DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

OFFICE OF DESIGN POLICY & SUPPORT
INTERDEPARTMENTAL CORRESPONDENCE

FILE P.I. # 0013297
Gordon County
GDOT District 6 - Cartersville
SR3/US41 @ SR156
Operational Improvements

OFFICE Design Policy & Support

DATE 6/18/2018

FROM for 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:

Hiral Patel, Director of Engineering
Joe Carpenter, Director of P3
Albert Shelby, Director of Program Delivery
Darryl VanMeter, Assistant Director of P3/State Innovative Delivery Administrator
Kim Nesbitt, Program Delivery Administrator
Bobby Hilliard, Program Control Administrator
Cindy VanDyke, State Transportation Planning Administrator
Eric Duff, State Environmental Administrator
Bill DuVall, State Bridge Engineer
Andrew Heath, State Traffic Engineer
Angela Robinson, Financial Management Administrator
Lisa Myers, State Project Review Engineer
Monica Flournoy, State Materials Engineer
Patrick Allen, State Utilities Engineer
Benny Walden, Statewide Location Bureau Chief
Andy Casey, State Roadway Design Engineer
Attn: David Ray, District 6 Design Engineer
Grant Waldrop, Acting District Engineer
David Acree, District Preconstruction Engineer
Jun Birnkammer, District Utilities Manager
Jeff Simmons, Project Manager
BOARD MEMBER - 14th Congressional District

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
LIMITED SCOPE PROJECT CONCEPT REPORT

Project Type:	Intersection Improvement	P.I. Number:	0013297
GDOT District:	6	County:	Gordon
Federal Route Number:	41	State Route Number:	SR 3 & SR 156
		Project Number:	N/A

This project proposes the construction of dedicated left-turn lanes on the northbound, southbound, and eastbound legs of the intersection. The westbound leg of the intersection will be reconfigured to provide a left-turn lane, a through lane, and a right lane. Additionally, the construction of a concrete island is proposed in front of a local business on the northbound leg of the intersection to provide physical separation from the road.

Report updated 4/18/2018

Submitted for approval:

Consultant: Doug Tilt, PE Arcadis U.S., Inc. — Date 2/16/2018

State Program Delivery Administrator — Date 3/8/18

GDOT Project Manager: — Date 3/1/2018

Recommendation for approval:

Eric Duff — State Environmental Administrator — Date 4/19/2018

Christina Barry, Traffic Operations Manager — for State Traffic Engineer — Date 3/26/2018

Grant Waldrop, District 6 Traffic Engineer — for District 6 Engineer — Date 3/27/2018

☐ 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).

Cynthia VanDyke — State Transportation Planning Administrator — Date 3/15/2018

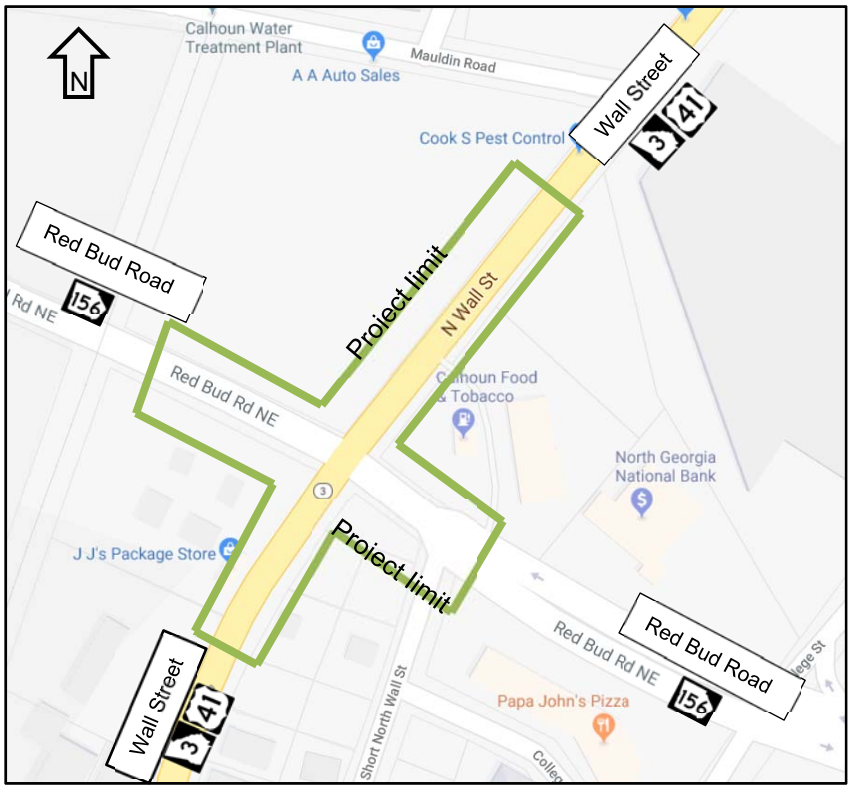
Approval:

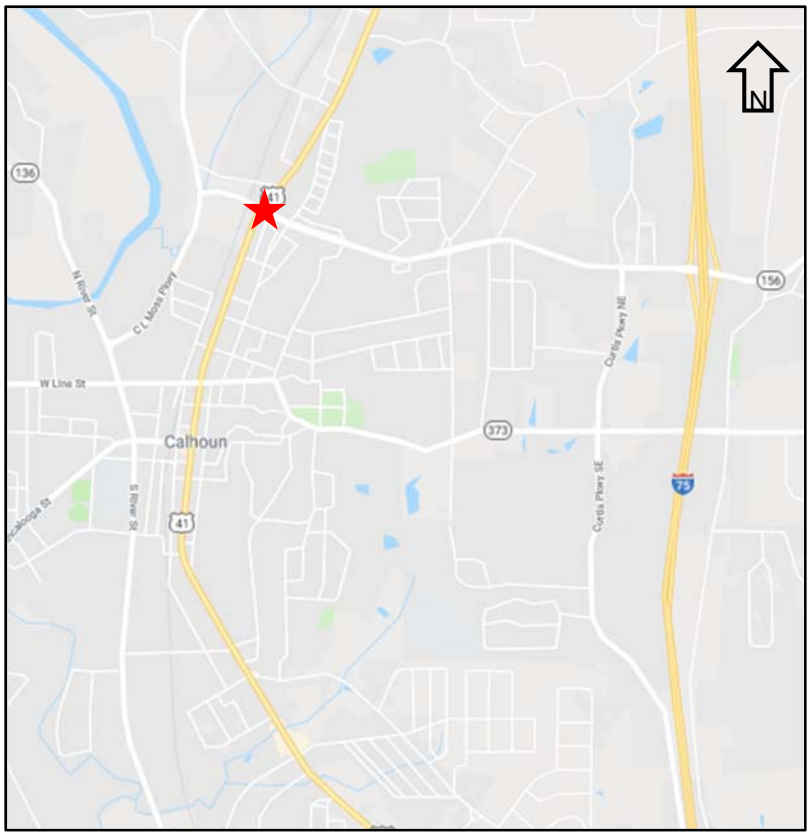
Concur: GDOT Director of Engineering — Date 6/12/18

Approve: GDOT Chief Engineer — Date 6/14/18

Comments & recommendations also received from:
Kerry Gore, Office of Utilities - Recommended 4/19/2018
Dan Pass, Office of Design Policy - Comments submitted 3/29/2018
Erik Rohde, Office of Engineering Services - Recommended with comments 3/28/2018

PROJECT LOCATION MAP: SR 3/US 41 @ SR 156





PLANNING & BACKGROUND DATA

Project Justification Statement: This Project Justification Statement was prepared by ARCADIS U.S., Inc., was approved by Georgia Department of Transportation (GDOT) and is on record at GDOT Office of Traffic Operations.

SR 3/US 41/Wall Street at SR 156/Red Bud Road in Gordon County was identified for minor intersection improvements. The proposed project is to be included in the GDOT Operational Improvement Lump Sum Program from the Office of Traffic Operations. This proposed project was approved by the Statewide Operational Improvement Committee on September 8, 2014. Voting members typically consist of the following people or their designee:

- Chief Engineer
- Director of Operations
- Director of Engineering
- State Traffic Engineer
- State Transportation Planning Administrator

The project was proposed by Traffic Operations staff to improve operating conditions in existing and future years for all approaches to the intersection with minimal impacts to right-of-way. The lack of dedicated left turn lanes on the northbound, southbound, and eastbound legs of the intersection causes left turning vehicles to block the through movements, causing extensive queues and delays during peak hours.

In the 2020 AM peak hour, the intersection is expected to operate at LOS E with a delay of 58.2 seconds/vehicle (sec/veh) and in the 2040 AM peak hour it is expected to operate at LOS F with a delay of 186.9 sec/veh, amounting to a 221 percent increase in delay. During the 2020 PM peak hour, the intersection is expected to operate at LOS D with a delay of 50.9 sec/veh, and in the 2040 PM peak hour, the intersection is expected to operate at LOS F with a delay of 159.0 sec/veh, amounting to a 212 percent increase in delay. Additional analysis can be found in Attachment 5.

Existing conditions: SR 3 at SR 156 is a four-leg, signalized intersection.

SR 3/US 41/Wall Street: In the project area, SR 3/Wall Street runs north-south. Both the northbound and southbound intersection approaches provide one shared through, left, and a right-turn lane.

SR 156/Red Bud Road: In the project area, SR 156/Red Bud Road runs east-west. The westbound intersection approach has one left turn lane and one shared through and right-turn lane with curb and gutter and 5-foot sidewalks on the north and south sides of the road. The eastbound approach has one shared through, left-, and right-turn lane and has guardrail on the north and south sides of the road due to the grade of the foreslope.

Other projects in the area: N/A

MPO: N/A - not in an MPO **TIP #:** N/A

Congressional District(s): 14

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

Projected Traffic: AADT *SR 3* - 24 HR T: 7.5% *SR 156* – 24 HR T: 5.5%
SR 3 AADT:
Current Year (2017): 13,200 Open Year (2020): 13,500 Design Year (2040): 15,750
SR 156 AADT:
Current Year (2017): 7,400 Open Year (2020): 7,600 Design Year (2040): 8,800

Traffic Projections Performed by: Arcadis U.S., Inc.

Date approved by the GDOT Office of Traffic Operations through Landon Perry in the GDOT Office of Traffic Operations: April 10, 2017
See Attachment 4 for the complete volume diagrams.

Functional Classification (Mainline): Urban Principal Arterial

Complete Streets - Bicycle, Pedestrian, and/or Transit Standards Warrants:
Warrants met: ☐None ☐Bicycle ☒Pedestrian ☐Transit

Pedestrian warrants are met at for this project as there are pedestrian traffic generators around the intersection.

Pavement Evaluation and Recommendations
Initial Pavement Evaluation Summary Report Required? ☒No ☐Yes
Initial Pavement Type Selection Report Required? ☒No ☐Yes
Feasible Pavement Alternatives: ☒HMA ☐PCC ☐HMA & PCC

DESIGN AND STRUCTURAL

Description of Proposed Project: Construct dedicated left turning lanes on northbound, southbound, and eastbound legs of the intersection. Convert westbound leg from one left turning lane and one shared through-right turning lane into one left turning storage lane, one through lane, and one right turning lane.
Major Structures:

Structure ID	Existing	Proposed
129-0007-0	US 41/SR 3 at Mill Pond Branch	No Impacts Anticipated

Mainline Design Features: ***SR 3/US 41/Wall Street – Urban Principal Arterial***

Northbound Approach to SR 156 Intersection

Feature	Existing	Policy	Proposed
Typical Section			
- Number of Lanes	2		2
- **Lane Width(s)**	**11'**	**11' – 12'**	**11'**
- **Median Width & Type**	**N/A**	**N/A**	**N/A**
- **Border Area Width**	**10'**	**10' - 16'**	**10'**
- **Border Area Cross Slope**	**0% - 2%**	**2% max**	**0% - 2%**
- **Inside Shoulder Width**	**N/A**	**N/A**	**N/A**
- **Sidewalks**	**N/A**	**N/A**	**N/A**
- Auxiliary Lanes	N/A		1 - 11' Left Turn Lane
- **Bike Accommodations**	**N/A**	**N/A**	**N/A**
Posted Speed	35		35
Design Speed	**35**	**35**	**35**
Minimum Horizontal Curve Radius	N/A	N/A	N/A
Maximum Superelevation Rate	N/A	N/A	N/A
Maximum Grade	N/A	N/A	N/A
Access Control	Permitted		Permitted
Design Vehicle	N/A		WB-40
Pavement Type	HMA		HMA

*According to current GDOT design policy if applicable

Southbound Approach to SR 156 Intersection

Feature	Existing	Policy	Proposed
Typical Section			
- Number of Lanes	2		2
- **Lane Width(s)**	**11-13'**	**11' – 12'**	**11'**
- **Median Width & Type**	**N/A**	**N/A**	**N/A**
- **Border Area Width (East Side)** - **Outside Shoulder Width (West Side)**	**10'** **2' – Paved** **4' – Overall**	**10'-16'** **4' – Paved** **8' – Overall**	**10'** **2' – Paved** **4' – Overall**
- **Border Area Cross Slope (East Side)** - **Outside Shoulder Slope (West Side)**	**0% - 2%** **6%**	**2% max** **6%**	**0% - 2%** **6%**
- **Inside Shoulder Width**	**N/A**	**N/A**	**N/A**
- **Sidewalks**	**N/A**	**N/A**	**N/A**
- Auxiliary Lanes	N/A		1 - 11' Left Turn Lane
- **Bike Accommodations**	**N/A**	**N/A**	**N/A**
Posted Speed	35		35
Design Speed	**35**	**35**	**35**
Minimum Horizontal Curve Radius	N/A	N/A	N/A
Maximum Superelevation Rate	N/A	N/A	N/A
Maximum Grade	N/A	N/A	N/A
Access Control	Permitted		Permitted
Design Vehicle	N/A		WB-40
Pavement Type	HMA		HMA

