

**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA**

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

FILE P.I. # 0012642

OFFICE Design Policy & Support

Henry County
GDOT District 3 - Thomaston
Roundabout: CR 824/Jodeco Road @
CR 661/Blackhall Road/Longwood Drive

DATE 6/2/2015

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
Darryl VanMeter, State Innovative Delivery Engineer
Bobby Hilliard, Program Control Administrator
Cindy VanDyke, State Transportation Planning Administrator
Hiral Patel, State Environmental Administrator
Andrew Heath, State Traffic Engineer
Angela Robinson, Financial Management Administrator
Lisa Myers, State Project Review Engineer
Charles "Chuck" Hasty, State Materials Engineer
Lee Upkins, State Utilities Engineer
Richard Cobb, Statewide Location Bureau Chief
Michael Presley, District Engineer
Dan Pass, District Preconstruction Engineer
Kerry Gore, District Utilities Engineer
Justin Banks, Project Manager
BOARD MEMBER - 13th Congressional District

DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA LIMITED SCOPE PROJECT CONCEPT REPORT

Project Type: <u>Intersection Improvement</u>	P.I. Number: <u>0012642</u>
GDOT District: <u>3</u>	County: <u>Henry</u>
Federal Route Number: <u>N/A</u>	State Route Number: <u>N/A</u>
Project Number: _____	<u>N/A</u>

Project Description:

This project calls for the improvement of the existing intersection at Jodeco Road/Blackhall Road/Longwood Drive. Currently, traffic from Blackhall Road has a stop sign to control movements. A roundabout is proposed to replace the un-signalized intersection and to better align Longwood Drive.

Submitted for approval:

<u><i>T. Barwick</i></u>	<u>3/23/15</u>
Tom Barwick, Heath & Lineback Engineers, Inc.	Date
<u><i>Logue Romero</i></u>	<u>3/23/15</u>
Henry County SPLOST Office	Date
<u><i>Albert V. Shelby</i></u>	<u>3/25/15</u>
State Program Delivery Engineer	Date
<u><i>Jan</i></u>	<u>3/24/15</u>
GDOT Project Manager	Date

Recommendation for approval:

<u><i>HIRAZ PATEL*/EKP</i></u>	<u>1/17/2015</u>
State Environmental Administrator	Date
<u><i>KEN WERTHO*/EKP</i></u>	<u>4/7/2015</u>
<i>FOR</i> State Traffic Engineer	Date

- 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).

<u><i>CINDY VANDUYKE*/EKP</i></u>	<u>4/7/2015</u>
State Transportation Planning Administrator	Date

Approval:

Concur:

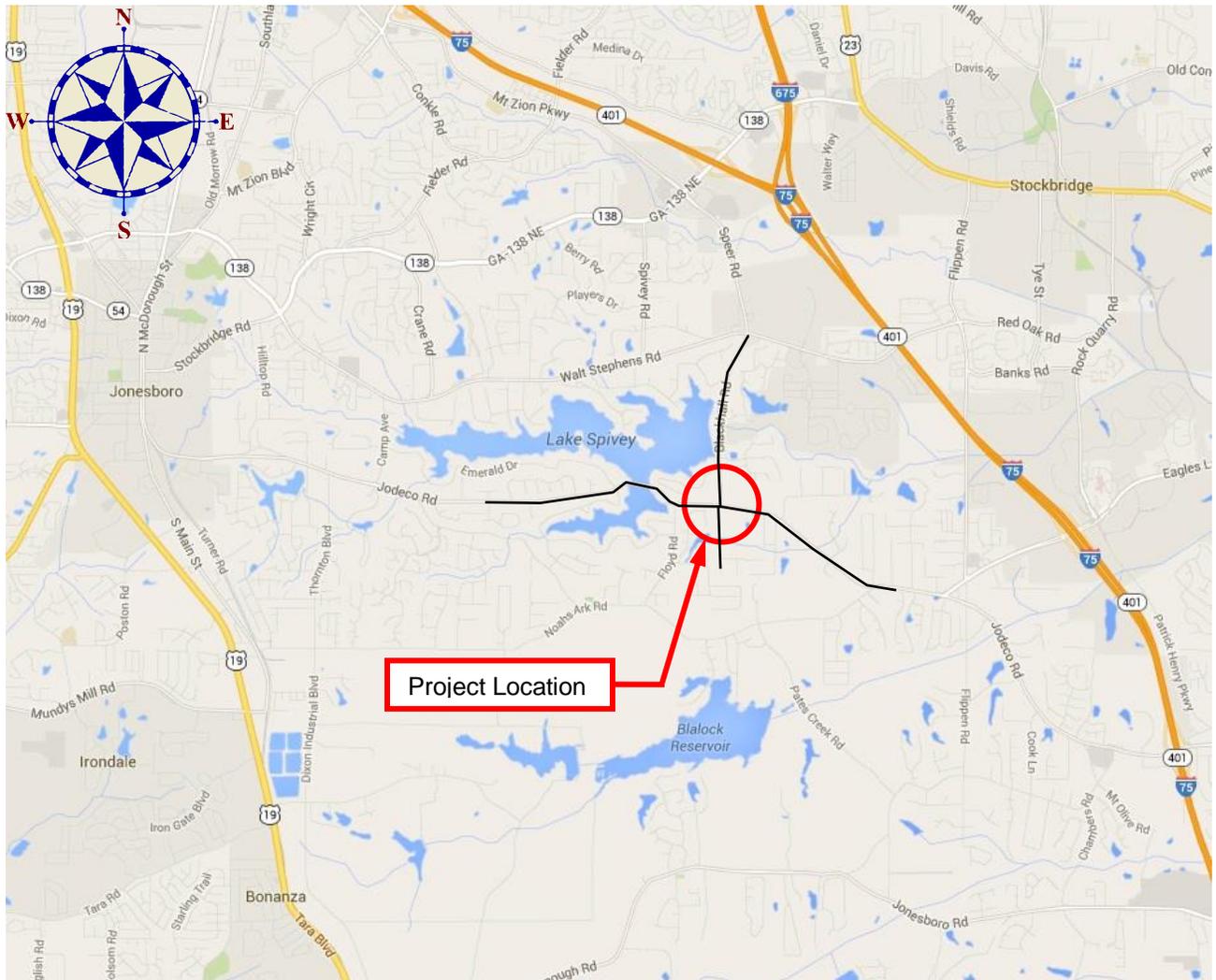
<u><i>She Bon</i></u>	<u>5/21/2015</u>
GDOT Director of Engineering	DATE

Approve:

<u><i>Margaret B. Finkel</i></u>	<u>5.27.15</u>
GDOT Chief Engineer	DATE

**-RECOMMENDATION ON FILE*

PROJECT LOCATION



CR824/Jodeco Road at CR661/Blackhall Road and Longwood Drive
Henry County
P.I. 0012642

County: Henry

PLANNING & BACKGROUND DATA

Project Justification Statement: The existing intersection serves as an alternate to I-75 due to traffic congestion and is congested itself during peak traffic hours. The intersection also serves cross-jurisdictional travel and local traffic. This intersection has been identified as a priority in Henry County’s Joint Comprehensive Transportation Plan. PI 0012642 was proposed by Henry County and selected during a competitive project solicitation for CMAQ funds based on its ability to reduce congestion and vehicle emissions. It is also part of the Roadway Operations and Safety Program as defined in ARC’s PLAN 2040 to make smaller-scale improvements along existing roadways which are the most critical for cross-jurisdictional travel. The existing intersection with Blackhall Road currently operates at LOS F and will continue to operate at that level without any improvements.

Existing conditions: The current intersection of Jodeco Road and Blackhall Road is a T intersection with a stop sign for Blackhall Road only. Each road has a single 12 foot lane in each direction with flush island separated right turns on Blackhall Road. There are no turn lanes on Jodeco Road. There are existing water lines and overhead utilities located at the intersection along both roads.

Other projects in the area: P.I. 0011691 (CR 661/Blackhall Rd @ Rum Creek)

MPO: Atlanta Regional Commission (ARC)

TIP #: HE-194

Congressional District(s): 13

Federal Oversight: Exempt State Funded Other

Projected Traffic: ADT or AADT

Current Year (2014): 9,496 Open Year (2017): 10,100 Design Year (2037): 14,450

Traffic Projections Performed by: Wilburn Engineering, LLC

See traffic diagrams in attached TE Study.

Functional Classification (Mainline): Urban Minor Arterial Street (CR 824/Jodeco Road and CR 661/Blackhall Road)

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

Warrants met: None Bicycle Pedestrian Transit

DESIGN AND STRUCTURAL

Description of Proposed Project: This project involves reconfiguring and realigning the intersection at CR 824/Jodeco Road and CR 661/Blackhall Road with Longwood Drive. A roundabout is proposed to replace the un-signalized intersection.

Major Structures: N/A

Mainline Design Features: Jodeco Road/Blackhall Road – Urban Minor Arterial Street

Feature	Existing	Standard*	Proposed	Roundabout
Typical Section				
- Number of Lanes	2	2	2	1
- Lane Width(s)	12'-0"	12'-0"	12'-0"	18'-0" (1 Lane), 16'-0" (2 Lane)
- Outside Shoulder or Border Area Width	2'-0"	10'-0"	10'-0"	10'-0"
- Outside Shoulder Slope	4:1	4:1	4:1	4:1
- Sidewalks	N/A	5'-0"	N/A	N/A

County: Henry

Posted Speed	45 MPH		45 MPH	15 MPH
Design Speed	N/A	45 MPH	45 MPH	15 MPH
Minimum Horizontal Curve Radius	5000'	643'	1000'	75' Radius
Maximum Superelevation Rate	2%	6%	6%	2%
Maximum Grade	5%	7%	7%	5%
Access Control	N/A	N/A	N/A	N/A
Design Vehicle	WB-67	WB-67	WB-67	WB-67

*According to current GDOT design policy if applicable

Major Interchanges/Intersections: CR 824/Jodeco Road at CR 661/Blackhall Road

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 TO PI

Will Context Sensitive Solutions procedures be utilized? No Yes
 Due to the proposed roundabout being unfamiliar to the region, a PIOH was held on October 30, 2014, to educate the population.

Design Exceptions to FHWA/AASHTO controlling criteria anticipated: No

Design Variances to GDOT Standard Criteria anticipated: No

UTILITY AND PROPERTY

Temporary State Route Needed: No Yes Undetermined

Railroad Involvement: N/A

Utility Involvements: Henry County Water and Sewer Authority, Georgia Power, AT&T, Comcast

SUE Required: No Yes

Public Interest Determination Policy and Procedure recommended (Utilities)? No Yes

Right-of-Way: Existing width: 80ft. CR 824/Jodeco Road
80ft. CR 661/Blackhall Road
 Proposed width: 80ft.

Required Right-of-Way anticipated: No Yes Undetermined

Easements anticipated: None Temporary Permanent Utility Other

Anticipated total number of impacted parcels: 9
 Displacements anticipated: Businesses: 0
 Residences: 0
 Other: 0
 Total Displacements: 0

Location and Design Approval: Not Required Required

ENVIRONMENTAL AND PERMITS

Anticipated Environmental Document:

GEPA: **NEPA:** CE PCE

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

Environmental Permits, Variances, Commitments, and Coordination anticipated:

Is a PAR required? No Yes Completed – Date:

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

NEPA/GEPA Comments & Information:

- A NEPA Categorical Exclusion is anticipated for this project. Section 4(f) impacts are not anticipated. Public involvement has been conducted on October 30, 2014.
- Air – a PM2.5 determination would be required for the proposed project. No carbon monoxide hotspot analysis would be required.
- Noise – a Type III noise screening assessment is anticipated for the proposed project.
- History – the project area will be evaluated for the presence of historic structures.
- Ecology – the project area will be evaluated for the presence of waters of the US/state waters and protected species habitat.
- Archaeology – a site files memo will be conducted for the project area. Additionally, the area will be field surveyed for the presence of archaeological sites.

CONSTRUCTION

Issues potentially affecting constructability/construction schedule: None

Early completion incentives recommended for consideration: No Yes

COORDINATION, ACTIVITIES, RESPONSIBILITIES, AND COSTS

Initial Concept Meeting: N/A

Concept Meeting: N/A

Other coordination to date:

Project kickoff meeting - September 30, 2014
Public Information Open House - October 30, 2014

Project Activity	Party Responsible for Performing Task(s)
Concept Development	Henry County/Heath & Lineback Engineers
Design	Henry County/ Heath & Lineback Engineers
Right-of-Way Acquisition	Henry County
Utility Coordination (Pre Let)	Henry County
Letting to Contract	Henry County
Utility Relocation (Construction)	Utility Companies
Construction Supervision	Henry County

County: Henry

Providing Material Pits	Construction Contractor
Providing Detours	N/A
Environmental Studies, Documents, and Permits	Henry County/Edwards-Pitman Environmental/Heath & Lineback Engineers
Environmental Mitigation	Henry County
Construction Inspection & Materials Testing	Henry County

Project Cost Estimate and Funding Responsibilities:

	Breakdown of PE	ROW	Reimbursable Utility	CST*	Environmental Mitigation	Total Cost
Funded By	Henry County	Federal/Local	80% Federal/ 20% Local	Federal/Local		\$1,890,073 <i>EKP</i>
\$ Amount	\$143,000	\$346,000	\$103,290 <i>\$0 EKP</i>	\$1,401,073	N/A	\$1,093,363
Date of Estimate	2/1/2013	3/8/2015	3/13/2015	3/3/2015		

T- Utility Cost > \$100,000 will be 100% Local Funding

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

ALTERNATIVES DISCUSSION

Preferred Alternative: Roundabout <i>\$1,890,073 EKP</i>			
Estimated Property Impacts:	9	Estimated Total Cost:	\$1,093,363
Estimated ROW Cost:	\$346,000	Estimated CST Time:	12 Months
Rationale: This option is supported by the public and the County SPLOST office.			

Signalized Intersection Alternative: Add signal and left/right turn lanes			
Estimated Property Impacts:	9	Estimated Total Cost:	N/A
Estimated ROW Cost:	N/A	Estimated CST Time:	12 Months
Rationale: This intersection alternative was not investigated nor is it supported by the County SPLOST office.			

No-Build Alternative: No improvements to existing intersection			
Estimated Property Impacts:	0	Estimated Total Cost:	\$0
Estimated ROW Cost:	\$0	Estimated CST Time:	N/A
Rationale: This intersection will not be improved if a roundabout is not approved.			

