

**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA**

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

FILE P.I. # 0010364

OFFICE Design Policy & Support

Bulloch County
GDOT District 5 - Jesup
SR 26 @ CR 585 Intersection
Improvements

DATE April 3, 2013

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:

Bobby Hilliard, Program Control Administrator
Genetha Rice-Singleton, State Program Delivery Engineer
Glenn Bowman, State Environmental Administrator
Cindy VanDyke, State Transportation Planning Administrator
Kathy Zahul, 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
Ken Thompson, Statewide Location Bureau Chief
Andy Casey, State Roadway Design Engineer
Attn: Chris Rudd, Design Group Manager
Karon Ivery, District Engineer
Brad Saxon, District Preconstruction Engineer
Stephen Thomas, District Utilities Engineer
Aghdas Ghazi, Project Manager
BOARD MEMBER - 12th Congressional District

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

Project Type: <u>Intersection Improv.</u>	P.I. Number: <u>0010364</u>
GDOT District: <u>5</u>	County: <u>Bulloch</u>
Federal Route Number: <u>80</u>	State Route Number: <u>26</u>

This project proposes to reduce crash frequency and severity and improve the operation of the existing intersection of SR 26/US 80 and CR 585/Burkhalter Road which is located near mile post 22.72 in the city of Statesboro, Bulloch County, Georgia. The proposed project length is approximately 0.47 miles.

Submitted for approval:

<u>C. Andy Conroy</u> State Roadway Design Engineer	<u>1/30/13</u> DATE
<u>Henett Rice-Lynn</u> State Program Delivery Engineer	<u>2/7/2013</u> DATE
<u>Ashley S. Yhroie</u> GDOT Project Manager	<u>2/11/2013</u> DATE

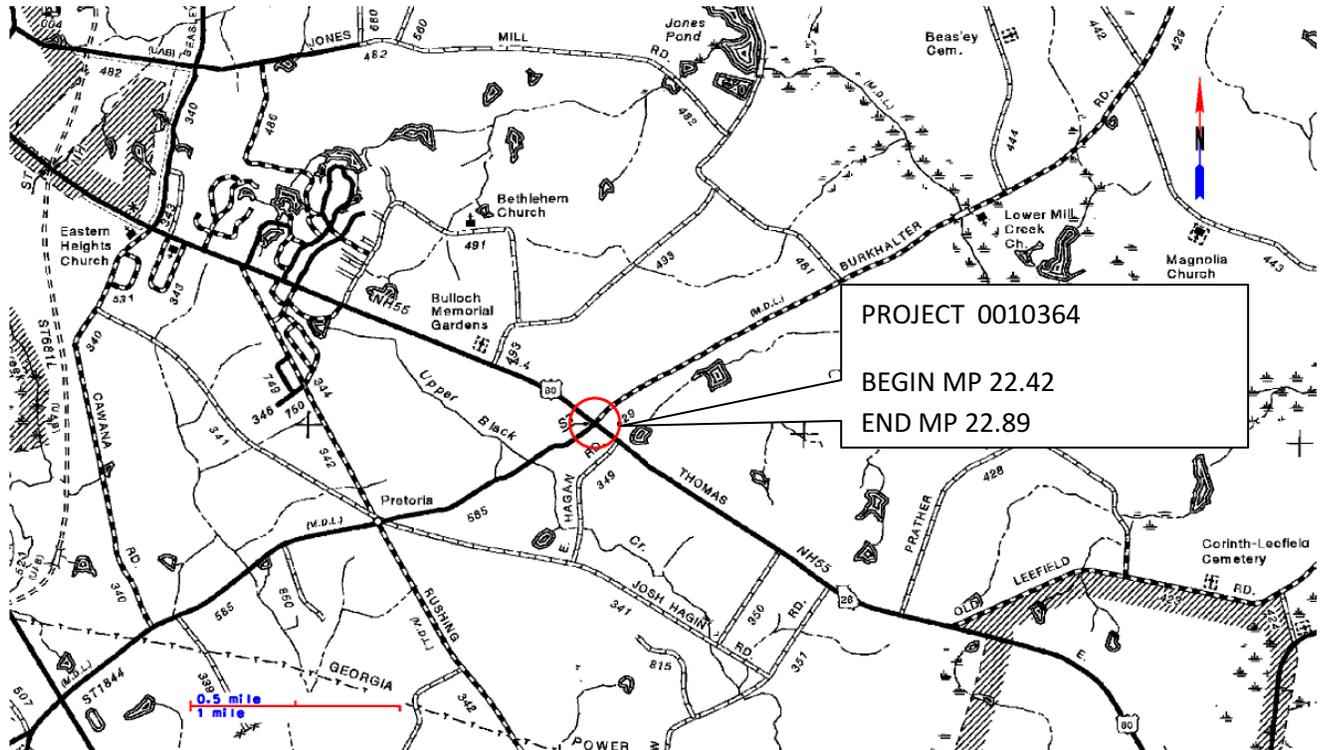
AVS

Recommendation for approval:

Program Control Administrator <u>GLENN BOWMAN*/EKP</u>	DATE <u>3/10/2013</u>
State Environmental Administrator <u>KATHY ZAHUL*/EKP</u>	DATE <u>3/19/2013</u>
State Traffic Engineer <u>LISA MYERS*/EKP</u>	DATE <u>3/1/2013</u>
Project Review Engineer	DATE
State Utilities Engineer <u>KARON IVERY*/EKP</u>	DATE <u>3/6/2013</u>
District Engineer	DATE
State Transportation Financial Management Administrator	DATE
The concept as presented herein and submitted for approval is consistent with that which is included in the Regional Transportation Plan (RTP) and/or the State Transportation Improvement Program (STIP).	
<u>CINDY VON DYKE*/EKP</u> State Transportation Planning Administrator	<u>3/7/2013</u> DATE

** - RECOMMENDATION ON FILE*

PROJECT LOCATION



Location Map

Project: 0010364 Bulloch County PI No.: 0010364

Description: SR 26/US 80 @ CR 585/Burkhalter Road

PLANNING & BACKGROUND DATA

Project Justification Statement: The proposed project will reduce crash frequency and severity at the intersection of SR 26 and Burkhalter Road. In Georgia, nearly a third of fatal crashes occur at intersections. Intersection safety is a focus area for the Georgia Department of Transportation. Nationally intersection crashes account for 40% of all reported crashes and approximately 20% of traffic fatalities. Of those crashes, almost half are the result of angle collisions. Angle collisions are often high speed, high impact crashes which often result in serious injuries or fatalities. Crash data from 2004-2009 was analyzed resulting in 59 total crashes with 69 injuries and 2 fatalities. Of those crashes 32 were angle collision, 1 was a head on collision, and 21 were rear end collisions.

Description of the proposed project: This project proposes the construction and installation of a traffic signal with left and right-turn lanes along SR 26/US 80 in the southeast quadrant of the intersection along CR 585/Burkhalter Road. The existing right turn lane will be reconstructed. This intersection is located in the city of Statesboro, Bulloch County, Georgia near mile post 22.72. The proposed project length is approximately 0.47 miles.

Federal Oversight: Full Oversight Exempt State Funded Other

MPO: N/A MPO - MPO Project TIP # N/A

Regional Commission: N/A RC – Coastal Regional Commission
RC Project ID # N/A

Congressional District(s): 12

Projected Traffic: ADT

Current Year (2011): 8950 Open Year (2016): 10550 Design Year (2036): 15600

Functional Classification :

SR 26/US 80: Rural Minor Arterial

CR 585/BURKHALTER ROAD (Northeast of the intersection): Rural Major Collector

CR 585/BURKHALTER ROAD (Southwest of the intersection): Urban Minor Arterial Street

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

Is this project on a designated Bike Route, Pedestrian Plan, or Transit Network?

