ORIGINAL TO GENERAL FILES

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

OFFICE OF DESIGN POLICY & SUPPORT
INTERDEPARTMENTAL CORRESPONDENCE

FILE P.I. # 0010926
Decatur County
GDOT District 4 - Tifton
Intersection Improvements: SR 38BU/
US 84BU at SR 38/US 84

OFFICE Design Policy & Support

DATE 1/29/2016

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/Program Delivery
Genetha Rice-Singleton, Assistant Director of P3/Program Delivery
Albert Shelby, State Program Delivery Engineer
Darryl VanMeter, State Innovative Delivery Engineer
Bobby Hilliard, Program Control Administrator
Cindy VanDyke, State Transportation Planning Administrator
Eric Duff, State Environmental Administrator
Andrew Heath, State Traffic Engineer
Angela Robinson, Financial Management Administrator
Lisa Myers, State Project Review Engineer
Charles "Chuck" Hasty, State Materials Engineer
Lee Upkins, State Utilities Engineer
Paul Tanner, State Transportation Data Administrator
Attn: Systems & Classification Branch
Richard Cobb, Statewide Location Bureau Chief
Andy Casey, State Roadway Design Engineer
Attn: Sandy Griffin, District Design Engineer
Ed David Adams, State Safety Program Manager
Chad Hartley, District Engineer
Brent Thomas, District Preconstruction Engineer
Tim Warren, District Utilities Engineer
Cherral Dempsey, Project Manager
BOARD MEMBER - 2nd Congressional District

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
LIMITED SCOPE PROJECT CONCEPT REPORT

Project Type:	Intersection Improvement	**P.I. Number:**	0010926
GDOT District:	District 4	**County:**	Decatur
Federal Route Number:	US 84BUS@US84	**State Route Number:**	SR1BU/SR38BU@SR38
	Project Number:	N/A	

Intersection Improvement on the east end of the Bainbridge Bypass to allow for its connectivity with US 84 and the re-alignment of US 84 BUS.

Submitted for approval:

Ralph L Cuff — GDOT Concept/Design Phase Office Head — DATE 5-6-14

Albert Shelby — State Program Delivery Engineer — DATE 5/21/14

Steven Dillyard — GDOT Project Manager — DATE 5/19/2014

Recommendation for approval:

*HIRAL PATEL — State Environmental Administrator — DATE 12/6/2015

*KEN WERHO for — State Traffic Engineer — DATE 10/28/2015

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).

* CYNTHIA L. VANDIVER — State Transportation Planning Administrator — DATE 10/27/2015

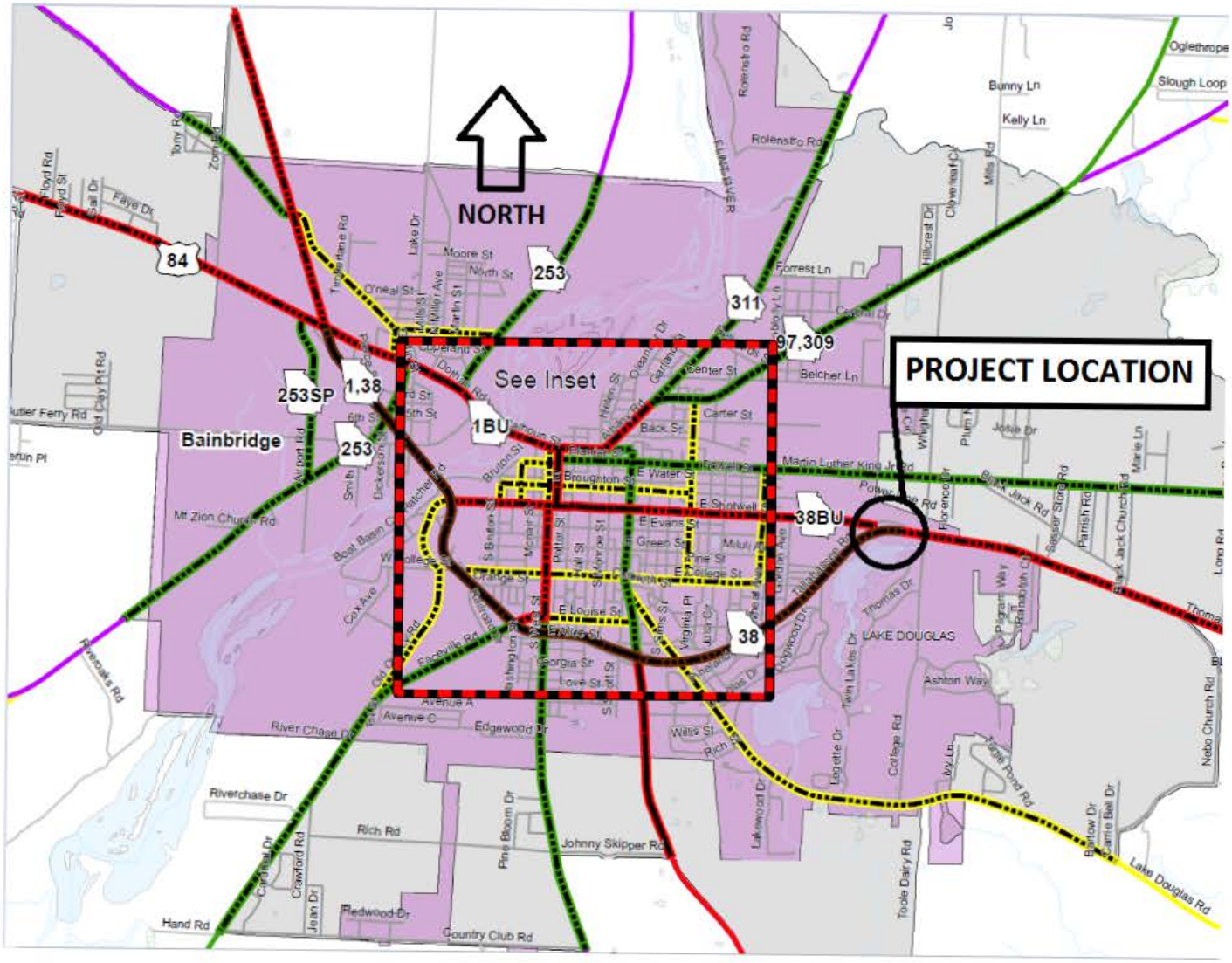
Approval:

Concur: Hiral Patel — GDOT Director of Engineering — DATE 01-19-2016

Approve: Margaret B. Pikel — GDOT Chief Engineer — DATE 1.21.2016

*RECOMMENDATION ON FILE

PROJECT LOCATION



PLANNING & BACKGROUND DATA

Project Justification Statement:

The purpose of the proposed project is to reduce the crash frequency and/or severity of both drivers and pedestrians at the intersection of State Route 1BU/State Route 38BU at State Route 38/US 84 Bypass and Frontage Rd in Decatur County, GA. US 84 is designated as GRIP Corridor. Safety is a major focus area for the Georgia Department of Transportation (GDOT). According to the Georgia Governor's Office of Highway Safety (GOHS), the majority of the statewide crashes occur along state routes.

In an initiative to reduce crashes along this corridor, the project will add a traffic signal in conjunction with the realignment of the above mentioned intersection. This device eliminates the conflicting phases from running simultaneously. According to the Federal Highway Administration (FHWA), the implementation of a properly placed traffic signal will greatly reduce the redundancy of angle crashes. The realignment of the side street, Frontage Road and US 84/SR 38 Bypass, will improve the intersection sight distance.

Crash data from 2009-2013 was analyzed and the data indicated a total of 5 crashes. Three of these crashes resulted in injuries, while one crash resulted in a fatality. Based on engineering judgment, it is believed that the use of a traffic signal along with roadway realignment at the above mentioned location would greatly reduce crash frequency and/or severity.

Existing conditions:

SR 1BU/SR 38BU on the west side of the intersection has two twelve foot travel lanes in each direction with a middle two way left turn lane (TWLTL). On the east side of the intersection, SR 1BU/SR 38BU has two twelve foot travel lanes with a 16 ft. grass median. SR 38/US 84 on the south side of the intersection has two twelve foot travel lanes in each direction with a 36 ft. grassed median.

Other projects in the area: None

Description of the proposed project:

This project consist of improving the intersection on the east end of the Bainbridge Bypass to allow for its connectivity with US 84 and the re-alignment of US 84 BUS. This project will need a traffic signal. This project is located in Decatur County, on the east side of Bainbridge, GA. The design speed for SR 1BUS/SR 38BUS is 35 mph and the design speed for SR 38/US 84 is 50 mph.

MPO: N/A MPO Project ID: N/A

Regional Commission: Southwest Georgia RC RC Project ID

Congressional District(s): 2

Federal Oversight: ☒ Exempt ☐ State Funded ☐ Other

Projected Traffic: ADT

	Current Year (2013):	Open Year (2019):	Design Year (2039):
SR 1BU/SR 38BU:	11,900	12,200	13,900
SR 38/US 84:	9,700	10,000	11,300
Frontage Rd.:	500	700	825

Traffic Projections Performed by: GDOT Planning Office

Functional Classification: **SR 1BU/SR 38BU**: Urban Principal Arterial
SR 38/US 84: Urban Freeway and Expressway
Frontage Rd.: Urban Local Road

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

DESIGN AND STRUCTURAL

Description of Proposed Project: N/A

Major Structures: N/A

Design Features:

SR 1BU/SR 38BU

Feature	Existing	Standard*	Proposed
Typical Section			
- **Number of Lanes**	**4**	**N/A**	**4**
- **Lane Width(s)**	**12 ft.**	**12 ft.**	**12 ft.**
- **Median Width & Type**	**Varies**	**N/A**	**20 ft flush median**
- **Outside Shoulder or Border Area Width**	**Curb & Gutter to 4ft Paved**	**8 ft.**	**16 ft.**
- **Outside Shoulder Slope**		**N/A**	**2%**
- **Inside Shoulder Width**	**Median to Curb & Gutter**	**N/A**	**N/A**
- **Sidewalks**	**None**	**N/A**	**None**
- **Auxiliary Lanes**	**Left Turn Lane on SR 38**	**N/A**	**Right Turn Lane on SR 38**
- **Bike Lanes**	**None**	**N/A**	**N/A**
Posted Speed	**45 mph**		**35 mph**
Design Speed	**-**	**30-60 mph**	**35 mph**
Min Horizontal Curve Radius	**5537 ft.**	**371 ft.**	**720 ft.**
Maximum Superelevation Rate	**-**	**4%**	**4%**
Maximum Grade	**-**	**6%**	**6%**
Access Control	**-**	**Permit**	
Design Vehicle	**-**	**WB-40 or WB-62**	**WB-67**

SR 38/US 84

Feature	Existing	Standard*	Proposed
Typical Section			
- **Number of Lanes**	**4**	**N/A**	**4**
- **Lane Width(s)**	**12 ft.**	**12 ft.**	**12 ft.**
- **Median Width & Type**	**40' Grassed**	**Depressed**	**40 ft. Depressed to 20 ft. Raised**
- **Outside Shoulder or Border Area Width**	**4 ft Paved**	**10 ft.**	**10 ft.**
- **Outside Shoulder Slope**		**2% to 6%**	**6%**
- **Inside Shoulder Width**	**2 ft. Paved**	**4 to 8 ft.**	**6 ft.**
- **Sidewalks**	**None**	**N/A**	**N/A**
- **Auxiliary Lanes**	**Lanes Split at Intersection**	**Required At Turns**	**Turn Lanes at Intersections**
- **Bike Lanes**	**None**	**N/A**	**N/A**
Posted Speed	**45 mph**		**45 mph**
Design Speed		**50 mph**	**50 mph**
Min Horizontal Curve Radius	**1903 ft.**	**833 ft.**	**1900 ft.**
Maximum Superelevation Rate		**6%**	**6%**
Maximum Grade		**4%**	**4%**
Access Control		**Limited**	**Limited**
Design Vehicle		**WB-67**	**WB-67**

Frontage Rd.

Feature	Existing	Standard*	Proposed
Typical Section			
- **Number of Lanes**	**2**	**N/A**	**3 (two turn lanes)**
- **Lane Width(s)**	**10 ft.**	**12 ft.**	**12 ft.**
- **Median Width & Type**	**N/A**	**N/A**	**N/A**
- **Outside Shoulder or Border Area Width**	**6 ft**	**5 ft. minimum**	**8 ft.**
- **Outside Shoulder Slope**		**6%**	**6%**
- **Inside Shoulder Width**	**N/A**	**N/A**	**N/A**
- **Sidewalks**	**None**	**N/A**	**N/A**
- **Auxiliary Lanes**	**N/A**	**N/A**	**N/A**
- **Bike Lanes**	**None**	**N/A**	**N/A**
Posted Speed	**Urban Statutory 30 mph**		**35 mph**
Design Speed		**30 mph**	**30 mph**
Min Horizontal Curve Radius	**632 ft.**	**250 ft.**	**N/A**
Maximum Superelevation Rate		**4%**	**N/A**
Maximum Grade		**8%**	**8%**
Access Control		**None**	**None**
Design Vehicle		**SU or P**	**WB-67**

*According to current GDOT design policy if applicable

Major Interchanges/Intersections: SR 38BUS/US 84BUS @ SR 38/US 84

Lighting required: ☒ No ☐ Yes

Transportation Management Plan [TMP] Required: ☐ No ☒ Yes
If Yes: Project classified as: ☒ Non-Significant ☐ Significant
TMP Components Anticipated: ☒ TTC ☐ TO ☐ PI

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

Design Exceptions to FHWA/AASHTO controlling criteria anticipated: No

Design Variances to GDOT Standard Criteria anticipated: No

UTILITY AND PROPERTY

Temporary State Route Needed: ☒ No ☐ Yes ☐ Undetermined

Railroad Involvement: N/A

Utility Involvements:
SUE Required: ☐ No ☒ Yes

Public Interest Determination Policy and Procedure recommended (Utilities)? ☒ No ☐ Yes
Right-of-Way: Additional right-of-way will not be required to complete the project.
Existing width: SR 38/US 84 300ft -1300ftft, SR 38BU/US 84BU 105ft -150ft Proposed width: Same as Existing
Required Right-of-Way anticipated: ☒ No ☐ Yes ☐ Undetermined
Easements anticipated: ☒ None ☐ Temporary ☐ Permanent ☐ Utility ☐ Other

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

ENVIRONMENTAL AND PERMITS

Anticipated Environmental Document:
GEPA: ☐ **NEPA:** ☒ CE ☐ PCE

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

Environmental Permits, Variances, Commitments, and Coordination anticipated: Ecology field work required before conclusions can be made; possible stream.

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
(if any of the above are answered "Yes", additional analysis may be required)

NEPA/GEPA Comments & Information: None at this time.

COORDINATION, ACTIVITIES, RESPONSIBILITIES, AND COSTS

Project Meetings:

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

Other coordination to date: None

Project Cost Estimate and Funding Responsibilities:

	Breakdown of PE	ROW	Reimbursable Utility	CST*	Environmental Mitigation	Total Cost
Funded By	GDOT	N/A	GDOT	GDOT	GDOT	
$ Amount	$239,321	$0	$228,000	$3,240,833	$0.00	$3,480,154
Date of Estimate	3/20/2012	N/A	11/12/2015	9/15/2015	4/24/2014	

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

ALTERNATIVES DISCUSSION

Preferred Alternative:			
Estimated Property Impacts:	None	**Estimated Total Cost:**	$3,240,833
Estimated ROW Cost:	0	**Estimated CST Time:**	12 Months
Rationale: *This alternative was selected to improve the safety and operations of the intersection by eliminating the merging section of the free flow right turn lane on SR 38 – Bypass and by signalizing the intersection to control each movement. This alternative would partially keep SR 38/US 84 on the same alignment roadway and realign SR 38BU/US 84BU to intersect SR 38/US 84 as a T-intersection.*			

No-Build Alternative:			
Estimated Property Impacts:	None	**Estimated Total Cost:**	$0
Estimated ROW Cost:	0	**Estimated CST Time:**	0 Months
Rationale: *The No-Build Alternative was not selected because of the crash history at the intersection and the existing operational problems identified in the traffic engineering study completed in 2011.*			

Alternative 1:			
Estimated Property Impacts:	None	**Estimated Total Cost:**	$1,491,201
Estimated ROW Cost:	0	**Estimated CST Time:**	12 Months
Rationale: *An alternative was considered which consisted of keeping the alignment of SR 38/US 84 running perpendicular to SR 38BU/US 84BU and creating a signalized intersection. However, this alternative was not chosen because of the complications the existing driveways present to creating a signalizied intersection that would operate safely and efficiently.*			

Comments/Additional Information:

A roundabout analysis was completed and the results are attached. However, a roundabout alternative at this location was not chosen due to a lack of support by the City of Bainbridge that was voiced in meetings with GDOT and conveyed through a letter to GDOT (See letter in Attachments). Also, after meeting with the Office of Traffic Operations and following their analysis, a decision was made to move forward with the preferred alternative described above. A Benefit/Cost (B/C) analysis was also completed for the selected/preferred intersection alternative and was found to have a B/C ratio of 2.06 which meets the requirments for qualifiying for safety funding. A traffic signal warrant analysis was also completed and meets for Warrant 1A, Warrant 1A&B combination, Warrant 2, and Warrant 3B.

Highway Safety Manual Analysis

The Highway Safety Manual (HSM) has been referenced for the availability of a Predictive Method analysis using a Safety Performance Function (SPF) with associated Crash Modification Factors (CMF) to provide a predicted average crash frequency. The proposed project involves SR 1BU/SR 38BU @ US 84/SR38 intersection improvement construction. At this intersection US 84/SR 38 is classified as an Urban Freeway. The HSM does not include a Predictive Method for this type of facility thus no HSM analysis is included in this Concept Report.

LIST OF ATTACHMENTS/SUPPORTING DATA

1. Concept Layout
2. Typical sections
3. Cost Estimates
   Construction Estimate
   Utilities Estimate
   Mitigation Estimate
4. Traffic diagrams or projections
5. Summary of TE Study and/or Signal Warrant Analysis
6. Roundabout Analysis Tool Results
7. Signal Analysis Output Results
8. Tabulation of Crashes
9. Benefit/Cost Analysis
10. Traffic Signal Warrant Analysis
11. Letter from Bainbridge City Manager
12. Meeting Minutes

8/4/2014 11:45:03 AM | DPLOT-V8 | C:\InRoads Data\0010926\Standards\Concept Report DGNs\0010926_13-001.dgn

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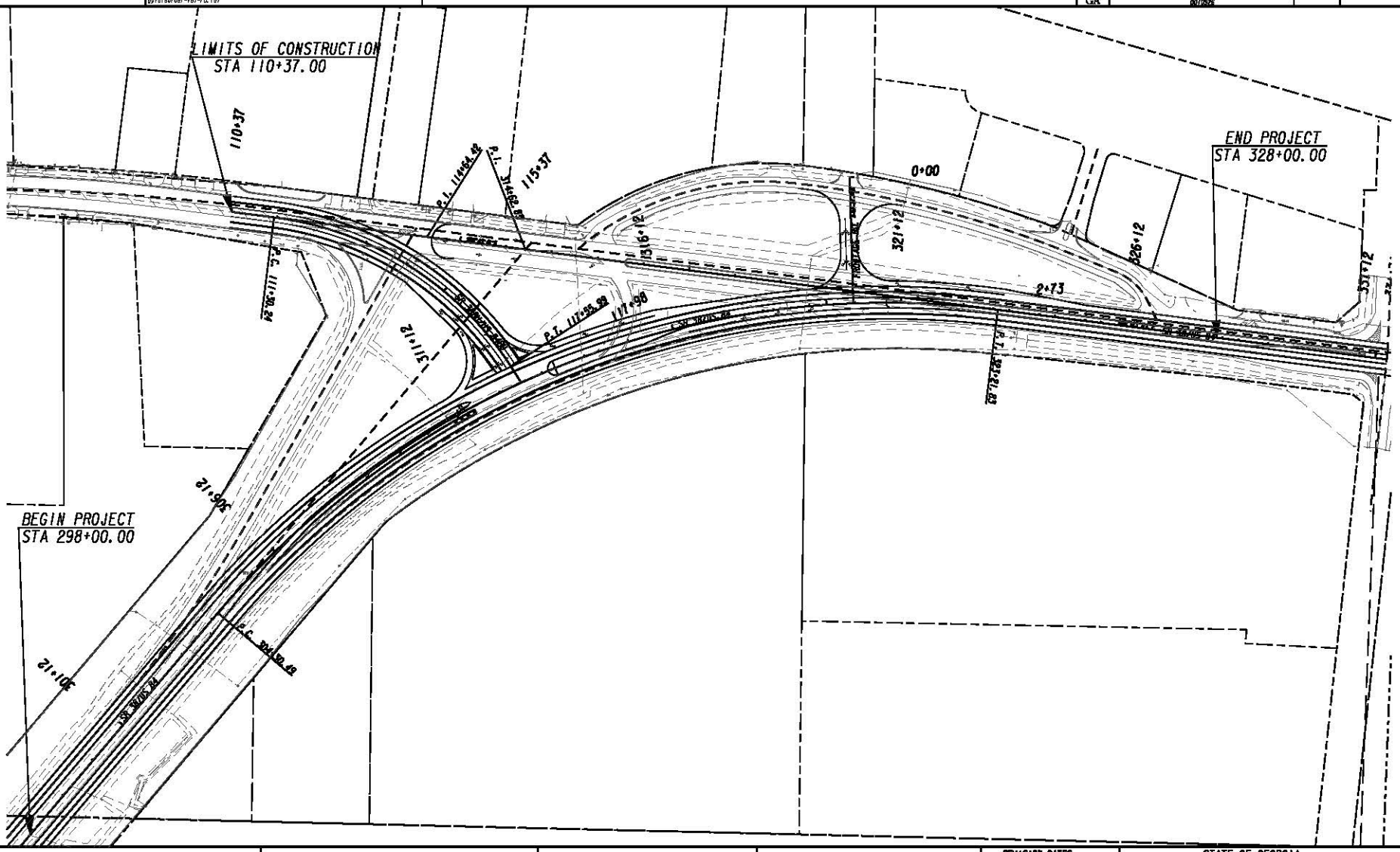
STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA	0010926		