Comments/Additional Information: None

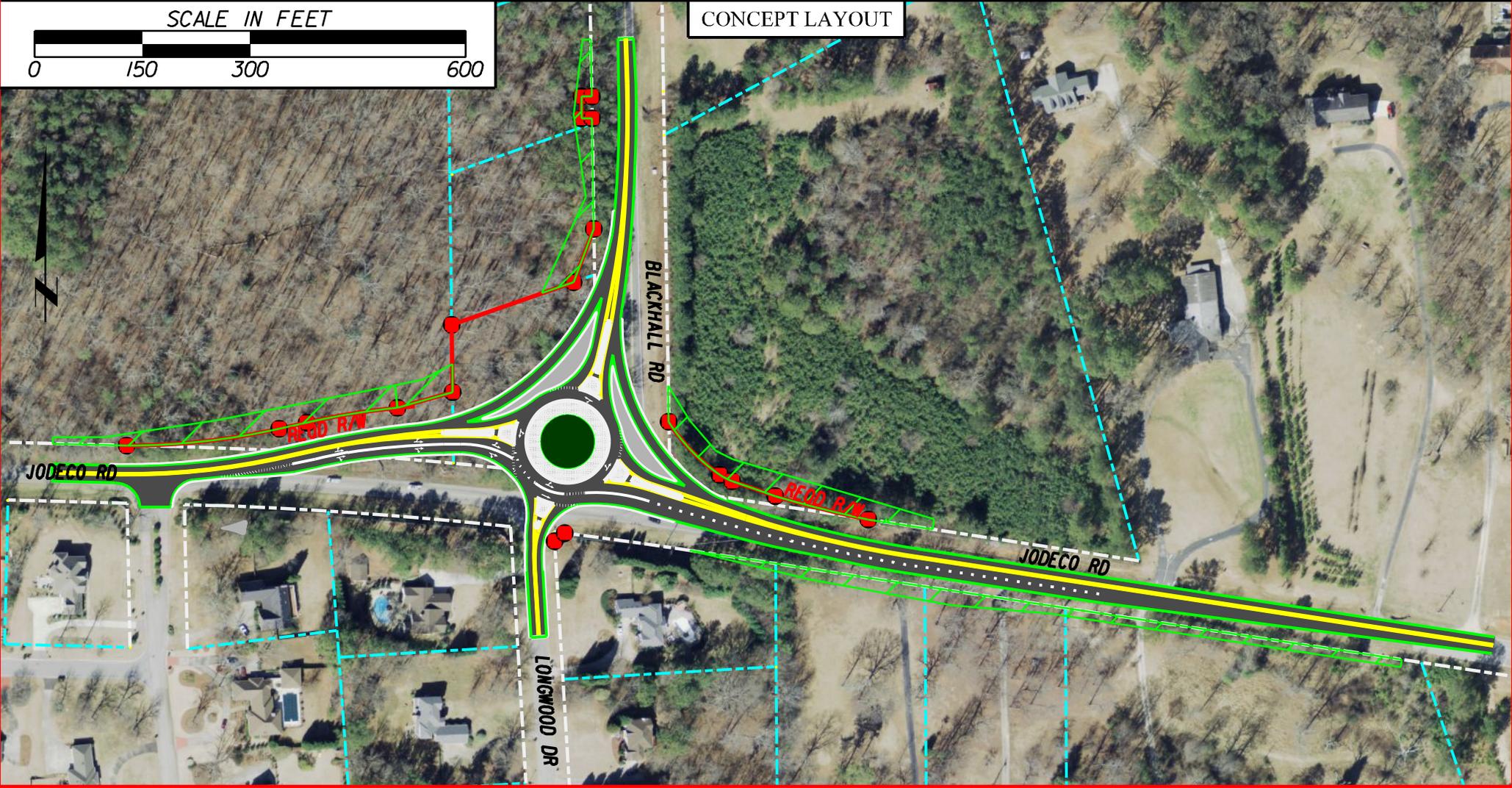
LIST OF ATTACHMENTS/SUPPORTING DATA

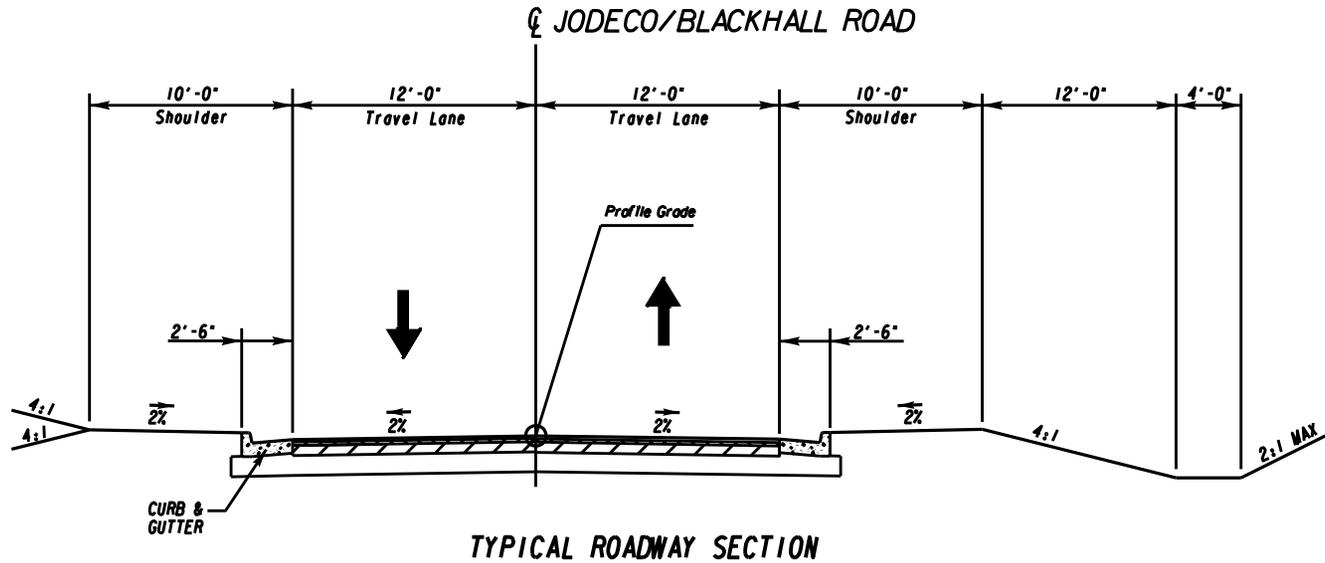
1. Concept Layout
2. Typical sections
3. Cost Estimates
4. TE Study
5. Meeting Minutes – Kick-off meeting
6. PIOH Comments
7. Signed Agreements - PFA

SCALE IN FEET



CONCEPT LAYOUT





HL Heath & Lineback Engineers
INCORPORATED
1300 CANTON ROAD, BUILDING 200
MARIETTA, GEORGIA 30066-8393

NO SCALE

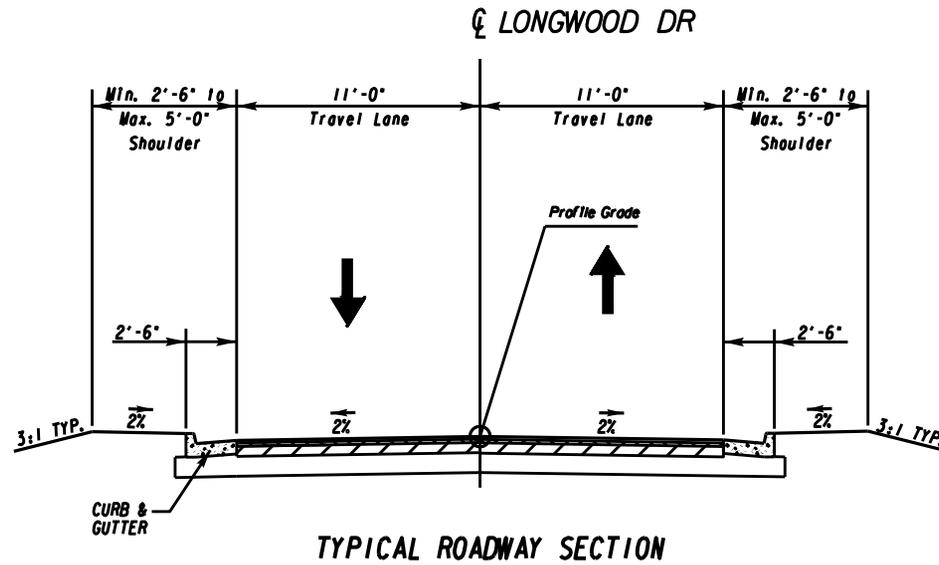
REVISION DATES		

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION

OFFICE: **TYPICAL SECTIONS**

JODECO RD AT BLACKHALL RD
INTERSECTION IMPROVEMENTS

DRAWING NO.
05-



HL Heath & Lineback Engineers
INCORPORATED
1300 CANTON ROAD, BUILDING 200
MARIETTA, GEORGIA 30066-8393

NO SCALE

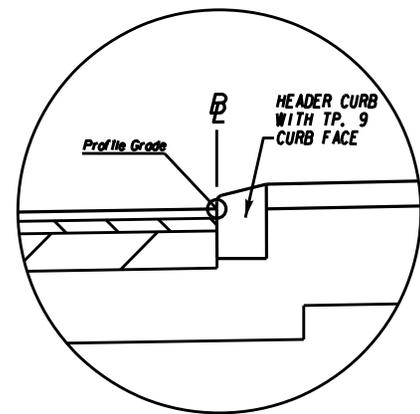
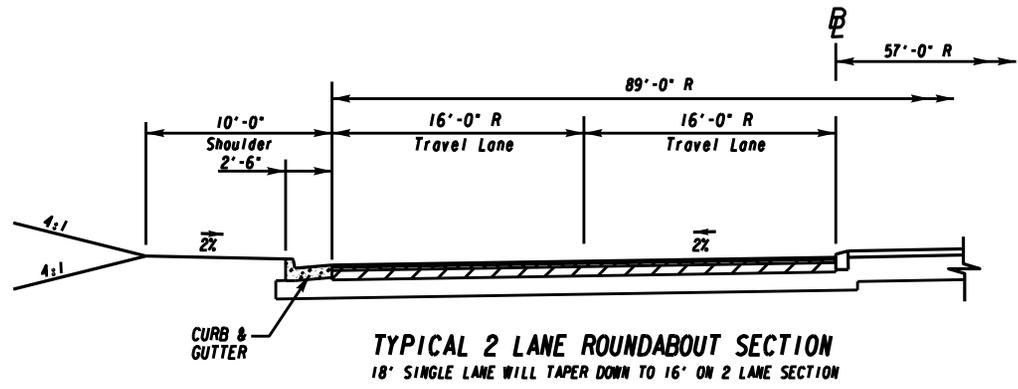
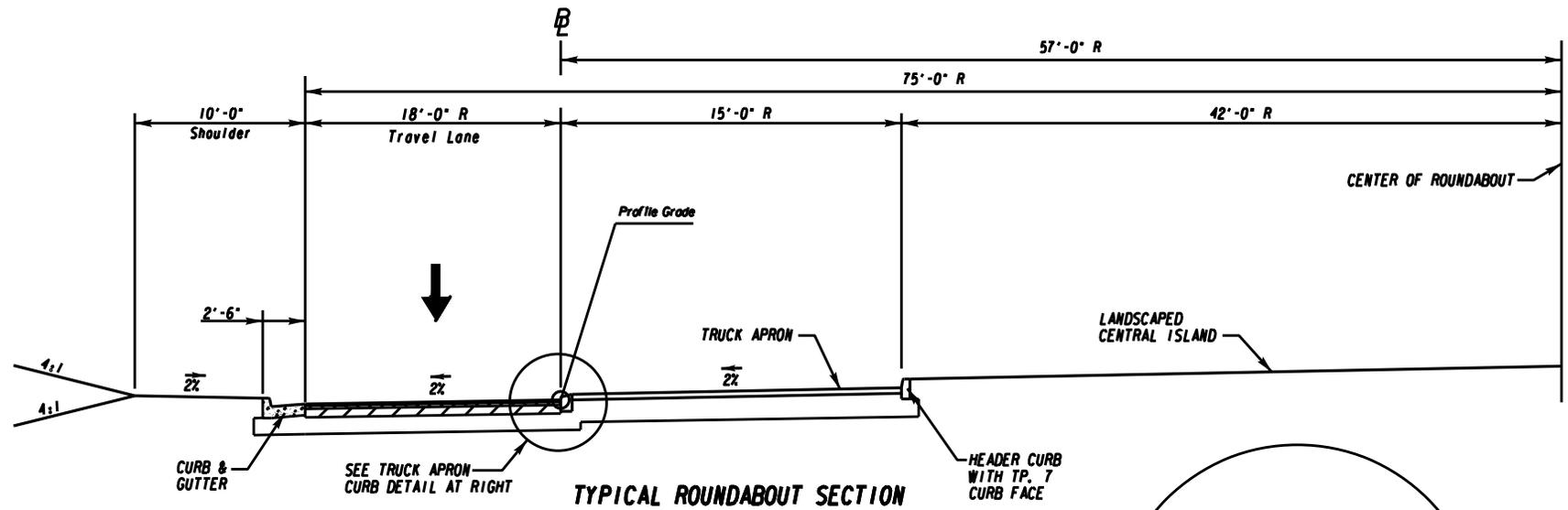
REVISION DATES		

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION

OFFICE: **TYPICAL SECTIONS**

JODECO RD AT BLACKHALL RD
INTERSECTION IMPROVEMENTS

DRAWING NO. **05-**



HL Heath & Lineback Engineers
INCORPORATED
1300 CANTON ROAD, BUILDING 200
MARIETTA, GEORGIA 30066-5393

NO SCALE

REVISION DATES	STATE OF GEORGIA DEPARTMENT OF TRANSPORTATION
	OFFICE: TYPICAL SECTIONS
	JODECO RD AT BLACKHALL RD INTERSECTION IMPROVEMENTS
	DRAWING NO. 05-