*According to current GDOT design policy if applicable

Mainline Design Features: ***SR 156/Red Bud Road – Urban Minor Arterial***

Westbound Approach to SR 3 Intersection

Feature	Existing	Policy	Proposed
Typical Section			
- Number of Lanes	4		4
- **Lane Width(s)**	**11'**	**11' – 12'**	**11'**
- **Median Width & Type**	**0' - 8' Flush**	**N/A**	**11' - 14' TWLTL**
- **Border Area Width**	**10' – 16'**	**10' – 16'**	**10' – 16'**
- **Border Area Cross Slope**	**0% - 2%**	**2% max**	**0% - 2%**
- **Inside Shoulder Width**	**N/A**	**N/A**	**N/A**
- **Sidewalks**	**5'**	**5'**	**5'**
- Auxiliary Lanes	N/A		**11' - 14' TWLTL**
- **Bike Accommodations**	**N/A**	**N/A**	**N/A**
Posted Speed	45		45
Design Speed	**45**	**45**	**45**
Minimum Horizontal Curve Radius	N/A	N/A	N/A
Maximum Superelevation Rate	N/A	N/A	N/A
Maximum Grade	N/A	N/A	N/A
Access Control	Permitted		Permitted
Design Vehicle	N/A		WB-40
Pavement Type	HMA		HMA

Eastbound Approach to SR 3 Intersection

Feature	Existing	Policy	Proposed
Typical Section			
- Number of Lanes	2		3
- **Lane Width(s)**	**12'**	**11' – 12'**	**11'**
- **Median Width & Type**	**N/A**	**N/A**	**N/A**
- **Outside Shoulder Width**	**2' – Paved 2' – Overall**	**4' – Paved 8' – Overall**	**4' – Paved 8' – Overall**
- **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		1 - 11' Left Turn Lane
- **Bike Accommodations**	**N/A**	**N/A**	**N/A**
Posted Speed	35		35
Design Speed	**35**	**35**	**35**
Minimum Horizontal Curve Radius	N/A	N/A	N/A
Maximum Superelevation Rate	N/A	N/A	N/A
Maximum Grade	N/A	N/A	N/A
Access Control	Permitted		Permitted
Design Vehicle	N/A		WB-40
Pavement Type	HMA		HMA

Note: The proposed lane width for the eastbound leg of Red Bud Road will be reduced from 12' to 11' in order to provide space for a center left turn lane.

Is the project located on a NHS roadway? ☐ No ☒ Yes

Design Exceptions/Design Variances to FHWA or GDOT Controlling Criteria anticipated:

Design Exceptions:

- A design Exceptions may be required for the 4' outside shoulder width with guardrail within the project area to maintain the existing condition.

Design Variances:

- A design variance may be required to omit crosswalks along the north and west legs of the intersection.
- A design variance may be required to provide 80 ft storage length for the southbound left turn lane and 140 ft storage length for the westbound left turn lane. These storage lengths are shorter than those recommended in GDOT's guidance as this project is limited in scope and intends to construct within the existing edges of pavement as much as possible.

Lighting required: ☒ No ☐ Yes

Off-site Detours Anticipated: ☐ No ☒ Undetermined ☐ Yes

- A Detour Open House will be needed and covered in the Environmental and Permits section under Public Involvement

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

If Yes: Project classified as: ☐ Non-Significant

TMP Components Anticipated: ☐ TTC

INTERCHANGES AND INTERSECTIONS

Major Interchanges/Intersections: N/A

Intersection Control Evaluation (ICE) Required: ☐ No ☒ Yes
ICE Stages 1 & 2 have been completed for this project.

Roundabout Peer Review Required: ☒ No ☐ Yes ☐ Completed

UTILITY AND PROPERTY

Railroad Involvement: Railroad coordination is anticipated as this intersection is approximately 330 feet east of a railroad crossing. Warning Devices and Pre-Emption are recommended at the railroad at-grade crossing Inventory # 351796S, Railroad Milepost 0WA0079.030 by the Railroad Safety team. CSX Transportation, Inc. is the operating railroad, and the State Properties Commission is the owner of the Right of Way.

Utility Involvements:

1. North Georgia EMC
2. City of Calhoun Water and Sewer
3. Atlanta Gas Light
4. AT&T
5. City of Calhoun Electric
6. Georgia Power
7. Comcast

SUE Required: ☒ No ☐Yes

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

Right-of-Way: Existing width: 50ft. Proposed width: 52 – 56 ft.
Required Right-of-Way anticipated: ☐ None ☒ Yes ☐ Undetermined
Easements anticipated: ☐ None ☒ Temporary ☒ Permanent ☐ Utility ☐ Other

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

All permanent easements are to be purchased with the right to place utilities.

Impacts to USACE property anticipated? ☒ No ☐ Yes ☐ Undetermined

Is Federal Aviation Administration (FAA) coordination anticipated? ☐ No ☒ Yes
The project location is less than five miles from Tom B. David Field.

CONTEXT SENSITIVE SOLUTIONS

Issues of Concern: N/A

Context Sensitive Solutions Proposed: N/A

ENVIRONMENTAL AND PERMITS

Anticipated Environmental Document:

NEPA:	☐ PCE	☐ CE	☐ EA-FONSI
GEPA:	☐ Type A	☐ Type B	☒ None

Level of Environmental Analysis:

☒ The environmental considerations noted below are based on preliminary desktop or screening level environmental analysis and are subject to revision after the completion of resource identification, delineation, and agency concurrence.

☐ The environmental considerations noted below are based on the completion of resource identification, delineation, and agency concurrence.

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

Is Non-MS4 water quality mitigation anticipated? ☒ No ☐ Yes

Environmental Permits, Variances, Commitments, and Coordination anticipated:

- Habitat for protected species does not likely exist due to utility easements, roadway construction, nearby railroad tracks, and urban development within the study corridor.
- Waters of the United States are present within the study corridor. An ecological survey would be necessary to confirm the extent, of natural resources within the project corridor. Impacts may require a PCN Permit. Impacts would be minimal and not likely to require mitigation.
- Using Georgia's Natural, Archeological, and Historic GIS (NAHRGIS) and a desktop survey, it was determined that there are houses and structures that are 50 years old and older within the project corridor. These houses and structures are primarily located south of SR 156, on both the east and west sides of SR 3/US 41. Section 106 Consultation and a Cultural Resources Survey by certified historian/archaeologist will confirm this and determine their eligibility for inclusion in the National Register of Historic Places.
- Underground storage tanks are present within the study corridor. Using EnviroMapper, Calhoun Food and Tobacco, located at 901 N. Wall Street occupies the northeast quadrant of the intersection was identified as having an underground storage tank. Phase I and Phase II testing could be required should land disturbing activity or right-of-way acquisition be necessary at the gas station locations. No other evidence of hazardous sites/materials were observed.

Air Quality:

Is the project located in an Ozone Non-attainment area?	☒ No	☐ Yes	
Carbon Monoxide hotspot analysis:	☒ Required	☐ Not Required	☐ TBD

NEPA/GEPA Comments & Information: None

COORDINATION, ACTIVITIES, RESPONSIBILITIES, AND COSTS

Project Meetings: Concept Team Meeting - January 30, 2018

Project Activity	Party Responsible for Performing Task(s)
Concept Development	Arcadis U.S., Inc.
Design	GDOT In-House
Right-of-Way Acquisition	GDOT
Utility Coordination (Preconstruction)	GDOT
Utility Relocation (Construction)	Utility Owners
Letting to Contract	GDOT
Construction Supervision	GDOT
Providing Material Pits	N/A
Providing Detours	N/A
Environmental Studies, Documents, & Permits	GDOT
Environmental Mitigation	N/A
Construction Inspection & Materials Testing	GDOT

Other coordination to date: N/A

Project Cost Estimate and Funding Responsibilities:

	PE Activities					
	PE Funding	Section 404 Mitigation	ROW**	Reimbursable Utilities	CST*	Total Cost
Funded By	GDOT	GDOT	GDOT	GDOT	GDOT	
$ Amount	$150,000	$15,000	$156,000	$625,000	$360,490	$1,306,490
Date of Estimate	2016	2/27/2018	5/29/2018	2/21/2018	4/2018	

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

**A right of way estimate has been requested from the GDOT right of way office as of 1/30/2018
ROW cost estimate added to report on 06/04/2018 - *DRP*

Note: The estimated railroad cost has been included to the Utility cost.

ALTERNATIVES DISCUSSION

Preferred Alternative: *Construction of left-turn lanes on the northbound, southbound, and eastbound legs of the intersection, westbound leg lane modifications, and the addition of a raised concrete section on the northbound leg.*			
Estimated Property Impacts:	**6**	**Estimated Total Cost:**	$1,306,490
Estimated ROW Cost:	**TBD**	**Estimated CST Time:**	**12 Months**
Rationale: The Preferred Alternative improves queueing and decreases delay, both of which have been identified as current and future concerns. Queueing is relieved with the addition of dedicated left turn lanes to the northbound, southbound, and eastbound legs of the intersection. The reconfiguration of the westbound leg to include a left turn storage lane, a through lane, and a right turn lane helps to relieve the delay on that approach. The construction of the raised concrete section on the northbound leg creates separation between the local business and SR 3/US 41/Wall Street, thereby limiting access to the road from this business. The Preferred Alternative is expected to reduce 2020 AM peak hour intersection delay from 58.2 sec/veh to 27.2 sec/veh, a 53 percent decrease. The 2040 AM peak hour delay is expected to reduce from 186.9 sec/veh to 31.3 sec/veh, an 83 percent decrease. In the PM peak hour, 2020 delay is expected to reduce from 50.9 sec/veh to 23.8 sec/veh, a 53% decrease. In 2040, the PM peak hour delay is expected to reduce from 159 sec/veh to 28.9 sec/veh, an 82% decrease. This was selected as the preferred alternative as it would provide improvements to both delay and queuing at the intersection.			

No-Build Alternative: *No Build*			
Estimated Property Impacts:	**0**	**Estimated Total Cost:**	**$0**
Estimated ROW Cost:	**$0**	**Estimated CST Time:**	**N/A**
Rationale: The No Build Alternative is predicted to see significant increases in intersection delay. From 2020 to 2040, the AM peak hour intersection delay is expected to increase from 58.2 to 186.9 sec/veh, a 221 percent increase. From 2020 to 2040, the PM peak hour intersection delay is expected to increase from 50.9 sec/veh to 159.0 sec/veh, a 212 percent increase. As the goal of this project is to improve traffic operations at this intersection, the no build alternative was eliminated.			

Alternative 1: *Single Lane Roundabout*			
Estimated Property Impacts:	**-**	**Estimated Total Cost:**	**$2,442,222**
Estimated ROW Cost:	**$278,342**	**Estimated CST Time:**	**-**
Rationale: A single lane roundabout was evaluated for this intersection. While the results of the traffic analysis showed the roundabout to give higher benefits to intersection delay, the roundabout's cost and overall impacts to right of way and environmental resources would be significantly higher than the left turn lane alternative. For those reasons, the roundabout alternative was eliminated.			

Additional Comments/ Information: N/A

LIST OF ATTACHMENTS/SUPPORTING DATA

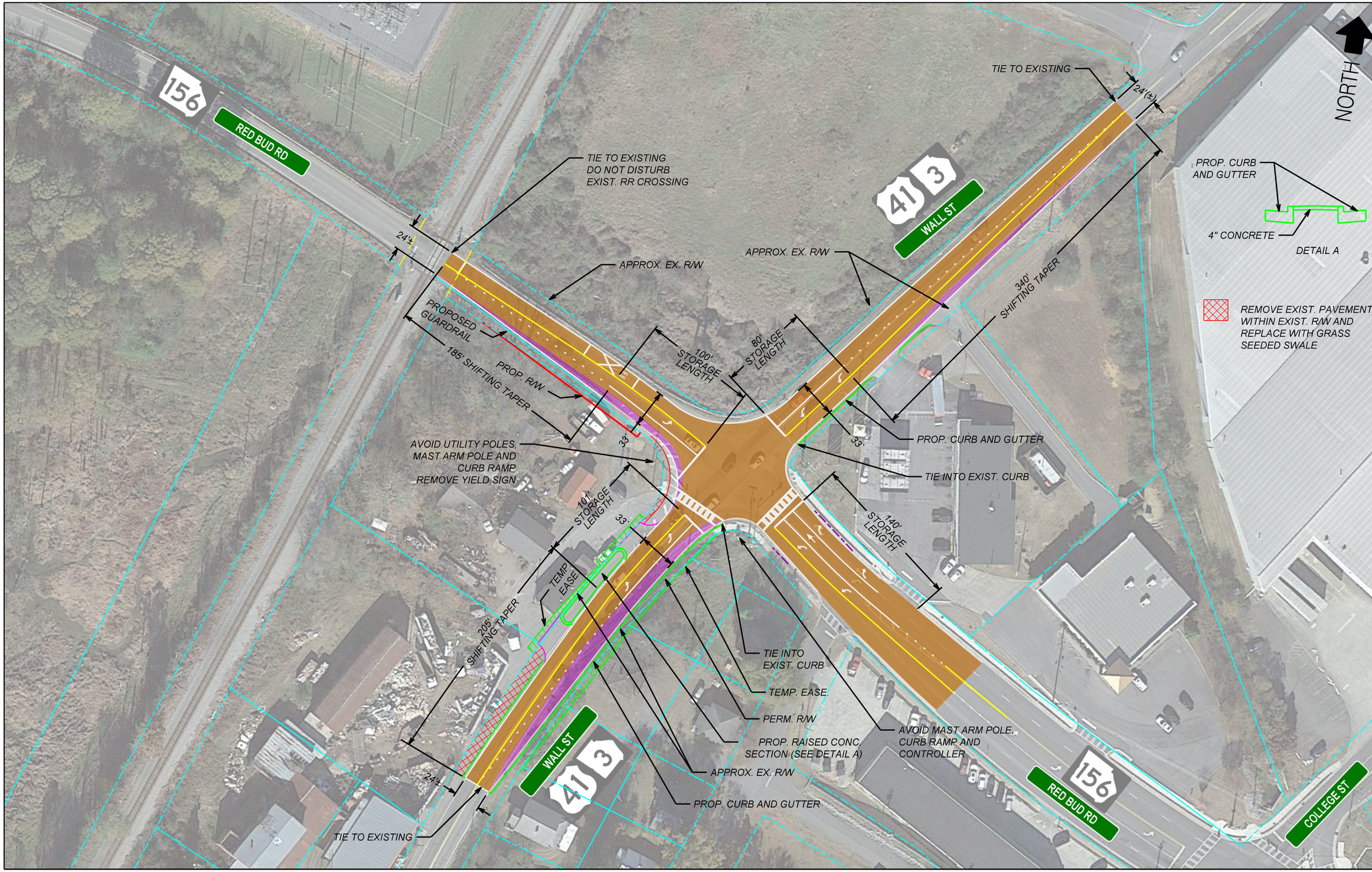
1. Concept Layout
2. Typical Sections
3. Cost Estimate
4. Traffic Diagrams and Projections
5. Summary of Traffic Study Synopsis
6. MS4 Checklist
7. Additional Documents
    a. Concept Team Meeting Minutes
    b. Intersection Control Evaluation (ICE) Document
    c. Synopsis Presented to Operational Improvement Committee

