Tommy,

Please see AJs comments about if we use a roundabout

Eric Wilkinson, E.I.T.
Project Manager
Georgia Department of Transportation
Office of Program Delivery
801 HWY 15 South
P.O. Box 8
Tennille, GA 31089
(478)538-8522

From: Jubran, Abdallah (AJ)
Sent: Thursday, June 19, 2014 9:58 AM
To: Wilkinson, Eric
Cc: Turner, James; Jubran, Abdallah (AJ)
Subject: RE: 0007528_Carey Station Interchange

Eric,

I have been out the last two weeks and going through my emails. Based on Mr. Crochets roundabout comment, I placed a call to Ms. Jenkins for additional clarity. This does not change the pavement type on the ramp. If the Roundabout is at the Ramp then it would only make sense to construct the circulatory road with concrete since the ramp and the apron are both concrete.

A J Jubran, P.E.
State Pavement Engineer
Geotechnical, Environmental and Pavement Bureau
Office of Materials & Testing, Division of Construction
404-608-4771

From: Wilkinson, Eric
Sent: Wednesday, June 04, 2014 4:09 PM
To: 'Tommy Crochet'; Jubran, Abdallah (AJ); Jenny Jenkins
Subject: RE: 0007528_Carey Station Interchange

AJ

Can you help with the below questions? Please see the previous two emails...

Eric Wilkinson, E.I.T.
Project Manager

Georgia Department of Transportation
Office of Program Delivery
801 HWY 15 South
P.O. Box 8
Tennille, GA 31089
(478)538-8522

From: Tommy Crochet [<mailto:tcrochet@mcgeepartners.com>]
Sent: Wednesday, June 04, 2014 4:07 PM
To: Wilkinson, Eric; Jubran, Abdallah (AJ); Jenny Jenkins
Subject: RE: 0007528_Carey Station Interchange

Eric,

If we end up with roundabouts at the ramp/Carey Station intersections, would we want to use concrete on the roundabouts?

Thanks!

*Tommy Crochet
McGee Partners, Inc.
T 770.938.6400*

From: Wilkinson, Eric [<mailto:ewilkinson@dot.ga.gov>]
Sent: Wednesday, June 04, 2014 4:05 PM
To: Jubran, Abdallah (AJ); Jenny Jenkins
Cc: Tommy Crochet
Subject: FW: 0007528_Carey Station Interchange

Jenny,

I am going to say just the ramps will be concrete and Carey Station rd will be asphalt as well as the intersection...

AJ

Do you agree?

Eric Wilkinson, E.I.T.
Project Manager
Georgia Department of Transportation
Office of Program Delivery
801 HWY 15 South
P.O. Box 8
Tennille, GA 31089
(478)538-8522

From: Jenny Jenkins [<mailto:jjenkins@mcgeepartners.com>]
Sent: Wednesday, June 04, 2014 4:03 PM
To: Wilkinson, Eric; Tommy Crochet
Cc: Brewer, George
Subject: RE: 0007528_Carey Station Interchange

Eric –

Thanks – that is very helpful. I do have a couple questions, though. Should the intersections of the ramps and Carey Station Road be concrete as well? Likewise, should Carey Station Road be concrete on both sides of the bridge (between the ramp intersections and the bridge)?

Thanks again!

Jenny C. Jenkins, PE
McGee Partners, Inc.
770.938.6400

From: Wilkinson, Eric [<mailto:ewilkinson@dot.ga.gov>]
Sent: Wednesday, June 04, 2014 12:23 PM
To: Jenny Jenkins; Tommy Crochet
Cc: Brewer, George
Subject: FW: 0007528_Carey Station Interchange

Jenny,

This is what I got from AJ in April. I am really not too familiar with the process on this, but if you need more information I will go back to AJ.

Eric Wilkinson, E.I.T.
Project Manager
Georgia Department of Transportation
Office of Program Delivery
801 HWY 15 South
P.O. Box 8
Tennille, GA 31089
(478)538-8522

From: Jubran, Abdallah (AJ)
Sent: Friday, April 25, 2014 5:38 PM
To: Wilkinson, Eric
Cc: Turner, James; Brewer, George
Subject: RE: 0007528_Carey Station Interchange

Eric,

Interstate ramps are constructed of JPCP consisting of a slab whose thickness will be determined by traffic volume and truck traffic. It is placed over 3 inches of 19 mm SP and 12 inches of GAB. As to Carey Station Road, the pavement type will be the existing pavement type.

AJ Jubran, P.E.
State Pavement Engineer
Geotechnical, Environmental and Pavement Bureau
Office of Materials & Testing, Division of Construction
404-608-4771

From: Wilkinson, Eric
Sent: Monday, April 21, 2014 4:20 PM

To: Jubran, Abdallah (AJ)
Cc: Turner, James; Johnson, Sidney C.; Brewer, George
Subject: Re: 0007528_Carey Station Interchange

This project will be a new interchange and I meant to say we need a pavement selection type. Such as for the ramps will it be concrete, etc....

