

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

Project Type: <u>Roundabout</u>	P.I. Number: <u>0009890</u>
GDOT District: <u>6</u>	County: <u>Whitfield</u>
Federal Route Number: <u>N/A</u>	State Route Number: <u>2 @ 201</u>

Project Description: Roundabout at the intersection of SR2 and SR 201

Submitted for approval:

<i>C. Andy Conway</i> Office of Roadway Design	<u>4/17/13</u> DATE
<i>David Rice, Jr.</i> Office of Program Delivery	<u>7/31/2013</u> DATE
<i>Perry Black</i> GDOT Project Manager	<u>7/25/13</u> DATE

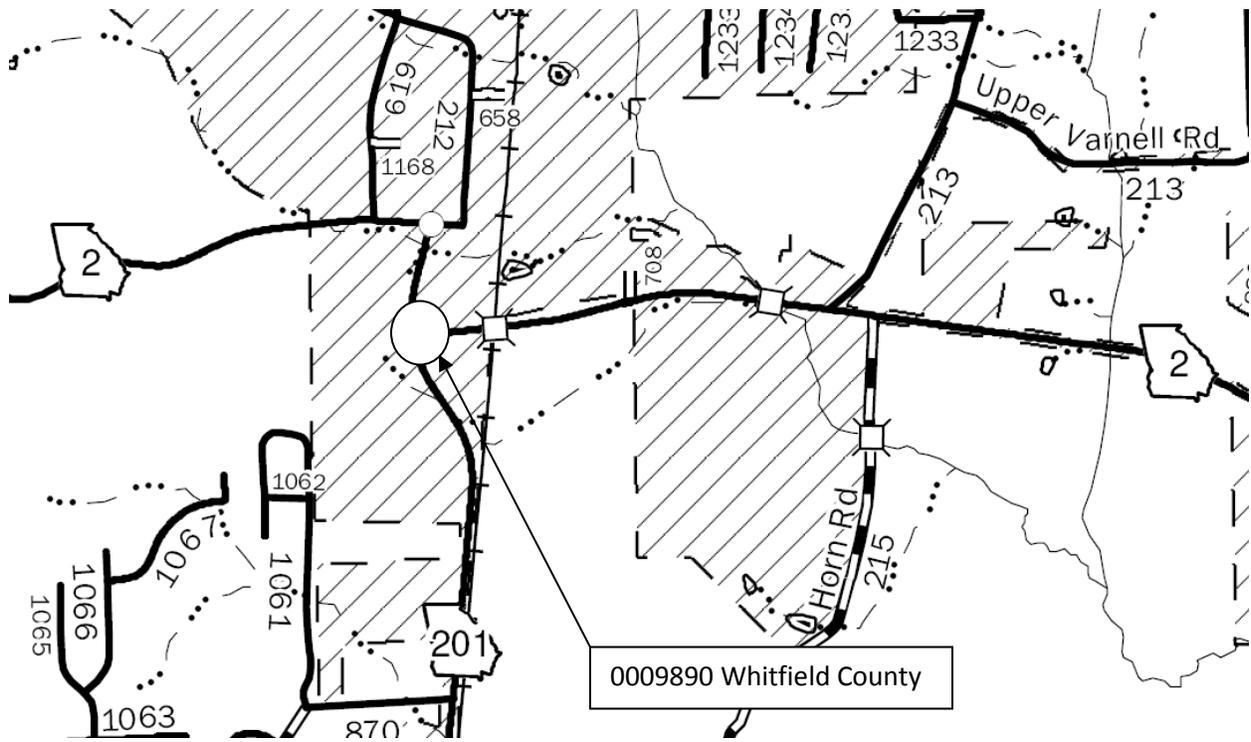
** Recommendation on file*
Recommendation for approval:

<i>* Glenn Bowman / KLP</i> Program Control Administrator	<u>8-19-13</u> DATE
<i>* Kathy Zahul / KLP</i> State Environmental Administrator	<u>8-20-13</u> DATE
<i>* Lisa Myers / KLP</i> State Traffic Engineer	<u>8-7-13</u> DATE
<i>* Jun Birnkammer / KLP</i> Project Review Engineer	<u>8-8-13</u> DATE
<i>* DeWayne Comer / KLP</i> State Utilities Engineer	<u>8-6-13</u> DATE
<i>* DeWayne Comer / KLP</i> District Engineer	<u>8-6-13</u> DATE
State Transportation Financial Management Administrator	DATE

The concept as presented herein and submitted for approval is consistent with that which is included in the Regional Transportation Plan (RTP) and/or the State Transportation Improvement Program (STIP).

<i>for Matthew Paula</i> State Transportation Planning Administrator	<u>8/14/13</u> DATE
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PROJECT LOCATION



PLANNING & BACKGROUND DATA

Project Justification Statement: This project proposes to improve the operation of the existing intersection of SR 2/South Spring St and SR 201/Prater Mill Road in Whitfield County, GA, while reducing the frequency and severity of crashes at the intersection. In Georgia, nearly a third of fatal crashes occur at intersections making intersection safety a focus area for the Georgia Department of Transportation. Nationally intersection crashes account for 40% of all reported crashes and approximately 20% of traffic fatalities. Of those fatalities, nearly 50% are the result of angle collisions. Angle collisions are often high speed, high impact crashes which often result in serious injuries or fatalities. Crash data from 2005-2009 indicated that 15 crashes occurred at this intersection resulting in 6 total injuries. Of those crashes 26% were angle collisions accounting for 60% of the injuries.

Description of the proposed project: This project proposes to improve the operation of the existing intersection of State Route 201 (SR 201) and State Route 2 (SR 2). The proposed project length is approximately 0.25 miles. The project is located in the City of Varnell, in Whitfield County. The posted speed for both SR 201 and SR 2 is 35 mph. The intersection is configured as a three leg "T" intersection with SR 201 forming the south approach, SR 2 forming the east approach, and both routes combining to form the north approach. Several alternates were analyzed for this intersection. An All-way Stop Control, a single lane roundabout and Signalizing were studied. Based on the findings in the study, the preferred alternate all-way stop control is recommended for this concept.

Federal Oversight: Full Oversight Exempt State Funded Other

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

Regional Commission: N/A RC – Northwest Georgia RC
RC Project ID #

Congressional District(s): 14

Projected Traffic ADT:

Current Year (2011): 8,800 Open Year (2016): 9,900 Design Year (2036): 14,500

Functional Classification (Mainline): Rural Minor Arterial

Is this project on a designated bike route? No YES

Is this project located on a pedestrian plan? No YES

Is this project located on or part of a transit network? No YES

CONTEXT SENSITIVE SOLUTIONS

Issues of Concern: None anticipated.

DESIGN AND STRUCTURAL DATA

Mainline Design Features: SR 2 and SR 201 (All Design features to remain unchanged)

Major Structures: N/A

Major Interchanges/Intersections: SR 2 @ SR 201

Utility Involvements: N/A

Public Interest Determination Policy and Procedure recommended (Utilities)? YES NO
SUE Required: Yes No

Railroad Involvement: None

Right-of-Way: None anticipated.

Location and Design approval: Not Required Required

Off-site Detours Anticipated: No Yes Undetermined

Transportation Management Plan Anticipated: YES NO

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

Design Variances to GDOT standard criteria anticipated: None Anticipated.

VE Study anticipated: No Yes Completed

ENVIRONMENTAL DATA

Anticipated Environmental Document:

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

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

Environmental Permits/Variations/Commitments/Coordination anticipated: None

Is a PAR required? No Yes Completed

NEPA/GEPA: N/A, This project is expected to be a NO BUILD.

Ecology: No protected species issues are expected.

History: Preliminary screenings indicate no history issues.

Archeology: Preliminary screenings indicate no archeology issues.

Air & Noise: There are no air/noise issues expected.

Public Involvement: None anticipated.

Major stakeholders: Traveling public and area businesses.

ROUNDABOUTS

Lighting agreement/commitment letter received: No Yes

Whitfield County signed a commitment letter on 10/14/2010 for installation and maintenance for lighting.

Planning Level assessment:

N/A Information and recommendation included in attached **Traffic Engineering Study for Proposed Roundabout at SR 2 @ SR 201 (See attachments)**

Feasibility Study: It is recommended by the Office of Roadway Design that this project not move forward as a roundabout. The All Way Stop Control alternate will provide an open year LOS of C and maintain an acceptable LOS of E through year 2026. This study indicates that a the All Way Stop Control alternate will be a feasible resolution to provide functional capacity at this intersection in the build and design years based on the projected traffic volumes at a greatly reduced construction cost. The purpose of the current study was exclusively aimed at evaluating the feasibility of implementation of intersection improvements at SR 201/ SR 2 intersection.

Peer Review required: No Yes Completed–Date: June 26, 2012

CONSTRUCTION

Issues potentially affecting constructability/construction schedule: None.

Early Completion Incentives recommended for consideration: No Yes

PROJECT RESPONSIBILITIES

Project Activities:

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

Materials Testing	
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Lighting required: No Yes

Initial Concept Meeting: N/A

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Concept Meeting: N/A

Other projects in the area: P.I. 0011064 widening and reconstruction, P.I. M004533 resurface and maintenance, P.I. 631250 passing lanes and reconstruction

Other coordination to date: None.

Project Cost Estimate and Funding Responsibilities:

	Breakdown of PE	ROW	Utility	CST*	Environmental Mitigation	Total Cost
By Whom	GDOT			GDOT		
\$ Amount	\$180,000	none	none	0	none	
Date of Estimate	5/25/2011					

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

ALTERNATIVES DISCUSSION

Alternative selection:

Preferred Alternative 1: All-way Stop Control			
Estimated Property Impacts:	0	Estimated Total Cost:	\$2,100
Estimated ROW Cost:	0	Estimated CST Time:	1 month
Rationale: The all-way stop control operates at a LOS C in the open year and LOS F in the design year. In 2026, the intersection will operate at a LOS E. The cost to build this alternate is approximately \$2,100.			

Alternative 2: Signalization			
Estimated Property Impacts:	0	Estimated Total Cost:	\$280,517.70
Estimated ROW Cost:	0	Estimated CST Time:	12 months
Rationale: Intersection does not meet warrants.			

Alternative 3: Single lane roundabout			
Estimated Property Impacts:	7 parcels	Estimated Total Cost:	\$1,035,440
Estimated ROW Cost:	\$1,271,000	Estimated CST Time:	18 months
Rationale: Single-lane roundabout may provide adequate capacity through the design year 2036. However, we recommend that the design be developed to provide the appropriate geometric features and preserve right-of-way for a future expansion to a partial multilane roundabout.			

No-Build Alternative: Leave as is.			
Estimated Property Impacts:	0	Estimated Total Cost:	0
Estimated ROW Cost:	0	Estimated CST Time:	0

Rationale: *Does not improve operational efficiency.*

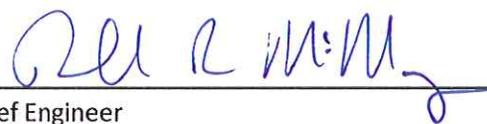
Comments: It is recommended that the intersection be modified with the all-way stop control alternate for a cost of approximately \$2,100. This alternate has a higher benefit cost with an acceptable LOS of C in the opening year. The intersection can be reanalyzed at a later date should the data suggest such.

Attachments:

1. Intersection Feasibility Study includes Traffic Diagrams, Detailed Cost Estimates and Layout
2. Signal Warrants
3. Email Discussion

APPROVALS

Concur:  9/30/2013
Director of Engineering

Approve: 
Chief Engineer

10/7/13
Date

**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA**

INTERDEPARTMENT CORRESPONDENCE

FILE P.I. 0009890, SR 201 @ SR 2 Roundabout
Whitfield County

OFFICE Roadway Design

DATE August 28, 2012

FROM 
C. Andy Casey, P.E., State Roadway Design Engineer

TO Genetha Rice Singleton, State Program Delivery Engineer
Perry Black, PM

SUBJECT Intersection Feasibility Study

This Office has completed an intersection feasibility study for the above referenced project. A total of four alternates and no-build were analyzed in the study. Based on the findings in the study, this Office recommends the all-way stop control alternate. This alternate will provide an open year LOS of C and maintain an acceptable LOS of E through year 2026 for a cost of approximately \$2,100.

If you have any questions or comments, please contact Clay Bastian at 404-631-1610 or Carlos Baker at 404-631-1995.

Attachment

CAC:TH:ccb

Roundabout Feasibility Study
P.I. 0009890
Whitfield County
SR 201 @ SR 2 Intersection

Project Background and Site Conditions

The purpose of this study is to evaluate the feasibility of alternatives to improve the operational and safety functions of the intersection at SR 201 and SR 2 in Whitfield County. The following alternates were analyzed: All-way stop control; Traffic signal; Single-lane roundabout; Single-lane roundabout with slip lanes; Multilane/ hybrid roundabout, and the no-build alternate. This feasibility study summarizes the findings and recommendations of the analysis.

BACKGROUND

This project proposes to improve the safety and operation of the existing intersection at State Route 201 (SR 201) and State Route 2 (SR 2). The proposed project length is approximately 0.25 miles. The intersection is configured as a three leg "T" intersection with SR 201 approaching from the south and SR 2 approaching from the east and north. An illustration of the existing intersection configuration is provided as Figure 1.

State Route 201 is a three-lane urban minor arterial with two lanes of traffic southbound and one lane of traffic northbound. State Route 2 is a two-lane urban minor arterial with one lane of traffic in each direction. The intersection is currently a one-way stop-controlled on the eastbound approach and free flow in the northern and southern approaches. Left-turn movements from the north approach to east approach operate under yield-control. Right-turn movements from the south approach to east approach are also under yield-control. The posted speed for both SR 201 and SR 2 is 35 mph. The existing right of way is 80 feet.

ADJACENT LAND USES AND ACCESS

The adjacent area, in general, is fairly rural although there is sporadic development due to the proximity to Dalton, GA and Chattanooga, TN urban areas. A Norfolk Southern railroad line runs parallel to SR 201 and SR 2 bridges over it approximately 700 feet east of the intersection.

The surrounding topography of the intersection is considered rolling. There are a few homes west of the intersection and access is granted by a driveway and two local roads (Nix Rd. and Dogwood Dr.). In the northeast quadrant, there is a new city complex that is currently under construction and in the southeast quadrant there is a Dollar General store.

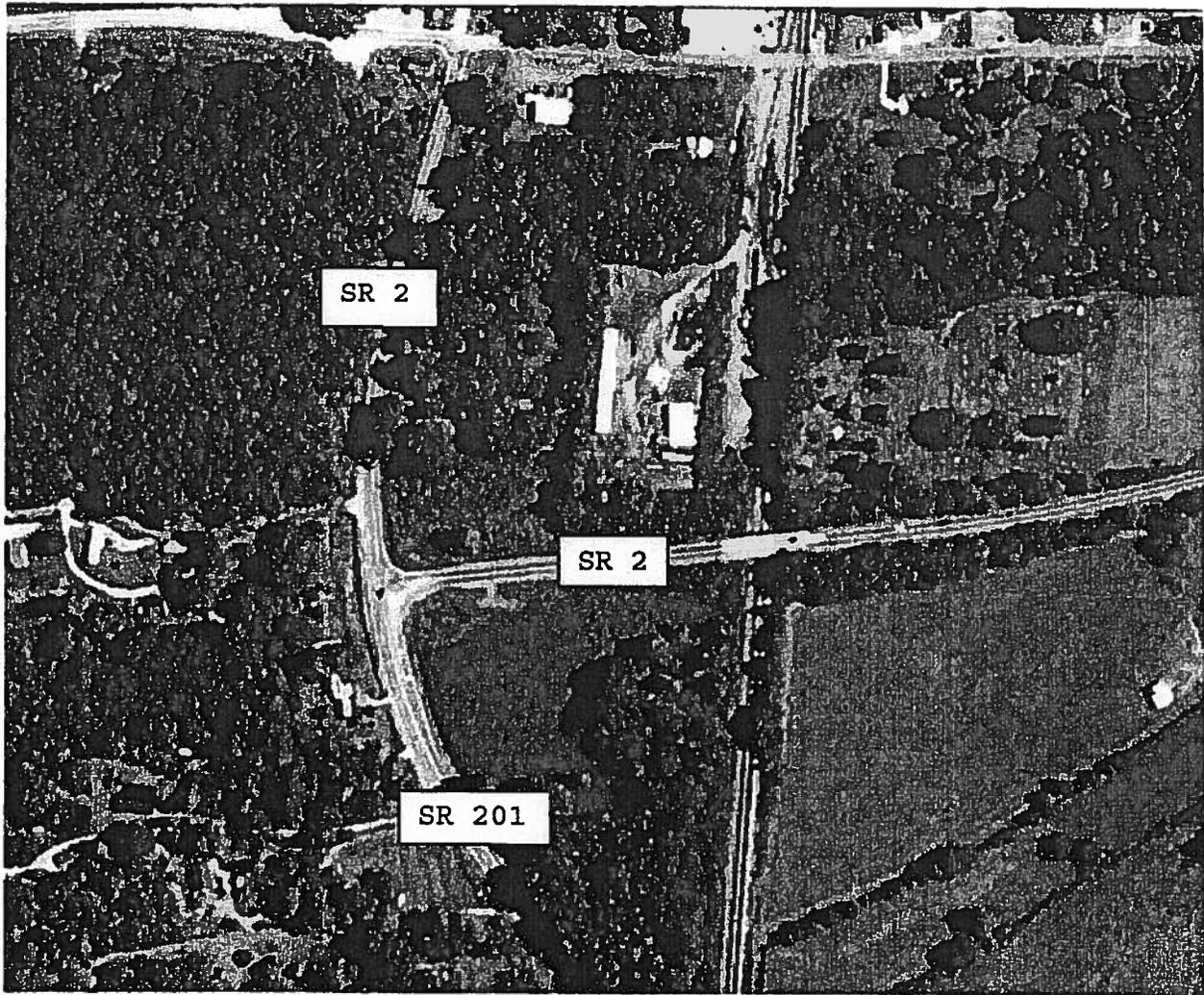


Figure 1: Existing Conditions: SR 201 @ SR 2 Whitfield County Varnell, Georgia

SAFETY ASESMENT

Crash data for the SR 201 @ SR 2 intersection was reviewed for crashes reported between January 1, 2007 and December 31, 2010. During that time eight crashes were reported at the SR 201 @ SR 2 intersection. An examination of the crash reports reveal that approximately 38% of the crashes were angle, and could be corrected by various alternatives that will be discussed in the report. The high speeds of the vehicles traveling along SR 201/SR 2 were noted during the field visit. As a result of the high speeds, local officials have implemented speed monitoring by police to minimize severe crashes at this intersection. During the site visit, a city police officer and City Manager informed the GDOT staff of a recent commercial truck rollover while attempting to make a left from SR 2 southbound to SR 2 eastbound. Rumble strips are located on the SR 2 westbound approach before and after the bridge over Norfolk Southern Railroad to warn drivers that they are approaching an intersection.