Jodeco Rd/Blackhall Rd Intersection Improvement

PI Number: 0012642

Henry County SPLOST

COST ESTIMATE 3/3/15

ITEM CODE	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
Roadway					
150-1000	TRAFFIC CONTROL	1	LS	\$ 50,000.00	\$ 50,000.00
210-0100	GRADING COMPLETE	1	LS	\$ 150,000.00	\$ 150,000.00
441-0301	CONC SPILLWAY, TP 1	2	EA	\$ 1,685.08	\$ 3,370.16
441-0748	CONC MEDIAN, 6 IN	850	SY	\$ 34.13	\$ 29,009.65
441-5007	CONCRETE HEADER CURB, 6 IN, TP 7	190	LF	\$ 16.54	\$ 3,142.60
441-5025	CONCRETE HEADER CURB, 4 IN, TP 9	315	LF	\$ 12.03	\$ 3,789.45
441-5057	CONC DOWELED INTEGRAL CURB, TP 7, INCL DOWELS	635	LF	\$ 15.04	\$ 9,550.40
441-6222	CONC CURB & GUTTER, 8 IN X 30 IN, TP 2	3085	LF	\$ 19.64	\$ 60,589.40
634-1200	RIGHT OF WAY MARKERS	19	EA	\$ 107.62	\$ 2,044.78
					\$ 311,496.44
Pavement					
310-1101	GR AGGR BASE CRS, INCL MATL	3603	TN	\$ 27.16	\$ 97,857.48
318-3000	AGGR SURF CRS	50	TN	\$ 20.07	\$ 1,003.50
402-3121	RECYCLED ASPH CONC 25 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME	1038	TN	\$ 78.31	\$ 81,285.78
402-3130	RECYCLED ASPH CONC 12.5 MM SUPERPAVE, GP 2 ONLY, INCL BITUM MATL & H LIME	959	TN	\$ 106.27	\$ 101,912.93
402-3190	RECYCLED ASPH CONC 19 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME	692	TN	\$ 86.75	\$ 60,031.00
413-1000	BITUM TACK COAT	661	GL	\$ 3.59	\$ 2,372.99
441-0016	DRIVEWAY CONCRETE, 6 IN TK	40	SY	\$ 35.00	\$ 1,400.00
					\$ 345,863.68
Drainage					
550-1180	STORM DRAIN PIPE, 18 IN, H 1-10	1700	LF	\$ 47.81	\$ 81,277.00
550-1360	STORM DRAIN PIPE, 36 IN, H 1-10	40	LF	\$ 75.35	\$ 3,014.00
550-4218	FLARED END SECTION 18 IN, STORM DRAIN	4	EA	\$ 592.53	\$ 2,370.12
550-4236	FLARED END SECTION 36 IN, STORM DRAIN	1	EA	\$ 1,193.24	\$ 1,193.24
603-2181	STN DUMPED RIP RAP, TP 3, 18 IN	100	SY	\$ 50.35	\$ 5,035.00
603-7000	PLASTIC FILTER FABRIC	100	SY	\$ 4.06	\$ 406.00
668-1100	CATCH BASIN, GP 1	8	EA	\$ 2,383.64	\$ 19,069.12
668-1110	CATCH BASIN, GP 1, ADDL DEPTH	10	LF	\$ 207.70	\$ 2,077.00
668-2100	DROP INLET, GP 1	6	EA	\$ 2,140.46	\$ 12,842.76
668-2110	DROP INLET, GP 1, ADDL DEPTH	10	LF	\$ 230.53	\$ 2,305.30
					\$ 129,589.54
Erosion Control					
163-0232	TEMPORARY GRASSING	2.23	AC	\$ 328.71	\$ 733.02
163-0240	MULCH	85	TN	\$ 208.78	\$ 17,746.30
163-0300	CONSTRUCTION EXIT	3	EA	\$ 1,156.14	\$ 3,468.42
163-0503	CONSTRUCT AND REMOVE SILT CONTROL GATE, TP 3	2	EA	\$ 343.47	\$ 686.94
163-0520	CONSTRUCT AND REMOVE TEMPORARY PIPE SLOPE DRAIN	200	LF	\$ 14.56	\$ 2,912.00
163-0527	CONSTRUCT AND REMOVE RIP RAP CHECK DAMS, STONE PLAIN RIP RAP/SAND BAGS	30	EA	\$ 278.47	\$ 8,354.10
163-0541	CONSTRUCT AND REMOVE ROCK FILTER DAMS	3	EA	\$ 487.68	\$ 1,463.04
163-0550	CONSTRUCT AND REMOVE INLET SEDIMENT TRAP	14	EA	\$ 141.13	\$ 1,975.82
165-0030	MAINTENANCE OF TEMPORARY SILT FENCE, TP C	1125	LF	\$ 0.64	\$ 720.00
165-0041	MAINTENANCE OF CHECK DAMS - ALL TYPES	495	LF	\$ 1.56	\$ 772.20
165-0087	MAINTENANCE OF SILT CONTROL GATE, TP 3	2	EA	\$ 93.35	\$ 186.70
165-0101	MAINTENANCE OF CONSTRUCTION EXIT	3	EA	\$ 461.98	\$ 1,385.94
165-0105	MAINTENANCE OF INLET SEDIMENT TRAP	14	EA	\$ 61.01	\$ 854.14
165-0110	MAINTENANCE OF ROCK FILTER DAM	3	EA	\$ 97.15	\$ 291.45
167-1000	WATER QUALITY MONITORING AND SAMPLING	3	EA	\$ 296.51	\$ 889.53
167-1500	WATER QUALITY INSPECTIONS	24	MO	\$ 770.76	\$ 18,498.24
171-0030	TEMPORARY SILT FENCE, TYPE C	2250	LF	\$ 2.73	\$ 6,142.50
700-6910	PERMANENT GRASSING	4.46	AC	\$ 439.81	\$ 1,961.55
700-7000	AGRICULTURAL LIME	20	TN	\$ 20.58	\$ 411.60
700-8000	FERTILIZER MIXED GRADE	6	TN	\$ 400.93	\$ 2,405.58
700-8100	FERTILIZER NITROGEN CONTENT	225	LB	\$ 1.94	\$ 436.50
700-9300	SOD	2828	SY	\$ 7.32	\$ 20,700.35
716-2000	EROSION CONTROL MATS, SLOPES	2230	SY	\$ 0.92	\$ 2,051.60
					\$ 95,047.53
Signing & Marking					
636-1020	HIGHWAY SIGNS, TP1 MATL, REFL, SHEETING TP3	64	SF	\$ 14.00	\$ 896.00
636-1033	HIGHWAY SIGNS, TP1 MATL, REFL, SHEETING TP9	100	SF	\$ 18.00	\$ 1,800.00
636-2070	GALV STEEL POSTS, TP 7	260	LF	\$ 7.50	\$ 1,950.00
653-0110	THERMOPLASTIC PVMT MARKING, ARROW, TP 1	1	EA	\$ 76.00	\$ 76.00
653-0130	THERMOPLASTIC PVMT MARKING, ARROW, TP 3	10	EA	\$ 100.00	\$ 1,000.00
653-1501	THERMOPLASTIC SOLID TRAF STRIPE, 5 IN, WHITE	545	LF	\$ 1.00	\$ 545.00
653-1502	THERMOPLASTIC SOLID TRAF STRIPE, 5 IN, YELLOW	5670	LF	\$ 0.75	\$ 4,252.50
653-3501	THERMOPLASTIC SKIP TRAF STRIPE, 5 IN, WHITE	1015	GLF	\$ 0.69	\$ 700.35
					\$ 11,219.85
Lump Items					
LANDSCAPING		1	LS	\$ 30,000.00	\$ 30,000.00
LIGHTING		1	LS	\$ 200,000.00	\$ 200,000.00
					\$ 230,000.00
TOTAL PROJECT CONSTRUCTION =					\$ 1,123,217.04
5% Engineering and Inspection					\$ 56,160.85
15% Construction Contingency					\$ 176,906.68
Fuel and Liquid Adjustment (See Worksheet)					\$ 44,788.42
TOTAL PROJECT COST (NO INFLATION) =					\$ 1,401,072.99

Henry County Intersection Improvement Project

PROJ. NO.
 P.I. NO. 0012642
 DATE 3/3/2015

CALL NO. 9/29/2009

INDEX (TYPE)	DATE	INDEX
REG. UNLEADED	Mar-15	\$ 1.998
DIESEL		\$ 2.777
LIQUID AC		\$ 534.00

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)				43878.78	\$	43,878.78
Monthly Asphalt Cement Price month placed (APM)	Max. Cap	60%	\$	854.40		
Monthly Asphalt Cement Price month project let (APL)			\$	534.00		
Total Monthly Tonnage of asphalt cement (TMT)				136.95		

ASPHALT	Tons	%AC	AC ton
Leveling	50	5.0%	2.5
12.5 OGFC		5.0%	0
12.5 mm	959	5.0%	47.95
9.5 mm SP		5.0%	0
25 mm SP	1038	5.0%	51.9
19 mm SP	692	5.0%	34.6
	2739		136.95

BITUMINOUS TACK COAT

Price Adjustment (PA)				\$	909.64	\$	909.64
Monthly Asphalt Cement Price month placed (APM)	Max. Cap	60%	\$	854.40			
Monthly Asphalt Cement Price month project let (APL)			\$	534.00			
Total Monthly Tonnage of asphalt cement (TMT)				2.839061709			

Bitum Tack

Gals	gals/ton	tons
661	232.8234	2.83906171

BITUMINOUS TACK COAT (surface treatment)

Price Adjustment (PA)					\$	0	\$	-
Monthly Asphalt Cement Price month placed (APM)	Max. Cap	60%	\$	854.40				
Monthly Asphalt Cement Price month project let (APL)			\$	534.00				
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

TOTAL LIQUID AC ADJUSTMENT \$ **44,788.42**

GEORGIA DEPARTMENT OF TRANSPORTATION
PRELIMINARY ROW COST ESTIMATE SUMMARY

Date: 3/8/2015 Project: N/A
 Revised: County: Henry
 PI: 0012642

Description: Jodeco Road at Blackhall Road Intersection Improvement
 Project Termini:

Existing ROW: 80 Ft
 Required ROW: Varies
 Parcels: 9

Land and Improvements _____ \$153,577.50

<i>Proximity Damage</i>	<i>\$0.00</i>
<i>Consequential Damage</i>	<i>\$0.00</i>
<i>Cost to Cures</i>	<i>\$0.00</i>
<i>Trade Fixtures</i>	<i>\$0.00</i>
<i>Improvements</i>	<i>\$0.00</i>

Valuation Services _____ \$12,500.00

Legal Services _____ \$81,075.00

Relocation _____ \$18,000.00

Demolition _____ \$0.00

Administrative _____ \$80,500.00

TOTAL ESTIMATED COSTS _____ \$345,652.50

TOTAL ESTIMATED COSTS (ROUNDED) _____ \$346,000.00

Preparation Credits	Hours	Signature

Prepared By: _____ CG#: _____ (DATE) _____
 Approved By: _____ CG#: _____ (DATE) _____

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

PRELIMINARY UTILITY COST ESTIMATE

PI No. 0012642 Henry County
 Jodeco Road at Blackhall Road Intersection Improvements

FACILITY OWNER	NON-REIMBURSABLE	REIMBURSABLE	GRAND TOTAL
AT&T	\$10,000.00	\$0.00	\$10,000.00
Comcast	\$10,000.00	\$0.00	\$10,000.00
Georgia Power	\$80,000.00	\$0.00	\$80,000.00
Henry County W&SA	\$3,290.00	\$0.00	\$3,290.00
Totals	\$103,290.00	\$0.00	\$103,290.00

DETAILED ESTIMATE

<u>Pay Item</u>	<u>Description</u>	<u>Unit</u>	<u>Quantity</u>	<u>Assumed Price per Unit</u>	<u>Cost</u>
670-9710	RELOCATE EXIST FIRE HYDRANT	EA	2	\$1,340.00	\$2,680.00
611-8140	ADJUST WATER VALVE BOX TO GRADE	EA	2	\$305.00	\$610.00
NONE	Relocate Power Pole and Guy Wires	EA	2	\$50,000.00	\$100,000.00
TOTAL					\$103,290.00

Traffic Engineering Study

Jodeco Rd & Blackhall Rd

P.I. # 0012642

Henry County, GA

February 2015



<p><i>Title</i></p> <p>Traffic Study Jodeco Rd & Blackhall Rd P.I. # 0012642 Henry County, GA</p>	
<p><i>Prepared For</i> Georgia Department of Transportation</p> <p><i>On Behalf of:</i> Health & Lineback Engineers, Inc. 2390 Canton Road, Bldg 200 Marietta, Georgia 30066-5393 Mr. Tom Barwick, P.E. 770.424.1668</p>	<p><i>Date</i></p> <p>February 16, 2015</p>
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<p><i>Summary</i></p> <p>This study evaluates the existing and projected traffic conditions to identify the necessary improvements and operational needs for the intersections of Jodeco Road and Longwood Drive and Jodeco Road and Blackhall Road in Henry County.</p> <p>The following statements summarize the findings of this study:</p> <ol style="list-style-type: none"> 1. Capacity analysis of existing conditions showed that the intersections of Jodeco Road and Longwood Drive and Jodeco Road and Blackhall Road currently operates at level of service (LOS) B and F, respectively. They will continue to operate at LOS C and F, respectively, through the Design Year (2037) without any improvements. 2. Capacity analysis of a single-lane roundabout shows that the intersection will operate at an acceptable level of service until 2029 before failing. 3. Since the single-lane roundabout failed before the Design Year, a modified multi-lane roundabout was investigated. A modified multi-lane roundabout with southbound and westbound right turn bypass lanes and dual eastbound entry lanes provides acceptable level of service through the Design Year (2037). 	