None Bike Route Pedestrian Plan Transit Network

CONTEXT SENSITIVE SOLUTIONS

Issues of Concern: N/A

Context Sensitive Solutions: N/A

DESIGN AND STRUCTURAL DATA

Mainline Design Features:

Roadway Name/Identification: SR 26 / US 80

Feature	Existing	Standard*	Proposed
Typical Section			
- Number of Lanes	2	2	2
- Lane Width(s)	12-ft	12-ft	12-ft
- Median Width & Type	None	None	None
- Outside Shoulder Width	2-ft paved	10-ft/4-ft paved	10-ft/4-ft paved
- Outside Shoulder Type	Rural	Rural	Rural
- Outside Shoulder Slope	6%	6%	6%
- Inside Shoulder Width & Type	None	None	None
- Sidewalks	None	None	None
- Auxiliary Lanes	12-ft Right - turn lane	12-ft Right and Left - turn lanes	12-ft Right and Left - turn lanes
- Bike Lanes	None	None	None
Posted Speed	55-mph		55-mph
Design Speed	Unknown	55-mph	55-mph
Min Horizontal Curve Radius	Unknown**	1060	1060
Max Super elevation Rate	Unknown**	6%	6%
Max Grade	Unknown**	4%	4%
Access Control	By Permit	By Permit	By Permit
Right-of-Way Width	100-ft	N/A	150-ft
Maximum Grade – Crossroad	Unknown**	2%	2%
Design Vehicle	Unknown	WB-67	WB-67

*According to current GDOT design policy if applicable

**Survey information has not yet been determined for this project.

Roadway Name/Identification: Burkhalter / CR 585

Feature	Existing	Standard*	Proposed
Typical Section			
- Number of Lanes	2	2	2
- Lane Width(s)	12-ft	12-ft	12-ft
- Median Width & Type	None	None	None
- Outside Shoulder Width	2-ft paved	8-ft/4-ft paved	8-ft/4-ft paved
- Outside Shoulder Type	Rural/Urban	Rural/Urban	Rural/Urban
- Outside Shoulder Slope	6%	6%	6%
- Inside Shoulder Width & Type	None	None	None
- Sidewalks	None	None	None
- Auxiliary Lanes	12-ft Right – turn lane	12-ft Right – turn lane	12-ft Right – turn lane
- Bike Lanes	None	None	None
Posted Speed	45-mph		45-mph
Design Speed	45-mph	45-mph	45-mph
Min Horizontal Curve Radius	Unknown**	643	643
Max Super elevation Rate	Unknown**	6%	6%
Max Grade	Unknown**	6%	6%
Access Control	By Permit	By Permit	By Permit
Right-of-Way Width	60-ft	N/A	150-ft
Maximum Grade – Crossroad	Unknown**	2%	2%
Design Vehicle	Unknown	WB-67	WB-67

*According to current GDOT design policy if applicable

**Survey information has not yet been determined for this project.

Major Interchanges/Intersections: N/A

Utility Involvements: Georgia Power (No known conflicts), Excelsior EMC, Bulloch Rural Telephone, and Frontier Communications.

Public Interest Determination Policy and Procedure recommended (Utilities)? YES NO

SUE Required: Yes No

Railroad Involvement: No Railroads are located along the project.

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

Warrants met: None Bicycle Pedestrian Transit

Right-of-Way:

Required Right-of-Way anticipated: YES NO Undetermined
 Easements anticipated: Temporary Permanent Utility Other

Anticipated number of impacted parcels: 6
 Anticipated number of displacements (Total): 0
 Businesses: 0
 Residences: 0
 Other: 0

Location and Design approval: Required Not Required

Off-site Detours Anticipated: No Yes Undetermined

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	YES	Appvl Date (if applicable)	NO	Undetermined
1. Design Speed	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Lane Width	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Shoulder Width	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Bridge Width	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Horizontal Alignment	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
6. Super elevation	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
7. Vertical Alignment	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
8. Grade	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
9. Stopping Sight Distance	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
10. Cross Slope	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
11. Vertical Clearance	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
12. Lateral Offset to Obstruction	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
13. Bridge Structural Capacity	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>

Design Variances to GDOT standard criteria anticipated:

GDOT Standard Criteria	Reviewing Office	YES	Appvl Date (if applic.)	NO	Undetermined
1. Access Control - Median Opening Spacing	DP&S	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Median Usage & Width	DP&S	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Intersection Skew Angle	DP&S	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Lateral Offset to Obstruction	DP&S	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Intersection Sight Distance	DP&S	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
6. Bike & Pedestrian Accommodations	DP&S	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
7. GDOT Drainage Manual	DP&S	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>

8. Georgia Standard Drawings	DP&S	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
9. GDOT Bridge & Structural Manual	Bridge	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
10. Roundabout Illumination	DP&S	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
11. Rumble Strips	DP&S	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
12. Safety Edge	DP&S	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>

VE Study anticipated: No Yes Completed – Date:

ENVIRONMENTAL DATA

Anticipated Environmental Document:

GEPA: **NEPA:** Categorical Exclusion EA/FONSI EIS

Project 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

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

Environmental Permits/Variations/Commitments/Coordination anticipated:

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

Is a PAR required? No Yes Completed – Date:

NEPA/GEPA: The CE is anticipated to be drafted around January of 2013 and approved by July of 2013.

Ecology: An Ecology field survey was conducted in March 2012. No wetland or stream resources were found in the project Area of Potential Effect. There was no suitable habitat and no effects for any federal or state protected species.

History: Section 106 of the National Historic Preservation Act has been initiated. A Historic Resource Survey was completed in April 2012. After section 106 consultation is completed, the historian will assess project effects to any identified historic properties as preliminary plans become available. SHPO concurrence was received on June 2012.

Archeology: Section 106 of the National Historic Preservation Act has been initiated. An Archaeological Resource Survey was completed in February 2012. When the project alignment files become available, the effects to any identified archaeological resources will be assessed and an Assessment of Effects report completed. The only archeology resource that was identified was a cemetery located in the northwest quadrant. No effects are anticipated.

Air & Noise: Air quality and Noise assessments will be required. Mitigation measures for this type project are not expected.

Public Involvement: A Public Information Open House (PIOH) is not anticipated for this project.

Major stakeholders: The major stakeholders for this project include the traveling public, two gas stations businesses, and adjacent R/W owners.

CONSTRUCTION

Issues potentially affecting constructability/construction schedule: NONE

Early Completion Incentives recommended for consideration: No Yes

PROJECT RESPONSIBILITIES

Project Activities:

Project Activity	Party Responsible for Performing Task(s)
Concept Development	GDOT Roadway Design
Design	GDOT Roadway Design
Right-of-Way Acquisition	GDOT District 5 R/W
Utility Relocation	Utilities Owners
Letting to Contract	GDOT Contract Bidding
Construction Supervision	GDOT District 5 Construction
Providing Material Pits	Contractor

Providing Detours	NA
Environmental Studies, Documents, & Permits	GDOT Environmental Services
Environmental Mitigation	GDOT Environmental Services
Construction Inspection & Materials Testing	GDOT District 5 Construction

Lighting required: No Yes

Initial Concept Meeting: None

Concept Meeting: The Concept Team Meeting, (CTM) was held on June 28, 2012 at District 5 Statesboro Area Office. See attached CTM minutes.

Other projects in the area:

STP00-005-00(829), P.I. # 0005829, (Reconstruction/Rehabilitation), Widening of SR26/US80 From 5 lane @ CR 491 to CR 423/Old Lee Field Road.

M004261, P.I. # M004261, (Maintenance), SR26 From East of CR 348/Stiles Street to East of CR 402/Arcola Road.

Other coordination to date: None

Project Cost Estimate and Funding Responsibilities:

	Breakdown of PE	ROW	Utility	CST*	Environmental Mitigation	Total Cost
By Whom	GDOT	GDOT	Utility Owner	GDOT	GDOT	
\$ Amount	\$409,413.89	\$177,000	\$0.00	\$1,060,493	\$0.00	\$1,646,906.89
Date of Estimate	2/23/2011	12/17/2012	8/13/2012	1/18/2013	N/A	

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

ALTERNATIVES DISCUSSION

Alternative selection:

Alternative 1: Single Lane Roundabout			
Estimated Property Impacts:	10 parcels	Estimated CST Cost:	\$1,732,727.00
Estimated ROW Cost:	\$1,082,000.00	Estimated CST Time:	18-months
Rationale: The level of service (LOS) for this Alternate was determined to be "B"; this single lane roundabout alternate would provide both safety enhancements and improved operational capacity at this intersection in build and design years. However, the roundabout alternate was not supported by the Bulloch County local government. Therefore, the signal control alternate is proposed.			

Alternative 2: Two way stop control with left turn lanes			
Estimated Property Impacts:	6 parcels	Estimated CST Cost:	\$896,954.08
Estimated ROW Cost:	\$177,000.00	Estimated CST Time:	12-months
Rationale: The level of service (LOS) for this Alternate was determined to be “F”. Because this is less than LOS “C,” the required LOS for this facility type, this alternate was not considered feasible.			

Alternative 3: Signal control with left turn lanes (Preferred)			
Estimated Property Impacts:	6 parcels	Estimated CST Cost:	\$1,060,492.85
Estimated ROW Cost:	\$177,000.00	Estimated CST Time:	12-months
Rationale: The LOS provided by this alternate was determined to be “C.” Since Alternate 1 provides a LOS “B” without the additional cost of the maintenance of a signal, this alternate was determined to be slightly less desirable than Alternate 1. However, the roundabout alternate was not supported by the Bulloch County local government. As a result, the signal control alternate is proposed to be implemented.			

No-Build Alternative: Alternate 4, No Build (Existing condition)			
Estimated Property Impacts:	none	Estimated CST Cost:	\$0.00
Estimated ROW Cost:	\$0.00	Estimated CST Time:	0 months
Rationale: This alternate would not reduce crash frequency and severity of the intersection and was considered to be less desirable than either alternates 1 or 3.			