Whitfield County SR 2 @ SR 201			
Year	Crashes	Injuries	Fatalities
2007	3	1	0
2008	1	1	0
2009	3	0	0
2010	1	0	0
Total	8	2	0

Table 1: Crash Data Summary SR 201 @ SR 2 Whitfield County Varnell, Georgia

Operational Analyses

Table 2 and Table 3 provide a summary of the 2016 and 2036 traffic volumes. Year 2016 weekday traffic volumes were provided by GDOT Office of Planning. See attachment "A" for the traffic diagrams.

TURNING MOVEMENT DIRECTION AM							
YEAR	NB SR 201	NB SR 201	WEST SR 2	WEST SR 2	SB SR 2	SB SR 2	TOTAL
	TO	TO	TO	TO	TO	TO	INTERSECTION
	NB SR 2	EAST SR 2	NB SR 2	SB SR 201	SB SR 201	EAST SR 2	VOLUME
2016	34	166	49	380	166	99	894
2036	60	275	90	625	270	145	1,465

Table 2: SR 201 @ SR 2 Weekday AM Peak Hour Traffic Volumes

TURNING MOVEMENT DIRECTION PM							
YEAR	NB SR 201	NB SR 201	WEST SR 2	WEST SR 2	SB SR 2	SB SR 2	TOTAL
	TO	TO	TO	TO	TO	TO	INTERSECTION
	NB SR 2	EAST SR 2	NB SR 2	SB SR 201	SB SR 201	EAST SR 2	VOLUME
2016	83	386	81	247	42	88	927
2036	140	640	140	410	65	170	1,565

Table 3: SR 201 @ SR 2 Weekday PM Peak Hour Traffic Volumes

NO-BUILD

An operational analysis was performed for the no-build condition using HCS. The analysis was performed for the 2016 and 2036 a.m. and p.m. peak hour condition. Attachment "B" contains a copy of the HCS analysis report. The no-build condition will have a level of service (LOS) of F in the build year. Based on the results of the capacity analysis, the no-build alternative is not a valid option.

ALTERNATE 1: ALL-WAY STOP CONTROL

All-way stop control was analyzed using Highway Capacity Software (HCS). The un-signalized intersection suite was used to study open year (2016) and design year (2026) traffic. The analysis determined the open year will function at a level of service (LOS) of C for both the am and pm peaks. The

design year analysis determined a LOS of F for both am and pm peaks. A mid-design analysis was performed using interpolated traffic for year 2026 which showed an expected LOS of E for both am and pm peaks. See attachment F for HCS reports.

ALTERNATE 2: SIGNAL

Capacity analysis was performed for the design year, 2036, the resulting LOS is C for both am and pm. Updated signal warrants study was requested and performed by GDOT District Six Office of Traffic Operations. The findings show signal warrants are not satisfied; therefore, this alternate is not an acceptable alternate.

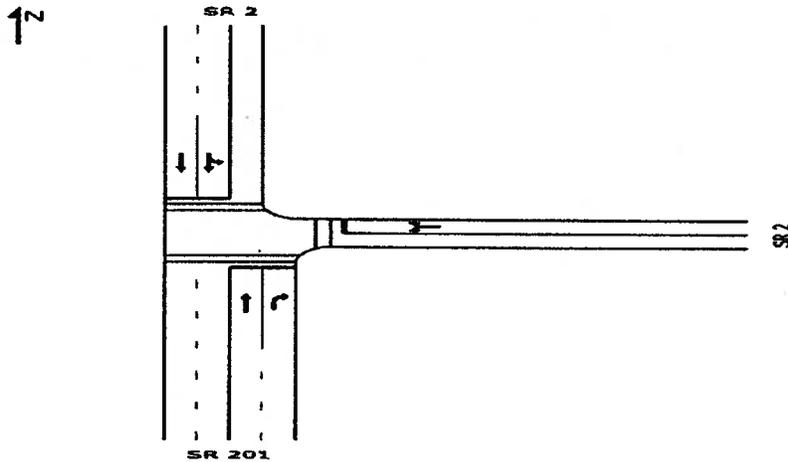


Figure 2: Alternate 1 and 2 – Un-signalized and Signalized

ALTERNATE 3: SINGLE-LANE ROUNDABOUT

A single-lane roundabout was analyzed using the SIDRA Intersection 5.1 Intersections with SIDRA standard procedure with an environment factor of 1.1, 1.2, and GDOT Analysis Tool V2.1. The layout for alternate 3 is shown in Figure 3 and provides a one-lane entry on all legs. This alternate functions at a LOS B/A, with significant queue and high delay times in the 2036 am and pm traffic. Table 4 and Table 4A display the output from the SIDRA 5.1 using SIDRA standard with an environment factor of 1.2 and traffic counts for opening year 2016. Table 4F and Table 4G display the output from the SIDRA 5.1 using SIDRA standard with an environment factor of 1.1. Attachment F displays the output from GDOT Analysis Tool V 2.1. A sketch of this alternate can be found in attachment G.

MOVEMENT SUMMARY

Site: 2016 AM Standard 1.2

SR 201 @ SR 2
 Roundabout Single-Lane AM 2016 E.F. 1.2

Mov ID	Turn	Demand Flow veh/h	HV Deg Satn %	Avg Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: SR 201											
3	L	1	3.0	0.635	13.7	LOS B	3.9	112.4	0.46	0.80	23.9
8	T	103	10.0	0.635	13.7	LOS B	3.9	112.4	0.46	0.49	25.9
18	R	473	10.0	0.635	13.7	LOS B	3.9	112.4	0.46	0.49	23.2
Approach		577	10.0	0.635	13.7	LOS B	3.9	112.4	0.46	0.49	23.7
East: SR 2											
1	L	304	10.0	0.447	9.3	LOS A	2.1	60.6	0.34	0.62	23.4
6	T	1	3.0	0.447	9.3	LOS A	2.1	60.6	0.34	0.42	28.1
16	R	103	10.0	0.447	9.3	LOS A	2.1	60.6	0.34	0.50	27.5
Approach		409	10.0	0.447	9.3	LOS A	2.1	60.6	0.34	0.59	24.4
North: SR 201/SR 2											
7	L	109	10.0	0.216	7.3	LOS A	0.8	21.4	0.45	0.82	26.4
4	T	49	10.0	0.216	7.3	LOS A	0.8	21.4	0.45	0.49	26.4
14	R	1	3.0	0.216	7.3	LOS A	0.8	21.4	0.45	0.63	28.7
Approach		159	10.0	0.216	7.3	LOS A	0.8	21.4	0.45	0.72	26.4
West: Nix RD											
5	L	1	3.0	0.005	5.3	LOS A	0.0	0.4	0.47	0.77	27.4
2	T	1	3.0	0.005	5.3	LOS A	0.0	0.4	0.47	0.51	30.5
12	R	1	3.0	0.005	5.3	LOS A	0.0	0.4	0.47	0.58	29.9
Approach		3	3.0	0.005	5.3	LOS A	0.0	0.4	0.47	0.62	29.2
All Vehicles		1148	10.0	0.635	11.2	LOS B	3.9	112.4	0.41	0.56	24.3

Table 4: SR 201 @ SR 2 Sidra Output 2016 AM Peak Hour Traffic Volumes (SIDRA standard EF: 1.2)

MOVEMENT SUMMARY

Site: 2016 PM Standard 1.2

SR 201 @ SR 2
 Roundabout Single-Lane PM 2016 E.F. 1.2

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV Deg Satn %	Avg Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: SR 201											
3	L	3	2.0	0.510	13.4	LOS B	4.3	115.6	0.47	0.76	29.8
8	T	103	6.0	0.510	5.6	LOS A	4.3	115.6	0.47	0.46	32.3
18	R	473	6.0	0.510	4.4	LOS A	4.3	115.6	0.47	0.46	29.4
Approach		579	6.0	0.510	4.7	LOS A	4.3	115.6	0.47	0.46	29.9
East: SR 2											
1	L	304	6.0	0.368	7.4	LOS A	2.5	68.8	0.39	0.60	27.2
6	T	3	2.0	0.368	5.3	LOS A	2.5	68.8	0.39	0.41	32.4
16	R	103	6.0	0.368	6.9	LOS A	2.5	68.8	0.39	0.49	31.9
Approach		411	6.0	0.368	7.3	LOS A	2.5	68.8	0.39	0.57	28.4
North: SR 201/SR 2											
7	L	109	6.0	0.192	14.8	LOS B	1.1	28.5	0.54	0.78	28.9
4	T	49	6.0	0.192	4.7	LOS A	1.1	28.5	0.54	0.50	28.6
14	R	3	2.0	0.192	8.2	LOS A	1.1	28.5	0.54	0.61	31.2
Approach		161	5.9	0.192	11.6	LOS B	1.1	28.5	0.54	0.69	28.9
West: Nix RD											
5	L	1	2.0	0.004	14.9	LOS B	0.0	0.5	0.56	0.69	28.9
2	T	1	2.0	0.004	7.5	LOS A	0.0	0.5	0.56	0.48	31.5
12	R	1	2.0	0.004	8.8	LOS A	0.0	0.5	0.56	0.54	31.3
Approach		3	2.0	0.004	10.4	LOS B	0.0	0.5	0.56	0.57	30.5
All Vehicles		1154	6.0	0.510	6.6	LOS A	4.3	115.6	0.45	0.53	29.2

Table 4A: SR 201 @ SR 2 Sidra Output 2016 PM Peak Hour Traffic Volumes (SIDRA standard EF: 1.2)

MOVEMENT SUMMARY

Site: 2036 AM Standard 1.1

SR 201 @ SR 2
 Roundabout Single-Lane AM 2036 E.F. 1.1

Movement Performance – Vehicles											
Mov ID	Turn	Demand Flow	HV Deg Satn	Average Delay	Level of Service	95% Back of Queue	Prop. Queued	Effective Stop Rate	Average Speed		
		veh/h	%	v/c	sec			per veh	mph		
						Vehicles	Distance				
						veh	ft				
South: SR 201											
3	L	2	2.0	0.352	13.6	LOS B	2.5	70.5	0.51	0.78	29.8
8	T	65	9.0	0.352	5.9	LOS A	2.5	70.5	0.51	0.50	32.0
18	R	299	9.0	0.352	7.5	LOS A	2.5	70.5	0.51	0.58	31.8
Approach		366	9.0	0.352	7.2	LOS A	2.5	70.5	0.51	0.57	31.8
East: SR 2											
1	L	679	9.0	0.604	13.3	LOS B	6.1	170.8	0.44	0.63	29.0
6	T	2	2.0	0.604	5.2	LOS A	6.1	170.8	0.44	0.39	32.0
16	R	98	9.0	0.604	6.9	LOS A	6.1	170.8	0.44	0.46	31.6
Approach		779	9.0	0.604	12.5	LOS B	6.1	170.8	0.44	0.61	29.3
North: SR 201/SR 2											
7	L	158	9.0	0.743	28.6	LOS D	9.0	253.3	0.99	1.23	23.3
4	T	293	9.0	0.743	21.1	LOS C	9.0	253.3	0.99	1.23	24.5
14	R	1	3.0	0.743	21.9	LOS C	9.0	253.3	0.99	1.24	24.4
Approach		452	9.0	0.743	23.7	LOS C	9.0	253.3	0.99	1.23	24.0
West: Nix RD											
5	L	7	2.0	0.063	27.4	LOS D	0.4	10.1	0.92	0.88	23.4
2	T	7	2.0	0.063	20.0	LOS C	0.4	10.1	0.92	0.84	24.8
12	R	7	2.0	0.063	21.4	LOS C	0.4	10.1	0.92	0.85	24.6
Approach		20	2.0	0.063	22.9	LOS C	0.4	10.1	0.92	0.86	24.2
All Vehicles		1617	8.9	0.743	14.5	LOS B	9.0	253.3	0.61	0.78	28.0

Table 4B: SR 201 @ SR 2 Sidra Output 2036 AM Peak Hour Traffic Volumes (SIDRA standard EF: 1.1)

MOVEMENT SUMMARY

Site: 2036 PM Standard 1.1

SR 201 @ SR 2
 Roundabout Single-Lane PM 2036 E.F. 1.1

Movement Performance – Vehicles											
Mov ID	Turn	Demand Flow	HV Deg Satn	Average Delay	Level of Service	95% Back of Queue	Prop. Queued	Effective Stop Rate	Average Speed		
		veh/h	%	v/c	sec			per veh	mph		
						Vehicles	Distance				
						veh	ft				
South: SR 201											
3	L	2	2.0	0.352	13.6	LOS B	2.5	70.5	0.51	0.78	29.8
8	T	65	9.0	0.352	5.9	LOS A	2.5	70.5	0.51	0.50	32.0
18	R	299	9.0	0.352	7.5	LOS A	2.5	70.5	0.51	0.58	31.8
Approach		366	9.0	0.352	7.2	LOS A	2.5	70.5	0.51	0.57	31.8
East: SR 2											
1	L	679	9.0	0.604	13.3	LOS B	6.1	170.8	0.44	0.63	29.0
6	T	2	2.0	0.604	5.2	LOS A	6.1	170.8	0.44	0.39	32.0
16	R	98	9.0	0.604	6.9	LOS A	6.1	170.8	0.44	0.46	31.6
Approach		779	9.0	0.604	12.5	LOS B	6.1	170.8	0.44	0.61	29.3
North: SR 201/SR 2											
7	L	158	9.0	0.743	28.6	LOS D	9.0	253.3	0.99	1.23	23.3
4	T	293	9.0	0.743	21.1	LOS C	9.0	253.3	0.99	1.23	24.5
14	R	1	3.0	0.743	21.9	LOS C	9.0	253.3	0.99	1.24	24.4
Approach		452	9.0	0.743	23.7	LOS C	9.0	253.3	0.99	1.23	24.0
West: Nix RD											
5	L	7	2.0	0.063	27.4	LOS D	0.4	10.1	0.92	0.88	23.4
2	T	7	2.0	0.063	20.0	LOS C	0.4	10.1	0.92	0.84	24.8
12	R	7	2.0	0.063	21.4	LOS C	0.4	10.1	0.92	0.85	24.6
Approach		20	2.0	0.063	22.9	LOS C	0.4	10.1	0.92	0.86	24.2
All Vehicles		1617	8.9	0.743	14.5	LOS B	9.0	253.3	0.61	0.78	28.0

Table 4C: SR 201 @ SR 2 Sidra Output 2036 PM Peak Hour Traffic Volumes (SIDRA standard EF: 1.1)

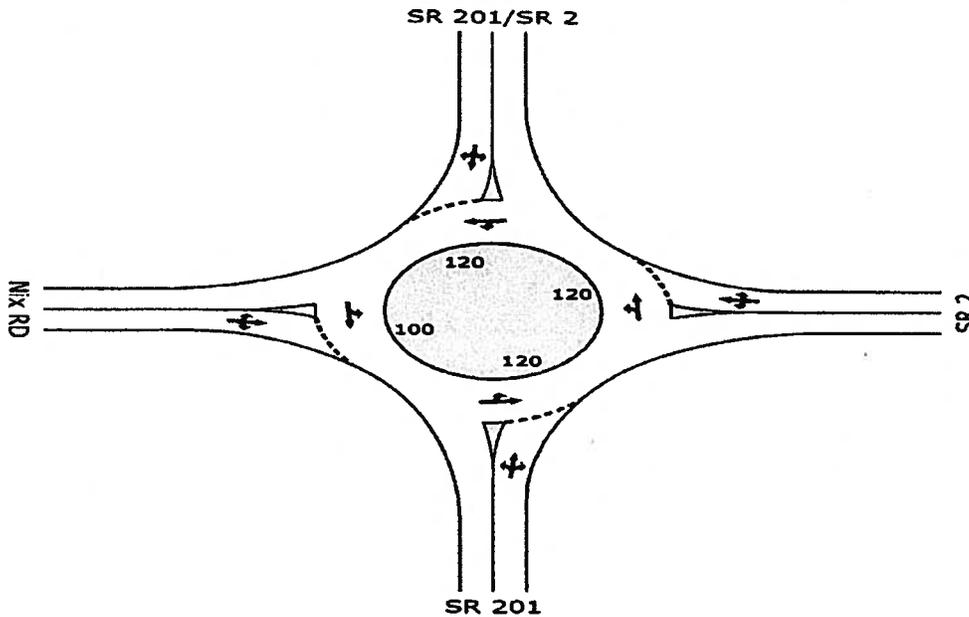


Figure 3: Alternate 3 – Single Lane Roundabout

ALTERNATE 4: SINGLE-LANE ROUNDABOUT WITH SLIP LANES

A single-lane roundabout with slip lanes was analyzed. SIDRA Intersection 5.1 with SIDRA standard procedure with environment factors of 1.2 and 1.1, and GDOT Analysis tool 2.1 the analysis was conducted. A layout for this alternate is shown in Figure 4 and provides a one-lane entry on all legs with slip lane on the east and south approach. Table 5 and Table 5A display the output from the SIDRA 5.1 using SIDRA standard with an environment factor of 1.2 for opening year 2016 traffic Table 5B and Table 5C display the output from the SIDRA 5.1 using SIDRA standard with an environment factor of 1.1 for design year 2036 traffic. Attachment F displays output from GDOT Analysis Tool V 2.1. A sketch of this alternate can be found in attachment G.

