ORIGINAL TO GENERAL FILES

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

OFFICE OF DESIGN POLICY & SUPPORT
INTERDEPARTMENTAL CORRESPONDENCE

FILE P.I. # 0009988
DeKalb County
GDOT District 7 - Metro Atlanta
SR 212/Browns Mill Road @ CR 594/Salem Road

OFFICE Design Policy & Support

DATE 4/6/2015

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:

Glenn Bowman, 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
Bobby Hilliard, Program Control Administrator
Cindy VanDyke, State Transportation Planning Administrator
Hiral Patel, State Environmental Administrator
Ben Rabun, State Bridge Engineer
Andrew Heath, State Traffic Engineer
Angela Robinson, Financial Management Administrator
Lisa Myers, State Project Review Engineer
Charles "Chuck" Hasty, State Materials Engineer
Mike Bolden, State Utilities Engineer
Richard Cobb, Statewide Location Bureau Chief
Mac Cranford, District Design Engineer
Ed David Adams, State Safety Program Manager
Kathy Zahul, District Engineer
Scott Lee, District Preconstruction Engineer
Patrick Allen, District Utilities Engineer
Merishia Robinson, Project Manager
BOARD MEMBER - 4th Congressional District

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
PROJECT CONCEPT REPORT

Project Type:	Safety - Roundabout	P.I. Number:	0009988
GDOT District:	Seven	County:	DeKalb
Federal Route Number:	N/A	State Route Number:	212
	Project Number:	N/A	

Project PI # 0009988 will replace the existing T-intersection with a roundabout at the intersection of State Route 212/Browns Mill Rd and County Road 0594/Salem Rd.

* Submission on file

Submitted for approval:

Katrena Zahrul — District Seven Engineer — Date: 2-27-15

* Albert Shelby /KLP — State Program Delivery Engineer — Date: 1-15-15

* Merishia Robinson — GDOT Project Manager — Date: 1-9-15

** Recommendation on file

Recommendation for approval:

** Hiral Patel /KLP — State Environmental Administrator — Date: 2-5-15

** Andrew Heath /KLP — State Traffic Engineer — Date: 2-5-15

** Lisa Myers /KLP — Project Review Engineer — Date: 2-4-15

** Yulonda Pride-Foster /KLP — State Utilities Engineer — Date: 2-13-15

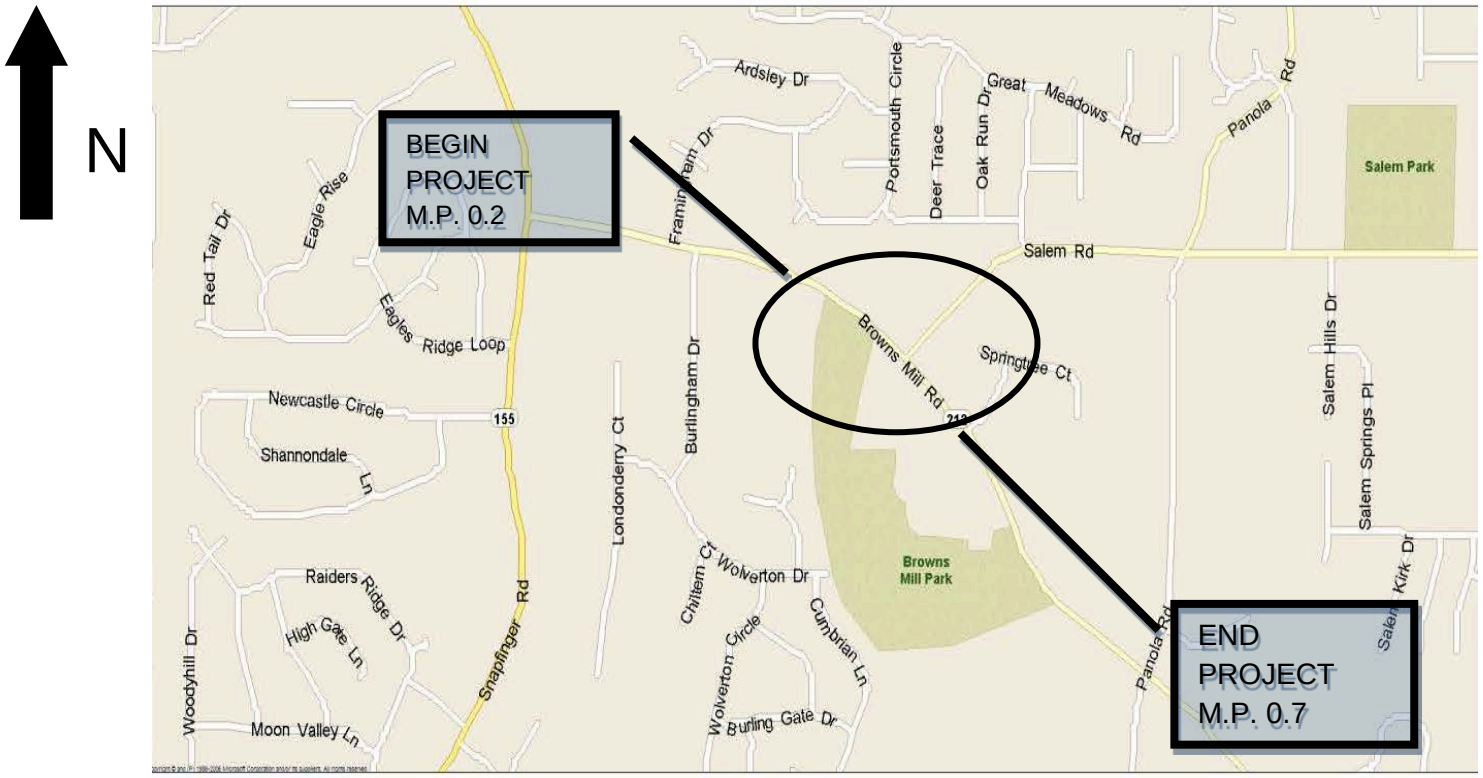
** FOR Ben Rabun /KLP — State Bridge Engineer — Date: 2-9-15

☒ MPO Area: This project is consistent with the MPO adopted Regional Transportation Plan (RTP)/Long Range Transportation Plan (LRTP).

☐ Rural Area: This project is consistent with the goals outlined in the Statewide Transportation Plan (SWTP) and/or is included in the State Transportation Improvement Program (STIP).

** Cynthia Van Dyke — State Transportation Planning Administrator — Date: 2-5-15

PROJECT LOCATION MAP



SR 212//Browns Mill Rd and CR 0594/Salem Rd
PI# 0009988, DeKalb County

PLANNING AND BACKGROUND

Project Justification Statement:

The proposed project will enhance and improve operational efficiency at the intersection of SR 212 at CR 594/Salem Road in DeKalb County, GA. In Georgia, as well as provide suitable crossings facilities for pedestrians within the project limits. Nearly a third of fatal crashes occur at intersections making intersection improvements 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.

Roundabouts have been identified as one of nine proven countermeasures by the Federal Highway Administration (FHWA). The installation of roundabouts in comparison to traditional protective countermeasures such as traffic signals have resulted in a greater reduction in crash frequency and in many instances better operational efficiency. Roundabouts are generally navigated at slower speeds which correlate with lower impact, less severe crashes. A roundabout also presents fewer conflict points than a traditional intersections resulting in fewer collisions.

In the project area, SR 212 is a two lane urban minor arterial with a posted speed limit of 45 mph and an AADT of 8,600 vehicles per day. CR 594/Salem Road is a two lane urban minor arterial with a posted speed limit of 45 mph and an AADT of 2,425 vehicles per day. Currently, the T-intersection is stop controlled on CR 594/Salem Road.

Crash data from 2004-2008 indicated that 38 crashes occurred at these intersections resulting in 23 total injuries. Of those crashes 42% were angle collisions accounting for 83% of the injuries. Studies have shown that the installation of a roundabout results in nearly 80% reduction in fatal and serious injury crashes and nearly 40% reduction in property damage crashes.

Existing conditions:

State Route 212/Browns Mill Road is a free flowing, two lane Urban Minor Arterial with two 12 ft travel lanes and right turn lanes at the intersection. The posted speed limit of SR 212 is 45 mph. The typical section near the intersection features a different shoulder on the north and south sides of the road. The north side has a rural section with 4 ft shoulders (2 ft paved shoulders and 2 ft grassed), and a 2 ft ditch. The south side is made up of a 9 ft urban shoulder (2.5 ft curb and gutter, 5 ft sidewalk, 2 ft grassed buffer). The Minor Arterial runs East/West in DeKalb County and has a current AADT of 7325. The nearest signalized intersection is approximately 2855 feet (Panola Road) from Salem Road in the Eastbound direction.

Salem Road is a stop controlled, two lane county road that is an Urban Minor Arterial as well. The speed limit on Salem Road is 45 mph. Salem Road runs North/South in DeKalb County. Salem road's typical section is made up of two 12 ft lanes, 4 ft rural shoulder and a 2 ft ditch.

Other projects in the area:

- 0006879 - CR 5150/PANOLA ROAD FROM CR 604/THOMPSON MILL ROAD TO SR 212 (ROAD WIDENING)
- 0006880 - CR 5150/PANOLA RD FM SR 212/BROWNS MILL TO SR 155/SNAPFINGER (RECONSTRUCTION)
- 0008268 - FLAT SHOALS RD; HENDERSON RD & SALEM RD (SIDEWALKS)

Description of the proposed project: Based on the Departments Feasibility Study, a multi-lane hybrid roundabout and rectangular rapid beacons for pedestrian crossings will be installed at the intersection of State Route 212/Brown Mills Road and County Road 594/Salem Road in DeKalb County.

MPO: Atlanta TMA **TIP #:** N/A

TIA Regional Commission: Atlanta RC RC Project ID: N/A

Congressional District(s): 4

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

Projected Traffic: ADT

- **SR 212/Brown Mill Rd**

Current Year (2013): 8,600 Open Year (2019): 9,500 Design Year (2039): 12,800
Traffic Projections Performed by: GDOT Office of Planning

- **CR 594/Salem Rd**

Current Year (2013): 2,425 Open Year (2019): 2,650 Design Year (2039): 3,650
Traffic Projections Performed by: GDOT Office of Planning

Functional Classification (SR 212/Brown Mill Rd): Urban Minor Arterial Street

Functional Classification (CR 594/Salem Rd): Urban Minor Arterial Street

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

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

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

DESIGN AND STRUCTURAL

Major Structures:

Structure	Existing	Proposed
Walls	N/A	The proposed wall will vary in heights of 10-15 feet. The wall will span parallel to S.R. 212 near the S.W. section of the roundabout. The wall will have a proposed length of 80‘ in order to minimize impacts to the existing parking

Mainline Design Features: SR 212/Browns Mill Rd *&* Salem Rd (Urban Minor Arterials)

Feature	Existing	Standard*	Proposed
Typical Section			
- **Number of Lanes**	**2**	**N/A**	**2-4**
- **Lane Width(s)**	**12'**	**10'-12'**	**12'-14'Roadway & 14'-19' Circulatory**
- **Median Width & Type**	**N/A**	**N/A**	**0'-35' Raised**
- **Outside Shoulder or Border Area Width**	**10'**	**10'**	**10'-16'**
- **Outside Shoulder Slope**	**2%**	**2%**	**2%**
- **Bike Lanes**	**N/A**	**4'-5'**	**4'**
- **Sidewalks**	**5'**	**5'**	**5'-8'**
Posted Speed	**45**		**45**
Design Speed	**45**	**45**	**45**
Min Horizontal Curve Radius	**N/A**	**711'**	**711'**
Maximum Superelevation Rate	**4%**	**4%**	**4%**
Maximum Grade	**7%**	**7%**	**7%**
Access Control	**BY PERMIT**	**BY PERMIT**	**BY PERMIT**
Design Vehicle	**N/A**	**WB-40**	**WB-67**
Pavement Type	**ASPHALT**	**ASPHALT**	**ASPHALT**

*According to current GDOT design policy if applicable

Major Interchanges/Intersections: SR 212/Browns Mill Rd at CR 594/Salem Rd

Lighting required: ☐ No ☒ Yes

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

Transportation Management Plan [TMP] Required: ☐ No ☒ Yes
If Yes: Project classified as: ☒ Non-Significant ☐ Significant
TMP Components Anticipated: ☒ TTC/SP150 ☐ TO ☐ PI

Design Exceptions to FHWA/AASHTO controlling criteria anticipated: None

Design Variances to GDOT Standard Criteria anticipated: None

VE Study anticipated: ☒ No ☐ Yes ☐ Completed – Date:

UTILITY AND PROPERTY

Temporary State Route needed: ☐ No ☒ Yes ☐ Undetermined

Railroad Involvement: N/A

Utility Involvements:
POWER – GA Power
TELEPHONE – AT&T
GAS - AGL
WATER & Sewer – DeKalb County Water & Sewer
CABLE - Comcast

SUE Required: ☒ No ☐ Yes ☐ Undetermined

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

Right-of-Way (ROW): Existing width: 100ft Proposed width: 185ft
Required Right-of-Way anticipated: ☐None ☒Yes ☐Undetermined
Easements anticipated: ☐None ☐Temporary ☒Permanent ☐Utility ☐Other
Anticipated total number of impacted parcels: 20
Displacements anticipated: Businesses: 0
Residences: 0
Other: 0
Total Displacements: 0

Location and Design approval: ☐ Not Required ☒ Required

ROUNDABOUTS

Roundabout Lighting Agreement/Commitment Letter received: ☐ No ☒ Yes

Roundabout Planning Level Assessment: N/A

Roundabout Feasibility Study: The study recommends a three-leg Hybrid Multi-lane roundabout with dual entry lanes. A roundabout with two through and exit lanes Northbound and Southbound. The Eastbound and Southbound approach and exit would have one lane. The right turn bypasses on the Westbound to Northbound and Eastbound to Southbound legs are one lane. The Inscribed Circle Diameter (ICD) is 190 feet

Roundabout Peer Review Required: ☐No ☒Yes ☐Completed – Date:

CONTEXT SENSITIVE SOLUTIONS

Issues of Concern: There will be 4F impacts to the Browns Mill Waterpark & Recreational Center and Browns Mills Elementary School due to the proposed roadway widening and sidewalks. Also, a residential parcel located on the northwest corner of Browns Mill Rd & Salem Rd has an existing driveway that is located within the radius of the roundabouts entrance from Salem Road.

Context Sensitive Solutions Proposed: To minimize further impacts to the parking lot of the waterpark, a retaining wall will be utilized to maintain the remaining parking lot area. The residential parcel located on the northwest corner of Browns Mill Rd & Salem Rd will have its Driveway relocated away from the roundabout's entry lane and radius.

ENVIRONMENTAL & PERMITS

Anticipated Environmental Document:
GEPA: ☐ **NEPA:** ☒ CE ☐ EA/FONSI ☐ EIS

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

Environmental Permits/Variances/Commitments/Coordination anticipated: NPDES Permit will be required due to disturbed area over 1 acre.

Is a PAR required? ☒ No ☐ Yes ☐ Completed – Date:

Environmental Comments and Information:

NEPA/GEPA: Project impacts to the Water Park and Recreational Center, which are County owned recreational facilities, including all additional ROW and easements need to be cleared.

Ecology: No adverse impacts anticipated.

History: No adverse impacts anticipated.

Archeology: No adverse impacts anticipated.

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

Noise Effects: No adverse impacts anticipated.

Public Involvement: PIOH held October 21, 2014

Major stakeholders: GDOT, DeKalb County Planning & Programming, DeKalb County School District, DeKalb County Public Works, DeKalb County Parks & Recreation, traveling public.

CONSTRUCTION

Issues potentially affecting constructability/construction schedule: Due to the Water Park, Recreational Center and school having seasonal traffic throughout the year; coordination between the contractor and parties involved needs to be managed to make sure access to the facilities during peak months are not adversely impacted.

Early Completion Incentives recommended for consideration: ☒ No ☐ Yes

COORDINATION, ACTIVITIES, RESPONSIBILITIES, AND COSTS

Initial Concept Meeting: Held 07/30/14. See attached ICTM minutes

Concept Meeting: Held 09/30/14. See attached CTM minutes

Other coordination to date: Meeting with DeKalb County Stakeholders (County's Planning & Programming, School District Reps, Public Works Reps, Parks & Recreation rep). Held on 06/11/14.

Project Activity	Party Responsible for Performing Task(s)
Concept Development	GDOT
Design	GDOT
Right-of-Way Acquisition	GDOT

Utility Relocation (Construction)	Utility Company
Utility Coordination (Pre-Let)	GDOT
Letting to Contract	GDOT
Construction Supervision	GDOT
Providing Material Pits	Contractor
Providing Detours	None
Environmental Studies, Documents, & Permits	GDOT
Environmental Mitigation	GDOT
Construction Inspection & Materials Testing	GDOT

Project Cost Estimate Summary and Funding Responsibilities:

	Breakdown of PE	ROW	Utility*	CST**	Mitigation	Total Cost
Funded By	GDOT	GDOT	GDOT	GDOT	TBD	
$ Amount	$174,972.60	$1,679,000.00	$89,000.00	$1,675,915.85		$3,618,888.45
Date of Estimate	5/10/2010	8/14/2014	7/25/2014	12/19/2014		

*Reimbursable Utility Costs only

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

ALTERNATIVES DISCUSSION

Alternative selection:

Preferred Alternative: Dual Lane Hybrid Roundabout			
Estimated Property Impacts:	**20**	**Estimated Total Cost:**	**$3,618,888.45**
Estimated ROW Cost:	**$1,679,000.00**	**Estimated CST Time:**	**18 Months**
Rationale: *The hybrid alternate addresses the specific Northbound/Southbound traffic movement while maintaining a smaller footprint than the multilane roundabout (Alternate 3)*			

No-Build Alternative: No Build			
Estimated Property Impacts:	**0**	**Estimated Total Cost:**	**0**
Estimated ROW Cost:	**0**	**Estimated CST Time:**	**0**
Rationale: This alternative does not resolve the congestion and efficiency issues at the intersection			

Alternative 1: *Single Lane Roundabout*			
Estimated Property Impacts:	**8**	**Estimated Total Cost:**	**$875,088.22**
Estimated ROW Cost:	**$1,680,822.10**	**Estimated CST Time:**	**12 Months**
Rationale: Feasibility study determined that the Single lane roundabout operation will fail under open year traffic volume.			

Comments: None

LIST OF ATTACHMENTS/SUPPORTING DATA

1. Concept Layout
2. Typical sections
3. Detailed Cost Estimates:
    a. Construction including Engineering and Inspection
    b. Liquid AC Cost Adjustment
    c. Right-of-Way
    d. Utilities
4. Lighting Agreement or Commitment Letter
5. Traffic diagrams
6. TE Study
7. Roundabout Data
    a. Roundabout Feasibility Study
    b. Peer Review Layout with Comments
8. Minutes of Initial Concept Team Meeting
9. Stakeholder Meeting Notes with DeKalb County
10. Minutes of Concept Team Meeting
11. Bike facilities needed email KLP

APPROVALS

Concur: _____
Director of Engineering

Approve: Margaret B. Pickle _____ 3.24.15
Chief Engineer Date

12/23/2014 3:04:12 PM
USER:oonabanjo

GPLOT-V8
gplotborder-V8I-PO.tbl

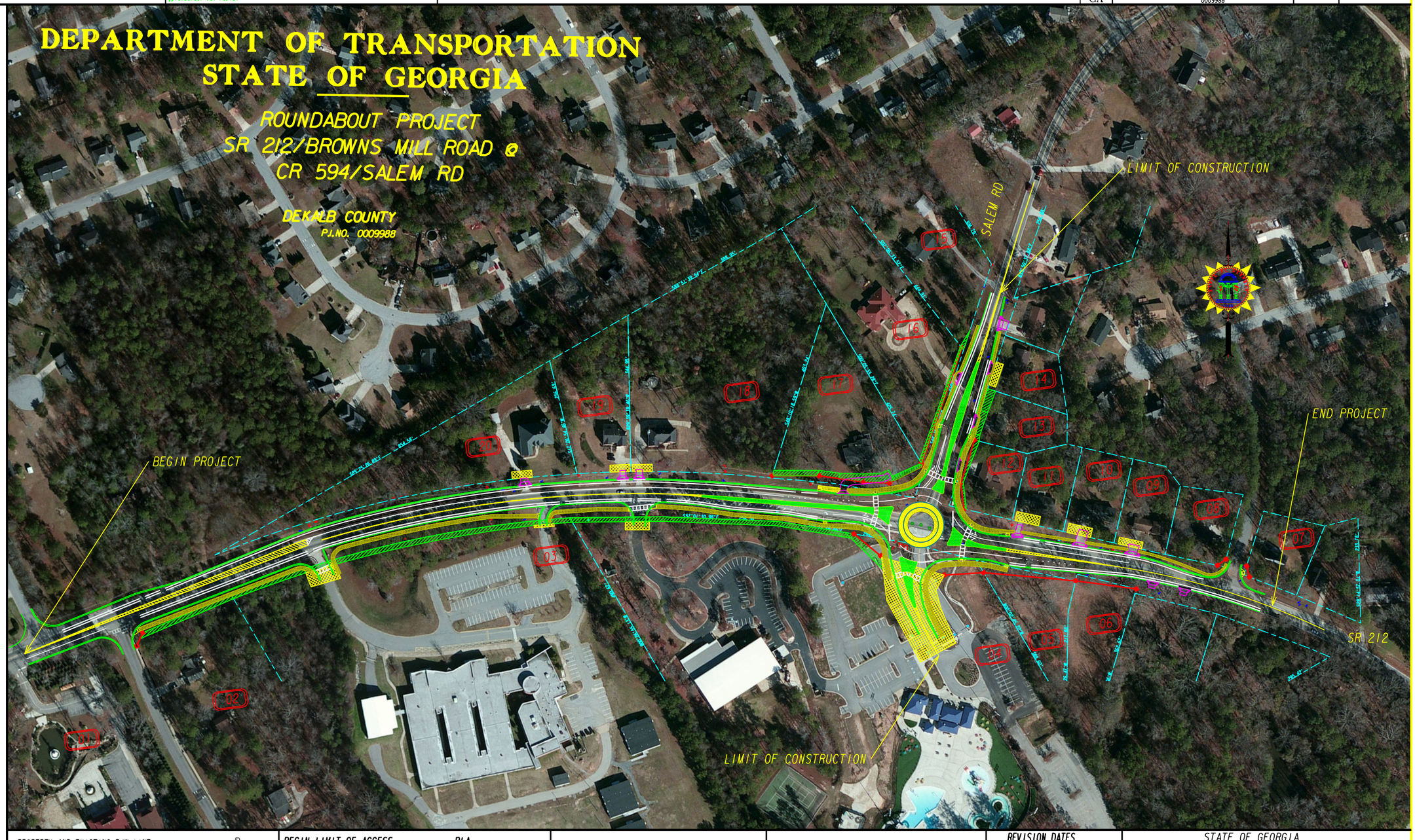
0009988 GHD Hybrid Concept layout Bikelanes (Alt 5) Oct 2014.dgn

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA	0009988		

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

ROUNDABOUT PROJECT
SR 212/BROWNS MILL ROAD @
CR 594/SALEM RD

DEKALB COUNTY
P.I.NO. 0009988



PROPERTY AND EXISTING R/W LINE
REQUIRED R/W LINE
CONSTRUCTION LIMITS
EASEMENT FOR CONSTR & MAINTENANCE OF SLOPES
EASEMENT FOR CONSTR OF SLOPES
EASEMENT FOR CONSTR OF DRIVES