Comments: None

Attachments:

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
4. Crash summaries
5. Traffic diagrams
6. Capacity analysis summary
7. TE Study including Signal Warrant Analysis
8. Concept Team Meeting Minutes
9. Highway Safety Calculation

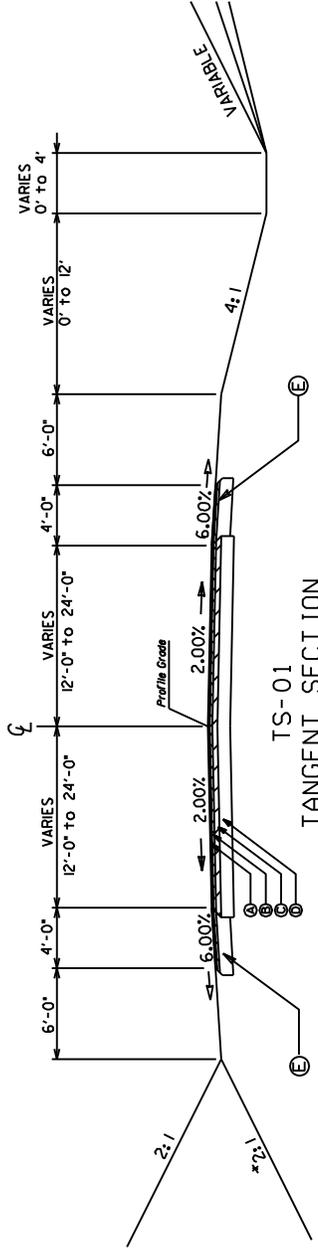
APPROVALS

Concur:  3/26/2013
Director of Engineering

Approve: 
Chief Engineer

4/1/13
Date

TYPICAL SECTION NO. 1 S.R. 26 / U.S. 80



TS-01
TANGENT SECTION

APPLIES TO: SR 26 / US 80

REQUIRED PAVEMENT

- (A) ASPHALTIC CONCRETE 12.5 mm, SUPERPAVE, 165 lb/sy, GP 1 OR 2, INCL BITUM MATL & H LIME
- (B) ASPHALTIC CONCRETE 19 mm, SUPERPAVE, 220 lb/sy, GP 1 OR 2, INCL BITUM MATL & H LIME
- (C) ASPHALTIC CONCRETE 25 mm, SUPERPAVE, 1210 lb/sy, GP 1 OR 2, INCL BITUM MATL & H LIME
- (D) GRADED AGGREGATE BASE, 12 in, INCL MATL
- (E) GRADED AGGREGATE BASE & SHOULDER BASE COURSE, 6 in, INCL MATL

SLOPE	CONTROLS
4:1	CUT FILL 0'-6" 0'-10"
3:1	6'-10"
2:1	OVER 10' OVER 10'

*REQUIRES GUARDRAIL

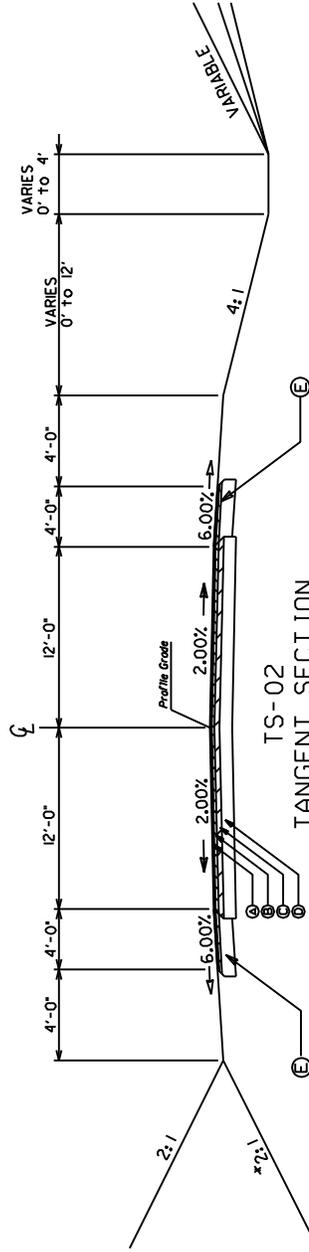
NOTE: FOR METHOD OF SURVEILLATION, SEE LOCATION OF PAVEMENT DATA LOCATIONS OF NORMAL CROWN OR SUPER REVERSE CROWN AND FULL S.E. NOTED ON CONSTRUCTION CENTERLINE.

*NOTE: SLOPES MAY VARY FLATTER THAN 2:1 TO FIT FIELD CONDITIONS. SEE EARTHWORK X-SEC.

Δ NOTE: THE ALGEBRAIC DIFFERENCE IN PAVING SLOPE AND SHOULDER SLOPE SHALL NOT EXCEED 8.0%

NOTE: THE 2'-0" AREA BETWEEN THE SIDEWALK AND THE CURB AND GUTTER SHALL BE SOD.

TYPICAL SECTION NO. 2 CR 585 BUCKHALTER ROAD



TS-02
TANGENT SECTION

APPLIES TO: CR 585 / BURKHALTER ROAD

GEORGIA DEPARTMENT OF TRANSPORTATION	STATE OF GEORGIA DEPARTMENT OF TRANSPORTATION OFFICE: ROADWAY DESIGN TYPICAL SECTIONS BULLOCH COUNTY	DRAWING NO. 05-001
	REVISION DATES	

DETAILED COST ESTIMATE

Job: 0010364

JOB NUMBER 0010364

FED/STATE PROJECT NUMBER 0010364

SPEC YEAR: 01

DESCRIPTION: SR26/US80 @ CR585/BURKHALTER ROAD

ALTERNATE NO. 3, SIGNAL CONTROL

ITEMS FOR JOB 0010364

0010 - ROADWAY ITEMS

Line Number	ITEM	QUANTITY	UNITS	PRICE	DESCRIPTION	AMOUNT
0005	150-1000	1.000	LS	\$30,000.00000	TRAFFIC CONTROL - 0010364	\$30,000.00
0010	210-0100	1.000	LS	\$200,000.00000	GRADING COMPLETE - 0010364	\$200,000.00
0015	310-5060	5632.000	SY	\$11.58801	GR AGGR BS CRS 6IN INCL MATL	\$65,263.67
0020	310-5120	7263.000	SY	\$18.07894	GR AGGR BS CRS 12IN INCL MATL	\$131,307.34
0050	634-1200	10.000	EA	\$101.48623	RIGHT OF WAY MARKERS	\$1,014.86
SUBTOTAL FOR ROADWAY ITEMS:						\$427,585.87

0020 - PAVEMENT ITEMS

Line Number	ITEM	QUANTITY	UNITS	PRICE	DESCRIPTION	AMOUNT
0055	402-1812	100.000	TN	\$82.85040	RECYL AC LEVELING,INC BM&HL	\$8,285.04
0060	402-3121	1439.000	TN	\$80.33341	RECYL AC 25MM SP,GP1/2,BM&HL	\$115,599.78
0065	402-3130	1065.000	TN	\$78.89020	RECYL AC 12.5MM SP,GP2,BM&HL	\$84,018.06
0070	402-3190	1729.000	TN	\$77.61151	RECYL AC 19 MM SP,GP 1 OR 2 ,INC BM&HL	\$134,190.30
0075	413-1000	5203.000	GL	\$2.78267	BITUM TACK COAT	\$14,478.23
0080	432-5010	100.000	SY	\$9.00867	MILL ASPH CONC PVMT,VARB DEPTH	\$900.87
SUBTOTAL FOR PAVEMENT ITEMS:						\$357,472.28

0040 - PERMANENT EROSION CONTROL ITEMS

Line Number	ITEM	QUANTITY	UNITS	PRICE	DESCRIPTION	AMOUNT
0110	700-6910	2.250	AC	\$727.52028	PERMANENT GRASSING	\$1,636.92
0115	700-7000	5.000	TN	\$24.68412	AGRICULTURAL LIME	\$123.42
0120	700-8000	1.000	TN	\$485.13175	FERTILIZER MIXED GRADE	\$485.13
0125	700-8100	113.000	LB	\$2.84491	FERTILIZER NITROGEN CONTENT	\$321.47
0130	716-2000	5445.000	SY	\$1.34080	EROSION CONTROL MATS, SLOPES	\$7,300.66
SUBTOTAL FOR PERMANENT EROSION CONTROL ITEMS:						\$9,867.60

0050 - TEMPORARY EROSION CONTROL ITEMS

Line Number	ITEM	QUANTITY	UNITS	PRICE	DESCRIPTION	AMOUNT
0135	163-0232	1.000	AC	\$234.49377	TEMPORARY GRASSING	\$234.49
0140	163-0240	49.000	TN	\$197.40969	MULCH	\$9,673.07
0150	163-0528	1200.000	LF	\$4.02169	CONSTR AND REM FAB CK DAM -TP C SLT FN	\$4,826.03
0155	163-0529	300.000	LF	\$3.81625	CNST/REM TEMP SED BAR OR BLD STRW CK DM	\$1,144.88
0165	165-0010	200.000	LF	\$0.57568	MAINT OF TEMP SILT FENCE, TP A	\$115.14
0175	165-0071	600.000	LF	\$0.61593	MAINT OF SEDIMENT BARRIER - BALED STRAW	\$369.56
0185	171-0010	400.000	LF	\$2.55514	TEMPORARY SILT FENCE, TYPE A	\$1,022.06
SUBTOTAL FOR TEMPORARY EROSION CONTROL ITEMS:						\$17,385.23