GEORGIA
DEPARTMENT
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TRANSPORTATION

SCALE IN FEET
0 100 200 400

REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: DISTRICT 4 DESIGN

MAINLINE PLAN

DRAWING No. 13-001

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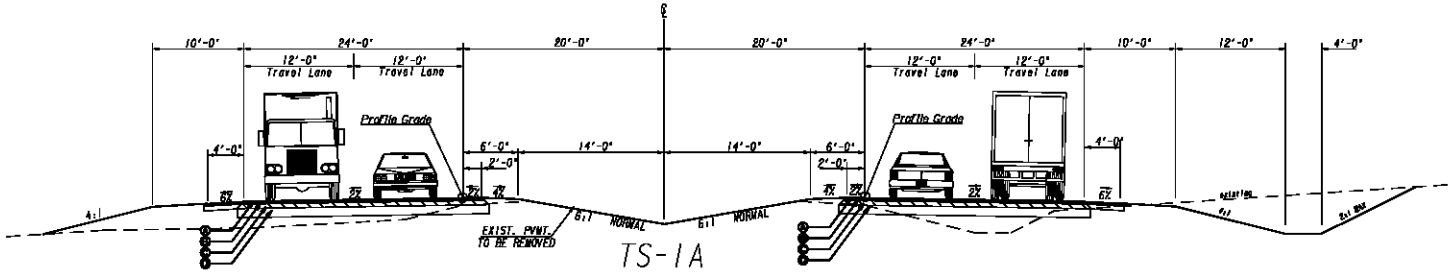
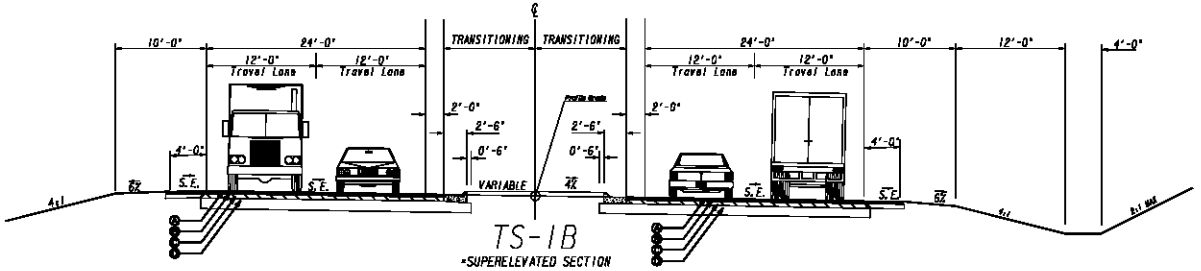
SR 38/US 84 BYPASS



TS-1A

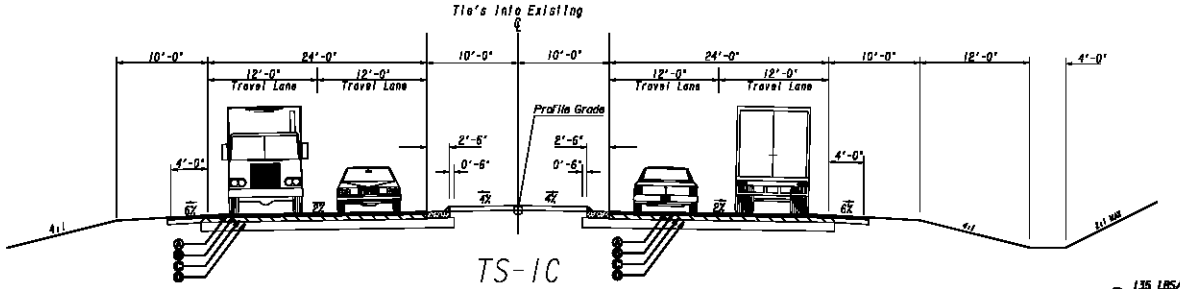
TANGENT SECTION
FULL DEPTH



TS-1B

*SUPERELEVATED SECTION
FULL DEPTH

*APPLIES TO SECTION BETWEEN SR 38BU/US 84BU INTERSECTION AND FRONTAGE RD. INTERSECTION



TS-1C

*SUPERELEVATED TO TANGENT SECTION
FULL DEPTH

*SECTION FROM FRONTAGE RD. INTERSECTION TO THE END OF THE PROJECT TRANSITIONS DOWN TO A 20' MEDIAN TO TIE INTO EXISTING CONDITIONS

- (A) 135 LBS/SQ YD RECYCLED ASPHALT CONC 9.5 MM SUPERPAVE, TYPE II, BLEND 1, INCL BITUM MATL & H LIME
- (B) 220 LBS/SQ YD RECYCLED ASPHALT CONC 19 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME
- (C) 550 LBS/SQ YD RECYCLED ASPHALT CONC 25 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME
- (D) GR AGGR BASE CRS, 12 INCH, INCL MATL

GEORGIA
DEPARTMENT OF TRANSPORTATION

REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: DISTRICT 4 DESIGN

TYPICAL SECTIONS

DRAWING No. 05-001

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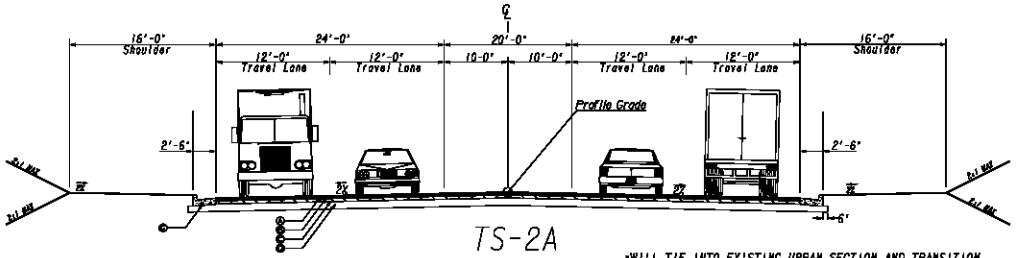
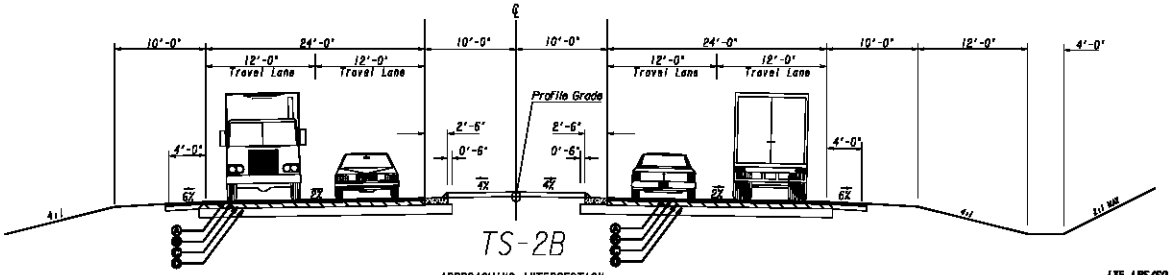
SR 38/US 84 BUSINESS



TS-2A

*CURVED SECTION
NO SUPERELEVATION

*WILL TIE INTO EXISTING URBAN SECTION AND TRANSITION INTO A RURAL TYPICAL SECTION ON THE NEW ALIGNMENT



TS-2B

APPROACHING INTERSECTION
CURVED SECTION
NO SUPERELEVATION

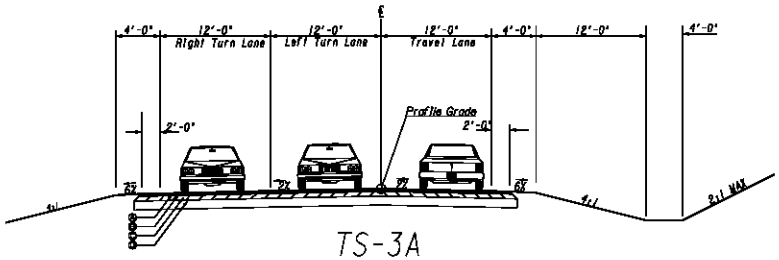
Ⓐ 135 LBS/SQ YD RECYCLED ASPHALT CONC 9.5 MM SUPERPAVE, TYPE II, BLEND I, INCL BITUM MATL & H LIME

Ⓑ 220 LBS/SQ YD RECYCLED ASPHALT CONC 19 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME

Ⓒ 550 LBS/SQ YD RECYCLED ASPHALT CONC 25 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME

Ⓓ GR AGGR BASE CRS, 12 INCH, INCL MATL

FRONTAGE RD.



TS-3A

TANGENT SECTION
FULL DEPTH

Ⓐ 135 LBS/SQ YD RECYCLED ASPHALT CONC 9.5 MM SUPERPAVE, TYPE I, BLEND I, INCL BITUM MATL & H LIME

Ⓑ 220 LBS/SQ YD RECYCLED ASPHALT CONC 19 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME

Ⓒ 330 LBS/SQ YD RECYCLED ASPHALT CONC 25 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME

Ⓓ GR AGGR BASE CRS, 8 INCH, INCL MATL

GEORGIA
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REVISION DATES		

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: DISTRICT 4 DESIGN

TYPICAL SECTIONS

DRAWING No. 05-002

DETAILED COST ESTIMATE

Georgia Department of Transportation

Job: 0010926

JOB NUMBER *0010926* **FED/STATE PROJECT NUMBER**

SPEC YEAR: *13*

DESCRIPTION: *INTERSECTION IMPROVEMENT - SR 38BU/US 84BU @ SR 38/US 84*

ITEMS FOR JOB 0010926

0010 - ROADWAY

Line Number	ITEM	QUANTITY	UNITS	PRICE	DESCRIPTION	AMOUNT
0005	150-1000	1.000	LS	$30,000.00000	TRAFFIC CONTROL - 0010926	$30,000.00
0010	210-0100	1.000	LS	$372,190.70000	GRADING COMPLETE - 0010926	$372,190.70
0040	310-5120	28870.000	SY	$25.00000	GR AGGR BS CRS 12IN INCL MATL	$721,750.00
0015	318-3000	50.000	TN	$30.00000	AGGR SURF CRS	$1,500.00
0020	402-1812	1.000	TN	$100.00000	RECYL AC LEVELING,INC BM&HL	$100.00
0025	402-3103	2052.000	TN	$98.00000	REC AC 9.5 MM SP,TPII,GP2, INCL BM & H L	$201,096.00
0035	402-3121	9309.000	TN	$83.00000	RECYL AC 25MM SP,GP1/2,BM&HL	$772,647.00
0034	402-3190	3141.000	TN	$85.00000	RECYL AC 19 MM SP,GP 1 OR 2 ,INC BM&HL	$266,985.00
0050	413-0750	4094.000	GL	$4.00000	TACK COAT	$16,376.00
0065	432-5010	1142.000	SY	$6.50000	MILL ASPH CONC PVMT,VARB DEPTH	$7,423.00
0280	441-0018	210.000	SY	$55.00000	DRIVEWAY CONCRETE, 8 IN TK	$11,550.00
0070	441-4030	70.000	SY	$75.00000	CONC VALLEY GUTTER, 8 IN	$5,250.00
0060	441-6223	1440.000	LF	$23.50000	CONC CURB & GUTTER/ 8X30TP3	$33,840.00
0055	441-6740	2684.000	LF	$18.50000	CONC CURB & GUTTER/ 8X30 TP7	$49,654.00
0095	456-2015	1.050	GLM	$4,000.00000	INDENT. RUMB. STRIPS - GRND-IN-PL (SKIP)	$4,200.00
0085	550-1180	360.000	LF	$28.60000	STM DR PIPE 18,H 1-10	$10,296.00
0090	550-3318	6.000	EA	$644.32311	SAFETY END SECTION 18,STD,4:1	$3,865.94
0075	668-1100	2.000	EA	$2,715.00000	CATCH BASIN, GP 1	$5,430.00
0080	668-2100	4.000	EA	$2,500.00000	DROP INLET, GP 1	$10,000.00
					SUBTOTAL FOR ROADWAY:	**$2,524,153.64**

0020 - SIGNING AND MARKING

Line Number	ITEM	QUANTITY	UNITS	PRICE	DESCRIPTION	AMOUNT
0099	636-1033	168.000	SF	$22.00000	HWY SIGNS, TP1MAT,REFL SH TP 9	$3,696.00
0270	636-1036	166.000	SF	$36.00000	HWY SGN,TP1MAT,REFL SH TP 11	$5,976.00
0100	636-2070	416.000	LF	$8.00000	GALV STEEL POSTS, TP 7	$3,328.00
0145	639-3004	4.000	EA	$13,500.00000	STEEL STRAIN POLE, TP IV	$54,000.00
0150	647-1000	1.000	LS	$85,000.00000	TRAF SIGNAL INSTALLATION NO - 0010926	$85,000.00
0130	652-0110	4.000	EA	$70.00000	PAVEMENT MARKING, ARROW, TP 1	$280.00
0120	652-0120	25.000	EA	$75.00000	PAVEMENT MARKING, ARROW, TP 2	$1,875.00
0125	652-0170	1.000	EA	$100.00000	PAVEMENT MARKING, ARROW, TP 7	$100.00
0140	653-1504	72.000	LF	$4.00000	THERM SOLID TRAF STRIPE,12,WH	$288.00
0135	653-1704	1567.000	LF	$8.50000	THERM SOLID TRAF STRIPE,24,WH	$13,319.50
0105	653-2501	1.900	LM	$1,600.00000	THERMO SOLID TRAF ST, 5 IN, WH	$3,040.00
0110	653-2502	1.300	LM	$1,600.00000	THERMO SOLID TRAF ST, 5 IN YE	$2,080.00
0115	653-4501	1.400	GLM	$1,000.00000	THERMO SKIP TRAF ST, 5 IN, WHI	$1,400.00
0160	654-1001	2.000	EA	$3.75000	RAISED PVMT MARKERS TP 1	$7.50
0155	654-1003	207.000	EA	$5.50000	RAISED PVMT MARKERS TP 3	$1,138.50
					SUBTOTAL FOR SIGNING AND MARKING:	**$175,528.50**

File Location: Div of Preconstruction > CES

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DETAILED COST ESTIMATE

Georgia Department of Transportation

Job: 0010926

0030 - TEMPORARY EROSION CONTROL

Line Number	ITEM	QUANTITY	UNITS	PRICE	DESCRIPTION	AMOUNT
0170	163-0232	6.000	AC	$600.00000	TEMPORARY GRASSING	$3,600.00
0165	163-0240	154.000	TN	$250.00000	MULCH	$38,500.00
0175	163-0300	13.000	EA	$1,800.00000	CONSTRUCTION EXIT	$23,400.00
0275	163-0520	1054.000	LF	$15.00000	CONSTR AND REMOVE TEMP PIPE SLOPE DRAIN	$15,810.00
0185	163-0528	1700.000	LF	$5.50000	CONSTR AND REM FAB CK DAM -TP C SLT FN	$9,350.00
0215	163-0529	1212.000	LF	$4.00000	CNST/REM TEMP SED BAR OR BLD STRW CK DM	$4,848.00
0225	163-0550	5.000	EA	$200.00000	CONS & REM INLET SEDIMENT TRAP	$1,000.00
0200	165-0030	4386.000	LF	$1.50000	MAINT OF TEMP SILT FENCE, TP C	$6,579.00
0190	165-0041	850.000	LF	$2.50000	MAINT OF CHECK DAMS - ALL TYPES	$2,125.00
0220	165-0071	606.000	LF	$1.00000	MAINT OF SEDIMENT BARRIER - BALED STRAW	$606.00
0180	165-0101	13.000	EA	$700.00000	MAINT OF CONST EXIT	$9,100.00
0230	165-0105	5.000	EA	$110.00000	MAINT OF INLET SEDIMENT TRAP	$550.00
0205	167-1000	4.000	EA	$500.00000	WATER QUALITY MONITORING AND SAMPLING	$2,000.00
0210	167-1500	12.000	MO	$500.00000	WATER QUALITY INSPECTIONS	$6,000.00
0195	171-0030	8771.000	LF	$4.00000	TEMPORARY SILT FENCE, TYPE C	$35,084.00
					SUBTOTAL FOR TEMPORARY EROSION CONTROL:	**$158,552.00**

0040 - PERMANENT EROSION CONTROL

Line Number	ITEM	QUANTITY	UNITS	PRICE	DESCRIPTION	AMOUNT
0260	603-2181	25.000	SY	$70.00000	STN DUMPED RIP RAP, TP 3, 18	$1,750.00
0265	603-7000	25.000	SY	$5.00000	PLASTIC FILTER FABRIC	$125.00
0235	700-6910	6.000	AC	$1,000.00000	PERMANENT GRASSING	$6,000.00
0240	700-7000	12.000	TN	$65.00000	AGRICULTURAL LIME	$780.00
0245	700-8000	3.000	TN	$500.00000	FERTILIZER MIXED GRADE	$1,500.00
0250	700-8100	293.000	LB	$3.63000	FERTILIZER NITROGEN CONTENT	$1,063.59
0255	711-0200	4129.000	SY	$4.00000	TURF REINFORCING MATTING, TP 2	$16,516.00
					SUBTOTAL FOR PERMANENT EROSION CONTROL:	**$27,734.59**

TOTALS FOR JOB 0010926

ITEMS COST:	**$2,885,968.73**
LIQUID AC ADJUSTMENT	**$200,538.22**
ESTIMATED COST:	**$3,086,506.95**
ENGINEERING AND INSPECTION:	**0.05**
ESTIMATED COST WITH LIQUID AC ADJUSTMENT AND E&I:	**$3,240,832.30**

File Location: Div of Preconstruction > CES

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PROJ. NO.		CALL NO.
P.I. NO.	0010926	
DATE	9/15/2015	

INDEX (TYPE)	DATE	INDEX
REG. UNLEADED	Sep-15	$ 2.289
DIESEL		$ 2.569
LIQUID AC		$ 450.00

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

LIQUID AC ADJUSTMENTS

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

Asphalt

Price Adjustment (PA)			**195790.5**	**$**	**195,790.50**
Monthly Asphalt Cement Price month placed (APM)	Max. Cap	60%	$ 720.00		
Monthly Asphalt Cement Price month project let (APL)			$ 450.00		
Total Monthly Tonnage of asphalt cement (TMT)			725.15		

ASPHALT	Tons	%AC	AC ton
Leveling	1	5.0%	0.05
12.5 OGFC		5.0%	0
12.5 mm		5.0%	0
9.5 mm SP	2052	5.0%	102.6
25 mm SP	9309	5.0%	465.45
19 mm SP	3141	5.0%	157.05
	14503		**725.15**

BITUMINOUS TACK COAT

Price Adjustment (PA)			**$ 4,747.72**	**$**	**4,747.72**
Monthly Asphalt Cement Price month placed (APM)	Max. Cap	60%	$ 720.00		
Monthly Asphalt Cement Price month project let (APL)			$ 450.00		
Total Monthly Tonnage of asphalt cement (TMT)			17.58414317		

Bitum Tack Gals	gals/ton	tons
4094	232.8234	17.5841432

PROJ. NO.					CALL NO.		
P.I. NO.	0010926						
DATE	9/15/2015						

BITUMINOUS TACK COAT (surface treatment)

Price Adjustment (PA)				**0**	**$ -**
Monthly Asphalt Cement Price month placed (APM)	Max. Cap	60%	$	720.00	
Monthly Asphalt Cement Price month project let (APL)			$	450.00	
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	**$**	**200,538.22**

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE

Project No:
County **DECATUR**
P.I. # **0010926**

Office: **District 4 Utilities**
Date: **11-12-15**

Description: ***SR 38BU/US 84BU @ SR 38/US 84***

FROM Tim Warren, District Utilities Engineer

TO Cherral Dempsey, Project Manager

SUBJECT **PRELIMINARY UTILITY COST ESTIMATE**

A review of utilities located on the above referenced project has been conducted with Concept Layout 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	$518,197.32	Preliminary info from Utility
City of Bainbridge CNS **	$0.00	$8,046.13	Site Visit / Available Drawings
City of Bainbridge Gas **	$0.00	$110,000.00	Site Visit / Available Drawings
City of Bainbridge Sewer **	$0.00	$183,150.00	Site Visit / Available Drawings
City of Bainbridge Water **	$0.00	$142,700.00	Site Visit / Available Drawings
Georgia Power Transmission	$200,000.00	$0.00	Site Visit / Available Drawings
Georgia Power Distribution	$28,000.00	$0.00	Site Visit / Available Drawings
Mediacom	$0.00	$9,809.38	Site Visit / Available Drawings
Total 100.00%	$228,000.00	$971,902.83	
Department Responsibility 100.00%	$228,000.00	$971,902.83	
Local Sponsor Responsibility 0.00%	$ 0.00	$ 0.00	PFA Dated N/A with N/A

Update All

** 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 Theo Parker at 229-391-5514.

cc: Jason Willingham, Designer
Lee Upkins, State Utilities Engineer
Kerry Gore, Assistant State Utilities Engineer
Brent Thomas, District Preconstruction Engineer

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE P.I. No. 0010926, Decatur County **OFFICE** Environmental Services

DATE April 24, 2014

Hiral Patel/HDC

FROM Hiral Patel, P.E., State Environmental Administrator

TO Stevonn Dilligard, Project Manager

SUBJECT Preliminary Mitigation Cost Estimate

As requested by your office, we are furnishing you with a preliminary cost estimate for the subject project. This project will improve the intersection of S.R. 38Bus/U.S. 84Bus at S.R. 38/U.S. 84 east of Bainbridge in Decatur County. After reviewing the information provided and comparing that to NWI mapping and soil mapping, the proposed project would have no impacts on any waters of the U.S. and therefore no mitigation would be required.