PROJECT CONCEPT REPORT

ATTACHMENT 1

CONCEPT LAYOUT

P.I. No. 0013297
Gordon County



STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION

PI NO
0013297

SR 3 AT
SR 156

SCALE IN FEET
0 80 160

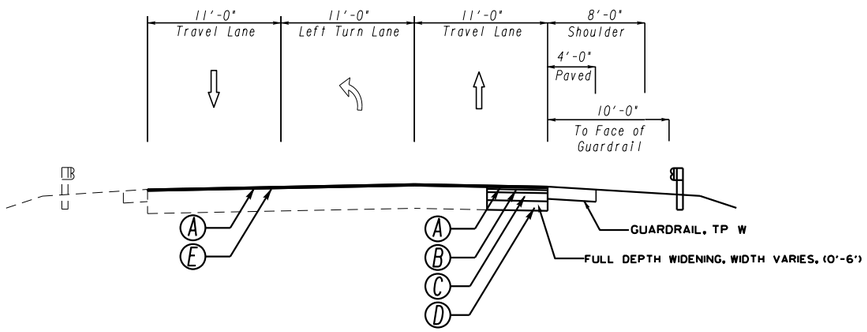
PROPOSED TRAVEL LANE
PROPOSED RESURFACING
PROPOSED SHOULDER
PROPOSED CONCRETE ISLAND
PROPOSED SIDEWALK AND C & G

PROJECT CONCEPT REPORT

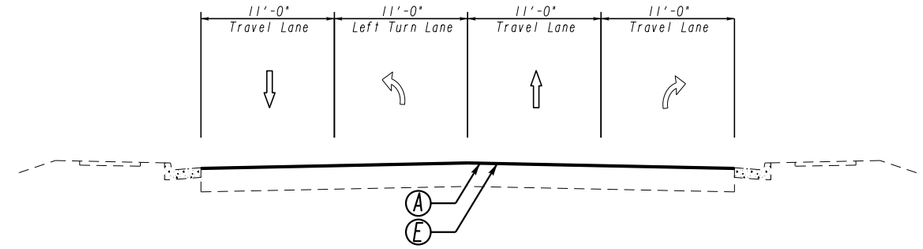
ATTACHMENT 2

TYPICAL SECTIONS

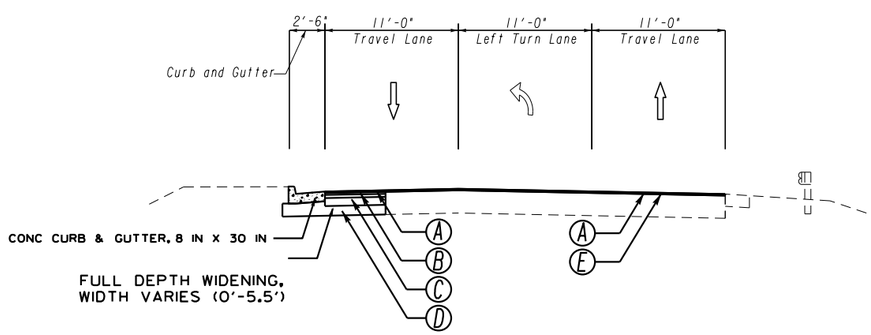
P.I. No. 0013297
Gordon County



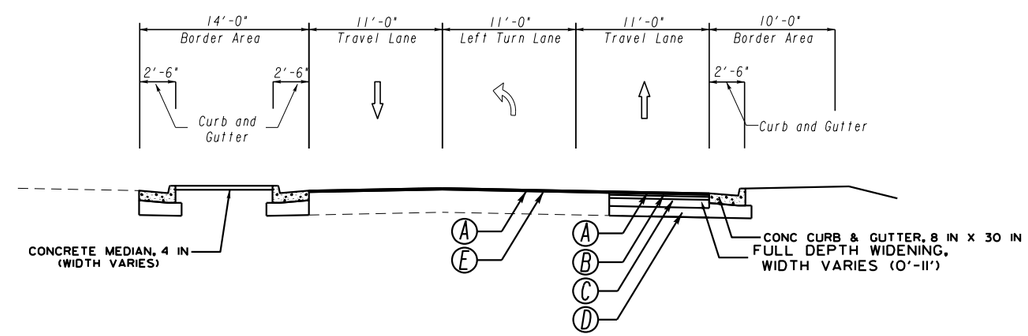
TYPICAL SECTION 1
SR 156/RED BUD RD EASTBOUND APPROACH



TYPICAL SECTION 2
SR 156/RED BUD RD WESTBOUND APPROACH



TYPICAL SECTION 3
SR 3/N WALL ST SOUTHBOUND APPROACH



TYPICAL SECTION 4
SR 3/N WALL ST NORTHBOUND APPROACH

Ⓐ 165 LB/SY RECYCLED ASPH CONC 12.5 MM SUPERPAVE, GP 2 ONLY, INCL BITUM MATL& H LIME
Ⓑ 220 LB/SY RECYCLED ASPH CONC 19 MM SUPERPAVE, GP 1 OR GP 2, INCL BITUM MATL & H LIME
Ⓒ 660 LB/SY RECYCLED ASPH CONC 25 MM SUPERPAVE, GP 1 OR GP 2, INCL BITUM MATL & H LIME
Ⓓ GR AGGR BASE CRS, 12 INCH, INCL MATL
Ⓔ MILL EXISTING PAVEMENT 1.5" DEPTH

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION

PI # 0013297

SR 3 AT SR 156

TYPICAL SECTIONS

ARCADIS
Design & Consultancy for natural and built assets

PROJECT CONCEPT REPORT

ATTACHMENT 3

COST ESTIMATES

P.I. No. 0013297
Gordon County

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE P.I. No. **0013297**

OFFICE Program Delivery

PROJECT DESCRIPTION

SR 3/US 41 @ SR 156

DATE April 12, 2018

From: Kimberly Nesbitt, State Program Delivery Administrator

To: Lisa L. Myers, State Project Review Engineer
via Email Mailbox: **CostEstimatesandUpdates@dot.ga.gov**

Subject: REVISIONS TO PROGRAMMED COSTS

MGMT LET DATE

PROJECT MANAGER Jeffrey Simmons

MGMT ROW DATE

PROGRAMMED COSTS (TPro W/OUT INFLATION) **LAST ESTIMATE UPDATE**

CONSTRUCTION	$	350,000.00	DATE	2017
RIGHT OF WAY	$	200,000.00	DATE	2017
UTILITIES	$		DATE	

REVISED COST ESTIMATES

CONSTRUCTION*	$	360,489.02	
RIGHT OF WAY	$	TBD	$156,000.00 (completed 5/29/2018)
UTILITIES	$	625,000.00	

*Cost Contains **20** % Contingency

REASONS FOR COST INCREASE AND CONTINGENCY JUSTIFICATION:

The GDOT contingency memo from November 2014 reccomends that projects that propose to reconstruct with added capacity at the concept stage should carry a contingency of 10%-20%. This project proposes to widen all approaches of the SR 3 at SR 156 intersection to add new dedicated left turn lanes. A contingency of 20% was chosen in accordance with the memo.

CONTINGENCY SUMMARY

A.	CONSTRUCTION COST ESTIMATE:	$ 278,579.85	Base Estimate From CES		
B.	ENGINEERING AND INSPECTION (E & I):	$ 13,928.99	Base Estimate (A) x	5	%
C.	CONTINGENCY:	$ 58,501.77	Base Estimate (A) + E & I (B) x	20	%
			See % Table in "Risk Based Cost Estimation" Memo		
D.	TOTAL LIQUID AC ADJUSTMENT:	$ 9,478.41	Total From Liquid AC Spreadsheet		
E.	CONSTRUCTION TOTAL:	$ 360,489.02	(A + B + C + D = E)		

REIMBURSABLE UTILTY COSTS

UTILITY OWNER	REIMBURSABLE COST
North Georgia EMC	$100,000.00
Georgia Power	$175,000.00
CSX	$350,000.00
TOTAL	**$ 625,000.00**

ATTACHMENTS: (File Copy in the Project Cost Estimate Folder)

Detailed Cost Estimate Printout From 411
Liquid AC Adjustment Spreadsheet
Preliminary ROW Cost Estimate
Utility Cost Estimate

Consultant Validation of Final QC/QA for Construction Cost Estimate Used in This Revision To Programmed Costs

COMPANY NAME:	Arcadis, U.S., Inc.

VALIDATION OF FINAL QC/QA

PRINTED NAME:	Doug Tilit
TITLE:	Vice President
SIGNATURE:	Douglas Tilit
DATE:	4/12/2018

PROJ. NO.		CALL NO.	0/00/2016
P.I. NO.	0013297		
DATE	4/12/2018		

INDEX (TYPE)	**DATE**	**INDEX**
REG. UNLEADED	Apr-18	$ 2.579
DIESEL		$ 2.920
LIQUID AC		$428.00

Link to AC Index:
http://www.dot.ga.gov/PS/Materials/AsphaltFuelIndex

LIQUID AC ADJUSTMENTS

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

Asphalt

Price Adjustment (PA)				**9180.6**	**$ 9,180.60**
Monthly Asphalt Cement Price month placed (APM)	Max. Cap	60%	$	684.80	
Monthly Asphalt Cement Price month project let (APL)			$	428.00	
Total Monthly Tonnage of asphalt cement (TMT)				35.75	

ASPHALT	**Tons**	**%AC**	**AC ton**
Leveling		5.0%	0
12.5 OGFC		5.0%	0
12.5 mm	460	5.0%	23
9.5 mm SP		5.0%	0
25 mm SP	190	5.0%	9.5
19 mm SP	65	5.0%	3.25
	715		**35.75**

BITUMINOUS TACK COAT

Price Adjustment (PA)			**$**	**297.81**	**$ 297.81**
Monthly Asphalt Cement Price month placed (APM)	Max. Cap	60%	$	684.80	
Monthly Asphalt Cement Price month project let (APL)			$	428.00	
Total Monthly Tonnage of asphalt cement (TMT)				1.159677249	

Bitum Tack Gals	gals/ton	tons
270	232.8234	1.15967725

BITUMINOUS TACK COAT (surface treatment)

Price Adjustment (PA)				**0**	**$ -**
Monthly Asphalt Cement Price month placed (APM)	Max. Cap	60%	$	684.80	
Monthly Asphalt Cement Price month project let (APL)			$	428.00	
Total Monthly Tonnage of asphalt cement (TMT)				0	

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

TOTAL LIQUID AC ADJUSTMENT **$ 9,478.41**

Detailed Cost Estimate

Time Processed: Apr-12-2018 12:53:03 PM

JOB NUMBER: 0013297
SPEC YEAR: 13
ITEM HISTORY: ALL_2017Q4_24MO
DESCRIPTION: WA #12 - SR 3 AT SR 156
ASSIGNED CONTROL GROUP: ARCADIS -US DESIGN CONSULTANTS

FED/STATE PROJECT NUMBER:

ITEMS FOR JOB 0013297

-

Line Number	Item	Quantity	Units	Price	Description	Amount
0005	150-1000	1.00	LS	$30,000.00000	TRAFFIC CONTROL - TRAFFIC CONTROL	$30,000.00
0010	210-0100	1.00	LS	$60,000.00000	GRADING COMPLETE - GRADING	$60,000.00
0015	310-1101	200.00	TN	$42.00753	GR AGGR BASE CRS, INCL MATL	$8,401.51
0025	441-6222	750.00	LF	$44.65042	CONC CURB & GUTTER/ 8X30TP2	$33,487.82
0030	653-0100	1.00	EA	$460.37263	THERM PVMT MARK, RR/HWY X SYM	$460.37
0035	653-0120	9.00	EA	$96.63959	THERM PVMT MARK, ARROW, TP 2	$869.76
0040	653-1501	2730.00	LF	$0.65503	THERMO SOLID TRAF ST 5 IN, WHI	$1,788.23
0045	653-1502	2420.00	LF	$0.63837	THERMO SOLID TRAF ST, 5 IN YEL	$1,544.86
0050	653-1704	140.00	LF	$7.80998	THERM SOLID TRAF STRIPE,24,WH	$1,093.40
0055	653-3501	800.00	GLF	$0.42634	THERMO SKIP TRAF ST, 5 IN, WHI	$341.07
0060	653-1804	400.00	LF	$2.69995	THERM SOLID TRAF STRIPE, 8,WH	$1,079.98
0065	654-1001	65.00	EA	$4.53701	RAISED PVMT MARKERS TP 1	$294.91
0070	654-1003	30.00	EA	$3.99143	RAISED PVMT MARKERS TP 3	$119.74
0075	432-0206	5000.00	SY	$4.86528	MILL ASPH CONC PVMT/ 1.50 DEP	$24,326.40
0080	653-0130	1.00	EA	$148.19428	THERM PVMT MARK, ARROW, TP 3	$148.19
0085	641-5001	1.00	EA	$1,141.13292	GUARDRAIL ANCHORAGE, TP 1	$1,141.13
0090	641-1200	220.00	LF	$23.62833	GUARDRAIL, TP W	$5,198.23
0095	641-5012	1.00	EA	$2,180.67889	GUARDRAIL ANCHORAGE, TP 12	$2,180.68
0110	441-0740	75.00	SY	$45.21954	CONC MEDIAN, 4 IN	$3,391.47
0115	700-6910	0.04	AC	$742.92716	PERMANENT GRASSING	$29.72
0120	163-0232	0.04	AC	$766.65149	TEMPORARY GRASSING	$30.67
0125	163-0240	0.67	TN	$291.66427	MULCH	$195.42
0130	700-7000	0.10	TN	$27.74851	AGRICULTURAL LIME	$2.77
0135	700-8100	2.10	LB	$5.47584	FERTILIZER NITROGEN CONTENT	$11.50
0140	165-0030	1100.00	LF	$1.00160	MAINT OF TEMP SILT FENCE, TP C	$1,101.76
0145	171-0030	1100.00	LF	$3.67306	TEMPORARY SILT FENCE, TYPE C	$4,040.37
0150	647-1000	1.00	LS	$12,500.00000	TRAF SIGNAL INSTALLATION NO - TRAFFIC SIGNAL	$12,500.00
0155	402-3130	460.00	TN	$106.18978	RECYL AC 12.5MM SP,GP2,BM&HL	$48,847.30
0160	402-3190	65.00	TN	$123.14049	RECYL AC 19 MM SP,GP 1 OR 2 ,INC BM&HL	$8,004.13
0165	402-3121	190.00	TN	$112.94646	RECYL AC 25MM SP,GP1/2,BM&HL	$21,459.83
0170	413-0750	270.00	GL	$2.00000	TACK COAT	$540.00
0175	163-0528	200.00	LF	$18.30541	CONSTR AND REM FAB CK DAM -TP C SLT FN	$3,661.08
0180	165-0041	200.00	LF	$8.41985	MAINT OF CHECK DAMS - ALL TYPES	$1,683.97
0185	163-0550	3.00	EA	$131.13443	CONS & REM INLET SEDIMENT TRAP	$393.40
0190	165-0105	3.00	EA	$70.05957	MAINT OF INLET SEDIMENT TRAP	$210.18
Total						**$278,579.85**

TOTALS FOR JOB 0013297

ITEMS COST:	$278,579.85
COST GROUP COST:	$0.00
ESTIMATED COST:	$278,579.85
CONTINGENCY PERCENT:	20.00%
ENGINEERING AND INSPECTION:	0.00%
ESTIMATED COST WITH CONTINGENCY AND E&I:	$334,295.82

File Location: Div of Preconstruction > CES

CONFIDENTIALITY NOTICE: This document may contain confidential and/or privileged information. Any unauthorized duplication, disclosure,

distribution/retransmission of taking of any action in reliance upon the material in this document is strictly forbidden.

GEORGIA DEPARTMENT OF TRANSPORTATION
PRELIMINARY ROW COST ESTIMATE SUMMARY

Date: 5/14/18 Project: NA
Revised: County: GORDON
PI: 0013297

Description: SR3 / US 41 @SR156
Project Termini:

Existing ROW: VARIES
Parcels: 6 Required ROW: VARIES

Land and Improvements	$12,300.00
Proximity Damage $0.00	
Consequential Damage $0.00	
Cost to Cures $0.00	
Trade Fixtures $0.00	
Improvements $0.00	
Valuation Services	$37,500.00
Legal Services	$41,550.00
Relocation	$12,000.00
Demolition	$0.00
Administrative	$52,000.00
TOTAL ESTIMATED COSTS	$155,350.00
TOTAL ESTIMATED COSTS (ROUNDED)	***$156,000.00***

Preparation Credits	Hours	Signature

Prepared By: Chyl Duty Pickett CG#: 211009 5/15/2018 (DATE)
Approved By: CG#: (DATE) 5/23/18
5/29/18

NOTE: No Market Appreciation is included in this Preliminary Cost Estimate

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE

Project No. N/A
County Gordon
P.I. # 0013297
Description SR 3 @ SR 156

Office Cartersville
Date February 21, 2018

FROM Jun Birnkammer, District Utilities Manager

TO Jeff Simmons, Project Manager

SUBJECT **CONCEPT UTILITY COST ESTIMATE**

A review of utilities located on the above referenced project has been conducted based on the latest available plans. Listed below is a breakdown of the anticipated reimbursable and non-reimbursable cost.

Utility Owner	Reimbursable	Non-Reimbursable	Estimate Based on
AT&T	$0.00	$50,000.00	Preliminary info from Utility
North Georgia EMC	$100,000.00	$0.00	Preliminary info from Utility
Georgia Power - Distribution	$175,000.00	$0.00	Preliminary info from Utility
AGL	$0.00	$62,000.00	Preliminary info from Utility
Comcast	$0.00	$22,359.00	Preliminary info from Utility
City of Calhoun Water & Sewer**	$0.00	$75,000.00	Preliminary info from Utility
City of Calhoun Electric	$0.00	$40,021.00	Preliminary info from Utility
	$0.00	$0.00	
	$0.00	$0.00	
	$0.00	$0.00	
	$0.00	$0.00	
	$0.00	$0.00	
	$0.00	$0.00	
	$0.00	$0.00	
TOTAL 100.00%	**$275,000.00**	**$249,380.00**	
Department Responsibility 100.00%	**$275,000.00**	**$249,380.00**	
Local Sponsor Responsibility 0.00%	**$0.00**	**$0.00**	**PFA Dated with**

** Indicates Potential Utility Aid Request from Local Gov't

Estimate is based on the best available information at the current stage, unforeseen prior rights information may be provided by the Utility Company at a later date that could cause some non-reimbursable costs to shift to the reimbursable cost column.

If additional information is needed, please contact Daniel Monteith at 678-721-5325.

cc:

Patrick Allen, P.E., State Utilities Administrator
David Acree, P.E., District Preconstruction Engineer

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE: **PI #0013297, Gordon County** **OFFICE: State Utilities Office**

FROM: Jill Franks for: **Patrick Allen, State Utilities Administrator** **DATE: January 30, 2018**

TO: Kimberly Nesbitt, State Program Delivery Administrator
Attn: Jeff Simmons, Project Manager

SUBJECT: **PRELIMINARY RAILROAD COST (CONCEPT ESTIMATE)**

A review of railroads located within the project limits on the above referenced project has been conducted based on the proposed concept report. Listed below is a breakdown of the estimated railroad costs:

FACILITY OWNER	NON-REIMBURSABLE	REIMBURSABLE
CSX Transportation, Inc.		
– P.E. review cost for warning devices	**$0.00**	**$ 25,000.00-GDOT**
– Const. cost for warning devices and Pre-Emption	**$0.00**	**$ 325,000.00-GDOT**
Total Reimbursement Cost:	**$0.00**	**$ 350,000.00**

Total railroad surface work and warning device reimbursable cost for the above project is estimated to be:

$350,000.00

Please note that this amount does not include other reimbursable utility costs that may be associated with this project. This project is GDOT funded.

If you have any questions, please contact Jill Franks, (404) 631-1370, jfranks@dot.ga.gov or Marcela Coll, (404)631-1372 mcoll@dot.ga.gov.

PA:JLF:mgc

cc: Yulonda Pride-Foster, Utilities Preconstruction Manager
Angela Robinson, State Financial Management Administrator
Jun Birnkammer, District 6 Utilities Manager
Kevin Cowan, Utilities Railroad Crossing Manager

Fisher, Chuck

From: Simmons, Jeff <jesimmons@dot.ga.gov>
Sent: Thursday, March 1, 2018 9:33 AM
To: Fisher, Chuck
Subject: FW: P.I. 0013297, Gordon County - Estimated Mitigation Cost for Concept Report

As requested.

From: Westberry, Lisa
Sent: Tuesday, February 27, 2018 1:14 PM
To: Simmons, Jeff; Monteith, Daniel
Cc: Allen, Jordan J
Subject: P.I. 0013297, Gordon County - Estimated Mitigation Cost for Concept Report

Jeff,

As requested, the estimated mitigation costs for the subject project is **$15,000**. This was based on a review of aerial photography, NWI mapping, and NRCS soil surveys and not an actual field verification. The total cost of mitigation credits could remain the same or be higher once the ecology field survey is complete.

If you should have any questions or need any additional information, please do not hesitate to contact me.

Thank you,

Lisa Westberry | Special Projects Coordinator | Office of Environmental Services | 600 West Peachtree Street, NW | Atlanta, GA 30308 | 404-631-1772

Roadway fatalities in Georgia are up 33% in two years. That's an average of four deaths every single day! Many of these deaths are preventable and related to driver behavior: distracted or impaired driving, driving too fast for conditions, and/or failure to wear a seatbelt. Pledge to **DRIVE ALERT ARRIVE ALIVE**. Buckle up – Stay off the phone and mobile devices – Drive alert. Visit www.dot.ga.gov/DAAA. #ArriveAliveGA

PROJECT CONCEPT REPORT

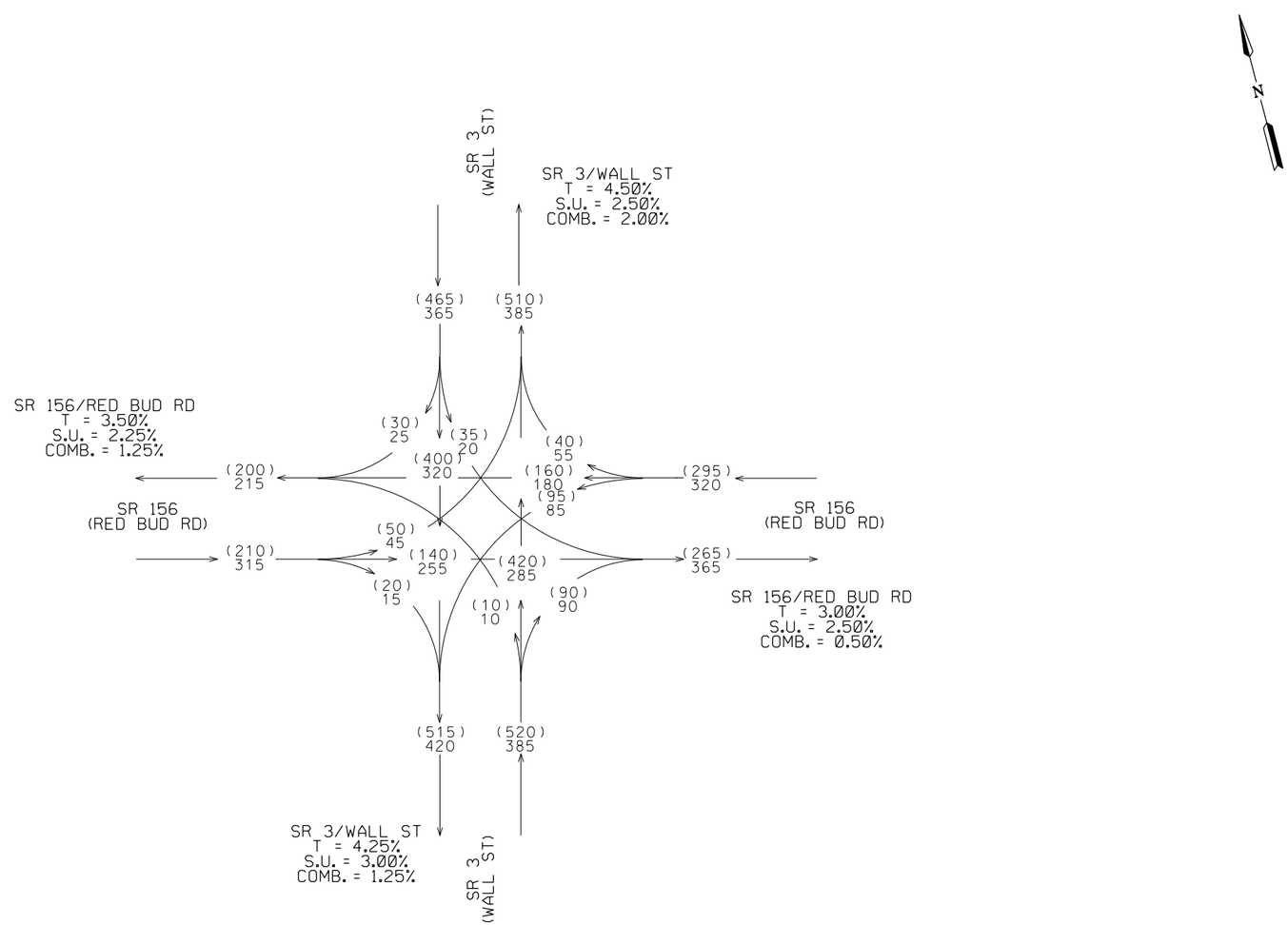
ATTACHMENT 4

TRAFFIC DIAGRAMS

P.I. No. 0013297
Gordon County

COUNTY	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GORDON	GA	PI. 0013297	1	8