DETAILED COST ESTIMATE



Job: 0010364

0060 - SIGNING AND MARKING ITEMS

Line Number	ITEM	QUANTITY	UNITS	PRICE	DESCRIPTION	AMOUNT
0205	636-1020	22.000	SF	\$14.29305	HWY SGN,TP1MAT,REFL SH TP3	\$314.45
0215	636-1033	45.000	SF	\$17.43425	HWY SIGNS, TP1MAT,REFL SH TP 9	\$784.54
0220	636-1041	30.000	SF	\$31.05786	HWY SIGNS,TP 2MAT,REFL SH TP 9	\$931.74
0225	636-2070	121.000	LF	\$7.13346	GALV STEEL POSTS, TP 7	\$863.15
0230	636-2080	35.000	LF	\$8.94171	GALV STEEL POSTS, TP 8	\$312.96
0395	639-4004	4.000	EA	\$5,545.72972	STRAIN POLE, TP IV	\$22,182.92
0400	647-1000	1.000	LS	\$75,000.00000	TRAF SIGNAL INSTALLATION NO - 0010364	\$75,000.00
0195	653-0100	30.000	EA	\$389.57174	THERM PVMT MARK, RR/HWY X SYM	\$11,687.15
0390	653-0120	15.000	EA	\$77.42025	THERM PVMT MARK, ARROW, TP 2	\$1,161.30
0235	653-1501	4700.000	LF	\$0.50350	THERMO SOLID TRAF ST 5 IN, WHI	\$2,366.45
0240	653-1502	1520.000	LF	\$0.66685	THERMO SOLID TRAF ST, 5 IN YEL	\$1,013.61
0245	653-1704	2.000	LF	\$4.98745	THERM SOLID TRAF STRIPE,24",WH	\$9.97
0260	653-3501	800.000	GLF	\$0.31301	THERMO SKIP TRAF ST, 5 IN, WHI	\$250.41
0265	653-6004	297.000	SY	\$3.28505	THERM TRAF STRIPING, WHITE	\$975.66
0270	653-6006	644.000	SY	\$3.29130	THERM TRAF STRIPING, YELLOW	\$2,119.60
SUBTOTAL FOR SIGNING AND MARKING ITEMS:						\$119,973.91

TOTALS FOR JOB 0010364

ITEMS COST:	\$932,284.89
COST GROUP COST:	\$0.00
ESTIMATED COST:	\$932,284.89
CONTINGENCY PERCENT:	0.00
ENGINEERING AND INSPECTION:	0.05
ESTIMATED COST WITH CONTINGENCY AND E&I:	\$978,899.13

PROJ. NO.: 0010364
P.I. NO. 0010364
DATE: 1/18/2013

Base Construction Cost		\$	932,284.89
E & I	5%	\$	46,614.24
Construction Contingency	0	\$	-
Subtotal Construction Cost		\$	978,899.13
Liquid AC Adjustment (50 % cap)		\$	81,593.72
Total Construction Cost		\$	1,060,492.85

PROJ. NO. 0010364
P.I. NO. 0010364
DATE 1/18/2013
CALL NO.

INDEX (TYPE) **DATE** **INDEX**
 REG. UNLEADED Nov-12 \$ 3.337
 DIESEL \$ 3.961
 LIQUID AC \$ 569.00

LIQUID AC ADJUSTMENTS
PA=[((APM-APL)/APL)]xTMTxAPL
Asphalt
 Price Adjustment (PA) **73964.31**
 Monthly Asphalt Cement Price month placed (APM) \$ 910.40
 Monthly Asphalt Cement Price month project let (APL) \$ 569.00
Total Monthly Tonnage of asphalt cement (TMT) **216.65**

ASPHALT	Tons	%AC	AC ton
Leveling	100	5.0%	5
12.5 OGFC	0	5.0%	0
12.5 mm	1065	5.0%	53.25
9.5 mm SP	0	5.0%	0
25 mm SP	1439	5.0%	71.95
19 mm SP	1729	5.0%	86.45
	4333		216.65

BITUMINOUS TACK COAT
 Price Adjustment (PA) **7,629.41**
 Monthly Asphalt Cement Price month placed (APM) \$ 910.40
 Monthly Asphalt Cement Price month project let (APL) \$ 569.00
Total Monthly Tonnage of asphalt cement (TMT) **22.3474101**

Bitum Tack
 Gals gals/ton tons
5203 232.8234 22.3474101

GEORGIA DEPARTMENT OF TRANSPORTATION
PRELIMINARY ROW COST ESTIMATE SUMMARY

Date: 12/17/2012 Project: Roundabout
Revised: 12/17/2012 County: Bulloch
PI: 0010364

Description: Single Lane Roudabout
Project Termini: Single Lane Roudabout

Existing ROW: Varies
Required ROW: Varies
Parcels: 6

Land and Improvements _____ \$64,845.00

Proximity Damage \$0.00

Consequential Damage \$0.00

Cost to Cures \$0.00

Trade Fixtures \$0.00

Improvements \$30,000.00

Valuation Services _____ \$6,000.00

Legal Services _____ \$41,550.00

Relocation _____ \$12,000.00

Demolition _____ \$0.00

Administrative _____ \$52,000.00

TOTAL ESTIMATED COSTS _____ \$176,395.00

TOTAL ESTIMATED COSTS (ROUNDED) _____ \$177,000.00

Preparation Credits	Hours	Signature

Prepared By:

Approved By:

Lashone Alexander CG#: 286999 12/17/2012
Lashone Alexander CG#: 286999 12/17/2012

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

DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE P.I. # 0010364 Bulloch County

OFFICE Jesup

DATE 8-13-2012

FROM Stephen Thomas, District Utilities Engineer

TO Charles Robinson, Project Manager

SUBJECT PRELIMINARY UTILITY COST ESTIMATE

As requested by your office, we are furnishing you with a Preliminary Utility Cost Estimate of each Utility with facilities potentially located within the above referenced project limits.

Facility Owner	Non-Reimbursable	Reimbursable	Comments
Georgia Power Distribution	\$ 0.00	\$ 0.00	No known conflicts
Excelsior EMC	\$ 20,000.00	\$ 0.00	
Bulloch Rural Telephone	\$ 52,800.00	\$ 0.00	
Frontier Communications	\$ 52,800.00	\$ 0.00	
Northland Cable Vision	\$ 23,500.00	\$ 0.00	
Totals	\$ 149,100.00	\$ 0.00	
Total Reimbursement		\$ 0.00	

CC; Angie Robinson, Office of Financial Management;
Terry Brigman, Assistant State Utilities Engineer
District Office File
Utilities Office File