MOVEMENT SUMMARY

Site: 2016 AM Standard 1.2

SR 201 @ SR 2
 Roundabout Slip-Lane AM 2016 E.F. 1.2

Movement Performance – Vehicles											
Mov ID	Turn	Demand Flow	HV-Deg Satn	Average Delay	Level of Service	95% Back of Queue	Prop. Queued	Effective Stop Rate	Average Speed		
		veh/h	%	sec		Vehicles	Distance	per veh	mph		
			v/c			veh	ft				
South: SR 201											
3	L	1	2.0	0.062	13.7	LOS B	0.3	8.8	0.39	0.87	29.9
8	T	43	10.0	0.062	6.1	LOS A	0.3	8.8	0.39	0.46	33.1
18	R	201	10.0	0.174	3.7	LOS A	1.0	29.7	0.37	0.39	30.0
Approach		246	10.0	0.174	4.2	LOS A	1.0	29.7	0.37	0.40	30.5
East: SR 2											
1	L	462	10.0	0.332	6.9	LOS A	2.3	64.2	0.23	0.52	27.4
6	T	1	2.0	0.332	4.7	LOS A	2.3	64.2	0.23	0.32	33.5
16	R	65	10.0	0.051	6.0	LOS A	0.3	7.4	0.18	0.44	33.5
Approach		528	10.0	0.332	6.8	LOS A	2.3	64.2	0.22	0.51	28.1
North: SR 201/SR 2											
7	L	125	10.0	0.478	18.5	LOS C	3.4	96.1	0.76	0.97	27.4
4	T	201	10.0	0.478	8.3	LOS A	3.4	96.1	0.76	0.81	27.2
14	R	1	2.0	0.478	11.8	LOS B	3.4	96.1	0.76	0.85	29.7
Approach		327	10.0	0.478	12.2	LOS B	3.4	96.1	0.76	0.87	27.3
West: Nix RD											
5	L	3	2.0	0.018	18.5	LOS C	0.1	2.6	0.75	0.77	27.1
2	T	3	2.0	0.018	11.1	LOS B	0.1	2.6	0.75	0.65	29.6
12	R	3	2.0	0.018	12.4	LOS B	0.1	2.6	0.75	0.68	29.3
Approach		10	2.0	0.018	14.0	LOS B	0.1	2.6	0.75	0.70	28.6
All Vehicles		1111	9.9	0.478	7.9	LOS A	3.4	96.1	0.42	0.59	28.3

Table 5: SR 201 @ SR 2 Sidra Output 2036 AM Peak Hour Traffic Volumes (SIDRA standard EF: 1.2)

MOVEMENT SUMMARY

Site: 2016 PM Standard 1.2

SR 201 @ SR 2
 Roundabout Slip-Lane PM 2016 E.F. 1.2

Movement Performance – Vehicles											
Mov ID	Turn	Demand Flow	HV-Deg Satn	Average Delay	Level of Service	95% Back of Queue	Prop. Queued	Effective Stop Rate	Average Speed		
		veh/h	%	sec		Vehicles	Distance	per veh	mph		
			v/c			veh	ft				
South: SR 201											
3	L	3	2.0	0.135	13.5	LOS B	0.7	19.3	0.36	0.88	30.0
8	T	103	6.0	0.135	5.8	LOS A	0.7	19.3	0.36	0.45	33.3
18	R	473	6.0	0.381	3.7	LOS A	2.7	74.3	0.39	0.39	29.9
Approach		579	6.0	0.381	4.1	LOS A	2.7	74.3	0.38	0.41	30.5
East: SR 2											
1	L	304	6.0	0.237	7.1	LOS A	1.4	38.4	0.31	0.55	27.2
6	T	3	2.0	0.237	5.0	LOS A	1.4	38.4	0.31	0.37	32.8
16	R	103	6.0	0.082	6.2	LOS A	0.4	11.6	0.27	0.46	33.0
Approach		411	6.0	0.237	6.8	LOS A	1.4	38.4	0.30	0.52	28.5
North: SR 201/SR 2											
7	L	109	6.0	0.191	14.8	LOS B	1.0	28.0	0.53	0.78	28.9
4	T	49	6.0	0.191	4.7	LOS A	1.0	28.0	0.53	0.50	28.7
14	R	3	2.0	0.191	8.2	LOS A	1.0	28.0	0.53	0.61	31.3
Approach		161	5.9	0.191	11.6	LOS B	1.0	28.0	0.53	0.69	28.9
West: Nix RD											
5	L	1	2.0	0.004	14.9	LOS B	0.0	0.5	0.55	0.70	28.9
2	T	1	2.0	0.004	7.5	LOS A	0.0	0.5	0.55	0.48	31.5
12	R	1	2.0	0.004	8.8	LOS A	0.0	0.5	0.55	0.54	31.3
Approach		3	2.0	0.004	10.4	LOS B	0.0	0.5	0.55	0.57	30.5
All Vehicles		1154	6.0	0.381	6.2	LOS A	2.7	74.3	0.38	0.49	29.5

Table 5A: SR 201 @ SR 2 Sidra Output 2036 PM Peak Hour Traffic Volumes (HCM 2010)

MOVEMENT SUMMARY

Site: 2036 AM Standard 1.1

SR 201 @ SR 2
 Roundabout Slip-Lane AM 2036 E.F. 1.1

Movement Performance – Vehicles											
Mov ID	Turn	Demand Flow	HV Deg Satn	Average Delay	Level of Service	95% Back of Queue	Prop. Queued	Effective Stop Rate	Average Speed		
		veh/h	%	sec		veh		per veh	mph		
			v/c			Distance					
						ft					
South: SR 201											
3	L	2	2.0	0.084	13.7	LOS B	0.4	12.5	0.44	0.86	29.9
8	T	65	9.0	0.084	6.1	LOS A	0.4	12.5	0.44	0.48	32.8
18	R	299	9.0	0.241	3.8	LOS A	1.6	45.7	0.44	0.40	29.6
Approach		366	9.0	0.241	4.3	LOS A	1.6	45.7	0.44	0.42	30.2
East: SR 2											
1	L	679	9.0	0.465	7.0	LOS A	3.7	105.4	0.33	0.53	27.1
6	T	2	2.0	0.465	4.9	LOS A	3.7	105.4	0.33	0.35	32.7
16	R	98	9.0	0.071	6.1	LOS A	0.4	10.5	0.22	0.45	33.3
Approach		779	9.0	0.465	6.9	LOS A	3.7	105.4	0.31	0.52	27.8
North: SR 201/SR 2											
7	L	158	9.0	0.723	27.7	LOS D	8.5	237.8	0.97	1.22	23.6
4	T	293	9.0	0.723	17.5	LOS C	8.5	237.8	0.97	1.22	22.4
14	R	2	2.0	0.723	21.0	LOS C	8.5	237.8	0.97	1.21	24.8
Approach		453	9.0	0.723	21.0	LOS C	8.5	237.8	0.97	1.22	22.9
West: Nix RD											
5	L	7	2.0	0.063	27.4	LOS D	0.4	10.0	0.92	0.88	23.4
2	T	7	2.0	0.063	20.0	LOS C	0.4	10.0	0.92	0.84	24.8
12	R	7	2.0	0.063	21.4	LOS C	0.4	10.0	0.92	0.85	24.6
Approach		20	2.0	0.063	22.9	LOS C	0.4	10.0	0.92	0.86	24.2
All Vehicles		1618	8.9	0.723	10.5	LOS B	8.5	237.8	0.53	0.70	26.6

Table 5F: SR 201 @ SR 2 Sidra Output 2036 AM Peak Hour Traffic Volumes (SIDRA standard EF: 1.1)

MOVEMENT SUMMARY

Site: 2036 PM Standard 1.1

SR 201 @ SR 2
 Roundabout Slip-Lane AM 2036 E.F. 1.1

Movement Performance – Vehicles											
Mov ID	Turn	Demand Flow	HV Deg Satn	Average Delay	Level of Service	95% Back of Queue	Prop. Queued	Effective Stop Rate	Average Speed		
		veh/h	%	sec		veh		per veh	mph		
			v/c			Distance					
						ft					
South: SR 201											
3	L	7	2.0	0.191	14.0	LOS B	1.1	29.2	0.47	0.88	29.8
8	T	152	6.0	0.191	6.3	LOS A	1.1	29.2	0.47	0.52	32.7
18	R	696	6.0	0.546	4.3	LOS A	4.8	130.6	0.59	0.46	28.9
Approach		854	6.0	0.546	4.7	LOS A	4.8	130.6	0.56	0.47	29.6
East: SR 2											
1	L	446	6.0	0.335	7.4	LOS A	2.3	61.7	0.42	0.58	26.9
6	T	7	2.0	0.335	5.3	LOS A	2.3	61.7	0.42	0.42	32.1
16	R	152	6.0	0.115	6.3	LOS A	0.6	17.3	0.34	0.48	32.7
Approach		604	6.0	0.335	7.1	LOS A	2.3	61.7	0.40	0.55	28.3
North: SR 201/SR 2											
7	L	185	6.0	0.320	15.8	LOS C	2.0	53.8	0.68	0.84	28.4
4	T	71	6.0	0.320	5.7	LOS A	2.0	53.8	0.68	0.64	27.7
14	R	7	2.0	0.320	9.3	LOS A	2.0	53.8	0.68	0.72	30.5
Approach		262	5.9	0.320	12.9	LOS B	2.0	53.8	0.68	0.78	28.3
West: Nix RD											
5	L	2	2.0	0.009	16.4	LOS C	0.1	1.3	0.68	0.71	28.2
2	T	2	2.0	0.009	9.0	LOS A	0.1	1.3	0.68	0.56	30.8
12	R	2	2.0	0.009	10.3	LOS B	0.1	1.3	0.68	0.60	30.7
Approach		7	2.0	0.009	11.9	LOS B	0.1	1.3	0.68	0.62	29.8
All Vehicles		1727	5.9	0.546	6.8	LOS A	4.8	130.6	0.52	0.55	28.9

Table 5G: SR 201 @ SR 2 Sidra Output 2036 PM Peak Hour Traffic Volumes (SIDRA standard EF: 1.1)

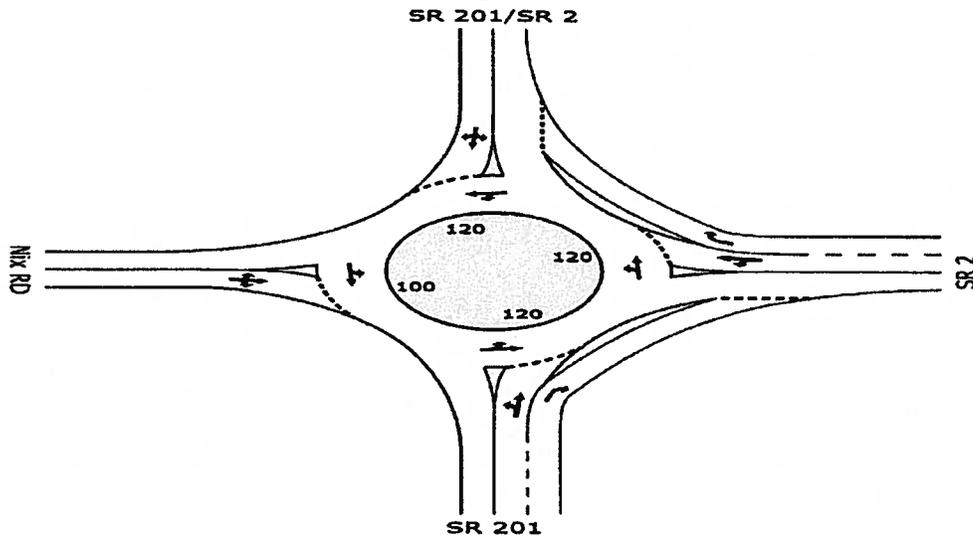


Figure 4: Alternate 4: Single-Lane Roundabout with Slip Lanes

ALTERNATE 5: MULTILANE / HYBRID ROUNDABOUT

A multilane/hybrid lane roundabout was analyzed performed. The multilane/hybrid roundabout consists of two circulating lanes heading north to south and one circulating lane heading south to north with dual entry at north and south approaches. A layout for this alternate is shown in Figure 5. Analyzed using SIDRA Intersection 5.1 SIDRA standard procedure with an environment factor of 1.2 and 1.1, and GDOT Analysis tool 2.1. Table 6 and Table 6A display the output from the SIDRA 5.1 using SIDRA standard with an environment factor of 1.2 for opening year 2016 traffic. Table 6B and Table 6C display the output from the SIDRA 5.1 using SIDRA standard with an environment factor of 1.1 for build year 2036 traffic. Attachment F displays output from GDOT Analysis Tool V 2.1. A sketch of this alternate can be found in attachment G.