DHV TRAFFIC
VOLUMES
EXISTING YEAR 2017
PM PEAK HOUR = (XXX)
AM PEAK HOUR = XXX



ARCADIS Design & Consultancy for natural and built assets

REVISION DATES

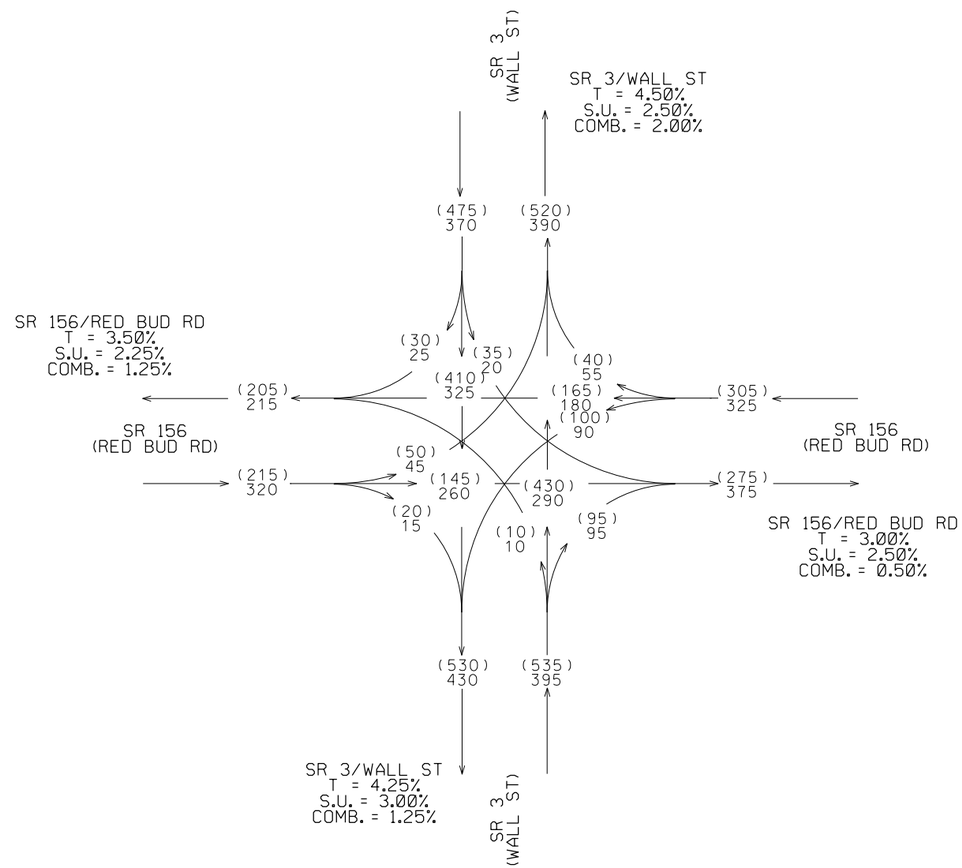
STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE OF PLANNING
TRAFFIC DIAGRAM

YEAR 2017 DHV
SHEET 1 OF 1

DRAWING No.
00-0001

COUNTY	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GORDON	GA	PI. 0013297	2	8

DHV TRAFFIC
VOLUMES
BASE YEAR 2020
PM PEAK HOUR = (XXX)
AM PEAK HOUR = XXX



ARCADIS Design & Consultancy for natural and built assets

REVISION DATES

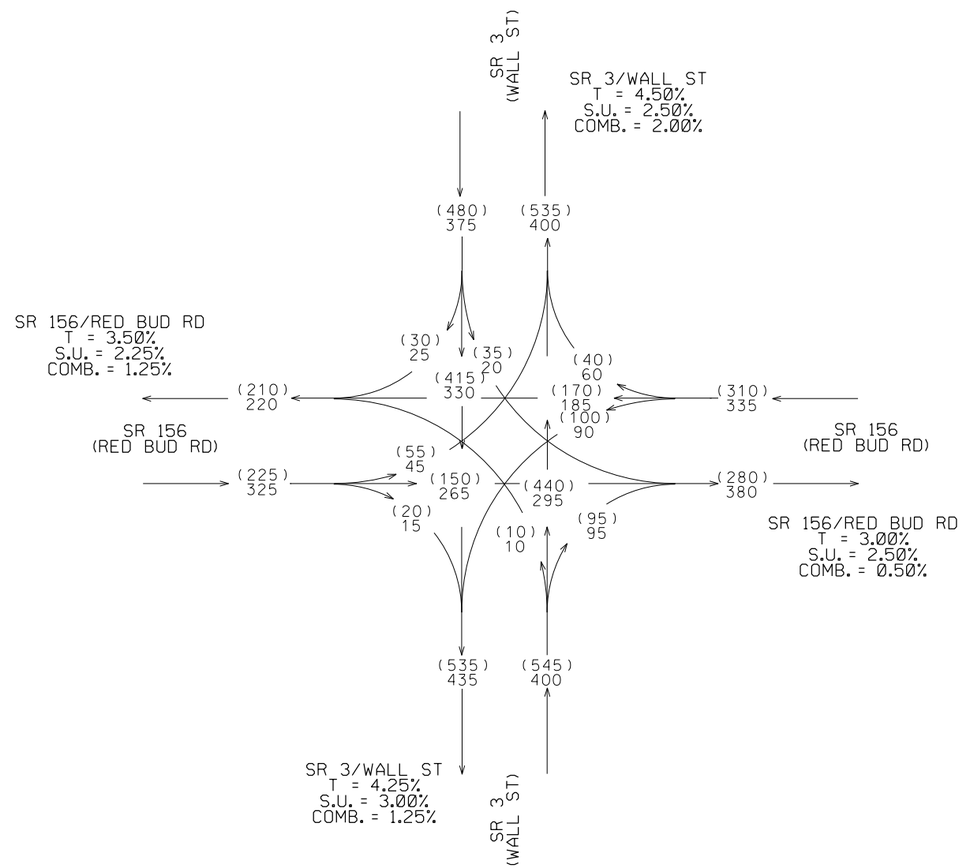
STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE OF PLANNING
TRAFFIC DIAGRAM

YEAR 2020 DHV
SHEET 1 OF 1

DRAWING No.
00-0002

COUNTY	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GORDON	GA	PI. 0013297	3	8

DHV TRAFFIC
VOLUMES
BASE YEAR +2 2022
PM PEAK HOUR = (XXX)
AM PEAK HOUR = XXX



REVISION DATES		

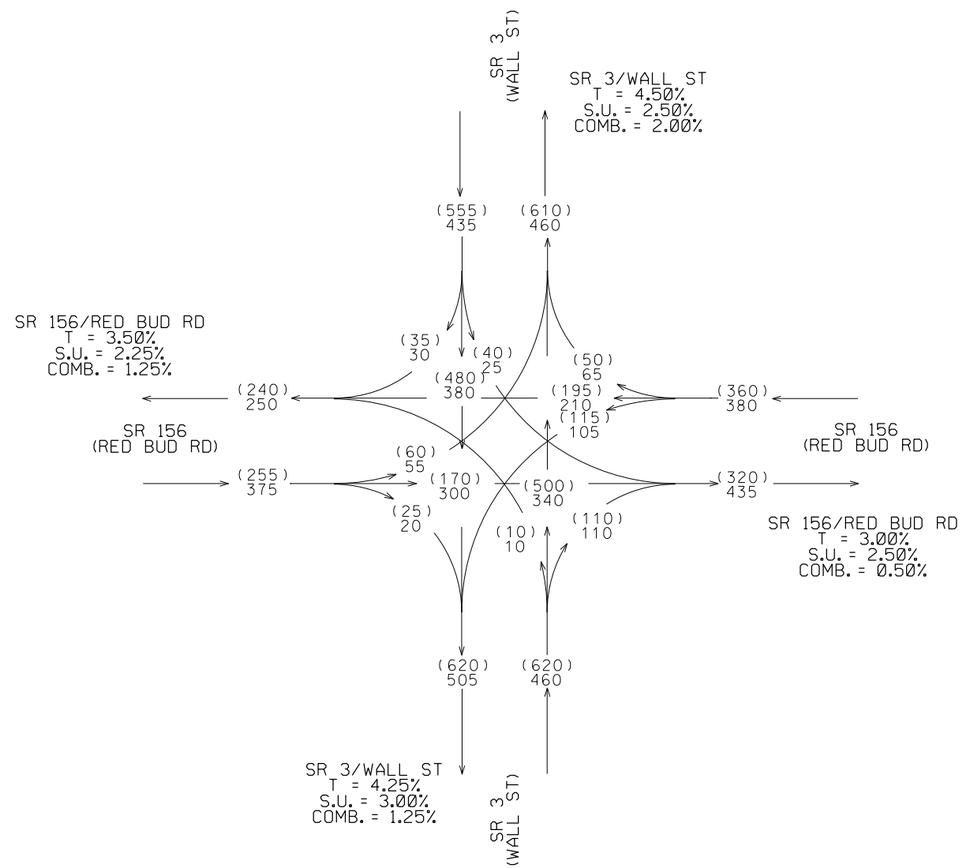
STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE OF PLANNING
TRAFFIC DIAGRAM

YEAR 2022 DHV
SHEET 1 OF 1

DRAWING No.
00-0003

COUNTY	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GORDON	GA	PI. 0013297	4	8

DHV TRAFFIC
VOLUMES
DESIGN YEAR 2040
PM PEAK HOUR = (XXX)
AM PEAK HOUR = XXX



ARCADIS Design & Consultancy for natural and built assets

REVISION DATES

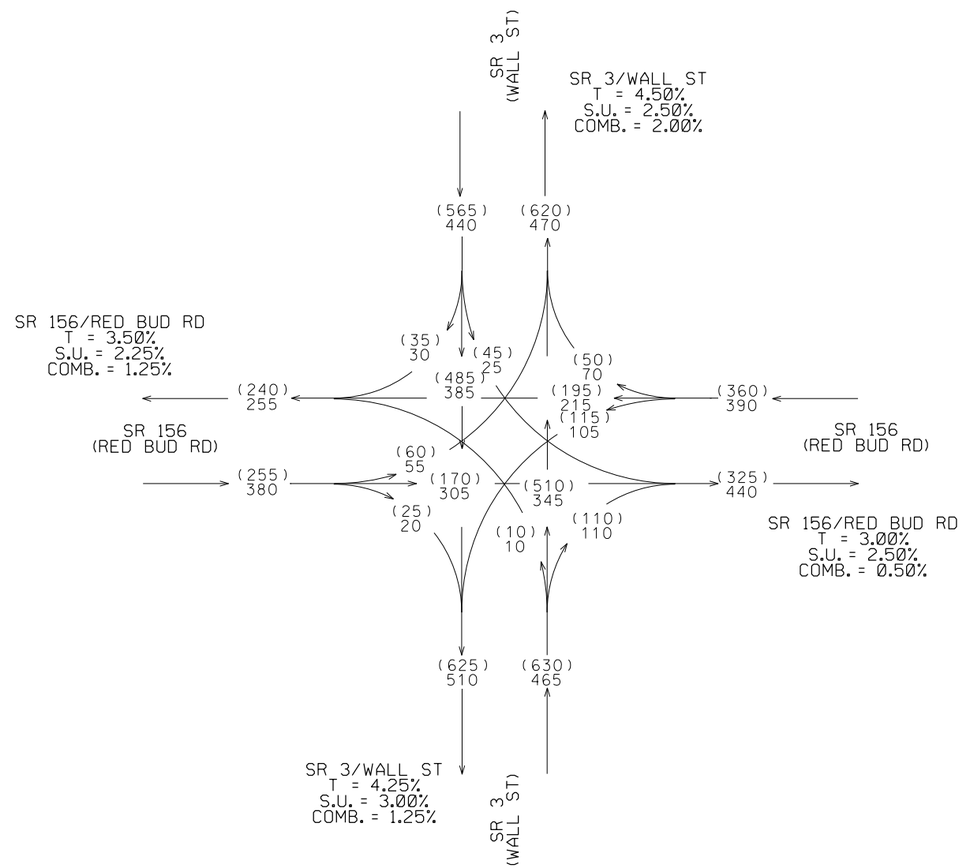
STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE OF PLANNING
TRAFFIC DIAGRAM

YEAR 2040 DHV
SHEET 1 OF 1

DRAWING No. 00-0004

COUNTY	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GORDON	GA	PI. 0013297	5	8