Project Number: 0010364

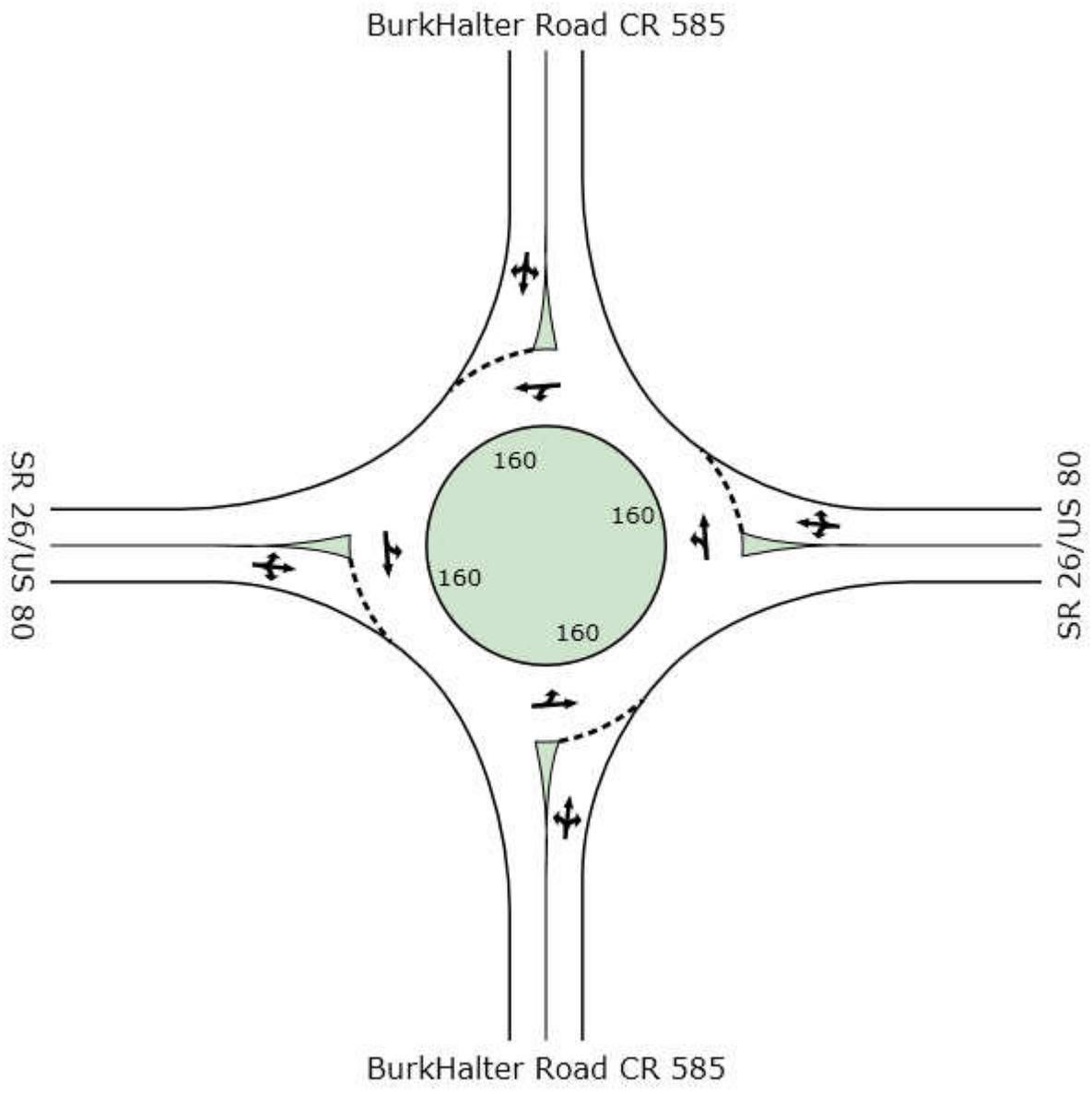
Bulloch County

P.I. Number: 0010364

Crash Summaries

Crash History:

Year	No. Crashes	No. Vehicles	No. Injuries	No. Fatalities
2004	16	34	21	0
2005	11	23	20	0
2006	8	18	13	0
2007	10	24	8	0
2008	7	14	3	2
2009	7	15	4	0
Total all years	59	128	69	2



LANE SUMMARY

Site: 2016 AM

New Site
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 Vehicles veh	Distance ft	Lane Length ft	SL Type	Cap. Adj. %	Prob. Block. %
	L veh/h	T veh/h	R veh/h													
South: BurkHalter Road CR 585																
Lane 1	22	33	54	109	7.0	1034	P	100	7.6	LOS A	0.6	14.9	1600	-	0.0	0.0
Approach	22	33	54	109	7.0		0.105		7.6	LOS A	0.6	14.9				
East: SR 26/US 80																
Lane 1	98	500	22	620	7.0	1334	P	100	5.6	LOS A	3.6	94.2	1600	-	0.0	0.0
Approach	98	500	22	620	7.0		0.464		5.6	LOS A	3.6	94.2				
North: BurkHalter Road CR 585																
Lane 1	22	109	114	245	7.0	757	P	100	9.7	LOS A	2.1	54.9	1600	-	0.0	0.0
Approach	22	109	114	245	7.0		0.323		9.7	LOS A	2.1	54.9				
West: SR 26/US 80																
Lane 1	38	212	22	272	5.0	1097	P	100	6.2	LOS A	1.5	38.7	1600	-	0.0	0.0
Approach	38	212	22	272	5.0		0.248		6.2	LOS A	1.5	38.7				
Intersection				1245	6.6		0.464		6.7	LOS A	3.6	94.2				

P: You need to Process this Site (F9) for this variable to be computed.

Level of Service (LOS) Method: Delay (HCM 2000).
 Roundabout LOS Method: Same as Sign Control.
 Lane LOS values are based on average delay per lane.
 Intersection and Approach LOS values are based on average delay for all lanes.
 Roundabout Capacity Model: SIDRA Standard.
 SIDRA Standard Delay Model used.



LANE SUMMARY

Site: 2016 PM

New Site
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 Vehicles veh	Queue Distance ft	Lane Length ft	SL Type	Cap. Adj. %	Prob. Block. %
	L veh/h	T veh/h	R veh/h													
South: BurkHalter Road CR 585																
Lane 1	27	49	98	174	7.0	771	P	100	9.7	LOS A	1.4	37.0	1600	-	0.0	0.0
Approach	27	49	98	174	7.0		0.226		9.7	LOS A	1.4	37.0				
East: SR 26/US 80																
Lane 1	98	457	27	582	7.0	1194	P	100	6.4	LOS A	3.7	97.9	1600	-	0.0	0.0
Approach	98	457	27	582	7.0		0.487		6.4	LOS A	3.7	97.9				
North: BurkHalter Road CR 585																
Lane 1	11	43	60	114	7.0	764	P	100	9.0	LOS A	0.9	23.7	1600	-	0.0	0.0
Approach	11	43	60	114	7.0		0.149		9.0	LOS A	0.9	23.7				
West: SR 26/US 80																
Lane 1	98	478	33	609	5.0	1251	P	100	6.1	LOS A	3.8	97.9	1600	-	0.0	0.0
Approach	98	478	33	609	5.0		0.487		6.1	LOS A	3.8	97.9				
Intersection				1478	6.2		0.487		6.9	LOS A	3.8	97.9				

P: You need to Process this Site (F9) for this variable to be computed.

Level of Service (LOS) Method: Delay (HCM 2000).
 Roundabout LOS Method: Same as Sign Control.
 Lane LOS values are based on average delay per lane.
 Intersection and Approach LOS values are based on average delay for all lanes.
 Roundabout Capacity Model: SIDRA Standard.
 SIDRA Standard Delay Model used.



LANE SUMMARY

Site: 2036 AM

New Site
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 Vehicles veh	Distance ft	Lane Length ft	SL Type	Cap. Adj. %	Prob. Block. %
	L veh/h	T veh/h	R veh/h													
South: BurkHalter Road CR 585																
Lane 1	49	71	82	201	7.0	906	P	100	8.8	LOS A	1.4	35.7	1600	-	0.0	0.0
Approach	49	71	82	201	7.0		0.222		8.8	LOS A	1.4	35.7				
East: SR 26/US 80																
Lane 1	136	750	33	918	7.0	1199	P	100	8.1	LOS A	10.3	271.9	1600	-	0.0	0.0
Approach	136	750	33	918	7.0		0.766		8.1	LOS A	10.3	271.9				
North: BurkHalter Road CR 585																
Lane 1	33	158	168	359	7.0	439	P	100	36.0	LOS E	11.4	300.2	1600	-	0.0	0.0
Approach	33	158	168	359	7.0		0.816		36.0	LOS E	11.4	300.2				
West: SR 26/US 80																
Lane 1	65	304	33	402	5.0	994	P	100	7.3	LOS A	2.8	73.6	1600	-	0.0	0.0
Approach	65	304	33	402	5.0		0.405		7.3	LOS A	2.8	73.6				
Intersection				1880	6.6		0.816		13.4	LOS B	11.4	300.2				

P: You need to Process this Site (F9) for this variable to be computed.

Level of Service (LOS) Method: Delay (HCM 2000).

Roundabout LOS Method: Same as Sign Control.

Lane LOS values are based on average delay per lane.

Intersection and Approach LOS values are based on average delay for all lanes.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model used.

LANE SUMMARY

Site: 2036 PM

New Site
Roundabout

Lane Use and Performance																	
	Demand Flows			Total	HV	Cap.	Deg.	Lane	Average	Level of	95% Back of Queue	SL	Cap.	Prob.	Queue		
	L	T	R												Adj.	Block.	
	veh/h	veh/h	veh/h	veh/h	%	veh/h	v/c	Util.	Delay	Service	Vehicles	Distance	ft	ft	Type	%	%
South: BurkHalter Road CR 585																	
Lane 1	49	76	147	272	7.0	483	P	100	18.5	LOS C	5.3	138.8	1600	-	0.0	0.0	
Approach	49	76	147	272	7.0		0.563		18.5	LOS C	5.3	138.8					
East: SR 26/US 80																	
Lane 1	130	679	49	859	7.0	1080	P	100	11.2	LOS B	12.3	323.4	1600	-	0.0	0.0	
Approach	130	679	49	859	7.0		0.795		11.2	LOS B	12.3	323.4					
North: BurkHalter Road CR 585																	
Lane 1	16	65	87	168	7.0	471	P	100	12.7	LOS B	2.7	70.3	1600	-	0.0	0.0	
Approach	16	65	87	168	7.0		0.358		12.7	LOS B	2.7	70.3					
West: SR 26/US 80																	
Lane 1	147	707	49	902	5.0	1174	P	100	9.0	LOS A	10.8	281.0	1600	-	0.0	0.0	
Approach	147	707	49	902	5.0		0.768		9.0	LOS A	10.8	281.0					
Intersection				2201	6.2		0.795		11.3	LOS B	12.3	323.4					

P: You need to Process this Site (F9) for this variable to be computed.

Level of Service (LOS) Method: Delay (HCM 2000).

Roundabout LOS Method: Same as Sign Control.

Lane LOS values are based on average delay per lane.

Intersection and Approach LOS values are based on average delay for all lanes.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model used.