DISCLAIMER: This information is based solely on a desktop review of the information available. Only after a field reconnaissance, can a more detailed and accurate cost be estimated.

If you have any questions or need additional information, please contact Lisa Westberry (404) 631-1772 of our office.

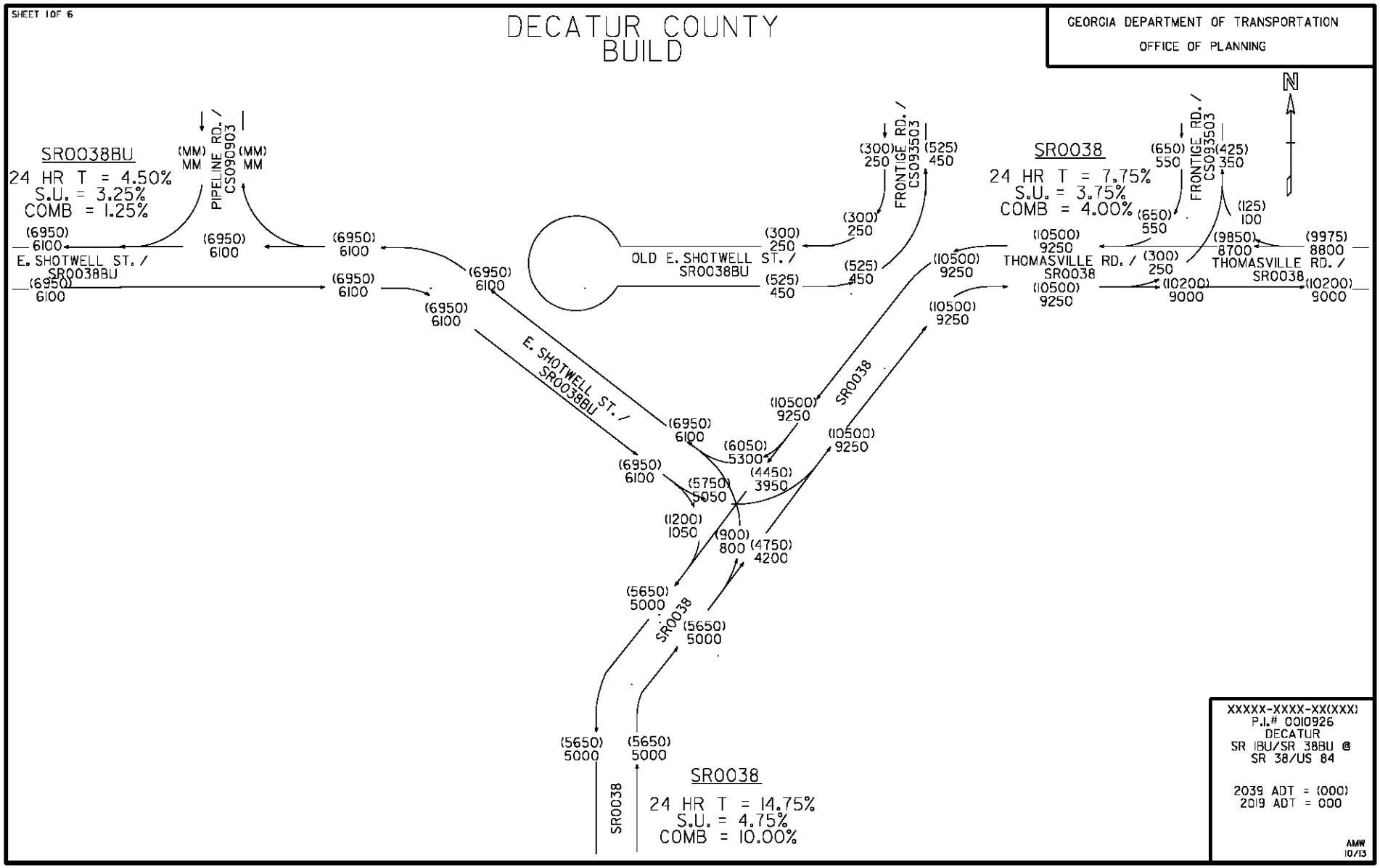
HP/HDC/lmw

cc: Sandy Griffin
General File

SHEET 1OF 6

DECATUR COUNTY
BUILD

GEORGIA DEPARTMENT OF TRANSPORTATION
OFFICE OF PLANNING



XXXXX-XXXX-XX(XXX)
P.I.# 0010926
DECATUR
SR 1BU/SR 38BU @
SR 38/US 84

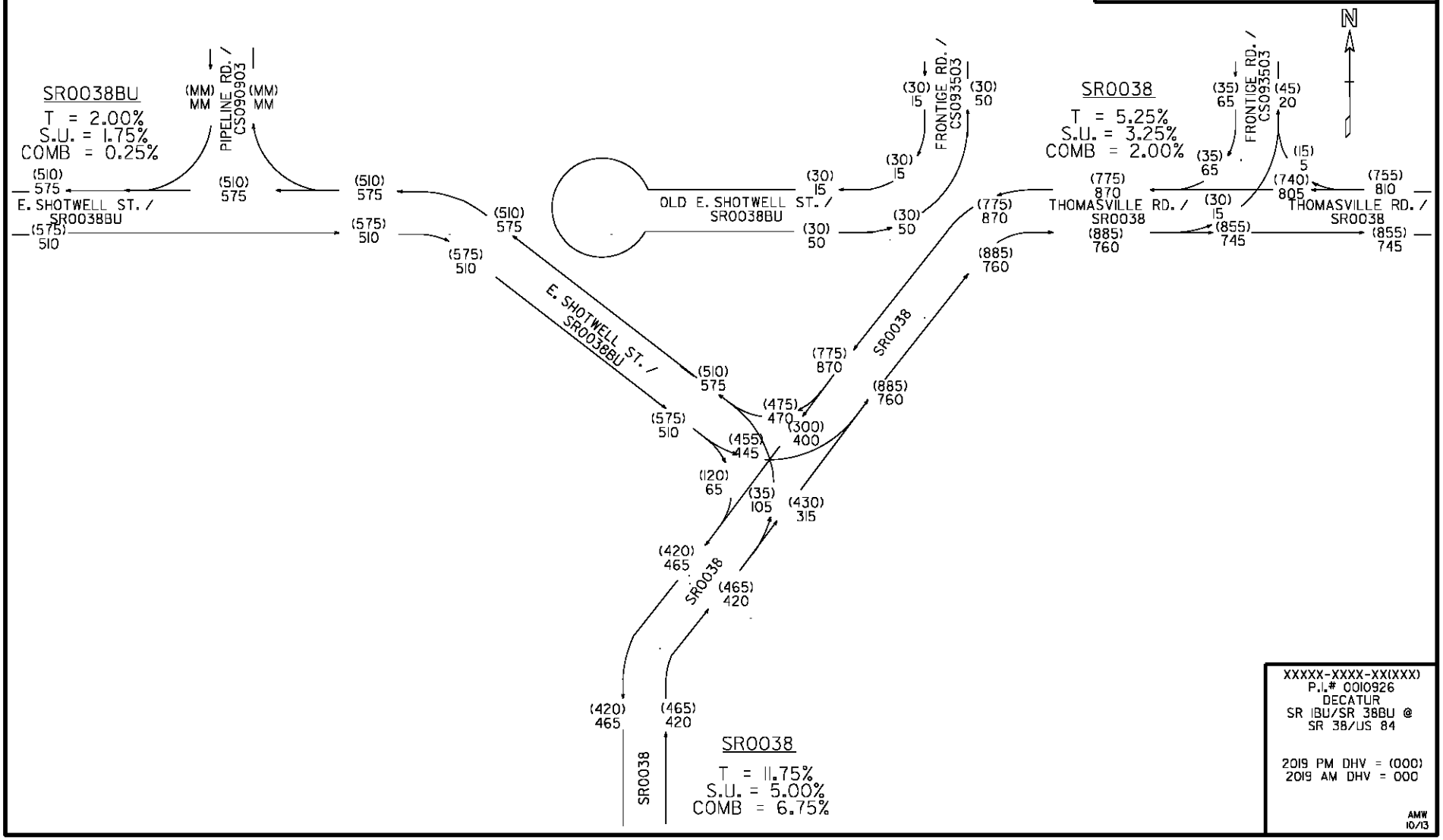
2039 ADT = (000)
2019 ADT = 000

AMW
10/13

SHEET 2 OF 6

DECATUR COUNTY
BUILD

GEORGIA DEPARTMENT OF TRANSPORTATION
OFFICE OF PLANNING



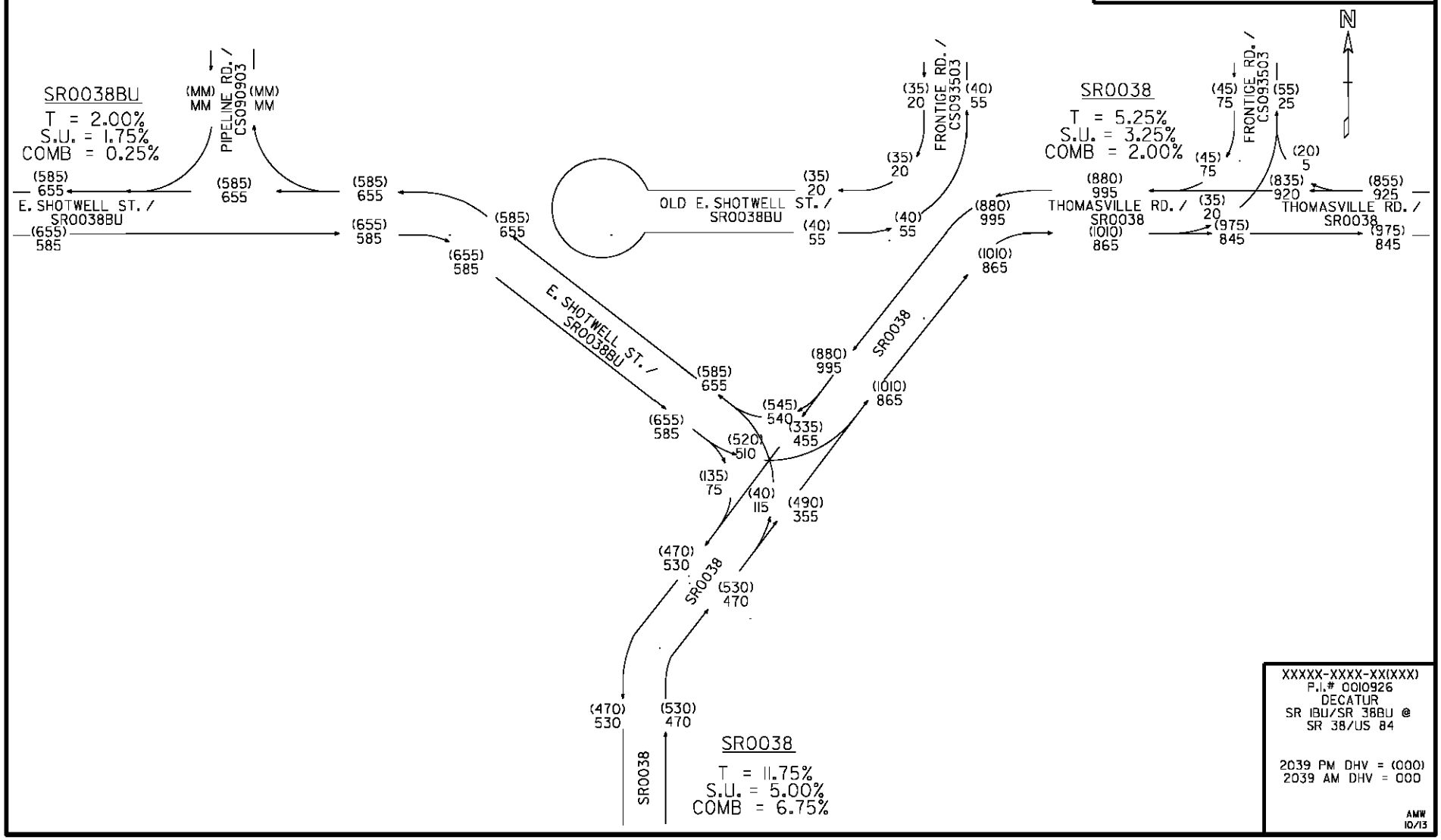
XXXXX-XXXX-XX(XXX)
P.I.# 0010926
DECATUR
SR 1BU/SR 38BU @
SR 38/US 84

2019 PM DHV = (000)
2019 AM DHV = 000

AMW
10/13

DECATUR COUNTY
BUILD

GEORGIA DEPARTMENT OF TRANSPORTATION
OFFICE OF PLANNING



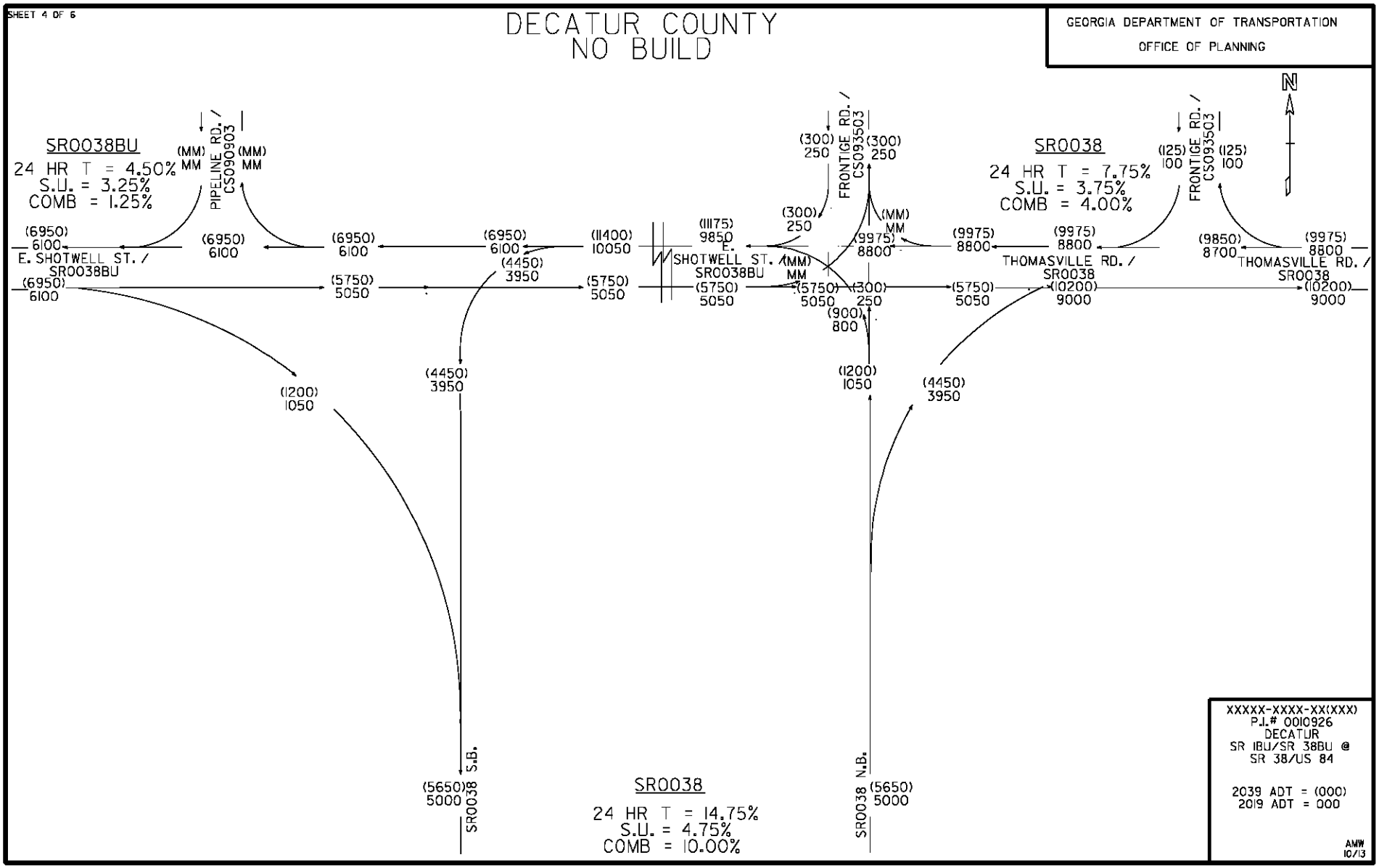
XXXXX-XXXX-XX(XXX)
P.I.# 0010926
DECATUR
SR 1BU/SR 38BU @
SR 38/US 84