BEGIN LIMIT OF ACCESS.....BLA
END LIMIT OF ACCESS.....ELA
LIMIT OF ACCESS
REQ'D R/W & LIMIT OF ACCESS

GEORGIA
DEPARTMENT OF TRANSPORTATION

SCALE IN FEET
0 50 100 200

REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: D7 DESIGN

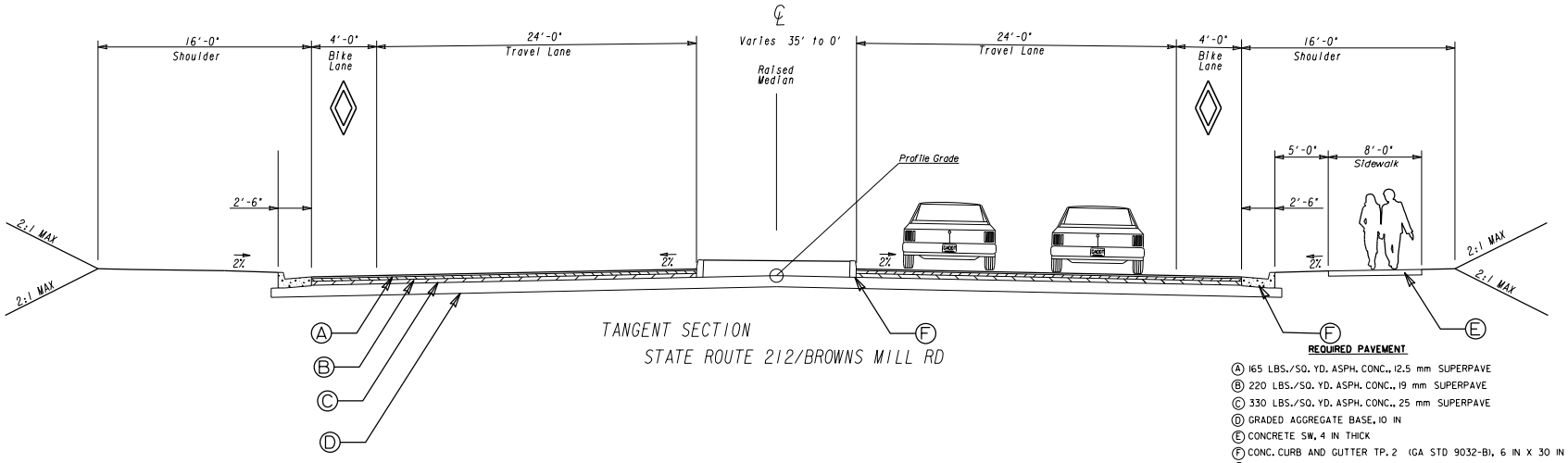
CONSTRUCTION LAYOUT

SR 212 @ SALEM RD

DRAWING No.
11-001

12/14/2012 GPLN

12/19/2014 5:04:37 PM	GPLOT-V8	Typicals.dgn	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
USER:oonabanjo	gplotborder-V81-PO.tbl		GA			

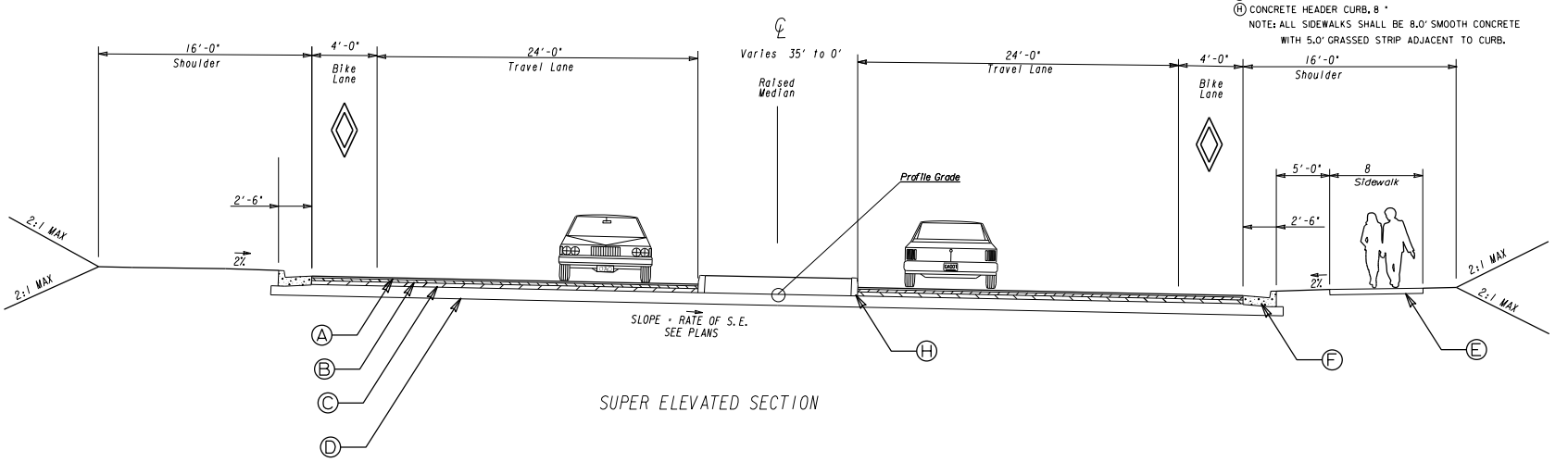


TANGENT SECTION
STATE ROUTE 212/BROWNS MILL RD

REQUIRED PAVEMENT

- (A) 165 LBS./SQ. YD. ASPH. CONC., 12.5 mm SUPERPAVE
- (B) 220 LBS./SQ. YD. ASPH. CONC., 19 mm SUPERPAVE
- (C) 330 LBS./SQ. YD. ASPH. CONC., 25 mm SUPERPAVE
- (D) GRADED AGGREGATE BASE, 10 IN
- (E) CONCRETE SW, 4 IN THICK
- (F) CONC. CURB AND GUTTER TP. 2 (GA STD 9032-B), 6 IN X 30 IN
- (H) CONCRETE HEADER CURB, 8 "

NOTE: ALL SIDEWALKS SHALL BE 8.0' SMOOTH CONCRETE WITH 5.0' GRASSED STRIP ADJACENT TO CURB.



SUPER ELEVATED SECTION

GEORGIA
DEPARTMENT OF TRANSPORTATION

NOT TO SCALE

REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: DISTRICT SEVEN

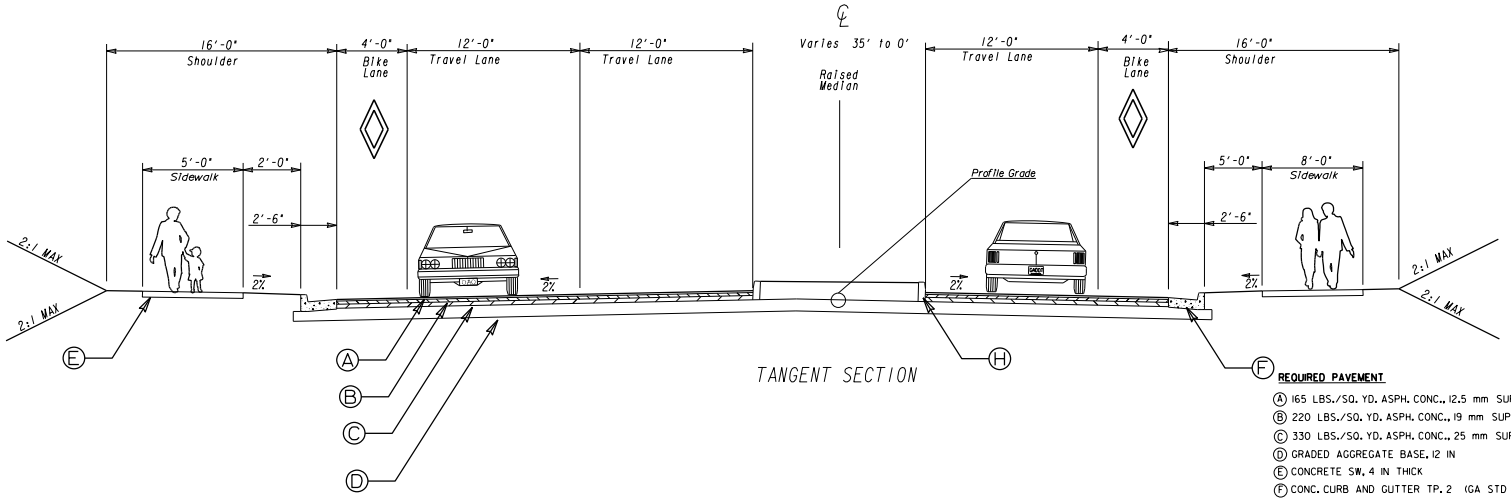
TYPICAL SECTIONS

S.R. 212 AT SALEM ROAD
ROUNDABOUT INTERSECTION

DRAWING No. 05-001

6/20/201 GPLN

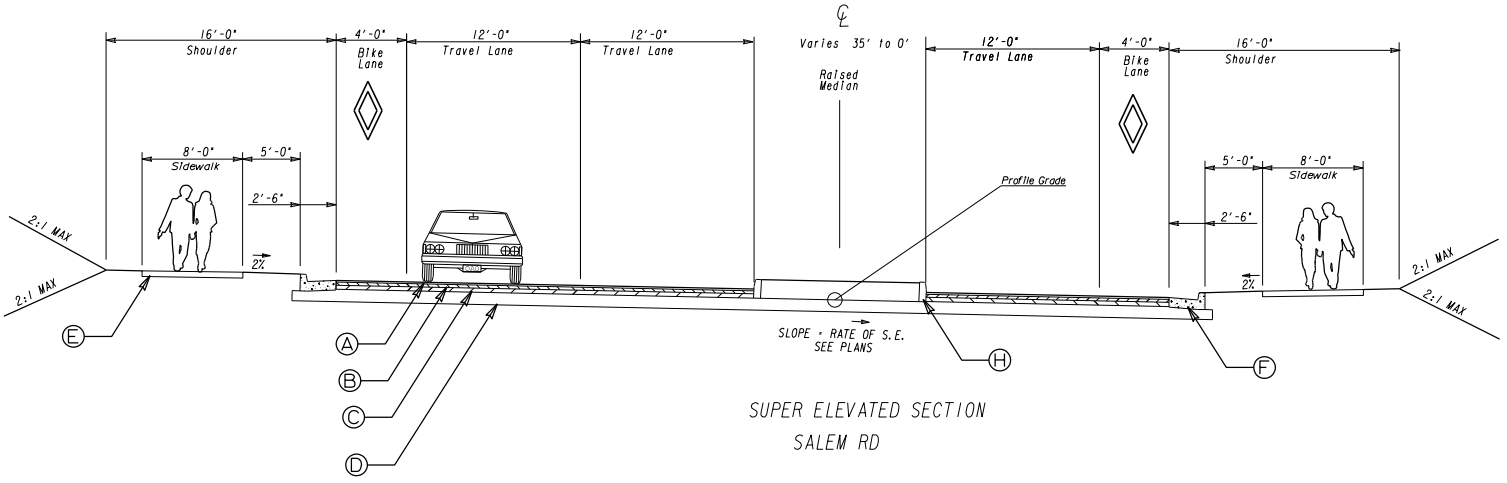
12/19/2014 5:05:32 PM USER:oonabanjo	GPLOT-V8 gplotborder-V81-PD.tbl	Typicals.dgn	STATE GA	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS



TANGENT SECTION

REQUIRED PAVEMENT

- (A) 165 LBS./SQ. YD. ASPH. CONC., 12.5 mm SUPERPAVE
- (B) 220 LBS./SQ. YD. ASPH. CONC., 19 mm SUPERPAVE
- (C) 330 LBS./SQ. YD. ASPH. CONC., 25 mm SUPERPAVE
- (D) GRADED AGGREGATE BASE, 12 IN
- (E) CONCRETE SW, 4 IN THICK
- (F) CONC. CURB AND GUTTER TP. 2 (GA STD 9032-B), 6 IN X 30 IN
- (H) CONCRETE HEADER CURB, 8 "



SUPER ELEVATED SECTION

SALEM RD

GEORGIA
DEPARTMENT OF TRANSPORTATION

NOT TO SCALE

REVISION DATES		

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: DISTRICT SEVEN

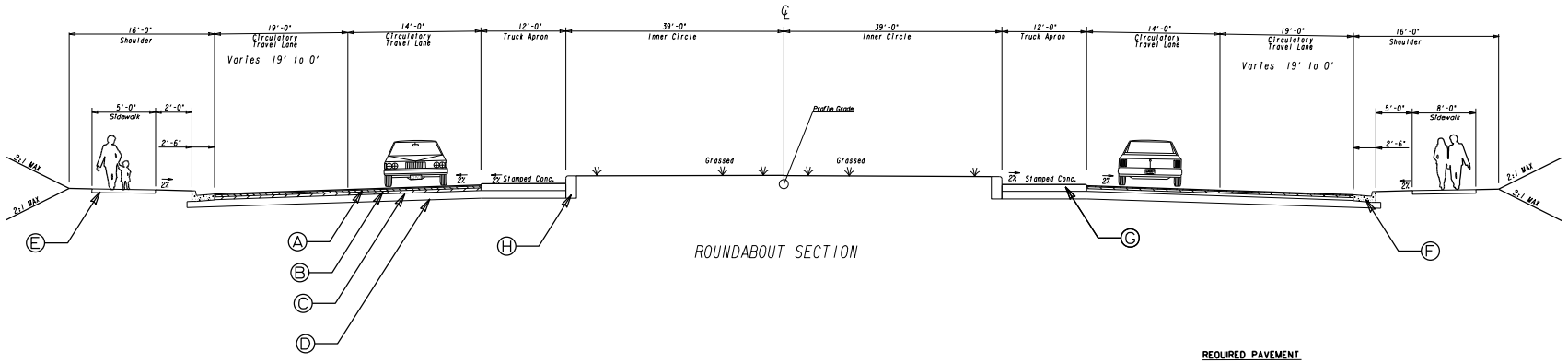
TYPICAL SECTIONS

S.R. 212 AT SALEM ROAD
ROUNDABOUT INTERSECTION

DRAWING No. 05-002

6/20/201 GPLN

12/19/2014 5:06:41 PM USER:oonabanjo	GPLOT-V8 gplotborder-V81-PO.tbl	Typicals.dgn	STATE GA	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS



ROUNDABOUT SECTION

REQUIRED PAVEMENT

- (A) 165 LBS./SQ. YD. ASPH. CONC., 12.5 mm SUPERPAVE
- (B) 220 LBS./SQ. YD. ASPH. CONC., 19 mm SUPERPAVE
- (C) 330 LBS./SQ. YD. ASPH. CONC., 25 mm SUPERPAVE
- (D) GRADED AGGREGATE BASE, 12 IN
- (E) CONCRETE SW, 4 IN THICK
- (F) CONC. CURB AND GUTTER TP. 2 (GA STD 9032-B), 6 IN X 30 IN
- (G) CONCRETE TRUCK APRON, TP 9, 8 IN STAMPED
- (H) CONCRETE HEADER CURB, TYPE 2

NOTE: ALL SIDEWALKS SHALL BE 8.0' SMOOTH CONCRETE WITH 5.0' GRASSED STRIP ADJACENT TO CURB.

GEORGIA
DEPARTMENT OF TRANSPORTATION

NOT TO SCALE

REVISION DATES		

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: DISTRICT SEVEN

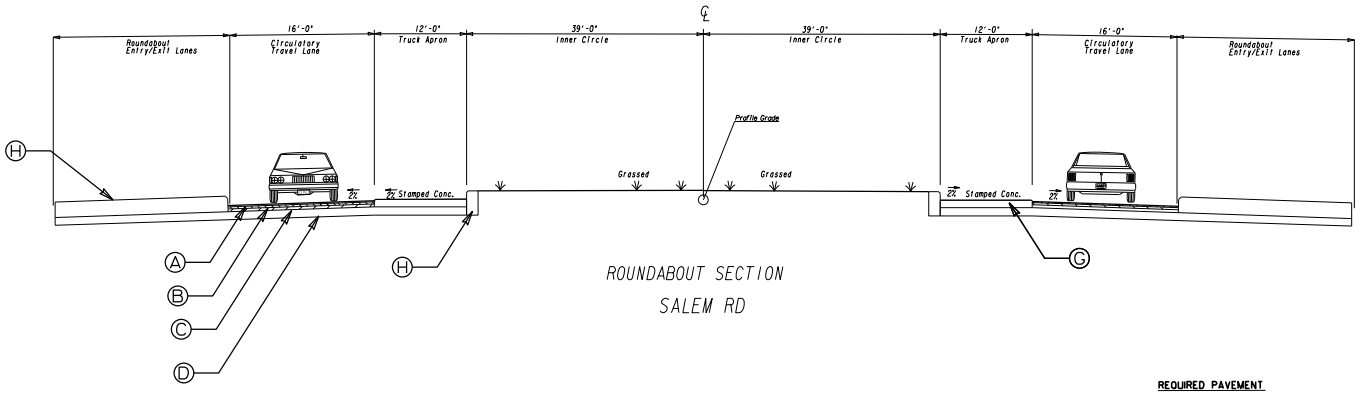
TYPICAL SECTIONS

S.R. 212 AT SALEM ROAD
ROUNDABOUT INTERSECTION

DRAWING No. 05-003

6/20/201 GPLN

12/19/2014 5:07:53 PM USER:oonabanjo	GPLOT-V8 gplotborder-V81-PO.tbl	Typicals.dgn	STATE GA	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS



ROUNDABOUT SECTION

SALEM RD

REQUIRED PAVEMENT

- (A) 165 LBS./SQ. YD. ASPH. CONC., 12.5 mm SUPERPAVE
- (B) 220 LBS./SQ. YD. ASPH. CONC., 19 mm SUPERPAVE
- (C) 330 LBS./SQ. YD. ASPH. CONC., 25 mm SUPERPAVE
- (D) GRADED AGGREGATE BASE, 12 IN
- (E) CONCRETE SW, 4 IN THICK
- (F) CONC. CURB AND GUTTER TP. 2 (GA STD 9032-B), 6 IN X 30 IN
- (G) CONCRETE TRUCK APRON, TP 9, 8 IN STAMPED
- (H) CONCRETE HEADER CURB, TYPE 2

NOTE: ALL SIDEWALKS SHALL BE 8.0' SMOOTH CONCRETE WITH 5.0' GRASSED STRIP ADJACENT TO CURB.

GEORGIA
DEPARTMENT OF TRANSPORTATION

NOT TO SCALE

REVISION DATES		

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: DISTRICT SEVEN

TYPICAL SECTIONS

S.R. 212 AT SALEM ROAD
ROUNDABOUT INTERSECTION

DRAWING No. 05-004

6/20/201 GPLN

Processed Date: 12/19/14

DETAILED COST ESTIMATE

Georgia Department of Transportation

Job: 0009988 OAO

JOB NUMBER *0009988 OAO* **FED/STATE PROJECT NUMBER**

SPEC YEAR: *13*

DESCRIPTION: *SR 212/BROWNS MILL RD @ CR ~~593~~ 594 NCRA/SALEM RD ROUNDABOUT*

PI NO 0009988

ITEMS FOR JOB 0009988 OAO

0010 - ROADWAY

Line Number	ITEM	QUANTITY	UNITS	PRICE	DESCRIPTION	AMOUNT
0025	150-1000	1.000	LS	$50,000.00000	TRAFFIC CONTROL - STP00-0001-00(239)	$50,000.00
0425	207-0203	110.000	CY	$51.66568	FOUND BKFILL MATL, TP II	$5,683.22
0030	210-0100	1.000	LS	$100,000.00000	GRADING COMPLETE - STP00-0001-00(239)	$100,000.00
0035	310-1101	3350.000	TN	$23.20078	GR AGGR BASE CRS, INCL MATL	$77,722.61
0440	318-3000	140.000	TN	$23.65081	AGGR SURF CRS	$3,311.11
0415	402-1812	100.000	TN	$91.25698	RECYL AC LEVELING,INC BM&HL	$9,125.70
0039	402-3121	1900.000	TN	$76.79250	RECYL AC 25MM SP,GP1/2,BM&HL	$145,905.75
0040	402-3130	475.000	TN	$105.34777	RECYL AC 12.5MM SP,GP2,BM&HL	$50,040.19
0045	402-3190	640.000	TN	$84.05184	RECYL AC 19 MM SP,GP 1 OR 2 ,INC BM&HL	$53,793.18
0050	413-1000	450.000	GL	$4.37135	BITUM TACK COAT	$1,967.11
0060	432-0206	10450.000	SY	$2.51608	MILL ASPH CONC PVMT/ 1.50 DEP	$26,293.04
0480	439-0022	380.000	SY	$87.33909	PLN PC CONC PVMT CL3 10 THK	$33,188.85
0410	441-0018	600.000	SY	$43.41640	DRIVEWAY CONCRETE, 8 IN TK	$26,049.84
0065	441-0104	2840.000	SY	$30.66162	CONC SIDEWALK, 4 IN	$87,079.00
0300	441-0756	1050.000	SY	$51.48000	CONC MEDIAN, 8 IN	$54,054.00
0435	441-3999	200.000	LF	$21.89177	CONCRETE V GUTTER	$4,378.35
0350	441-4020	200.000	SY	$37.84697	CONC VALLEY GUTTER, 6 IN	$7,569.39
0355	441-4030	95.000	SY	$45.41228	CONC VALLEY GUTTER, 8 IN	$4,314.17
0455	441-5008	245.000	LF	$12.68660	CONC HEADER CURB, 6 IN, TP 7	$3,108.22
0450	441-5010	320.000	LF	$20.00000	CONC HDR CURB, 6 IN, TP 9	$6,400.00
0070	441-6222	7420.000	LF	$14.16920	CONC CURB & GUTTER/ 8X30TP2	$105,135.46
0089	446-1100	550.000	LF	$7.63406	PVMT REF FAB STRIPS, TP2,18 INCH WIDTH	$4,198.73
0315	550-1180	400.000	LF	$40.72873	STM DR PIPE 18,H 1-10	$16,291.49
0495	621-4060	120.000	LF	$270.00000	CONCRETE SIDE BARRIER, TY 6	$32,400.00
0490	632-0003	3.000	EA	$9,091.09355	CHANGEABLE MESS SIGN,PORT,TP 3	$27,273.28
0105	641-1200	200.000	LF	$19.91465	GUARDRAIL, TP W	$3,982.93
0110	641-5001	1.000	EA	$912.11639	GUARDRAIL ANCHORAGE, TP 1	$912.12
0115	641-5012	1.000	EA	$1,963.39804	GUARDRAIL ANCHORAGE, TP 12	$1,963.40
0445	668-1100	36.000	EA	$2,182.02738	CATCH BASIN, GP 1	$78,552.99
					SUBTOTAL FOR ROADWAY:	**$1,020,694.13**

File Location: Div of Preconstruction > CES

DETAILED COST ESTIMATE

Georgia Department of Transportation

Job: 0009988 OAO

0020 - EROSION

Line Number	ITEM	QUANTITY	UNITS	PRICE	DESCRIPTION	AMOUNT
0210	163-0232	8.000	AC	$254.12523	TEMPORARY GRASSING	$2,033.00
0215	163-0240	200.000	TN	$211.15029	MULCH	$42,230.06
0340	163-0300	6.000	EA	$1,302.04580	CONSTRUCTION EXIT	$7,812.27
0385	163-0529	1300.000	LF	$3.61000	CNST/REM TEMP SED BAR OR BLD STRW CK DM	$4,693.00
0290	163-0542	5.000	EA	$225.26000	CONSTR & REM STONE FILTER RING	$1,126.30
0275	163-0550	33.000	EA	$120.38516	CONS & REM INLET SEDIMENT TRAP	$3,972.71
0220	165-0030	4000.000	LF	$0.61603	MAINT OF TEMP SILT FENCE, TP C	$2,464.12
0380	165-0071	500.000	LF	$1.75000	MAINT OF SEDIMENT BARRIER - BALED STRAW	$875.00
0345	165-0101	6.000	EA	$669.42445	MAINT OF CONST EXIT	$4,016.55
0280	165-0105	33.000	EA	$38.09250	MAINT OF INLET SEDIMENT TRAP	$1,257.05
0295	165-0111	4.000	EA	$55.42000	MAINT OF STONE FILTER RING	$221.68
0475	167-1000	2.000	EA	$220.48128	WATER QUALITY MONITORING AND SAMPLING	$440.96
0470	167-1500	12.000	MO	$460.23136	WATER QUALITY INSPECTIONS	$5,522.78
0230	171-0030	8000.000	LF	$2.77576	TEMPORARY SILT FENCE, TYPE C	$22,206.08
0235	603-2180	60.000	SY	$36.75954	STN DUMPED RIP RAP, TP 3, 12	$2,205.57
0325	603-7000	60.000	SY	$4.29107	PLASTIC FILTER FABRIC	$257.46
0485	643-8200	100.000	LF	$1.45703	BARRIER FENCE (ORANGE), 4 FT	$145.70
0245	700-6910	8.000	AC	$901.74054	PERMANENT GRASSING	$7,213.92
0250	700-7000	5.000	TN	$100.34839	AGRICULTURAL LIME	$501.74
0390	700-8000	5.000	TN	$557.45584	FERTILIZER MIXED GRADE	$2,787.28
0260	700-8100	220.000	LB	$2.80174	FERTILIZER NITROGEN CONTENT	$616.38
0265	716-2000	2200.000	SY	$1.13239	EROSION CONTROL MATS, SLOPES	$2,491.26
					SUBTOTAL FOR EROSION:	**$115,090.87**