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INTRODUCTION

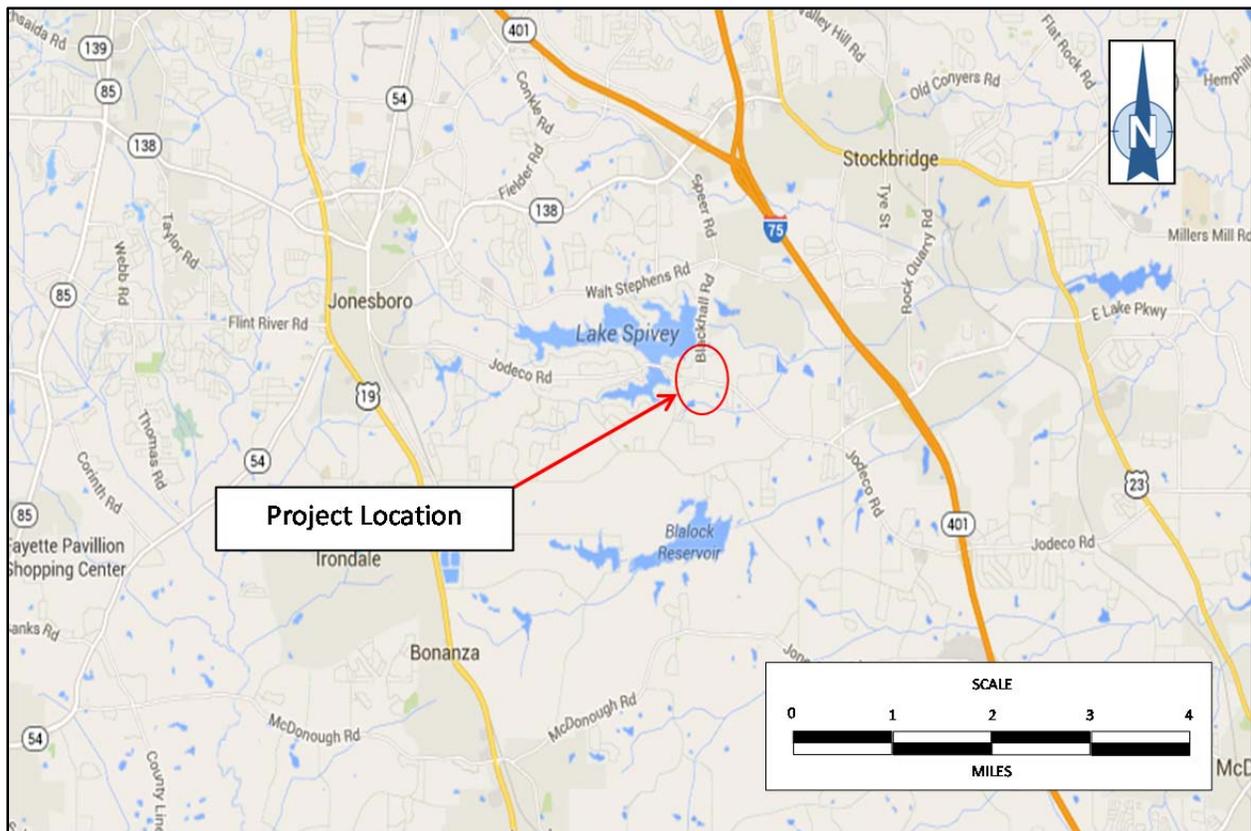
The intersection of Jodeco Road (CR 824) and Blackhall Road (CR 661) is planned to be improved and is identified in the Henry County Joint Comprehensive Transportation Plan. The project is also listed in the county’s SPLOST III Program. The project (PI 0012642) is scheduled to be Let for construction in 2017 and anticipated to be open by the end of 2017 or early 2018.

This study includes traffic projections, crash analysis, capacity analysis, and recommended improvements necessary to address the operational and safety conditions.

Project Location

The project is located in west Henry County approximately 2 miles west of I-75 and 0.3 miles east of the Clayton County line. Figure 1 shows the project location.

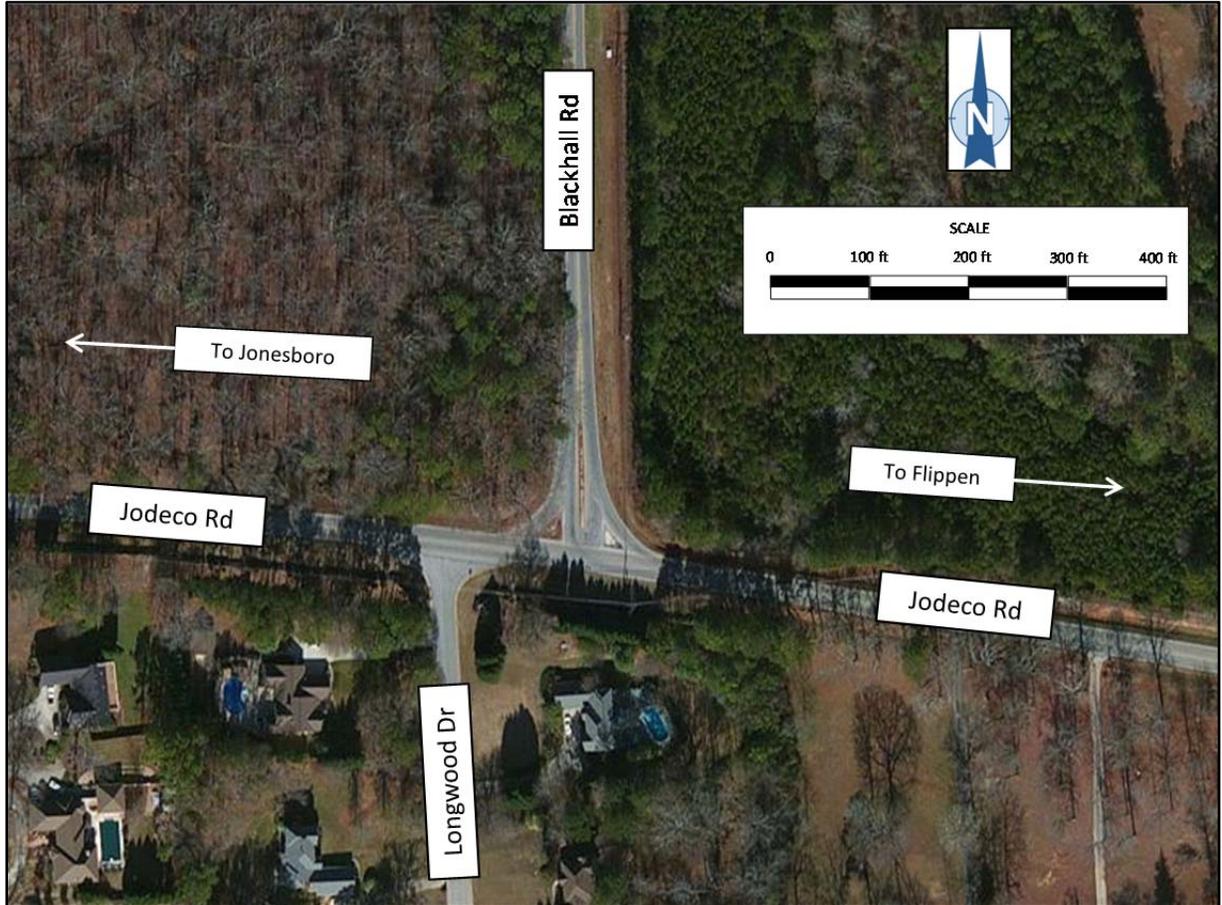
Figure 1: PROJECT LOCATION MAP



Study Area

Figure 2 shows the study area in more detail.

Figure 2: STUDY AREA MAP

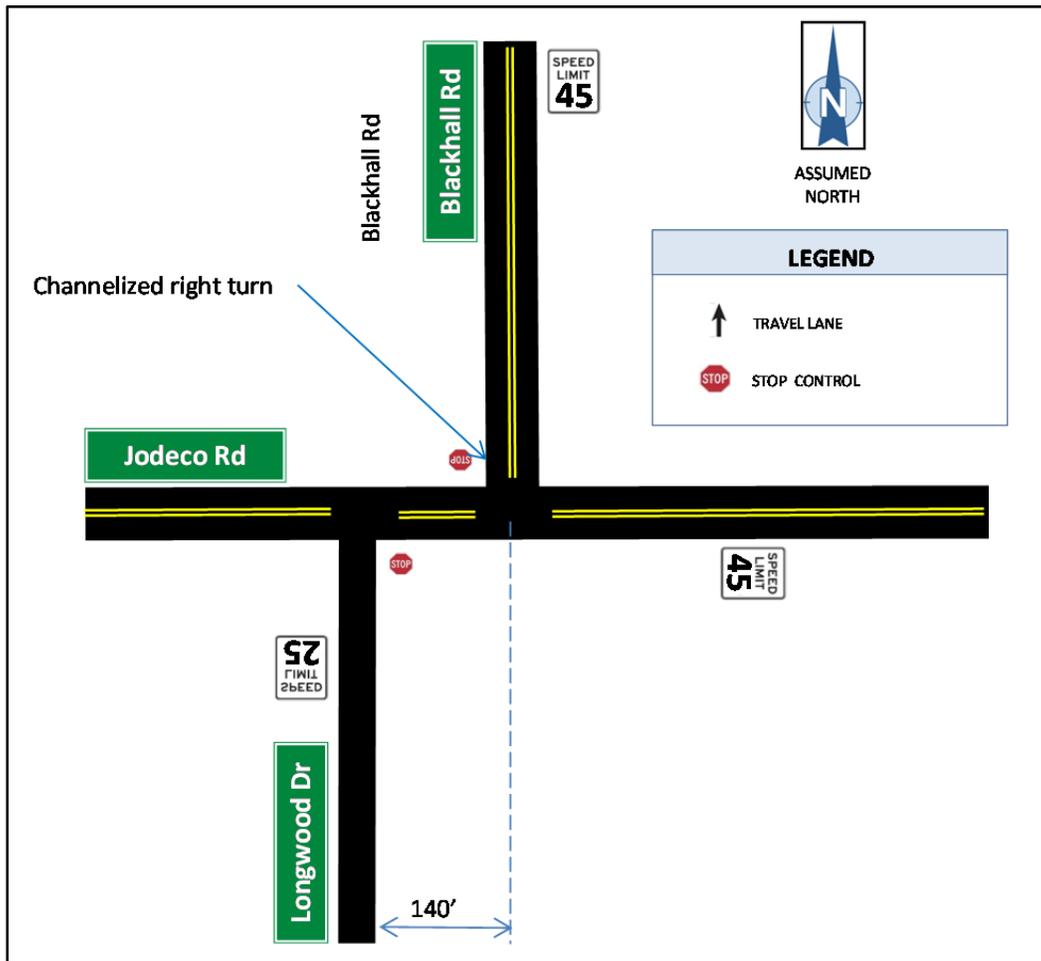


EXISTING CONDITIONS

Blackhall Road and Longwood Drive form T-intersections with Jodeco Road and are offset by approximately 140 feet. Jodeco Road is a two-lane Urban Minor Arterial with a posted speed limit of 45 mph. Blackhall Road is a two-lane Rural Minor Arterial with a posted speed limit of 45 mph. Longwood Drive is a two-lane local road with a posed limit of 25 mph.

Figure 3 illustrates the existing conditions and traffic control where Blackhall Road and Longwood Drive intersect Jodeco Road. A photographic inventory of the area is provided in Appendix A.

Figure 3: EXISTING GEOMETRIC CONDITIONS



Existing Turning Movement Volumes

Wilburn Engineering collected existing turning movement volumes for 12 hours (7 AM – 7 PM) on Wednesday, October 15, 2014. Turning movement volumes were collected to show the traffic to and from Blackhall Road and Longwood Drive as if they were aligned directly opposite one another. The traffic volume reports are provided in Appendix B. Table 1 shows the existing hourly volumes.

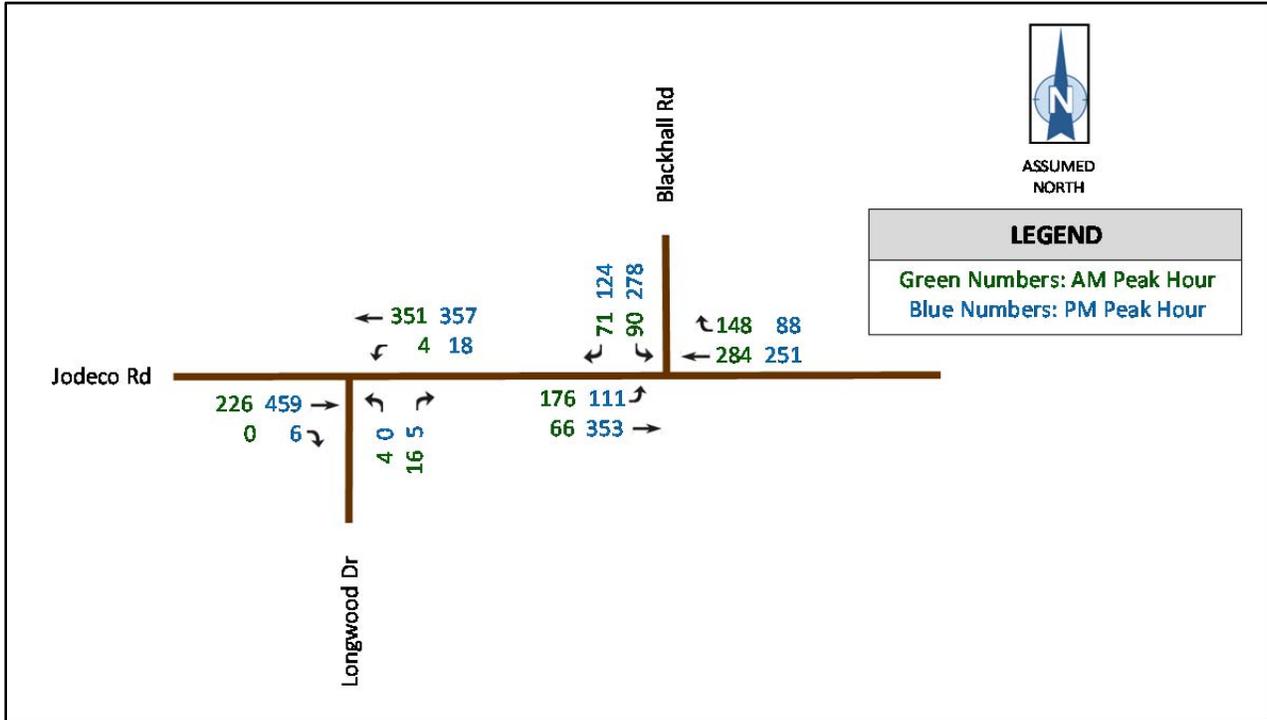
Truck and bus traffic were determined to be approximately 2.2% during the AM Peak Hour and 2.3% during the PM Peak Hour.

Table 1: EXISTING HOURLY TRAFFIC VOLUMES (JODECO RD & BLACKHALL RD / LONGWOOD DR)

HOUR BEGINNING AT:	EB Jodeco Rd			WB Jodeco Rd			NB Longwood Dr			SB Blackhall Rd		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
7 AM	179	215	0	2	257	130	4	7	12	75	2	69
8 AM	134	194	1	4	242	121	2	6	6	58	0	58
9 AM	114	147	1	1	138	66	0	1	7	38	2	48
10 AM	90	161	3	1	138	47	1	3	6	41	3	56
11 AM	68	145	1	1	129	62	5	3	3	30	3	72
12 NOON	81	170	4	6	154	67	3	5	9	68	4	66
1 PM	76	182	5	3	166	63	1	5	1	60	9	87
2 PM	78	209	2	5	177	85	1	10	2	92	5	88
3 PM	88	248	1	1	218	102	2	4	5	111	9	114
4 PM	82	325	3	4	214	100	0	5	6	144	5	126
5 PM	98	380	5	12	247	78	0	4	4	247	6	102
6 PM	105	261	5	11	241	110	1	2	1	162	6	159
12-hr Total	1193	2637	31	51	2321	1031	20	55	62	1126	54	1045

Figure 4, on the following page, shows the peak hour volumes.