MOVEMENT SUMMARY

Site: 2016 AM Standard 1.20

SR 201 @ SR 2
 Roundabout Multilane/ Hybrid AM 2016 E.F. 1.2

Movement Performance – Vehicles											
MovID	Turn	Demand Flow	HV Deg: Sain	Average Delay	Level of Service	95% Back of Queue	Prop. Queued	Effective Stop Rate	Average Speed		
		veh/h	%	v/c	sec		veh	ft	per veh	mph	
South: SR 201											
3	L	1	2.0	0.061	13.7	LOS B	0.3	8.5	0.38	0.87	29.8
8	T	43	9.0	0.061	6.1	LOS A	0.3	8.5	0.38	0.46	33.1
18	R	201	9.0	0.173	3.7	LOS A	1.0	28.5	0.36	0.39	30.0
Approach		246	9.0	0.173	4.2	LOS A	1.0	28.5	0.36	0.40	30.6
East: SR 2											
1	L	462	9.0	0.426	7.0	LOS A	3.2	91.1	0.27	0.54	27.4
6	T	1	2.0	0.426	4.8	LOS A	3.2	91.1	0.27	0.34	33.2
18	R	65	9.0	0.426	6.5	LOS A	3.2	91.1	0.27	0.43	32.5
Approach		528	9.0	0.426	6.9	LOS A	3.2	91.1	0.27	0.53	28.0
North: SR 201/SR 2											
7	L	125	9.0	0.174	16.2	LOS B	0.9	26.3	0.63	0.79	28.0
4	T	201	9.0	0.230	5.4	LOS A	1.3	38.0	0.63	0.59	29.0
14	R	1	2.0	0.230	9.1	LOS A	1.3	38.0	0.63	0.71	31.5
Approach		327	9.0	0.230	9.6	LOS A	1.3	38.0	0.63	0.67	28.6
West: Nix RD											
5	L	3	2.0	0.018	16.9	LOS B	0.1	1.9	0.63	0.82	27.9
2	T	3	2.0	0.018	9.4	LOS A	0.1	1.9	0.63	0.63	30.8
12	R	3	2.0	0.018	10.8	LOS B	0.1	1.9	0.63	0.68	30.4
Approach		10	2.0	0.018	12.4	LOS B	0.1	1.9	0.63	0.71	29.6
All Vehicles		1111	8.9	0.426	7.1	LOS A	3.2	91.1	0.40	0.54	28.7

Table 6: SR 201 @ SR 2 Sidra Output 2016 AM Peak Hour Traffic Volumes (SIDRA standard EF: 1.2)

MOVEMENT SUMMARY

Site: 2016 PM standard 1.20

SR 201 @ SR 2
 Roundabout Multilane/ Hybrid PM 2016 E.F. 1.2

Movement Performance – Vehicles											
MovID	Turn	Demand Flow	HV Deg: Sain	Average Delay	Level of Service	95% Back of Queue	Prop. Queued	Effective Stop Rate	Average Speed		
		veh/h	%	v/c	sec		veh	ft	per veh	mph	
South: SR 201											
3	L	3	2.0	0.137	13.6	LOS B	0.7	19.4	0.38	0.88	29.9
8	T	103	6.0	0.137	5.9	LOS A	0.7	19.4	0.38	0.46	33.2
18	R	473	6.0	0.385	3.8	LOS A	2.7	74.3	0.40	0.40	29.8
Approach		579	6.0	0.385	4.2	LOS A	2.7	74.3	0.40	0.42	30.4
East: SR 2											
1	L	304	6.0	0.367	7.4	LOS A	2.5	67.4	0.38	0.60	27.2
6	T	3	2.0	0.367	5.3	LOS A	2.5	67.4	0.38	0.41	32.4
16	R	103	6.0	0.367	6.9	LOS A	2.5	67.4	0.38	0.49	31.9
Approach		411	6.0	0.367	7.3	LOS A	2.5	67.4	0.38	0.57	28.4
North: SR 201/SR 2											
7	L	120	6.0	0.114	14.0	LOS B	0.6	16.8	0.49	0.69	28.7
4	T	49	6.0	0.066	4.5	LOS A	0.3	8.8	0.50	0.47	29.6
14	R	3	2.0	0.066	8.3	LOS A	0.3	8.8	0.50	0.61	32.0
Approach		172	5.9	0.114	11.2	LOS B	0.6	16.8	0.49	0.63	29.0
West: Nix RD											
5	L	1	2.0	0.005	14.6	LOS B	0.0	0.5	0.49	0.74	29.0
2	T	1	2.0	0.005	7.2	LOS A	0.0	0.5	0.49	0.49	31.9
12	R	1	2.0	0.005	8.5	LOS A	0.0	0.5	0.49	0.56	31.6
Approach		3	2.0	0.005	10.1	LOS B	0.0	0.5	0.49	0.59	30.7
All Vehicles		1165	6.0	0.385	6.3	LOS A	2.7	74.3	0.41	0.50	29.4

Table 6A: SR 201 @ SR 2 Sidra Output 2016 PM Peak Hour Traffic Volumes (SIDRA standard EF: 1.2)

MOVEMENT SUMMARY

Site: 2016 AM standard 1.1

SR 201 @ SR 2
 Roundabout Multilane/ Hybrid AM 2036 E.F. 1.1

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow	HV Deg Satn	Average Delay	Level of Service	95% Back of Queue	Prop Queued	Effective Stop Rate	Average Speed		
		veh/h	%	v/c	sec	veh	ft	per veh	mph		
South: SR 201											
3	L	1	2.0	0.061	13.7	LOS B	0.3	8.5	0.38	0.87	29.8
8	T	43	9.0	0.061	6.1	LOS A	0.3	8.5	0.38	0.46	33.1
18	R	201	9.0	0.173	3.7	LOS A	1.0	28.5	0.36	0.39	30.0
Approach		246	9.0	0.173	4.2	LOS A	1.0	28.5	0.36	0.40	30.6
East: SR 2											
1	L	462	9.0	0.426	7.0	LOS A	3.2	91.1	0.27	0.54	27.4
6	T	1	2.0	0.426	4.8	LOS A	3.2	91.1	0.27	0.34	33.2
16	R	65	9.0	0.426	6.5	LOS A	3.2	91.1	0.27	0.43	32.5
Approach		528	9.0	0.426	6.9	LOS A	3.2	91.1	0.27	0.53	28.0
North: SR 201/SR 2											
7	L	125	9.0	0.174	16.2	LOS B	0.9	26.3	0.63	0.79	28.0
4	T	201	9.0	0.230	5.4	LOS A	1.3	38.0	0.63	0.59	29.0
14	R	1	2.0	0.230	9.1	LOS A	1.3	38.0	0.63	0.71	31.5
Approach		327	9.0	0.230	9.6	LOS A	1.3	38.0	0.63	0.67	28.6
West: Nix RD											
5	L	3	2.0	0.018	16.9	LOS B	0.1	1.9	0.63	0.82	27.9
2	T	3	2.0	0.018	9.4	LOS A	0.1	1.9	0.63	0.63	30.8
12	R	3	2.0	0.018	10.8	LOS B	0.1	1.9	0.63	0.68	30.4
Approach		10	2.0	0.018	12.4	LOS B	0.1	1.9	0.63	0.71	29.6
All Vehicles		1111	8.9	0.426	7.1	LOS A	3.2	91.1	0.40	0.54	28.7

Table 6B: SR 201 @ SR 2 Sidra Output 2036 AM Peak Hour Traffic Volumes (SIDRA standard EF: 1.1)

MOVEMENT SUMMARY

Site: 2036 PM Standard 1.1

SR 201 @ SR 2
 Roundabout Multilane/ Hybrid PM 2036 E.F. 1.1

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow	HV Deg Satn	Average Delay	Level of Service	95% Back of Queue	Prop Queued	Effective Stop Rate	Average Speed		
		veh/h	%	v/c	sec	veh	ft	per veh	mph		
South: SR 201											
3	L	7	2.0	0.200	14.2	LOS B	1.1	31.4	0.49	0.88	29.7
8	T	152	9.0	0.200	6.5	LOS A	1.1	31.4	0.49	0.54	32.6
18	R	696	9.0	0.569	4.6	LOS A	5.1	142.5	0.62	0.48	28.8
Approach		854	8.9	0.569	5.0	LOS A	5.1	142.5	0.59	0.49	29.5
East: SR 2											
1	L	446	9.0	0.546	8.2	LOS A	4.6	128.4	0.57	0.65	26.9
6	T	7	2.0	0.546	6.0	LOS A	4.6	128.4	0.57	0.51	31.1
16	R	152	9.0	0.546	7.7	LOS A	4.6	128.4	0.57	0.57	31.0
Approach		604	8.9	0.546	8.0	LOS A	4.6	128.4	0.57	0.63	27.9
North: SR 201/SR 2											
7	L	190	9.0	0.196	15.0	LOS B	1.2	34.8	0.64	0.75	28.3
4	T	71	9.0	0.108	5.7	LOS A	0.6	16.6	0.63	0.59	29.0
14	R	7	2.0	0.108	9.5	LOS A	0.6	16.6	0.63	0.69	31.5
Approach		267	8.8	0.196	12.4	LOS B	1.2	34.8	0.64	0.71	28.5
West: Nix RD											
5	L	2	2.0	0.010	15.8	LOS B	0.0	1.2	0.61	0.76	28.5
2	T	2	2.0	0.010	8.3	LOS A	0.0	1.2	0.61	0.57	31.2
12	R	2	2.0	0.010	9.7	LOS A	0.0	1.2	0.61	0.63	31.1
Approach		7	2.0	0.010	11.3	LOS B	0.0	1.2	0.61	0.65	30.1
All Vehicles		1733	8.9	0.569	7.2	LOS A	5.1	142.5	0.59	0.57	28.7

Table 6C: SR 201 @ SR 2 Sidra Output 2016 PM Peak Hour Traffic Volumes (SIDRA standard EF: 1.1)

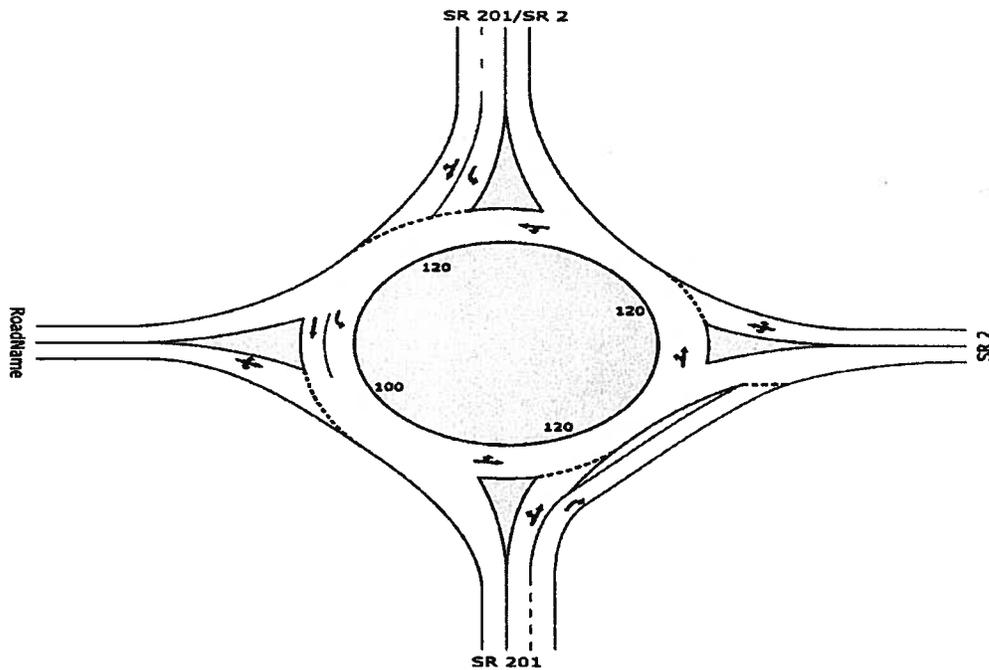


Figure 5: ALTERNATE 5: Multilane / Hybrid

OPERATIONAL ANALYSES

Intersection Type	LOS			
	2016 am	2016 pm	2036 am	2036 pm
All-Way Stop Control	C	C	F	F
Traffic Signal			C	C
Single-Lane	B	A	B	B
Signal-Lane With Slip Lanes	A	A	B	A
Multilane/ Hybrid	A	A	A	A

COST COMPARISON

Alternate Number	Alternate	Construction	Right of Way	Utility (reimbursable)	Total
1	All-Way Stop Control	\$2,100	N/A	N/A	\$2,100
2	Traffic Signal	\$210,517.70	\$70,000	N/A	\$280,517.70
3	Single-Lane Roundabout	\$626,708.56	\$1,271,000	\$88,000	\$1,985,708.56
4	SLR with Slip Lanes	\$762,566.76	\$1,271,000	\$88,000	\$2,121,556.76
5	Multilane/ Hybrid	\$763,892.33	\$1,271,000	\$88,000	\$2,122,892.33

Alternates 3, 4 and 5 will be similar in size foot print and construction materials. However it should be noted there is a size difference and a slight increase would be expected for alternates 4 and 5.

Alternate Selection

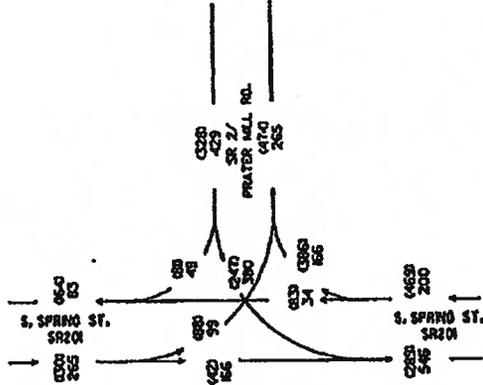
A summary of the findings of this study are listed below.

- The all-way stop control operates at a LOS C in the open year and LOS F in the design year. In 2026, the intersection will operate at a LOS E. The cost to build this alternate is approximately \$2100.
- The intersection did not warrant a signal.
- The single-lane roundabout operates at a LOS B am and LOS A pm in the open year and a LOS B in each am and pm for the design year with a queue length is 253 feet.
- The single-lane roundabout with slip lanes operates at a LOS A am and pm in the open year and a LOS B am and A pm, with a queue length of 238 feet.
- The multilane/ hybrid roundabout operates at a LOS A am and pm for the open and design year with a queue length of 143 feet.

DESIGN RECOMMENDATION

It is recommended that the intersection be modified with the all-way stop control alternate for a cost of approximately \$2100. This alternate will provide an opening year LOS C and an acceptable LOS E through 2026. After 2026, the intersection could be reanalyzed and upgraded.

WHITFIELD COUNTY

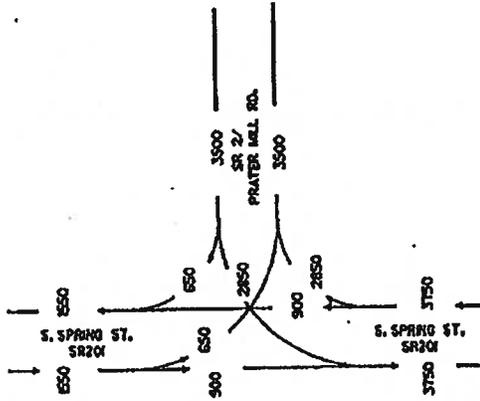


2011 PM DIV = 6000
2011 AM DIV = 600

T PM = 5.5Z
S.U. PM = 4Z
COMB. PM = 1.5Z

T AM = 9Z
S.U. AM = 7.5Z
COMB. AM = 1.5Z

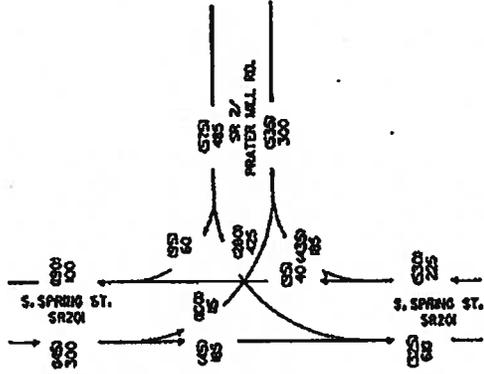
P.L.# 0009880
WHITFIELD COUNTY
SR 201 @ SR 2



EXISTING 20X

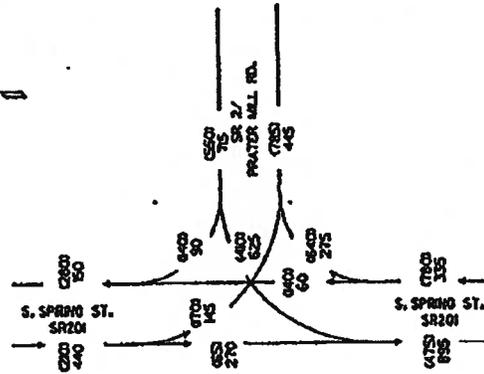
24 HOUR T = 10Z
S.U. = 7Z
COMB. = 3Z

WHITFIELD COUNTY

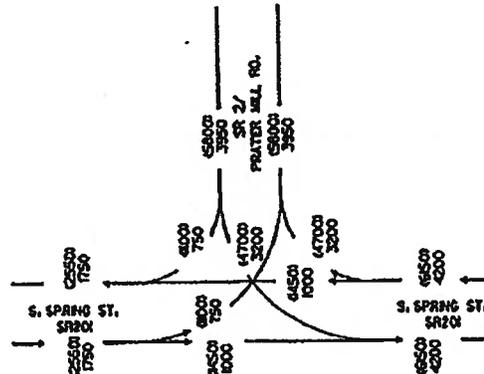


NO BUILD
 2016 PM DTV = 0000
 2016 AM DTV = 000
 T PM = 5.5Z
 SLL PM = 4Z
 COMB. PM = 1.5Z
 T AM = 9Z
 SLL AM = 7.5Z
 COMB. AM = 1.5Z

P.L.# 0008890
 WHITFIELD COUNTY
 SR 2010 SR 2

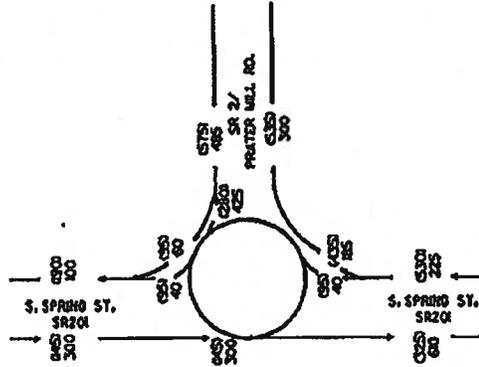


NO BUILD
 2035 PM DTV = 1000
 2035 AM DTV = 000
 T PM = 5.5Z
 SLL PM = 4Z
 COMB. PM = 1.5Z
 T AM = 9Z
 SLL AM = 7.5Z
 COMB. AM = 1.5Z



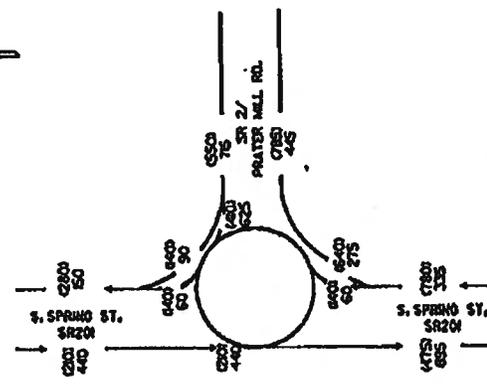
NO BUILD
 2042 ADT = 6000
 2042 ADT = 000
 24 HOUR T = 10Z
 SLL = 2
 COMB. = 2