ALL-WAY STOP CONTROL ANALYSIS								
General Information				Site Information				
Analyst	Walter L. Burton			Intersection	SR 26/US 80 @ BURKHALTER RD.			
Agency/Co.	GDOT			Jurisdiction	Alternate # 2			
Date Performed	7/20/2012			Analysis Year	2036			
Analysis Time Period	AM							
Project ID P.I.# 0010364-BULLOCH CO-SR 26/US 80/CR 585/BURKHALTER RD.								
East/West Street: SR 26/US 80				North/South Street: CR 585/BURKHALTER RD.				
Volume Adjustments and Site Characteristics								
Approach	Eastbound				Westbound			
Movement	L	T	R	L	T	R	L	R
Volume (veh/h)	60	280	30	125	690	30		
%Thrus Left Lane								
Approach	Northbound				Southbound			
Movement	L	T	R	L	T	R	L	R
Volume (veh/h)	30	145	155	45	65	75		
%Thrus Left Lane								
	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	L	TR	L	TR	LT	R	LT	R
PHF	0.95	0.95	0.95	0.95	0.95	1.00	0.95	1.00
Flow Rate (veh/h)	63	325	131	757	183	155	115	75
% Heavy Vehicles	5	5	7	7	7	0	7	0
No. Lanes	2		2		2		2	
Geometry Group	5		5		5		5	
Duration, T	0.25							
Saturation Headway Adjustment Worksheet								
Prop. Left-Turns	1.0	0.0	1.0	0.0	0.2	0.0	0.4	0.0
Prop. Right-Turns	0.0	0.1	0.0	0.0	0.0	1.0	0.0	1.0
Prop. Heavy Vehicle	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.0
hLT-adj	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
hRT-adj	-0.7	-0.7	-0.7	-0.7	-0.7	-0.7	-0.7	-0.7
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	0.6	0.0	0.6	0.1	0.2	-0.7	0.3	-0.7
Departure Headway and Service Time								
hd, initial value (s)	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.06	0.29	0.12	0.67	0.16	0.14	0.10	0.07
hd, final value (s)	8.00	7.43	7.64	7.11	8.07	7.16	8.52	7.49
x, final value	0.14	0.67	0.28	1.50	0.41	0.31	0.27	0.16
Move-up time, m (s)	2.3		2.3		2.3		2.3	
Service Time, t _s (s)	5.7	5.1	5.3	4.8	5.8	4.9	6.2	5.2
Capacity and Level of Service								
	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	313	479	381	757	433	405	365	325
Delay (s/veh)	11.99	23.96	13.25	252.31	16.26	13.03	14.37	11.58
LOS	B	C	B	F	C	B	B	B
Approach: Delay (s/veh)	22.02		217.04		14.78		13.27	
LOS	C		F		B		B	
Intersection Delay (s/veh)	115.74							
Intersection LOS	F							

ALL-WAY STOP CONTROL ANALYSIS								
General Information				Site Information				
Analyst	Walter L. Burton			Intersection	SR 26/US 80 @ BURKHALTER RD.			
Agency/Co.	GDOT			Jurisdiction	Alternate # 2			
Date Performed	7/20/2012			Analysis Year	2036			
Analysis Time Period	PM							
Project ID P.I.# 0010364-BULLOCH CO-SR 26/US 80/CR 585/BURKHALTER RD.								
East/West Street: SR 26/US 80				North/South Street: CR 585/BURKHALTER RD.				
Volume Adjustments and Site Characteristics								
Approach	Eastbound				Westbound			
Movement	L	T	R	L	T	R		
Volume (veh/h)	135	650	45	120	625	45		
%Thrus Left Lane								
Approach	Northbound				Southbound			
Movement	L	T	R	L	T	R		
Volume (veh/h)	15	60	80	45	70	135		
%Thrus Left Lane								
	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	L	TR	L	TR	LT	R	LT	R
PHF	0.95	0.95	0.95	0.95	0.95	1.00	0.95	1.00
Flow Rate (veh/h)	142	731	126	704	78	80	120	135
% Heavy Vehicles	5	5	7	7	7	0	7	0
No. Lanes	2		2		2		2	
Geometry Group	5		5		5		5	
Duration, T	0.25							
Saturation Headway Adjustment Worksheet								
Prop. Left-Turns	1.0	0.0	1.0	0.0	0.2	0.0	0.4	0.0
Prop. Right-Turns	0.0	0.1	0.0	0.1	0.0	1.0	0.0	1.0
Prop. Heavy Vehicle	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.0
hLT-adj	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
hRT-adj	-0.7	-0.7	-0.7	-0.7	-0.7	-0.7	-0.7	-0.7
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	0.6	0.0	0.6	0.1	0.2	-0.7	0.3	-0.7
Departure Headway and Service Time								
hd, initial value (s)	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.13	0.65	0.11	0.63	0.07	0.07	0.11	0.12
hd, final value (s)	7.64	7.10	7.70	7.15	8.67	7.76	8.50	7.49
x, final value	0.30	1.44	0.27	1.40	0.19	0.17	0.28	0.28
Move-up time, m (s)	2.3		2.3		2.3		2.3	
Service Time, t _s (s)	5.3	4.8	5.4	4.8	6.4	5.5	6.2	5.2
Capacity and Level of Service								
	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	392	731	376	704	328	330	370	385
Delay (s/veh)	13.61	229.34	13.21	211.33	13.37	12.07	14.53	13.08
LOS	B	F	B	F	B	B	B	B
Approach: Delay (s/veh)	194.25		181.25		12.71		13.76	
LOS	F		F		B		B	
Intersection Delay (s/veh)	153.84							
Intersection LOS	F							

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	Walter L. Burton			Intersection	SR 26/US 80 @ BURKHALTER RD.			
Agency/Co.	GDOT			Jurisdiction	Alternate # 2			
Date Performed	7/20/2012			Analysis Year	2036			
Analysis Time Period	AM							
Project Description P.I.# 001364-BULLOCH CO-SR 26/US 80/CR 585/BURKHALTER RD.								
East/West Street: SR 26/US 80				North/South Street: CR 585/BURKHALTER RD.				
Intersection Orientation: East-West				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	30	280	60	125	690	30		
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92		
Hourly Flow Rate, HFR (veh/h)	32	304	65	135	749	32		
Percent Heavy Vehicles	5	--	--	7	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	1	1	1	1	1	1		
Configuration	L	T	R	L	T	R		
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)	45	65	75	30	145	155		
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92		
Hourly Flow Rate, HFR (veh/h)	48	70	81	32	157	168		
Percent Heavy Vehicles	7	7	7	7	7	7		
Percent Grade (%)		1			1			
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	1	1	0	1	1		
Configuration	LT		R	LT		R		
Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L	LT		R	LT		R
v (veh/h)	32	135	118		81	189		168
C (m) (veh/h)	823	1162	0		718	74		395
v/c	0.04	0.12			0.11	2.55		0.43
95% queue length	0.12	0.39			0.38	18.26		2.07
Control Delay (s/veh)	9.6	8.5			10.7	825.4		20.7
LOS	A	A	F		B	F		C
Approach Delay (s/veh)	--	--				446.7		
Approach LOS	--	--				F		

TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	Walter L. Burton			Intersection	SR 26/US 80 @ BURKHALTER RD.		
Agency/Co.	GDOT			Jurisdiction	Alternate # 2		
Date Performed	7/20/2012			Analysis Year	2036		
Analysis Time Period	PM						
Project Description P.I.# 001364-BULLOCH CO-SR 26/US 80/CR 585/BURKHALTER RD.							
East/West Street: SR 26/US 80				North/South Street: CR 585/BURKHALTER RD.			
Intersection Orientation: East-West				Study Period (hrs): 0.25			
Vehicle Volumes and Adjustments							
Major Street	Eastbound			Westbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)	135	650	45	120	625	45	
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly Flow Rate, HFR (veh/h)	146	706	48	130	679	48	
Percent Heavy Vehicles	5	--	--	7	--	--	
Median Type	Undivided						
RT Channelized			0				0
Lanes	1	1	1	1	1	1	
Configuration	L	T	R	L	T	R	
Upstream Signal		0			0		
Minor Street	Northbound			Southbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)	45	70	135	15	60	80	
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly Flow Rate, HFR (veh/h)	48	76	146	16	65	86	
Percent Heavy Vehicles	7	7	7	7	7	7	
Percent Grade (%)		1			1		
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0				0
Lanes	0	1	1	0	1	1	
Configuration	LT		R	LT		R	
Delay, Queue Length, and Level of Service							
Approach	Eastbound	Westbound	Northbound		Southbound		
Movement	1	4	7	8	9	10	11
Lane Configuration	L	L	LT		R	LT	R
v (veh/h)	146	130	124		146	81	86
C (m) (veh/h)	863	834	0		419	0	435
v/c	0.17	0.16			0.35		0.20
95% queue length	0.61	0.55			1.54		0.73
Control Delay (s/veh)	10.0	10.1			18.1		15.3
LOS	B	B	F		C	F	C
Approach Delay (s/veh)	--	--					
Approach LOS	--	--					