Figure 4: EXISTING PEAK HOUR VOLUMES



Existing Daily Volumes

Wilburn Engineering set automatic traffic recorders (ATRs) and collected 24-hour data on Jodeco Road and Blackhall Road near the intersection.

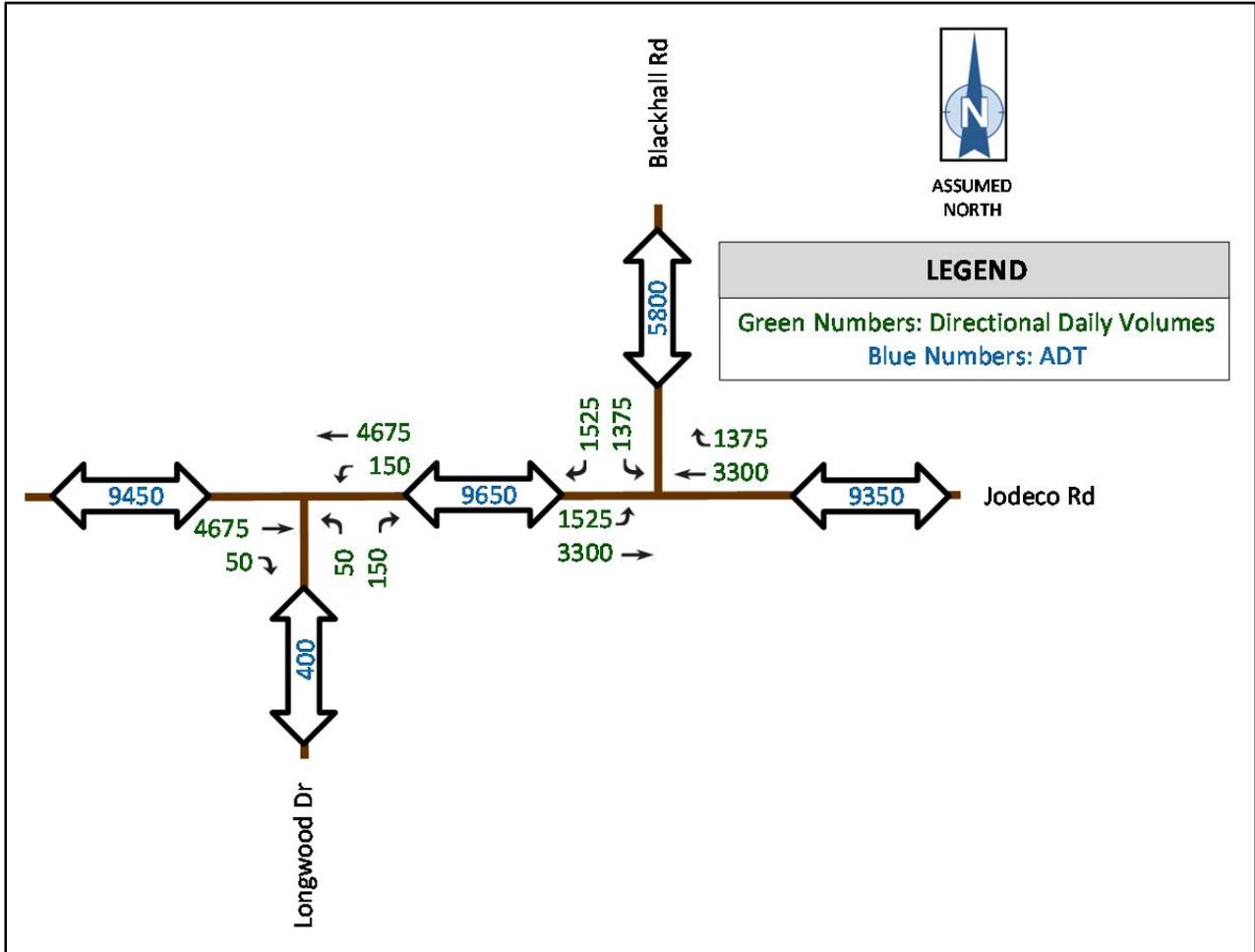
The average daily traffic (ADT) observed on Jodeco Road, west of the intersection, was 9496 vehicles per day (vpd) (5114 vpd eastbound and 4382 vpd westbound). The 12-hour total (7 AM – 7 PM) represented 82% of the ADT. The observed 24-hour bus and truck total was 1.1% (SU = 0.8, MU = 0.3%). The observed 85th percentile speeds were 35 mph (33 mph eastbound and 37 mph westbound).

The ADT observed on Blackhall Road was 6618 vpd (2789 vpd northbound and 3829 vpd southbound). The 12-hour total (7 AM – 7 PM) represented 82% of the ADT. The observed 24-hour bus & truck total was 4.7% (SU = 4.4, MU = 0.3). The observed 85th percentile speeds was 40 mph (55 mph northbound and 30 mph southbound). The existing daily traffic volume reports are provided in Appendix C.

The K-factor is the percentage of peak hour volume to ADT. The observed K-factor for Jodeco Road was 9.7% and Blackhall Road was 10.8%. The weighted K-factor for the intersection was 10.1%. The D-factor for Jodeco Road was 65.6%. The D-factor for Blackhall Road was 73.0%.

The existing daily turning movement volumes for the intersection were estimated by taking the highest of the reciprocal 12-hour turning movements from Table 1 and dividing it by 0.82 (the observed percentage of 12-hour (7 AM – 7 PM to ADT) and rounding up to the nearest 25. The estimated daily traffic volumes are shown in Figure 5, on the following page.

Figure 5: EXISTING DAILY TRAFFIC VOLUMES



CRASH HISTORY

Crash data for the study area was obtained from the Georgia Department of Transportation. Table 2 summarizes the crash frequency along the corridor for the most recent five-year period from 2010 through 2014. The raw data is provided in Appendix D.

Table 2: YEARLY CRASH FREQUENCY

YEAR	TOTAL CRASHES	INJURY CRASHES /INJURIES	FATALITIES	VEHICLE COLLISION With OTHER VEHICLE				VEHICLE COLLISION With ANIMAL/STRUCTURE
				RIGHT ANGLE	HEAD ON	REAR END	SIDESWIPE	
2010	10	3/5	0	4	1	4	1	0
2011	9	3/4	0	1	1	3	0	4
2012	8	5/8	0	2	0	3	1	2
2013	14	6/9	0	4	1	7	0	2
2014	12	4/5	0	7	0	4	0	1
Totals	53	21/31	0	18	3	21	2	9

Rear-end collisions accounted for 40% of all crashes. Right-angle and head-on collisions accounted for 40% of all crashes. Sideswipe and collisions with something other than a vehicle accounted for 20% of all crashes.

Crash Rate Calculations

Crash rates were calculated for the intersection of Jodeco Road and Blackhall Road.

The first step was to calculate a crash rate factor specific to the roadway section using the following equation;

$$\text{Crash Rate Factor} = \frac{L * ADT * 365}{100,000,000}$$

Where;

L = length of section in miles

ADT = Average daily volume for the section

365 days per year

100,000,000 = constant to convert value to a rate per 100 million vehicle miles traveled

The second step was to calculate the crash rate by dividing the number of crashes by the crash rate factor specific to the roadway section.

Table 3, on the following page, summarizes the crash rates for the intersection of Jodeco Road and Blackhall Road for: 2010, 2011, 2012, 2013, and 2014. This section of Jodeco Road is classified as an Urban Minor Arterial. The table shows the rates for all crashes, injuries, and fatalities and compares each to the statewide averages for like facilities. The statewide averages (SWA) were provided through 2013. The statewide averages for 2014 were calculated by averaging the data from 2010-2013. Crash rates above the statewide averages are highlighted.

Daily traffic volumes were collected at several locations along this section. The 2010, 2011, 2012, and 2013 volumes were developed from the collected data by reducing the 2014 volume by the growth rate of 1% per year.

Table 3: CRASH RATE SUMMARIES

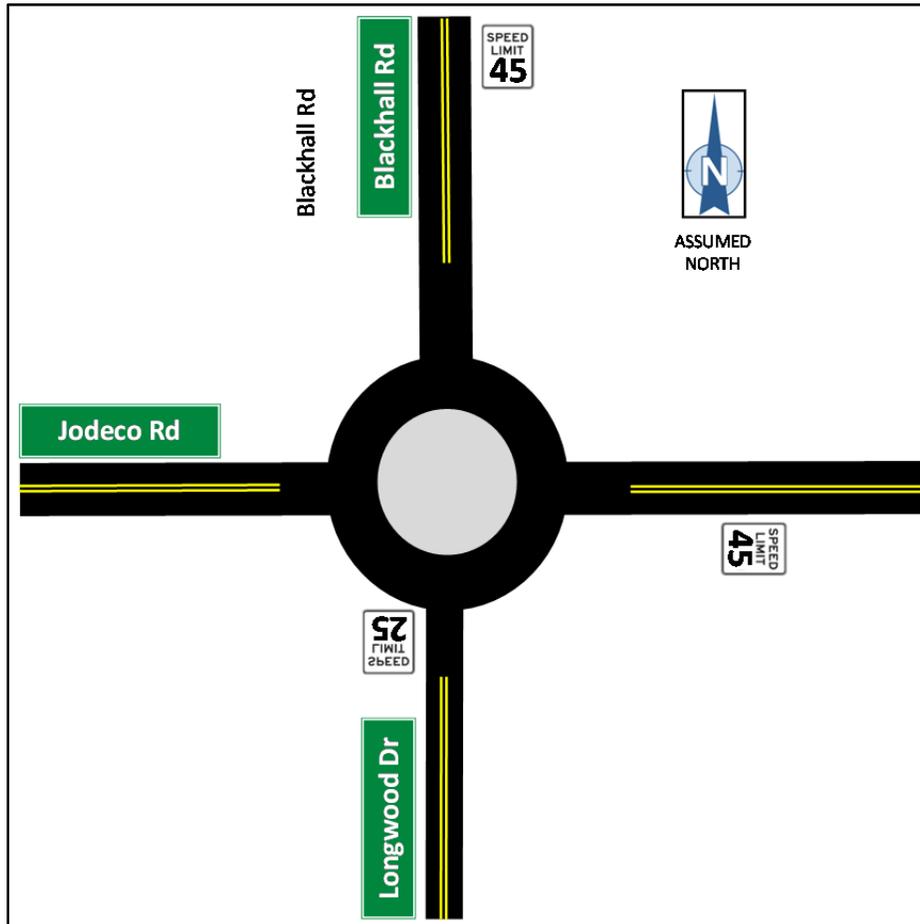
YEAR	CRASHES			INJURY CRASHES			FATALITIES		
	Number Of Crashes	Calculated Rate	Statewide Average Rate	Number Of Crashes	Calculated Rate	Statewide Average Rate	Number Of Fatalities	Calculated Rate	Statewide Average Rate
2010	10	453	383	3/5	226	151	0	0	1.50
2011	9	403	397	3/4	179	145	0	0	1.51
2012	8	355	447	5/8	355	160	0	0	1.46
2013	14	615	478	6/9	395	159	0	0	1.43
2014	12	522	426	4/5	217	154	0	0	1.48

Table 3 shows that the intersection experienced crash and injury rates higher than the statewide averages for like facilities.

PROPOSED IMPROVEMENT

The proposed improvement is to realign Blackhall Road and Longwood Drive to intersect Jodeco Road opposite one another and construct a single-lane roundabout. The improvement is planned to be open by 2017. Figure 6 illustrates the proposed improvement.

Figure 6: PROPOSED IMPROVEMENT



The expected peak hour volumes if the realignment were constructed today are shown in Figure 7. The expected daily volumes if the realignment were constricted today are shown in Figure 8.

Figure 7: EXPECTED PEAK HOUR VOLUMES AFTER REALIGNMENT

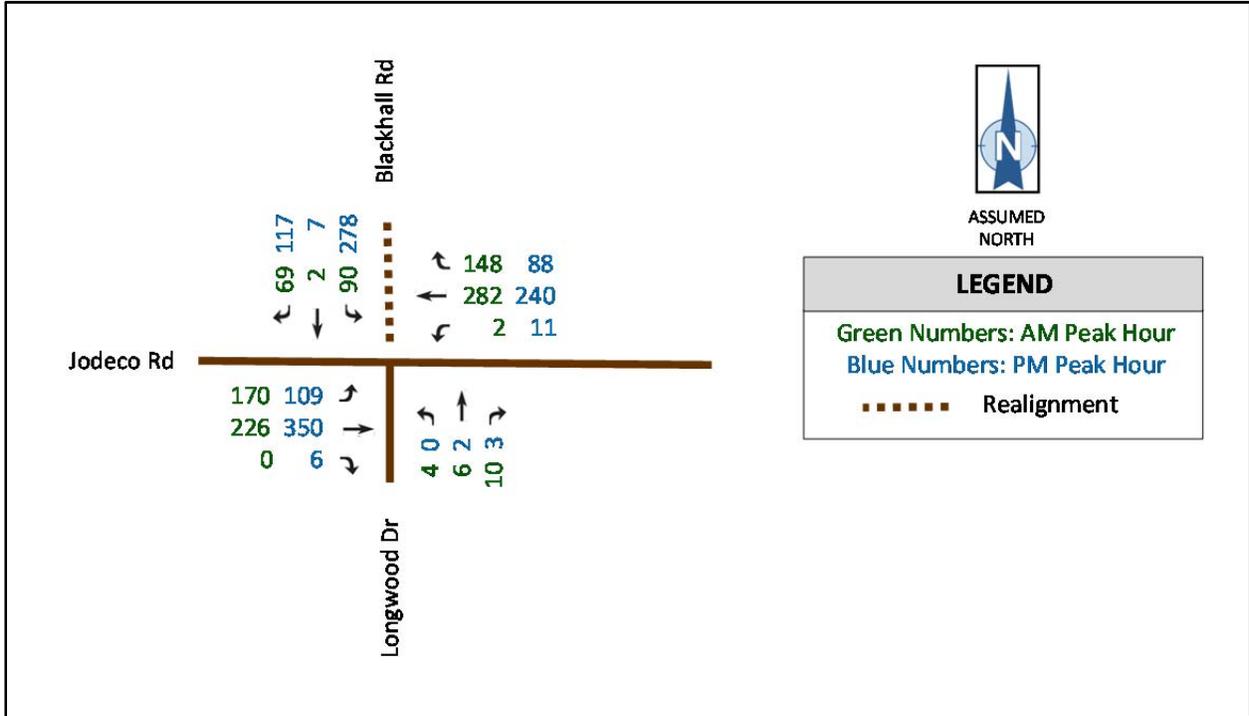
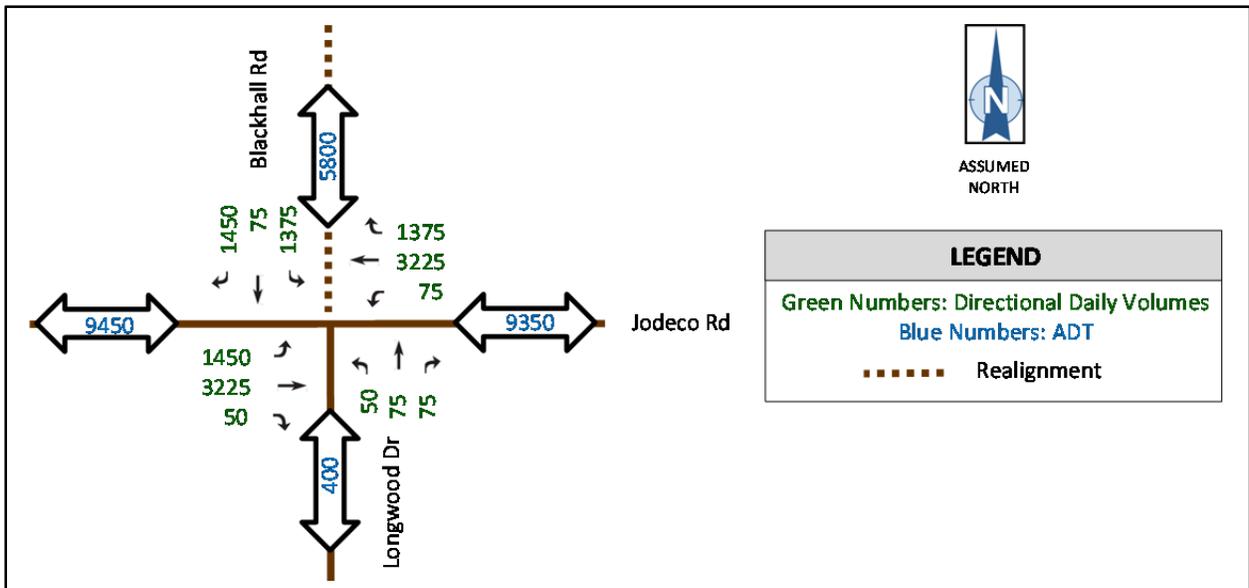