2039 PM DHV = (000)
2039 AM DHV = 000

AMW
10/13

DECATUR COUNTY
NO BUILD

GEORGIA DEPARTMENT OF TRANSPORTATION
OFFICE OF PLANNING



XXXXX-XXXX-XX(XXX)
P.I.# 0010926
DECATUR
SR 1BU/SR 38BU @
SR 38/US 84

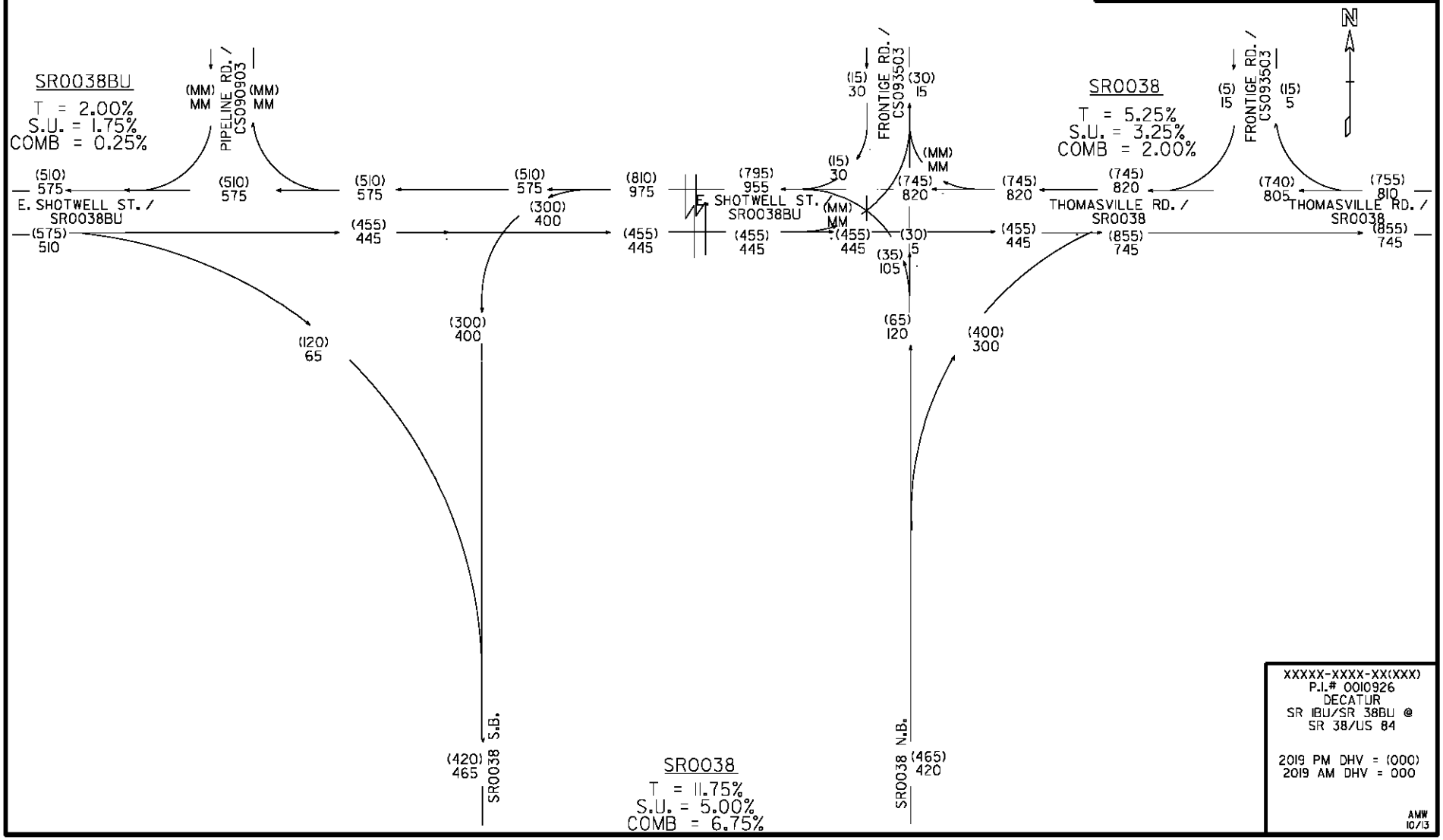
2039 ADT = (000)
2019 ADT = 000

AMW
10/13

SHEET 5 OF 6

DECATUR COUNTY
NO BUILD

GEORGIA DEPARTMENT OF TRANSPORTATION
OFFICE OF PLANNING



XXXXX-XXXX-XX(XXX)
P.I.# 0010926
DECATUR
SR 1BU/SR 38BU @
SR 38/US 84

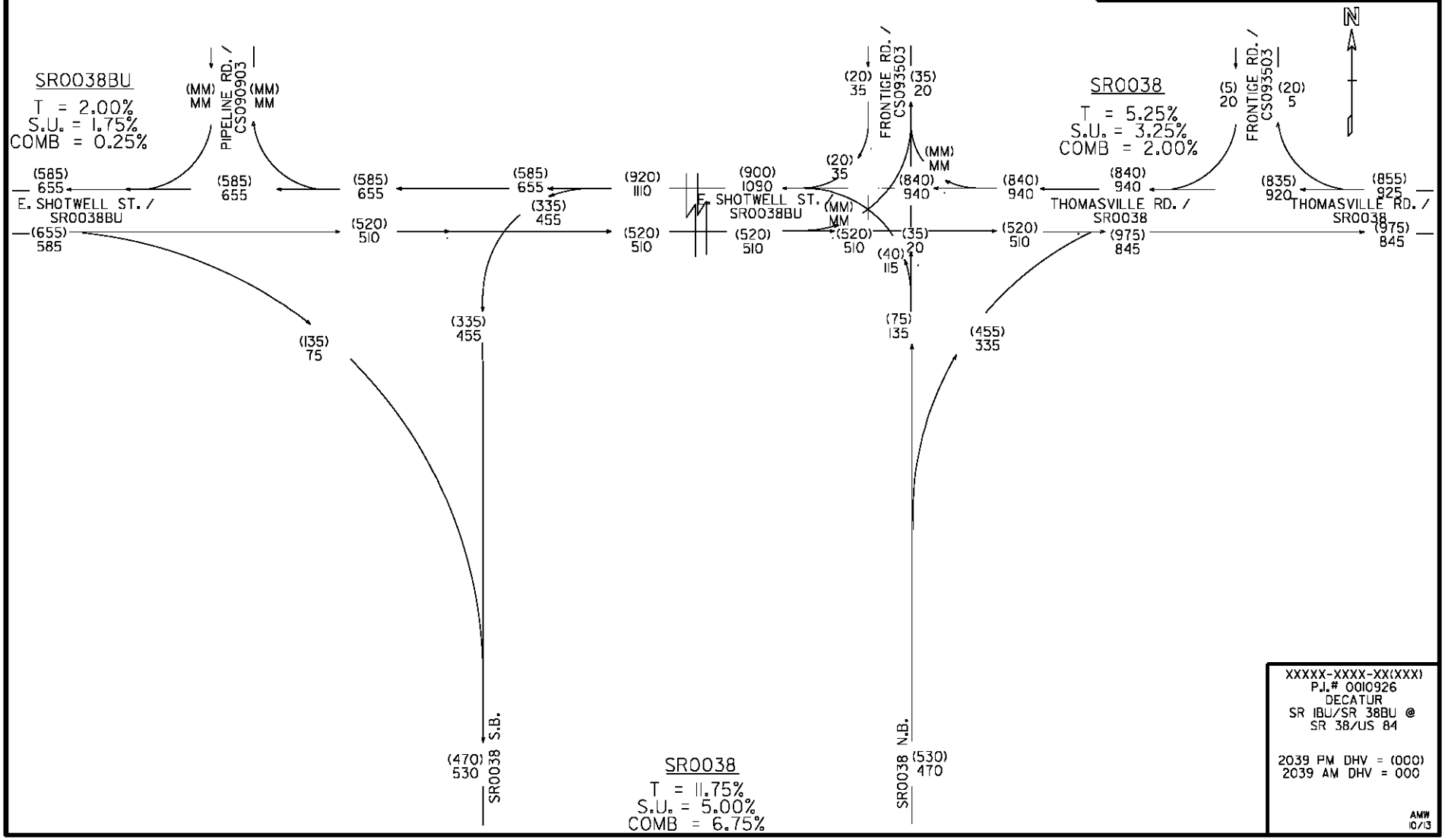
2019 PM DHV = (000)
2019 AM DHV = 000

AMW
10/13

SHEET 6 OF 6

DECATUR COUNTY
NO BUILD

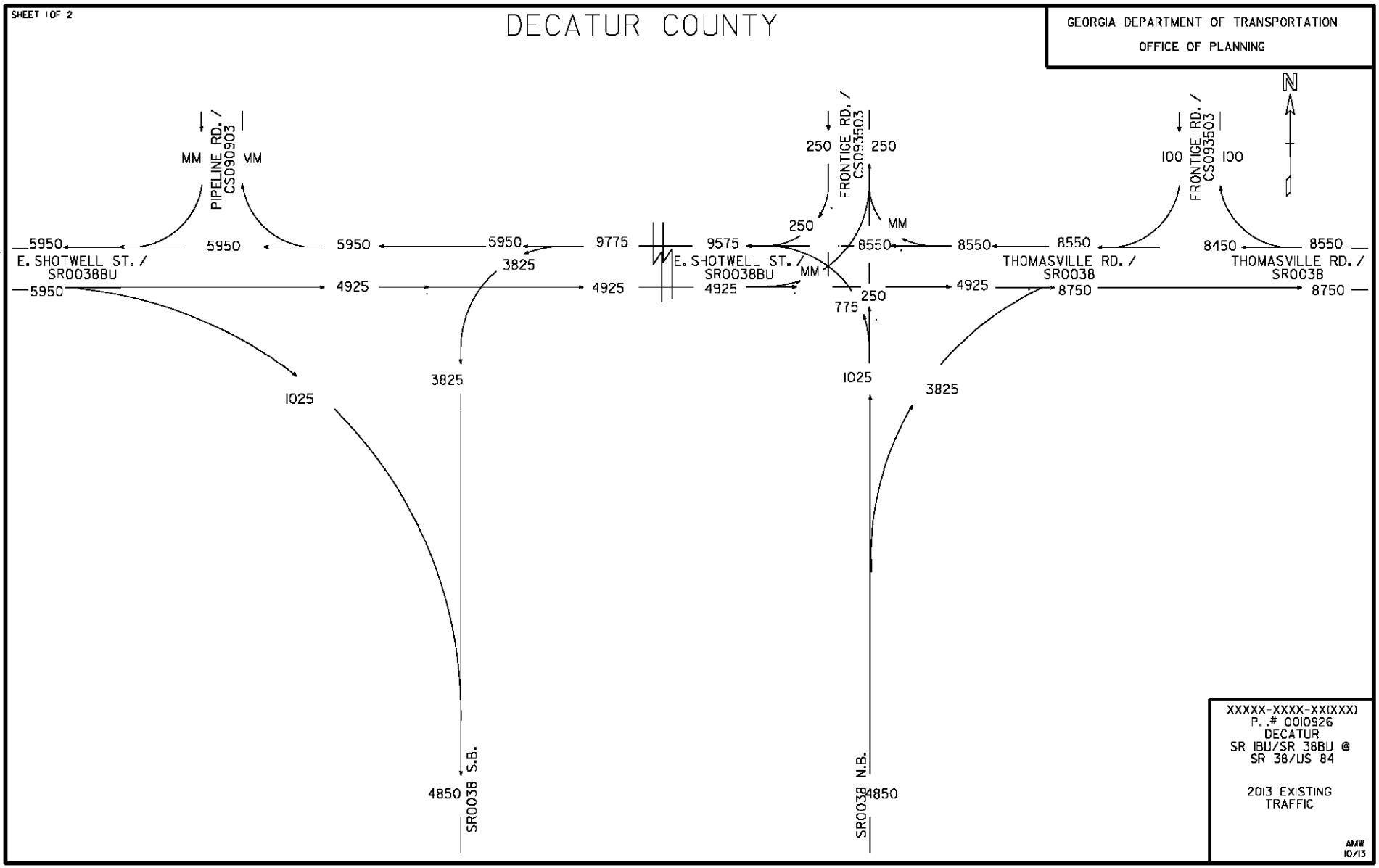
GEORGIA DEPARTMENT OF TRANSPORTATION
OFFICE OF PLANNING



XXXXX-XXXX-XX(XXX)
P.I.# 0010926
DECATUR
SR 1BU/SR 38BU @
SR 38/US 84

2039 PM DHV = (000)
2039 AM DHV = 000

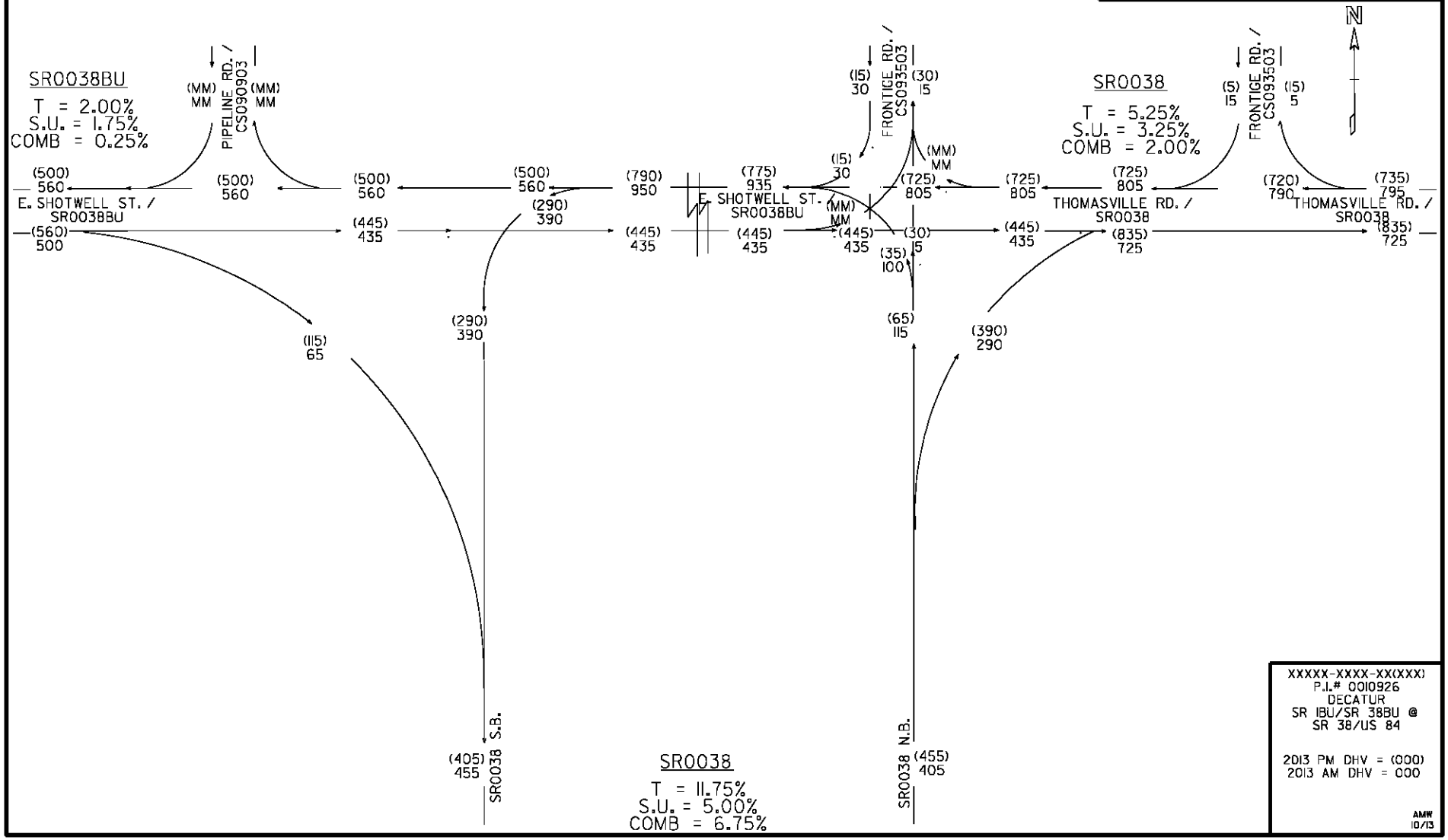
AMW
10/13


SHEET 1 OF 2
DECATUR COUNTY
GEORGIA DEPARTMENT OF TRANSPORTATION
OFFICE OF PLANNING
N
TC # 0358
E. SHOTWELL ST. / SR0038BU
PIPELINE RD. / CS090903
FRONTIGE RD. / CS093503
THOMASVILLE RD. / SR0038
MM
5950
4925
3825
1025
9775
9575
250
775
8550
8750
100
8450
4850 S.B.
SR0038
4850 N.B.
TC # 0154
XXXXX-XXXX-XX(XXX)
P.I.# 0010926
DECATUR
SR 1BU/SR 38BU @ SR 38/US 84
2013 EXISTING TRAFFIC
AMW
10/13

SHEET 2 OF 2

DECATUR COUNTY

GEORGIA DEPARTMENT OF TRANSPORTATION
OFFICE OF PLANNING



XXXXX-XXXX-XX(XXX)
P.I.# 0010926
DECATUR
SR 1BU/SR 38BU @
SR 38/US 84

2013 PM DHV = (000)
2013 AM DHV = 000

AMW
10/13

Traffic Projections/Forecasting Summary Sheet

P.I. # 0010926
DECATUR COUNTY

Year Counts Were Taken: 2013

Growth Factors

Build

Growth for Build

Existing Year to Base Year:
Mainline (SR38BU & SR38) 0.44%

Base Year to Design Year:
Mainline (SR38BU & SR38) 0.64%

Mainline (SR38BU & SR38)
K = 8.9%
Mainline (SR38BU & SR38)
D = 53%

No Build

Growth for No Build

Existing Year to Base Year:
Mainline (SR38BU & SR38) 0.44%

Base Year to Design Year:
Mainline (SR38BU & SR38) 0.64%

Mainline (SR38BU & SR38)
K = 8.9%
Mainline (SR38BU & SR38)
D = 53%

Assumptions

- Reviewed GDOT AADT Historical Traffic Growth Trends for the past 25 Years, 20 Years, 15 Years, 10 Years, and 5 Years for the following:
    a. 2 Traffic Counter Locations within the scope of this project.
- Reviewed Decatur County Comprehensive Land Use Plan.
- Reviewed Georgia Residential Population Projections Based on The 2000 Census Count and The 2010 Census Count.

RESEARCHED BY: ANDRE WASHINGTON
DATE: OCTOBER 2013

TRAFFIC ENGINEERING REPORT

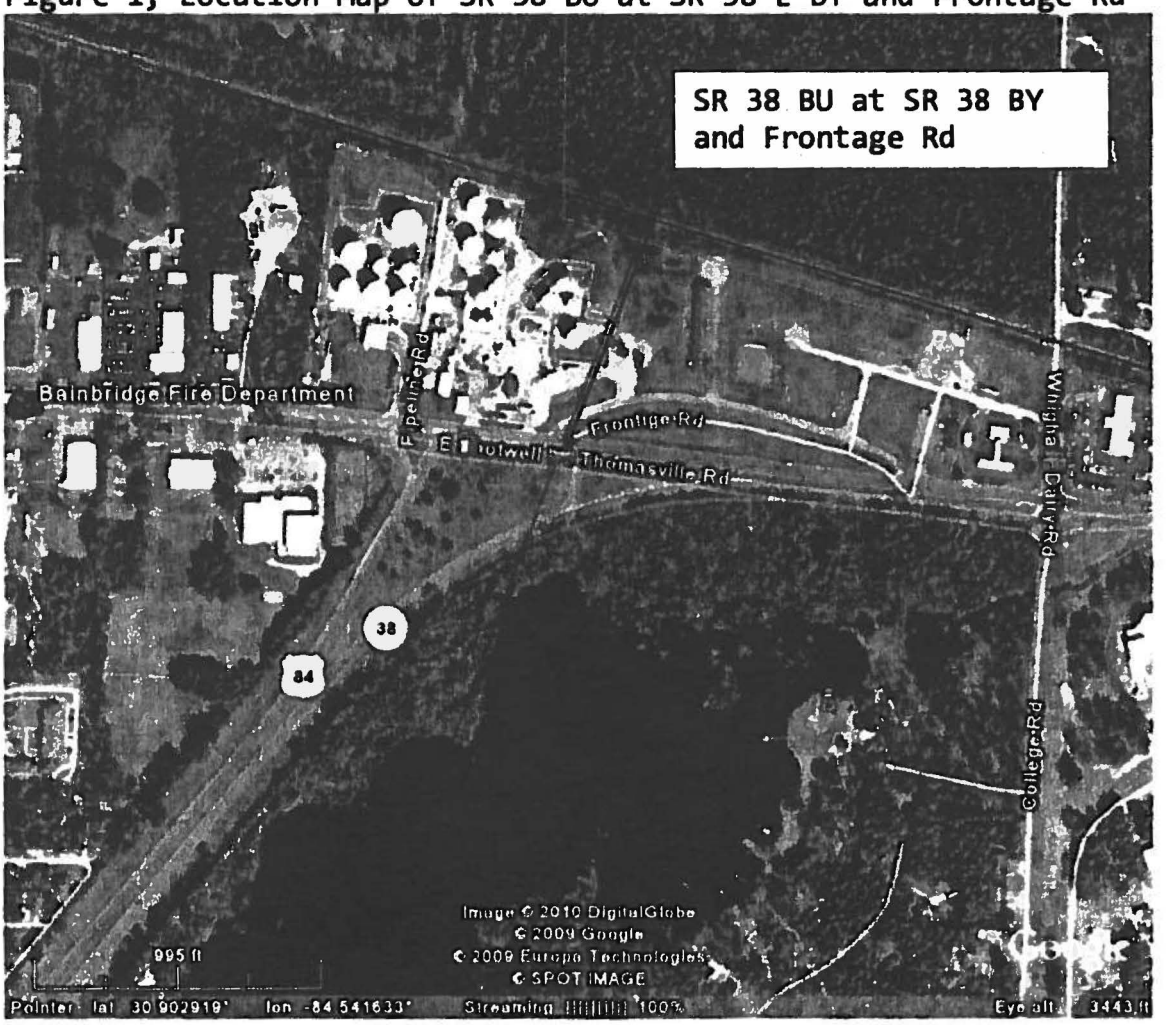
DATE: January 5, 2011

FILE: US 84/SR 38 BUS at US 84/SR 38 Bypass and Frontage Road

COUNTY: Decatur **CITY:** Bainbridge

STUDY LOCATION/AREA DESCRIPTION: The at grade TWSC intersection of US 84/SR 38 E/W BUS at US 84/SR 38 E Bypass and Frontage Rd. has been examined for signalization and operational or safety improvement needs.

Figure 1, Location Map of SR 38 BU at SR 38 E BY and Frontage Rd



REASON FOR INVESTIGATION: Joe Sheffield, District 4 Engineer, requested that the intersection of US 84/SR 38 BUS at US 84/SR 38 Bypass and Frontage Road be investigated to determine if operational or safety improvements are warranted.

AREA DESCRIPTION/TOPOGRAPHY: US 84/SR 38 BUS and US 84/SR 38 Bypass are urban principal arterials.

US 84/SR 38 E and W Bypass have four lanes (two westbound receiving and two eastbound (one shared left turn/through and right turning roadway) approach lanes), divided by a grassed and channelized median.

West of the intersection, US 84/SR 38 BUS has five lanes (two eastbound through, with the outside lane being a shared through/right turn slip lane, two westbound through, and one westbound left turn lane). East of the study location, US 84/SR 38 BUS has four lanes (two eastbound and westbound through approach lanes) divided by a raised curb and grass median.

Frontage Road is an urban local street that has two lanes (one approach and one receiving). Left turning movements are prohibited, and right turning movements are allowed.

EXISTING TRAFFIC CONTROL: US 84/SR 38 BUS at US 84/SR 38 E Bypass and Frontage Road is TWSC (two-way stop controlled).

Pavement markings consist of solid white and yellow edge lines, solid white and yellow traffic striping, type 1 and 2 pavement marking arrows, solid twenty-four white stop lines, double-solid five inch yellow centerlines, and skip and/or broken five inch white lane lines),

Traffic control signs consist of advance traffic signal ahead warning signs, regulatory yield signs, trailblazer assemblies, various miscellaneous signs, regulatory overhead lane control movement sign, speed limit (English) signs, regulatory do not enter signs, turn prohibition signs, a keep right regulatory sign, left lane must turn left regulatory sign, yield ahead warning sign, merging warning sign, general service signs, no parking sign, a recreational sign and destination signs.

Other traffic control devices consist of transverse and shoulder rumble strips.

VEHICULAR VOLUMES: According to the GDOT RC Web Info database, the current Average Annual Daily Traffic (AADT) on US 84/SR 38 Bainbridge Bypass is 11,260 vehicles-per-day (VPD), 10,680 VPD on US 84/SR 38 BUS, and 856 VPD on Frontage Road.

Twenty-four hour traffic counts were obtained in October 2009, and February 2010

Table 1, 24 Hr. (Higher of Oct. 2009 and Feb. 2010 24 hour counts) Entering Vehicular Volumes

Approach	Vehicular Volumes (VPD)
SR 38 W BUS Inside Through Ln	5,375
SR 38 W BUS Outside Through Ln	3,667
SR 38 W BUS Left-turn lane to SR 38 W Bypass	3,446
SR 38 E BUS Inside Through Ln	2,766
SR 38 E BUS Outside Through Ln	2,246
SR 38 E BUS Right Turning Roadway onto SR 38 W Bypass	557
SR 38 E Bypass Left Turning Roadway to SR 38 W BUS and Downtown Bainbridge	1,150
SR 38 E Bypass Right Turning Roadway to SR 38 E BUS	2,245
Frontage Rd.	"counter failed to read"
***** Total 24-Hr. Entering Vehicular Volume**	**21,452**

VEHICULAR SPEEDS: US 84/SR 38 BUS and US 84/SR 38 Bypass are posted at 45 mph; however, Frontage Rd. isn't posted.