HCS+™ DETAILED REPORT												
General Information						Site Information						
Analyst	Walter L. Burton					Intersection	SR 26/US 80 @ BURKHALTER RD.					
Agency or Co.	GDOT					Area Type	All other areas					
Date Performed	07/20/2012					Jurisdiction	Alternate # 3					
Time Period	AM					Analysis Year	2036					
						Project ID	P.I. # 0010364-BULLOCH CO-SR 26/US 80/CR 585/BURKHALTER RD.					
Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes, N _l	1	1	0	1	1	0	0	1	0	0	1	0
Lane Group	L	TR		L	TR			LTR			LTR	
Volume, V (vph)	60	280	30	125	690	30	45	65	75	155	145	30
% Heavy Vehicles, %HV	2	2	2	2	2	2	2	2	2	2	2	2
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Pretimed (P) or Actuated (A)	P	P	P	P	P	P	P	P	P	P	P	P
Start-up Lost Time, I _l	2.0	2.0		2.0	2.0			2.0			2.0	
Extension of Effective Green, e	2.0	2.0		2.0	2.0			2.0			2.0	
Arrival Type, AT	3	3		3	3			3			3	
Unit Extension, UE	3.0	3.0		3.0	3.0			3.0			3.0	
Filtering/Metering, I	1.000	1.000		1.000	1.000			1.000			1.000	
Initial Unmet Demand, Q _b	0.0	0.0		0.0	0.0			0.0			0.0	
Ped / Bike / RTOR Volumes	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width	12.0	12.0		12.0	12.0			12.0			12.0	
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking Maneuvers, N _m												
Buses Stopping, N _b	0	0		0	0			0			0	
Min. Time for Pedestrians, G _p	3.2			3.2			3.2			3.2		
Phasing	Excl. Left	EW Perm	03	04	NS Perm	06	07	08				
Timing	G = 16.0	G = 57.0	G =	G =	G = 25.0	G =	G =	G =				
	Y = 4	Y = 4	Y =	Y =	Y = 4	Y =	Y =	Y =				
Duration of Analysis, T = 0.25						Cycle Length, C = 110.0						
Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate, v	65	337		136	783			202			359	
Lane Group Capacity, c	383	951		718	959			331			266	
v/c Ratio, X	0.17	0.35		0.19	0.82			0.61			1.35	
Total Green Ratio, g/C	0.70	0.52		0.70	0.52			0.23			0.23	
Uniform Delay, d ₁	13.5	15.6		6.1	22.1			38.1			42.5	
Progression Factor, PF	1.000	1.000		1.000	1.000			1.000			1.000	
Delay Calibration, k	0.50	0.50		0.50	0.50			0.50			0.50	

Incremental Delay, d_2	1.0	1.0		0.6	7.6			8.1			180.1	
Initial Queue Delay, d_3	0.0	0.0		0.0	0.0			0.0			0.0	
Control Delay	14.5	16.7		6.7	29.8			46.3			222.6	
Lane Group LOS	B	B		A	C			D			F	
Approach Delay	16.3			26.4			46.3			222.6		
Approach LOS	B			C			D			F		
Intersection Delay	63.8			$X_C = 0.91$			Intersection LOS			E		

**TRAFFIC SIGNAL WARRANT ANALYSIS
TE STUDY
SR 26 AT BURKHALTER ROAD.
BULLOCH COUNTY**



**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
January 26, 2011
M.P. 22.66**

Prepared by

**District 5
Traffic Operations**

**TRAFFIC SIGNAL WARRANT ANALYSIS – TE STUDY
SR 26 AT BURKHALTER ROAD.
BULLOCH COUNTY**

STUDY LOCATION

The intersection of State Route 26/US 80 at Burkhalter Road in Bulloch County has been examined for signalization needs. The intersection is located along SR 26/US 80 approximately 2.0 miles west of the Brooklet City Limits and 2.4 miles east of the Statesboro City Limits. For the purposed of this report, SR 26/US 80 has an east-west orientation and Burkhalter Road has a north-south orientation. (See attached site map and adjacent signalized intersection map).

REASON FOR INVESTIGATION

The District 5 Traffic operations office is investigating this location to determine if Signalization or other operational improvements can be implemented.

TOPOGRAPHY

At the study location, SR 26/US 80 is a two-lane, undivided road with all lanes being 12-feet in width. The westbound approach has a shared left/through lane and a right turn lane. The westbound right-turn lane has 220 feet of storage and 140-foot taper. The eastbound approach has a shared left/through/right-turn lane.

Burkhalter Road is a two-lane road, 20-feet wide forming the northbound and southbound approaches with SR 26/US 80. The north approach has a left/through/right shared lane while the south approach has a separate left/through lane and separate right turn lane.

Intersection sight distance was measured using a driver's eye height of 42" and a vehicle height of 42" per ASHTO guidelines. Sight distance measurements are shown below.

Burkhalter Road. SB approach looking East onto SR 26	1000ft.
Burkhalter Road SB approach looking West onto SR 26	1000ft.
Burkhalter Road NB approach looking East onto SR 26	1000ft.
Burkhalter Road NB approach looking West onto SR26	1000ft.

**TRAFFIC SIGNAL WARRANT ANALYSIS – TE STUDY
SR 26 AT BURKHALTER ROAD.
BULLOCH COUNTY**

EXISTING TRAFFIC CONTROL

SR 26 carries free flow traffic at its intersection with Burkhalter Road. There are advance crossroad warning signs with flashers on each approach to the intersection.

Burkhalter road has stop signs and stop ahead signs on each approach to the intersection. There are rumble strips on the northbound approach.

VEHICLE VOLUME HISTORY

YEAR	SR 26	Burkhalter Road
2008	10040	1160
2007	10290	1160

VEHICULAR SPEEDS

The posted speed limit for both approaches of SR 26 at Burkhalter Road, is 55 MPH.

PEDESTRIAN MOVEMENTS

There was (1) one pedestrian recorded crossing at the intersection during the study period. There are no crosswalks or sidewalks at the intersection.

PARKING

On-street parking is not permitted along SR 26 at Burkhalter Road in the vicinity of the intersection.

**TRAFFIC SIGNAL WARRANT ANALYSIS – TE STUDY
SR 26 AT BURKHALTER ROAD.
BULLOCH COUNTY**

COLLISION HISTORY

Collision data was available for the study intersection between the time period of January 2009 to May 2010. A total of 13 collisions were reported. Below see the accidents per year.

CRASHES	2009	2010
<i>RIGHT ANGLE</i>	7	3
<i>LEFT TURN</i>	0	0
<i>REAR END</i>	2	1
<i>HEAD ON</i>	0	0
<i>SIDESWIPE</i>	0	0
<i>OTHER</i>	0	0
<i>TOTAL</i>	9	4

(See attached collision diagram)

MUTCD SIGNAL WARRANT ANALYSIS

A traffic signal warrant analysis was performed for the intersection of SR 26 at Burkhalter Road using the criteria provided in the Manual on Uniform Traffic Control Devices MUTCD, 2009 Edition. The data for the study was imported into the PC WARRANTS program for analysis and justification.

(See attached PC Warrants Analysis)

OTHER INFORMATION

This intersection was included in a widening project for SR 26/US 80 (PI 0005829) which is proposed to be converted to a passing lane project.

**TRAFFIC SIGNAL WARRANT ANALYSIS – TE STUDY
SR 26 AT BURKHALTER ROAD,
BULLOCH COUNTY**

CONCLUSIONS

An examination of traffic volumes and collision experience indicates that Warrants 3 and 7 of the MUTCD signal warrants are satisfied at this intersection.

10 of the 13 collisions reported between January 2009 and May 2010 are considered correctable by a traffic signal.

The GDOT Roundabout analysis shows that all approaches will operate at an acceptable Level of Service as a Single Lane Roundabout for at least 10 years and convert to a multi-lane roundabout before 2032.

	LOS	LOS	LOS	LOS
	N	E	S	W
2011 PM Peak	A	A	A	A
2021 PM Peak/3%/Year	A	A	B	B
2032 PM DHV(SINGLE)	C	D	C	F
2032 PM DHV(DOUBLE)	A	A	A	A
2032 AM DHV(SINGLE)	F	F	B	F
2032 AM DHV(DOUBLE)	B	A	A	A

**TRAFFIC SIGNAL WARRANT ANALYSIS – TE STUDY
SR 26 AT BURKHALTER ROAD,
BULLOCH COUNTY**

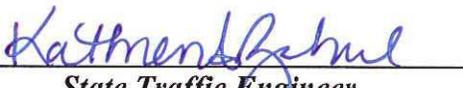
RECOMMENDATIONS

Based on an analysis of traffic data, collision experience, intersection operations, and potential signalization needs, the following action is recommended.

- It is recommended that the Safety project be programmed to construct a Roundabout for the intersection of SR 26/US 80 at Burkhalter Road.