0030 - DRAINAGE

Line Number	ITEM	QUANTITY	UNITS	PRICE	DESCRIPTION	AMOUNT
0324	550-2180	100.000	LF	$33.99037	SIDE DR PIPE 18,H 1-10	$3,399.04
0405	611-8055	3.000	EA	$1,000.00000	ADJUST MINOR STRUCT TO GRADE	$3,000.00
					SUBTOTAL FOR DRAINAGE:	**$6,399.04**

DETAILED COST ESTIMATE

Georgia Department of Transportation

Job: 0009988 OAO

0050 - SIGNING & MARKING

Line Number	ITEM	QUANTITY	UNITS	PRICE	DESCRIPTION	AMOUNT
0139	636-1020	740.000	SF	$12.84198	HWY SGN,TP1MAT,REFL SH TP3	$9,503.07
0140	636-2070	755.000	LF	$7.06843	GALV STEEL POSTS, TP 7	$5,336.66
0520	652-0094	6.000	EA	$110.74095	PVMT MARKING, SYMBOL, TP 4	$664.45
0515	652-0110	6.000	EA	$52.23345	PAVEMENT MARKING, ARROW, TP 1	$313.40
0525	652-5301	4340.000	LF	$0.24621	SOLID TRAF STRIPE, 6 IN, WHITE	$1,068.55
0530	652-6301	655.000	GLF	$0.13397	SKIP TRAF STRIPE, 6 IN, WHITE	$87.75
0535	652-6501	655.000	GLF	$0.11180	SKIP TRAF STRIPE, 5 IN, WHITE	$73.23
0155	653-0120	14.000	EA	$76.20346	THERM PVMT MARK, ARROW, TP 2	$1,066.85
0165	653-1502	4000.000	LF	$0.52609	THERMO SOLID TRAF ST, 5 IN YEL	$2,104.36
0175	653-1704	95.000	LF	$6.26695	THERM SOLID TRAF STRIPE,24,WH	$595.36
0180	653-1804	2600.000	LF	$2.08038	THERM SOLID TRAF STRIPE, 8,WH	$5,408.99
0185	653-3501	850.000	GLF	$0.34909	THERMO SKIP TRAF ST, 5 IN, WHI	$296.73
0190	653-6004	80.000	SY	$4.01850	THERM TRAF STRIPING, WHITE	$321.48
0195	653-6006	1500.000	SY	$3.46138	THERM TRAF STRIPING, YELLOW	$5,192.07
0200	654-1001	750.000	EA	$3.06601	RAISED PVMT MARKERS TP 1	$2,299.51
0205	654-1003	80.000	EA	$3.81938	RAISED PVMT MARKERS TP 3	$305.55
0505	999-3800	3.000	EA	$6,500.00000	RECTANGULAR RAPID BEACON ASSY	$19,500.00
0510	999-3900	1.000	LS	$4,500.00000	TEST - RECTANGULAR RAPID BEACON ASSY	$4,500.00
					SUBTOTAL FOR SIGNING & MARKING:	**$58,638.01**

0060 - MISCELLANEOUS

Line Number	ITEM	QUANTITY	UNITS	PRICE	DESCRIPTION	AMOUNT
0500	515-2020	300.000	LF	$27.46787	GALV STEEL PIPE HDRAIL,2,ROUD	$8,240.36
0130	634-1200	25.000	EA	$118.25556	RIGHT OF WAY MARKERS	$2,956.39
					SUBTOTAL FOR MISCELLANEOUS:	**$11,196.75**

0070 - LIGHTING

Line Number	ITEM	QUANTITY	UNITS	PRICE	DESCRIPTION	AMOUNT
0460	005-0002	1.000	LS	$250,000.00000	INSTALL/LIGHTING FACILITIES	$250,000.00
					SUBTOTAL FOR LIGHTING:	**$250,000.00**

0080 - LANDSCAPING

Line Number	ITEM	QUANTITY	UNITS	PRICE	DESCRIPTION	AMOUNT
0465	009-2000	1.000	LS	$12,000.00000	LANDSCAPING WITH IRRIGATION	$12,000.00
					SUBTOTAL FOR LANDSCAPING:	**$12,000.00**

TOTALS FOR JOB 0009988 OAO

ITEMS COST:	**$1,474,018.80**
COST GROUP COST:	**$0.00**
ESTIMATED COST:	**$1,474,018.80**
CONTINGENCY PERCENT:	**0.05**
ENGINEERING AND INSPECTION:	**0.05**
ESTIMATED COST WITH CONTINGENCY AND E&I:	**$1,621,420.68**

File Location: Div of Preconstruction > CES

PROJ. NO.	N/A	CALL NO.
P.I. NO.	0009988	
DATE	12/11/2014	

INDEX (TYPE)	DATE	INDEX
REG. UNLEADED	Aug-14	$ 2.687
DIESEL		$ 3.437
LIQUID AC		$ 576.00

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)				**53827.2**	**$ 53,827.20**
Monthly Asphalt Cement Price month placed (APM)	Max. Cap	60%	$	921.60	
Monthly Asphalt Cement Price month project let (APL)			$	576.00	
Total Monthly Tonnage of asphalt cement (TMT)				155.75	

ASPHALT	Tons	%AC	AC ton
Leveling	100	5.0%	5
12.5 OGFC		5.0%	0
12.5 mm	475	5.0%	23.75
9.5 mm SP		5.0%	0
25 mm SP	1900	5.0%	95
19 mm SP	640	5.0%	32
	3115		**155.75**

BITUMINOUS TACK COAT

Price Adjustment (PA)			**$**	**667.97**	**$ 667.97**
Monthly Asphalt Cement Price month placed (APM)	Max. Cap	60%	$	921.60	
Monthly Asphalt Cement Price month project let (APL)			$	576.00	
Total Monthly Tonnage of asphalt cement (TMT)				1.932795415	

Bitum Tack Gals	gals/ton	tons
450	232.8234	1.93279541

BITUMINOUS TACK COAT (surface treatment)

Price Adjustment (PA)				**0**	**$ -**
Monthly Asphalt Cement Price month placed (APM)	Max. Cap	60%	$	921.60	
Monthly Asphalt Cement Price month project let (APL)			$	576.00	
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	**$ 54,495.17**

GEORGIA DEPARTMENT OF TRANSPORTATION
PRELIMINARY ROW COST ESTIMATE SUMMARY

Date: 8/14/2014 Project: Alt 4
Revised: County: Dekalb
PI: 0009988
Description: SR 212/Browns Mill Rd @ Salem Rd Roundabout
Project Termini: SR 212/Browns Mill Rd @ Salem Rd Roundabout
Existing ROW: Varies
Parcels: 6 Required ROW: Varies

Land and Improvements		$1,503,375.00
Proximity Damage	*$125,000.00*	
Consequential Damage	*$200,000.00*	
Cost to Cures	*$150,000.00*	
Trade Fixtures	*$0.00*	
Improvements	*$575,000.00*	
Valuation Services		$25,000.00
Legal Services		$41,550.00
Relocation		$12,000.00
Demolition		$45,000.00
Administrative		$52,000.00
TOTAL ESTIMATED COSTS		$1,678,925.00
TOTAL ESTIMATED COSTS (ROUNDED)		***$1,679,000.00***

Preparation Credits	Hours	Signature

Prepared By: LaShone Alexander CG#: 286999 08/14/2014 (DATE)
Approved By: LaShone Alexander CG#: 286999 08/14/2014 (DATE)

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

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTER-DEPARTMENT CORRESPONDENCE

FROM: Patrick Allen, P.E.
District Utilities Engineer

DATE: July 25, 2013

TO: Merishia Robinson, Project Manager

SUBJECT: PRELIMINARY UTILITY COST ESTIMATE
SR 212 @ CR 593/Salem Road in DeKalb County

As requested by your office, we are furnishing you with a Preliminary Cost Estimate for each utility with facilities potentially located with the project limits.

FACILITY OWNER	REIMBURSABLE	NON-REIMBURSABLE	TOTAL
Georgia Power Company	$60,000.00		$60,000.00
AT&T of Georgia		$42,000.00	$42,000.00
Comcast Cable		$42,000.00	$42,000.00
DeKalb County Water & Sewer	$29,000.00	$53,000.00	$82,000.00
Atlanta Gas Light		$47,000.00	$47,000.00
			$0.00
			$0.00
			$0.00
			$0.00
			$0.00
			$0.00
			$0.00
			$0.00
			$0.00
			$0.00
			$0.00
			$0.00
			$0.00
			$0.00
			$0.00
			$0.00
			$0.00
TOTAL	$89,000.00	$184,000.00	$273,000.00

This estimate is based upon the current information. We will provide an updated estimate when the plans are further developed.

If you have any questions, please contact Wade Woodard at 770-986-1117

RSB/PA/SW/WW

Cc: Michael J. Bolden, State Utilities Engineer

DEKALB COUNTY
PI 0009988
SR 212 @ CR ~~593~~ 594/SALEM ROAD

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INDICATION OF ROUNDABOUT SUPPORT

To the Georgia Department of Transportation:

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

Location

The Department of Public Works in DeKalb County supports the consideration of a roundabout at the location specified below.

Local Street Names: Browns Mill Rd at Salem Rd

State/County Route Numbers: 212 at N/A

Associated Conditions

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

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

We agree to participate in a formal Local Government Lighting Project Agreement during the preliminary design phase. This indication of support is submitted and all of the conditions are hereby agreed to. The undersigned are duly authorized to execute this agreement.

This is the 3 day of December, 2010

Attest:

Clerk

By: Ted Rhinehart

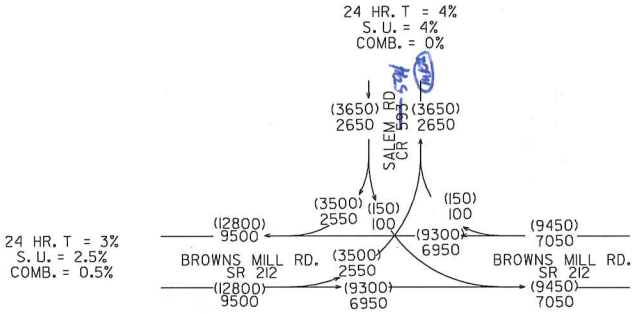
Title: Deputy COO / Infrastructure

NOTARY PUBLIC, DEKALB COUNTY, GEORGIA
MY COMMISSION EXPIRES OCTOBER 6, 2014

SHEET 1 OF 1

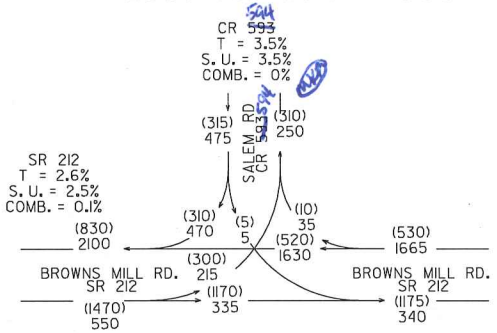
GEORGIA DEPARTMENT OF TRANSPORTATION
OFFICE OF PLANNING

2039 ADT = (000)
2019 ADT = 000

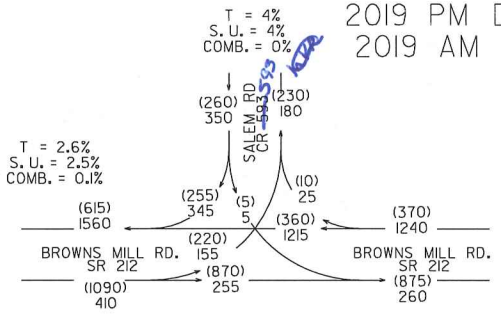


DEKALB COUNTY
NO BUILD

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



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



DEKALB COUNTY
P.I. NO. 0009988

SR 212 @ CR 593
/SALEM RD.

NO BUILD

AFE
09/2014

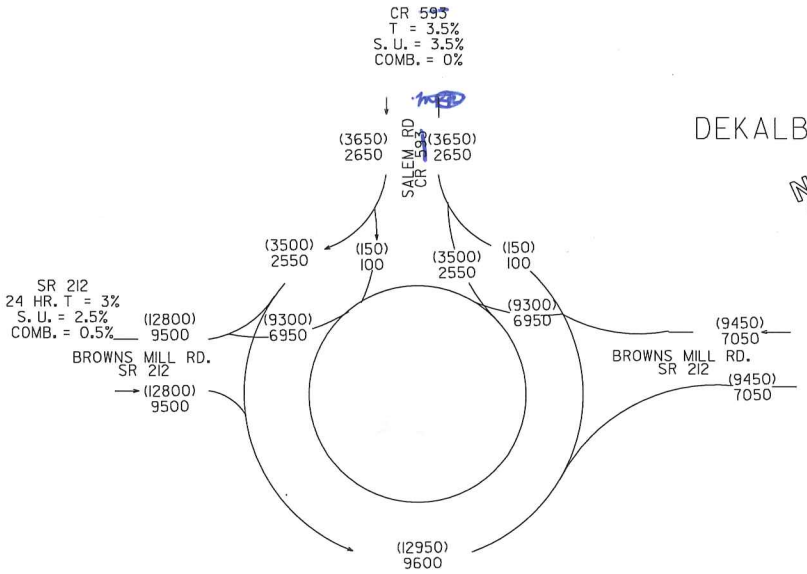
SHEET 1 OF 1

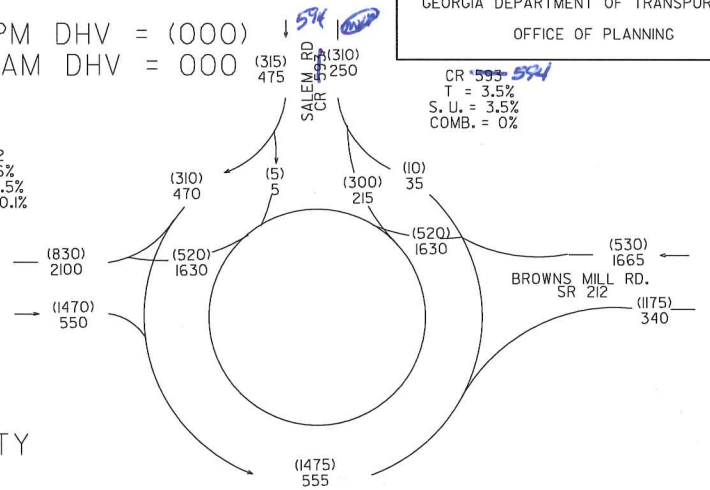
GEORGIA DEPARTMENT OF TRANSPORTATION
OFFICE OF PLANNING

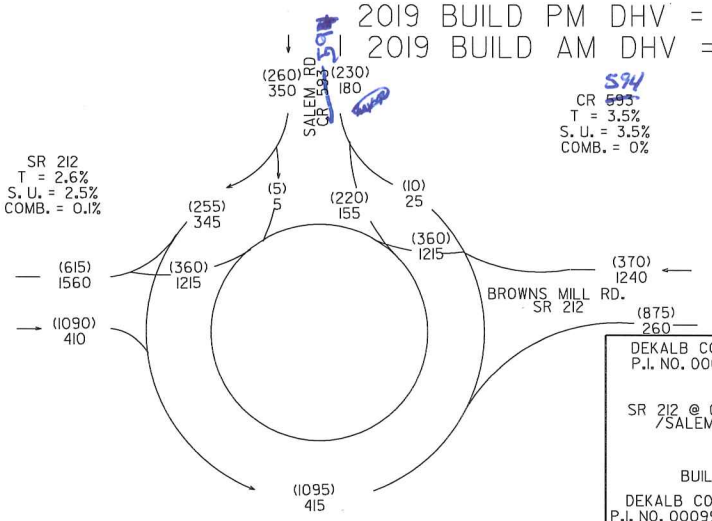
2039 BUILD ADT = (000)
2019 BUILD ADT = 000

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

DEKALB COUNTY







DEKALB COUNTY
P.I. NO. 0009988

SR 212 @ CR 593
/SALEM RD.

BUILD

DEKALB COUNTY
P.I. NO. 0009988

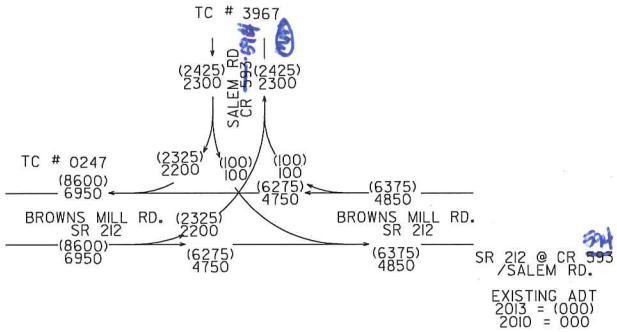
AFE
09/2014

SHEET 1 OF 1

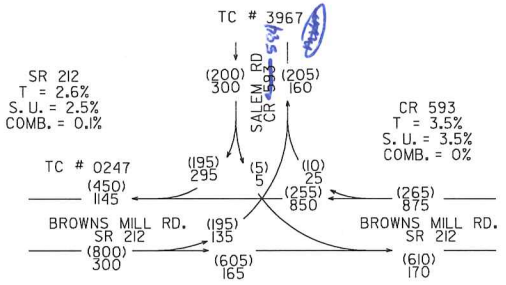
GEORGIA DEPARTMENT OF TRANSPORTATION
OFFICE OF PLANNING

EXISTING ADT

DEKALB COUNTY



EXISTING DHV



DEKALB COUNTY
P.I. # 0009988

SR 212 @ CR 593
/SALEM RD.

AFE
09/2014

DEPARTMENT OF TRANSPORTATION

STATE OF GEORGIA

TRAFFIC ENGINEERING REPORT
ROUNDABOUT

SR 212 Browns Mill Road at Salem Road
DeKalb County, Georgia
Mile log: 0.60

Report prepared by:
Patrick S. Werho
Traffic Operations Engineer
5025 New Peachtree Rd
Chamblee, GA 30341

Telephone Number: *(770)986-1773*
E-mail Address: *pwerho@dot.ga.gov*

Date prepared: 2/4/2011

LOCATION:
This study was conducted at the intersection of SR 212 Browns Mill Road at Salem Road in DeKalb County.

REASON FOR INVESTIGATION:
This traffic study was conducted by the Office of Traffic Operations for an Operational Improvement of the intersection.

DESCRIPTION OF THE INTERSECTION:

- ***State Route 212/Browns Mill Road*** is a two lane roadway with right turn lanes in each approach on Browns Mill Road at Salem Road. The Minor Arterial runs East/West in DeKalb County. Data from the Department Road Information System states the current AADT for SR 212/Browns Mill Road is 11800.
  The nearest signalized intersection is approximately 2855 feet (Panola Road) from Salem Road in the Eastbound direction.

- ***Salem Road*** is a two lane county road.

- ***Browns Mill Recreation Park*** is a two lane county road.

PEAK HOUR VOLUMES: the table below gives the peak hour volumes movement and direction. These peak hour counts are found by using the peak hour four fifteen minute consecutive intervals within the two hour period.

SR 212/BROWNS MILL ROAD								
TIME	EASTBOUND				WESTBOUND			
	THRU	LEFT	RIGHT	PED'S	THRU	RIGHT	LEFT	PED'S
6:30AM-9:30AM	410	419	2	0	1739	25	0	1
11:00AM-1:00PM	226	159	1	0	398	4	0	0
4:15PM-7:00PM	681	22	20	0	607	20	740	0
TOTAL								

SALEM ROAD							
TIME	WESTBOUND	EASTBOUND	THRU	PEDS			
	RIGHT	LEFT					
6:30AM-9:30AM	772	7	2	6			
11:00AM-1:00PM	188	2	2	1			
4:15PM-6:00PM	622	11	8	1			
TOTAL							

RECREATION PARK							
TIME	WESTBOUND	EASTBOUND	THRU	PEDS			
	RIGHT	LEFT					
6:30AM-9:30AM	2	0	1	0			
11:00AM-1:00PM	1	0	1	0			
4:15PM-7:00PM	1	2	4	1			
TOTAL							

CAPACITY ANAYLYSIS:

	HCS+Unsignalized 2010					Roundabout Analysis 2010			
Road Name	Approach								
		Delay	LOS	V/C	Q(ft)	Delay	LOS	V/C	Q(ft)
SR 212	EAST	9.9	A	0.18	16.75	23	C	0.88	297
SR 212	WEST	7.6	A	0	0	5	A	0.29	31
Road Name	Approach								
		Delay	LOS	V/C	Q(ft)	Delay	LOS	V/C	Q(ft)
Salem Road	NORTH	65.4	F	0.89	363.3	7	A	0.01	1
Rec. Park	SOUTH	0	0	0	0	3	A	0	0

	HCS+Unsignalized 2030					Roundabout Analysis 2030			
Road Name	Approach								
		Delay	LOS	V/C	Q(ft)	Delay	LOS	V/C	Q(ft)
SR 212	EAST	15.7	C	0.44	58.5	13.8	B	0.74	174
SR 212	WEST	7.8	A	0	0	6.1	A	0.48	67
Road Name	Approach								
		Delay	LOS	V/C	Q(ft)	Delay	LOS	V/C	Q(ft)
SALEM ROAD	NORTH	3334	F	2.83	5114	8.6	A	0.02	1
Rec Park	SOUTH	0	0	0	0	0	0	0	0

The above 2010 chart shows comparisons of the existing Peak Hour vehicular traffic for the four legged intersection and the installation of the Roundabout. Using the Roundabout Analysis Tool for the 2010 showed improvements to the traffic flow by reducing delay on most legs of the intersection however, increasing delay on others.

The above 2030 (20 year projection) chart shows comparisons of the projected Peak Hour vehicular traffic for the four legged intersection and the installation of the Roundabout. Using the Roundabout Analysis Tool for the 2030 showed improvements to the traffic flow by reducing delay. Modifications to the intersection/roundabout for the 2030 Analysis included a Right By-Pass lane for the right turning Salem Road traffic to Westbound SR 212 and a Westbound Dual Lane Roundabout.

Improvements to SR 212 will also be required to help the traffic flow, widening for a excel lane of approximately 1800 feet will be needed. This lane will extend to Browns Mill Elementary School and provide a left turn lane into the school while allowing traffic to flow in the right lane.

EXISTING TRAFFIC CONTROL:

- State Route 212 is currently free-flowing at this intersection.
- Salem Road is Stop-Condition at this intersection.
- Recreation Park is Stop-Condition at this intersection.

POSTED SPEEDS:

- The posted speed limit on SR 212 is 45 MPH.
- The posted speed limit on Salem Road is not posted, the GDOT List of Roadways states 40 MPH.
- The posted speed limit on Recreational Park is not posted.

PEDESTRIAN MOVEMENTS:

Pedestrians were observed during traffic counts. Pedestrian movements should be noted to increase as counts were taken in the "off-season" for the Browns Mill Recreation Water Park and "walkers" to the nearby school in the spring and early fall months.

PARKING:

There was no parking observed or expected at the intersection.