Eric Wilkinson, E.I.T.
GDOT Project Manager
(478)-538-8522

On Apr 21, 2014, at 4:08 PM, "Jubran, Abdallah (AJ)" <ajubran@dot.ga.gov> wrote:

Eric,

For the new construction, you will eventually need a pavement thickness design. The Consultant can prepare one using the GDOT Pavement Design Tool. Alternatively, the Consultant needs to look up a pavement section from the Minor Project Pavement Guidelines which is published on the ROADS webpage.

Since this is an intersection, there will a tie-in section to an existing facility, and milling is typically 1 ½ inches, so as to restore the stripe lines after work has been completed.

If this is an Interstate Intersection or a major intersection with high volume traffic, trucks or both, then your Consultant needs to find out from old plans what pavement thickness and base type exist, and estimate a milling depth, based on field conditions prior to overlay and striping.

Are you asking for field work to be done or does your Consultant need assistance in preparing a pavement design?

A J Jubran, P.E.
State Pavement Engineer
Geotechnical, Environmental and Pavement Bureau
Office of Materials & Testing, Division of Construction
404-608-4771

From: Wilkinson, Eric
Sent: Monday, April 21, 2014 2:50 PM
To: Jubran, Abdallah (AJ)
Cc: Brewer, George
Subject: RE: 0007528_Carey Station Interchange

I am just checking to see if you received my email below? If you have seen it, when do you expect to be able to provide this information?

Thanks

Eric Wilkinson, E.I.T.
Project Manager
Georgia Department of Transportation
Office of Program Delivery
801 HWY 15 South
P.O. Box 8

Tennille, GA 31089
(478)538-8522

From: Wilkinson, Eric
Sent: Tuesday, April 15, 2014 2:27 PM
To: Jubran, Abdallah (AJ)
Subject: 0007528_Carey Station Interchange

AJ,

I have a consultant on board to prepare the concept report for this project, so we can get a better assessment of the cost of the project phases. This project will consist of a new interchange at Carey Station RD in Greene County. The consultant is needing the Pavement Section Report and I was going to get with you on this. What information do you need for this report? We have traffic projections and the Interchange justification report. Please let me know what all you will need.

Thanks

Eric Wilkinson, E.I.T.
Project Manager
Georgia Department of Transportation
Office of Program Delivery
801 HWY 15 South
P.O. Box 8
Tennille, GA 31089
(478)538-8522

Georgia DOT commits \$7 million per year to an Off-System Safety Improvement Program designed to reduce fatalities and serious injuries on rural roads owned and maintained by local governments throughout Georgia. Thus far in FY2014, GDOT has administered approximately \$6.5 million of federal funds for local assistance in 78 counties. Visit us at <http://www.dot.ga.gov> (Local Government link) or follow us on <http://www.facebook.com/GeorgiaDOT> and <http://twitter.com/gadepoftrans>.

The Georgia DOT inspected 8,725 bridges across the state in 2013 to ensure the safety of the travelling public and to identify critical maintenance needs for system preservation. With one of the lower gasoline taxes in the nation, Georgia consistently ranks among the nation's best maintained bridges. Visit us at <http://www.dot.ga.gov> or follow us on <http://www.facebook.com/GeorgiaDOT> and <http://twitter.com/gadepoftrans>.

McGee Partners, Inc.

13 Corporate Boulevard NE
Suite 200
Atlanta, GA 30329
T 770.938.6400

Meeting Summary

Date: July 18, 2014 Time: 10:00 am
Location: Greene County Government Campus
Subject: I-20 at Carey Station Road
Project No: CSHPP-0007-00(528), PI# 0007528 MPI: 2001036
Recorded By: Jenny Jenkins

Attendees: George Brewer, GDOT
Eric Wilkinson, GDOT
Harriet Oxford, GDOT
Michael Thomas, GDOT
Kendrick Collins, GDOT
Neal O'Brien, GDOT
Tom Caiafa, GDOT
Thomas Johnson, GDOT
Bryan Gibbs, GDOT
Chris Dills, GDOT
Robert Simpson, GDOT
Byron Lombard, Greene County Manager
Gerald Torbert, Greene County Commissioner
Valerie Duvall, Greene County
Drew Pitman, Edwards-Pitman Environmental
Mark Lenters, GHD
Tommy Crochet, McGee Partners
Jenny Jenkins, McGee Partners
Pete Bailey, Property Owner
Jamie Reynolds, Property Owner