RECOMMENDED BY: 
District Traffic Engineer

DATE: 2-3-11

RECOMMENDED BY: 
State Traffic Engineer

DATE: 2-23-11

RECOMMENDED BY: _____
Director of Operations

DATE: _____

DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA

CONCEPT TEAM MEETING MINUTES

SUBJECT: Concept Team Meeting - P.I.# 0010364 - SR26 @ Burkhalter Road - Bulloch County

MEETING LOCATION: GDOT District 5 Statesboro Area Office located at 17213 U.S. Hwy 301 North, Statesboro, GA 30458

MEETING DATE: June 28, 2012

ATTENDEES:

Charles A. Robinson	Project Manager, GDOT Office of Program Delivery
Christopher Rudd	Roadway Design
Walter Burton	Roadway Design
Malcolm Coleman	Right of Way Specialist II, District 5
Steve Price	District Environmentalist, Jesup
Franklin Lamb	Construction Project Manger II, Jesup
Claude R. Jackson	GDOT Area Engineer, District 5
Brad Saxon	GDOT Preconstruction Engineer, District 5
John Kopotic	Design Review Engineer, GDOT Engineering Services
*Ken Werho	GDOT Traffic Operation Engineer, TMC
*Paul DeNard	GDOT Traffic Design Supervisor, TMC
*Scott Zengraff	GDOT General Operation Manager, TMC
*Ben Rabun	GDOT State Bridge Engineer

*Attendees who teleconferenced.

DISCUSSION:

Charles: Welcomed everyone to the meeting. Asked everyone to introduce themselves. Introduced the project and reviewed the current baseline schedule which has Environmental Approval July 2013, Right of Way (ROW) authorization December 2013, and GDOT Let December 2014.

Chris: Read through the draft concept report and the draft feasibility study and asked the attendees for any question or comments.

Malcolm: Commented that permanent easements and demolition easements for existing signs are anticipated.

Scott: Made note to change the Posted Speed limits in the proposed column of the Design and Structural Data Chart for SR26/US80 mainline to read 55-mph, not 35-mph, and for CR 585/Burkhalter Road to read 45-mph, not 35-mph.

Brad: Commented Public Interest Determination not applicable for this project

Steve: Suggested changing the data in the Environmental Data section for the following numbers:

6. Coastal Zone Management Coordination from YES to NO.
7. NPDES changes from NO to YES.

Steve: Anticipates that with minimal environmental impacts and no anticipated controversy, Environmental Services could possibly complete a programmatic categorical exclusion (PCE) –vs- categorical exclusion (CE) which may save time.

Steve: Commented no wetlands identified but there may be an historical house and cemetery.

Chris: Provided a detailed explanation regarding the multiple iterations that had been completed to date to achieve the current concept layout.

Brad: Suggested minimizing the ROW impacts to the gas stations for both Southeast and Northeast project quadrants.

Chris: The concept layout is still being revised and the right of way limits are anticipated to be significantly reduced.

Walter: Commented that the current right of way cost estimate was high due to the previous foot print/layout of the roundabout proposes impacting the gas station in the South east quadrant canopy. Commented that a updated ROW cost estimate will be requested based on a revised reduced ROW footprint.

John: Inquired about the expected date for a PIOH..

Chris: Suggested that the concept layout was close to being completed and that the PIOH was anticipated Fall 2012.

Scott: Mentioned setting up a meeting with Mark Lenters, GDOT Traffic Operations the GDOT project manager and the designers to revise the roundabout concept layout to minimize right of way prior to the public involvement open house (PIOH).

Chris: Confirmed that the meeting that Scott was requesting would be scheduled to be held within the next few weeks.

Claude: A capacity project was originally planned which would have included this project. The capacity project has been scaled back to consider constructing passing lanes instead of road widening based on updated traffic projections. Stated that a maintenance project which involves overlay within the project limits of this project along SR 26 has been scheduled.

Claude: Mentioned that there are no major utility impacts involved with this project at this time. Also, no SUE is required.

Charles: Charles stated that an asphalt pavement design is anticipated for this project.

Brad: The recommendation was made to coordinate the survey efforts of this project with a maintenance project that is expected to be begin Fall 2012.

Brad: Soon as the final concept foot print has been and finalized to reduce the right of way and major impacts to the existing gas stations, the next step will be the PIOH meeting.

Charles: Asked for additional comments and adjourned the meeting.

**GEORGIA DEPARTMENT OF TRANSPORTATION
MEETING / CONFERENCE RECORD OF ATTENDEES**

PURPOSE: Concept Team Meeting - P.I. # 0010364 - SR26 @ CR 585/Burkhalter Road

LOCATION: GDOT District 5 Statesboro Area Office located at 17213 U.S. Hwy 301 North, Statesboro, GA 30458

DATE: 6/27/2012

TIME: 1:00 p.m.

MODERATOR: Charles A. Robinson

	NAME	ORGANIZATION	PHONE NO.	GDOT suffix: @dot.ga.gov E-MAIL ADDRESS
1	Malcolm C. Coleman	DISTRICT/ROW	912-427-1975	malcoleman@dot.ga.gov
2	Steve Price	GDOT Enviro.	912-427-5756	stprice@dot.ga.gov
3	FRANKLIN LAMB	GDOT A6 Constr.	912-871-1103	flamb@dot.ga.gov
4	Walter Burton	GDOT Roadway	404-631-1664	wburton@dot.ga.gov
5	Chris Rudd	GDOT Roadway Design	404-631-1661	crudd@dot.ga.gov
6	Claude R. Jackson	GDOT Area Engineer	912-871-1103	clj@dot.ga.gov
7	BRAD SAXON	GDOT DS Pylon Eng	404-631-5715 912-427-5715	bsaxon@dot.ga.gov
8	JOHN KOPOL	GDOT ENG. SERVICES	912-262-2397	jkopol@dot.ga.gov
9	Charles A. Robinson	GDOT Program Delivery	404-631-1439	chrbinrn@dot.ga.gov
10	Ken Werho	GDOT		
11	Paul Denard	GDOT		
12	Scott Zengraff			
13	Ben Rabun			
14				
15				
16				
17				
18				

Attachment 09
P.I. Number: 0010364
County: Bulloch

State of Georgia
Department of Transportation

HIGHWAY SAFETY MANUAL (HSM) ANALYSIS for CONCEPT REPORTS

This Concept Report includes an HSM predicted average crash frequency analysis for the design year ADT using the Manual's Predictive Method. The HSM uses AADT with the Predictive Method while this analysis uses ADT since AADT is typically not available for GDOT projects. The Predictive Method analysis is based on Safety Performance Functions (SPF) for individual roadway segments and intersections that provide the crash frequency. The HSM often provides information on crash frequency distribution by collision type and severity. Crash severities include Fatality, Incapacitating Injury, Non-Incapacitating Injury, Possible Injury and Property Damage Only. Some SPFs include HSM Crash Modification Factors (CMF) that adjust the SPF crash frequency to account for difference between HSM base conditions that the function is based on and project specific conditions such as geometric design features. The HSM includes local calibration factors to further refine predicted average crash frequency. These local calibration factors have not yet been developed for GDOT.

Two Predictive Method analyses of the proposed Concept design are provided below. One analysis provides the Total predicted average crash frequency which includes all crash severities. The second analysis is for Fatal & Injury severities which includes all crash severities except Property Damage Only.

Project Roadway Segment and Intersection Types analyzed

Roadway Segment				Intersection	
ID #	Type	Sta. Begin	Sta. End	ID #	Type
N/A		N/A	N/A	1	4 Leg Signalized-Rural

This project is an intersection improvement to change from a minor road stop control to a signalized intersection thus there are no roadway segments to analyze.

This intersection is defined by the Highway Safety Manual (HSM) as a Rural Two-Lane Two-Way four leg signalized intersection. The HSM predictive method analysis predicts a total of 6.685 crashes for the 2036 design year of which 2.273 are predicted to be fatal and injury crashes.

HSM Predictive Method for Rural Intersections – Total Crashes

Intersection ID #	Analysis Condition	Intersection Base Crash Frequency (total crashes/year)	Intersection Skew Angle Signalized - CMF = 1.00	Signalized - Left Turn Lanes - All Approaches Unsignalized - Left Turn Lanes - Major Road Approaches	Signalized - Right Turn Lanes - All Approaches Unsignalized - Right Turn Lanes - Major Approaches	Lighting	Total Predicted Average Crash Frequency for Roadway Intersections (total crashes/year)
1	Proposed	10.846	1.000	.670	.920	1.000	6.685
Total	Proposed	10.846					6.685

HSM Predictive Method for Rural Intersections – Fatal & Injury Crashes

Intersection ID #	Analysis Condition	Intersection Base Crash Frequency (fatal & injury crashes/year)	Intersection Skew Angle Signalized - CMF = 1.00	Signalized - Left Turn Lanes - All Approaches Unsignalized - Left Turn Lanes - Major Road Approaches	Signalized - Right Turn Lanes - All Approaches Unsignalized - Right Turn Lanes - Major Approaches	Lighting	Total Predicted Average Crash Frequency for Roadway Intersections (fatal & injury crashes/year)
		$N_{spf, int}$	CMF_{Ii}	CMF_{2i}	CMF_{3i}	CMF_{4i}	$N_{predicted, int}$
1	Proposed	3.688	1.000	0.670	0.920	1.000	2.273
Total	Proposed	3.688					2.273