Figure 8: EXPECTED DAILY VOLUMES AFTER REALIGNMENT



TRAFFIC PROJECTION METHODOLOGY

The methodology used to estimate future traffic volumes is based on the procedures in Chapter 13 of the GDOT Policy Manual. The procedure began with an examination of historic trends and then considered travel forecasts from the regional travel demand model maintained by the Atlanta Regional Commission (ARC).

Background traffic was developed to show the growth in traffic with (Build) or without (No-Build) the proposed intersection improvement. The Background traffic was developed from 2014 to Construction Year (2017) and Construction Year (2017) to Design Year (2037).

Historic Traffic Data

GDOT maintains three count stations in the vicinity of the intersection. Count station 1510223 is located on Jodeco Road east of the intersection. Count station 0630183 is located on Jodeco Road west of the intersection. Count station 1510221 is located on Blackhall Road north of the intersection. Table 4 provides the latest 15 years of available data (1999 – 2013) for each count station.

Table 4: GDOT 15-YEAR HISTORICAL DAILY TRAFFIC VOLUMES

Year	GDOT Count Station 1510223	GDOT Count Station 0630183	GDOT Count Station 1510221
1999	6800	6100	5300
2000	6800	6300	6100
2001	7200	6000	5700
2002	8052	6558	6161
2003	8920	6540	6240
2004	9560	7030	6320
2005	9150	7480	6320
2006	9190	8390	5300
2007	9150	7710	6040
2008	8920	7260	5890
2009	8450	6540	5900
2010	8370	6550	5850
2011	7950	6540	5710
2012	7810	6500	5900
2013	7760	6530	5860

Source: GDOT Geocounts Database System

The Atlanta Regional Commission (ARC) maintains the regional transportation model. The forecasts for the project area are provided in Table 5. The first column corresponds to the location of GDOT count station 1510223 (on Jodeco Road east of Blackhall Rd). The second column corresponds to the location of GDOT count station 0630183 (on Jodeco Road west of Blackhall Rd). The third column corresponds to the location of GDOT count station 1510221 (on Blackhall Road north of Jodeco Rd).

Table 5: ARC MODEL FORECAST

Model Year	Jodeco Rd east of Blackhall Rd	Jodeco Rd west of Blackhall Rd	Blackhall Rd north of Jodeco RD
2010	8300	4200	4100
2020 Build	11000	5700	5300
2040 No-Build	14300	8600	5900
2040 Build	15100	9500	6400

Source: ARC

Using the procedure from Figure 13-2 in the GDOT Policy Manual the No-Build and Build growth rates were calculated. Table 6 shows the calculation for the No-Build growth rate. Table 7 shows the calculation for the Existing (2014) to Base Year (2017) Build growth rate and Base Year (2017) to Design Year (2037) growth rate.

Table 6: NO-BUILD GROWTH RATE

GDOT COUNT STATION	GDOT 2010	ARC 2010	ARC NO-BUILD 2040	ARC GROWTH ('40 - '10)	GDOT 2010 + ARC GROWTH	(2010 - 2040) GROWTH %
0223	8370	8300	14300	6000	14370	1.82%
0183	6550	4200	8600	4400	10950	1.73%
0221	5850	4100	5900	1800	7650	0.90%
Weighted Annual No-Build Growth Rate						1.57%

Table 7: BUILD GROWTH RATES

EXISTING - 2017

GDOT COUNT STATION	GDOT 2010	ARC 2010	ARC BUILD 2040	ARC GROWTH ('40 - '10)	GDOT 2010 + ARC GROWTH	(2010 - 2040) GROWTH %
0223	8370	8300	11000	2700	11070	2.84%
0183	6550	4200	5700	1500	8050	2.08%
0221	5850	4100	5300	1200	7050	1.88%
Weighted Annual Build Growth Rate – Existing to 2017						2.35%

2017 - 2037

GDOT COUNT STATION	2020	ARC 2020	ARC BUILD 2040	ARC GROWTH ('40 - '10)	GDOT 2010 + ARC GROWTH	(2010 - 2040) GROWTH %
0223	11000	11000	15100	4100	15100	1.60%
0183	5700	5700	9500	3800	9500	2.59%
0221	5300	5300	6400	1100	6400	0.95%
Weighted Annual Build Growth Rate – 2017 to 2037						1.77%

For traffic projection purposes, growth factors were established by applying the growth rates as follows:

- The 2017 “No-Build” annual factor - growth rate of 1.6% from Existing Year (2014) to Base Year (2017)
- The 2037 “No-Build” annual factor - growth rate of 1.6% from Base Year (2017) to Design Year (2037)
- The 2017 “Build” annual growth rate of 2.4% from Existing Year (2014) to Base Year (2017)
- The 2037 “Build” annual growth rate of 1.8% from Base Year (2017) to Design Year (2037)

The exponential equation used to calculate the future volumes was:

$$\text{Future Volume} = \text{Present Volume} (1 + r)^n$$

The 2017 projections were calculated using $n=3$, taken as the time period from Existing Year (2014) to Base Year (2017). The 2037 projections were calculated using $n=20$, taken as the time period from Base Year (2017) to Design Year (2037). The growth factors calculated to be used for the project are provided in Table 8.

Table 8: GROWTH FACTORS

	BASE YEAR 2017	DESIGN YEAR 2037
No-Build	1.05	1.37
Build	1.07	1.43

The Base Year growth factors were applied to the existing volumes to develop the projected volumes for the Base Year. The Design Year growth factors were applied to the Base Year Volumes to develop the projected volumes for the Design Year.

The Longwood Drive subdivision is fully built-out and not expected to have future increases in traffic. Therefore, growth rates were not applied to the Longwood Drive volumes.

TRAFFIC PROJECTIONS

The traffic projection methodology presented in the previous section was used to develop the Construction Year (2017 No-Build and Build) and Design Year (2037 No-Build and Build) design hour (DHV) and daily traffic volumes. Truck percentages are expected to remain constant throughout the design period.

No-Build Traffic Projections

Figure 9 illustrates the 2017 No-Build projections. The DHV's are shown in the upper panel and the Daily volumes are shown in the lower panel.

Figure 9: CONSTRUCTION YEAR (2017) NO-BUILD VOLUMES

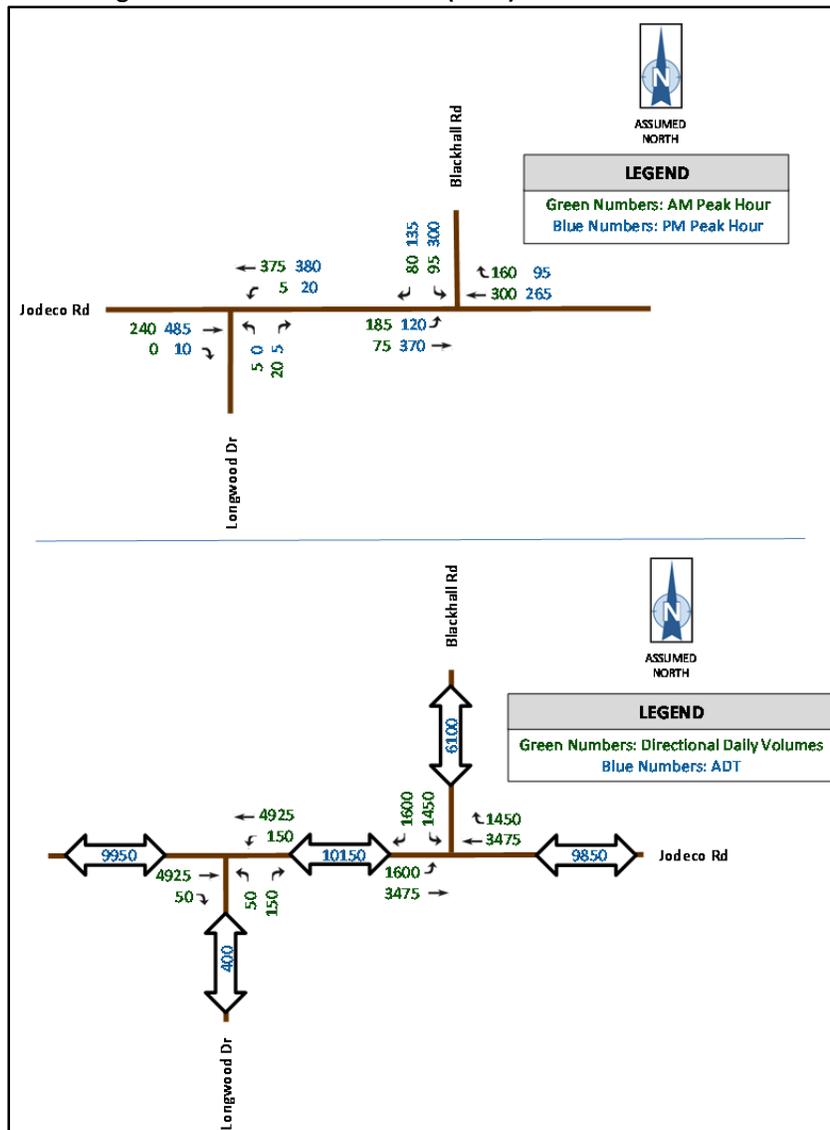
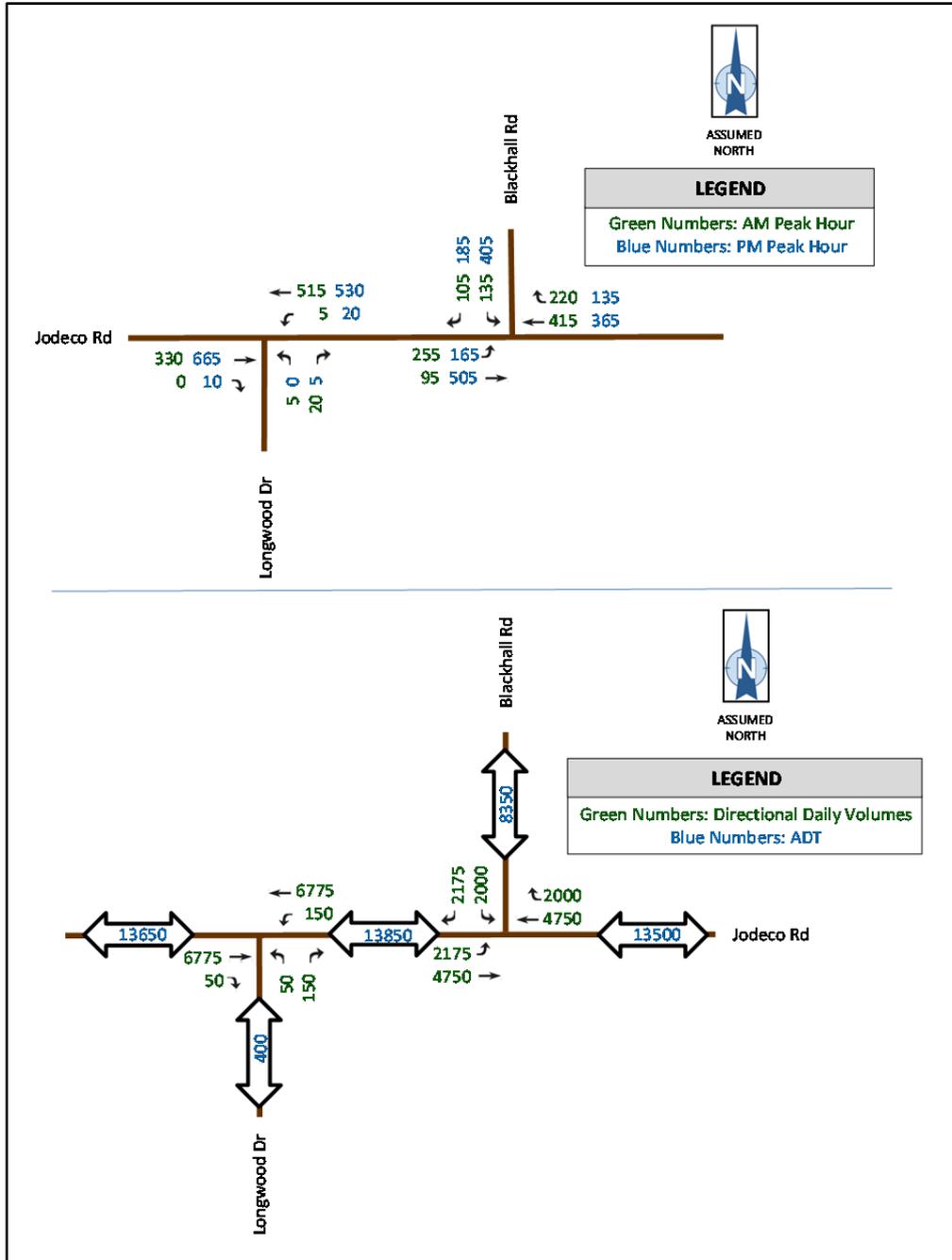


Figure 10 illustrates the 2037 No-Build projections. The DHV's are shown in the upper panel and the Daily volumes are shown in the lower panel.