DHV TRAFFIC
VOLUMES
DESIGN YEAR +2 2042
PM PEAK HOUR = (XXX)
AM PEAK HOUR = XXX



REVISION DATES		

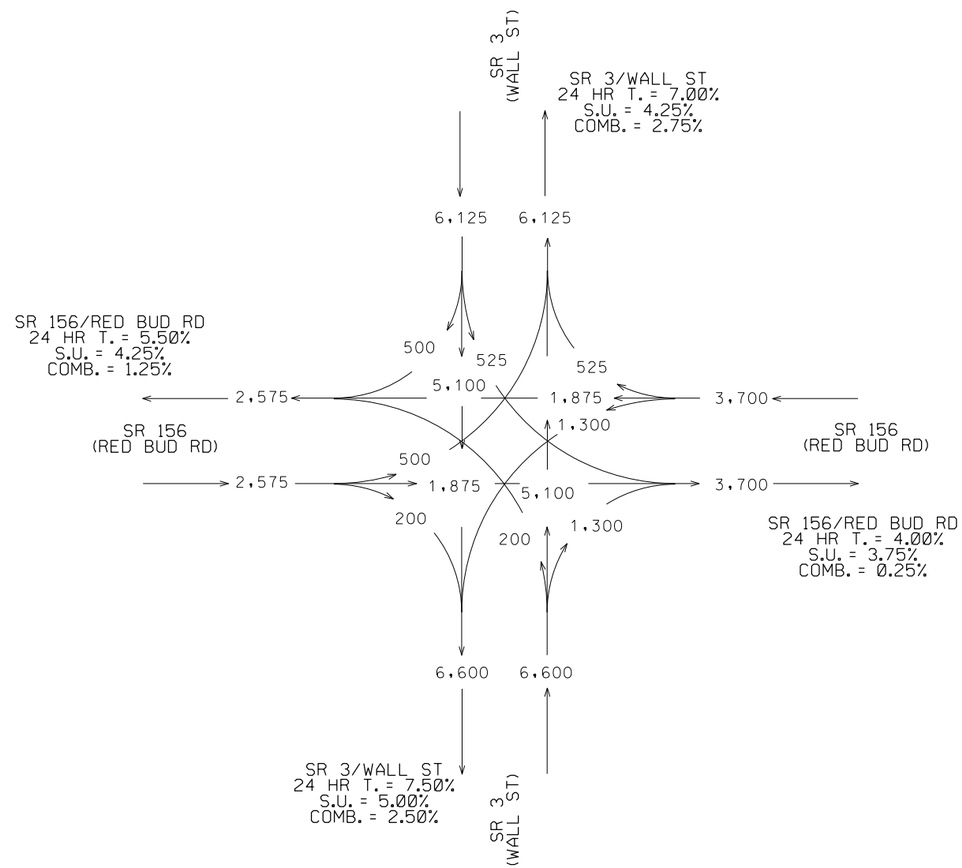
STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE OF PLANNING
TRAFFIC DIAGRAM

YEAR 2042 DHV
SHEET 1 OF 1

DRAWING No.
00-0005

COUNTY	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GORDON	GA	PI. 0013297	6	8

AADT TRAFFIC
VOLUMES
EXISTING YEAR 2017
AADT = XXX



ARCADIS Design & Consultancy for natural and built assets

REVISION DATES

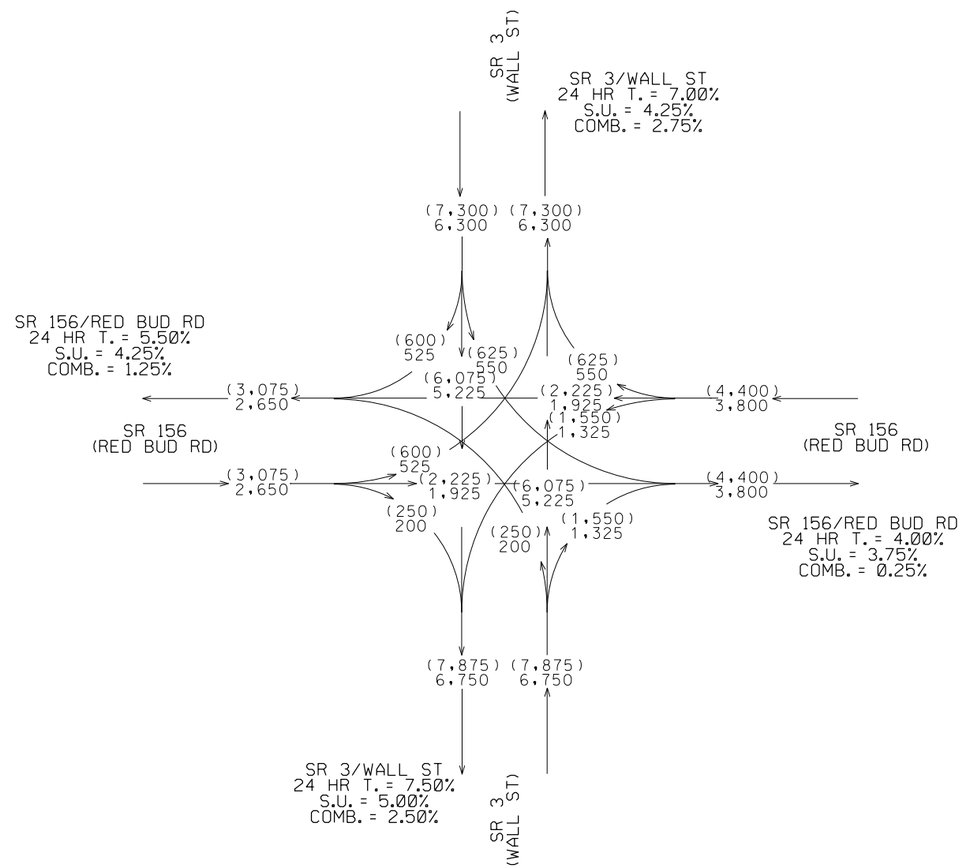
STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE OF PLANNING
TRAFFIC DIAGRAM

YEAR 2017 ADT VOLUMES
SHEET 1 OF 1

DRAWING No.
00-0006

COUNTY	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GORDON	GA	PI. 0013297	7	8

AADT TRAFFIC
VOLUMES
DESIGN YEAR 2040
AADT = (XXX)
BASE YEAR 2020
AADT = XXX



ARCADIS Design & Consultancy for natural and built assets

REVISION DATES		
03/22/2017		

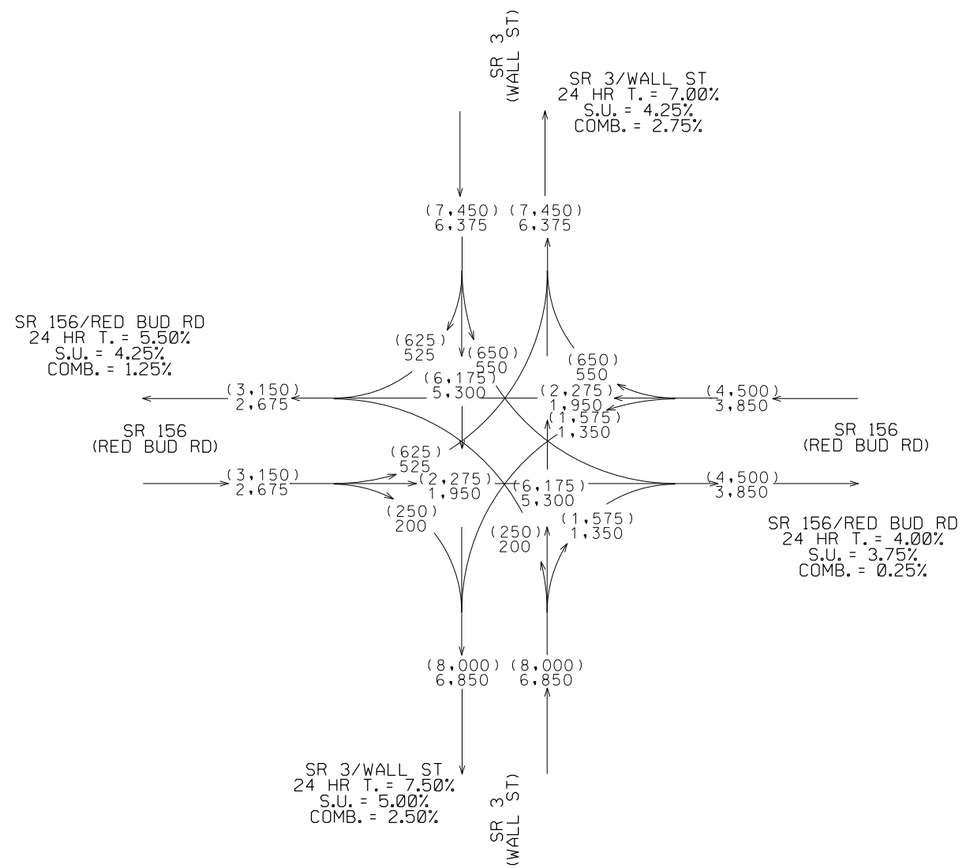
STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE OF PLANNING
TRAFFIC DIAGRAM

YEAR 2020 & 2040 ADT VOLUMES
SHEET 1 OF 1

DRAWING No.
00-0007

COUNTY	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GORDON	GA	PI. 0013297	8	8

AADT TRAFFIC
VOLUMES
DESIGN YEAR +2 2042
AADT = (XXX)
BASE YEAR +2 2022
AADT = XXX



REVISION DATES		
03/22/2017		

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE OF PLANNING
TRAFFIC DIAGRAM

YEAR 2022 & 2042 ADT VOLUMES
SHEET 1 OF 1

DRAWING No.
00-0008

PROJECT CONCEPT REPORT

ATTACHMENT 5

SUMMARY OF TRAFFIC STUDY SYNOPSIS

P.I. No. 0013297
Gordon County

Potential Operational Improvement Project

SR 3 at SR 156			Date Completed: February 2017	Requested By: GDOT Ops Staff
Ops ID: 98-089	GDOT District:	District 6	County:	Gordon
	Project Type:	Intersection Improvement	City:	Calhoun

Description of the Problem:

Lack of dedicated left turn lanes on north, south, and west legs of the intersection causes left turning vehicles to block the through movements causing extensive queues and delays during peak hours.

Location: (Attach Map, Image or Sketch):

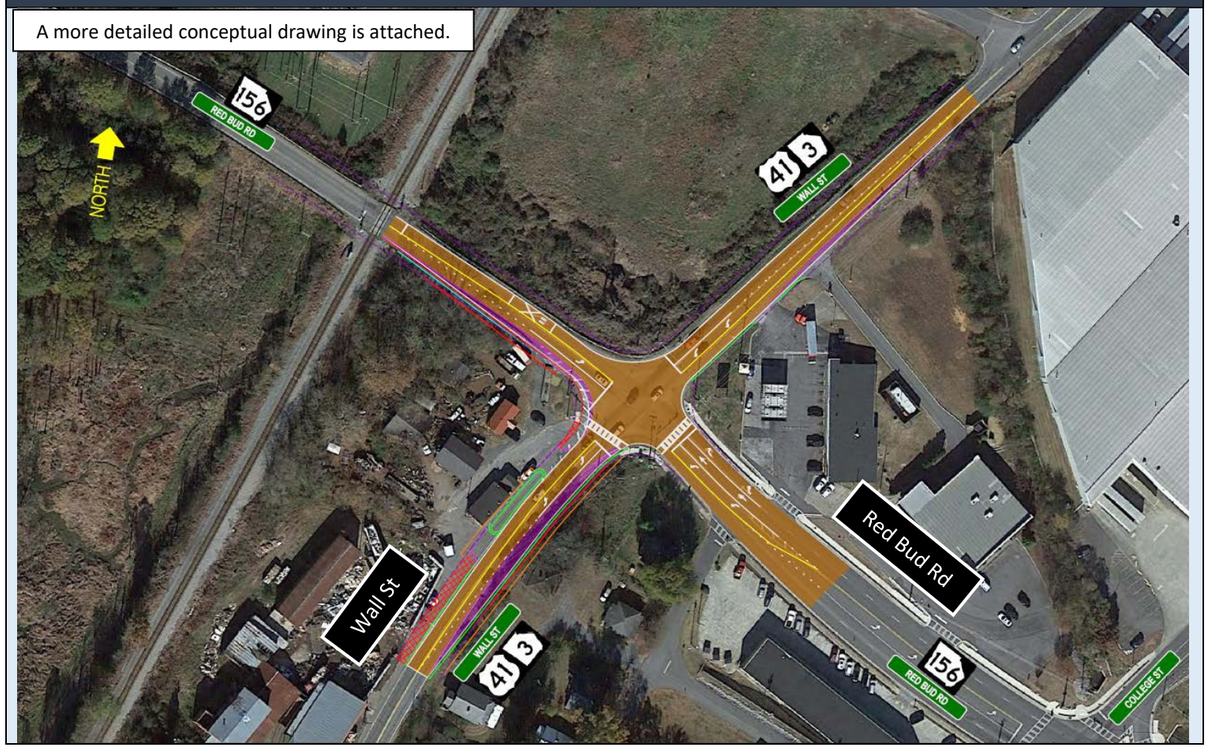
Traffic Volume	Year	DHV
Existing Year	2020	See Attached Sheets
Future Year	2040	See Attached Sheets
Pedestrian Activity?	NO	

Proposed Improvement Description:

Construct dedicated left turning lanes on north, south, and west legs of the intersection. Convert east leg from one left turning lane and one shared through/right turning lane into one left turning storage lane, one through lane, and one right turning lane.

Improvement Sketch:

A more detailed conceptual drawing is attached.



Anticipated Benefits Table:
(LOS, Delay Reduction, Modeling output, etc.)