- Tommy Crochet began the meeting by asking everyone to introduce themselves. Tommy then reviewed the current concept layout, and asked whether I-20 or Carey Station Road should be considered the mainline. Attendees agreed that I-20 would be the mainline on this project.
- Mark Lenters reviewed the traffic analyses that have been done so far. The traffic studies show that a 2-lane roadway is sufficient to carry the traffic volume in the design year. The intersections

Meeting Notes

Initial Concept Meeting

July 18, 2014

I-20 at Carey Station Road, Greene County

of the ramps and Carey Station Road do not meet signal warrants. Furthermore, stop-controlled intersections and roundabouts would adequately handle the traffic at the intersections through 2040, based on the traffic projections provided by the GDOT Office of Planning. However, roundabouts would be considerably safer, and could handle traffic volumes three times the projected 2040 traffic. Future traffic volumes may necessitate inclusion of a right turn bypass on northbound Carey Station Road to the eastbound entrance ramp, but the exclusive right turn lane would not be required until traffic volumes exceed the projected 2040 traffic. GHD recommended roundabouts at the intersections. Byron Lombard stated that Greene County would prefer roundabouts at this time, and agreed that the County would cover the cost of energizing and maintaining lighting at the interchange. GDOT agreed with the recommendation to include roundabouts in the conceptual design.

- Byron stated that the County would like to pursue the alternative alignment that avoids impacting the transfer station at the north end of the project.
- Tommy reviewed the draft concept report, and the issues below were discussed:
 - Other projects in the area: The report should include the GDOT project(s) that will widen SR 44 from I-20 to Eatonton.
 - Regional Commission Project ID: McGee Partners will find out if the Northeast Georgia Regional Commission has an ID number for this project.
 - Federal Oversight: GDOT stated that the concept report should indicate that this project is exempt from federal oversight.
 - Functional Classification: GDOT has Carey Station Road listed as a rural major collector. Gerald Torbert indicated that it is an arterial. GDOT will confirm the functional classification of Carey Station Road. *(Note: For the purpose of completing the draft Concept Report, McGee Partners will consider Carey Station Road as a Rural Minor Arterial upon completion of the interchange.)*
 - Complete Streets/Bikes/Peds: There is no evidence of current pedestrian activity. Furthermore, the proposed projects to widen SR 44 will include provisions for bicycles, so Greene County does not want bike shoulders on Carey Station Road.

Meeting Notes

Initial Concept Meeting

July 18, 2014

I-20 at Carey Station Road, Greene County

- Pavement Recommendations: GDOT Office of Materials has recommended that the ramps and roundabouts be constructed of concrete. Tommy recommended that the approaches to the roundabouts be concrete as well to avoid rutting of pavement by trucks as they approach the intersections. All attendees agreed that the concrete should extend to at least the end of the splitter islands and between the two roundabouts, and asphalt should begin at the point where Carey Station Road consists of two 12' lanes. Tommy stated that McGee Partners will do a preliminary pavement design in order to have a more accurate concept cost estimate.
- Proposed bridge: The new bridge will only need to be 2 lanes due to the presence of the roundabouts.
- Lighting: Greene County and GDOT will sign a lighting agreement or commitment letter.
- Transportation Management Plan: Not required.
- Temporary State Route: GDOT confirmed that Carey Station Road will need to be a temporary state route in order to procure right-of-way along the relocated roadway.
- Utility Involvements: Byron indicated that utility companies may want to work with the County and GDOT during the concept development phase in order to allow for provisions for future installations in anticipation of growth to the south of I-20 along the project corridor.
- SUE Required: It appears that all of the existing utilities in the project are above ground, so SUE will likely not be required for this project. Cardno has completed a QL-D survey that was submitted to GDOT on July 11.
- Public Interest Determination Policy and Procedure: Not required since there will be minimal conflicts with existing utilities.
- Proposed R/W Width: Right-of-way on I-20 will be widened to accommodate the new ramps. The proposed right-of-way on Carey Station Road will be 80'. However, Greene County envisions widening Carey Station Road to 4 lanes with a landscaped median after the potential development and growth occurs. In anticipation of the possible widening, the

Meeting Notes

Initial Concept Meeting

July 18, 2014

I-20 at Carey Station Road, Greene County

County will consider reserving space along the roadway through the implementation of zoning overlay district along Carey Station Road from I-20 southward to SR 44.