PEDESTRIAN MOVEMENTS: No pedestrian activity was observed during field visits. With exception of the raised curb median, which provides refuge for pedestrians crossing US 84/SR 38 BUS, no other pedestrian accommodations exist at the study intersection.

ADJACENT SIGNALIZED INTERSECTION: US 84/SR 38 BUS at Whigham Dairy Road and College Road is located approximately 1,656 feet east of the study intersection.

CRASH HISTORY: Crash information for the past five years was obtained from the Department's collision database. There have been three angle crashes with three injuries and one fatality identified to the vicinity of the study intersection.

2006 Crash Summary

Two right angle crashes with no injuries or fatalities.

2009 Crash Summary

One angle crash (which didn't occur at the study intersection but rather west of and at the intersection of US 84/SR 38 E BUS/East Shotwell Street and US 84/SR 38 W Bypass) occurred on the evening of October 12, 2009, at 9:23 PM, and had 3 injuries and 1 fatality. Driver 1 was issued a traffic citation for failure to yield.

INTERSECTION SIGHT DISTANCE: Intersection sight distance measurements were obtained in February 2010 and are reflected below.

Field Measured Intersection Sight Distance

- Stopped at Frontage Road, observing vehicles traveling west on SR 38/US 84 E BUS (approaching from the east), the field measured sight distance is approximately 790 feet.
- Stopped at SR 38/US 84 E Bypass left turning roadway, observing vehicles traveling east (approaching from the west) on SR 38/US 84 W BUS, the field measured sight distance is most nearly 621 feet.

ISD Case B1-Left Turn from Stop

- Case B1 (Passenger Car)-Left Turn from Stop, ISD is 562 feet (calculated)

ISD Case B2-Right Turn from Stop

- Case B2 (Passenger Car)-Right Turn from Stop, ISD is 430 feet (design)

ISD Case B3-Crossing Maneuver

- Case B3 (Passenger Car)-Crossing Maneuver, ISD is 529 feet (calculated)

Field measured intersection sight distance measurements satisfied minimum AASHTO Intersection Sight Distance criteria.

CAPACITY ANALYSES:

TWSC UNSIGNALIZED INTERSECTION CAPACITY ANALYSES: Refer to the morning and afternoon peak hour two-way stop condition (TWSC) capacity analyses based upon existing and projected conditions.

Table 2, Existing TWSC Peak Hr. Delay and LOS

Intersection Approach	7-8:00 AM Peak Hr LOS	AM Peak Hr Delay (s/veh)	3-4:00 PM Peak Hr LOS	PM Peak Hr Delay (s/veh)
SR 38 E BU	B	12.0	B	11.4
SR 38 W BU	B	12.0	B	11.4
SR 38 E BY	C	22.0	C	21.5
Frontage Rd.	B	14.1	B	14.0

Based upon existing conditions (higher of Oct. 2009/Feb. 2010 24-hour counts), all intersection approaches are functioning at their appropriate level of service grade.

And refer to the projected capacity analysis that is based upon an applied growth rate of 2% for a period (n) of 1.5 years.

Table 2a, Projected TWSC Peak Hr. Delay and LOS

Intersection Approach	7-8:00 AM Peak Hr LOS	AM Peak Hr Delay (s/veh)	3-4:00 PM Peak Hr LOS	PM Peak Hr Delay (s/veh)
SR 38 E BU	B	14.9	B	11.6
SR 38 W BU	B	14.9	B	11.6
SR 38 E BY	D	30.6	C	22.5
Frontage Rd.	C	17.5	B	14.3

With exception of the SR 38 E Bypass left-turning roadway intersection approach, which should function at a LOS D, approaching unstable flow, the remaining intersection approaches should function at their appropriate LOS grade.

MULTILANE ROUNDABOUT CAPACITY ANALYSES:

Table 3, Multi-lane Roundabout Capacity Analysis based on Existing 7-8:00 AM Peak Hr. Vehicular Volumes

Results: Approach Measures of Effectiveness				
NCHRP-572 Model	N	E	S	W
Crit. Entry Capacity (pcu/h)	358	1,048	853	790
Crit. Lane Entry Flow (pcu/h)	35	1,023	616	401
V/C ratio	0.10	0.98	0.72	0.51
Control Delay (sec/pcu)	11.1	37.2	14.3	9.2
LOS	B	E	B	A
95th % Queue (ft.)	8	512	181	83

Based on current conditions, all multilane roundabout intersection approaches should function at LOS E, unstable flow, or better during peak hours.

Table 3a, Multi-lane Roundabout Capacity Analysis based on Projected 7-8:00 AM Peak Hr. Vehicular Volumes

Results: Approach Measures of Effectiveness				
NCHRP-572 Model	N	E	S	W
Crit. Entry Capacity (pcu/h)	346	1,045	846	782
Crit. Lane Entry Flow (pcu/h)	36	1,054	634	413
V/C ratio	0.10	1.01	0.75	0.53
Control Delay (sec/pcu)	11.6	44.7	15.8	9.7
LOS	B	E	C	A
95th % Queue (ft.)	9	579	201	89

And based upon projected (applied growth rate of 2% for a period (n) of 1.5 years) conditions, all multilane intersection approaches should function at LOS grade E, unstable flow, or better during peak hours.

MUTCD SIGNAL WARRANT ANALYSES: Signal warrant analyses were performed based upon existing (higher of Oct. 2009/Feb. 2010 24-hour vehicular counts) and projected (applied growth rate of 2% for a period (n) of 1.5 years) conditions and excluding right turns to determine which, if any, of the nine MUTCD Signal Warrants were satisfied.

- Warrant 1-Eight-Hour Vehicular Volume
- Warrant 2-Four-Hour Vehicular Volume
- Warrant 3-Peak Hour
- Warrant 4-Pedestrian Volume
- Warrant 5-School Crossing
- Warrant 6-Coordinated Signal System
- Warrant 7-Crash Experience
- Warrant 8-Roadway Network
- Warrant 9-Intersection Near a Grade Crossing

Table 4, 2009 MUTCD Signal Warrant Analysis (Existing and Excluding Right Turns)

Signal Warrant	Met/Not Met	Hours Met vs. Required
1A (100%)	Not Met	0/8
1B (100%)	Not Met	5/8
2	Not Met	1/4
3	Not Met	0/1
4	Not Met	Not Met
5	N/A	N/A
6	N/A	N/A
7	Not Met	2/5 angle crashes susceptible to correction by a traffic signal; however, volumes are met
8	Met	Met
9	N/A	N/A

Based upon existing (the higher of the Oct. 2009/Feb. 2010 24-hour vehicular traffic counts) conditions and excluding right turns, MUTCD Signal Warrant 8, Roadway Network, was satisfied. The remaining eight warrants were not. No hours satisfied Warrant 1A (at 100%), and five out of eight hours required satisfied Warrant 1B at 100%. Minor approach volumes for the remaining three hours were only four vehicles shy of satisfying Warrant 1B at 100%, and should a growth rate of 2% be applied for a period of one year, then Warrant 1B at 100% would be met. One out of four hours required satisfied Warrant 2, Four-Hour Vehicular Volume, criteria, and no hours satisfied Warrant 3, Peak Hour. Minimum vehicular volumes satisfied Warrant 7, Crash Experience; however, crashes (two out of five required) did not.

Table 4a, 2009 MUTCD Signal Warrant Analysis (Projected (applied growth rate factor of 2% for a period (n) of 1.5 years) and Excluding Right Turns)

Signal Warrant	Met/Not Met	Hours Met vs. Required
1A (100%)	Not Met	0/8
1B (100%)	Met	8/8
2	Not Met	2/4
3	Not Met	0/1
4	Not Met	Not Met
5	N/A	N/A
6	N/A	N/A
7	Not Met	2/5 angle crashes susceptible to correction by a traffic signal; however, volumes are met
8	Met	Met
9	N/A	N/A

Based upon projected (applied growth rate of 2% for a period (n) of 1.5 years (timeframe required to gain approval of operational improvement project) to the higher of Oct. 2009/Feb. 2010 24-hour traffic counts) conditions and excluding right turns, MUTCD Warrants 1B (100%), Eight-Hour Vehicular Volume, and 8, Roadway Network, were satisfied. The remaining six warrants were not. Two out of the four required under Warrant 2, Four-Hour Vehicular Volume, were satisfied, and no hours satisfied Warrant 3, Peak Hour. Moreover, volumes satisfied Warrant 7, Crash Experience; however, crashes (two out of five crashes required) did not.

PROPOSED GEOMETRIC IMPROVEMENTS: Five improvement alternatives were created. With exception of alternatives five (retain original intersection geometrics and install a traffic signal) and six (multi-lane roundabout with bypass lanes), the remaining alternatives (1, 2 3, and 4) would involve realignment of both SR 38 E and W Bypass corridors and addition of left turn lanes on SR 38 BUS.

"For the purpose of this report and to eliminate any confusion pertaining to the US 84/SR 38 Bypass approaches and/or directions, a northerly direction was taken to equate to east and southbound to west."

Improvement alternatives 1 to 4 share similar characteristics. Some of the benefits each one shares include reduction in frequency and severity of right angle collisions, orderly movement of traffic, increase to minor road capacity, and means of interrupting heavy traffic flow to allow other traffic to enter into or cross the intersection. Impacts include high construction and right-of-way acquisition costs, increased delays for intersection approaches and decrease in LOS for right turning movements, maintenance of traffic signal, traffic signal power outages, light emitting diode and/or lamp failures, increase in conflict points and certain types of crashes (rear end, lane changing, turning and possibly left turn), increased delay, and possible disobedience of signal indications.

Refer to improvement alternatives 1-5.

Improvement Alternative 1 (Concept Drawing 1A)-Obliterate SR 38 E and W Bypass existing pavement sections, beginning at a point south of and terminating at SR 38 E BUS, realign existing SR 38 E and W Bypass corridors by constructing a SR 38 E BUS right turning roadway/slip receiving lane that will tie into the newly realigned SR 38 W Bypass. Moreover, two southbound receiving lanes, one northbound exclusive left turn approach lane, one northbound thru approach lane, one channelized right turn slip lane, and two channelized and/or divisional islands that will separate same direction vehicular movements will be constructed. Exclusive left turn lanes along both US 84/SR 38 BUS intersection approaches shall be constructed.

Improvement Alternative 2 (Concept Drawing 2A)-Obliterate SR 38 E Bypass left turning roadway, SR 38 E BUS right turning roadway, and SR 38 W Bypass lanes to a point south of SR 38 BUS. Reduce the two SR 38 E Bypass lanes to one right turning roadway by retaining the existing outside lane. A traffic signal will be installed and SR 38 E and W Bypass will be realigned to include one SR 38 E BUS exclusive right turn lane with right turning roadway/slip lane, two southbound through lanes, one exclusive northbound left turn lane, one shared through/right turn lane, a raised channelized/divisional island separating the southbound through and eastbound right-turning movements, and exclusive left turn lanes on both US 84/SR 38 E and W BUS approaches. Refer to concept drawing 2A.

Improvement Alternative 3 (Concept Drawing 3A)-Obliterate both SR 38 E Bypass left and right turning roadway lanes from a point

south of SR 38 E BUS to SR 38 E BUS, and both SR 38 W Bypass lanes from the end of the SR 38 E BUS right turning roadway lane to SR 38 E BUS. Install a traffic signal and construct a proposed alignment to include one southbound through, one northbound left turn, one northbound through, and one northbound right turn lane with right turning roadway/slip lane. In addition to traffic signal installation, a raised channelized island shall be constructed between the northbound through and right turning roadway to separate vehicular movements. Furthermore, exclusive left turn lanes on SR 38 E and W BUS approaches shall be constructed. Refer to concept drawing 3A.

Improvement Alternative 4 (Concept Drawing 4A)-Under alternative four, the SR 38 E Bypass left turning roadway and both SR 38 W Bypass lanes from the end of the SR 38 E BUS right turning roadway lane to SR 38 E BUS shall be obliterated and graded to drain. SR 38 E Bypass right turning/merging roadway shall be retained. The proposed alignment shall include one southbound, one northbound left turn, and one shared though/right turn slip lane. In addition, exclusive left turn lanes on SR 38 E and W BUS approaches shall be constructed, and a traffic signal installed. Refer to concept drawing 4A.

Improvement Alternative 5 (Concept Drawing 5A)-Under alternative five, a multilane roundabout shall be constructed. US 84/SR 38 E and W Bypass corridors shall be realigned and/or used as bypass lanes. Refer to concept drawing 5A.

Roundabout Advantages

- In most cases should offer decreased delay and better level of service
- Reduction in intersection conflict points
- Reduced congestion due to being efficient during peak hours and off-peak times
- Fewer stops and hard accelerations
- Reduction in amount of time drivers spend idling
- Lower operating speeds
- Low energy and less severe type crashes
- Best intersection safety treatment
- Safer than traditional intersections
- Cost effective way to improve intersection safety
- Increased capacity and improved traffic flow
- No traffic signal equipment to install, maintain and/or power
- Aesthetic benefits

- 100% Federally (FHWA) funded

Roundabout Disadvantages

- Requires all traffic to slow down, thus may be undesirable where a high-volume road would not otherwise be required to stop
- Occupies more space than crossroads at the intersection point
- Drivers may become confused and use roundabouts improperly
- Central island can be hindrance to oversized vehicular movements
- Location of a fuel storage facility adjacent to multilane roundabout and in the northwest corner
- Obstruction to departing vehicles can result in blockage of all approaches to the roundabout until cleared
- Can be confusing to drivers, especially the older driver, without user education
- Acquisition of additional right-of-way
- According to the NCHRP-572 Model, a multilane roundabout, based upon projected conditions with bypass lanes, should function at level of service grade E, unstable flow, or better during the peak hour.

SHORT TERM ACTIONS: The following short term actions shall be the responsibility of District 4 Maintenance Forces.

- Refurbish solid twenty-four inch white stop lines on SR 38 E Bypass left turning roadway and Frontage Road.
- At SR 38 E Bypass left turning roadway, refurbish Type 4 Wrong Way pavement marking arrow and replace raised pavement markers.
- Refurbish double-solid five inch yellow centerline pavement markings on Frontage Road.
- Refurbish Detail "B" (Yellow) and "B" (White) pavement markings on SR 38 BUS and west of the study intersection.
- Remove and replace approach guardrail anchor, which was previously damaged, protecting the concrete strain pole located west of the study intersection and along the right (south) side of the SR 38 E BUS approach.
- Relocate the trailblazer assembly (1 M3-4, 1 M5-1, and 1 M1-4) assembly located east of the SR 38 E Bypass right turning roadway at SR 38 E BUS gore point to west of Frontage Road.

- Place yield lines at SR 38 E BUS right turning roadway to SR 38 W Bypass and SR 38 E Bypass right turning roadway to SR 38 E BUS.
- Safe up drop offs located along the SR 38 E Bypass left turning roadway left-edge roadway pavement tie in to grassed shoulder.
- Install cross traffic does not stop (W4-4p) warning signs below STOP signs.
- Install a STOP Ahead warning sign on Frontage Road.
- Remove from STOP sign post and reinstall on separate sign post the left turn prohibition (R3-2) sign on Frontage Road

CONCLUSIONS: The following conclusions are based upon collected field data, observations, intersection capacity analysis, and existing and proposed conditions.

- There have been two angle crashes coded to the study intersection. Both crashes, exclusive of any injuries or fatalities, occurred in calendar year 2006.
- Another angle crash, which had three injuries and one fatality, occurred in 2009 and near the vicinity of the study intersection.
- The signalized intersection of US 84/SR 38 BUS at Whigham Dairy Road and College Road is located approximately 1,656 feet east of the study intersection of US 84/SR 38 BUS and US 84/SR 38 Bypass and Frontage Road.
- Field measured intersection sight distance measurements satisfied minimum AASHTO Intersection Sight Distance (ISD) passenger car criteria.
- Based upon existing conditions (higher of Oct. 2009/Feb. 2010 24-hour vehicular volumes) for a TWSC intersection, all intersection approaches are functioning at their appropriate level of service grade.
- Based upon projected (applied growth rate of 2% for a period (n) of 1.5 years to higher of Oct. 2009/Feb. 2010 24-hour vehicular counts) conditions and with exception of the SR 38 E Bypass left-turning roadway intersection approach, which should function at LOS D, approaching unstable flow, the remaining intersection approaches should function at their appropriate LOS grade.
- According to the NCHRP-572 Roundabout Analysis Model and current conditions, all multilane roundabout intersection approaches should function at LOS E, unstable flow, or better during peak hours.

- And based upon projected (applied growth rate of 2% for a period (n) of 1.5 years) conditions, all multilane roundabout intersection approaches should function at a LOS grade E, unstable flow, or better during peak hours.
- Based upon existing (the higher of the Oct. 2009/Feb. 2010 24-hour vehicular traffic counts) conditions and excluding right turns, MUTCD Signal Warrant 8, Roadway Network, was satisfied. The remaining eight warrants were not. No hours satisfied Warrant 1A (at 100%), and five out of eight hours required satisfied Warrant 1B at 100%. Minor approach volumes for the remaining three hours were just four vehicles shy of satisfying Warrant 1B at 100%, and should a growth rate of 2% be applied for a period of one year, then Warrant 1B at 100% would be met. One out of four hours required satisfied Warrant 2, Four-Hour Vehicular Volume, criteria, and no hours satisfied Warrant 3, Peak Hour. Minimum vehicular volumes satisfied Warrant 7, Crash Experience; however, crashes (two out of five required) did not.
- Based upon projected (applied growth rate of 2% for a period (n) of 1.5 years (timeframe required to gain approval of an operational improvement project) to the higher of Oct. 2009/Feb. 2010 24-hour traffic counts) conditions and excluding right turns, MUTCD Signal Warrants 1B at 100%, Eight-Hour Vehicular Volume, and 8, Roadway Network, were satisfied. The remaining six warrants were not. Two out of the four required under Warrant 2, Four-Hour Vehicular Volume, were satisfied, and no hours satisfied Warrant 3, Peak Hour. Moreover, volumes satisfied Warrant 7, Crash Experience; however, crashes (two out of five crashes required) did not.
- Five improvement alternatives were devised. With exception of alternative five (multilane roundabout with bypass lanes), the remaining alternatives (1, 2 3, and 4) would involve realignment of both SR 38 Bypass corridors and construction of left turn lanes on SR 38 BUS.
- Until an operational improvement project can be implemented, District Maintenance Forces shall perform several low cost safety improvements to include refurbishing the solid white stop line and solid white wrong way pavement marking arrow on SR 38 E Bypass left turning roadway, and double-solid yellow centerline and solid white stop line on Frontage Road, refurbishing solid white and yellow pavement markings on SR 38 BUS west of the study intersection, replacing the w-beam approach guardrail anchor along the south side of the

SR 38 E BUS approach, relocating the trailblazer assembly located east of the SR 38 E Bypass right turning roadway to just west of Frontage Road, placing a yield line at the SR 38 E BUS right-turning roadway to SR 38 E BUS, healing up left edge drop offs along SR 38 E Bypass left-turning roadway inside shoulder, installing cross traffic does not stop warning signs beneath stop signs, installing a stop ahead warning sign on Frontage Road, and on Frontage Road, removing the existing left-turn prohibition sign that is mounted on the stop sign post and reinstalling on a separate post.

RECOMMENDATIONS: Based upon an analysis of projected (growth rate of 2% applied for a period (n) of 1.5 years to higher of Oct. 2009/Feb. 2010 24-hour vehicular counts) traffic data, intersection operations and field observations, the following actions are recommended.

- Implement improvement alternative 1 (refer to Concept Drawing 1A) by obliterating SR 38 E and W Bypass existing pavement sections, beginning at a point south of and terminating at SR 38 E BUS, realign existing SR 38 E and W Bypass corridors by constructing a SR 38 E BUS right turning roadway/slip receiving lane that will tie into the newly realigned SR 38 W Bypass. Moreover, two southbound receiving lanes, one northbound exclusive left turn approach lane, one northbound thru approach lane, one channelized right turn slip lane, and two channelized and/or divisional islands that will separate same direction vehicular movements will be constructed. Exclusive left turn lanes along both US 84/SR 38 BUS intersection approaches shall be constructed.
- Install a "stop-n-go" traffic signal.

Existing and projected summary vehicular volume count sheets and concept drawing 1A are attached.