CRASH HISTORY:

DeKalb County (M.P. 0.60-M.P. 0.64)

YEAR	2006	2007	2008	2009
# of CRASHES	2*	1*	7*	1*

*The above chart lists only the "Angle" crashes.
There were a total of 31 crashes with 33 injuries and 0 fatalities that occurred during the 4 year crash history reviewed at this intersection in DeKalb County. Attached is a list of the type crashes, number of crashes and number of injuries, for each type of crashes that have occurred.

For Year(s): 2006,2007,2008,2009

Year	County	Route Type	Route Number	Beginning Milelog	Ending Milelog	No. Accidents	No. Vehicles	No. Injuries	No. Fatalities
2006	Dekalb	State Route	021200	0.60	0.64	8	14	2	0
					2006 SubTotal	8	14	2	0
2007	Dekalb	State Route	021200	0.60	0.64	2	3	1	0
					2007 SubTotal	2	3	1	0
2008	Dekalb	State Route	021200	0.60	0.64	15	28	17	0
					2008 SubTotal	30	56	34	0
2009	Dekalb	State Route	021200	0.60	0.64	6	13	13	0
					2009 SubTotal	12	26	26	0
					All Year(s)Total	**31**	**58**	**33**	**0**

SIGHT DISTANCE:
Intersection Sight Distance (ISD) from SR 212 in the North and Southbound approaches. Sight distance to the left (SDL) and sight distance to the right (SDR) was above the standards set for ISD in the 2004 GDOT Driveway Manual. The results are summarized in the table below.

Intersecting Road	Arterial Speed (mph)	Existing SDL (ft.)	Required SDL (ft.)	Existing SDR (ft.)	Required SDR (ft.)
SR 212 at Salem Road	45	960	595	880	630

CONCLUSIONS:
Based on compiled information and programmed Signal Warrant Analysis, this location meets two of the Nine Signal Warrants (see attachment); a reevaluation would be recommended for pedestrian movements during the summer months before an evaluation of the Pedestrian Hybrid Beacon (HAWK) System criteria could be made.

RECOMMENDATION:
The District Seven Office of Traffic Operations recommends the construction of a one lane east /two lane west roundabout with a single lane by-pass lane and an excel lane of 1800 feet with a left turn lane into Browns Mill Elementary School to the existing conditions at this time.

PREPARED BY: _____ DATE: 2/4/2011
District Traffic Operations Engineer

RECOMMENDED BY: _____ DATE: 8/26/14
District Traffic Engineer

RECOMMENDED BY: _____ DATE: _____
State Traffic Engineer

RECOMMENDED BY: _____ DATE: _____
Director of Operations

Traffic Engineering Report Appendix

- Accident diagram
- Crash Analysis Report
- Traffic Count Summary Sheets
- Signal Warrant Analysis
- Roundabout Analysis


Georgia 212 & Salem Rd, Lithonia, GA 30
06
07
08
09
Browns Mill Rd
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
© 2010 Google
Google
33°40'35.84" N 84°11'07.98" W
Apr 9, 2010
Eye alt 483 ft

Analysis Report 1

Total Accidents: 31 **Total Vehicles: 58** **Total Injuries: 33** **Total Fatalities: 0**

Accident Analysis Report 1

AccidentId	Date	Time	County	Rt TP	Rt No	Mile	IntRt TP	InterRt	Ramp	Inj	Fatal	Collision	Loc Impact	Harmful Event	Light	Surf	D1	D2	VM1	VM2
63520305	09/10/2006	08:30:PM	Dekalb	State	021200	.60	2	059300		0	0	1-Angle	1-On Roadway	11-Motor Vehicle in	1-Daylight	Dry	W	W	02	05
60250044	01/26/2006	01:45:PM	Dekalb	State	021200	.60	2	059300		0	0	6-Not A Collision	3-Off Roadway	33-Tree	1-Daylight	Dry	S		05	
64710091	12/01/2006	05:50:PM	Dekalb	State	021200	.60	2	059300		2	0	1-Angle	1-On Roadway	11-Motor Vehicle in	5-Dark-Not Lighte	Dry	S	W	01	05
64720088	11/29/2006	06:50:PM	Dekalb	State	021200	.60				0	0	3-Rear End	1-On Roadway	11-Motor Vehicle in	5-Dark-Not Lighte	Wet	E	E	05	04
65290519	12/31/2006	02:30:PM	Dekalb	State	021200	.60	2	059300		0	0	3-Rear End	1-On Roadway	11-Motor Vehicle in	1-Daylight	Wet	S	S	05	01
65130214	12/18/2006	05:30:PM	Dekalb	State	021200	.60	2	059300		0	0	6-Not A Collision	1-On Roadway	14-Deer	1-Daylight	Dry	N		05	
64560670	11/12/2006	03:23:PM	Dekalb	State	021200	.60	2	059300		0	0	5-Sideswipe - Opp	1-On Roadway	11-Motor Vehicle in	1-Daylight	Dry	W	E	05	05
62530492	06/27/2006	11:05:PM	Dekalb	State	021200	.60	2	059300		0	0	6-Not A Collision	3-Off Roadway	33-Tree	5-Dark-Not Lighte	Dry	S		05	
72300024	06/02/2007	08:29:PM	Dekalb	State	021200	.60				1	0	6-Not A Collision	3-Off Roadway	13-Other Object (No	2-Dusk	Dry	E		05	
73600117	08/24/2007	08:45:AM	Dekalb	State	021200	.60	2	059300		0	0	1-Angle	1-On Roadway	11-Motor Vehicle in	1-Daylight	Dry	E	W	02	05
80190425	01/22/2008	03:15:PM	Dekalb	State	021200	.60	2	059300		2	0	1-Angle	1-On Roadway	11-Motor Vehicle in	1-Daylight	Wet	S	E	05	04
80640017	02/22/2008	12:23:PM	Dekalb	State	021200	.60	2	059300		0	0	4-Sideswipe - Sam	1-On Roadway	11-Motor Vehicle in	1-Daylight	Wet	E	E	09	01
80750586	02/29/2008	09:20:PM	Dekalb	State	021200	.60	2	059300		6	0	1-Angle	1-On Roadway	11-Motor Vehicle in	4-Dark-Lighted	Dry	S	E	05	05
81060415	03/19/2008	01:45:PM	Dekalb	State	021200	.60	2	059300		0	0	4-Sideswipe - Sam	1-On Roadway	11-Motor Vehicle in	1-Daylight	Wet	S	W	02	05
81110340	03/14/2008	12:37:PM	Dekalb	State	021200	.60	2	059300		0	0	2-Head On	1-On Roadway	11-Motor Vehicle in	1-Daylight	Dry	S	E	02	05
83040442	08/10/2008	11:00:PM	Dekalb	State	021200	.60	2	059300		0	0	6-Not A Collision	1-On Roadway	14-Deer	5-Dark-Not Lighte	Dry	W		05	
83080512	07/18/2008	09:29:PM	Dekalb	State	021200	.60	2	059300		2	0	1-Angle	1-On Roadway	11-Motor Vehicle in	5-Dark-Not Lighte	Dry	S	W	05	05
83820161	09/21/2008	01:50:PM	Dekalb	State	021200	.60	2	059300		0	0	4-Sideswipe - Sam	1-On Roadway	11-Motor Vehicle in	1-Daylight	Dry	N	N	05	05
84720080	11/14/2008	07:11:PM	Dekalb	State	021200	.60	2	059300		2	0	1-Angle	1-On Roadway	11-Motor Vehicle in	4-Dark-Lighted	Wet	S	E	05	05
85430025	12/11/2008	08:16:AM	Dekalb	State	021200	.60	2	059300		1	0	3-Rear End	1-On Roadway	11-Motor Vehicle in	1-Daylight	Wet	E	E	05	04
80410326	02/05/2008	12:20:PM	Dekalb	State	021200	.60	2	059300		1	0	1-Angle	1-On Roadway	11-Motor Vehicle in	1-Daylight	Wet	N	W	01	05
83160408	07/26/2008	03:54:AM	Dekalb	State	021200	.60	2	059300		0	0	6-Not A Collision	1-On Roadway	14-Deer	5-Dark-Not Lighte	Dry	N		05	
83340175	08/26/2008	07:57:AM	Dekalb	State	021200	.60	2	059300		0	0	1-Angle	1-On Roadway	11-Motor Vehicle in	1-Daylight	Wet	E	W	01	05
83580424	09/03/2008	03:45:PM	Dekalb	State	021200	.60	2	059300		1	0	1-Angle	1-On Roadway	11-Motor Vehicle in	1-Daylight	Dry	N	E	01	05
81060111	02/08/2008	01:11:PM	Dekalb	State	021200	.60	2	059300		2	0	1-Angle	1-On Roadway	11-Motor Vehicle in	1-Daylight	Dry	E	E	05	01
92750059	06/27/2009	06:13:PM	Dekalb	State	021200	.60	2	059300		10	0	1-Angle	1-On Roadway	11-Motor Vehicle in	1-Daylight	Dry	S	E	05	05
93480097	08/11/2009	07:30:AM	Dekalb	State	021200	.60	2	059300		0	0	3-Rear End	1-On Roadway	11-Motor Vehicle in	1-Daylight	Dry	S	S	05	04
94390502	10/05/2009	08:01:AM	Dekalb	State	021200	.60	2	059300		0	0	4-Sideswipe - Sam	1-On Roadway	11-Motor Vehicle in	1-Daylight	Wet	S	S	09	05
94400510	10/11/2009	04:55:PM	Dekalb	State	021200	.60	2	059300		0	0	3-Rear End	1-On Roadway	11-Motor Vehicle in	1-Daylight	Dry	W	W	02	02
94810305	10/31/2009	07:28:PM	Dekalb	State	021200	.60	2	059300		0	0	6-Not A Collision	3-Off Roadway	34-Other Fixed Obje	4-Dark-Lighted	Wet	E		05	
92750067	06/24/2009	07:45:PM	Dekalb	State	021200	.60	2	059300		3	0	2-Head On	1-On Roadway	11-Motor Vehicle in	1-Daylight	Dry	E	W	01	05

Georgia Department of Transportation

5025 New Peachtree Rd
Chamblee, GA 30341
District 7

Default Comments
Change These in The Preferences Window
Select File/Preference in the Main Scree
Then Click the Comments Tab

File Name : SR 212 and Salem Rd
Site Code : 00000000
Start Date : 12/2/2010
Page No : 1

Groups Printed- Unshifted - Bank 1

	SALEM From North					SR212 From East					SALEM From South					SR212 From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:30 AM	56	0	0	0	56	2	237	0	0	239	0	0	0	0	0	0	28	28	0	56	351
06:45 AM	75	0	0	1	76	0	204	0	0	204	0	0	0	0	0	0	31	23	0	54	334
Total	131	0	0	1	132	2	441	0	0	443	0	0	0	0	0	0	59	51	0	110	685
07:00 AM	76	0	2	0	78	1	236	0	0	237	0	0	0	0	0	0	30	44	0	74	389
07:15 AM	108	0	1	1	110	0	188	0	0	188	0	0	0	0	0	0	46	34	0	80	378
07:30 AM	109	0	1	1	111	3	151	0	0	154	0	0	0	0	0	0	55	39	0	94	359
07:45 AM	80	1	0	1	82	3	131	0	1	135	0	0	0	0	0	1	46	46	0	93	310
Total	373	1	4	3	381	7	706	0	1	714	0	0	0	0	0	1	177	163	0	341	1436
08:00 AM	62	0	0	1	63	5	147	0	0	152	0	0	0	0	0	0	41	58	0	99	314
08:15 AM	64	0	1	0	65	2	130	0	0	132	0	0	0	0	0	0	20	46	0	66	263
08:30 AM	63	0	0	1	64	5	95	0	0	100	0	0	0	0	0	1	27	33	0	61	225
08:45 AM	40	0	1	0	41	0	66	0	0	66	2	0	0	0	2	0	24	29	0	53	162
Total	229	0	2	2	233	12	438	0	0	450	2	0	0	0	2	1	112	166	0	279	964
09:00 AM	19	0	1	0	20	1	78	0	0	79	0	0	0	0	0	0	39	24	0	63	162
09:15 AM	20	1	0	0	21	3	76	0	0	79	0	1	0	0	1	0	23	15	0	38	139
*** BREAK ***																					
Total	39	1	1	0	41	4	154	0	0	158	0	1	0	0	1	0	62	39	0	101	301
*** BREAK ***																					
11:00 AM	28	0	0	0	28	1	47	0	0	48	0	0	0	0	0	0	27	24	0	51	127
11:15 AM	25	1	0	0	26	0	46	0	0	46	0	0	0	0	0	0	18	20	0	38	110
11:30 AM	19	0	0	0	19	0	41	0	0	41	0	0	0	0	0	0	26	17	0	43	103
11:45 AM	24	0	0	1	25	1	44	0	0	45	0	1	0	0	1	0	25	22	0	47	118
Total	96	1	0	1	98	2	178	0	0	180	0	1	0	0	1	0	96	83	0	179	458
12:00 PM	18	0	1	0	19	0	49	0	0	49	1	0	0	0	1	1	33	19	0	53	122
12:15 PM	29	1	0	0	30	0	65	0	0	65	0	0	0	0	0	0	41	18	0	59	154
12:30 PM	15	0	0	0	15	1	52	0	0	53	0	0	0	0	0	0	23	17	0	40	108
12:45 PM	30	0	1	0	31	1	54	0	0	55	0	0	0	0	0	0	33	22	0	55	141
Total	92	1	2	0	95	2	220	0	0	222	1	0	0	0	1	1	130	76	0	207	525
*** BREAK ***																					
04:15 PM	0	0	0	0	0	3	119	52	0	174	49	0	0	0	49	1	50	0	0	51	274
04:30 PM	0	0	1	1	2	0	125	55	0	180	52	0	2	0	54	1	69	0	0	70	306
04:45 PM	0	0	0	0	0	0	140	54	0	194	54	0	1	0	55	2	65	0	0	67	316
Total	0	0	1	1	2	3	384	161	0	548	155	0	3	0	158	4	184	0	0	188	896

Georgia Department of Transportation

5025 New Peachtree Rd
Chamblee, GA 30341
District 7

Default Comments
Change These in The Preferences Window
Select File/Preference in the Main Scree
Then Click the Comments Tab

File Name : SR 212 and Salem Rd
Site Code : 00000000
Start Date : 12/2/2010

Groups Printed- Unshifted - Bank 1

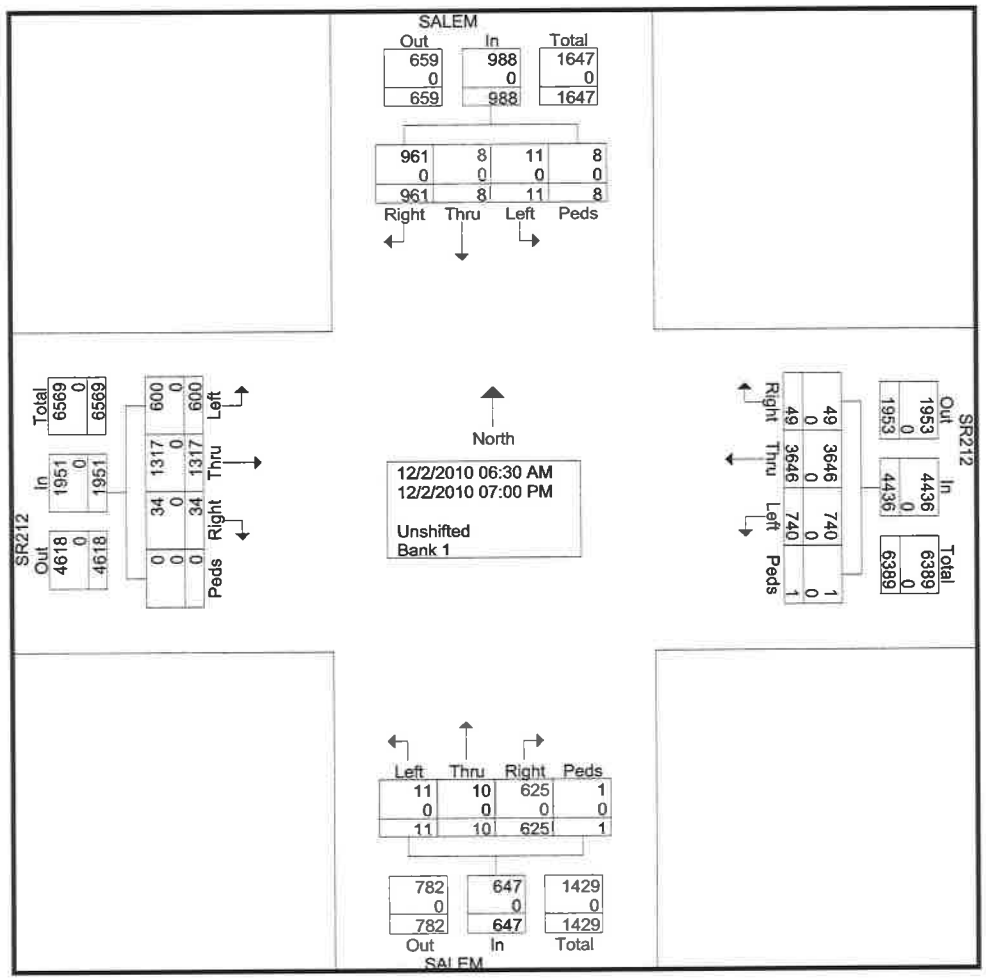
	SALEM From North					SR212 From East					SALEM From South					SR212 From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
05:00 PM	0	0	0	0	0	1	145	51	0	197	55	0	0	0	55	4	61	0	0	65	317
05:15 PM	0	0	0	0	0	0	115	72	0	187	52	1	1	0	54	3	62	0	0	65	306
05:30 PM	0	1	0	0	1	1	119	56	0	176	59	0	2	0	61	0	74	0	0	74	312
05:45 PM	0	1	0	0	1	1	139	64	0	204	43	1	0	0	44	6	54	11	0	71	320
Total	0	2	0	0	2	3	518	243	0	764	209	2	3	0	214	13	251	11	0	275	1255
06:00 PM	0	1	0	0	1	2	133	70	0	205	61	1	2	0	64	6	49	7	0	62	332
06:15 PM	1	0	1	0	2	8	117	76	0	201	57	2	1	0	60	3	53	2	0	58	321
06:30 PM	0	0	0	0	0	3	128	63	0	194	50	0	1	0	51	4	41	1	0	46	291
06:45 PM	0	0	0	0	0	0	134	75	0	209	40	0	0	0	40	0	55	0	0	55	304
Total	1	1	1	0	3	13	512	284	0	809	208	3	4	0	215	13	198	10	0	221	1248
07:00 PM	0	1	0	0	1	1	95	52	0	148	50	3	1	1	55	1	48	1	0	50	254
Grand Total	961	8	11	8	988	49	3646	740	1	4436	625	10	11	1	647	34	1317	600	0	1951	8022
Apprch %	97.3	0.8	1.1	0.8		1.1	82.2	16.7	0		96.6	1.5	1.7	0.2		1.7	67.5	30.8	0		
Total %	12	0.1	0.1	0.1	12.3	0.6	45.5	9.2	0	55.3	7.8	0.1	0.1	0	8.1	0.4	16.4	7.5	0	24.3	
Unshifted	961	8	11	8	988	49	3646	740	1	4436	625	10	11	1	647	34	1317	600	0	1951	8022
% Unshifted	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	0	100	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Georgia Department of Transportation

5025 New Peachtree Rd
Chamblee, GA 30341
District 7

Default Comments
Change These in The Preferences Window
Select File/Preference in the Main Scree
Then Click the Comments Tab

File Name : SR 212 and Salem Rd
Site Code : 00000000
Start Date : 12/2/2010
Page No : 3

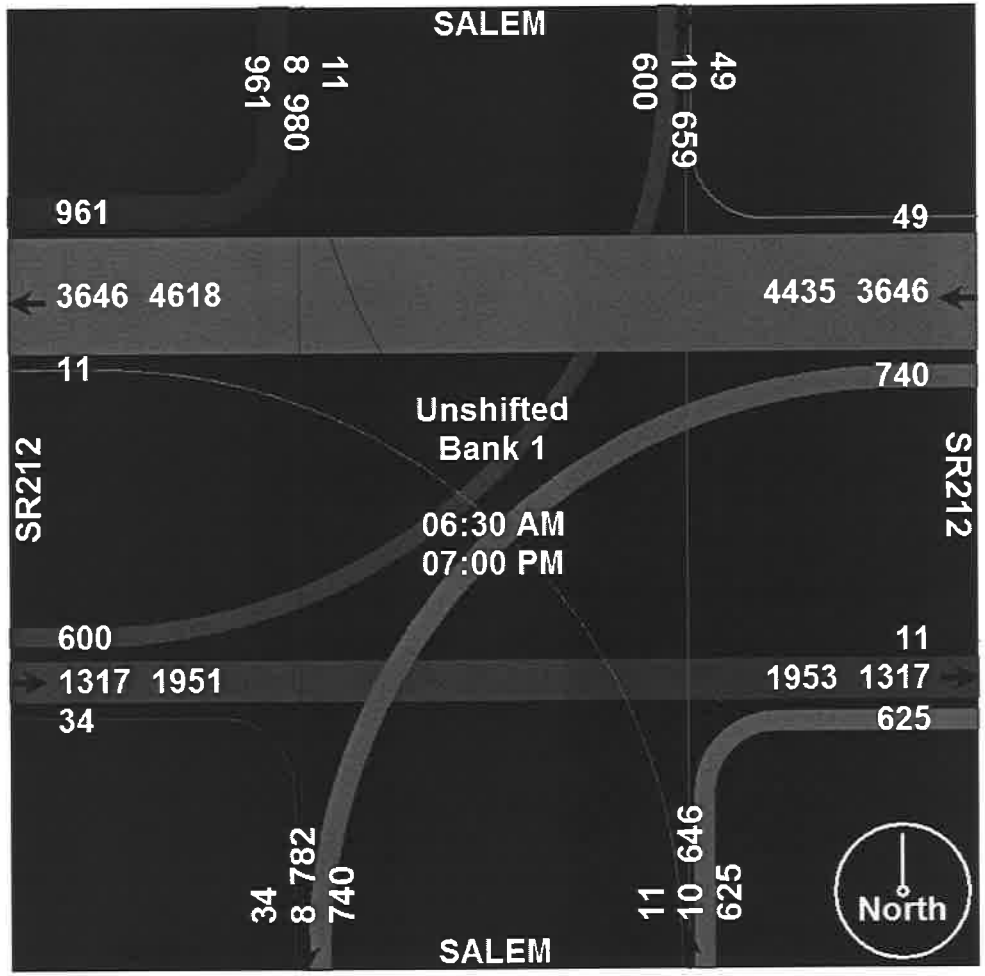


Georgia Department of Transportation

5025 New Peachtree Rd
Chamblee, GA 30341
District 7

Default Comments
Change These in The Preferences Window
Select File/Preference in the Main Scree
Then Click the Comments Tab

File Name : SR 212 and Salem Rd
Site Code : 00000000
Start Date : 12/2/2010
Page No : 4

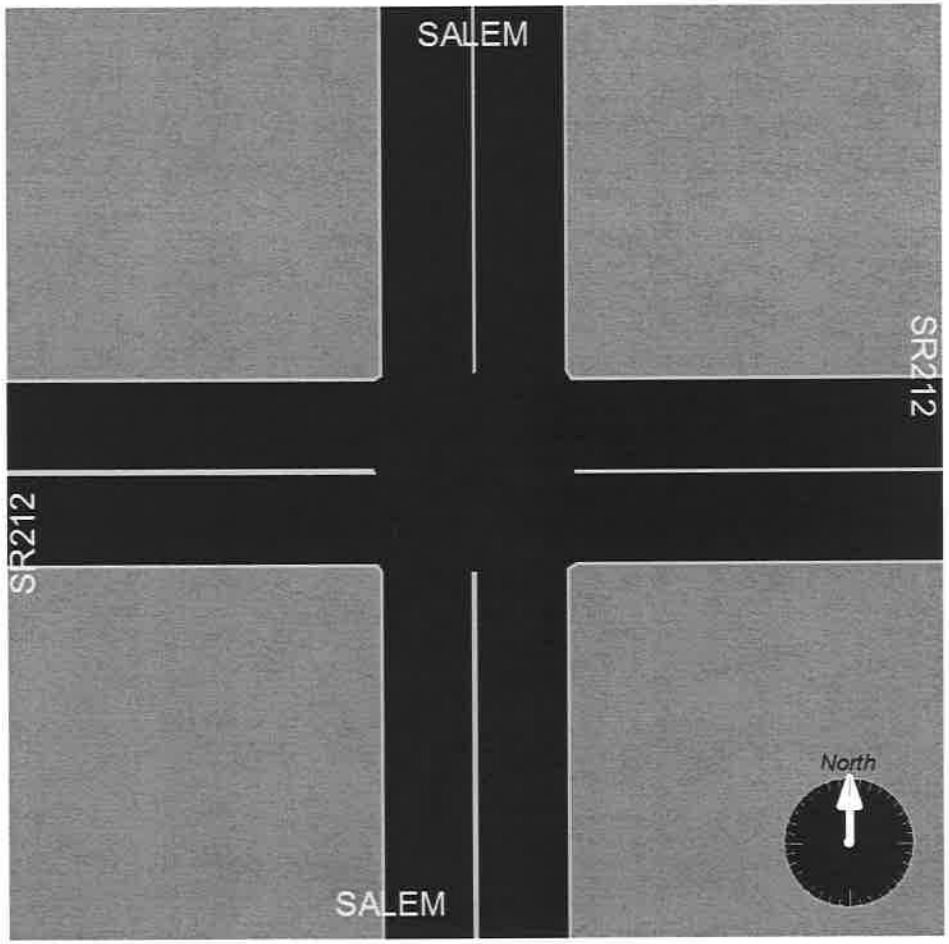


Georgia Department of Transportation

5025 New Peachtree Rd
Chamblee, GA 30341
District 7

Default Comments
Change These in The Preferences Window
Select File/Preference in the Main Scree
Then Click the Comments Tab

File Name : SR 212 and Salem Rd
Site Code : 00000000
Start Date : 12/2/2010
Page No : 5



Georgia Dept. of Transportation

Signal Warrant Analysis

SR 212 @ Salem Rd

Signal Warrants - Summary

Major Street Approaches

Northbound: **SR 212**
Number of Lanes: **1**
Approach Speed: **45**
Total Approach Volume: **3,713**

Southbound: **SR 212**
Number of Lanes: **1**
Approach Speed: **45**
Total Approach Volume: **1,847**

Minor Street Approaches

Eastbound:
Number of Lanes: **2**

Total Approach Volume: **0**

Westbound: **SALEM RD**
Number of Lanes: **2**

Total Approach Volume: **1,582**

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

Warrant 1 - Eight Hour Vehicular Volumes ..... **Not Satisfied**

Warrant 1A - Minimum Vehicular Volume ..... **Not Satisfied**
Required volumes reached for 6 hours, 8 are needed

Warrant 1B - Interruption of Continuous Traffic ..... **Not Satisfied**
Required volumes reached for 6 hours, 8 are needed

Warrant 1 A&B - Combination of Warrants ..... **Not Satisfied**
Required volumes reached for 6 hours, 8 are needed

Warrant 2 - Four Hour Volumes ..... **Satisfied**
Number of hours (6) 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 (-1) is less than minimum (5). Volume minimums are not met.