WHITFIELD COUNTY

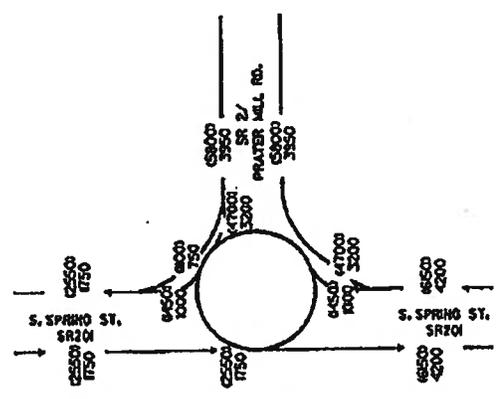


BUILD
2006 PM DIV = 0000
2006 AM DIV = 000
T PM = 5.5Z
S.L. PM = 4Z
COMB. PM = 1.5Z
T AM = 9Z
S.L. AM = 7.5Z
COMB. AM = 1.5Z

P.I.# 0009890
WHITFIELD COUNTY
SR 201 @ SR 2



BUILD
2036 PM DIV = 0000
2036 AM DIV = 000
T PM = 5.5Z
S.L. PM = 4Z
COMB. PM = 1.5Z
T AM = 9Z
S.L. AM = 7.5Z
COMB. AM = 1.5Z



BUILD
2042 ADT = 0000
2042 AMT = 000
24 HOUR T = 10Z
S.L. = 7Z
COMB. = 3Z

NO BUILD

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	Carlos Baker	Intersection	SR 201 @ SR 2
Agency/Co.	GDOT	Jurisdiction	
Date Performed	1/10/2012	Analysis Year	2016
Analysis Time Period	2016 AM		

Project Description 0009890	
East/West Street: SR 2	North/South Street: SR 201
Intersection Orientation: North-South	Study Period (hrs): 0.25

Vehicle Volumes and Adjustments						
Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		40	185	115	185	
Peak-Hour Factor, PHF	1.00	0.92	0.92	0.92	0.92	1.00
Hourly Flow Rate, HFR (veh/h)	0	43	201	124	201	0
Percent Heavy Vehicles	0	--	--	9	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	1	0	2	0
Configuration		T	R	LT	T	
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				425		60
Peak-Hour Factor, PHF	1.00	1.00	1.00	0.92	1.00	0.92
Hourly Flow Rate, HFR (veh/h)	0	0	0	461	0	65
Percent Heavy Vehicles	0	0	0	9	0	9
Percent Grade (%)	0			0		
Flared Approach	N			N		
Storage	0			0		
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration				LR		

Delay, Queue Length, and Level of Service								
Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LR				
v (veh/h)		124		526				
C (m) (veh/h)		1270		545				
v/c		0.10		0.97				
95% queue length		0.32		12.91				
Control Delay (s/veh)		8.1		57.9				
LOS		A		F				
Approach Delay (s/veh)	--	--		57.9				
Approach LOS	--	--		F				

NO BUILD

TWO-WAY STOP CONTROL SUMMARY								
General Information			Site Information					
Analyst	Carlos Baker		Intersection	SR 201 @ SR 2				
Agency/Co.	GDOT		Jurisdiction					
Date Performed	1/10/2012		Analysis Year	2016				
Analysis Time Period	2016 PM							
Project Description 0009890								
East/West Street: SR 2			North/South Street: SR 201					
Intersection Orientation: North-South			Study Period (hrs): 0.25					
Vehicle Volumes and Adjustments								
Major Street	Northbound			Southbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)		95	435	100	45			
Peak-Hour Factor, PHF	1.00	0.92	0.92	0.92	0.92	1.00		
Hourly Flow Rate, HFR (veh/h)	0	103	472	108	48	0		
Percent Heavy Vehicles	0	--	--	6	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	1	0	2	0		
Configuration		T	R	LT	T			
Upstream Signal		0			0			
Minor Street	Eastbound			Westbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)				280		95		
Peak-Hour Factor, PHF	1.00	1.00	1.00	0.92	1.00	0.92		
Hourly Flow Rate, HFR (veh/h)	0	0	0	304	0	103		
Percent Heavy Vehicles	0	0	0	6	0	6		
Percent Grade (%)	0			0				
Flared Approach	N			N				
Storage	0			0				
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration				LR				
Delay, Queue Length, and Level of Service								
Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LR				
v (veh/h)		108		407				
C (m) (veh/h)		967		612				
v/c		0.11		0.67				
95% queue length		0.38		4.99				
Control Delay (s/veh)		9.2		21.8				
LOS		A		C				
Approach Delay (s/veh)	--	--		21.8				
Approach LOS	--	--		C				

NO BUILD

TWO-WAY STOP CONTROL SUMMARY

General Information				Site Information			
Analyst	Carlos Baker			Intersection	SR 201 @ SR 2		
Agency/Co.	GDOT			Jurisdiction			
Date Performed	1/10/2012			Analysis Year	2036		
Analysis Time Period	2036 AM						
Project Description 0009890							
East/West Street: SR 2				North/South Street: SR 201			
Intersection Orientation: North-South				Study Period (hrs): 0.25			
Vehicle Volumes and Adjustments							
Major Street	Northbound			Southbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)		60	275	145	270		
Peak-Hour Factor, PHF	1.00	0.92	0.92	0.92	0.92	1.00	
Hourly Flow Rate, HFR (veh/h)	0	65	298	157	293	0	
Percent Heavy Vehicles	0	--	--	9	--	--	
Median Type	Undivided						
RT Channelized			0			0	
Lanes	0	1	1	0	2	0	
Configuration		T	R	LT	T		
Upstream Signal		0			0		
Minor Street	Eastbound			Westbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)				625		90	
Peak-Hour Factor, PHF	1.00	1.00	1.00	0.92	1.00	0.92	
Hourly Flow Rate, HFR (veh/h)	0	0	0	679	0	97	
Percent Heavy Vehicles	0	0	0	9	0	9	
Percent Grade (%)	0			0			
Flared Approach	N			N			
Storage	0			0			
RT Channelized			0			0	
Lanes	0	0	0	0	0	0	
Configuration				LR			
Delay, Queue Length, and Level of Service							
Approach	Northbound	Southbound	Westbound			Eastbound	
Movement	1	4	7	8	9	10	11
Lane Configuration		LT	LR				
v (veh/h)		157	776				
C (m) (veh/h)		1143	433				
v/c		0.14	1.79				
95% queue length		0.48	48.83				
Control Delay (s/veh)		8.7	387.7				
LOS		A	F				
Approach Delay (s/veh)	--	--	387.7				
Approach LOS	--	--	F				

NO BUILD

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	Carlos Baker			Intersection	SR 201 @ SR 2			
Agency/Co.	GDOT			Jurisdiction				
Date Performed	1/10/2012			Analysis Year	2036			
Analysis Time Period	2036 PM							
Project Description 0009890								
East/West Street: SR 2				North/South Street: SR 201				
Intersection Orientation: North-South				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Northbound			Southbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)		140	640	170	270			
Peak-Hour Factor, PHF	1.00	0.92	0.92	0.92	0.92	1.00		
Hourly Flow Rate, HFR (veh/h)	0	152	695	184	293	0		
Percent Heavy Vehicles	0	--	--	6	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	1	0	2	0		
Configuration		T	R	LT	T			
Upstream Signal		0			0			
Minor Street	Eastbound			Westbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)				415		140		
Peak-Hour Factor, PHF	1.00	1.00	1.00	0.92	1.00	0.92		
Hourly Flow Rate, HFR (veh/h)	0	0	0	451	0	152		
Percent Heavy Vehicles	0	0	0	6	0	6		
Percent Grade (%)		0			0			
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration					LR			
Delay, Queue Length, and Level of Service								
Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LR				
v (veh/h)		184		603				
C (m) (veh/h)		761		350				
v/c		0.24		1.72				
95% queue length		0.94		37.63				
Control Delay (s/veh)		11.2		363.5				
LOS		B		F				
Approach Delay (s/veh)	--	--		363.5				
Approach LOS	--	--		F				

ALL-WAY STOP CONTROL ANALYSIS								
General Information				Site Information				
Analyst	Bastian			Intersection	SR 201 @ SR 2			
Agency/Co.	GDOT			Jurisdiction				
Date Performed	7/18/2012			Analysis Year	2016			
Analysis Time Period	AM							
Project ID 0009880								
East/West Street: SR 2				North/South Street: SR 201				
Volume Adjustments and Site Characteristics								
Approach	Eastbound				Westbound			
Movement	L	T	R	L	T	R		
Volume (veh/h)	0	0	0	425	0	60		
%Thrus Left Lane								
Approach	Northbound				Southbound			
Movement	L	T	R	L	T	R		
Volume (veh/h)	0	40	185	115	185	0		
%Thrus Left Lane								
	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration			LR		T	R	L	T
PHF			1.00		1.00	1.00	1.00	1.00
Flow Rate (veh/h)			485		40	185	115	185
% Heavy Vehicles			9		9	0	9	0
No. Lanes	0		1		2		2	
Geometry Group			1		5		5	
Duration, T	1.00							
Saturation Headway Adjustment Worksheet								
Prop. Left-Turns			0.9		0.0	0.0	1.0	0.0
Prop. Right-Turns			0.1		0.0	1.0	0.0	0.0
Prop. Heavy Vehicle			0.1		0.1	0.0	0.1	0.0
hLT-adj			0.2	0.2	0.5	0.5	0.5	0.5
hRT-adj			-0.6	-0.6	-0.7	-0.7	-0.7	-0.7
hHV-adj			1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed			0.3		0.2	-0.7	0.7	0.0
Departure Headway and Service Time								
hd, initial value (s)			3.20		3.20	3.20	3.20	3.20
x, initial			0.43		0.04	0.16	0.10	0.16
hd, final value (s)			5.58		6.73	5.85	7.07	6.41
x, final value			0.75		0.07	0.30	0.23	0.33
Move-up time, m (s)			2.0		2.3		2.3	
Service Time, t _s (s)			3.6		4.4	3.6	4.8	4.1
Capacity and Level of Service								
	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)			633		290	435	365	435
Delay (s/veh)			24.83		9.97	11.06	11.84	12.24
LOS			C		A	B	B	B
Approach: Delay (s/veh)			24.83			10.87	12.09	
LOS			C			B	B	
Intersection Delay (s/veh)	17.94							
Intersection LOS	C							

ALL-WAY STOP CONTROL ANALYSIS									
General Information					Site Information				
Analyst	Bastian				Intersection	SR 201 @ SR 2			
Agency/Co.	GDOT				Jurisdiction				
Date Performed	7/18/2012				Analysis Year	2016			
Analysis Time Period	PM								
Project ID 0009890									
East/West Street: SR 2					North/South Street: SR 201				
Volume Adjustments and Site Characteristics									
Approach	Eastbound				Westbound				
Movement	L	T	R	L	T	R			
Volume (veh/h)	0	0	0	280	0	95			
%Thrus Left Lane									
Approach	Northbound				Southbound				
Movement	L	T	R	L	T	R			
Volume (veh/h)	0	95	435	100	45	0			
%Thrus Left Lane									
	Eastbound		Westbound		Northbound		Southbound		
	L1	L2	L1	L2	L1	L2	L1	L2	
Configuration			LR		T	R	L	T	
PHF			1.00		1.00	1.00	1.00	1.00	
Flow Rate (veh/h)			375		95	435	100	45	
% Heavy Vehicles			6		6	6	6	6	
No. Lanes	0		1		2		2		
Geometry Group			1		5		5		
Duration, T	1.00								
Saturation Headway Adjustment Worksheet									
Prop. Left-Turns			0.7		0.0	0.0	1.0	0.0	
Prop. Right-Turns			0.3		0.0	1.0	0.0	0.0	
Prop. Heavy Vehicle			0.1		0.1	0.1	0.1	0.1	
hLT-adj			0.2	0.2	0.5	0.5	0.5	0.5	
hRT-adj			-0.6	-0.6	-0.7	-0.7	-0.7	-0.7	
hHV-adj			1.7	1.7	1.7	1.7	1.7	1.7	
hadj, computed			0.1		0.1	-0.6	0.6	0.1	
Departure Headway and Service Time									
hd, initial value (s)			3.20		3.20	3.20	3.20	3.20	
x, initial			0.33		0.08	0.39	0.09	0.04	
hd, final value (s)			5.65		6.05	5.34	7.04	6.52	
x, final value			0.59		0.16	0.64	0.20	0.08	
Move-up time, m (s)			2.0		2.3		2.3		
Service Time, t _s (s)			3.6		3.7	3.0	4.7	4.2	
Capacity and Level of Service									
	Eastbound		Westbound		Northbound		Southbound		
	L1	L2	L1	L2	L1	L2	L1	L2	
Capacity (veh/h)			613		345	658	350	295	
Delay (s/veh)			16.63		9.90	17.57	11.44	9.80	
LOS			C		A	C	B	A	
Approach: Delay (s/veh)			16.63		16.20		10.93		
LOS			C		C		B		
Intersection Delay (s/veh)	15.63								
Intersection LOS	C								

ALL-WAY STOP CONTROL ANALYSIS								
General Information				Site Information				
Analyst	Bastian			Intersection	SR 201 @ SR 2			
Agency/Co.	GDOT			Jurisdiction				
Date Performed	7/18/2012			Analysis Year	2026			
Analysis Time Period	AM							
Project ID 0009890								
East/West Street: SR 2				North/South Street: SR 201				
Volume Adjustments and Site Characteristics								
Approach	Eastbound				Westbound			
Movement	L	T	R	L	T	R		
Volume (veh/h)	0	0	0	345	0	118		
%Thrus Left Lane								
Approach	Northbound				Southbound			
Movement	L	T	R	L	T	R		
Volume (veh/h)	0	118	538	130	228	0		
%Thrus Left Lane								
	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration			LR		T	R	L	T
PHF			1.00		1.00	1.00	1.00	1.00
Flow Rate (veh/h)			463		118	538	130	228
% Heavy Vehicles			0		0	0	0	0
No. Lanes	0		1		2		2	
Geometry Group			1		5		5	
Duration, T	1.00							
Saturation Headway Adjustment Worksheet								
Prop. Left-Turns			0.7		0.0	0.0	1.0	0.0
Prop. Right-Turns			0.3		0.0	1.0	0.0	0.0
Prop. Heavy Vehicle			0.0		0.0	0.0	0.0	0.0
hLT-adj			0.2	0.2	0.5	0.5	0.5	0.5
hRT-adj			-0.6	-0.6	-0.7	-0.7	-0.7	-0.7
hHV-adj			1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed			-0.0		0.0	-0.7	0.5	0.0
Departure Headway and Service Time								
hd, initial value (s)			3.20		3.20	3.20	3.20	3.20
x, initial			0.41		0.10	0.48	0.12	0.20
hd, final value (s)			6.43		6.92	6.20	7.85	7.33
x, final value			0.83		0.23	0.93	0.28	0.46
Move-up time, m (s)			2.0		2.3		2.3	
Service Time, t _s (s)			4.4		4.6	3.9	5.5	5.0
Capacity and Level of Service								
	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)			550		368	578	380	474
Delay (s/veh)			37.68		11.65	64.09	13.64	16.33
LOS			E		B	F	B	C
Approach: Delay (s/veh)			37.68		54.66		15.36	
LOS			E		F		C	
Intersection Delay (s/veh)	39.81							
Intersection LOS	E							

ALL-WAY STOP CONTROL ANALYSIS								
General Information				Site Information				
Analyst	Bastian			Intersection	SR 201 @ SR 2			
Agency/Co.	GDOT			Jurisdiction				
Date Performed	7/18/2012			Analysis Year	2026			
Analysis Time Period	PM							
Project ID 0009890								
East/West Street: SR 2				North/South Street: SR 201				
Volume Adjustments and Site Characteristics								
Approach	Eastbound			Westbound				
Movement	L	T	R	L	T	R		
Volume (veh/h)	0	0	0	525	0	75		
%Thrus Left Lane								
Approach	Northbound			Southbound				
Movement	L	T	R	L	T	R		
Volume (veh/h)	0	50	230	130	228	0		
%Thrus Left Lane								
	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration			LR		T	R	L	T
PHF			1.00		1.00	1.00	1.00	1.00
Flow Rate (veh/h)			600		50	230	130	228
% Heavy Vehicles			0		0	0	0	0
No. Lanes	0		1		2		2	
Geometry Group			1		5		5	
Duration, T					1.00			
Saturation Headway Adjustment Worksheet								
Prop. Left-Turns			0.9		0.0	0.0	1.0	0.0
Prop. Right-Turns			0.1		0.0	1.0	0.0	0.0
Prop. Heavy Vehicle			0.0		0.0	0.0	0.0	0.0
hLT-adj			0.2	0.2	0.5	0.5	0.5	0.5
hRT-adj			-0.6	-0.6	-0.7	-0.7	-0.7	-0.7
hHV-adj			1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed			0.1		0.0	-0.7	0.5	0.0
Departure Headway and Service Time								
hd, initial value (s)			3.20		3.20	3.20	3.20	3.20
x, initial			0.53		0.04	0.20	0.12	0.20
hd, final value (s)			5.80		7.23	6.50	7.57	7.05
x, final value			0.97		0.10	0.42	0.27	0.45
Move-up time, m (s)			2.0		2.3		2.3	
Service Time, t _s (s)			3.8		4.9	4.2	5.3	4.8
Capacity and Level of Service								
	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)			619		300	480	380	478
Delay (s/veh)			83.54		10.73	13.80	13.11	15.41
LOS			F		B	B	B	C
Approach: Delay (s/veh)			83.54		13.26		14.58	
LOS			F		B		B	
Intersection Delay (s/veh)					47.70			
Intersection LOS					E			

ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	Bastian	Intersection	SR 201 @ SR 2
Agency/Co.	GDOT	Jurisdiction	
Date Performed	7/18/2012	Analysis Year	2036
Analysis Time Period	AM		

Project ID 0009890

East/West Street: SR 2

North/South Street: SR 201

Volume/Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
	L	T	R	L	T	R
Movement						
Volume (veh/h)	0	0	0	625	0	90
%Thrus Left Lane						

Approach	Northbound			Southbound		
	L	T	R	L	T	R
Movement						
Volume (veh/h)	0	60	275	145	270	0
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration			LR		T	R	L	T
PHF			1.00		1.00	1.00	1.00	1.00
Flow Rate (veh/h)			715		60	275	145	270
% Heavy Vehicles			0		0	0	0	0
No. Lanes	0			1		2		2
Geometry Group				1		5		5
Duration, T						1.00		

Saturation Headway Adjustment Worksheet

Prop. Left-Turns			0.9		0.0	0.0	1.0	0.0
Prop. Right-Turns			0.1		0.0	1.0	0.0	0.0
Prop. Heavy Vehicle			0.0		0.0	0.0	0.0	0.0
hLT-adj			0.2	0.2	0.5	0.5	0.5	0.5
hRT-adj			-0.6	-0.6	-0.7	-0.7	-0.7	-0.7
hHV-adj			1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed			0.1		0.0	-0.7	0.5	0.0

Departure Headway and Service Time

hd, initial value (s)			3.20		3.20	3.20	3.20	3.20
x, initial			0.64		0.05	0.24	0.13	0.24
hd, final value (s)			6.09		7.43	6.71	7.78	7.26
x, final value			1.21		0.12	0.51	0.31	0.54
Move-up time, m (s)				2.0		2.3		2.3
Service Time, t _s (s)			4.1		5.1	4.4	5.5	5.0

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)			715		310	525	395	493
Delay (s/veh)			417.43		11.18	16.39	14.02	18.57
LOS			F		B	C	B	C
Approach: Delay (s/veh)			417.43		15.46		16.98	
LOS			F		C		C	
Intersection Delay (s/veh)					212.07			
Intersection LOS					F			

ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	Bastian	Intersection	SR 201 @ SR 2
Agency/Co.	GDOT	Jurisdiction	
Date Performed	7/18/2012	Analysis Year	2036
Analysis Time Period	PM		

Project ID 0009890

East/West Street: SR 2

North/South Street: SR 201

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
	L	T	R	L	T	R
Movement						
Volume (veh/h)	0	0	0	410	0	140
%Thrus Left Lane						

Approach	Northbound			Southbound		
	L	T	R	L	T	R
Movement						
Volume (veh/h)	0	140	640	170	65	0
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration			LR		T	R	L	T
PHF			1.00		1.00	1.00	1.00	1.00
Flow Rate (veh/h)			550		140	640	170	65
% Heavy Vehicles			0		0	0	0	0
No. Lanes	0			1		2		2
Geometry Group				1		5		5
Duration, T					1.00			

Saturation Headway Adjustment Worksheet

Prop. Left-Turns			0.7		0.0	0.0	1.0	0.0
Prop. Right-Turns			0.3		0.0	1.0	0.0	0.0
Prop. Heavy Vehicle			0.0		0.0	0.0	0.0	0.0
hLT-adj			0.2	0.2	0.5	0.5	0.5	0.5
hRT-adj			-0.6	-0.6	-0.7	-0.7	-0.7	-0.7
hHV-adj			1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed			-0.0		0.0	-0.7	0.5	0.0

Departure Headway and Service Time

hd, initial value (s)			3.20		3.20	3.20	3.20	3.20
x, initial			0.49		0.12	0.57	0.15	0.06
hd, final value (s)			6.34		7.06	6.34	8.30	7.78
x, final value			0.97		0.27	1.13	0.39	0.14
Move-up time, m (s)				2.0		2.3		2.3
Service Time, t _s (s)			4.3		4.8	4.0	6.0	5.5

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)			568		390	640	420	315
Delay (s/veh)			89.40		12.43	284.50	16.32	11.74
LOS			F		B	F	C	B
Approach: Delay (s/veh)			89.40		235.67		15.05	
LOS			F		F		C	
Intersection Delay (s/veh)			151.14					
Intersection LOS			F					

Stop Control Estimate

Stop Control ITEM	Sign	Size	Total	Post
3 Stop	R1-1	36X36	27ft ²	13ft
3 Stop Ahead	W3-1	36X36	27ft ²	13ft
1 Reduce Speed	R2-5B	18X24	3ft ²	14ft
1 Speed Zone	R2-5C	18X24	3ft ²	14ft
			60ft ²	54ft
Traffic Signal				
PAY ITEM	Total Amount	Price Per Item	Total	
636-1020	60ft ²	13.96/sf	837.6	Signs
636-2070	54lf	7.46/lf	402	Post
653-1501	300lf	0.57/lf	171	5" White
653-1502	300lf	0.61/lf	183	5" Yellow
653-1706	60lf	5.12/lf	307	24" white
			1,901	
			1	E&C
			2,091	2,100

Signal Estimate

RT TURN LANE

Type of Pavement	Total Area	sqf/9ft	Thickness	Thickness X 110 ld/sy-in	Total	Tons/2000lbs	Total in Tons
1 1/4 inches 9.5 mm superpave	3,000 sqF	334 sy	1 1/4 inches	135 ld/sy	45,090	2,000 lbs	23
2 inches 19 mm superpave	3,000 sqF	334 sy	2 inches	220 ld/sy	73,480	2,000 lbs	37
8 inches 25 mm superpave	3,000 sqF	334 sy	8 inches	880 ld/sy	293,920	2,000 lbs	147

Type of Base	Total Area	Convert to Area /12Inch	V ft ³	∅GAB	Total	Tons/2000lbs	Total in Tons
12 inches Base	3,000 sqF	(1ft/12 inch)	3,000 ft ³	145 lbs/ft ³	435,000	2,000 lbs	218

Bituminous gal/yd ²	Total Area	Convert to Area /9sqf	V sy	gal/yrd ²	totalt for one application	totalt for 2 application
0.04(0.180)	3,000 sqF	9/sqf	334 sy	0.04	13.5	27

Cost

Type of Pavement	PAY ITEM	Total in Tons	Price Per Ton	Total
1 1/4 inches 9.5 mm superpave	402-3100	23	71.96	1655.08
2 inches 19 mm superpave	402-3190	37	73.45	2717.65
8 inches 25 mm superpave	402-3121	147	65.61	9644.67
12 inches Base	310-1101	218	18.47	4026.46
Bituminous gal/yd ²	413-1000	27	4.76	128.52
				18,172.38

ADA Landing Pads

Type of Pavement	PAY ITEM	Total in sy	Price Per sy	Total
CONC SIDEWALK, 4 IN	441-0104	5	51	255.35

Traffic Signal

PAY ITEM	Price Per Item	Total Unit	Total
647-1000	150,000	1	150,000
639-4014	5,738	4	22,952

Total	R/W
18,172.38	70,000
255.35	210,517.70
172,952	280,517.70

191,379.73

E&C

X1.10
210,517.70

0009890

WHITFIELD

SINGLE LANE

9.5	241	x	78.85705	=	19,004.55
19	391	x	74.22002	=	29,020.03
25	1567	x	64.35702	=	100,847.45
GAB	2538	x	25.52899	=	64,792.45
TACK	286	x	0.40	=	114.40

213,778.88

COST OF ABOVE ITEMS FROM MULTILANE / HYBRID CES
350,962.65

ROADWAY ITEMS	555,970.33
-	350,962.65
+	213,778.88
	<u>418,786.56</u>

SIGNING + MARKING 39,922.00

GRADING COMPLETE 168,000.00

\$627,708.56

0009890

WHITFIELD

SINGLE LANE W/SLIP LANE

9.5	345 x	78.84705	=	27,205.68
19	715 x	74.22002	=	53,067.31
25	2860 x	64.35702	=	184,061.08
GAB	3335 x	25.52899	=	85,139.01
TALK	910 x	0.40	=	169.00

349,637.08

COST OF ABOVE ITEMS FROM MULTILANE / HYBRID CES
350,962.65

ROADWAY ITEMS

555,970.33

- 350,962.65

+ 349,637.08

554,644.76

SIGNING & MARKING

39,922.00

GRADING COMPLETE

168,000.00

\$ 762,556.76

DETAILED COST ESTIMATE



Job: 0009890

JOB NUMBER: 0009890

FED/STATE PROJECT NUMBER

SPEC YEAR: 01

MULTILANE/HYBRID

DESCRIPTION: SR 201 @ SR 2

ITEMS FOR JOB 0009890

10 - ROADWAY

Item Number	ITEM	QUANTITY	UNITS	PRICE	DESCRIPTION	AMOUNT
0004	150-1000	1.000	LS	\$44,500.00000	TRAFFIC CONTROL - 0009890	\$44,500.00
0040	310-5100	508.000	SY	\$19.69777	GR AGGR BS CRS 10IN INCL MATL	\$10,006.47
0025	310-5120	3915.000	SY	\$25.52864	GR AGGR BS CRS 12IN INCL MATL	\$99,945.80
0010	402-3103	405.000	TN	\$78.85705	REC AC 9.5 MM SP,TPI,GP2, INCL BM & H L	\$31,937.11
0020	402-3121	2640.000	TN	\$64.35702	RECYL AC 25MM SP,GP1/2,BM&HL	\$169,902.59
0015	402-3190	680.000	TN	\$74.22002	RECYL AC 10 MM SP,GP 1 OR 2, JNC BM&HL	\$48,985.21
0030	413-0500	480.000	GL	\$0.40000	DILUTED EMULSIFIED ASPH TK CT	\$192.00
0035	430-0180	935.000	SY	\$25.10717	PLN PC CONC PVMT/CLIC/ 8" TK	\$23,475.20
0070	441-0104	369.000	SY	\$45.83572	CONC SIDEWALK, 4 IN	\$16,913.38
0085	441-0748	600.000	SY	\$38.37173	CONC MEDIAN, 6 IN	\$23,023.04
0045	441-5008	240.000	LF	\$11.83959	CONC HEADER CURB, 6 IN, TP 7	\$2,841.50
0050	441-5011	380.000	LF	\$8.87000	CONC HDR CURB, 6 IN, TP 8A	\$3,481.20
0055	441-6222	2474.000	LF	\$12.25552	CONC CURB & GUTTER/ 8"x30"TP2	\$30,320.16
0060	441-6720	3800.000	LF	\$12.83506	CONC CURB & GUTTER/ 6"x30"TP7	\$50,446.73
SUBTOTAL FOR ROADWAY:						\$566,970.33

60 - SIGNING AND MARKING

Item Number	ITEM	QUANTITY	UNITS	PRICE	DESCRIPTION	AMOUNT
0075	636-1020	114.000	SF	\$17.00000	HWY SGN,TP1MAT,REFL SH TP3	\$1,938.00
0080	636-1033	188.000	SF	\$22.00000	HWY SIGNS, TP1MAT,REFL SH TP 9	\$3,718.00
0085	636-2070	600.000	LF	\$8.00000	GALV STEEL POSTS, TP 7	\$4,800.00
0090	636-2080	250.000	LF	\$8.00000	GALV STEEL POSTS, TP 8	\$2,250.00
0095	653-0170	4.000	EA	\$100.00000	THERM PVMT MARK, ARROW, TP 7	\$400.00
0100	653-0284	4.000	EA	\$706.28668	THERM PVMT MARK, WORD, TP 13	\$2,825.18
0105	653-1501	4000.000	LF	\$0.55526	THERMO SOLID TRAF ST 5 IN, WHI	\$2,221.12
0120	653-1502	3600.000	LF	\$0.55721	THERMO SOLID TRAF ST, 5 IN YEL	\$2,005.86
0115	653-1704	200.000	LF	\$5.00000	THERM SOLID TRAF STRIPE,24",WH	\$1,000.00
0110	653-1804	4500.000	LF	\$2.25000	THERM SOLID TRAF STRIPE, 8",WH	\$10,125.00
0125	653-3501	700.000	GLF	\$0.37876	THERMO SKIP TRAF ST, 5 IN, WHI	\$263.73
0130	653-6004	2200.000	SY	\$3.00000	THERM TRAF STRIPING, WHITE	\$6,600.00
0135	654-1002	300.000	EA	\$3.00000	RAISED PVMT MARKERS TP 2	\$900.00
0140	654-1003	250.000	EA	\$3.50000	RAISED PVMT MARKERS TP 3	\$875.00
SUBTOTAL FOR SIGNING AND MARKING:						\$39,922.00

Item Number	ITEM	QUANTITY	UNITS	PRICE	DESCRIPTION	AMOUNT
0005	210-0100	1.000	LS	\$168,000.00000	GRADING COMPLETE - 0009890	\$168,000.00
SUBTOTAL FOR :						\$168,000.00

TOTALS FOR JOB 0009890

ITEMS COST:	\$763,892.33
COST GROUP COST:	\$0.00
ESTIMATED COST:	\$763,892.33
CONTINGENCY PERCENT:	0.00
ENGINEERING AND INSPECTION:	0.00
ESTIMATED COST WITH CONTINGENCY AND E&I:	\$763,892.33

PROJ. NO.	9890
P.I. NO.	0009890
DATE	8/28/2012

CALL NO.

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

INDEX (TYPE)	DATE	INDEX
REG. UNLEADED	Aug-12	\$ 3.431
DIESEL		\$ 3.786
LIQUID AC		\$ 549.00

LIQUID AC ADJUSTMENTS

PA=(((APM-APL)/APL)xTMT)xAPL

Asphalt				
Price Adjustment (PA)				61021.35
Monthly Asphalt Cement Price month placed (APM)			60%	\$ 878.40
Monthly Asphalt Cement Price month project let (APL)				\$ 549.00
Total Monthly Tonnage of asphalt cement (TMT)				185.25

ASPHALT	Tons	%AC	AC ton
Leveling		5.0%	0
12.5 OGFC		5.0%	0
12.5 mm		5.0%	0
9.5 mm SP	405	5.0%	20.25
25 mm SP	2640	5.0%	132
19 mm SP	660	5.0%	33
	3705		185.25

BITUMINOUS TACK COAT

Price Adjustment (PA)				\$ 679.11
Monthly Asphalt Cement Price month placed (APM)			60%	\$ 878.40
Monthly Asphalt Cement Price month project let (APL)				\$ 549.00
Total Monthly Tonnage of asphalt cement (TMT)				2.061648443

Bitum Tack			
Gals	480	gals/ton	232.8234
		tons	2.06164844

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE: .Whitfield Co.
P.I. No. 0009890
SR 201 @ SR 2 - Roundabout

OFFICE: Cartersville

DATE: April 30, 2012

FROM:  Kerry D. Bonner, District Utilities Engineer

TO: Perry Black, Project Manager

SUBJECT: PRELIMINARY UTILITY COST ESTIMATE

We are furnishing you with a Preliminary Utility Cost estimate for each utility with facilities potentially located within the project limits.

FACILITY OWNER	NON REIMBURSABLE	REIMBURSABLE
Charter	\$ 10,000.00	
North Georgia EMC	\$ 11,000.00	
Dalton Utilities – Gas	\$ 88,775.00	
Dalton Utilities – Telcom	\$ 9,673.00	
Georgia Power Company – Dist		\$ 88,000.00
Windstream	\$ 2,400.00	
Totals	\$ 121,848.00	\$ 88,000.00

Total cost for the above project is \$ 209,848.00.

If you have any questions, please contact Jennifer Deems at 770-387-3616.