- Roundabouts: GHD will incorporate the roundabout studies into the overall traffic study; we will not have a separate roundabout feasibility study. A roundabout peer review of the feasibility study should not be required since GHD is prequalified by GDOT to perform roundabout peer reviews.
- PAR Required: The concept report will state that a PAR is not required provided the cumulative stream impacts are kept below 1500'.
- Constructability Issues: None anticipated.
- Other issues not discussed in conjunction with the draft concept report included:
 - Existing Safety Concerns: None.
 - Need for formal or informal location inspection: No.
 - ITS: None.
 - Existing maintenance problems (drainage, pavement): None.
 - Proposed access control: GDOT policy requires a minimum of 300' access control outside the area of influence of the ramp intersections. The project team will study the potential for queueing at the roundabouts and may recommend limited access lengths along Carey Station Road greater than 300' to preserve desirable operations of the roundabouts.
 - District information on public contacts and concerns to date: None.
 - Coordination with FHWA, FTA, GRTA, other non-environmental agencies: None.
 - Considerations for mapping/aerial photography/tax plats when moving forward with preliminary design: Will be addressed when appropriate.
- Current schedule
 - R/W and Construction are currently programmed as Long Range. Eric stated that one goal of this concept development process is to be able to present cost estimates to GDOT upper management with hopes of identifying funding for the project to proceed. Byron emphasized that the County would like to be involved in the funding discussions.

Meeting Notes

Initial Concept Meeting

July 18, 2014

I-20 at Carey Station Road, Greene County

- The issue of project cost spurred a discussion involving design speed of Carey Station Road. Tommy stated that we might be able to lower the cost of the project by reducing the design speed of Carey Station Road to 45 mph. A lower speed on the approaches to the interchange would help prepare drivers for the roundabouts at the intersections, and would allow us to use smaller radius horizontal curves north of I-20. Lower K values for vertical curves could also reduce earthwork volumes and the lengths of cross drain at existing streams and drainage channels. Portions of Carey Station Road outside of the limit of access would still utilize higher K values to ensure intersection sight distance is provided for future access driveways and side streets.
- There were no further comments from attendees.

McGee Partners, Inc.

13 Corporate Boulevard NE
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Meeting Summary

Date: October 20, 2014 Time: 10:00 am
Location: Greene County Government Campus
Subject: I-20 at Carey Station Road – Concept Meeting
Project No: CSHPP-0007-00(528), PI# 0007528 MPI: 2001036
Recorded By: Jenny Jenkins

Attendees: George Brewer, GDOT
Eric Wilkinson, GDOT
Michael Thomas, GDOT
Neal O'Brien, GDOT
Tom Caiafa, GDOT
Bryan Gibbs, GDOT
Chris Dills, GDOT
Robert Simpson, GDOT
Cissy McNure, GDOT
Byron Lombard, Greene County Manager
Rabun Neal, Reynolds Plantation
Josh Earhart, Edwards-Pitman Environmental
Andy Duerr, GHD
Tommy Crochet, McGee Partners
Jenny Jenkins, McGee Partners
Mark McCullers, Greene County Citizen

- Tommy Crochet began the meeting by asking everyone to introduce themselves. Tommy then reviewed the current concept layout and report.
- Josh Earhart summarized the environmental resources and anticipated environmental impacts associated with the project.
- Tommy led a discussion on the speed limit on Carey Station. GDOT Design Policy Manual indicated 55 mph for a rural collector. Byron Lombard stated that Greene County supports a 45 mph speed limit on Carey Station Road, on both the north and south sides of the interchange.

Meeting Notes

Concept Meeting

October 20, 2014

I-20 at Carey Station Road, Greene County

Tommy will review AASHTO and GDOT policy, and discuss with the Office of Design Policy and Support, if needed

- Tommy asked Andy Duerr if high mast lighting in the interchange would adequately address the lighting needs for the roundabouts; Andy stated that it should.
- Andy stated that the roundabout feasibility study has been completed and will be submitted to GDOT.
- Cost estimates are being finalized. Summary of the costs at this time:
 - Construction: Approximately \$18 million
 - Right of Way: Approximately \$5 million
 - Reimbursable Utilities: \$200,000
 - Non-reimbursable Utilities: \$300,000
- Tommy asked if any PFAs would be required. Eric stated that GDOT has a letter from Greene County indicating they will cover the cost of lighting, but a signed agreement will still be required.
- Funding: Eric stated that Byron will need to set up a meeting with Toby Carr, GDOT Director of Planning, to discuss funding, but that the project is currently programmed for Long Range. Tommy stated the updated concept report will be submitted in about 4 weeks. Eric suggested that the County try to meet with the GDOT Planning Office around the first of the year after the concept report has been approved by GDOT.
- Tommy pointed out that the proposed intersection of Carey Station Road and Stagecoach Road is a potential location for a roundabout; he suggests looking into the issue in the design phase of the project.
- Byron Lombard indicated the County is considering extension of Parks Mill Road to the realigned Carey Station Road as a County funded project after the interchange is built. Stagecoach Road west of Carey Station Road may be realigned to tie into Parks Mill Road.
- There were no further comments from attendees.