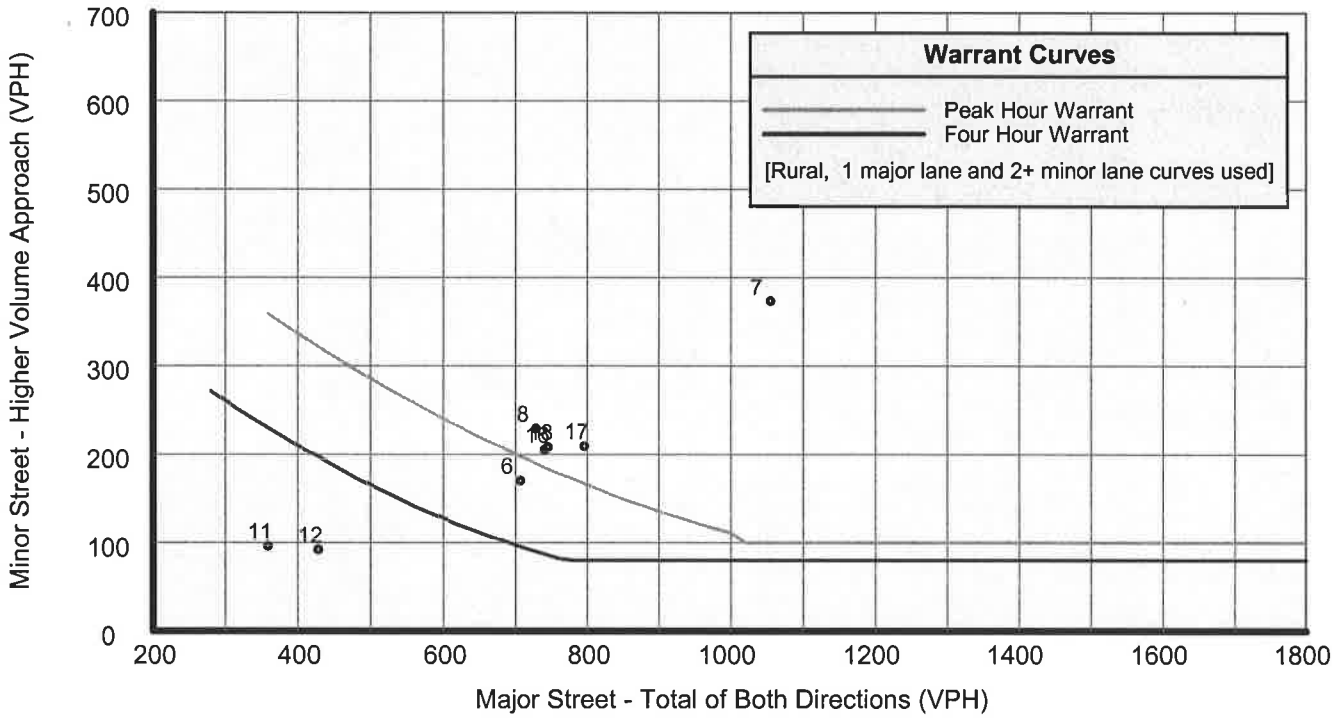
Warrant 8 - Roadway Network ..... **Not Satisfied**
Major Route conditions not met. One or more volume requirement met.

Georgia Dept. of Transportation

Signal Warrant Analysis

SR 212 @ Salem Rd

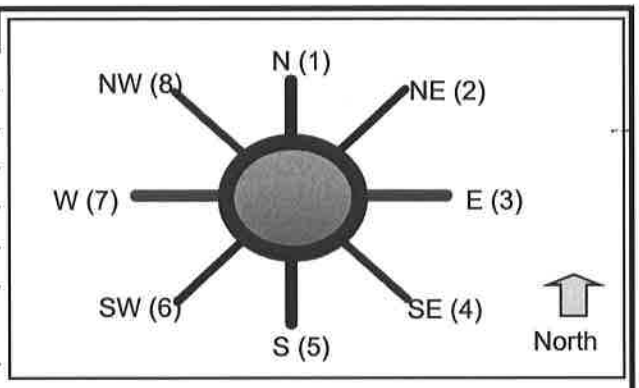
Signal Warrants - Summary



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	0	0	EB	350-No	140-No	---	525-No	70-No	---	420-No	112-No	---
01:00	0	0	EB	350-No	140-No	---	525-No	70-No	---	420-No	112-No	---
02:00	0	0	EB	350-No	140-No	---	525-No	70-No	---	420-No	112-No	---
03:00	0	0	EB	350-No	140-No	---	525-No	70-No	---	420-No	112-No	---
04:00	0	0	EB	350-No	140-No	---	525-No	70-No	---	420-No	112-No	---
05:00	0	0	EB	350-No	140-No	---	525-No	70-No	---	420-No	112-No	---
06:00	707	170	WB	350-Yes	140-Yes	Both	525-Yes	70-Yes	Both	420-Yes	112-Yes	Both
07:00	1,054	373	WB	350-Yes	140-Yes	Both	525-Yes	70-Yes	Both	420-Yes	112-Yes	Both
08:00	729	229	WB	350-Yes	140-Yes	Both	525-Yes	70-Yes	Both	420-Yes	112-Yes	Both
09:00	0	0	EB	350-No	140-No	---	525-No	70-No	---	420-No	112-No	---
10:00	0	0	EB	350-No	140-No	---	525-No	70-No	---	420-No	112-No	---
11:00	359	96	WB	350-Yes	140-No	Major	525-No	70-Yes	Minor	420-No	112-No	---
12:00	428	92	WB	350-Yes	140-No	Major	525-No	70-Yes	Minor	420-Yes	112-No	Major
13:00	0	0	EB	350-No	140-No	---	525-No	70-No	---	420-No	112-No	---
14:00	0	0	EB	350-No	140-No	---	525-No	70-No	---	420-No	112-No	---
15:00	0	0	EB	350-No	140-No	---	525-No	70-No	---	420-No	112-No	---
16:00	741	205	WB	350-Yes	140-Yes	Both	525-Yes	70-Yes	Both	420-Yes	112-Yes	Both
17:00	796	209	WB	350-Yes	140-Yes	Both	525-Yes	70-Yes	Both	420-Yes	112-Yes	Both
18:00	746	208	WB	350-Yes	140-Yes	Both	525-Yes	70-Yes	Both	420-Yes	112-Yes	Both
19:00	0	0	EB	350-No	140-No	---	525-No	70-No	---	420-No	112-No	---
20:00	0	0	EB	350-No	140-No	---	525-No	70-No	---	420-No	112-No	---
21:00	0	0	EB	350-No	140-No	---	525-No	70-No	---	420-No	112-No	---
22:00	0	0	EB	350-No	140-No	---	525-No	70-No	---	420-No	112-No	---
23:00	0	0	EB	350-No	140-No	---	525-No	70-No	---	420-No	112-No	---

General & Site Information	
Analyst:	Patrick S. Werho
Agency/Company:	GDOT
Date:	1/31/2011
Project Name or PI#:	
Year, Peak Hour:	2010
County/District:	DeKalb / D7
Intersection:	SR 212 at Salem Road



Volumes		Entry Legs (FROM) N (1)	NE (2)	E (3)	SE (4)	S (5)	SW (6)	W (7)	NW (8)
	N (1), vph			4		0		140	
Exit	NE (2), vph								
Legs	E (3), vph	4				0		162	
(TO)	SE (4), vph								
	S (5), vph	0		0				0	
	SW (6), vph								
	W (7), vph	0		779		0			
	NW (8), vph								
Output	Total Vehicles	4	0	783	0	0	0	302	0

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	100%	100%	100%	100%	100%	100%	100%	100%
% SU/ Bus	0%	0%	0%	0%	0%	0%	0%	0%
% Trucks/ Combin.	0%	0%	0%	0%	0%	0%	0%	0%
% Bicycle	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}	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 Leg # N (1), pcu/h	0	0	4	0	0	0	152	0
NE (2), pcu/h	0	0	0	0	0	0	0	0
E (3), pcu/h	4	0	0	0	0	0	176	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	0	0	847	0	0	0	0	0
NW (8), pcu/h	0	0	0	0	0	0	0	0
Entry flow, pcu/h	4	0	851	0	0	0	328	0
Conflicting flow, pcu/h	847	0	152	0	0	0	4	0

Roundabout Type	Standard Single Lane or Urban Compact
Enter type here...	Standard Single Lane

Results: Approach Measures of Effectiveness								
NCHRP-572 Model	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**
Entry Capacity, pcu/h	485	NA	970	NA	1130	NA	1125	NA
V/C ratio	**0.01**		**0.88**		**0.00**		**0.29**	
Control Delay, sec/pcu	**7**		**23**		**3**		**5**	
LOS	A		C		A		A	
95th % Queue (ft)	**1**		**297**		**0**		**31**	
UK Model**	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**
Entry Capacity, pcu/h	751	NA	1129	NA	1212	NA	1210	NA
V/C ratio	**0.01**		**0.75**		**0.00**		**0.27**	
Control Delay, sec/pcu	**5**		**12**		**3**		**4**	
LOS	A		B		A		A	
95th % Queue (ft)	**0**		**189**		**0**		**28**	

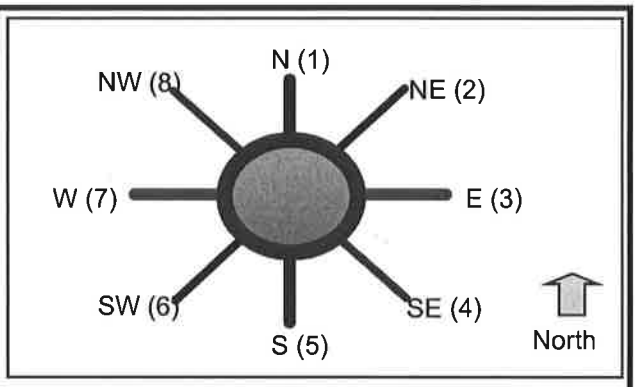
Notes:

Unit Legend:
vph = vehicles per hour
PHF = peak hour factor
F_{HV} = heavy vehicle factor
pcu = passenger car unit

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)	N (1)					
Select Exit Leg for Bypass (TO)	W (7)					
Volumes						
Right Turn Volume removed from Entry Leg	368					
Volume Characteristics (for entry leg)						
PHF	0.92					
F_{HV}	1.00					
NOTE: Volume Characteristics for Exit Leg are already taken into account						
Entry/Conflicting Flows						
Entry Flow	400					
Conflicting Flow	847					
Bypass Lane Results (NCHRP-572 Model)						
Entry Capacity at bypass mergepoint, pcu/hr	485					
V/C ratio	**0.83**					
Control Delay, sec/pcu	**33.8**					
LOS	D					
95th % Queue (ft)	**201**					

General & Site Information

Analyst:	Patrick S. Werho
Agency/Company:	GDOT
Date:	2/2/2011
Project Name or PI#:	
Year, Peak Hour:	2030
County/District:	DeKalb / D7
Intersection:	SR 212 at Salem Road



Volumes

		Entry Legs (FROM) N (1)	NE (2)	E (3)	SE (4)	S (5)	SW (6)	W (7)	NW (8)
	N (1), vph			7				230	
Exit	NE (2), vph								
Legs	E (3), vph	7						266	
(TO)	SE (4), vph								
	S (5), vph			0				0	
	SW (6), vph								
	W (7), vph			1278					
	NW (8), vph								
Output	Total Vehicles	7	0	1285	0	0	0	496	0

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	100%	100%	100%	100%	100%	100%	100%	100%
% SU/ Bus	0%	0%	0%	0%	0%	0%	0%	0%
% Trucks/ Combin.	0%	0%	0%	0%	0%	0%	0%	0%
% Bicycle	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}	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 Leg # N (1), pcu/h	0	0	8	0	0	0	250	0
NE (2), pcu/h	0	0	0	0	0	0	0	0
E (3), pcu/h	8	0	0	0	0	0	289	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	0	0	1389	0	0	0	0	0
NW (8), pcu/h	0	0	0	0	0	0	0	0
Entry flow, pcu/h	8	0	1397	0	0	0	539	0
Conflicting flow, pcu/h	1389	0	250	0	0	0	8	0

Roundabout Type	Standard Single Lane or Urban Compact
Enter type here...	Standard Single Lane

Results: Approach Measures of Effectiveness								
NCHRP-572 Model	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**
Entry Capacity, pcu/h	282	NA	880	NA	NA	NA	1121	NA
V/C ratio	**0.03**		**1.59**				**0.48**	
Control Delay, sec/pcu	**13**		**279**				**6**	
LOS	B		F				A	
95th % Queue (ft)	**2**		**1797**				**67**	
UK Model**	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**
Entry Capacity, pcu/h	455	NA	1076	NA	NA	NA	1208	NA
V/C ratio	**0.02**		**1.30**				**0.45**	
Control Delay, sec/pcu	**8**		**151**				**5**	
LOS	A		F				A	
95th % Queue (ft)	**1**		**1262**				**59**	

Notes:

Unit Legend:
vph = vehicles per hour
PHF = peak hour factor
F_{HV} = heavy vehicle factor
pcu = passenger car unit

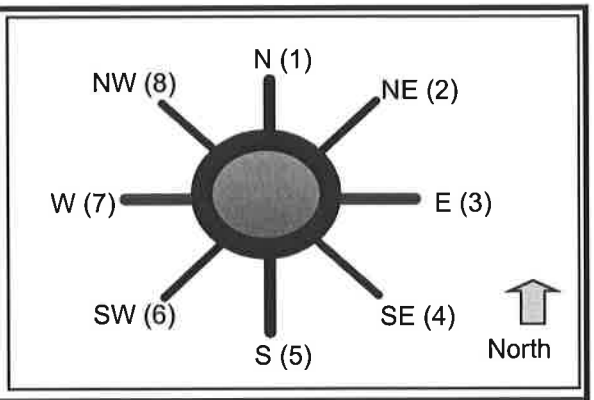
Bypass Lane Merge Point Analysis (if applicable)						
Bypass Characteristics	**Bypass #1**	**Bypass #2**	**Bypass #3**	**Bypass #4**	**Bypass #5**	**Bypass #6**
Select Entry Leg from Bypass (FROM)	**N (1)**					
Select Exit Leg for Bypass (TO)	**W (7)**					
Volumes						
Right Turn Volume removed from Entry Leg	604					
Volume Characteristics (for entry leg)						
PHF	0.92					
F_{HV}	1.00					
NOTE: Volume Characteristics for Exit Leg are already taken into account						
Entry/Conflicting Flows						
Entry Flow	657					
Conflicting Flow	1389					
Bypass Lane Results (NCHRP-572 Model)						
Entry Capacity at bypass mergepoint, pcu/hr	282					
V/C ratio	**2.33**					
Control Delay, sec/pcu	**633.1**					
LOS	F					
95th % Queue (ft)	**1291**					

Roundabout Analysis Tool
Multi-Lane

2/2/2011
Version 1.3

General & Site Information

Analyst:	Patrick S. Werho
Agency/Company:	GDOT
Date:	1/31/2011
Project Name or PI#:	
Year, Peak Hour:	2030
County/District:	DeKalb / D7
Intersection:	SR 212 at Salem Road



Volumes

	Entry Legs (FROM)							
	N1 (1)	N2 (1)	NE1 (2)	NE2 (2)	E1 (3)	E2 (3)	SE1 (4)	SE2 (4)
N (1), vph					7			
Exit NE (2), vph								
Legs E (3), vph	7							
(TO) SE (4), vph								
S (5), vph								
SW (6), vph								
W (7), vph					639	639		
NW (8), vph								
Entry Volume, vph	7	0	0	0	646	639	0	0

	S1 (5)	S2 (5)	SW1 (6)	SW2 (6)	W1 (7)	W2 (7)	NW1 (8)	NW2 (8)
N (1), vph					230			
NE (2), vph								
E (3), vph					266			
SE (4), vph								
S (5), vph								
SW (6), vph								
W (7), vph								
NW (8), vph								
Entry Volume, vph	0	0	0	0	496	0	0	0

Critical Lane Volumes

	N	NE	E	SE	S	SW	W	NW
N (1), vph	0	0	7	0	0	0	230	0
NE (2), vph	0	0	0	0	0	0	0	0
E (3), vph	7	0	0	0	0	0	266	0
SE (4), vph	0	0	0	0	0	0	0	0
S (5), vph	0	0	0	0	0	0	0	0
SW (6), vph	0	0	0	0	0	0	0	0
W (7), vph	0	0	639	0	0	0	0	0
NW (8), vph	0	0	0	0	0	0	0	0
Entry Volume, vph	7	0	646	0	0	0	496	0

No. of Conflict Flow Lanes to	2	2	2	2	2	2	2	2

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	100%	100%	100%	100%	100%	100%	100%	100%
% S.U./ Bus	0%	0%	0%	0%	0%	0%	0%	0%
% Trucks/ Combin.	0%	0%	0%	0%	0%	0%	0%	0%
% Bicycles	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}	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	8	0	0	0	250	0
Leg #	NE (2), pcu/h	0	0	0	0	0	0	0	0
	E (3), pcu/h	8	0	0	0	0	0	289	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	0	0	1389	0	0	0	0	0
	NW (8), pcu/h	0	0	0	0	0	0	0	0
	Conflicting flow, pcu/h	1389	0	250	0	0	0	8	0

Results: Approach Measures of Effectiveness

NCHRP-572 Model	N	NE	E	SE	S	SW	W	NW
Crit. Entry Capacity pcu/h	427	NA	949	NA	NA	NA	1124	NA
Crit. Lane Entry Flow pcu/h	8	0	702	0	0	0	539	0
V/C ratio	**0.02**		**0.74**				**0.48**	
Control Delay, sec/pcu	**8.6**		**13.8**				**6.1**	
LOS	A		B				A	
95th % Queue (ft)	**1**		**174**				**67**	

UK Model**	N	NE	E	SE	S	SW	W	NW
Crit. Entry Capacity pcu/h	1430	NA	2245	NA	NA	NA	2419	NA
Entry Flow pcu/h	8	0	1397	0	0	0	539	0
V/C ratio	**0.01**		**0.62**				**0.22**	
Control Delay, sec/pcu	**2.5**		**4.2**				**1.9**	
LOS	A		A				A	
95th % Queue (ft)	**0**		**118**				**21**	

Notes:

Unit Legend:
vph = vehicles per hour
PHF = peak hour factor
F_{HV} = heavy vehicle factor
pcu = passenger car unit

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)	**N (1)**	**N (1)**				
Select Exit Leg for Bypass (TO)	W (7)	W (7)				
Volumes						
Entry Leg: Insert Right Turn Volume	604					
Exit Leg: ***(Select Input Method)***	Default					
*Critical Lane Flow (Default) in Exit Leg****	927					
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)	0.92	0.92				
F_{HV} (Entry Leg)	1.00	1.00				
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	657	0				
Conflicting Critical Flow	927					
Bypass Lane Results (NCHRP-572 Method)						
Entry Capacity at bypass merge point, pcu/hr	447					
V/C ratio	1.47					
Control Delay, sec/pcu	241.2					
LOS	F					
95th % Queue (ft)	**837**					

DEPARTMENT OF TRANSPORTATION

STATE OF GEORGIA

FEASIBILITY STUDY

SR 212 Browns Mill Road at Salem Road
Roundabout
DeKalb County, Georgia
Mile log: 0.60

Report prepared by:
Kevin Cowan, Jr.
Design Engineer II
5025 New Peachtree Rd
Chamblee, GA 30341

Telephone Number: *(770)986-1786*
E-mail Address: *kcowan*@dot.ga.gov

Date prepared: 5/22/2013

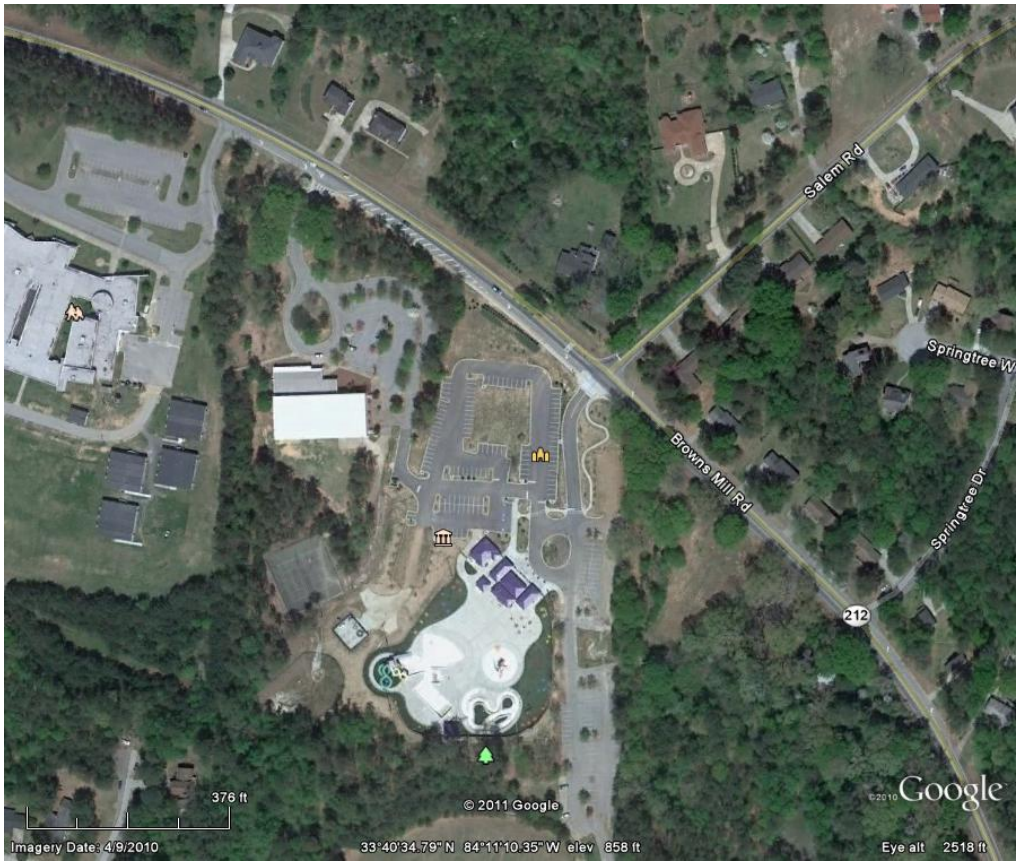
Background & Site Conditions

The intersection of State Route 212/Browns Mill Road at Salem Road is located in a well populated residential area in south Dekalb County. The intersection is positioned approximately 1500 ft from Browns Mill Elementary school and one leg of the intersection feeds directly into Browns Mill Recreation Park. During the school session and water park season the area experiences mild amounts of pedestrian traffic.