PREPARED BY: _____ DATE 05 JAN 2011
DISTRICT TRAFFIC OPERATIONS ENGINEER

RECOMMENDED BY: _____ DATE 1/11/11
DISTRICT TRAFFIC ENGINEER

RECOMMENDED BY: _____ DATE _____
STATE TRAFFIC ENGINEER

RECOMMENDED BY: _____ DATE _____
DIRECTOR OF OPERATIONS

Existing Signal Warrants Summary fm OCT 2009/FEB 2010 Excluding Rt Tns

County: Decatur **City: Bainbridg**

Day of Wk	Date / Time 19/20 OCT 09 10/11 FEB 10	SR 38 E BUS		SR 38 W BUS				SR 38 E Bypass Lt Tn Ln, Thru & Rt Tn Ln				Frontage Rd.			Warr 1E	
							Total				Total			Total	100%	80%
	7:00-8:00		325	415	829		1569	87			87	*			Met	Me
	8:00-9:00		241	224	457		922	61			61	*			Not	Me
	9:00-10:00		232	213	459		904	62			62	*			Not	Me
	10:00-11:00		226	223	505		954	79			79	*			Met	Met
	11:00-12:00		316	214	579		1109	73			73	*			Not	Met
	12:00-1:00		397	212	599		1208	74			74	*			Not	Met
	1:00-2:00		365	216	609		1190	65			65	*			Not	Met
	2:00-3:00		349	285	623		1257	80			80	*			Met	Met
	3:00-4:00		382	241	902		1525	74		*	74	*			Not	Met
	4:00-5:00		415	218	622		1255	79		*	79	*			Met	Met
	5:00-6:00		480	255	685		1420	78		*	78	*			Met	Met

SR 38 E & W BUS Thrus from OCT 2009 24 Hr. Counts
SR 38 W BUS LT TNs from OCT 2009 & FEB 2010 Highest 24 Hr. Counts
SR 38 E BUS RT TNs from FEB 2010 24 Hr. Counts
SR 38 E Bypass LT TN/THRUs and RT TNs from FEB 2010 24 Hr. Counts
SR 38 W Bypass from FEB 2010 24 Hr. Counts
Frontage Rd 24 hr. counter failed to record traffic volumes and speeds

* Counter failed to read traffic volumes for hours shown

N

Eight-Hour Vehicular Volume	100%	80%	70%	56%	100%	80%	70%	56%	Warrant 1, Eight-Hour Vehicular V
Major 2 or more, Minor 1 (at intersection w/Frontage)		MAJOR				MINOR			
Condition A (Min. Veh. Volume)	600	480	420	336	150	120	105	84	
Condition B (Interruption of continous traffic)	900	720	630	504	75	60	53	42	

Projected Signal Warrants Summary OCT 2009/FEB 2010, Excluding Rt Tns, Applied Growth Rate of 2%

County: Decatur — **for a Period (n) of 1.5 yrs** — **City: Bainbridge**

Day of Wk	Date / Time 19/20 OCT 09 10/11 FEB 10	SR 38 E BUS			SR 38 W BUS				SR 38 E Bypass Lt Tn Ln, Thru & Rt Tn Ln				Frontage Rd.				Warran 1B	
		↑	→	↓	↓	←	↱	Total	↰	↑	↱	Total	↰			Total	100%	80%
	7:00-8:00		335		427	854		1616	90			90	*				Met	Met
	8:00-9:00		248		231	471		950	63			63	*				Not	Met
	9:00-10:00		239		219	473		931	64			64	*				Not	Met
	10:00-11:00		233		230	520		983	81			81	*				Met	Met
	11:00-12:00		325		220	596		1141	75			75	*				Met	Met
	12:00-1:00		409		218	617		1244	76			76	*				Met	Met
	1:00-2:00		376		222	627		1225	67			67	*				Not	Met
	2:00-3:00		359		294	642		1295	82			82	*				Met	Met
	3:00-4:00		393		248	929		1570	76		*	76	*				Met	Met
	4:00-5:00		427		225	641		1293	81		*	81	*				Met	Met
	5:00-6:00		494		263	706		1463	80		*	80	*				Met	Met

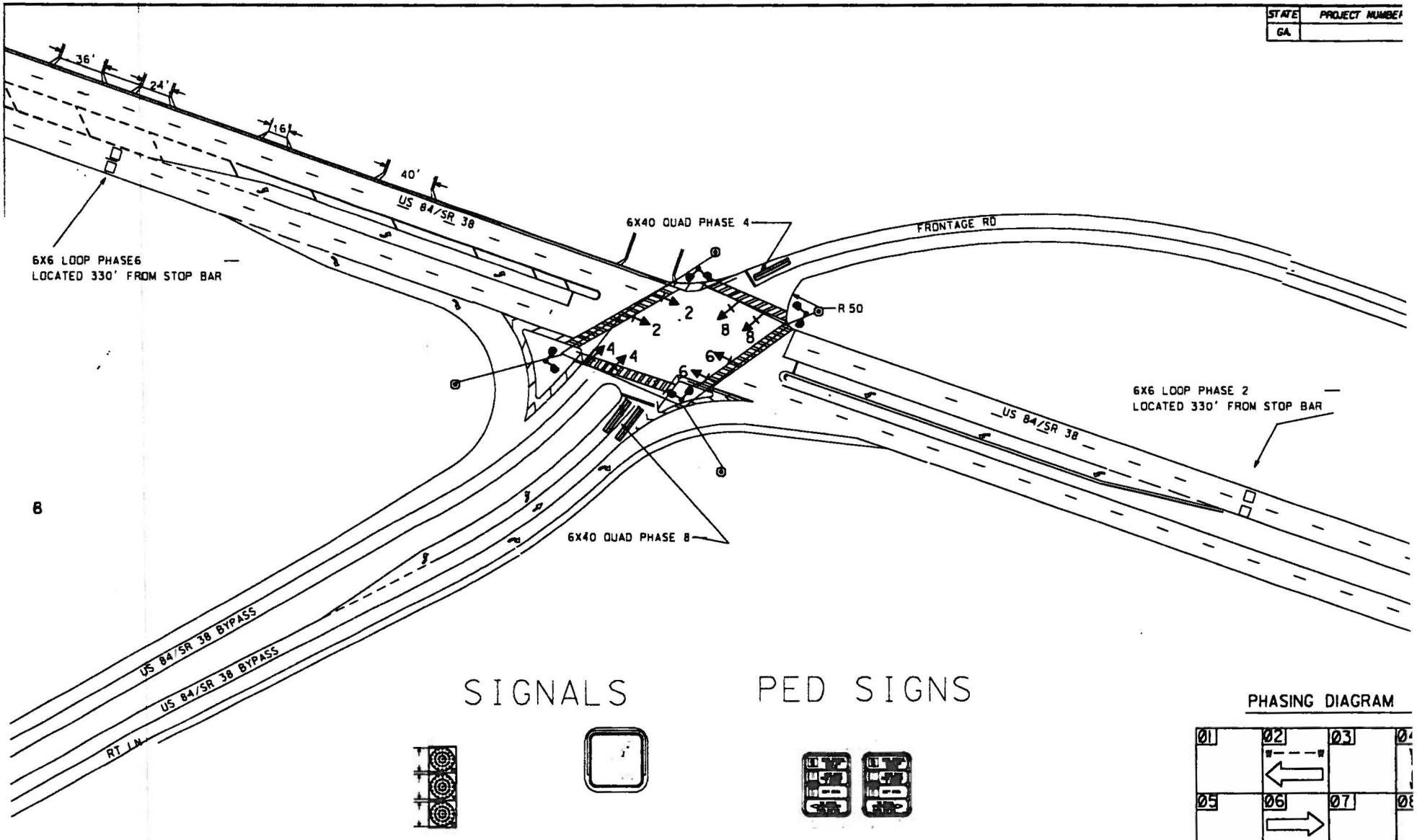
SR 38 E & W BUS Thrus from OCT 2009 24 Hr. Counts
SR 38 W BUS LT TNs from OCT 2009 & FEB 2010 Highest 24 Hr. Counts
SR 38 E BUS RT TNs from FEB 2010 24 Hr. Counts
SR 38 E Bypass LT TN/THRUs and RT TNs from FEB 2010 24 Hr. Counts
SR 38 W Bypass from FEB 2010 24 Hr. Counts
Frontage Rd 24 hr. counter failed to record traffic volumes and speeds

* Counter failed to read traffic volumes for hours shown

N

Eight-Hour Vehicular Volume	100%	80%	70%	56%	100%	80%	70%	56%	Warrant 1, Eight-Hour Vehicular Vo
Major 2 or more, Minor 1 (at intersection w/Frontage)		MAJOR				MINOR			
Condition A (Min. Veh. Volume)	600	480	420	336	150	120	105	84	
Condition B (Interruption of continous traffic)	900	720	630	504	75	60	53	42	

STATE	PROJECT NUMBER
GA.	



8

SIGNALS PED SIGNS

PHASING DIAGRAM

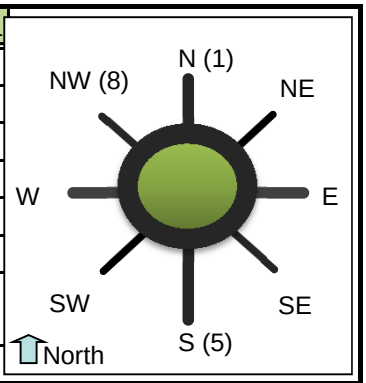
		OFFICE OF TRAFFIC SAFETY AND DESIGN	GEORGIA DEPARTMENT OF TRANSPORTATION	DATE / REVISIONS	TRAFFIC SIGNAL INSTA

.\sr38ateshotwellintersection lm 1/5/2011 3:53:19 PM

General & Site Information

v2.1

Analyst:	GDOT Traffic Operations
Agency/Co:	GDOT
Date:	9/16/2014
Project or PI#:	PI-0010926
Year, Peak Hour:	2019(am)
County/District:	Decatur
Intersection:	SR 38 BU @ SR 38 BY



Volumes

Exit Legs (TO)	Entry Legs (FROM) N1 (1)	N2 (1)	NE1 (2)	NE2 (2)	E1 (3)	E2 (3)	SE1 (4)	SE2 (4)
Lane Designation	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT
N (1), vph						**470**		
NE (2), vph								
E (3), vph		**65**						
SE (4), vph								
S (5), vph								
SW (6), vph								
W (7), vph	**445**				**400**			
NW (8), vph								
Entry Volume, vph	445	65	0	0	400	470	0	0

	S1 (5)	S2 (5)	SW1 (6)	SW2 (6)	W1 (7)	W2 (7)	NW1 (8)	NW2 (8)
Lane Designation	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT
N (1), vph					**105**			
NE (2), vph								
E (3), vph						**315**		
SE (4), vph								
S (5), vph								
SW (6), vph								
W (7), vph								
NW (8), vph								
Entry Volume, vph	0	0	0	0	105	315	0	0

	N	NE	E	SE	S	SW	W	NW
# of Entry Flow Lanes	2	0	2	0	0	0	2	0
# of Conflict Flow Lanes	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	98%	100%	95%	100%	100%	100%	88%	100%
% Heavy Vehicles	2%	0%	5%	0%	0%	0%	12%	0%
% Bicycles	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians **(ped/hr)**	0	0	0	0	0	0	0	0
PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
F_{hv}	0.980	1.000	0.950	1.000	1.000	1.000	0.895	1.000
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows		N	NE	E	SE	S	SW	W	NW
Flow to	N (1), pcu/h	0	0	538	0	0	0	128	0
Leg #	NE (2), pcu/h	0	0	0	0	0	0	0	0
	E (3), pcu/h	72	0	0	0	0	0	383	0
	SE (4), pcu/h	0	0	0	0	0	0	0	0
	S (5), pcu/h	0	0	0	0	0	0	0	0
	SW (6), pcu/h	0	0	0	0	0	0	0	0
	W (7), pcu/h	493	0	458	0	0	0	0	0
	NW (8), pcu/h	0	0	0	0	0	0	0	0
	Entry flow, pcu/h	565	0	995	0	0	0	510	0
	Entry flow Lane 1, pcu/h	493	0	458	0	0	0	128	0
	Entry flow Lane 2, pcu/h	72	0	538	0	0	0	383	0
	Conflicting flow, pcu/h	458	0	128	0	0	0	72	0

Results: Approach Measures of Effectiveness

HCM 2010 Model *(build yr)*	N		E		S		W	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	786	804	976	982	NA	NA	958	961
Entry Flow Rates, veh/h	484	71	435	511	NA	NA	114	342
V/C ratio	**0.62**	**0.09**	**0.45**	**0.52**	#VALUE!	#VALUE!	**0.12**	**0.36**
Control Delay, s/veh	**14.7**	**5.3**	**8.8**	**10.2**	#VALUE!	#VALUE!	**4.9**	**7.6**
LOS	B	A	A	B	#VALUE!	#VALUE!	A	A
95th % Queue (ft)	**110**	**7**	**61**	**81**	#VALUE!	#VALUE!	**11**	**45**
Approach Delay, LOS	13.5 sec, LOS B		9.6 sec, LOS A		#VALUE!		6.9 sec, LOS A	

	NE		SE		SW		NW	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!			#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!			#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Approach Delay, LOS			#VALUE!				#VALUE!	

Calibrated Model *(future yr)*	N		E		S		W	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	1017	1065	1372	1389	NA	NA	1366	1375
Entry Flow Rates, veh/h	484	71	435	511	NA	NA	114	342
V/C ratio	**0.48**	**0.07**	**0.32**	**0.37**	#VALUE!	#VALUE!	**0.08**	**0.25**
Control Delay, s/veh	**9.1**	**4.0**	**5.4**	**5.9**	#VALUE!	#VALUE!	**3.3**	**4.7**
LOS	A	A	A	A	#VALUE!	#VALUE!	A	A
95th % Queue (ft)	**67**	**5**	**36**	**45**	#VALUE!	#VALUE!	**8**	**28**
Approach Delay, LOS	8.4 sec, LOS A		5.7 sec, LOS A		#VALUE!		4.4 sec, LOS A	

	NE		SE		SW		NW	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!			#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!			#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Approach Delay, LOS			#N/A				#N/A	

v2.1

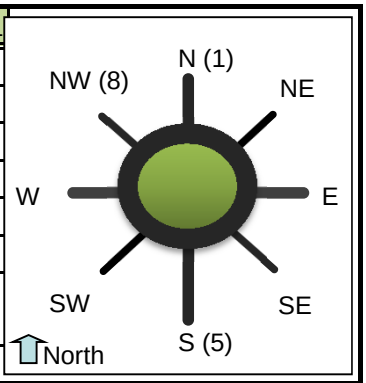
Bypass Lane Merge Point Analysis (if applicable)

Bypass Characteristics	Bypass #1	Bypass #2	Bypass #3	Bypass #4	Bypass #5	Bypass #6
Select Entry Leg from Bypass (FROM)						
Select Exit Leg for Bypass (TO)						
Does the bypass have a dedicated receiving lane?						
# of Conflicting Exit Flow Lanes	**2**	**2**	**2**	**2**	**2**	**2**
Volumes						
Entry Leg: Insert Right Turn Volume						
Exit Leg: ***(Select Input Method)***						
*Lane Flow in Exit Leg****						
Sum of inner circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
Sum of outer circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
*Critical Lane Flow (Manual) in Exit Leg****						
Volume Characteristics						
PHF (Entry Leg)						
F_{HV} (Entry Leg)						
F_{ped}						
PHF (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
F_{HV} (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
Volume Characteristics are already taken into account for Default method ONLY. Insert Values above if Manual method.						
Entry/Conflicting Flows						
Entry Flow						
Conflicting Critical Flow						
Bypass Lane Results						
Entry Capacity of Bypass, veh/h						
Flow Rates of Exiting Traffic, veh/h						
V/C ratio						
Control Delay, sec/pcu						
LOS						
95th % Queue (ft)						

General & Site Information

v2.1

Analyst:	GDOT Traffic Operations
Agency/Co:	GDOT
Date:	9/16/2014
Project or PI#:	PI-0010926
Year, Peak Hour:	2019(pm)
County/District:	Decatur
Intersection:	SR 38 BU @ SR 38 BY



Volumes

Volumes	Entry Legs (FROM)	N1 (1)	N2 (1)	NE1 (2)	NE2 (2)	E1 (3)	E2 (3)	SE1 (4)	SE2 (4)
Lane Designation		SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT
Exit Legs (TO)	N (1), vph						475		
	NE (2), vph								
	E (3), vph	455							
	SE (4), vph								
	S (5), vph								
	SW (6), vph								
	W (7), vph		120			300			
	NW (8), vph								
	Entry Volume, vph	455	120	0	0	300	475	0	0

		S1 (5)	S2 (5)	SW1 (6)	SW2 (6)	W1 (7)	W2 (7)	NW1 (8)	NW2 (8)
Lane Designation		SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT
	N (1), vph					35			
	NE (2), vph								
	E (3), vph						430		
	SE (4), vph								
	S (5), vph								
	SW (6), vph								
	W (7), vph								
	NW (8), vph								
	Entry Volume, vph	0	0	0	0	35	430	0	0

	N	NE	E	SE	S	SW	W	NW
# of Entry Flow Lanes	2	0	2	0	0	0	2	0
# of Conflict Flow Lanes	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	98%	100%	95%	100%	100%	100%	88%	100%
% Heavy Vehicles	2%	0%	5%	0%	0%	0%	12%	0%
% Bicycles	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians **(ped/hr)**	0	0	0	0	0	0	0	0
PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
F_{hv}	0.980	1.000	0.950	1.000	1.000	1.000	0.895	1.000
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows		N	NE	E	SE	S	SW	W	NW
Flow to	N (1), pcu/h	0	0	543	0	0	0	43	0
Leg #	NE (2), pcu/h	0	0	0	0	0	0	0	0
	E (3), pcu/h	504	0	0	0	0	0	522	0
	SE (4), pcu/h	0	0	0	0	0	0	0	0
	S (5), pcu/h	0	0	0	0	0	0	0	0
	SW (6), pcu/h	0	0	0	0	0	0	0	0
	W (7), pcu/h	133	0	343	0	0	0	0	0
	NW (8), pcu/h	0	0	0	0	0	0	0	0
	Entry flow, pcu/h	638	0	887	0	0	0	565	0
	Entry flow Lane 1, pcu/h	504	0	343	0	0	0	43	0
	Entry flow Lane 2, pcu/h	133	0	543	0	0	0	522	0
	Conflicting flow, pcu/h	343	0	43	0	0	0	504	0

Results: Approach Measures of Effectiveness

HCM 2010 Model *(build yr)*	N		E		S		W	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	856	871	1040	1042	NA	NA	693	710
Entry Flow Rates, veh/h	495	130	326	516	NA	NA	38	467
V/C ratio	**0.58**	**0.15**	**0.31**	**0.50**	#VALUE!	#VALUE!	**0.05**	**0.66**
Control Delay, s/veh	**12.7**	**5.6**	**6.6**	**9.3**	#VALUE!	#VALUE!	**5.8**	**17.6**
LOS	B	A	A	A	#VALUE!	#VALUE!	A	C
95th % Queue (ft)	**96**	**13**	**36**	**74**	#VALUE!	#VALUE!	**5**	**139**
Approach Delay, LOS	11.2 sec, LOS B		8.2 sec, LOS A		#VALUE!		16.7 sec, LOS C	

	NE		SE		SW		NW	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!			#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!			#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Approach Delay, LOS			#VALUE!				#VALUE!	

Calibrated Model *(future yr)*	N		E		S		W	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	1141	1181	1493	1500	NA	NA	886	932
Entry Flow Rates, veh/h	495	130	326	516	NA	NA	38	467
V/C ratio	**0.43**	**0.11**	**0.22**	**0.34**	#VALUE!	#VALUE!	**0.04**	**0.50**
Control Delay, s/veh	**7.7**	**4.0**	**4.2**	**5.4**	#VALUE!	#VALUE!	**4.5**	**10.2**
LOS	A	A	A	A	#VALUE!	#VALUE!	A	B
95th % Queue (ft)	**57**	**9**	**22**	**41**	#VALUE!	#VALUE!	**4**	**80**
Approach Delay, LOS	6.9 sec, LOS A		4.9 sec, LOS A		#VALUE!		9.8 sec, LOS A	

	NE		SE		SW		NW	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!			#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!			#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Approach Delay, LOS			#N/A				#N/A	

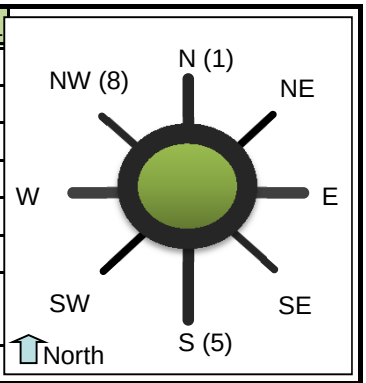
v2.1

Bypass Lane Merge Point Analysis (if applicable)						
Bypass Characteristics	**Bypass #1**	**Bypass #2**	**Bypass #3**	**Bypass #4**	**Bypass #5**	**Bypass #6**
Select Entry Leg from Bypass (FROM)						
Select Exit Leg for Bypass (TO)						
Does the bypass have a dedicated receiving lane?						
# of Conflicting Exit Flow Lanes	**2**	**2**	**2**	**2**	**2**	**2**
Volumes						
Entry Leg: Insert Right Turn Volume						
Exit Leg: ***(Select Input Method)***						
*Lane Flow in Exit Leg****						
Sum of inner circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
Sum of outer circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
*Critical Lane Flow (Manual) in Exit Leg****						
Volume Characteristics						
PHF (Entry Leg)						
F_{HV} (Entry Leg)						
F_{ped}						
PHF (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
F_{HV} (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
Volume Characteristics are already taken into account for Default method ONLY. Insert Values above if Manual method.						
Entry/Conflicting Flows						
Entry Flow						
Conflicting Critical Flow						
Bypass Lane Results						
Entry Capacity of Bypass, veh/h						
Flow Rates of Exiting Traffic, veh/h						
V/C ratio						
Control Delay, sec/pcu						
LOS						
95th % Queue (ft)						

General & Site Information

v2.1

Analyst:	GDOT Traffic Operations
Agency/Co:	GDOT
Date:	9/16/2014
Project or PI#:	PI-0010926
Year, Peak Hour:	2039(am)
County/District:	Decatur
Intersection:	SR 38 BU @ SR 38 BY



Volumes

Volumes	Entry Legs (FROM)	N1 (1)	N2 (1)	NE1 (2)	NE2 (2)	E1 (3)	E2 (3)	SE1 (4)	SE2 (4)
Lane Designation		SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT
Exit Legs (TO)	N (1), vph						540		
	NE (2), vph								
	E (3), vph	510							
	SE (4), vph								
	S (5), vph								
	SW (6), vph								
	W (7), vph		75			455			
	NW (8), vph								
	Entry Volume, vph	510	75	0	0	455	540	0	0

		S1 (5)	S2 (5)	SW1 (6)	SW2 (6)	W1 (7)	W2 (7)	NW1 (8)	NW2 (8)
Lane Designation		SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT
	N (1), vph					115			
	NE (2), vph								
	E (3), vph						355		
	SE (4), vph								
	S (5), vph								
	SW (6), vph								
	W (7), vph								
	NW (8), vph								
	Entry Volume, vph	0	0	0	0	115	355	0	0

	N	NE	E	SE	S	SW	W	NW
# of Entry Flow Lanes	2	0	2	0	0	0	2	0
# of Conflict Flow Lanes	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	98%	100%	95%	100%	100%	100%	88%	100%
% Heavy Vehicles	2%	0%	5%	0%	0%	0%	12%	0%
% Bicycles	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians **(ped/hr)**	0	0	0	0	0	0	0	0
PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
F_{hv}	0.980	1.000	0.950	1.000	1.000	1.000	0.895	1.000
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows		N	NE	E	SE	S	SW	W	NW
Flow to	N (1), pcu/h	0	0	618	0	0	0	140	0
Leg #	NE (2), pcu/h	0	0	0	0	0	0	0	0
	E (3), pcu/h	565	0	0	0	0	0	431	0
	SE (4), pcu/h	0	0	0	0	0	0	0	0
	S (5), pcu/h	0	0	0	0	0	0	0	0
	SW (6), pcu/h	0	0	0	0	0	0	0	0
	W (7), pcu/h	83	0	521	0	0	0	0	0
	NW (8), pcu/h	0	0	0	0	0	0	0	0
	Entry flow, pcu/h	649	0	1138	0	0	0	571	0
	Entry flow Lane 1, pcu/h	565	0	521	0	0	0	140	0
	Entry flow Lane 2, pcu/h	83	0	618	0	0	0	431	0
	Conflicting flow, pcu/h	521	0	140	0	0	0	565	0

Results: Approach Measures of Effectiveness

HCM 2010 Model *(build yr)*	N		E		S		W	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	750	770	967	974	NA	NA	662	681
Entry Flow Rates, veh/h	554	82	495	587	NA	NA	125	386
V/C ratio	**0.74**	**0.11**	**0.51**	**0.60**	#VALUE!	#VALUE!	**0.19**	**0.57**
Control Delay, s/veh	**20.8**	**5.8**	**10.1**	**12.2**	#VALUE!	#VALUE!	**7.6**	**14.8**
LOS	C	A	B	B	#VALUE!	#VALUE!	A	B
95th % Queue (ft)	**170**	**9**	**79**	**110**	#VALUE!	#VALUE!	**19**	**100**
Approach Delay, LOS	18.9 sec, LOS C		11.2 sec, LOS B		#VALUE!		13.1 sec, LOS B	
	NE		**SE**		**SW**		**NW**	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!			#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!			#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Approach Delay, LOS			#VALUE!				#VALUE!	