Figure 10: DESIGN YEAR (2037) NO-BUILD VOLUMES



Build Traffic Projections

Figure 11 illustrates the 2017 Build projections. The DHV's are shown in the upper panel and the Daily volumes are shown in the lower panel.

Figure 11: CONSTRUCTION YEAR (2017) BUILD VOLUMES

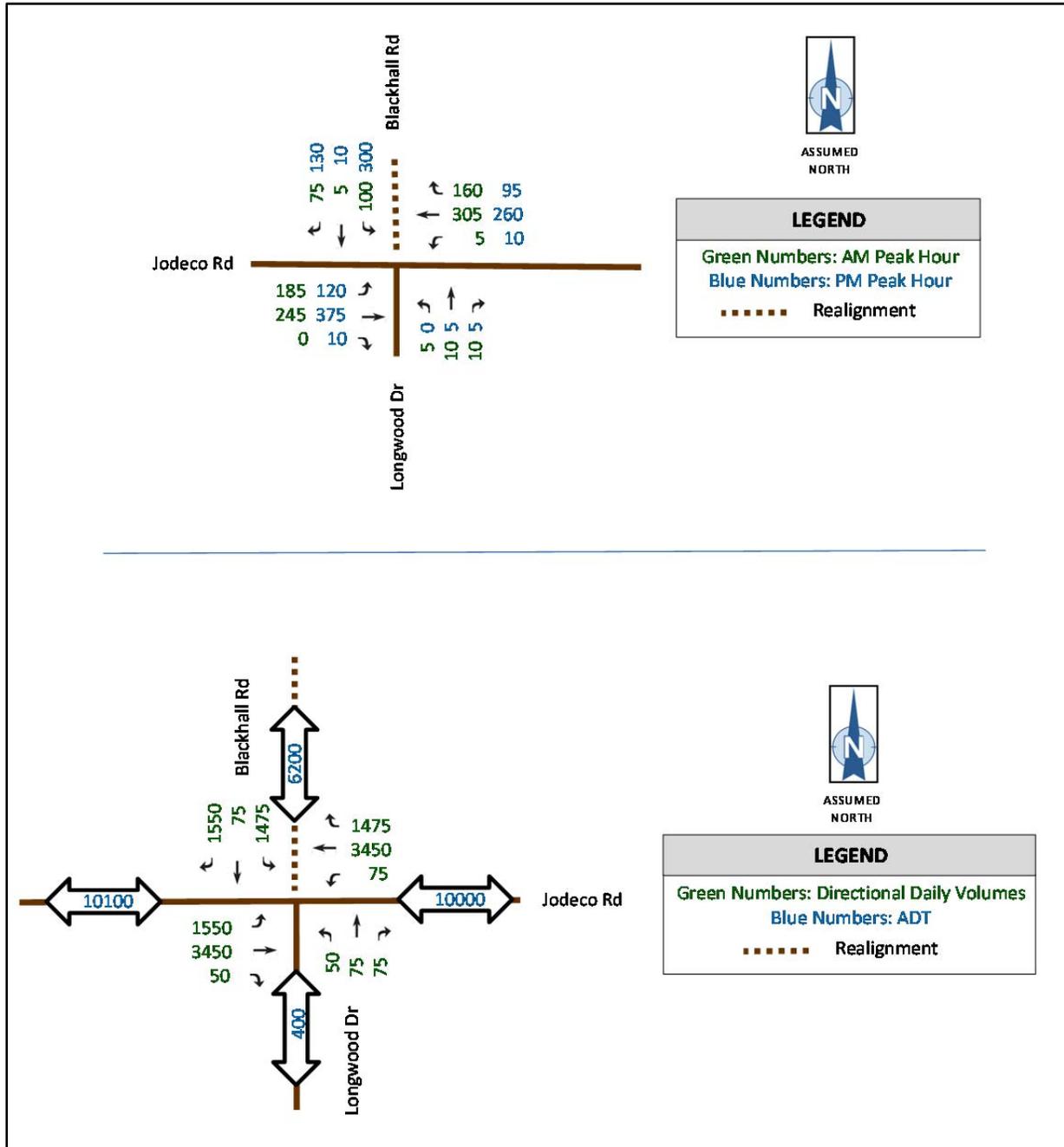
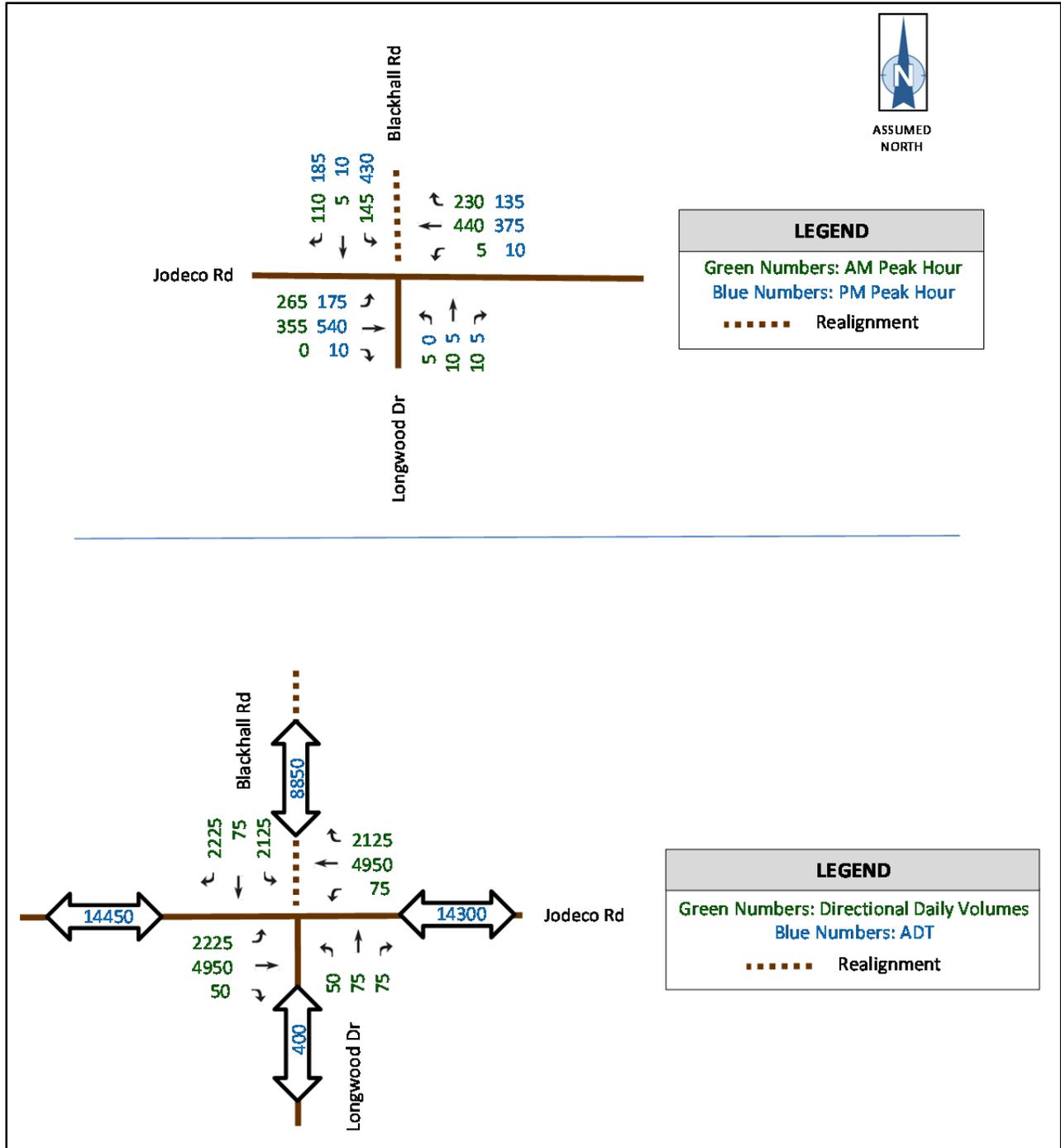


Figure 12 illustrates the 2037 Build projections. The DHV's are shown in the upper panel and the Daily volumes are shown in the lower panel.

Figure 12: DESIGN YEAR (2037) BUILD VOLUMES



CAPACITY ANALYSIS

Capacity analysis was used to evaluate both existing and projected traffic volumes. The *Synchro* Program (Version 9) was used to conduct the capacity analysis. This program replicates the procedures outlined in the *Highway Capacity Manual, Special Report 2009* (HCM 2000 & 2010) published by the Transportation Research Board.

The level of service definitions are provided in Table 9. The HCM has different LOS definitions for signalized intersections than for stop controlled intersections.

Table 9: LEVEL OF SERVICE CRITERIA

LEVEL OF SERVICE (LOS)	SIGNALIZED INTERSECTION CONTROL DELAY PER VEHICLE (SECONDS)	STOP CONTROLLED & ROUNDABOUT INTERSECTION CONTROL DELAY PER VEHICLE (SECONDS)
A	≤10	≤10
B	>10 and ≤20	>10 and ≤15
C	>20 and ≤35	>15 and ≤25
D	>35 and ≤55	>25 and ≤35
E	>55 and ≤80	>35 and ≤50
F	>80	>50

Capacity analysis results for an unsignalized intersection provide estimates of level of service (LOS) for each minor movement that is required to yield to free flow movements. LOS for each movement is shown followed by the estimated delay per vehicle in seconds.

Existing Conditions

Table 10 summarizes the results of the capacity analysis for the existing unsignalized intersection. Capacity analysis reports for Existing Conditions are provided in Appendix E. Poor operating conditions are highlighted.

Table 10: EXISTING LEVELS OF SERVICE

INTERSECTION	MOVEMENT	AM PEAK HOUR		PM PEAK HOUR	
		LOS	QUEUE LENGTH, FT	LOS	QUEUE LENGTH, FT
Jodeco Rd & Longwood Dr	EB	A (0.0)	0'	A (0.0)	0'
	WB	A (0.2)	0'	A (1.0)	3'
	NB	B (11.5)	7'	B (12.3)	2'
Jodeco Rd & Blackhall Rd	EB	A (7.3)	20'	A (2.7)	8'
	WB	A (0.0)	0'	A (0.0)	0'
	SB	F (53.6)	170'	F (381.5)	839'

The intersection of Jodeco Road and Longwood Drive operates at LOS B or better during both the AM and PM Peak Hours. The intersection of Jodeco Road and Blackhall Road operates at LOS F during both the AM and PM Peak Hours.

Projected Conditions

No-Build Alternative

Table 11 summarizes the results of the capacity analysis for No-Build Construction Year (2017) and Design Year (2037) projected volumes. Capacity analysis reports for 2017 and 2037 No-Build Conditions are provided in Appendix F. Poor operating conditions are highlighted.

Table 11: NO-BUILD LEVELS OF SERVICE

INTERSECTION	MOVEMENT	2017 CONSTRUCTION YEAR				2037 DESIGN YEAR			
		AM PEAK HOUR		PM PEAK HOUR		AM PEAK HOUR		PM PEAK HOUR	
		LOS	QUEUE LENGTH (FT)	LOS	QUEUE LENGTH (FT)	LOS	QUEUE LENGTH (FT)	LOS	QUEUE LENGTH (FT)
Jodeco Rd & Longwood Dr	EB	A (0.0)	0'	A (0.0)	0'	A (0.0)	0'	A (0.0)	0'
	WB	A (0.3)	1'	A (1.1)	3'	A (0.2)	1'	A (1.2)	4'
	NB	B (12.0)	9'	B (12.6)	2'	B (14.4)	12'	C (15.5)	3'
Jodeco Rd & Blackhall Rd	EB	A (7.5)	22'	A (2.9)	9'	A (10.0)	45'	A (4.2)	16'
	WB	A (0.0)	0	A (0.0)	0'	A (0.0)	0'	A (0.0)	0'
	SB	F (83.8)	234'	F (522.4)	1031'	F (799.0)	821'	F (*)	*

* = Delay & Queue Length outside calculated range

The intersection of Jodeco Road and Longwood Drive operates at LOS C or better during both the AM and PM Peak Hours. The intersection of Jodeco Road and Blackhall Road operates at LOS F during both the AM and PM Peak Hours.

Build Alternative

The previous section established that the intersections of Jodeco Road and Longwood Drive and Jodeco Road and Blackhall Road will operate at LOS C and F, respectively, through 2037 if no improvements were made.

This section provides capacity analysis results for the single-lane roundabout

Roundabout Analysis

This alternative is to construct a roundabout at the intersection.

GDOT’s criteria for determining if a single-lane roundabout might be appropriate suggests that this type of intersection could be considered if the following conditions are expected:

1. The total entering volume is less than 25,000 vehicles for a single-lane roundabout, and
2. The percentage of volume on the main roadway is less than 90% of the total volume.

Table 12 compares the projected conditions to the two criteria listed above.

Table 12: ROUNDABOUT SUITABILITY SCREENING CRITERIA

HORIZON YEAR	DAILY VOLUME					
	Jodeco Road	Side Street	Total	Less Than 25,000?	Portion on Mainline	Mainline Portion Less than 90 %
2017	10,050	3,300	13,350	Yes	75%	Yes
2037	14,375	4,625	19,000	Yes	76%	Yes

The projected conditions indicate that the intersection could be candidate for a single-lane roundabout operation.

Operational analysis was conducted for the intersection using the GDOT Roundabout Analysis Tool, which is based on the NCHRP-672 methodology.

Table 13 shows the results for the projected conditions for the Construction Year (2017). The GDOT roundabout analysis worksheets are included in Appendix G.

Table 13: PROPOSED SINGLE-LANE ROUNDABOUT, LEVEL OF SERVICE, 2017

	AM PEAK HOUR				PM PEAK HOUR			
	JODECO RD		LONGWOOD DR	BLACKHALL RD	JODECO RD		LONGWOOD DR	BLACKHALL RD
	EB	WB	NB	SB	EB	WB	NB	SB
LOS	A	A	A	A	B	A	A	B
DELAY (sec/veh)	8	10	5	6	14	7	6	11
QUEUE (ft)	68	85	4	25	127	43	3	97

The analysis indicates that the single-lane roundabout will work at LOS B when it is opened in the Construction Year (2017).