State Route 212/Browns Mill Road is a free flowing, two lane Urban Minor Arterial with two 12 ft travel lanes and right turn lanes at the intersection. The posted speed limit of SR 212 is 45 mph. The typical section near the intersection features a different shoulder on the north and south sides of the road. The north side has a rural section with 4 ft shoulders (2 ft paved shoulders and 2 ft grassed), and a 2 ft ditch. The south side is made up of a 9 ft urban shoulder (2.5 ft curb and gutter, 5 ft sidewalk, 2 ft grassed). The Minor Arterial runs East/West in DeKalb County and has a current AADT of 11800. The nearest signalized intersection is approximately 2855 feet (Panola Road) from Salem Road in the Eastbound direction.

Salem Road is a stop controlled, two lane county road that is an Urban Minor Arterial as well. The speed limit on Salem Rd. is 40 mph. Salem Road runs North/South in DeKalb County. Salem road's typical section is made up of two 12 ft lanes a 4 ft rural shoulder and a 2 ft ditch. An aerial layout of the intersection is provided in Figure 1.1

Figure 1.1



Peak Hour Volumes

The tables below give the peak hour volumes movement and direction. These peak hour counts are found by using the peak hour four fifteen minute consecutive intervals within the two hour period.

SR 212/BROWNS MILL ROAD

TIME	EASTBOUND				WESTBOUND			
	THRU	LEFT	RIGHT	PED'S	THRU	RIGHT	LEFT	PED'S
6:30AM-9:30AM	410	419	2	0	1739	25	0	1
11:00AM-1:00PM	226	159	1	0	398	4	0	0
4:15PM-7:00PM	681	22	20	0	607	20	740	0

SALEM ROAD

TIME	WESTBOUND	EASTBOUND	THRU	PEDS
	RIGHT	LEFT		
6:30AM-9:30AM	772	7	2	6
11:00AM-1:00PM	188	2	2	1
4:15PM-6:00PM	622	11	8	1

RECREATION PARK

TIME	WESTBOUND	EASTBOUND	THRU	PEDS
	RIGHT	LEFT		
6:30AM-9:30AM	2	0	1	0
11:00AM-1:00PM	1	0	1	0
4:15PM-7:00PM	1	2	4	1

Signal Warrant Analysis

A Signal Warrant Analysis was conducted at the intersection of SR 212 Browns Mill Road at Salem Road; Nine Warrants were reviewed in accordance with the 2009 MUTCD Manual. Two Warrants were "Satisfied," Warrant 2- Four Hour Volumes and Warrant 3- Peak Hour.

Safety Assessment

SR 212/ Brownsmill Rd. (M.P. 0.55-M.P. 0.65)

Year	Accidents	Injuries	Fatalities	Angle	Head On	Non Vehicle	Rear End	Sideswipe	Accident Rate	Statewide Average
2006	8	2	0	2	0	3	0	1	353*	
2007	3	3	0	1	0	1	0	1	410*	513*
2008	16	17	0	8	1	2	1	3	520*	469*
2009	6	13	0	1	1	1	2	1	125*	463*
Total	33	35	0	12	2	7	3	6		

* NOTE: Rates are per 100 Million Vehicle Miles

Alternative Designs

Four alternates have been considered for the proposed project. The alternates include three roundabout alternatives and a 4–way stop controlled alternative. Descriptions for each alternative can be found in the following paragraphs and sketches are provided in the appendix:

Alternate 1

~ Roundabout with ICD 80 ft -95 ft
~ 16ft - 20 ft travel lane in roundabout
~ 5ft – 10 ft Truck apron with type 9 curb
~ Bypass/Dual right on Salem Rd.
~ 4 lane section 1500 ft along Browns Mill Rd. west of the intersection including a two way left turn lane

Pros:
~ Eliminates Merge
~ Significantly reduces delay on Salem Rd.
~ Low entry and exit speeds
~ Anticipate drastic reduction in crashes
~ Best operational alternative

Cons:
~ Most expensive alternative
~ Largest ROW impacts
~ Least Ped/ADA friendly

Alternate 2

~ 4-way stop controlled intersection
~ 250 ft – 300 ft left turn lanes (all legs except driveway)
~ 1500 ft 2-way left turn West of Salem Rd.
~ 300 ft right turn lane on Salem Rd.

Pros:
~ Pedestrian friendly
~ Decreases delay on Salem Rd.

Cons:
~ Does not address safety issues with injury crashes
~ Will increase delay on Browns Mill significantly

Alternate 3

~ Roundabout with ICD 80 ft -95 ft
~ 16ft - 20 ft travel lane in roundabout
~ 5ft – 10 ft Truck apron with type 9 curb

Pros:
~ No merging
~ Minimal ROW requirements
~ Low entry and exit speeds
~ Increased safety
~ Minimal driver confusion (w/roundabout design)
~ Lowest cost (w/roundabout design)

Cons:
~ Minimal reduction in delay time on Salem Rd.
~ Left turns into school, church, etc... will delay through traffic

Alternate 4

~ Roundabout with ICD 80 ft -95 ft
~ 16ft - 20 ft travel lane in roundabout
~ 5ft – 10 ft Truck apron with type 9 curb
~ Right turn bypass lane on Salem Rd.
~ 1500 ft west bound Drop lane

Pros:
~ Reduces delay on Salem
~ Low entry and exit speeds
~ Increased safety

Cons:
~ Significantly increases merge potential
~ Slightly higher construction costs
~ Slightly increased ROW requirements

Operational Analyses

Capacity Analyses:

Cost Comparison

Alternate	Construction Costs	ROW Costs	Notes
1	$1,339,545	$ 350,000	ROW costs will increase if displacements cannot be avoided
2	$1,044,577	$ 150,000	
3	$1,207,322	$ 150,000	
4	$1,214,923	$ 200,000	

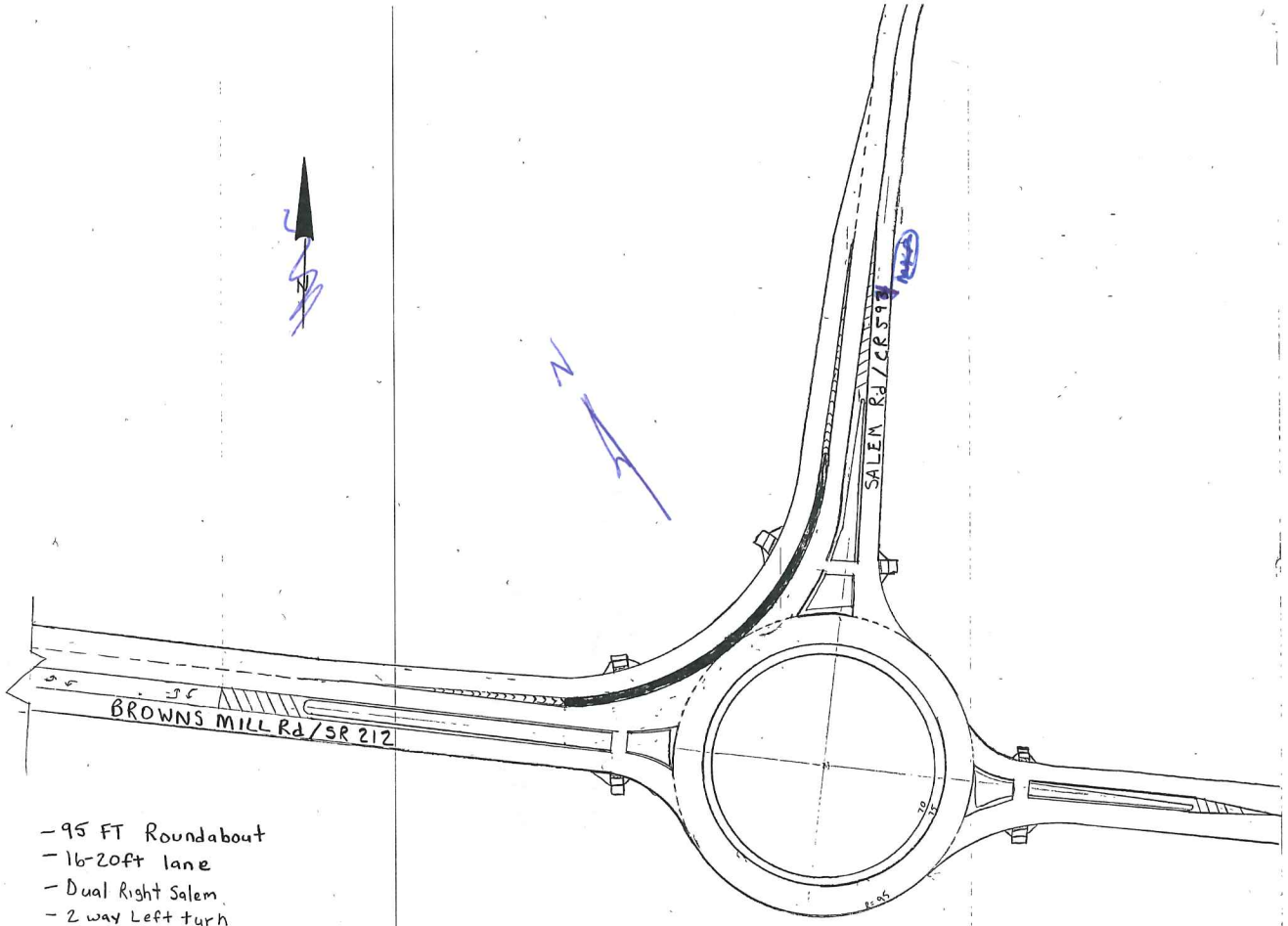
*Cost for each alternate may be reduced by $239,508 may be reduced if pedestrian accommodations are removed from project scope

Alternate Selection

After careful review of the data, Alternate 1 has been found the most favorable alterative. Although the costs are slightly higher for this alternative, the operational efficiency obtained by implementing this alternative make the money spent a good investment in Georgia's infrastructure.

Feasibility Study Appendix
- Alternate Sketches
- Signal Warrant Analysis
- Peak Hour Volume Counts Work Sheet
- Roundabout Analysis 2010 Single
- Roundabout Analysis 2030 Single w/ By-Pass
- Roundabout Analysis 2030 Multi-lane w/ By-Pass

Appendix A
Sketches



- 95 FT Roundabout
- 16-20ft lane
- Dual Right Salem
- 2 way Left turn
- 5 ft Mountable curb

CONCEPT Alternate #1

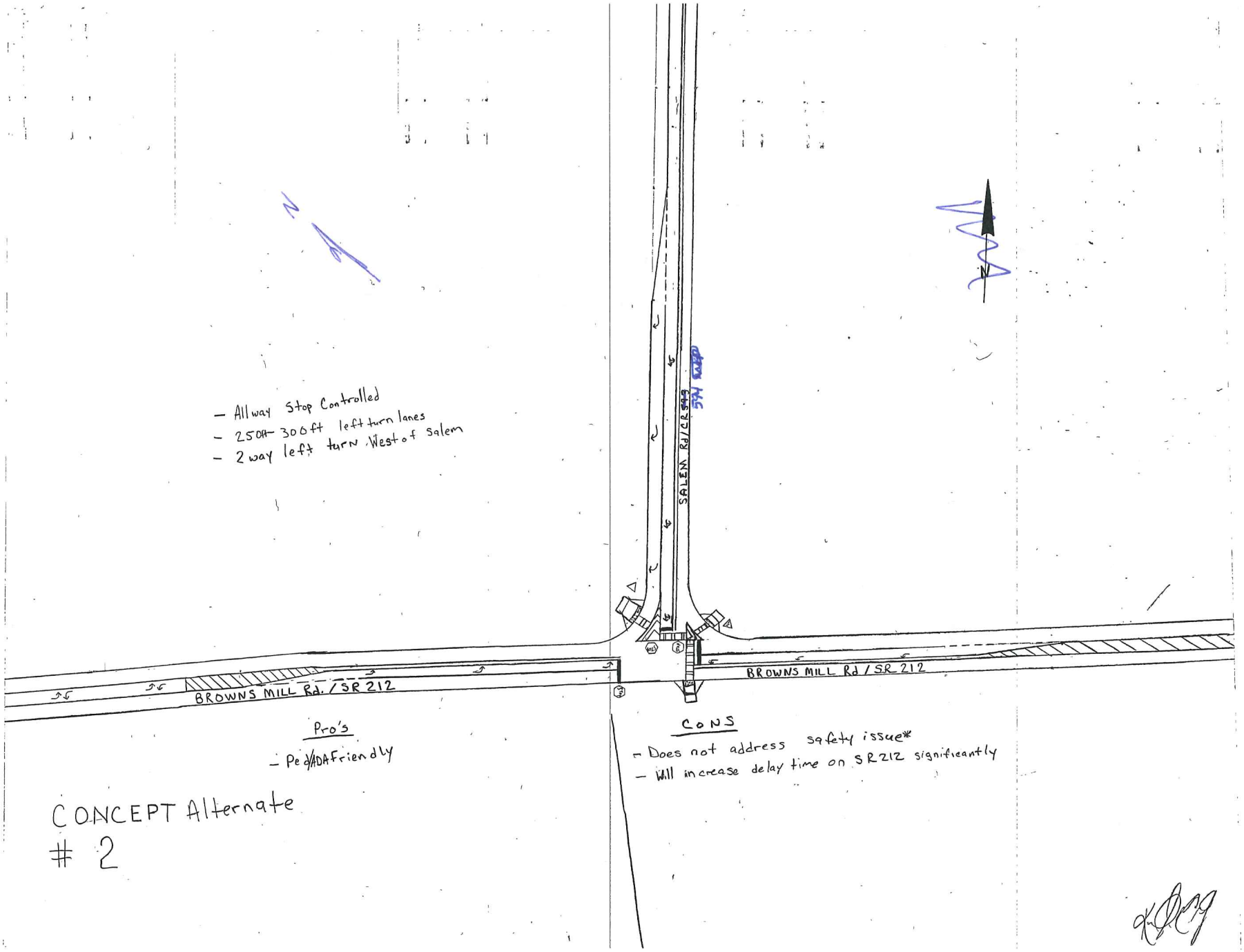
PROS

- Eliminates merge
- Reduces delay on Salem significantly
- Low Entry & Exit speeds
- Increased safety
- Best operational Alt

CONS

- Most Expensive Roundabout Alt.
- Most R/W Required Alt
- least PED friendly

K.



- All way Stop Controlled
- 250ft - 300ft left turn lanes
- 2 way left turn West of Salem

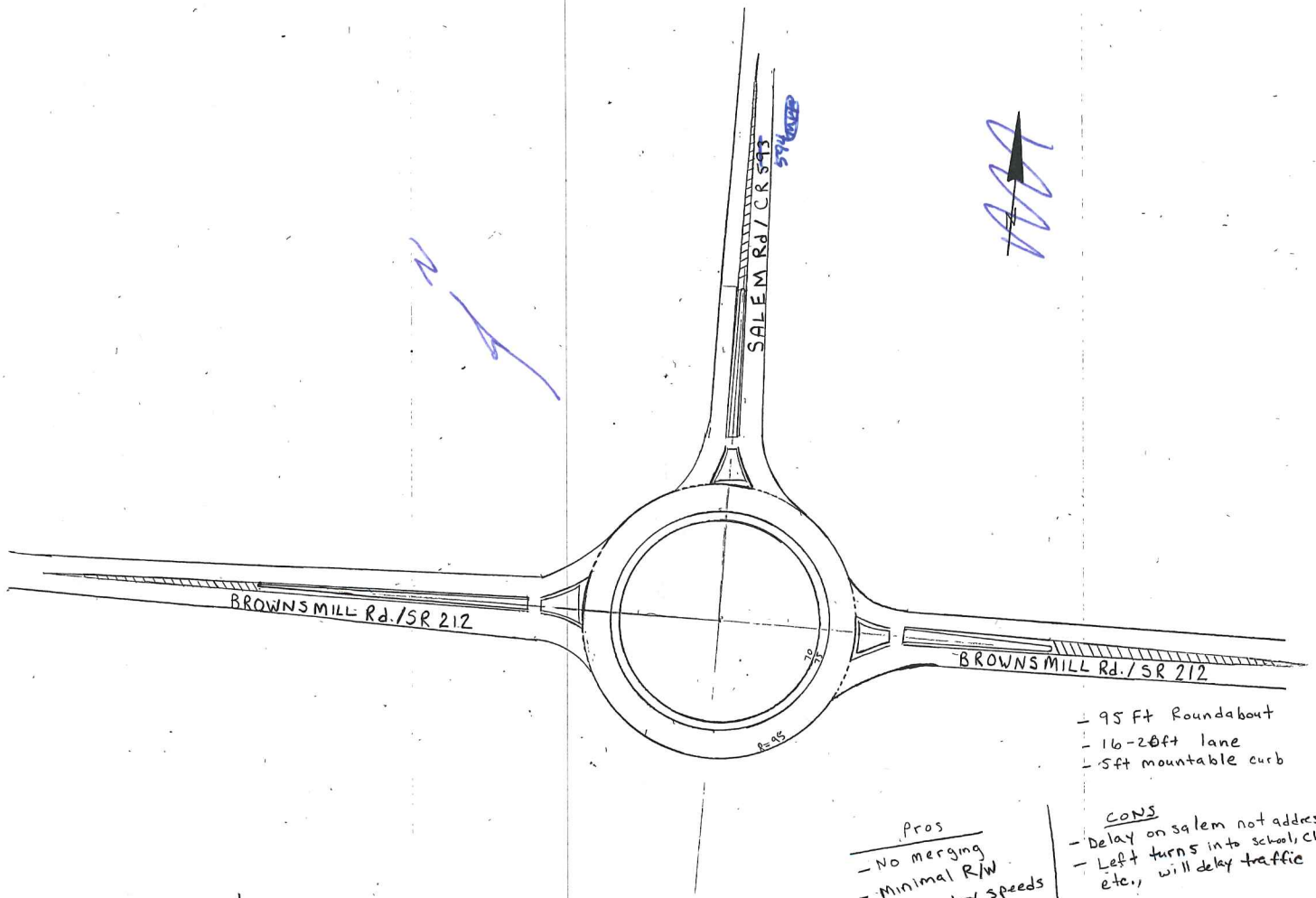
Pro's

- Ped/ADA Friendly

CONS

- Does not address safety issue*
- Will increase delay time on SR 212 significantly

CONCEPT Alternate
2



- 95 Ft Roundabout
- 16-20ft lane
- 5ft mountable curb

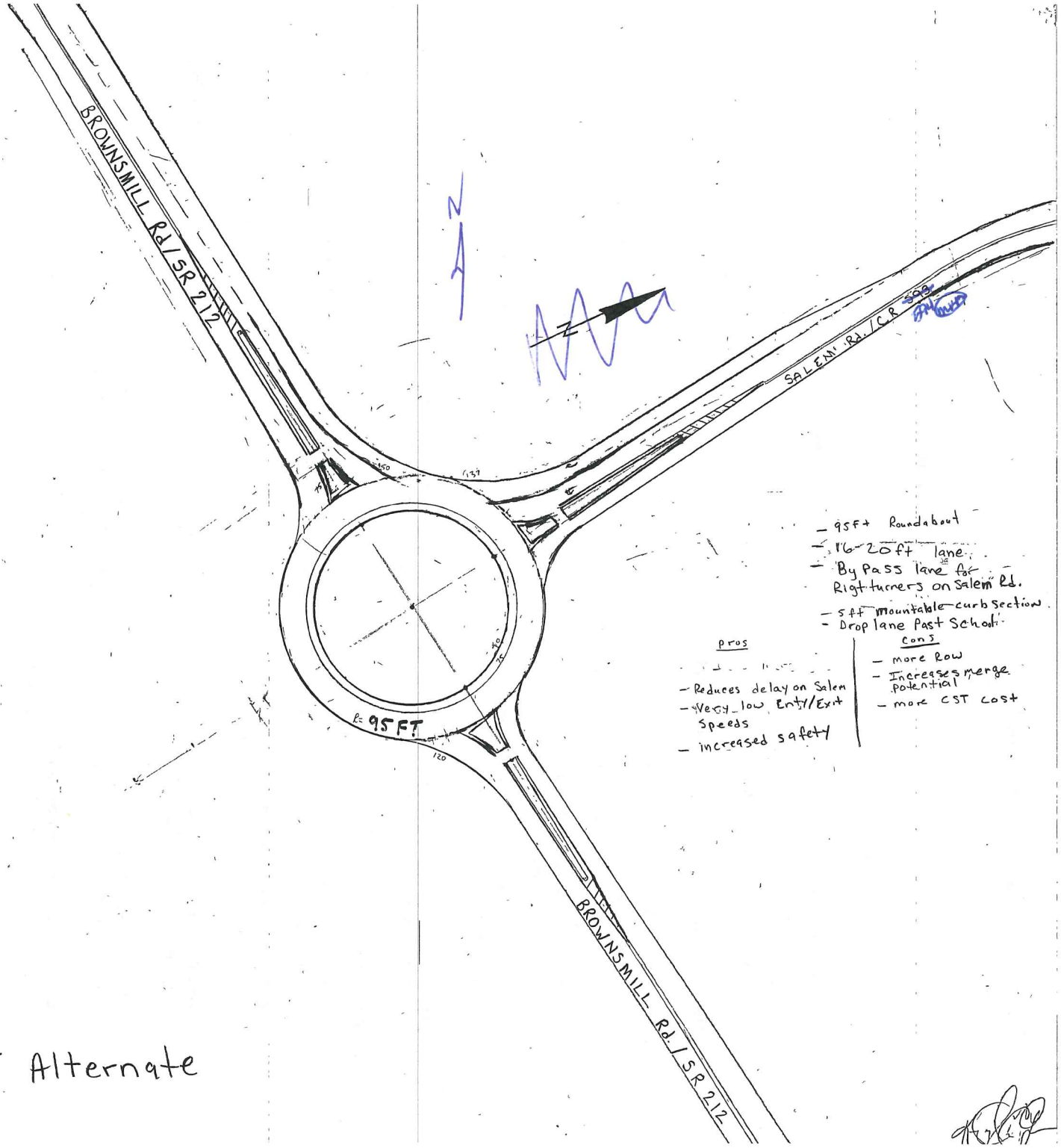
Pros

- No merging
- Minimal R/W
- Low Entry speeds
- increased safety
- Minimal Driver Confusion
- Lowest Cost w/ Roundabout option

CONS

- Delay on salem not addressed
- Left turns into school, Church etc., will delay traffic

CONCEPT Alternate #3



- 95Ft Roundabout
- 16-20ft lane
- By Pass lane for Rigt turners on Salem Rd.
- 5ft mountable curb section
- Drop lane Past School

Pros

- Reduces delay on Salem
- Very low Enty/Exit Speeds
- increased safety

Cons

- more ROW
- Increases merge potential
- more CST cost

CONCEPT Alternate #4

Georgia Dept. of Transportation

Signal Warrant Analysis

SR 212 @ Salem Rd

Signal Warrants - Summary

Major Street Approaches

Northbound: **SR 212**
Number of Lanes: **1**
Approach Speed: **45**
Total Approach Volume: **3,713**

Southbound: **SR 212**
Number of Lanes: **1**
Approach Speed: **45**
Total Approach Volume: **1,847**

Minor Street Approaches

Eastbound:
Number of Lanes: **2**

Total Approach Volume: **0**

Westbound: **SALEM RD**
Number of Lanes: **2**

Total Approach Volume: **1,582**

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

Warrant 1 - Eight Hour Vehicular Volumes ..... **Not Satisfied**

Warrant 1A - Minimum Vehicular Volume ..... **Not Satisfied**
Required volumes reached for 6 hours, 8 are needed

Warrant 1B - Interruption of Continuous Traffic ..... **Not Satisfied**
Required volumes reached for 6 hours, 8 are needed

Warrant 1 A&B - Combination of Warrants ..... **Not Satisfied**
Required volumes reached for 6 hours, 8 are needed

Warrant 2 - Four Hour Volumes ..... **Satisfied**
Number of hours (6) 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 (-1) is less than minimum (5). Volume minimums are not met.