Calibrated Model *(future yr)*	N		E		S		W	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	955	1006	1355	1374	NA	NA	834	882
Entry Flow Rates, veh/h	554	82	495	587	NA	NA	125	386
V/C ratio	**0.58**	**0.08**	**0.36**	**0.43**	#VALUE!	#VALUE!	**0.15**	**0.44**
Control Delay, s/veh	**11.7**	**4.3**	**6.0**	**6.7**	#VALUE!	#VALUE!	**5.8**	**9.4**
LOS	B	A	A	A	#VALUE!	#VALUE!	A	A
95th % Queue (ft)	**98**	**7**	**45**	**58**	#VALUE!	#VALUE!	**15**	**63**
Approach Delay, LOS	10.8 sec, LOS B		6.4 sec, LOS A		#VALUE!		8.5 sec, LOS A	
	NE		**SE**		**SW**		**NW**	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!			#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!			#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Approach Delay, LOS			#N/A				#N/A	

v2.1

Bypass Lane Merge Point Analysis (if applicable)						
Bypass Characteristics	**Bypass #1**	**Bypass #2**	**Bypass #3**	**Bypass #4**	**Bypass #5**	**Bypass #6**
Select Entry Leg from Bypass (FROM)						
Select Exit Leg for Bypass (TO)						
Does the bypass have a dedicated receiving lane?						
# of Conflicting Exit Flow Lanes	**2**	**2**	**2**	**2**	**2**	**2**
Volumes						
Entry Leg: Insert Right Turn Volume						
Exit Leg: ***(Select Input Method)***						
*Lane Flow in Exit Leg****						
Sum of inner circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
Sum of outer circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
*Critical Lane Flow (Manual) in Exit Leg****						
Volume Characteristics						
PHF (Entry Leg)						
F_{HV} (Entry Leg)						
F_{ped}						
PHF (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
F_{HV} (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
Volume Characteristics are already taken into account for Default method ONLY. Insert Values above if Manual method.						
Entry/Conflicting Flows						
Entry Flow						
Conflicting Critical Flow						
Bypass Lane Results						
Entry Capacity of Bypass, veh/h						
Flow Rates of Exiting Traffic, veh/h						
V/C ratio						
Control Delay, sec/pcu						
LOS						
95th % Queue (ft)						

General & Site Information

v2.1

Analyst:	GDOT Traffic Operations
Agency/Co:	GDOT
Date:	9/16/2014
Project or PI#:	PI-0010926
Year, Peak Hour:	2039(pm)
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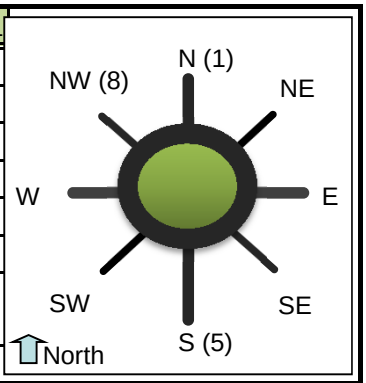


Volumes

Volumes	Entry Legs (FROM)	N1 (1)	N2 (1)	NE1 (2)	NE2 (2)	E1 (3)	E2 (3)	SE1 (4)	SE2 (4)
Lane Designation		SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT
Exit Legs (TO)	N (1), vph						545		
	NE (2), vph								
	E (3), vph	520							
	SE (4), vph								
	S (5), vph								
	SW (6), vph								
	W (7), vph		135			335			
	NW (8), vph								
	Entry Volume, vph	520	135	0	0	335	545	0	0

	S1 (5)	S2 (5)	SW1 (6)	SW2 (6)	W1 (7)	W2 (7)	NW1 (8)	NW2 (8)
Lane Designation	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT
N (1), vph					40			
NE (2), vph								
E (3), vph						490		
SE (4), vph								
S (5), vph								
SW (6), vph								
W (7), vph								
NW (8), vph								
Entry Volume, vph	0	0	0	0	40	490	0	0

	N	NE	E	SE	S	SW	W	NW
# of Entry Flow Lanes	2	0	2	0	0	0	2	0
# of Conflict Flow Lanes	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	98%	100%	95%	100%	100%	100%	88%	100%
% Heavy Vehicles	2%	0%	5%	0%	0%	0%	12%	0%
% Bicycles	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians **(ped/hr)**	0	0	0	0	0	0	0	0
PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
F_{hv}	0.980	1.000	0.950	1.000	1.000	1.000	0.895	1.000
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows		N	NE	E	SE	S	SW	W	NW
Flow to	N (1), pcu/h	0	0	623	0	0	0	49	0
Leg #	NE (2), pcu/h	0	0	0	0	0	0	0	0
	E (3), pcu/h	577	0	0	0	0	0	595	0
	SE (4), pcu/h	0	0	0	0	0	0	0	0
	S (5), pcu/h	0	0	0	0	0	0	0	0
	SW (6), pcu/h	0	0	0	0	0	0	0	0
	W (7), pcu/h	150	0	383	0	0	0	0	0
	NW (8), pcu/h	0	0	0	0	0	0	0	0
	Entry flow, pcu/h	726	0	1007	0	0	0	644	0
	Entry flow Lane 1, pcu/h	577	0	383	0	0	0	49	0
	Entry flow Lane 2, pcu/h	150	0	623	0	0	0	595	0
	Conflicting flow, pcu/h	383	0	49	0	0	0	577	0

Results: Approach Measures of Effectiveness

HCM 2010 Model *(build yr)*	N		E		S		W	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	831	847	1035	1038	NA	NA	656	675
Entry Flow Rates, veh/h	565	147	364	592	NA	NA	43	533
V/C ratio	**0.68**	**0.17**	**0.35**	**0.57**	#VALUE!	#VALUE!	**0.07**	**0.79**
Control Delay, s/veh	**16.4**	**6.0**	**7.1**	**10.8**	#VALUE!	#VALUE!	**6.2**	**26.2**
LOS	C	A	A	B	#VALUE!	#VALUE!	A	D
95th % Queue (ft)	**140**	**16**	**42**	**98**	#VALUE!	#VALUE!	**6**	**218**
Approach Delay, LOS	14.3 sec, LOS B		9.4 sec, LOS A		#VALUE!		24.7 sec, LOS C	

	NE		SE		SW		NW	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!			#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!			#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Approach Delay, LOS			#VALUE!				#VALUE!	

Calibrated Model *(future yr)*	N		E		S		W	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	1096	1139	1484	1492	NA	NA	825	873
Entry Flow Rates, veh/h	565	147	364	592	NA	NA	43	533
V/C ratio	**0.52**	**0.13**	**0.25**	**0.40**	#VALUE!	#VALUE!	**0.05**	**0.61**
Control Delay, s/veh	**9.3**	**4.3**	**4.4**	**6.0**	#VALUE!	#VALUE!	**4.9**	**13.4**
LOS	A	A	A	A	#VALUE!	#VALUE!	A	B
95th % Queue (ft)	**78**	**11**	**25**	**51**	#VALUE!	#VALUE!	**5**	**119**
Approach Delay, LOS	8.3 sec, LOS A		5.4 sec, LOS A		#VALUE!		12.7 sec, LOS B	

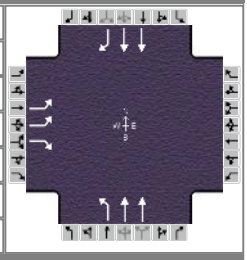
	NE		SE		SW		NW	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!			#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!			#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Approach Delay, LOS			#N/A				#N/A	

v2.1

Bypass Lane Merge Point Analysis (if applicable)						
Bypass Characteristics	**Bypass #1**	**Bypass #2**	**Bypass #3**	**Bypass #4**	**Bypass #5**	**Bypass #6**
Select Entry Leg from Bypass (FROM)						
Select Exit Leg for Bypass (TO)						
Does the bypass have a dedicated receiving lane?						
# of Conflicting Exit Flow Lanes	**2**	**2**	**2**	**2**	**2**	**2**
Volumes						
Entry Leg: Insert Right Turn Volume						
Exit Leg: ***(Select Input Method)***						
*Lane Flow in Exit Leg****						
Sum of inner circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
Sum of outer circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
*Critical Lane Flow (Manual) in Exit Leg****						
Volume Characteristics						
PHF (Entry Leg)						
F_{HV} (Entry Leg)						
F_{ped}						
PHF (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
F_{HV} (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
Volume Characteristics are already taken into account for Default method ONLY. Insert Values above if Manual method.						
Entry/Conflicting Flows						
Entry Flow						
Conflicting Critical Flow						
Bypass Lane Results						
Entry Capacity of Bypass, veh/h						
Flow Rates of Exiting Traffic, veh/h						
V/C ratio						
Control Delay, sec/pcu						
LOS						
95th % Queue (ft)						

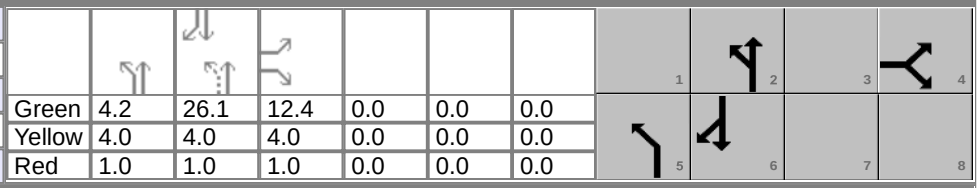
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Georgia Department of Transportation			Duration, h	0.25
Analyst	GDOT-District 4 Design	Analysis Date	Nov 17, 2015	Area Type	Other
Jurisdiction	District 4 - Tifton	Time Period		PHF	0.92
Intersection	SR 38 BU/SR 38 Bypass	Analysis Year	2019	Analysis Period	1> 7:00
File Name	0010926_HCS Traffic Analysis_Opening Year AM Volumes.xus				
Project Description	Realignment of SR 38 BU-Opening Year AM Volumes				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	445		65				105	315			400	470

Signal Information			
Cycle, s	57.7	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	4.2	26.1	12.4	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	1.0	1.0	1.0	0.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		9.0			1.0	4.0		7.3
Phase Duration, s		17.4			9.2	40.3		31.1
Change Period, $(Y+R_c)$, s		5.0			5.0	5.0		5.0
Max Allow Headway *(MAH)*, s		3.1			3.0	3.1		3.1
Queue Clearance Time (g_s), s		11.1			4.3	5.2		23.1
Green Extension Time (g_e), s		1.3			0.1	3.1		2.9
Phase Call Probability		1.00			0.84	1.00		1.00
Max Out Probability		0.00			0.00	0.00		0.02

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7		14				5	2			6	16
Adjusted Flow Rate *(v)*, veh/h	484		71				114	342			435	511
Adjusted Saturation Flow Rate *(s)*, veh/h/ln	1451		1329				1361	1360			1437	1279
Queue Service Time (g_s), s	9.1		2.5				2.3	3.2			5.6	21.1
Cycle Queue Clearance Time (g_c), s	9.1		2.5				2.3	3.2			5.6	21.1
Capacity *(c)*, veh/h	625		286				533	1664			1300	578
Volume-to-Capacity Ratio *(X)*	0.774		0.247				0.214	0.206			0.335	0.883
Available Capacity (c_a), veh/h	2359		1081				740	2494			1989	885
Back of Queue *(Q)*, veh/ln (50th percentile)	2.7		0.7				0.4	0.5			1.3	5.2
Overflow Queue (Q_3), veh/ln	0.0		0.0				0.0	0.0			0.0	0.0
Queue Storage Ratio *(RQ)* (50th percentile)	0.27		0.09				0.03	0.04			0.14	0.41
Uniform Delay (d_1), s/veh	21.4		18.8				6.7	5.0			10.2	14.4
Incremental Delay (d_2), s/veh	0.8		0.2				0.1	0.0			0.1	4.8
Initial Queue Delay (d_3), s/veh	0.0		0.0				0.0	0.0			0.0	0.0
Control Delay *(d)*, s/veh	22.1		19.0				6.7	5.0			10.3	19.2
Level of Service (LOS)	C		B				A	A			B	B
Approach Delay, s/veh / LOS	21.7		C	0.0			5.4		A	15.1		B
Intersection Delay, s/veh / LOS	14.7						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.8	C	2.8	C	0.7	A	2.4	B
Bicycle LOS Score / LOS		F			0.9	A	1.3	A

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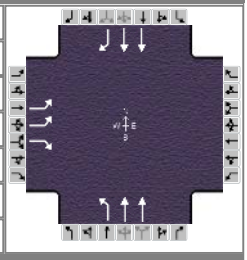
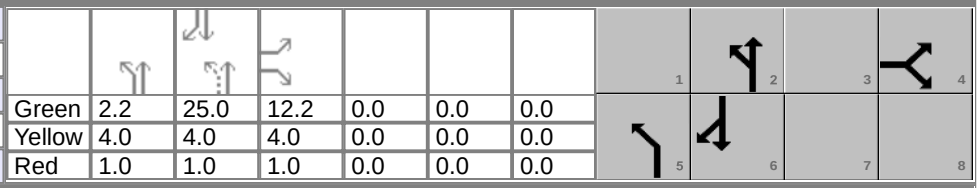
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Georgia Department of Transportation			Duration, h	0.25
Analyst	GDOT-District 4 Design	Analysis Date	Nov 17, 2015	Area Type	Other
Jurisdiction	District 4 - Tifton	Time Period		PHF	0.92
Intersection	SR 38 BU/SR 38 Bypass	Analysis Year	2019	Analysis Period	1> 7:00
File Name	0010926_HCS Traffic Analysis_Opening Year PM Volumes.xus				
Project Description	Realignment of SR 38BU-Opening Year PM Volumes				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	455		120				35	430			300	475

Signal Information			
Cycle, s	54.4	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	2.2	25.0	12.2	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	1.0	1.0	1.0	0.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		9.0			1.0	4.0		7.3
Phase Duration, s		17.2			7.2	37.2		30.0
Change Period, $(Y+R_c)$, s		5.0			5.0	5.0		5.0
Max Allow Headway *(MAH)*, s		3.1			3.0	3.1		3.1
Queue Clearance Time (g_s), s		10.7			2.7	6.6		21.9
Green Extension Time (g_e), s		1.4			0.0	3.2		3.0
Phase Call Probability		1.00			0.44	1.00		1.00
Max Out Probability		0.00			0.00	0.00		0.02

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7		14				5	2			6	16
Adjusted Flow Rate *(v)*, veh/h	495		130				38	467			326	516
Adjusted Saturation Flow Rate *(s)*, veh/h/ln	1451		1329				1361	1360			1437	1279
Queue Service Time (g_s), s	8.7		4.6				0.7	4.6			3.8	19.9
Cycle Queue Clearance Time (g_c), s	8.7		4.6				0.7	4.6			3.8	19.9
Capacity *(c)*, veh/h	651		298				564	1612			1323	589
Volume-to-Capacity Ratio *(X)*	0.760		0.437				0.067	0.290			0.246	0.877
Available Capacity (c_a), veh/h	2497		1144				833	2640			2105	937
Back of Queue *(Q)*, veh/ln (50th percentile)	2.5		1.2				0.1	0.7			0.9	4.6
Overflow Queue (Q_3), veh/ln	0.0		0.0				0.0	0.0			0.0	0.0
Queue Storage Ratio *(RQ)* (50th percentile)	0.25		0.15				0.01	0.05			0.09	0.36
Uniform Delay (d_1), s/veh	19.8		18.2				6.3	5.5			9.0	13.3
Incremental Delay (d_2), s/veh	0.7		0.4				0.0	0.0			0.0	3.6
Initial Queue Delay (d_3), s/veh	0.0		0.0				0.0	0.0			0.0	0.0
Control Delay *(d)*, s/veh	20.5		18.6				6.3	5.5			9.0	16.9
Level of Service (LOS)	C		B				A	A			A	B
Approach Delay, s/veh / LOS	20.1		C	0.0			5.6		A	13.8		B
Intersection Delay, s/veh / LOS	13.7						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.8	C	2.8	C	0.7	A	2.4	B
Bicycle LOS Score / LOS		F			0.9	A	1.2	A

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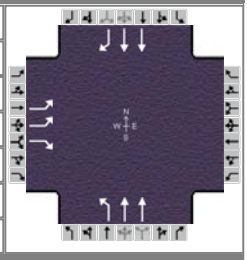
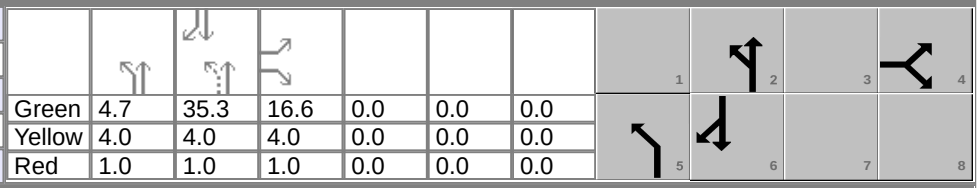
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Georgia Department of Transportation			Duration, h	0.25
Analyst	GDOT-District 4 Design	Analysis Date	Nov 17, 2015	Area Type	Other
Jurisdiction	District 4 - Tifton	Time Period		PHF	0.92
Intersection	SR 38 BU/SR 38 Bypass	Analysis Year	2039	Analysis Period	1> 7:00
File Name	0010926_HCS Traffic Analysis_Design Year AM Volumes.xus				
Project Description	Realignment of SR 38 BU-Design Year AM Volumes				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	510		75				115	355			455	540

Signal Information			
Cycle, s	71.6	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	4.7	35.3	16.6	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	1.0	1.0	1.0	0.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		9.0			1.0	4.0		7.3
Phase Duration, s		21.6			9.7	50.0		40.3
Change Period, $(Y+R_c)$, s		5.0			5.0	5.0		5.0
Max Allow Headway *(MAH)*, s		3.1			3.0	3.1		3.1
Queue Clearance Time (g_s), s		15.0			5.0	6.4		32.8
Green Extension Time (g_e), s		1.5			0.1	3.7		2.5
Phase Call Probability		1.00			0.92	1.00		1.00
Max Out Probability		0.00			0.00	0.00		0.38