KDB/jd

C: Jeff Baker, P. E., State Utilities Engineer;
File/Estimating Book

**GEORGIA DEPARTMENT OF TRANSPORTATION
PRELIMINARY ROW COST ESTIMATE SUMMARY**

Date: 7/13/2012 Project: Roundabout
 Revised: County: Whitefield
 PI: 0009890

Description: SR 201/S. Springs Street @ SR 2/Prater Mill Rd. NE Roundabout
 Project Termini: SR 201/S. Springs Street @ SR 2/Prater Mill Rd. NE Roundabout

Existing ROW: Varies
 Required ROW: Varies
 Parcels: 7

Land and Improvements _____ \$1,052,940.00

Proximity Damage \$150,000.00

Consequential Damage \$0.00

Cost to Cures \$0.00

Trade Fixtures \$0.00

Improvements \$500,000.00

Valuation Services _____ \$17,500.00

Legal Services _____ \$79,725.00

Relocation _____ \$29,000.00

Demolition _____ \$25,000.00

Administrative _____ \$66,500.00

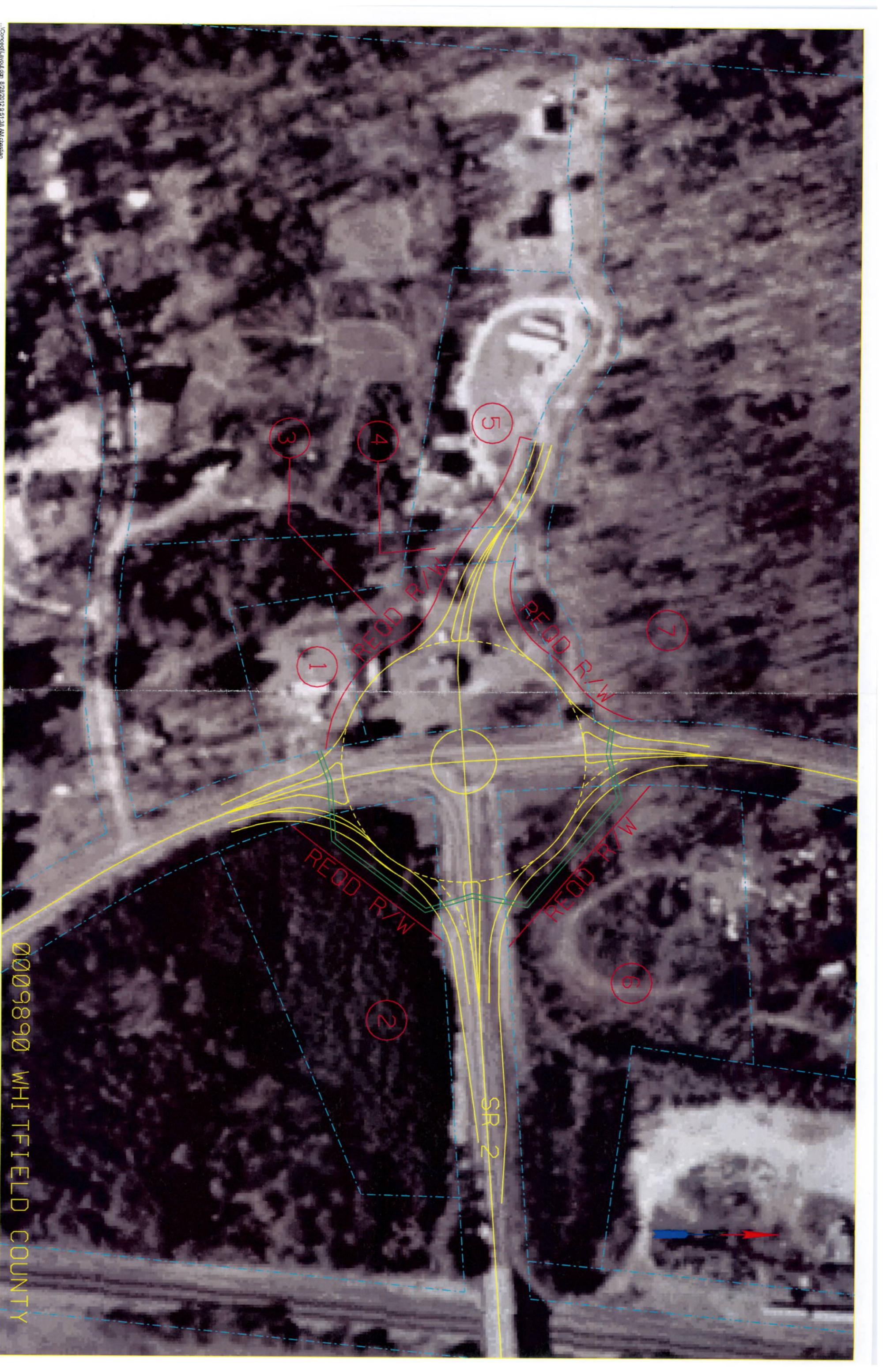
TOTAL ESTIMATED COSTS _____ \$1,270,665.00

TOTAL ESTIMATED COSTS (ROUNDED) _____ \$1,271,000.00

Preparation Credits	Hours	Signature

Prepared By: Lashara Alexander CG# 286909 7/13/2012
 Approved By: [Signature] CG# 286909 7/13/2012

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



3

4

5

7

1

6

2

RECD R/W

RECD R/W

SR 2

RECD R/W

Georgia Department of Transportation

District Six Traffic Operations
SR 2 @ SR 201 XRT8th70%Build

Study Name : 2@201XRT8th70%Build

Study Date : 08/06/12

Page No. : 1

Signal Warrants - Summary

Major Street Approaches

Northbound: SR 201

Number of Lanes: 1

Approach Speed: 45

Total Approach Volume: 448

Southbound: SR 201

Number of Lanes: 1

Approach Speed: 45

Total Approach Volume: 784

Minor Street Approaches

Westbound: SR 2

Number of Lanes: 1

Total Approach Volume: 1,432

Warrant Summary (Urban values apply.)

Warrant 1 - Eight Hour Vehicular Volumes	Not Satisfied
Warrant 1A - Minimum Vehicular Volume	Not Satisfied
Required volumes reached for 0 hours, 8 are needed	
Warrant 1B - Interruption of Continuous Traffic	Not Satisfied
Required volumes reached for 0 hours, 8 are needed	
Warrant 1 A&B - Combination of Warrants	Not Satisfied
Required volumes reached for 0 hours, 8 are needed	
Warrant 2 - Four Hour Volumes	Not Satisfied
Number of hours (0) volumes exceed minimum < minimum required (4).	
Warrant 3 - Peak Hour	Not Satisfied
Warrant 3A - Peak Hour Volumes	Not Satisfied
Volumes do not exceed minimums for any hour.	
Warrant 3B - Peak Hour Delay	Not Satisfied
Total approach volumes and delays on minor street do not exceed minimums for any 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 (-1) is less than minimum (5). Volume minimums are not met.	
Warrant 8 - Roadway Network	Not Satisfied
Major Route conditions not met. No volume requirement met.	

Georgia Department of Transportation

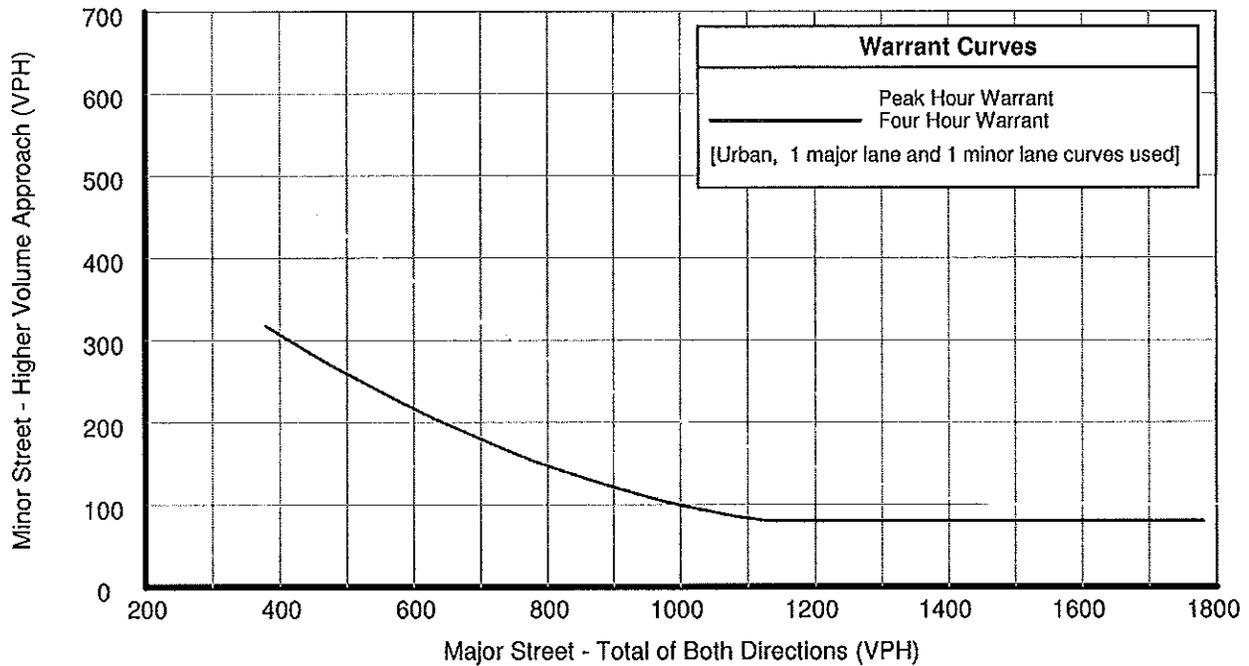
District Six Traffic Operations
SR 2 @ SR 201 XRT8th70%Build

Study Name : 2@201XRT8th70%Build

Study Date : 08/06/12

Page No. : 2

Signal Warrants - Summary



Analysis of 8-Hour Volume Warrants:

Hour Begin	Major Total	Higher Minor		War-1A			War-1B			War-1A&B		
		Vol	Dir	Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?
00:00	154	179	WB	500-No	150-Yes	Minor	750-No	75-Yes	Minor	600-No	120-Yes	Minor
01:00	154	179	WB	500-No	150-Yes	Minor	750-No	75-Yes	Minor	600-No	120-Yes	Minor
02:00	154	179	WB	500-No	150-Yes	Minor	750-No	75-Yes	Minor	600-No	120-Yes	Minor
03:00	154	179	WB	500-No	150-Yes	Minor	750-No	75-Yes	Minor	600-No	120-Yes	Minor
04:00	154	179	WB	500-No	150-Yes	Minor	750-No	75-Yes	Minor	600-No	120-Yes	Minor
05:00	154	179	WB	500-No	150-Yes	Minor	750-No	75-Yes	Minor	600-No	120-Yes	Minor
06:00	154	179	WB	500-No	150-Yes	Minor	750-No	75-Yes	Minor	600-No	120-Yes	Minor
07:00	154	179	WB	500-No	150-Yes	Minor	750-No	75-Yes	Minor	600-No	120-Yes	Minor
08:00	0	0	EB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
09:00	0	0	EB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
10:00	0	0	EB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
11:00	0	0	EB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
12:00	0	0	EB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
13:00	0	0	EB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
14:00	0	0	EB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
15:00	0	0	EB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
16:00	0	0	EB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
17:00	0	0	EB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
18:00	0	0	EB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
19:00	0	0	EB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
20:00	0	0	EB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
21:00	0	0	EB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
22:00	0	0	EB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
23:00	0	0	EB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---

Georgia Department of Transportation

District Six Traffic Operations

SR 2 @ SR 201 XRT8th70%Build+5

Study Name : 2@201XRT8th70%Build+5

Study Date : 08/06/12

Page No. : 1

Signal Warrants - Summary

Major Street Approaches

Northbound: SR 201

Number of Lanes: 1

Approach Speed: 55

Total Approach Volume: 496

Southbound: SR 201

Number of Lanes: 1

Approach Speed: 55

Total Approach Volume: 864

Minor Street Approaches

Westbound: SR 2

Number of Lanes: 1

Total Approach Volume: 1,584

Warrant Summary (Rural values apply.)

Warrant 1 - Eight Hour Vehicular Volumes	Not Satisfied
Warrant 1A - Minimum Vehicular Volume	Not Satisfied
Required volumes reached for 0 hours, 8 are needed	
Warrant 1B - Interruption of Continuous Traffic	Not Satisfied
Required volumes reached for 0 hours, 8 are needed	
Warrant 1 A&B - Combination of Warrants	Not Satisfied
Required volumes reached for 0 hours, 8 are needed	
Warrant 2 - Four Hour Volumes	Not Satisfied
Number of hours (0) volumes exceed minimum < minimum required (4).	
Warrant 3 - Peak Hour	Not Satisfied
Warrant 3A - Peak Hour Volumes	Not Satisfied
Volumes do not exceed minimums for any hour.	
Warrant 3B - Peak Hour Delay	Not Satisfied
Total approach volumes and delays on minor street do not exceed minimums for any 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 (-1) is less than minimum (5). Volume minimums are not met.	
Warrant 8 - Roadway Network	Not Satisfied
Major Route conditions not met. No volume requirement met.	

Georgia Department of Transportation

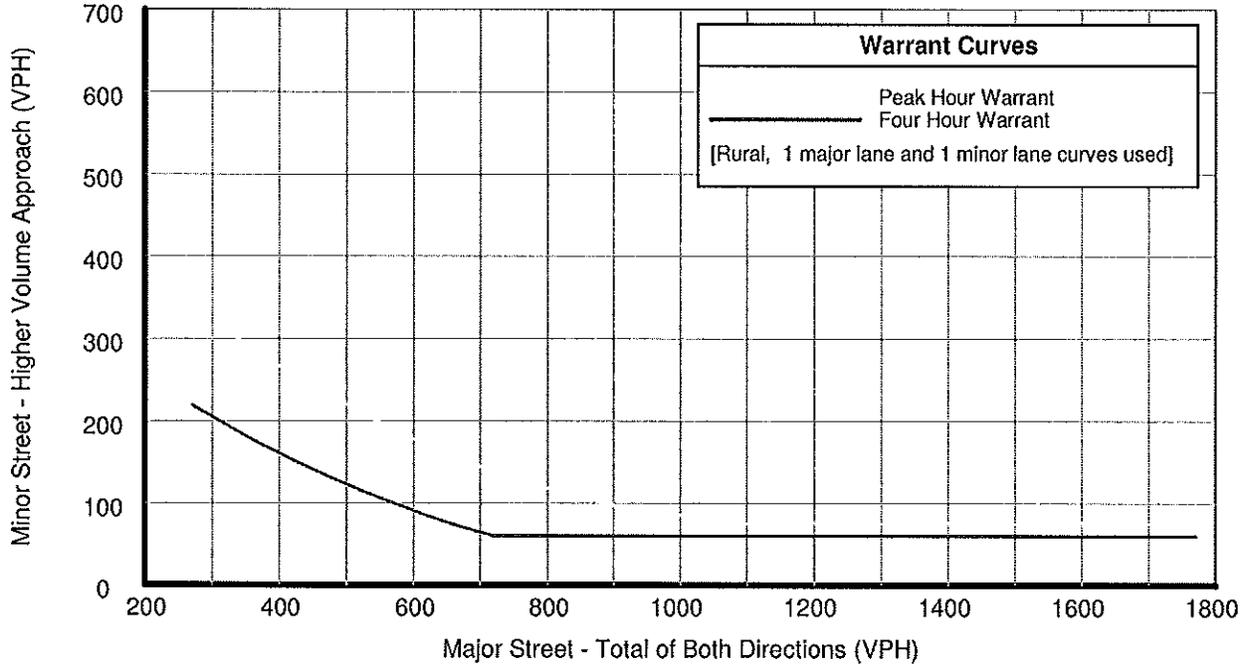
District Six Traffic Operations
SR 2 @ SR 201 XRT8th70%Build+5

Study Name : 2@201XRT8th70%Build+5

Study Date : 08/06/12

Page No. : 2

Signal Warrants - Summary



Analysis of 8-Hour Volume Warrants:

Hour Begin	Major Total	Higher Minor		War-1A			War-1B			War-1A&B		
		Vol	Dir	Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?
00:00	170	198	WB	350-No	105-Yes	Minor	525-No	52-Yes	Minor	420-No	84-Yes	Minor
01:00	170	198	WB	350-No	105-Yes	Minor	525-No	52-Yes	Minor	420-No	84-Yes	Minor
02:00	170	198	WB	350-No	105-Yes	Minor	525-No	52-Yes	Minor	420-No	84-Yes	Minor
03:00	170	198	WB	350-No	105-Yes	Minor	525-No	52-Yes	Minor	420-No	84-Yes	Minor
04:00	170	198	WB	350-No	105-Yes	Minor	525-No	52-Yes	Minor	420-No	84-Yes	Minor
05:00	170	198	WB	350-No	105-Yes	Minor	525-No	52-Yes	Minor	420-No	84-Yes	Minor
06:00	170	198	WB	350-No	105-Yes	Minor	525-No	52-Yes	Minor	420-No	84-Yes	Minor
07:00	170	198	WB	350-No	105-Yes	Minor	525-No	52-Yes	Minor	420-No	84-Yes	Minor
08:00	0	0	EB	350-No	105-No	---	525-No	52-No	---	420-No	84-No	---
09:00	0	0	EB	350-No	105-No	---	525-No	52-No	---	420-No	84-No	---
10:00	0	0	EB	350-No	105-No	---	525-No	52-No	---	420-No	84-No	---
11:00	0	0	EB	350-No	105-No	---	525-No	52-No	---	420-No	84-No	---
12:00	0	0	EB	350-No	105-No	---	525-No	52-No	---	420-No	84-No	---
13:00	0	0	EB	350-No	105-No	---	525-No	52-No	---	420-No	84-No	---
14:00	0	0	EB	350-No	105-No	---	525-No	52-No	---	420-No	84-No	---
15:00	0	0	EB	350-No	105-No	---	525-No	52-No	---	420-No	84-No	---
16:00	0	0	EB	350-No	105-No	---	525-No	52-No	---	420-No	84-No	---
17:00	0	0	EB	350-No	105-No	---	525-No	52-No	---	420-No	84-No	---
18:00	0	0	EB	350-No	105-No	---	525-No	52-No	---	420-No	84-No	---
19:00	0	0	EB	350-No	105-No	---	525-No	52-No	---	420-No	84-No	---
20:00	0	0	EB	350-No	105-No	---	525-No	52-No	---	420-No	84-No	---
21:00	0	0	EB	350-No	105-No	---	525-No	52-No	---	420-No	84-No	---
22:00	0	0	EB	350-No	105-No	---	525-No	52-No	---	420-No	84-No	---
23:00	0	0	EB	350-No	105-No	---	525-No	52-No	---	420-No	84-No	---

Georgia Department of Transportation

District Six Traffic Operations
SR 2 @ SR 201 XRT8th70%2036

Study Name : 2@201XRT8th70%2036
Study Date : 08/06/12
Page No. : 1

Signal Warrants - Summary

Major Street Approaches

Northbound: SR 201

Number of Lanes: 1
Approach Speed: 55
Total Approach Volume: 648

Southbound: SR 201

Number of Lanes: 1
Approach Speed: 55
Total Approach Volume: 1,144

Minor Street Approaches

Westbound: SR 2

Number of Lanes: 1
Total Approach Volume: 2,104

Warrant Summary (Rural values apply.)