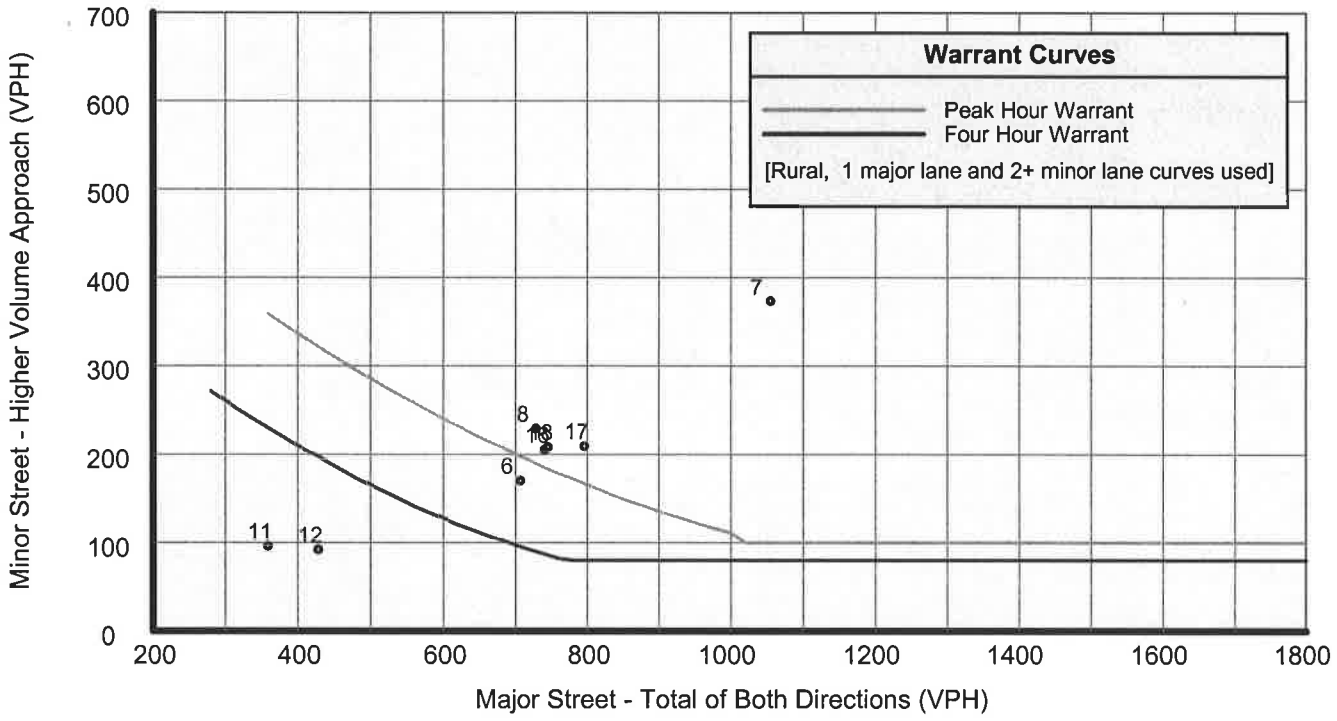
Warrant 8 - Roadway Network ..... **Not Satisfied**
Major Route conditions not met. One or more volume requirement met.

Georgia Dept. of Transportation

Signal Warrant Analysis

SR 212 @ Salem Rd

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	0	0	EB	350-No	140-No	---	525-No	70-No	---	420-No	112-No	---
01:00	0	0	EB	350-No	140-No	---	525-No	70-No	---	420-No	112-No	---
02:00	0	0	EB	350-No	140-No	---	525-No	70-No	---	420-No	112-No	---
03:00	0	0	EB	350-No	140-No	---	525-No	70-No	---	420-No	112-No	---
04:00	0	0	EB	350-No	140-No	---	525-No	70-No	---	420-No	112-No	---
05:00	0	0	EB	350-No	140-No	---	525-No	70-No	---	420-No	112-No	---
06:00	707	170	WB	350-Yes	140-Yes	Both	525-Yes	70-Yes	Both	420-Yes	112-Yes	Both
07:00	1,054	373	WB	350-Yes	140-Yes	Both	525-Yes	70-Yes	Both	420-Yes	112-Yes	Both
08:00	729	229	WB	350-Yes	140-Yes	Both	525-Yes	70-Yes	Both	420-Yes	112-Yes	Both
09:00	0	0	EB	350-No	140-No	---	525-No	70-No	---	420-No	112-No	---
10:00	0	0	EB	350-No	140-No	---	525-No	70-No	---	420-No	112-No	---
11:00	359	96	WB	350-Yes	140-No	Major	525-No	70-Yes	Minor	420-No	112-No	---
12:00	428	92	WB	350-Yes	140-No	Major	525-No	70-Yes	Minor	420-Yes	112-No	Major
13:00	0	0	EB	350-No	140-No	---	525-No	70-No	---	420-No	112-No	---
14:00	0	0	EB	350-No	140-No	---	525-No	70-No	---	420-No	112-No	---
15:00	0	0	EB	350-No	140-No	---	525-No	70-No	---	420-No	112-No	---
16:00	741	205	WB	350-Yes	140-Yes	Both	525-Yes	70-Yes	Both	420-Yes	112-Yes	Both
17:00	796	209	WB	350-Yes	140-Yes	Both	525-Yes	70-Yes	Both	420-Yes	112-Yes	Both
18:00	746	208	WB	350-Yes	140-Yes	Both	525-Yes	70-Yes	Both	420-Yes	112-Yes	Both
19:00	0	0	EB	350-No	140-No	---	525-No	70-No	---	420-No	112-No	---
20:00	0	0	EB	350-No	140-No	---	525-No	70-No	---	420-No	112-No	---
21:00	0	0	EB	350-No	140-No	---	525-No	70-No	---	420-No	112-No	---
22:00	0	0	EB	350-No	140-No	---	525-No	70-No	---	420-No	112-No	---
23:00	0	0	EB	350-No	140-No	---	525-No	70-No	---	420-No	112-No	---

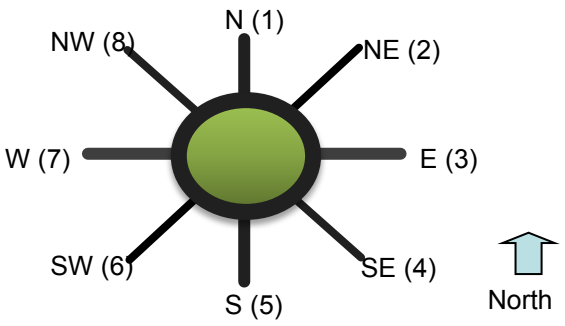
SR 212/BROWNS MILL ROAD								
TIME	EASTBOUND				WESTBOUND			
	THRU	LEFT	RIGHT	PED'S	THRU	RIGHT	LEFT	PED'S
6:30AM-9:30AM	410	419	2	0	1739	25	0	1
11:00AM-1:00PM	226	159	1	0	398	4	0	0
4:15PM-7:00PM	681	22	20	0	607	20	740	0
TOTAL								

SALEM ROAD							
TIME	WESTBOUND	EASTBOUND	THRU	PEDS			
	RIGHT	LEFT					
6:30AM-9:30AM	772	7	2	6			
11:00AM-1:00PM	188	2	2	1			
4:15PM-6:00PM	622	11	8	1			
TOTAL							

RECREATION PARK							
TIME	WESTBOUND	EASTBOUND	THRU	PEDS			
	RIGHT	LEFT					
6:30AM-9:30AM	2	0	1	0			
11:00AM-1:00PM	1	0	1	0			
4:15PM-7:00PM	1	2	4	1			
TOTAL							

General & Site Information

Analyst:	Kevin Cowan
Agency/Company:	GDOT
Date:	8/9/2011
Project Name or PI#:	0009988 2013 Concept 1
Year, Peak Hour:	2013
County/District:	Dekalb
Intersection:	Browns Mill Rd @ Salem Rd



Volumes

		Entry Legs (FROM)							
		N (1)	NE (2)	E (3)	SE (4)	S (5)	SW (6)	W (7)	NW (8)
	N (1), vph			**25**		**1**		**140**	
Exit	NE (2), vph								
Legs	E (3), vph	**5**				**2**		**175**	
(TO)	SE (4), vph								
	S (5), vph	0						0	
	SW (6), vph								
	W (7), vph	**315**		**895**					
	NW (8), vph								
Output	Total Vehicles	320	0	920	0	3	0	315	0

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	98%	100%	98%	100%	100%	100%	100%	100%
% SU/ Bus	**3%**	0%	**3%**	0%	0%	0%	0%	0%
% Trucks/ Combin.	0%	0%	0%	0%	0%	0%	0%	0%
% Bicycle	0%	0%	0%	0%	0%	0%	0%	0%
PHF	*0.95*	*0.95*	*0.95*	*0.95*	*0.95*	*0.95*	*0.95*	*0.95*
F_{HV}	0.988	1.000	0.988	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pcu/h	0	0	27	0	1	0	147	0
NE (2), pcu/h	0	0	0	0	0	0	0	0
E (3), pcu/h	5	0	0	0	2	0	184	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	336	0	954	0	0	0	0	0
NW (8), pcu/h	0	0	0	0	0	0	0	0
Entry flow, pcu/h	341	0	981	0	3	0	332	0
Conflicting flow, pcu/h	954	0	148	0	337	0	5	0

Roundabout Type — Standard Single Lane or Urban Compact

Enter type here… Standard Single Lane

Results: Approach Measures of Effectiveness								
NCHRP-572 Model	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**
Entry Capacity, pcu/h	435	NA	974	NA	807	NA	1124	NA
V/C ratio	**0.78**		**1.01**		**0.00**		**0.30**	
Control Delay, sec/pcu	**32**		**46**		**4**		**5**	
LOS	D		E		A		A	
95th % Queue (ft)	**174**		**496**		**0**		**31**	
UK Model**	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**
Entry Capacity, pcu/h	692	NA	1131	NA	1028	NA	1209	NA
V/C ratio	**0.49**		**0.87**		**0.00**		**0.27**	
Control Delay, sec/pcu	**10**		**19**		**4**		**4**	
LOS	B		C		A		A	
95th % Queue (ft)	**69**		**302**		**0**		**28**	

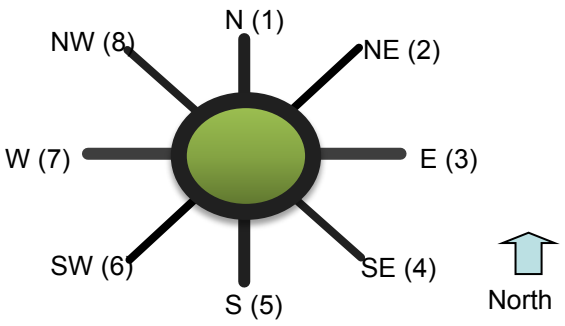
Notes:

Unit Legend:
vph = vehicles per hour
PHF = peak hour factor
F_{HV} = heavy vehicle factor
pcu = passenger car unit

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)	**N (1)**					
Select Exit Leg for Bypass (TO)	**W (7)**					
Volumes						
Right Turn Volume removed from Entry Leg	**315**					
Volume Characteristics (for entry leg)						
PHF	0.95					
F_{HV}	0.99					
NOTE: Volume Characteristics for Exit Leg are already taken into account						
Entry/Conflicting Flows						
Entry Flow	336					
Conflicting Flow	0					
Bypass Lane Results (NCHRP-572 Model)						
Entry Capacity at bypass mergepoint, pcu/hr	1130					
V/C ratio	**0.30**					
Control Delay, sec/pcu	**4.5**					
LOS	A					
95th % Queue (ft)	**32**					

General & Site Information

Analyst:	Kevin Cowan
Agency/Company:	GDOT
Date:	8/9/2011
Project Name or PI#:	0009988 2013 Concept 3
Year, Peak Hour:	2013
County/District:	Dekalb
Intersection:	Browns Mill Rd @ Salem Rd



Volumes

		Entry Legs (FROM)							
		N (1)	NE (2)	E (3)	SE (4)	S (5)	SW (6)	W (7)	NW (8)
	N (1), vph			**25**		**1**		**140**	
Exit	NE (2), vph								
Legs	E (3), vph	**5**				**2**		**175**	
(TO)	SE (4), vph								
	S (5), vph	0						0	
	SW (6), vph								
	W (7), vph	**315**		**895**					
	NW (8), vph								
Output	Total Vehicles	320	0	920	0	3	0	315	0

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	98%	100%	97%	100%	100%	100%	100%	100%
% SU/ Bus	**3%**	0%	**3%**	0%	0%	0%	0%	0%
% Trucks/ Combin.	0%	0%	0%	0%	0%	0%	0%	0%
% Bicycle	0%	0%	0%	0%	0%	0%	0%	0%
PHF	*0.95*	*0.95*	*0.95*	*0.95*	*0.95*	*0.95*	*0.95*	*0.95*
F_{HV}	0.988	1.000	0.985	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pcu/h	0	0	27	0	1	0	147	0
NE (2), pcu/h	0	0	0	0	0	0	0	0
E (3), pcu/h	5	0	0	0	2	0	184	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	336	0	956	0	0	0	0	0
NW (8), pcu/h	0	0	0	0	0	0	0	0
Entry flow, pcu/h	341	0	983	0	3	0	332	0
Conflicting flow, pcu/h	956	0	148	0	337	0	5	0

Roundabout Type — Standard Single Lane or Urban Compact

Enter type here… Standard Single Lane

Results: Approach Measures of Effectiveness

NCHRP-572 Model	N	NE	E	SE	S	SW	W	NW
Entry Capacity, pcu/h	434	NA	974	NA	807	NA	1124	NA
V/C ratio	**0.79**		**1.01**		**0.00**		**0.30**	
Control Delay, sec/pcu	**33**		**47**		**4**		**5**	
LOS	D		E		A		A	
95th % Queue (ft)	**175**		**501**		**0**		**31**	

UK Model**	N	NE	E	SE	S	SW	W	NW
Entry Capacity, pcu/h	691	NA	1131	NA	1028	NA	1209	NA
V/C ratio	**0.49**		**0.87**		**0.00**		**0.27**	
Control Delay, sec/pcu	**10**		**20**		**4**		**4**	
LOS	B		C		A		A	
95th % Queue (ft)	**70**		**306**		**0**		**28**	

Notes:

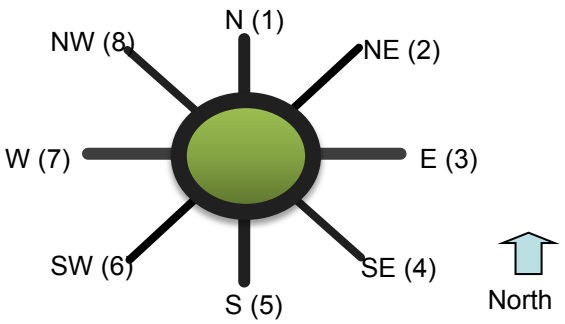
Unit Legend:
vph = vehicles per hour
PHF = peak hour factor
F_{HV} = heavy vehicle factor
pcu = passenger car unit

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)						
Volumes						
Right Turn Volume removed from Entry Leg						
Volume Characteristics (for entry leg)						
PHF						
F_{HV}						
NOTE: Volume Characteristics for Exit Leg are already taken into account						
Entry/Conflicting Flows						
Entry Flow						
Conflicting Flow						
Bypass Lane Results (NCHRP-572 Model)						
Entry Capacity at bypass mergepoint, pcu/hr						
V/C ratio						
Control Delay, sec/pcu						
LOS						
95th % Queue (ft)						

General & Site Information

Analyst:	Kevin Cowan
Agency/Company:	GDOT
Date:	8/9/2011
Project Name or PI#:	0009988 2013 Concept 4
Year, Peak Hour:	2013
County/District:	Dekalb
Intersection:	Browns Mill Rd @ Salem Rd



Volumes

		Entry Legs (FROM)							
		N (1)	NE (2)	E (3)	SE (4)	S (5)	SW (6)	W (7)	NW (8)
	N (1), vph			25		1		140	
Exit	NE (2), vph								
Legs	E (3), vph	5				2		175	
(TO)	SE (4), vph								
	S (5), vph	0						0	
	SW (6), vph								
	W (7), vph	315		895					
	NW (8), vph								
Output	Total Vehicles	320	0	920	0	3	0	315	0

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	97%	97%	100%	100%	100%	100%	100%	100%
% SU/ Bus	3%	3%	0%	0%	0%	0%	0%	0%
% Trucks/ Combin.	0%	0%	0%	0%	0%	0%	0%	0%
% Bicycle	0%	0%	0%	0%	0%	0%	0%	0%
PHF	*0.95*	*0.95*	*0.95*	*0.95*	*0.95*	*0.95*	*0.95*	*0.95*
F_{HV}	0.985	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 Leg # N (1), pcu/h	0	0	26	0	1	0	147	0
NE (2), pcu/h	0	0	0	0	0	0	0	0
E (3), pcu/h	5	0	0	0	2	0	184	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	337	0	942	0	0	0	0	0
NW (8), pcu/h	0	0	0	0	0	0	0	0
Entry flow, pcu/h	342	0	968	0	3	0	332	0
Conflicting flow, pcu/h	942	0	148	0	337	0	5	0

Roundabout Type — Standard Single Lane or Urban Compact

Enter type here... Standard Single Lane

Results: Approach Measures of Effectiveness

NCHRP-572 Model	N	NE	E	SE	S	SW	W	NW
Entry Capacity, pcu/h	440	NA	974	NA	807	NA	1124	NA
V/C ratio	**0.78**		**0.99**		**0.00**		**0.30**	
Control Delay, sec/pcu	**31**		**43**		**4**		**5**	
LOS	D		E		A		A	
95th % Queue (ft)	**171**		**468**		**0**		**31**	

UK Model**	N	NE	E	SE	S	SW	W	NW
Entry Capacity, pcu/h	699	NA	1131	NA	1028	NA	1209	NA
V/C ratio	**0.49**		**0.86**		**0.00**		**0.27**	
Control Delay, sec/pcu	**10**		**18**		**4**		**4**	
LOS	A		C		A		A	
95th % Queue (ft)	**69**		**286**		**0**		**28**	

Notes:

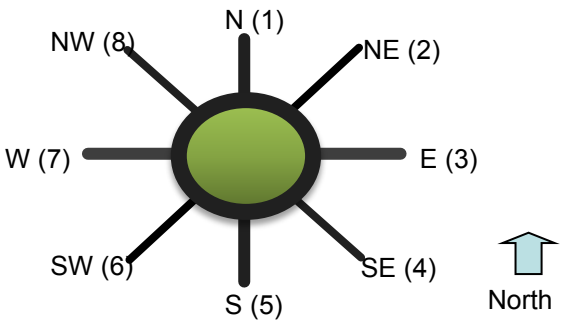
Unit Legend:
vph = vehicles per hour
PHF = peak hour factor
F_{HV} = heavy vehicle factor
pcu = passenger car unit

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)	**N (1)**					
Select Exit Leg for Bypass (TO)	**W (7)**					
Volumes						
Right Turn Volume removed from Entry Leg	**315**					
Volume Characteristics (for entry leg)						
PHF	0.95					
F_{HV}	0.99					
NOTE: Volume Characteristics for Exit Leg are already taken into account						
Entry/Conflicting Flows						
Entry Flow	337					
Conflicting Flow	1279					
Bypass Lane Results (NCHRP-572 Model)						
Entry Capacity at bypass mergepoint, pcu/hr	315					
V/C ratio	**1.07**					
Control Delay, sec/pcu	**103.0**					
LOS	F					
95th % Queue (ft)	**322**					

General & Site Information

Analyst:	Kevin Cowan
Agency/Company:	GDOT
Date:	8/9/2011
Project Name or PI#:	0009988 2033 am Concept 1
Year, Peak Hour:	2033
County/District:	Dekalb
Intersection:	Browns Mill Rd @ Salem Rd



Volumes

		Entry Legs (FROM)							
		N (1)	NE (2)	E (3)	SE (4)	S (5)	SW (6)	W (7)	NW (8)
	N (1), vph			35		1		195	
Exit	NE (2), vph								
Legs	E (3), vph	5				2		240	
(TO)	SE (4), vph								
	S (5), vph	0						0	
	SW (6), vph								
	W (7), vph	430		1235					
	NW (8), vph								
Output	Total Vehicles	435	0	1270	0	3	0	435	0

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	96%	100%	96%	100%	100%	100%	100%	100%
% SU/ Bus	4%	0%	4%	0%	0%	0%	0%	0%
% Trucks/ Combin.	0%	0%	0%	0%	0%	0%	0%	0%
% Bicycle	0%	0%	0%	0%	0%	0%	0%	0%
PHF	*0.95*	*0.95*	*0.95*	*0.95*	*0.95*	*0.95*	*0.95*	*0.95*
F_{HV}	0.980	1.000	0.980	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pcu/h	0	0	38	0	1	0	205	0
NE (2), pcu/h	0	0	0	0	0	0	0	0
E (3), pcu/h	5	0	0	0	2	0	253	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	462	0	1326	0	0	0	0	0
NW (8), pcu/h	0	0	0	0	0	0	0	0
Entry flow, pcu/h	467	0	1364	0	3	0	458	0
Conflicting flow, pcu/h	1326	0	206	0	463	0	5	0

Roundabout Type	Standard Single Lane or Urban Compact
Enter type here…	Standard Single Lane

Results: Approach Measures of Effectiveness								
NCHRP-572 Model	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**
Entry Capacity, pcu/h	300	NA	919	NA	711	NA	1124	NA
V/C ratio	**1.56**		**1.48**		**0.00**		**0.41**	
Control Delay, sec/pcu	**292**		**233**		**5**		**5**	
LOS	F		F		A		A	
95th % Queue (ft)	**696**		**1621**		**0**		**50**	
UK Model**	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**
Entry Capacity, pcu/h	490	NA	1100	NA	960	NA	1209	NA
V/C ratio	**0.95**		**1.24**		**0.00**		**0.38**	
Control Delay, sec/pcu	**54**		**126**		**4**		**5**	
LOS	F		F		A		A	
95th % Queue (ft)	**303**		**1134**		**0**		**45**	