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7		14				5	2			6	16
Adjusted Flow Rate *(v)*, veh/h	554		82				125	386			495	587
Adjusted Saturation Flow Rate *(s)*, veh/h/ln	1451		1329				1361	1360			1437	1279
Queue Service Time (g_s), s	13.0		3.6				3.0	4.4			7.5	30.8
Cycle Queue Clearance Time (g_c), s	13.0		3.6				3.0	4.4			7.5	30.8
Capacity *(c)*, veh/h	671		308				509	1711			1419	632
Volume-to-Capacity Ratio *(X)*	0.826		0.265				0.246	0.225			0.348	0.929
Available Capacity (c_a), veh/h	1900		871				666	2009			1602	713
Back of Queue *(Q)*, veh/ln (50th percentile)	4.1		1.0				0.6	0.9			2.0	10.0
Overflow Queue (Q_3), veh/ln	0.0		0.0				0.0	0.0			0.0	0.0
Queue Storage Ratio *(RQ)* (50th percentile)	0.42		0.13				0.04	0.06			0.20	0.79
Uniform Delay (d_1), s/veh	26.2		22.6				7.5	5.7			11.1	17.0
Incremental Delay (d_2), s/veh	1.0		0.2				0.1	0.0			0.1	16.6
Initial Queue Delay (d_3), s/veh	0.0		0.0				0.0	0.0			0.0	0.0
Control Delay *(d)*, s/veh	27.2		22.7				7.6	5.8			11.2	33.6
Level of Service (LOS)	C		C				A	A			B	C
Approach Delay, s/veh / LOS	26.6		C	0.0			6.2		A	23.3		C
Intersection Delay, s/veh / LOS	20.3						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	2.9	C	0.7	A	2.4	B
Bicycle LOS Score / LOS		F			0.9	A	1.4	A

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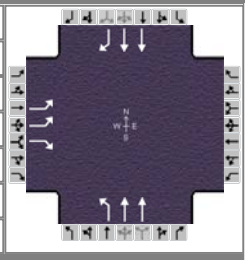
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Georgia Department of Transportation			Duration, h	0.25
Analyst	GDOT-District 4 Design	Analysis Date	Nov 17, 2015	Area Type	Other
Jurisdiction	District 4 - Tifton	Time Period		PHF	0.92
Intersection	SR 38 BU/SR 38 Bypass	Analysis Year	2039	Analysis Period	1> 7:00
File Name	0010926_HCS Traffic Analysis_Design Year PM Volumes.xus				
Project Description	Realignment of SR 38BU-Design Year PM Volumes				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	520		135				40	490			335	545

Signal Information			
Cycle, s	68.5	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

							1	2	3	4
Green	2.8	34.3	16.4	0.0	0.0	0.0	5	6	7	8
Yellow	4.0	4.0	4.0	0.0	0.0	0.0				
Red	1.0	1.0	1.0	0.0	0.0	0.0				

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		9.0			1.0	4.0		7.3
Phase Duration, s		21.4			7.8	47.2		39.3
Change Period, $(Y+R_c)$, s		5.0			5.0	5.0		5.0
Max Allow Headway *(MAH)*, s		3.1			3.0	3.1		3.1
Queue Clearance Time (g_s), s		14.6			3.0	8.4		31.5
Green Extension Time (g_e), s		1.7			0.0	3.8		2.7
Phase Call Probability		1.00			0.56	1.00		1.00
Max Out Probability		0.00			0.00	0.00		0.29

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7		14				5	2			6	16
Adjusted Flow Rate *(v)*, veh/h	565		147				43	533			364	592
Adjusted Saturation Flow Rate *(s)*, veh/h/ln	1451		1329				1361	1360			1437	1279
Queue Service Time (g_s), s	12.6		6.5				1.0	6.4			5.0	29.5
Cycle Queue Clearance Time (g_c), s	12.6		6.5				1.0	6.4			5.0	29.5
Capacity *(c)*, veh/h	693		318				559	1674			1441	641
Volume-to-Capacity Ratio *(X)*	0.816		0.462				0.078	0.318			0.253	0.924
Available Capacity (c_a), veh/h	1986		910				760	2100			1674	745
Back of Queue *(Q)*, veh/ln (50th percentile)	3.9		1.8				0.2	1.3			1.2	9.2
Overflow Queue (Q_3), veh/ln	0.0		0.0				0.0	0.0			0.0	0.0
Queue Storage Ratio *(RQ)* (50th percentile)	0.40		0.23				0.01	0.09			0.13	0.73
Uniform Delay (d_1), s/veh	24.7		22.4				6.9	6.3			9.8	15.9
Incremental Delay (d_2), s/veh	0.9		0.4				0.0	0.0			0.0	14.8
Initial Queue Delay (d_3), s/veh	0.0		0.0				0.0	0.0			0.0	0.0
Control Delay *(d)*, s/veh	25.6		22.7				6.9	6.4			9.8	30.7
Level of Service (LOS)	C		C				A	A			A	C
Approach Delay, s/veh / LOS	25.0	C		0.0			6.4	A		22.7	C	
Intersection Delay, s/veh / LOS	19.3						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	2.9	C	0.7	A	2.4	B
Bicycle LOS Score / LOS		F			1.0	A	1.3	A

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Decatur County

P.I. Number: 0010926

Correctable Crash Summary

Crash History:

Year	Total Crashes	Crash Types						Severity		
		Angle	Rear End	Head On	Fixed Object	Sideswipe Same	Other	PDO	Injury	Fatal
2009	2	2	0	0	0	0	0	0	2	1
2010	0	0	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0	0	0
2012	1	0	1	0	0	0	0	1	0	0
2013	2	1	1	0	0	0	0	1	1	0
Total	**5**	**3**	**2**	**0**	**0**	**0**	**0**	**2**	**3**	**1**

Michael D. Turpeau Jr.
8/25/2015

BENEFIT COST ANALYSIS WORKSHEET

US 84/SR 38BUS @ US 84/SR 38 Bypass and Frontage Road
Decatur County

ACCIDENT DATA

Description	Symbol	Value
Property Damage Accidents (no fatality or injury)	P	0.4
Fatalities	F	0.2
Injuries	I	0.6

FIXED VALUES

Description	Symbol	Value
Fatality Cost	Fc	$9,100,000
Injury Cost	Ic	$955,500
Property Damage Cost	Pc	$27,300
Maintenance/Operating Cost	Cm	$20,000

TABLE VALUES

Description	Symbol	Value
Reduction Factor (fatalities and injuries) (Appendix E)	R	0.4506
Reduction Factor (property damage) (Appendix E)	Rp	0.4506
Capital Recovery Factor (Appendix E)	Ek	0.135
Initial Improvement Cost (Itemized Cost Estimate)	Ci	$3,745,093.25

Q = Weighted cost of fatal and injury collisions

$$Q = \frac{(Fc \times F) + (Ic \times I)}{F + I}$$

Q = 2991625

B = Benefit

B = Q (F + I) (R) + Pc (P) (Rp)

B = 1083341.532

C = Cost

C = Ek (Ci) + Cm

C = 525587.5888

B/C = Benefit/Cost Ratio

B/C = 2.06120075

BENEFIT/COST RATIO: 2.06

BENEFIT COST ANALYSIS FACTOR DEFINITIONS

F: annual number of collisions involving fatatlities during study period

I: average annual number of collisions involving injured people for the period of the study

P: average annual number of collisions involoving only property damage for the period of the study

R: reduction of fatal and injury collisions by type (from Table A - Appendix E)

R_p: reduction of property damage only collisions by type (from Table A - Appendix E)

P_c: average cost, in thousands of $, per property damage only collision

Q: weighted cost, in thousands of $, of fatal and injury collisions

I_c: average cost per injury in thousands of $

F_c: average cost per fatality in thousands of $

E_k: capital recovery factor based on countermeasure life (from Table B - Appendix E)

C_i: estimated intial cost of the countermeasure (cost of the improvement including r/w) in thousands of $

C_m: estimated annual maintenance and operating cost of the countermeasure in thousands of $

District 4
Traffic Operations

Bainbridge By-Pass 100%
Build Year AADT Rights Excluded

Signal Warrants - Summary

Major Street Approaches

Northbound: **ByPAss**
Number of Lanes: **2**
Approach Speed: **45**
Total Approach Volume: **4,997**

Southbound: **BYpass**
Number of Lanes: **2**
Approach Speed: **45**
Total Approach Volume: **3,951**

Minor Street Approaches

Eastbound: **Shotwell**
Number of Lanes: **1**
Total Approach Volume: **5,048**

Westbound: **0**
Number of Lanes: **1**
Total Approach Volume: **0**

Warrant Summary **(Rural values apply.)**

Warrant 1 - Eight Hour Vehicular Volumes ..... **Satisfied**

Warrant 1A - Minimum Vehicular Volume ..... **Satisfied**
Required volumes reached for 12 hours, 8 are needed

Warrant 1B - Interruption of Continuous Traffic ..... **Not Satisfied**
Required volumes reached for 2 hours, 8 are needed

Warrant 1 A&B - Combination of Warrants ..... **Satisfied**
Required volumes reached for 8 hours, 8 are needed

Warrant 2 - Four Hour Volumes ..... **Satisfied**
Number of hours (13) volumes exceed minimum >= minimum required (4).

Warrant 3 - Peak Hour ..... **Satisfied**

Warrant 3A - Peak Hour Delay ..... **Not Satisfied**
Total approach volumes and delays on minor street do not exceed minimums for any hour.

Warrant 3B - Peak Hour Volumes ..... **Satisfied**
Volumes exceed minimums for at least one hour.

Warrant 4 - Pedestrian Volumes ..... **Not Satisfied**
Required 4 Hr pedestrian volume reached for 0 hour(s) and the single hour volume for 0 hour(s)

Warrant 5 - School Crossing ..... **Not Satisfied**
Number of gaps > .0 seconds (0) exceeds the number of minutes in the crossing period (0).

Warrant 6 - Coordinated Signal System ..... **Not Satisfied**
No adjacent coordinated signals are present

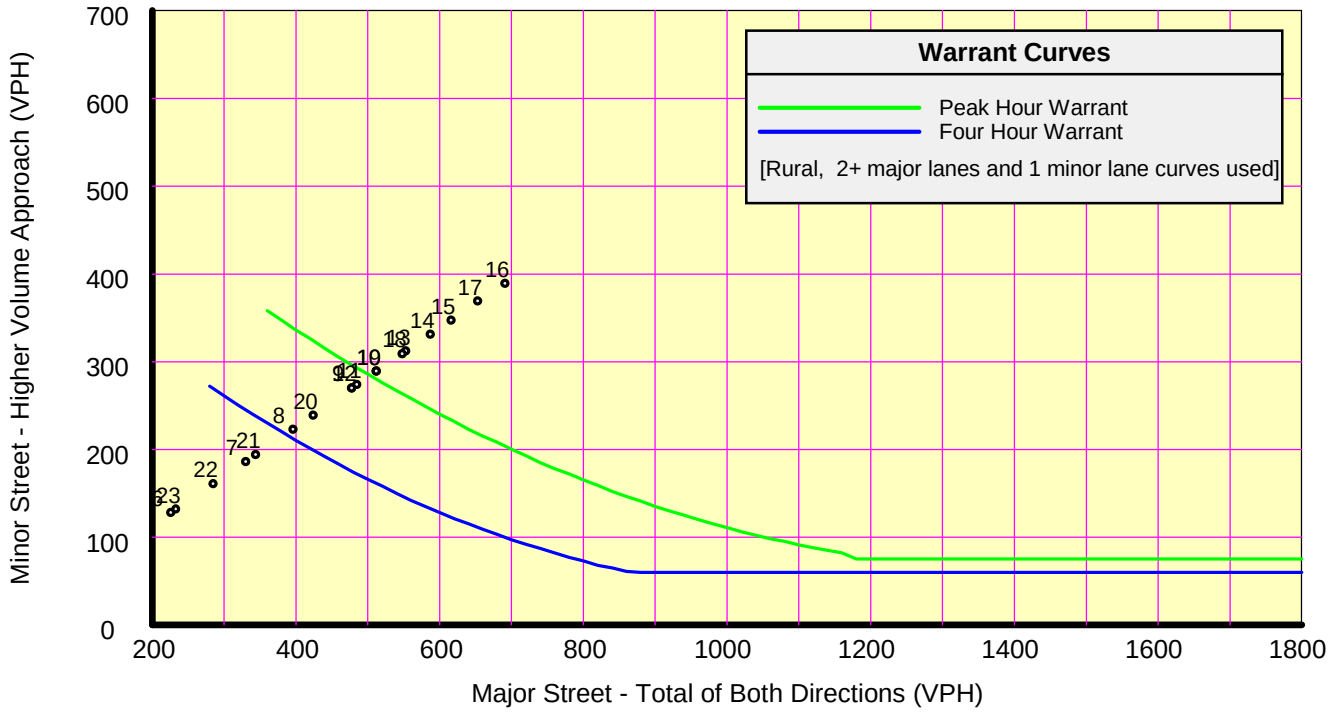
Warrant 7 - Crash Experience ..... **Not Satisfied**
Number of accidents (2) is less than minimum (5). Volume minimums are met.

Warrant 8 - Roadway Network ..... **Not Satisfied**
Major Route conditions not met. One or more volume requirement met.

District 4
Traffic Operations

Bainbridge By-Pass 100%
Build Year AADT Rights Excluded

Signal Warrants - Summary



Analysis of 8-Hour Volume Warrants:

Hour	Major	Higher Minor		War-1A			War-1B			War-1A&B		
Begin	Total	Vol	Dir	Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?
00:00	169	95	EB	420-No	105-No	---	630-No	53-Yes	Minor	504-No	84-Yes	Minor
01:00	118	67	EB	420-No	105-No	---	630-No	53-Yes	Minor	504-No	84-No	---
02:00	81	45	EB	420-No	105-No	---	630-No	53-No	---	504-No	84-No	---
03:00	68	38	EB	420-No	105-No	---	630-No	53-No	---	504-No	84-No	---
04:00	68	38	EB	420-No	105-No	---	630-No	53-No	---	504-No	84-No	---
05:00	93	53	EB	420-No	105-No	---	630-No	53-Yes	Minor	504-No	84-No	---
06:00	226	128	EB	420-No	105-Yes	Minor	630-No	53-Yes	Minor	504-No	84-Yes	Minor
07:00	330	186	EB	420-No	105-Yes	Minor	630-No	53-Yes	Minor	504-No	84-Yes	Minor
08:00	396	223	EB	420-No	105-Yes	Minor	630-No	53-Yes	Minor	504-No	84-Yes	Minor
09:00	478	270	EB	420-Yes	105-Yes	Both	630-No	53-Yes	Minor	504-No	84-Yes	Minor
10:00	512	289	EB	420-Yes	105-Yes	Both	630-No	53-Yes	Minor	504-Yes	84-Yes	Both
11:00	485	274	EB	420-Yes	105-Yes	Both	630-No	53-Yes	Minor	504-No	84-Yes	Minor
12:00	478	270	EB	420-Yes	105-Yes	Both	630-No	53-Yes	Minor	504-No	84-Yes	Minor
13:00	553	312	EB	420-Yes	105-Yes	Both	630-No	53-Yes	Minor	504-Yes	84-Yes	Both
14:00	587	331	EB	420-Yes	105-Yes	Both	630-No	53-Yes	Minor	504-Yes	84-Yes	Both
15:00	616	347	EB	420-Yes	105-Yes	Both	630-No	53-Yes	Minor	504-Yes	84-Yes	Both
16:00	691	389	EB	420-Yes	105-Yes	Both	630-Yes	53-Yes	Both	504-Yes	84-Yes	Both
17:00	653	369	EB	420-Yes	105-Yes	Both	630-Yes	53-Yes	Both	504-Yes	84-Yes	Both
18:00	548	309	EB	420-Yes	105-Yes	Both	630-No	53-Yes	Minor	504-Yes	84-Yes	Both
19:00	512	289	EB	420-Yes	105-Yes	Both	630-No	53-Yes	Minor	504-Yes	84-Yes	Both
20:00	424	239	EB	420-Yes	105-Yes	Both	630-No	53-Yes	Minor	504-No	84-Yes	Minor
21:00	344	194	EB	420-No	105-Yes	Minor	630-No	53-Yes	Minor	504-No	84-Yes	Minor
22:00	285	161	EB	420-No	105-Yes	Minor	630-No	53-Yes	Minor	504-No	84-Yes	Minor
23:00	233	132	EB	420-No	105-Yes	Minor	630-No	53-Yes	Minor	504-No	84-Yes	Minor

City
of
Bainbridge

Georgia
at Its
Best

P.O. Box 158
Bainbridge, Georgia 39818

www.bainbridgecity.com

Phone (229) 248-2000
Fax (229) 248-2008

May 21, 2015

Mr. Albert V. Shelby, III
State Program Delivery Engineer
Georgia Department of Transportation
One Atlanta Center, 600 West Peachtree Street, NW
Atlanta, Georgia 30308

Dear Mr. Shelby:

The City of Bainbridge is in receipt of your recent letter concerning improvements at the SR 38BU/US 84BU at SR38/US 84 intersection in Bainbridge. We understand that the state has identified this as a potential location for the installation of a roundabout. After careful consideration, the city is unable to support or endorse this plan. The city strongly supports the effort to improve safety and operational efficiency at this location but we do not think that a roundabout would accomplish this goal. The presence of two separate fuel terminals at this location with the supporting truck movements combined with school and business traffic would, we think, overwhelm a roundabout and actually make the intersection more dangerous. We urge the Georgia Department of Transportation to continue to study improvements at this intersection and to identify other solutions to improve safety and better manage the flow of traffic at this location.

Please let me know if you have require any further input from the city in regards to this matter.

Yours truly,

Chris Hobby
City Manager

RECEIVED
MAY 26 2015

Meeting Minutes

BY: Brent Moseley, Project Manager
DATE: March 27, 2014; District 4 - Assembly Room
SUBJECT: 0010926 – Concept Meeting

ATTENDEES:

Brent Moseley	Program Delivery
Jason Willingham	District Design
Sandy Griffin	District Design
Shane Pridgen	District Planning & Programming
Mike Simmons	District Utilities
Donna Garrison	Engineering Services
Sadi Hasona	Area 7 Construction
Randy Rathburn	District Construction
Brent Thomas	District Preconstruction
Joe Sheffield	District Engineer
Scott Chambers	District Construction
Van Mason	District Traffic Operations
Robbie Dixon	AT&T
Brent Lupo	District Traffic Operations
Geno Hasty	District Traffic Operations

- Brent Moseley opened up the meeting with introductions to everyone attending.
- Brent Moseley discussed the signal design consultant contract and the environmental contract.
- Brent Moseley turned the meeting over to Sandy Griffin, Design.
- Sandy Griffin introduced Jason Willingham as the designer.
- Jason Willingham read the Concept Report and then Sandy opened the discussion up to the other offices present.
- This is a Safety project programmed by the Office of Traffic Operations that consists of the intersection realignment & traffic signal installation at the intersection of US 84/SR 38 BUS & US 84/SR 38 Bypass. PE funds are currently authorized for $230,431.84 and the CST estimate is at $3,438,907 and is programmed for FY16.
- Mike Simmons, District Utilities, stated that a SUE and a PID would not be required.
- Robbie Dixon, AT&T, stated that one of their main fibers runs along the north side of SR 38BU/US 84BU and that the project doesn't appear to affect it. Robbie also stated that there may be a small line on the south west side of the intersection but that if there was any conflict it would be small.
- Mike Simmons stated that they are still waiting on the City of Bainbridge and Georgia Power to respond and that there should be no conflict.
- Brent Mosely stated that there might be a gas line present, but Mike Simmons said that there is not one shown.

- Sadi Hasona, District Construction, asked if access for trucks would still be available and Jason Willingham responded that the trucks would have access from the new alignment of Frontage Rd.
- Shane Pridgen asked if the GDOT owned Frontage Rd. and Brent Mosely responded that GDOT does own it.
- Van Mason inquired if the alternate design was just bringing the by-pass into SR 38BU and Jason Willingham affirmed it was.
- Geno Hasty stated that although the chosen design cost more than the alternative, it would be the best solution and provide the best long term benefits.
- Brent Thomas stated that an advanced warning beacon had been discussed for SR 38/US 84 By-pass and asked Traffic Operations if they thought it was still needed. Geno Hasty responded that it would be needed on the east bound approach only.
- Donna Garrison made comments to assure the existing driveways would have the appropriate access and to verify the cost estimate.
- Joe Sheffield stated that the construction cost estimate seemed large.
- Sandy Griffin moved the meeting to the review of the plan layouts.
- Van Mason asked about the driveway access and Jason Willingham responded.
- Geno Hasty stated he wished we could take out the crest vertical curve that is to the east of the project but that it was out of the scope of the project.
- Joe Sheffield inquired about the truck docking areas and how they would be serviced.
- Brent Thomas asked if left turns would be allowed out of Frontage Rd. and Geno and Van stated that the signals should provide acceptable gaps for this.
- Other minor project discussions took place, no additional questions or comments were received and the meeting was adjourned by Brent Moseley at 11:20 a.m.

CONCEPT MEETING
SIGN IN SHEET

PROJECT NO.: N/A
P. I. NO.: 0010926
COUNTY: DECATUR
DATE: MARCH 27, 2014
TIME: 10:00 AM

NAME	AGENCY	PHONE NO.
Jason E. Willingham	GDOT	229-391-5458
Shane Pridgen	GDOT	229-391-5471
Brent Moseley	GDOT	912-661-7157
Brent A. Thomas	GDOT	229-386-3300
Mike Simmons	GDOT	229 391-5447
DONNA GARRISON	GDOT	229-391-5470
SADI HASONA	GDOT	229 309-9955
JOE W. SHEFFIELD	GDOT	229-386-3250
Van Mason	GDOT	229-386-3435
Brent Lupo	GDOT	229-386-3435
GENO Hasty	GDOT	229 386-3435
Robbie Dixon	AT+T	229-333-5072
SCOTT CHAMBERS	GDOT	229 386 3304
Sandy Griffin	GDOT	229-391-5460