Delay and Level of Service (LOS)

Movement	AM Peak Hour				PM Peak Hour			
	Delay (sec/veh) and LOS				Delay (sec/veh) and LOS			
	No-Build (2020)	Build (2020)	No-Build (2040)	Build (2040)	No-Build (2020)	Build (2020)	No-Build (2040)	Build (2040)
Intersection	58.2 (E)	27.2 (C)	**186.9 (F)**	**31.3 (C)**	50.9 (D)	23.8 (C)	**159.0 (F)**	**28.9 (C)**
% Improvement	53%		**83%**		53%		**82%**	

Findings: The average intersection delay is estimated to be decreased by 53% during both 2020 AM and PM peak hours, respectively. **The average intersection delay is estimated to be decreased by 83% and 82% during the 2040 AM and PM peak hours, respectively. The 2040 AM peak hour LOS improves from LOS F to LOS C and the 2040 PM peak hour LOS improves from LOS F to C.**

GDOT Benefit-Cost Calculator

Project Information

ID	0013297
Description	SR 3 at SR 156

Cost Estimate

Date of estimate		4/12/2018
Preliminary Engineering	$	150,000
Reimbursable Utility	$	625,000
Right-of-Way		
Construction	$	360,490
Total	**$**	**1,135,490**

Source of traffic data

Design traffic provided by PE consultant; Analysis in Sim Traffic 8; Network analysis of 2 hour peak AM and 2 hour peak PM periods

Without project	Open Year 2020				Design Year 2040			
	AM		PM		AM		PM	
	Number of Vehicles	Delay per vehicle (s)	Number of Vehicles	Delay per vehicle (s)	Number of Vehicles	Delay per vehicle (s)	Number of Vehicles	Delay per vehicle (s)
Vehicle Served*	1,410	58.2	1,530	50.9	1,650	186.9	1,790	159.0
Vehicle Denied**								
Total Delay (hr)	22.8		21.6		85.7		79.1	

With project	Open Year 2020				Design Year 2040			
	AM		PM		AM		PM	
	Number of Vehicles	Delay per vehicle (s)	Number of Vehicles	Delay per vehicle (s)	Number of Vehicles	Delay per vehicle (s)	Number of Vehicles	Delay per vehicle (s)
Vehicle Served*	1,410	27.2	1,530	23.8	1,650	31.3	1,790	28.9
Vehicle Denied**								
Total Delay (hr)	10.7		10.1		14.3		14.4	

*Vehicle Served: Number of vehicles in the network + Number of vehicles that have arrived; **Vehicle Denied: Number of vehicles not allowed to enter the network
F: Annual number of collisions involving fatalities during study period
I: Average annual number of collisions involving injured people for the period of the study
P: Average annual number of collisions involving only property damage for the period of the study
R: Reduction of fatal and injury collisions by type (from Table A - Appendix E)
r: Crash modification factor for fatal and injury collisions
Rp: Reduction of property damage only collisions by type (from Table A - Appendix E)
rp: Crash modification factor for property damage only collisions
Pc: Average cost, in thousands of $, per property damage only collision
Q: Weighted cost, in thousands of $, of fatal and injury collisions
Ic: Average cost per injury in thousands of $
Fc: Average cost per fatality in thousands of $
Ek: Capital recovery factor based on countermeasure life (from Table B - Appendix E)
Ci: Estimated initial cost of the countermeasure (cost of the improvement including r/w) in thousands of $
Cm: Estimated annual maintenance and operating cost of the countermeasure in thousands of $

Parameters	Default	Override	Used
Open year	2017		2020
Design year	2037		2040
Discount rate	7%		7%
AM peak period (hr)	2	2	2
PM peak period (hr)	3	2	2
Value of auto travel ($/hr)	13.75		13.75
Value of truck travel ($/hr)	72.65		72.65
Percent trucks	12%	6.0%	6.0%
Fatality Cost (Fc)	$9,100,000		$9,100,000
Injury Cost (Ic)	$955,500		$955,500
Property Damage Cost (Pc)	$27,300		$27,300
Annual Maintenance/Operating Cost (Cm)	$20,000		$20,000
Operational Benefit Factor	100%		100%

===> Operational Design Life = 20 Years

===> Safety Benefit Factor = 0%

Operational Benefits

Costs	**$**	**1,135,490**
Open Year (2020) Auto Delay Costs		
Nobuild	$	287,113
Build	$	134,215
Auto delay savings	**$**	**152,897**
Open Year (2020) Truck Delay Costs		
Nobuild	$	96,830
Build	$	45,265
Truck delay savings	**$**	**51,565**
Open Year (2020) Benefits	**$**	**204,463**
Design Year (2040) Auto Delay Costs		
Nobuild	$	1,064,508
Build	$	185,574
Auto delay savings	**$**	**878,934**
Design Year (2040) Truck Delay Costs		
Nobuild	$	359,009
Build	$	62,586
Truck delay savings	**$**	**296,424**
Design Year (2040) Benefits	**$**	**1,175,358**
Design Life Benefits	**$**	**13,798,201**
Design Life Benefit-Cost Ratio		**12.15**

Safety Benefits

Type of Safety Counter-measure	Ek	R	r	Rp	rp

Description	Symbol	Value
Reduction Factor (F, I)	R	0
Reduction Factor (PDO)	Rp	0
Capital Recovery Factor	Ek	0
Initial Improvement Cost	Ci	$ 1,135,490

Accident Data	Symbol	Value
PDO	P	
Fatalities	F	
Injuries	I	

Weighted cost of fatal and injury collisions
Q = $ -

Annual Benefit: $ -
Annual Cost: $ -
Annual B/C Ratio: **N/A**

Design Life Benefit
B = $ -

Design Life Cost
C = $ -

Design Life Benefit/Cost Ratio
B/C = **N/A**

Total Project Benefit

Design Life Operational Benefit	$13,798,201	**Weight=** 100%
Design Life Safety Benefit	$0	**Weight=** 0%
Total Weighted Benefit	**$13,798,201**	
Design Life Operational Cost	$1,135,490	**Weight=** 100%
Design Life Safety Cost	$0	**Weight=** 0%
Total Weighted Cost	**$1,135,490**	
Project Benefit-Cost Ratio	**12.15**	

1: SR 3 & SR 156 Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.4	0.2	1.3	0.6	0.6
Total Del/Veh (s)	56.3	27.1	59.9	70.1	54.2

Total Network Performance

Denied Del/Veh (s)	0.6
Total Del/Veh (s)	58.2

1: SR 3 & SR 156 Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.2	0.2	0.5	0.7	0.5
Total Del/Veh (s)	48.1	28.8	23.7	84.8	46.9

Total Network Performance

Denied Del/Veh (s)	0.5
Total Del/Veh (s)	50.9

1: SR 3 & SR 156 Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.8	0.6	0.5	0.5	0.6
Total Del/Veh (s)	25.3	35.9	18.2	15.2	23.2

Total Network Performance

Denied Del/Veh (s)	0.6
Total Del/Veh (s)	27.2

1: SR 3 & SR 156 Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	3.3	0.4	0.4	1.6	0.2	0.1	2.4	0.6	0.5	2.1	0.5	0.5
Total Del/Veh (s)	41.4	28.4	19.3	54.2	28.8	8.8	22.3	15.2	10.2	32.8	11.0	7.0

1: SR 3 & SR 156 Performance by movement

Movement	All
Denied Del/Veh (s)	0.7
Total Del/Veh (s)	19.9

Total Network Performance

Denied Del/Veh (s)	0.7
Total Del/Veh (s)	23.8

1: SR 3 & SR 156 Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	81.3	0.2	2.3	133.9	54.8
Total Del/Veh (s)	210.5	30.6	120.9	389.1	184.2

Total Network Performance

Denied Del/Veh (s)	54.8
Total Del/Veh (s)	186.9

1: SR 3 & SR 156 Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.3	0.2	0.7	395.7	126.4
Total Del/Veh (s)	73.6	30.6	63.0	440.4	155.9

Total Network Performance

Denied Del/Veh (s)	126.4
Total Del/Veh (s)	159.0

1: SR 3 & SR 156 Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	1.0	0.5	0.6	0.6	0.7
Total Del/Veh (s)	24.8	32.9	26.0	24.8	27.0

Total Network Performance

Denied Del/Veh (s)	0.7
Total Del/Veh (s)	31.3

1: SR 3 & SR 156 Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	1.1	0.7	0.7	0.7	0.8
Total Del/Veh (s)	30.6	35.5	20.6	19.4	24.6

Total Network Performance

Denied Del/Veh (s)	0.8
Total Del/Veh (s)	28.9

PROJECT CONCEPT REPORT

ATTACHMENT 6

MS4 CHECKLIST

P.I. No. 0013297
Gordon County

MS4 Concept Report Summary

Attach the following checklist information to the Concept Report Template:

Is there a Project Level Exclusion that applies to this project: ☐ No ☒ Yes

If yes, please indicate which of the following exclusions apply:

- ☐ Roadways that are not owned or operated (maintained) by GDOT may not require post-construction BMPs. Coordinate with the appropriate local government or entity to determine stormwater management requirements.
- ☒ The project location is not within a designated MS4 area.
- ☐ Maintenance and safety improvement projects whereby the sites are not connected and disturbs less than one acre at each individual site. This includes projects such as repaving, shoulder building, fiber optic line installation, sign addition, and sound barrier installation.
- ☐ Projects that have their environmental documents approved or right-of-way plans submitted for approval on or before June 30th, 2012.
- ☐ Road projects that disturb less than 1 acre or for site development projects that add less than 5,000 ft^2 of impervious area.

If the project has a Project Level Exclusion nothing further is needed.

If the project does not have a Project Level Exclusion use the MS4 Concept Level Design Spreadsheet to estimate the treatment volumes and flow rates, size the BMP's, complete the tables below, and include as an attachment to the Concept Report. Add additional rows, if necessary. It is understood that this information will be approximate based on available information at the time of the concept.

In MS4 designated areas, water quantity requirements may be waived for drainage areas that flow directly into surface waters that have a drainage area greater than 5 square miles.

Drainage Area Summary									
	Pre-Development			Post-Development			Water Quality Volume (Cubic Feet)	Channel Protection Volume (Cubic Feet)	Required Detention Volume (Cubic Feet)
Outfall Area	Tc	Weighted CN	Area (Acres)	Tc	Weighted CN	Area (Acres)			
1									
2									
3									

BMP Selection and Feasibility Summary					
	Outfall Level Exclusion?		BMP Selected	Is the BMP Feasible?	
	Y/N	Exclusion No.		Y/N	Infeasibility Criteria No.
Outfall Area					
1					
2					
3					

In addition to the above charts, attach the Drainage Area Map, drainage basin summary spreadsheets, and cost estimates (if required) to the Concept Report.

PROJECT CONCEPT REPORT

ATTACHMENT 7

ADDITIONAL DOCUMENTS

P.I. No. 0013297
Gordon County

PROJECT CONCEPT REPORT

ATTACHMENT 7

A. CONCEPT TEAM MEETING MINUTES

P.I. No. 0013297
Gordon County

MEETING MINUTES

Arcadis U.S., Inc.
2410 Paces Ferry Road
#400
Atlanta
Georgia 30339
Tel 770 431 8666
Fax 770 435 2666
www.arcadis.com

Subject:

SR 3 at SR 156
PI. 0013297, Gordon County

Meeting Location:

GDOT District 6 Office
500 Joe Frank Harris Pkwy S.E.
Cartersville, GA 30120

Participants:

[See Sign-In Sheet]

Meeting Date:

January 30, 2018

Minutes by:

Chuck Fisher

Issue Date:

February 12, 2018

MEETING DISCUSSION AND COMMENTS

Introductions and Project Overview:

- Jeff Simmons (GDOT PM) led introductions including in-person and conference call attendees
- Jeff Simmons discussed that Arcadis was tasked with concept report development and approval.
- Jody Peace discussed the Operational Improvement Program and the origin on the subject project
- Chuck Fisher discussed the overall design features of the project and the results of the operational analysis

Concept Report Review

- Project was proposed by GDOT Traffic Operations staff
- Project aims to improve delay and queuing for through movements at the intersection currently blocked by left turning vehicles.
- Project will construct add left turn lanes to all approaches.
- Project has no NEPA or GEPA document
- PCN permit may be required as a stream crosses under SR 156 at the intersection.
- USTs exist at gas stations near the project
- Potentially historic properties are present on the east and west sides of SR 3.
- R/W is anticipated at 6 parcels.
- Total project cost of $749,432
    - R/W costs have been requested
    - Utility costs will be updated
    - B/C is 15.34

- Project will provide significant reduction in delay in both the build year (2020) and design year (2040) AM & PM peak hours.

Comments and Discussions

- This project will be designed in-house by GDOT
- Pedestrian warrants are met in this project
- Initial Pavement Evaluation Summary Report will not be required
- Add CTM to project meetings
- Design will be completed in-house by GDOT
- Environmental will likely be completed in-house by GDOT
- Determination of the need for off-site detours will be completed during the design phase of the project.
- Reimbursable utility costs will be updated as the most recent is from 1/2017
- A 24" raw water line is present through the project area crossing the intersection and running north along the east side of SR 3.
- Charles Chesleigh noted that a Southern Company gas line runs through the project area.
    - A pdf showing the location of the gas line was emailed following the meeting.
- Marcela Coll noted that cost for upgrading the railroad will need to be included in the utility cost estimate
    - A cost estimate totaling $350,000 was emailed following the meeting
    - A railroad Val map was also emailed following the meeting.
- Willie Webb provided the following comments by email after the meeting:
    - Add the District Engineer to the signature page.
    - Why WB-40 instead of WB-67&SU on Design Vehicle?
    - Please remove note "A GEPA document must be prepared only for state funded projects…".
    - Page 3 needs to be marked as state funded, not exempt as there are no Federal Funds on the project as per the project PSR.
- A comment was made to check the design speed for SR 156 west of the intersection and consider shortening the proposed 185' shifting taper.
- A comment was made that additional RW may be required to relocate utilities.
- A comment was made that a variance may be needed to omit the crosswalks along the north and west legs of the intersection as proposed.
- A comment was made that including a TWLTL on SR 156 east of the intersection would be preferred.