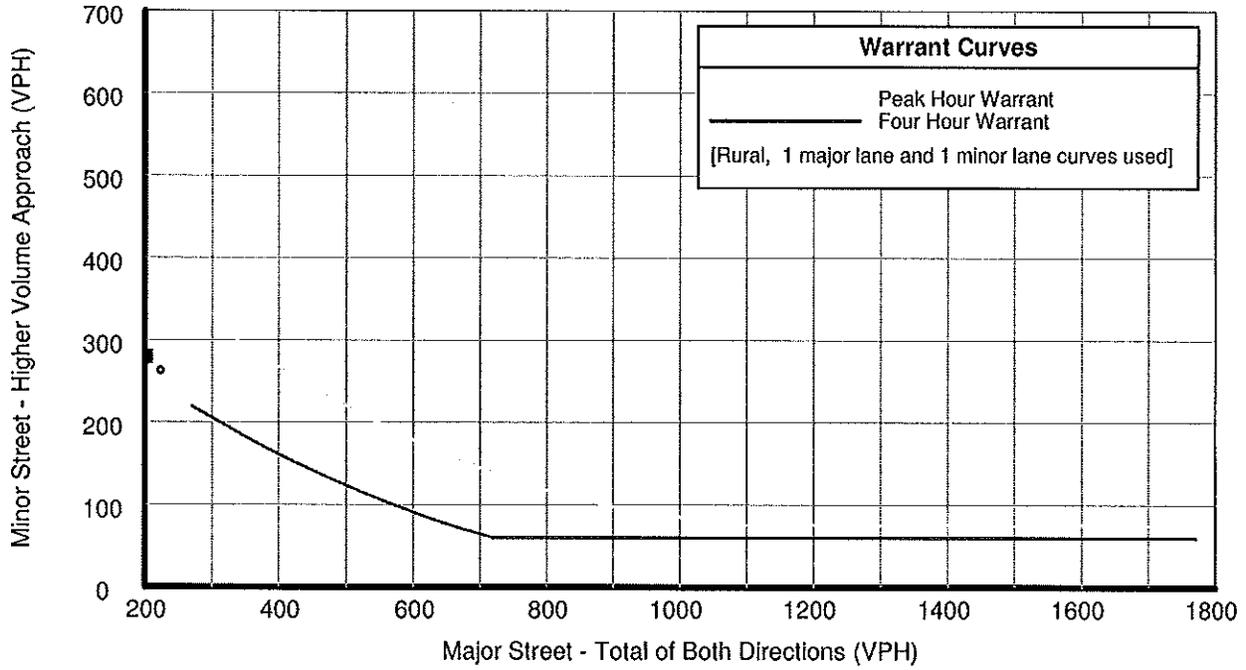
Warrant 1 - Eight Hour Vehicular Volumes	Not Satisfied
Warrant 1A - Minimum Vehicular Volume	Not Satisfied
Required volumes reached for 0 hours, 8 are needed	
Warrant 1B - Interruption of Continuous Traffic	Not Satisfied
Required volumes reached for 0 hours, 8 are needed	
Warrant 1 A&B - Combination of Warrants	Not Satisfied
Required volumes reached for 0 hours, 8 are needed	
Warrant 2 - Four Hour Volumes	Not Satisfied
Number of hours (0) volumes exceed minimum < minimum required (4).	
Warrant 3 - Peak Hour	Not Satisfied
Warrant 3A - Peak Hour Volumes	Not Satisfied
Volumes do not exceed minimums for any hour.	
Warrant 3B - Peak Hour Delay	Not Satisfied
Total approach volumes and delays on minor street do not exceed minimums for any 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 (-1) is less than minimum (5). Volume minimums are not met.	
Warrant 8 - Roadway Network	Not Satisfied
Major Route conditions not met. No volume requirement met.	

Georgia Department of Transportation

District Six Traffic Operations
SR 2 @ SR 201 XRT8th70%2036

Study Name : 2@201XRT8th70%2036
Study Date : 08/06/12
Page No. : 2

Signal Warrants - Summary



Analysis of 8-Hour Volume Warrants:

Hour Begin	Major Total	Higher Minor Vol	Dir	War-1A			War-1B			War-1A&B		
				Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?
00:00	224	263	WB	350-No	105-Yes	Minor	525-No	52-Yes	Minor	420-No	84-Yes	Minor
01:00	224	263	WB	350-No	105-Yes	Minor	525-No	52-Yes	Minor	420-No	84-Yes	Minor
02:00	224	263	WB	350-No	105-Yes	Minor	525-No	52-Yes	Minor	420-No	84-Yes	Minor
03:00	224	263	WB	350-No	105-Yes	Minor	525-No	52-Yes	Minor	420-No	84-Yes	Minor
04:00	224	263	WB	350-No	105-Yes	Minor	525-No	52-Yes	Minor	420-No	84-Yes	Minor
05:00	224	263	WB	350-No	105-Yes	Minor	525-No	52-Yes	Minor	420-No	84-Yes	Minor
06:00	224	263	WB	350-No	105-Yes	Minor	525-No	52-Yes	Minor	420-No	84-Yes	Minor
07:00	224	263	WB	350-No	105-Yes	Minor	525-No	52-Yes	Minor	420-No	84-Yes	Minor
08:00	0	0	EB	350-No	105-No	---	525-No	52-No	---	420-No	84-No	---
09:00	0	0	EB	350-No	105-No	---	525-No	52-No	---	420-No	84-No	---
10:00	0	0	EB	350-No	105-No	---	525-No	52-No	---	420-No	84-No	---
11:00	0	0	EB	350-No	105-No	---	525-No	52-No	---	420-No	84-No	---
12:00	0	0	EB	350-No	105-No	---	525-No	52-No	---	420-No	84-No	---
13:00	0	0	EB	350-No	105-No	---	525-No	52-No	---	420-No	84-No	---
14:00	0	0	EB	350-No	105-No	---	525-No	52-No	---	420-No	84-No	---
15:00	0	0	EB	350-No	105-No	---	525-No	52-No	---	420-No	84-No	---
16:00	0	0	EB	350-No	105-No	---	525-No	52-No	---	420-No	84-No	---
17:00	0	0	EB	350-No	105-No	---	525-No	52-No	---	420-No	84-No	---
18:00	0	0	EB	350-No	105-No	---	525-No	52-No	---	420-No	84-No	---
19:00	0	0	EB	350-No	105-No	---	525-No	52-No	---	420-No	84-No	---
20:00	0	0	EB	350-No	105-No	---	525-No	52-No	---	420-No	84-No	---
21:00	0	0	EB	350-No	105-No	---	525-No	52-No	---	420-No	84-No	---
22:00	0	0	EB	350-No	105-No	---	525-No	52-No	---	420-No	84-No	---
23:00	0	0	EB	350-No	105-No	---	525-No	52-No	---	420-No	84-No	---

Bastian, Clay

From: Holder, Theresa
Sent: Thursday, October 11, 2012 5:28 PM
To: Shelby, Albert; Black, Perry
Cc: Bastian, Clay; Baker, Carlos; Rice-Singleton, Genetha
Subject: RE: P.I. 0009890 SR 201 @ SR 2 Whitfield County

Albert- as discussed, I want to ensure that the all-way stop alternate is implemented for approximately \$2100. The feasibility study recommendation has already received concurrence and documents the decision process. A letter can be sent to Program Control to cancel the project.

From: Shelby, Albert
Sent: Thursday, October 11, 2012 11:31 AM
To: Holder, Theresa; Black, Perry
Cc: Bastian, Clay; Baker, Carlos; Rice-Singleton, Genetha
Subject: RE: P.I. 0009890 SR 201 @ SR 2 Whitfield County

I believe we should document the cancellation of the project with a no-build concept report recommendation. This gets a signature from all staff concurring with the decision.

Thanks,

Albert V. Shelby, III
Assistant State Program Delivery Engineer
Office of Program Delivery - Delivering Excellence
One Georgia Center
600 West Peachtree Street, Floor 25
Atlanta, GA 30308
☎ (404) 631-1758 (Office cubicle #2542)
(404) 354-0513 (blackberry)
ashelby@dot.ga.gov

From: Holder, Theresa
Sent: Thursday, October 11, 2012 10:26 AM
To: Black, Perry
Cc: Bastian, Clay; Baker, Carlos; Shelby, Albert; Rice-Singleton, Genetha
Subject: RE: P.I. 0009890 SR 201 @ SR 2 Whitfield County

Hi Perry- what are the next steps as far as implementing the recommended alternate?

From: Black, Perry
Sent: Friday, September 28, 2012 8:25 AM
To: Zahul, Kathy; Holder, Theresa
Cc: Bastian, Clay; Baker, Carlos; Shelby, Albert; Rice-Singleton, Genetha; Casey, Andy; Turpeau Jr, Michael; Cressman, Norm; DeNard, Paul
Subject: RE: P.I. 0009890 SR 201 @ SR 2 Whitfield County

As project manager I concur with canceling the current project.

Thanks,

Perry Black
Project Manager
Georgia Department of Transportation
Office of Program Delivery
600 W. Peachtree St. N.W. 24th Floor
Atlanta Georgia 30308
(404) 631-1224

From: Zahul, Kathy
Sent: Thursday, September 27, 2012 7:54 PM
To: Black, Perry; Holder, Theresa
Cc: Bastian, Clay; Baker, Carlos; Shelby, Albert; Rice-Singleton, Genetha; Casey, Andy; Turpeau Jr, Michael; Cressman, Norm; DeNard, Paul
Subject: Re: P.I. 0009890 SR 201 @ SR 2 Whitfield County

I think the decisions should always involve, at minimum, the project manager, the program manager, district traffic operations, subject matter experts, and the designer. Michael Turpeau and I discussed this project today. He has coordinated with District Traffic Operations to review the crash history and traffic projections. We believe that your recommendations are sound and that the need for the project can be re-evaluated at a future date if traffic volumes or crashes increase. I'm not sure it's necessary to meet before canceling the current project. Please let us know if you concur.

Thank you,
Kathy

From: Black, Perry
Sent: Thursday, September 27, 2012 01:28 PM
To: Holder, Theresa
Cc: Zahul, Kathy; Bastian, Clay; Baker, Carlos; Shelby, Albert; Rice-Singleton, Genetha; Casey, Andy; Turpeau Jr, Michael; Cressman, Norm; DeNard, Paul
Subject: RE: P.I. 0009890 SR 201 @ SR 2 Whitfield County

Theresa,

One of the goals of this meeting is to figure who makes the final decision in these types of situations.

-----Original Appointment-----

From: Holder, Theresa
Sent: Thursday, September 27, 2012 1:21 PM
To: Black, Perry; Holder, Theresa
Cc: Zahul, Kathy; Bastian, Clay; Baker, Carlos; Shelby, Albert; Rice-Singleton, Genetha; Casey, Andy
Subject: Tentative: P.I. 0009890 SR 201 @ SR 2 Whitfield County
When: Thursday, October 11, 2012 1:30 PM-3:00 PM (UTC-05:00) Eastern Time (US & Canada).
Where: One Georgia Center-25th Floor Office Program Delivery Conference Room

Perry- I just want to make sure we are all on the same page as far as the expected outcome of the meeting. In the Feasibility Study, we recommended installing an all-way stop control for this intersection instead of the roundabout or signal alternates. Is it your intent to have Kathy make the final decision on moving forward with the recommendations at the meeting?

<< File: Intersection Feasibility Study.pdf >>

Thanks,

Theresa

Georgia DOT's mission is to provide a safe, connected and environmentally sensitive transportation system that enhances Georgia's economic competitiveness by working efficiently and communicating effectively to create strong partnerships.

Visit us at <http://www.dot.ga.gov>; or follow us on <http://www.facebook.com/GeorgiaDOT> and <http://twitter.com/gadepoftrans>.

Black, Perry

From: Zahul, Kathy
Sent: Monday, August 12, 2013 3:36 PM
To: Black, Perry
Subject: FW: P.I. 0009890 SR 201 @ SR 2 Whitfield County(8-12-13)

Perry,
Just closing the loop on 0009890 to reflect the revised concept report.

Thanks,
Kathy

From: Maddox, Harry
Sent: Monday, August 12, 2013 1:58 PM
To: Zahul, Kathy
Cc: Corson, Dee
Subject: RE: P.I. 0009890 SR 201 @ SR 2 Whitfield County

Kathy,

We can submit a maintenance request for the stop signs.

Thanks,
Harry

From: Zahul, Kathy
Sent: Monday, August 12, 2013 12:28 PM
To: Zehngraff, Scott E.; Werho, Ken; Maddox, Harry; Corson, Dee
Cc: Turpeau Jr, Michael
Subject: FW: P.I. 0009890 SR 201 @ SR 2 Whitfield County

Scott and Ken,

There is a long history behind this decision. Michael discussed the recommendation with District 6 last year. Revising the concept report closes the loop from a federal perspective so that PE expenditures can be justified even though there will be no construction phase (assuming the work can be done by Maintenance forces.)

Harry/Dee,
Can you confirm that GDOT will be erecting the stop signs?

Thank you all,
Kathy

From: Black, Perry
Sent: Friday, September 28, 2012 8:25 AM
To: Zahul, Kathy; Holder, Theresa
Cc: Bastian, Clay; Baker, Carlos; Shelby, Albert; Rice-Singleton, Genetha; Casey, Andy; Turpeau Jr, Michael; Cressman, Norm; DeNard, Paul
Subject: RE: P.I. 0009890 SR 201 @ SR 2 Whitfield County

As project manager I concur with canceling the current project.

Thanks,
Perry Black
Project Manager
Georgia Department of Transportation
Office of Program Delivery
600 W. Peachtree St. N.W. 24th Floor
Atlanta Georgia 30308
(404) 631-1224

From: Zahul, Kathy
Sent: Thursday, September 27, 2012 7:54 PM
To: Black, Perry; Holder, Theresa
Cc: Bastian, Clay; Baker, Carlos; Shelby, Albert; Rice-Singleton, Genetha; Casey, Andy; Turpeau Jr, Michael; Cressman, Norm; DeNard, Paul
Subject: Re: P.I. 0009890 SR 201 @ SR 2 Whitfield County

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Thank you,
Kathy

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To: Holder, Theresa
Cc: Zahul, Kathy; Bastian, Clay; Baker, Carlos; Shelby, Albert; Rice-Singleton, Genetha; Casey, Andy; Turpeau Jr, Michael; Cressman, Norm; DeNard, Paul
Subject: RE: P.I. 0009890 SR 201 @ SR 2 Whitfield County

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Sent: Thursday, September 27, 2012 1:21 PM
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Cc: Zahul, Kathy; Bastian, Clay; Baker, Carlos; Shelby, Albert; Rice-Singleton, Genetha; Casey, Andy
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roundabout or signal alternates. Is it your intent to have Kathy make the final decision on moving forward with the recommendations at the meeting?

<< File: Intersection Feasibility Study.pdf >>

Thanks,

Theresa

Five-hundred, forty-five fewer people died on Georgia roads in 2012 than in 2005. Highway fatalities have declined in each of the seven years since 2005. The 2012 total-recently finalized in a report to federal officials-was 1,199. By comparison, 2005 deaths were a record high 1,744.

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