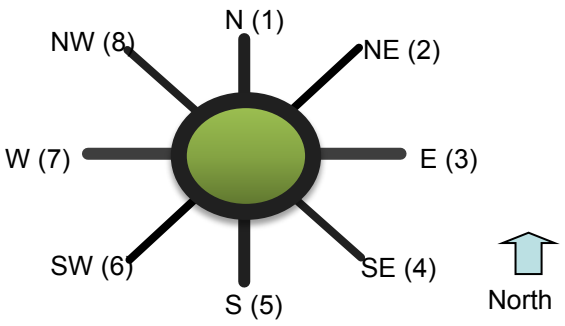
Notes:

Unit Legend:
vph = vehicles per hour
PHF = peak hour factor
F_{HV} = heavy vehicle factor
pcu = passenger car unit

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)	**N (1)**					
Select Exit Leg for Bypass (TO)	**W (7)**					
Volumes						
Right Turn Volume removed from Entry Leg	**430**					
Volume Characteristics (for entry leg)						
PHF	0.95					
F_{HV}	0.98					
NOTE: Volume Characteristics for Exit Leg are already taken into account						
Entry/Conflicting Flows						
Entry Flow	462					
Conflicting Flow	0					
Bypass Lane Results (NCHRP-572 Model)						
Entry Capacity at bypass mergepoint, pcu/hr	1130					
V/C ratio	**0.41**					
Control Delay, sec/pcu	**5.4**					
LOS	A					
95th % Queue (ft)	**52**					

General & Site Information

Analyst:	Kevin Cowan
Agency/Company:	GDOT
Date:	8/9/2011
Project Name or PI#:	0009988 2033 Concept 3
Year, Peak Hour:	2033
County/District:	Dekalb
Intersection:	Browns Mill Rd @ Salem Rd



Volumes

		Entry Legs (FROM)							
		N (1)	NE (2)	E (3)	SE (4)	S (5)	SW (6)	W (7)	NW (8)
	N (1), vph			35		1		195	
Exit	NE (2), vph								
Legs	E (3), vph	5				2		240	
(TO)	SE (4), vph								
	S (5), vph	0						0	
	SW (6), vph								
	W (7), vph	430		1235					
	NW (8), vph								
Output	Total Vehicles	435	0	1270	0	3	0	435	0

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	96%	100%	96%	100%	100%	100%	100%	100%
% SU/ Bus	4%	0%	4%	0%	0%	0%	0%	0%
% Trucks/ Combin.	0%	0%	0%	0%	0%	0%	0%	0%
% Bicycle	0%	0%	0%	0%	0%	0%	0%	0%
PHF	*0.95*	*0.95*	*0.95*	*0.95*	*0.95*	*0.95*	*0.95*	*0.95*
F_{HV}	0.980	1.000	0.980	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pcu/h	0	0	38	0	1	0	205	0
NE (2), pcu/h	0	0	0	0	0	0	0	0
E (3), pcu/h	5	0	0	0	2	0	253	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	462	0	1326	0	0	0	0	0
NW (8), pcu/h	0	0	0	0	0	0	0	0
Entry flow, pcu/h	467	0	1364	0	3	0	458	0
Conflicting flow, pcu/h	1326	0	206	0	463	0	5	0

Roundabout Type	Standard Single Lane or Urban Compact
Enter type here…	Standard Single Lane

Results: Approach Measures of Effectiveness

NCHRP-572 Model	N	NE	E	SE	S	SW	W	NW
Entry Capacity, pcu/h	300	NA	919	NA	711	NA	1124	NA
V/C ratio	**1.56**		**1.48**		**0.00**		**0.41**	
Control Delay, sec/pcu	**292**		**233**		**5**		**5**	
LOS	F		F		A		A	
95th % Queue (ft)	**696**		**1621**		**0**		**50**	

UK Model**	N	NE	E	SE	S	SW	W	NW
Entry Capacity, pcu/h	490	NA	1100	NA	960	NA	1209	NA
V/C ratio	**0.95**		**1.24**		**0.00**		**0.38**	
Control Delay, sec/pcu	**54**		**126**		**4**		**5**	
LOS	F		F		A		A	
95th % Queue (ft)	**303**		**1134**		**0**		**45**	

Notes:

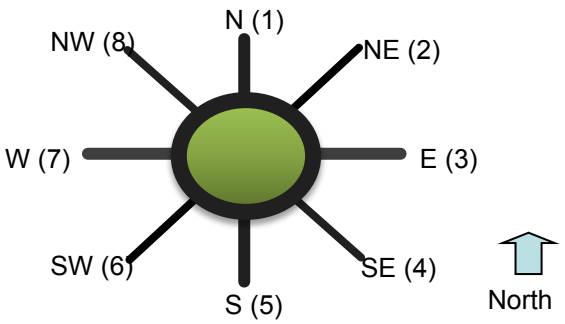
Unit Legend:
vph = vehicles per hour
PHF = peak hour factor
F_{HV} = heavy vehicle factor
pcu = passenger car unit

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)						
Volumes						
Right Turn Volume removed from Entry Leg						
Volume Characteristics (for entry leg)						
PHF						
F_{HV}						
NOTE: Volume Characteristics for Exit Leg are already taken into account						
Entry/Conflicting Flows						
Entry Flow						
Conflicting Flow						
Bypass Lane Results (NCHRP-572 Model)						
Entry Capacity at bypass mergepoint, pcu/hr						
V/C ratio						
Control Delay, sec/pcu						
LOS						
95th % Queue (ft)						

General & Site Information

Analyst:	Kevin Cowan
Agency/Company:	GDOT
Date:	8/9/2011
Project Name or PI#:	0009988 2033 Concept 4
Year, Peak Hour:	2033
County/District:	Dekalb
Intersection:	Browns Mill Rd @ Salem Rd



Volumes

		Entry Legs (FROM)							
		N (1)	NE (2)	E (3)	SE (4)	S (5)	SW (6)	W (7)	NW (8)
	N (1), vph			**35**		**1**		**195**	
Exit	NE (2), vph								
Legs	E (3), vph	**5**				**2**		**240**	
(TO)	SE (4), vph								
	S (5), vph	0						0	
	SW (6), vph								
	W (7), vph	**430**		**1235**					
	NW (8), vph								
Output	Total Vehicles	435	0	1270	0	3	0	435	0

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	96%	100%	96%	100%	100%	100%	100%	100%
% SU/ Bus	**4%**	0%	**4%**	0%	0%	0%	0%	0%
% Trucks/ Combin.	0%	0%	0%	0%	0%	0%	0%	0%
% Bicycle	0%	0%	0%	0%	0%	0%	0%	0%
PHF	*0.95*	*0.95*	*0.95*	*0.95*	*0.95*	*0.95*	*0.95*	*0.95*
F_{HV}	0.980	1.000	0.980	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pcu/h	0	0	38	0	1	0	205	0
NE (2), pcu/h	0	0	0	0	0	0	0	0
E (3), pcu/h	5	0	0	0	2	0	253	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	462	0	1326	0	0	0	0	0
NW (8), pcu/h	0	0	0	0	0	0	0	0
Entry flow, pcu/h	467	0	1364	0	3	0	458	0
Conflicting flow, pcu/h	1326	0	206	0	463	0	5	0

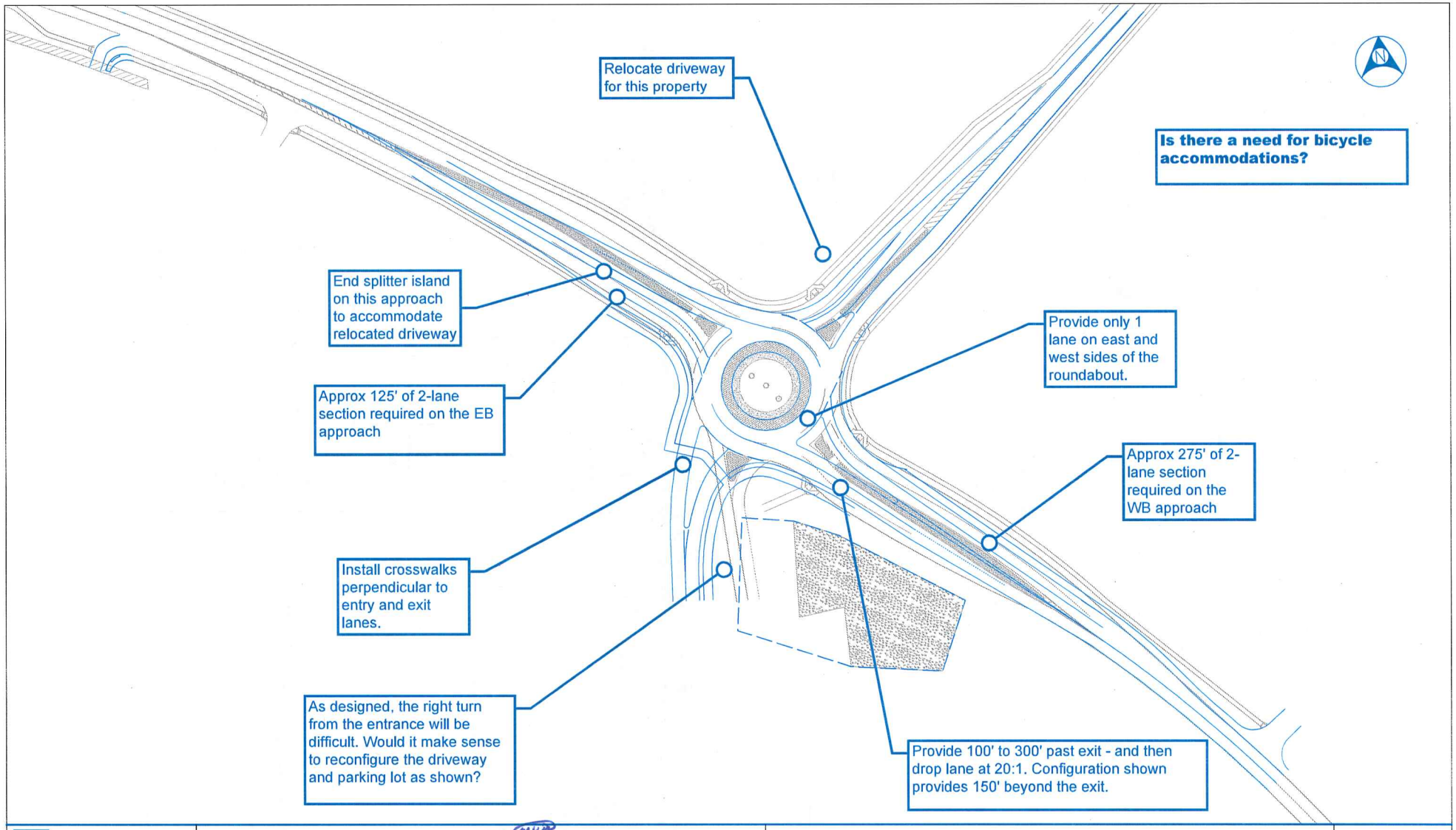
Roundabout Type	Standard Single Lane or Urban Compact
Enter type here…	Standard Single Lane

Results: Approach Measures of Effectiveness								
NCHRP-572 Model	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**
Entry Capacity, pcu/h	300	NA	919	NA	711	NA	1124	NA
V/C ratio	**1.56**		**1.48**		**0.00**		**0.41**	
Control Delay, sec/pcu	**292**		**233**		**5**		**5**	
LOS	F		F		A		A	
95th % Queue (ft)	**696**		**1621**		**0**		**50**	
UK Model**	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**
Entry Capacity, pcu/h	490	NA	1100	NA	960	NA	1209	NA
V/C ratio	**0.95**		**1.24**		**0.00**		**0.38**	
Control Delay, sec/pcu	**54**		**126**		**4**		**5**	
LOS	F		F		A		A	
95th % Queue (ft)	**303**		**1134**		**0**		**45**	

Notes:

Unit Legend:
vph = vehicles per hour
PHF = peak hour factor
F_{HV} = heavy vehicle factor
pcu = passenger car unit

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)	**N (1)**					
Select Exit Leg for Bypass (TO)	**W (7)**					
Volumes						
Right Turn Volume removed from Entry Leg	**430**					
Volume Characteristics (for entry leg)						
PHF	0.95					
F_{HV}	0.98					
NOTE: Volume Characteristics for Exit Leg are already taken into account						
Entry/Conflicting Flows						
Entry Flow	462					
Conflicting Flow	1788					
Bypass Lane Results (NCHRP-572 Model)						
Entry Capacity at bypass mergepoint, pcu/hr	189					
V/C ratio	**2.44**					
Control Delay, sec/pcu	**698.5**					
LOS	F					
95th % Queue (ft)	**983**					



GHD Inc.
1240 North Mountain Road
Harrisburg, PA 17112
T 717 541 0622 W www.ghd.com

SR 212 at CR ~~593~~ 594 (MLK)/Salem Road
P.I. # 0009988
DEKALB COUNTY, GA

Concept Comparison
July 2014

SCALE
0 50 100

Meeting Minutes

SUBJECT: PI 0009988; SR 212 @ CR ~~593~~ 594/Salem Rd Kick-Off Meeting Follow-up

LOCATION: A meeting was held on July 30, 2013 at 10:30 AM at the Georgia Department of Transportation (GDOT) District 7 Office, 5025 New Peachtree Rd, Chamblee, GA 30341 – Room 111

ATTENDEES:
See Sign-in Sheet attached

PURPOSE: To finalize outstanding items from the kick-off meeting.

Meeting Minutes Provided By: **Merishia Robinson, Project Manager**
GDOT – Office of Program Delivery

Notes below summarize discussions and decisions from the meeting.

---

1. The meeting started with introductions and the Project Manager proceeded to present the purpose of meeting.

2. The first item discussed was whether bike accommodations were needed and the level of access required for Browns Mill Elementary and Water Park. It was stated that Complete Streets should be followed for the bike lanes and to possibly provide the width without striping the lanes. It was also stated that Patrece Keeter, DeKalb County, had been contacted regarding these accommodations but a response had not been received to date. Will continue to reach out to DeKalb County for their input.

3. The next issue discussed was whether this project was still a viable project. Looking over the cost estimates it appears that there may not be a cost benefit to complete this project. The TMC stated that the crash data needed to be redone to include the school entrance and exit so the BC Ratio could be recalculated. They also stated that we would have to get FHWA to sign off on this project because of the BC Ratio value. District 7 Traffic Operations will re-do the crash analysis so that the B.C. can be recalculated. They stated that they would need 30 days to complete this task.

4. Mark Lenters discussed the conceptual layouts that he manipulated for this intersection. He also discussed the findings from completing the ARCADY simulation. According to the layout that was presented, the lane configuration and circle size was determined. Mark will send the layout to District 7 Design (Mac Cranford) so that they can shift the roundabout location for two alternatives. One alternative will minimize the impacts to utilities in the area and the other alternative will minimize impacts to the right of way around the intersection. These alternates will be needed from District 7 Design within two weeks of receiving the dgn files from Mark Lenters so that updated cost estimates can be done based on these alternates.

5. Merishia Robinson will coordinate with District 7 Traffic Ops and Design to complete the action items and start the process of scheduling a Concept Team Meeting.

6. The meeting was adjourned

MEETING SIGN-IN SHEET

Project:	PI 0009988; SR 212 @ Salem Road Roundabout	**Meeting Date:**	July 30, 2013
		Place/Room:	District 7 Office 5025 New Peachtree Rd Chamblee, GA 30341

Name		Company	Phone		E-Mail
Merishia Robinson		GDOT – OPD	404-631-1151		mrobinson@dot.ga.gov
Gerald Ford		GDOT – D7 Design	770-986-1111		gford@dot.ga.gov
Mike Lobdell		GDOT – D7 Traffic Ops	770-986-1766		mlobdell@dot.ga.gov
Scott Zehngraff		GDOT – TMC	404-635-2848		szehngraff@dot.ga.gov
Kevin Cowan		GDOT – D7 Design	770-986-1112		kcowan@dot.ga.gov
Paul DeNard		GDOT – TMC	404-635-2843		pdenard@dot.ga.gov
Tommy Crochet		McGee Partners	770-938-6400		tcrochet@mcgeepartners.com
Mark Lenters		Ourston (GHD)	608-216-2059		Mark.lenters@ghd.com
Chris Woods		GDOT – D7 Traffic Ops	770-986-1767		cwoods@dot.ga.gov
Daniel Pass		GDOT – Design Policy & Support	404-631-1651		dpass@dot.ga.gov

0009988- DeKalb County: Project Meeting with DeKalb County (Stakeholder)

212 @ CR ~~593~~ 594 KLP/Salem Road:

- Merishia Robinson (GDOT) - opened the meeting with introductions
- Merishia Robinson - presented the proposed project description & scope
- Kevin Cowan (GDOT):
    - Gave an overview of the proposed project design and existing issues.
    - Explained the project proposed impacts (Parcel takes and proposed easement needs).
    - Explained why the other alternatives were not selected.
    - Explained the proposed geometric features of the project and how it benefits the school and the county parcels (slower speeds and pedestrian mobility).
    - Explained potential mitigation methods that can be incorporated into the project (gravity wall and additional parking space).

- Daniel Drake, PE (DeKalb County/Planning and programming):
    - Pedestrian mobility for the project should be a priority (No sidewalks show in the layout sketch of the roundabout).
    - Mentioned that the school zone speed and posted speed should be included in the concept document.
    - Sidewalk to be offset far from the travel lane as possible (5-8ft buffer or more).
    - Asked if hawk signals can be implemented for the project to get peds across.
    - Asked if the GDOT can include an additional acceleration lane for the right turn out of the school.
    - Suggest that sidewalk be proposed to the outside shoulders of the school drive ways and that the school will connect the sidewalks to the rest of the school property.

- Patrece Ketter, PE (DeKalb County/Public works):
    - Needs verification that the proposed roundabout will be a true dual lane and entry roundabout.
    - Verification will be needed if additional parking lots can be placed on the acquired county land (maybe prohibited due to the funding used to acquire the property).
    - Suggest that contact with the path foundation should be utilized to determine any future sidewalk connectivity projects that will be in the area.
    - Mentioned the left turning movement exiting the school properties causes conflicts and delays (It was determined that making the one way exit from the school a right out only & vehicles should utilize the roundabout in place of the left turn exit from the school).

- Vinnie Nagarkar (Parks & Recreation):
    - Will flashing panels be used to warn people/peds of the roundabout.
    - Memorial Day to Labor Day is when the pool is open and has the most traffic (construction activity should be limited during this time frame).
    - The park has acquired additional property to add parking in case of parking lot takes and future expansion.
    - Suggests that a wider buffer would be preferred between the sidewalk and travel lanes.
    - Would like to receive the Concept layout that displays the proposed sidewalks and parcel impacts.

- Richard O'hara (OEL):
    - The major issue is with the park and its potential impacts. A preliminary design seems to be of minimal effects. Additional parking mitigations maybe needed.
    - Most of the 4F consideration of the project will deal with the impacts to the county park. Currently the impacts can be deemed minimal.

- Paul Denard (GDOT) - suggested rectangular rapid flashing beacons be incorporated along the west leg of SR 212 and on Salem road as well.

- PI 0008268 Salem sidewalk project- near the vicinity of the project.

KDC:OAO

Meeting Minutes

SUBJECT: PI 0009988; SR 212 @ CR ~~593~~ 594/Salem Rd Concept Team Meeting

LOCATION: A meeting was held on September 30, 2014 at 1:30 PM at the Georgia Department of Transportation (GDOT) General Office, 600 West Peachtree St., Atlanta, GA 30308 – Room 402

ATTENDEES:
See Sign-in Sheet attached

PURPOSE: To provide an overview of the scope/concept for this project, to define the need and purpose, and provide an understanding of the project.

Meeting Minutes Provided By: **Merishia Robinson, Project Manager**
GDOT – Office of Program Delivery

Notes below summarize discussions and decisions from the meeting.

---

1. The meeting started with introductions and the Project Manager proceeded to present the purpose of meeting.

2. The meeting was then turned over to the District 7 Designers for their presentation of the proposed project.

3. The slide show included information concerning the existing conditions, accident and traffic data, typical sections of the proposed design, potential environmental, right of way and utility impacts and a conceptual layout. The layout depicted a hybrid roundabout design that raised questions about pedestrian safety at the roundabout. Since Browns Mill Elementary School and Browns Mill Recreation Center/Water Park are in the area the safety of children crossing at the roundabout was a concern raised by DeKalb County Transportation representatives. The use of rectangular rapid flashing beacons at the roundabout was discussed to enhance pedestrian safety.

4. It was also noted that pedestrian improvements in front of the elementary school were not shown on the layout. The Project Manager stated that the sidewalk placement was still under consideration and that a decision would be made between the District 7 Traffic Operations Engineer and the TMC Traffic Operations Office before the final concept report was submitted for approval.

5. The function and operation of the hybrid roundabout was discussed in further detail. There were concerns about the general public understanding the lane configuration and usage of the roundabout. It was stated that proper signage would be placed to help guide drivers to the proper lanes. There was also concern about whether the entry lanes allowed for vehicles to enter the roundabout at high speeds. It was explained that peer reviews are conducted by

expert roundabout design engineers and that they will review items such as roundabout fastest paths during the design of the project.

6. The concept report was reviewed in its entirety and not many comments were made regarding the content of the report. DeKalb County had a few comments:, noted that it was noted that bike lanes would not be included as part of this project but stated that this roadway was listed as part of DeKalb County's bike route plan. She would verify this information and submit correspondence back to the Project Manager. She also inquired about the type of landscaping that would be utilized in the center of the roundabout. It was stated that we follow a standard detail for our landscaping at roundabouts. A copy of the roundabout landscaping detail was requested for DeKalb County's review. DeKalb County would also like verification that the lighting will meet their County specifications. The PM will make sure that lighting plans are submitted to DeKalb County for a courtesy review.

7. Other comments: Wade Woodard, District 7 Utilities, stated that a Public Interest Determination (PID) would not be required on this project. Additional comments were received via email from Design Policy & Support; the Project Manager stated that she would forward those comments to the designers so that they could address them.

8. The meeting was adjourned

MEETING SIGN-IN SHEET

Project: PI 0009988, Concept Team Meeting	**Meeting Date:** September 30, 2014 @ 1:30p
Facilitator: Merishia Robinson	**Place/Room:** GDOT OGC, Conference Room 402

Name	Company	Phone	E-Mail
Merishia Robinson	GDOT – Program Delivery	404-631-1151	mrobinson@dot.ga.gov
Mac Cranford	GDOT District 7 Design	770-986-1260	mcranford@dot.ga.gov
Andrew Cobb	GDOT Office of Environmental Services – NEPA	404-631-1255	acobb@dot.ga.gov
Spencer Pucci	GDOT Office of Environmental Services – NEPA	404-631-1164	spucci@dot.ga.gov
Christina Barry	GDOT Traffic Ops – TMC	404-635-2886	cbarry@dot.ga.gov
Oladimeji Onabanjo	GDOT District 7 Design	770-986-1786	oonabanjo@dot.ga.gov
Shun Pringle	GDOT District 7 Construction	770-986-1414	springle@dot.ga.gov
Bessie Reina	GDOT Planning	404-631-1750	breina@dot.ga.gov
Wade Woodard	GDOT District 7 Utilities	770-986-1117	wwoodard@dot.ga.gov

MEETING SIGN-IN SHEET

Project: PI 0009988, Concept Team Meeting	**Meeting Date:** September 30, 2014 @ 1:30p
Facilitator: Merishia Robinson	**Place/Room:** GDOT OGC, Conference Room 402

Name	Company	Phone	E-Mail
David Pelton	DeKalb County Transportation	770-492-5223	dwpelton@dekalbcountyga.gov
Patrece Keeter	DeKalb County Transportation	770-492-5281	pgkeeter@dekalbcountyga.gov
Mike Lobdell	GDOT District 7 Traffic Ops	770-986-1765	mlobdell@dot.ga.gov
Steve Sander	GDOT Office of Engineering Services	678-630-1270	ssander@dot.ga.gov
Daryl Williams	GDOT – Environmental Compliance Bureau – Engineering Services	404-631-1763	darywilliams@dot.ga.gov
Chandria Brown	GDOT – Program Delivery	404-631-1580	chbrown@dot.ga.gov