Report by Section and associated Comment(s)

- **Signature Page -**
    - **Add a line for the District Engineer.**
- Project Location Map – No comment
- **Planning & Background Data –**
    - **Mark pedestrian warrants as met**
    - **Mark "Initial Pavement Evaluation Summary Report Required?" as "No"**
- Design and Structural - No comment
- Utility and Property – No comment
- Environmental and Permits –
    - **Remove GEPA note**

- **Coordination, Activities, Responsibilities, and Costs**
    - **Include CTM date**
    - **Revise design responsibilities to GDOT In-House**
    - **Revise Environmental to GDOT In-House**
    - **Revise Providing Material Pits to Contractor**
    - **Utility Costs to be updated**
    - **Include railroad cost in the utility cost**
- Alternative Discussion – No Comment
- **Attachments -**
    - **Concept Layout**
        - **Consider shortening the proposed 185' shifting taper on SR 156.**
        - **Consider including additional RW for utility relocation.**
        - **Variance may be needed to omit the crosswalks along the north and west legs of the intersection as proposed.**
        - **Consider including a TWLTL on SR 156 east of the intersection.**

MEETING SIGN-IN
PI.0013297, Gordon
SR 3 at SR 156

Name	Agency/Office	E-Mail
Jordan Allen	GDOT-OES	joallen@dot.ga.gov
Lakeshia Osborn	GDOT TMC Traffic Ops	losborne@dot.ga.gov
Jeff Simmons	GDOT-OPD	jesimmons@dot.ga.gov
David Acree	District 6-Preconstruction	dacree@dot.ga.gov
Joe Ciauarro	District 6-Planning	jciauarro@dot.ga.gov
Kevin King	City of Calhoun	kking@calnet-ga.net
Tod Lankford	City of Calhoun	tlankford@calnet-ga.net
Kerry Bonner	GDOT-CDM Smith	kbonner@dot.ga.gov
Jennifer Deems	District 6-Utilities	jdeems@dot.ga.gov
David Ray	District 6-Design	dray@dot.ga.gov
Jun Birnkammer	District 6-Utilities	jbirnkammer@dot.ga.gov
Daniel Monteith	District 6-Utilities	dmonteith@dot.ga.gov
Grant Waldrop	District 6-Traffic	gwaldrop@dot.ga.gov
Paul Worley	City of Calhoun	pworley@calnet-ga.net
Jimmy Palmer	City of Calhoun	jpalmer@calnet-ga.net
Chesleion Charles	Southern Company Gas/Atlanta Gas Light	ccharles@southernco.com
Brett Dixon	GDOT/District 6 ROW	Bdixon@dot.ga.gov
Chad Haygood	District 6 ROW/GDOT	chaygood@dot.ga.gov

Tim Dingler	ATT	Td4986@att.com
Kipp Champion	GDOT-Utilities	rchampion@dot.ga.gov
Jimmy Stewart	City of Calhoun	jstewart@calnet-ga.net
Barry Walraven	City of Calhoun Electric	bwalraven@calnet-ga.net
Jody Peace	Arcadis	Jody.peace@arcadis.com
Chuck Fisher	Arcadis	Chuck.fisher@arcadis.com
Marcela Coll	GDOT-Utilities	mcoll@dot.ga.gov

PROJECT CONCEPT REPORT

ATTACHMENT 7

B. INTERSECTION CONTROL EVALUATION (ICE) DOCUMENT

P.I. No. 0013297
Gordon County

GDOT ICE STAGE 1: SCREENING DECISION RECORD

GDOT PI #	0013721
Major Route:	SR 3
Minor Route:	SR 156
Prepared by:	Arcadis U.S., Inc.
Analyst:	Arcadis U.S., Inc.
Date Completed:	5/11/2017

Answer "Yes" or "No" to each policy question for each control type to identify which alternatives should be evaluated in the Stage 2 Decision Record. Enter justification in the rightmost column.
Note: *No more than 5 alternatives may selected and evaluated in Stage 2.*

Version 1.8
Revised 4/14/2017

	Intersection Alternative:	1 Does alternative address the project need in a balanced manner and in scale with the project?	2 Does alternative improve safety performance in terms of reducing severe crashes?	3 Does alternative incorporate convenience and accessibility for pedestrians and /or bicyclists?	4 Does alternative improve (or preserve) traffic operations (congestion, delay, reliability, etc.)?	5 Does alternative appear feasible given the site characteristics, constrains and location context?	6 Does alternative appear feasible with respect to other project factors?	7 Overall feasible alternative (select alternative for further evaluation in Stage 2)?	Screening Decision Justification:
Unsignalized	Conventional (Minor Stop)	No	No	No	No	No	No	No	N/A - Existing is signalized
	Conventional (All-Way Stop)	No	No	No	No	No	No	No	N/A - Existing is signalized
	Mini Roundabout	**Yes**	**Yes**	No	**Yes**	**Yes**	No	No	Approach speed of 45 mph on SR 3
	Single Lane Roundabout	**Yes**	**Yes**	**No**	**Yes**	**Yes**	**Yes**	**Yes**	**Potential for safety and operational benefits**
	Multilane Roundabout	**Yes**	**Yes**	No	**Yes**	No	No	No	ROW constraints
	RCUT (unsignalized)	No	No	No	No	No	No	No	N/A - Existing is signalized
	RIRO w/downstream U-Turn	No	No	No	No	No	No	No	N/A - Existing is signalized
	Unsignalized High-T	No	No	No	No	No	No	No	N/A - Existing is a four-leg intersection
	Offset-Tee Pair	No	No	No	No	No	No	No	N/A - Existing is signalized
	Other Unsignalized (provide description):	No	No	No	No	No	No	No	N/A
	Other Unsignalized (provide description):	No	No	No	No	No	No	No	N/A
Signalized Intersections	Traffic Signal	No	No	No	No	No	No	No	N/A - Existing is signalized
	Median U-Turn (Indirect Left)	No	**Yes**	No	No	No	No	No	Volumes on the cross street are comparable to the mainline
	RCUT (signalized)	No	**Yes**	No	No	No	No	No	Volumes on the cross street are comparable to the mainline
	Displaced Left Turn (CFI)	No	**Yes**	No	No	No	No	No	Low left-turn volumes
	Continuous Green-Tee (Hight-T)	No	No	No	No	No	No	No	N/A - Existing is a four-leg intersection
	Jughandle (Any Corner)	No	**Yes**	No	No	No	No	No	Low left-turn volumes
	Quadrant Roadway (Any Corner)	No	**Yes**	No	No	No	No	No	Low left-turn volumes
	Diverging Diamond (Ramp Terminals)	No	No	No	No	No	No	No	N/A - Not an interchange
	Single Point Interch (Ramp Terminals)	No	No	No	No	No	No	No	N/A - Not an interchange
	Other Signalized (provide description):	No	No	No	No	No	No	No	N/A
	Other Signalized (provide description):	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Dedicated left-turn lanes**

= Intersection type selected for more detailed analysis in Stage 2 Alternative Selection Decision Record

GDOT ICE STAGE 2: ALTERNATIVE SELECTION DECISION RECORD

Version 1.8
Revised 4/14/2017

Project Information

GDOT PI # (or N/A)	0013721	GDOT District:	6 - Cartersville	Date:	5/11/2017
County:	Gordon	Area Type:	Suburb/Transition	Agency/Firm:	Arcadis U.S., Inc.
Project Location:	SR 3 @ SR 156			Analyst:	Arcadis U.S., Inc.

Existing Intersection Control: Signal (no turn lanes on mainline)

Type of Analysis: Conventional Non-Safety Funded Project

Existing Conditions

Intersection meets Signal warrants?	Yes
Intersection meets AWSC warrants?	
Traffic Analysis Software	Synchro 8
Existing Pk Hr Intersection Delay*	37.1 sec
Existing Intersection V/C ratio*	0.69
Design Year	2037
Design Year Intersection Delay*	113.8 sec
Design Year V/C Ratio*	0.83

* = worst case AM/PM results

Crash Data:

Crash Type: 3 most recent years of intersection crash data	Crash Severity: PDO	Injuries	Fatalities
Angle	5	0	0
Head-On	1	0	0
Rear End	14	5	0
Sideswipe - same	0	0	0
Sideswipe - opposite	0	0	0
Not Collision w/Motor Veh	1	0	0
TOTALS:	21	5	0

Alternatives Analysis	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Proposed Control Type/Improvement	Single Lane Roundabout	Dedicated left-turn lanes	N/A	N/A	N/A
Project Cost					
Construction Cost	$1,524,086	$324,432			
ROW Cost	$278,342	$150,000			
Environmental Cost	$0	$0			
Reimbursable Utility	$76,204	$275,000			
PE+Contingency Cost (30%)	$563,590	$224,830			
Total Cost	$2,442,222	$974,262			
Traffic Operations					
Design Yr Intersection Delay	29.2	54.2			
Design Yr V/C Ratio	0.88	0.77			
Traffic Analysis Software	SIDRA 7	Synchro 8			
Safety Analysis					
Predefined CRF: PDO	24%	0%			
Predefined CRF: Fatal/Inj	74%	0%			
User Defined CRF: PDO		25%			
User Defined CRF: Fatal/Inj		43%			
User Defined CRF Source (if applicable):		CMF Clearninghouse 7996 / 7999			
Environmental Impacts					
Historic District/Property	None	None	None	None	
Archaeology Resources	None	None	None	None	
Graveyard	None	None	None	None	
Stream	None	None	None	None	
Underground Tank/Hazmat	None	None	None	None	
Park Land	None	None	None	None	
Environmental Justice Community	None	None	None	None	
Wooded Area	None	None	None	None	
Wetland	Yes	None	None	None	
Political Factors	*If environmental impact is highlighted* ***RED****, provide justification impact won't jeopardize project delivery on ENV worksheet tab.*				
Local Citizen Support	Neutral	Neutral	Neutral	Neutral	
Local Government Support	Neutral	Neutral	Neutral	Neutral	
GDOT District Office Support	Neutral	Strong	Neutral	Neutral	
GDOT Central Office Support	Neutral	Strong	Neutral	Neutral	
Final ICE Stage 2 Score	5.3	5.8	-	-	-
Rank of Control Type Alternatives:	2	1	-	-	-

Note: Stage 2 score is not shown (shown as "-") if signal or AWS is selected as control type but signal or AWS warrants are not met

Provide any additional general comments or explain analysis inputs (as necessary):

Intersection delay results for existing, design year no-build, and alternative 2 (dedicated left-turn lanes) obtained from Simtraffic
v/c results for existing, design year no-build, and alternative 2 (dedicated left-turn lanes) obtained from Synchro

LANE SUMMARY

Site: 1 [SR 3 at SR 156 - 2037 AM]

EF: 1.05
PHFs: 0.70 (All Approaches)

Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: SR 3													
Lane 1[d]	636	6.0	725	0.877	100	34.0	LOS D	16.0	418.6	Full	1600	0.0	0.0
Approach	636	6.0		0.877		34.0	LOS D	16.0	418.6				
East: SR 156/Red Bud Rd													
Lane 1[d]	529	6.0	709	0.745	100	22.1	LOS C	9.5	249.5	Full	1600	0.0	0.0
Approach	529	6.0		0.745		22.1	LOS C	9.5	249.5				
North: SR 3													
Lane 1[d]	607	6.0	799	0.760	100	21.1	LOS C	10.3	270.3	Full	1600	0.0	0.0
Approach	607	6.0		0.760		21.1	LOS C	10.3	270.3				
West: SR 156/Red Bd Rd													
Lane 1[d]	529	6.0	598	0.884	100	39.9	LOS E	15.5	406.8	Full	1600	0.0	0.0
Approach	529	6.0		0.884		39.9	LOS E	15.5	406.8				
Intersection	2300	6.0		0.884		29.2	LOS D	16.0	418.6				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

SIDRA INTERSECTION 7.0 | Copyright © 2000-2017 Akcelik and Associates Pty Ltd | sidrasolutions.com

1: SR 3 & SR 156 Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	2.9	0.6	0.6	0.0	0.0	0.0	2.0	0.5	0.4	2.0	0.5	0.6
Total Del/Veh (s)	65.6	43.4	28.8	158.4	41.8	8.8	45.4	26.6	21.4	62.6	21.8	14.2

1: SR 3 & SR 156 Performance by movement

Movement	All
Denied Del/Veh (s)	0.5
Total Del/Veh (s)	39.8

Total Network Performance

Denied Del/Veh (s)	0.6
Total Del/Veh (s)	54.2

PROJECT CONCEPT REPORT

ATTACHMENT 7

C. SYNOPSIS PRESENTED TO OPERATIONAL IMPROVEMENT COMMITTEE

P.I. No. 0013297
Gordon County

SYNOPSIS PRESENTED TO OPERATIONAL IMPROVEMENT COMMITTEE SEPTEMBER 8, 2014

Potential Operational Improvement Project

SR 3 at SR 156			Date Completed: February 2017	Requested By: GDOT Ops Staff
Ops ID: 98-089	GDOT District:	District 6	County:	Gordon
	Project Type:	Intersection Improvement	City:	Calhoun

Description of the Problem:

Lack of dedicated left turn lanes on north, south, and west legs of the intersection causes left turning vehicles to block the through movements causing extensive queues and delays during peak hours.

Location: (Attach Map, Image or Sketch):

Traffic Volume	Year	DHV
Existing Year	2017	See Attached Sheets
Future Year	2037	See Attached Sheets
Pedestrian Activity?	NO	

Proposed Improvement Description:

Construct dedicated left turning lanes on north, south, and west legs of the intersection. Convert east leg from one left turning lane and one shared through/right turning lane into one left turning storage lane, one through lane, and one right turning lane.

Improvement Sketch:

A more detailed conceptual drawing is attached.

Anticipated Benefits Table:
(LOS, Delay Reduction, Modeling output, etc.)

Delay and Level of Service (LOS)

Movement	AM Peak Hour				PM Peak Hour			
	Delay (sec/veh) and LOS				Delay (sec/veh) and LOS			
	No-Build (2017)	Build (2017)	No-Build (2037)	Build (2037)	No-Build (2017)	Build (2017)	No-Build (2037)	Build (2037)
Intersection	37.1 (D)	24.2 (C)	**113.8 (F)**	**54.2 (D)**	30.5 (C)	22.7 (C)	**143.2 (F)**	**29.0 (C)**
% Improvement	35%		**52%**		26%		**80%**	

Findings: The average intersection delay is estimated to be decreased by 35% and 26% during the 2017 AM and PM peak hours, respectively. **Similarly, the average intersection delay is estimated to be decreased by 52% and 80% during the 2037 AM and PM peak hours, respectively. The 2037 AM peak hour LOS improves from LOS F to LOS D and the 2037 PM peak hour LOS improves from LOS F to C.**

Initial Project Cost Estimate ($):

PE:	$95,916	Utility:	$19,183	ROW:	$32,983	CST:	$479,581	Total:	$627,663