The capacity analysis results for the Design Year (2037) projections are summarized in Table 14. Poor operating conditions are highlighted. The GDOT roundabout analysis worksheets are included in Appendix G.

Table 14: PROPOSED SINGLE-LANE ROUNDABOUT, LEVEL OF SERVICE, 2037

	AM PEAK HOUR				PM PEAK HOUR			
	JODECO RD		LONGWOOD DR	BLACKHALL RD	JODECO RD		LONGWOOD DR	BLACKHALL RD
	EB	WB	NB	SB	EB	WB	NB	SB
LOS	B	C	A	A	F	B	A	D
DELAY (sec/veh)	15	24	7	9	76	10	9	33
QUEUE (ft)	171	267	5	52	567	89	4	337

The roundabout analysis indicates that the eastbound movement is expected to fail by 2029, well before the design year.

Since the single-lane roundabout fails before the design year, a modified multi-lane roundabout was investigated. The modified multi-lane roundabout shown in Figure 13, on the following page, was analyzed.

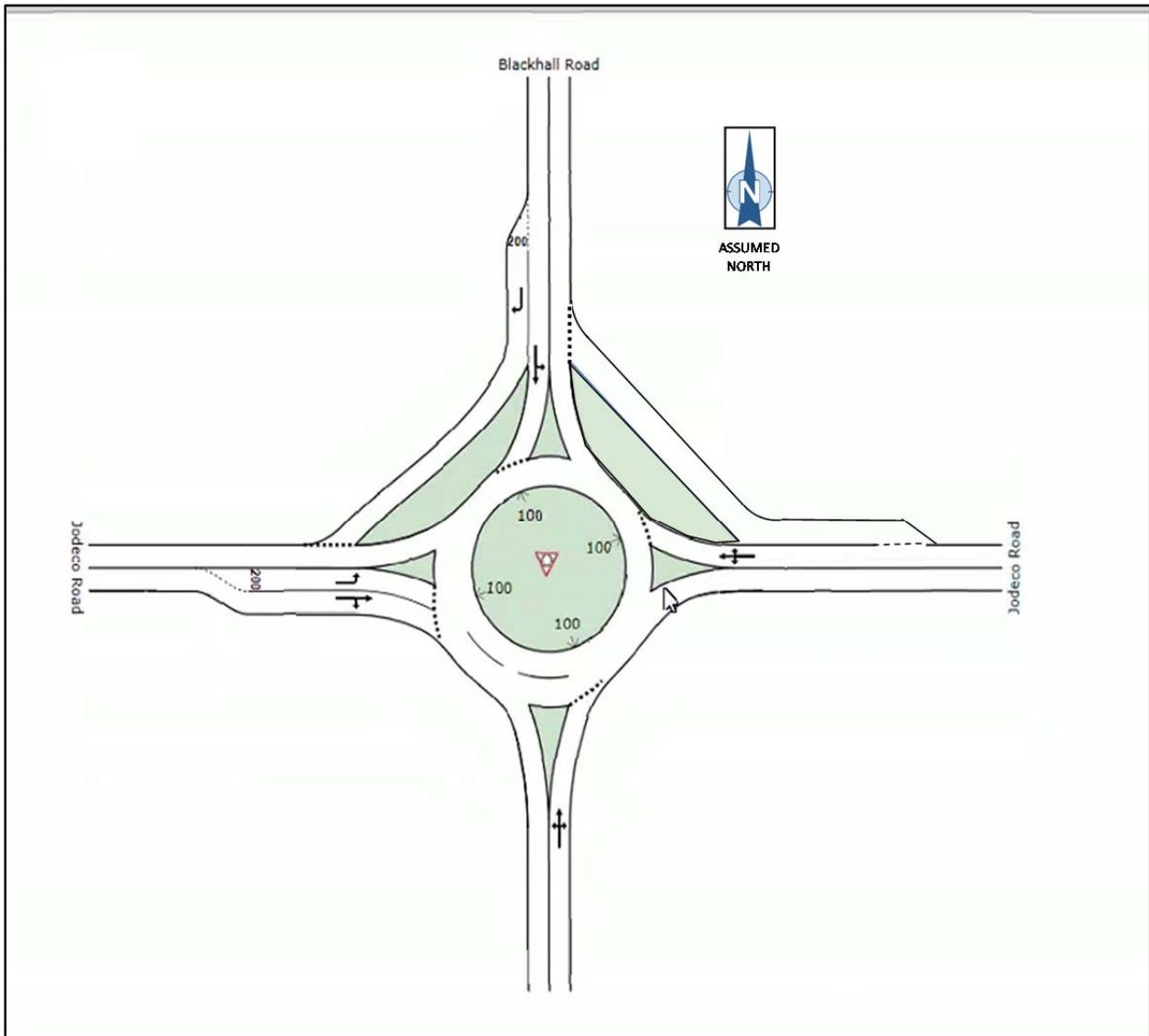
The capacity analysis results for the Design Year (2037) projections are summarized in Table 15. The GDOT roundabout analysis worksheets are included in Appendix H.

Table 15: PROPOSED MULTI-LANE ROUNDABOUT, LEVEL OF SERVICE, 2037

	AM PEAK HOUR						PM PEAK HOUR					
	JODECO RD			LONGWOOD DR	BLACKHALL RD		JODECO RD			LONGWOOD DR	BLACKHALL RD	
	EB	WB	WB RT Bypass Ln	NB	SB	SB RT Bypass Ln	EB	WB	WB RT Bypass Ln	NB	SB	SB RT Bypass Ln
LOS	A	B	A	A	A	A	C	A	A	A	B	A
DELAY (sec/veh)	9.7	13.9	8.9	6.2	7.9	8.5	22.8	8.5	5.4	8.4	14.8	8.5
QUEUE (ft)	69	112	41	4	27	23	193	54	14	2	117	32

The analysis indicates that the modified multi-lane roundabout shown in Figure 13 will operate at LOS C or better through the Design Year (2037).

Figure 13: PROPOSED MODIFIED MULTI-LANE ROUNDABOUT



SUMMARY OF FINDINGS

The following conclusions are based on the newly collected data, field observations, intersection capacity analyses and warrant analysis.

1. The intersections of Jodeco Road and Longwood Drive and Jodeco Road and Blackhall Road are offset unsignalized T-intersections separated by 140’.
2. The current geometrics of the intersections result in crash rates that are consistently higher than the statewide averages. The proposed roundabout is expected to provide safer conditions than the current stop-controlled operation.
3. Capacity analysis of existing conditions showed that the intersections of Jodeco Road and Longwood Drive and Jodeco Road and Blackhall Road operate at LOS B and F, respectively.
4. Capacity analysis of the projected volumes for the No-Build alternative show that the intersections of Jodeco Road and Longwood Drive and Jodeco Road and Blackhall Road will operate at LOS C and F, respectively.
5. Capacity analysis of the Build volumes for the proposed single-lane roundabout show that the intersection is expected to operate acceptably until 2029, when the eastbound approach is expected to fail.
6. A modified multi-lane roundabout, shown in Figure 13, provided acceptable LOS C or better through the Design Year (2037).

RECOMMENDATIONS

1. The current geometrics of the offset T-intersections of Blackhall Road and Longwood Drive should be realigned to intersect Jodeco Road opposite one another.
2. The proposed modified multi-lane roundabout, shown in Figure 13, will provide the following improvements:
 - a. LOS C or better operations through the Design Year (2037),
 - b. Reduce crash frequency (especially right angle and head-on crashes).

APPENDICES

A – PHOTOGRAPHIC INVENTORY

B – EXISTING TURNING MOVEMENT VOLUMES

C – DAILY TRAFFIC VOLUMES

D – CRASH DATA

E – CAPACITY ANALYSIS – EXISTING

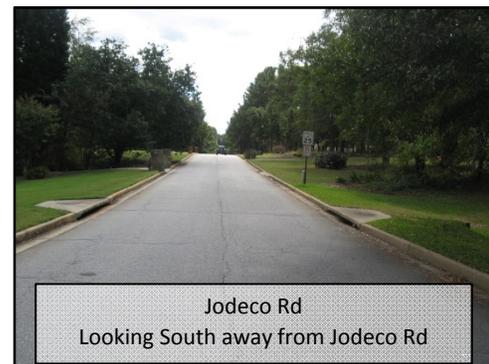
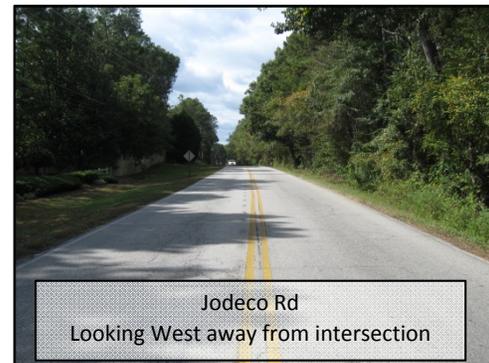
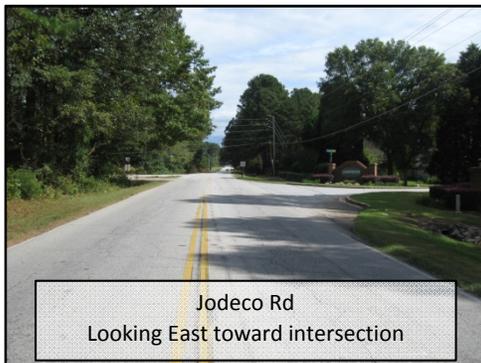
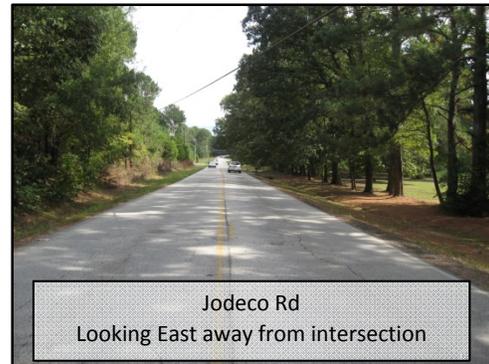
F – CAPACITY ANALYSIS – NO-BUILD

G – ROUNDABOUT ANALYSIS – SINGLE LANE ROUNDABOUT

H – ROUNDABOUT ANALYSIS – MODIFIED MULTI-LANE ROUNDABOUT

APPENDIX A
PHOTOGRAPHIC INVENTORY

JODECO RD & BLACKHALL RD / LONGWOOD DR



JODECO RD & BLACKHALL RD / LONGWOOD DR



APPENDIX B

EXISTING TURNING MOVEMENT VOLUMES

Wilburn Engineering, LLC

931 Lower Fayetteville Road, Suite I
Newnan, GA, 30263
678.423.0050

File Name : Jodeco Rd & Blackhall Rd - Longwood Dr
Site Code : 00000000
Start Date : 10/15/2014
Page No : 1

Groups Printed- Cars - Trucks & Buses

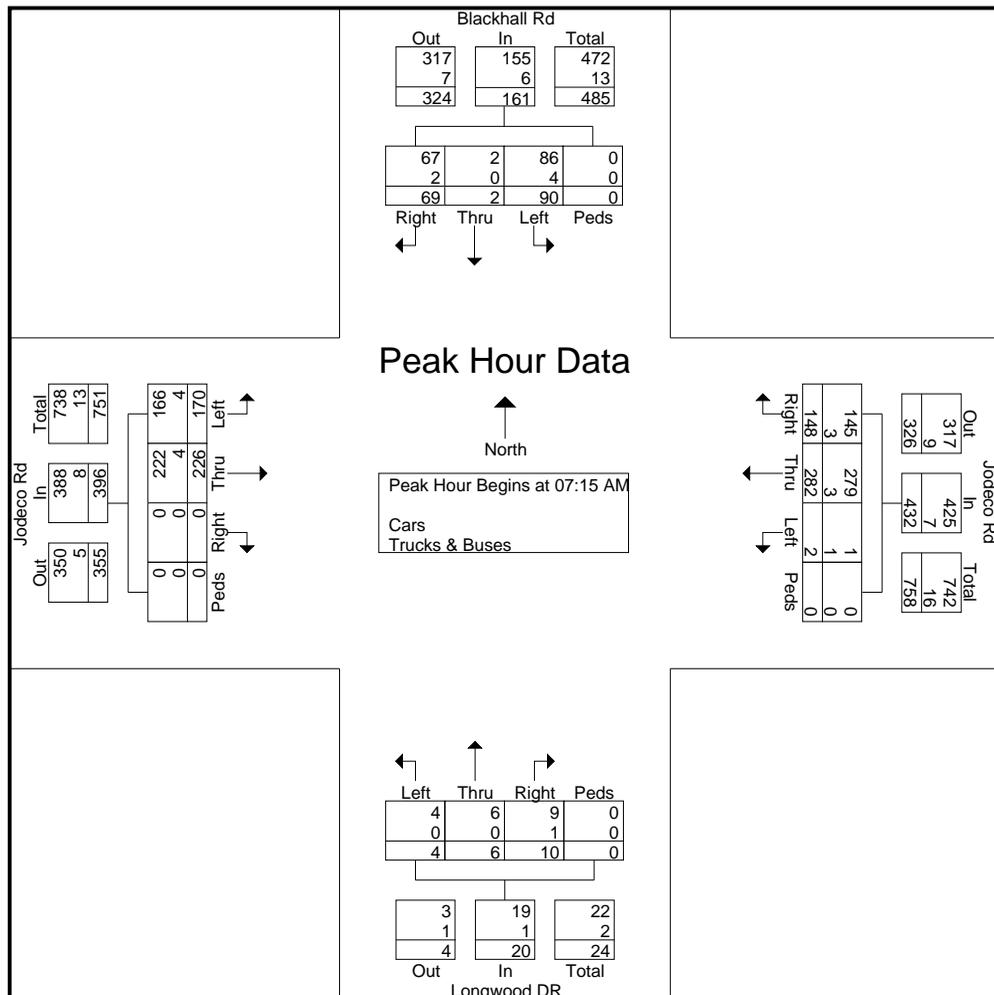
Start Time	Jodeco Rd EB				Jodeco Rd WB				Longwood DR NB				Blackhall Rd SB				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
07:00 AM	43	38	0	0	0	63	26	0	0	2	2	0	7	0	14	0	195
07:15 AM	42	49	0	0	1	51	22	0	0	0	6	0	17	0	13	0	201
07:30 AM	54	75	0	0	1	68	42	0	1	2	4	0	35	1	16	0	299
07:45 AM	40	53	0	0	0	75	40	0	3	3	0	0	16	1	26	0	257
Total	179	215	0	0	2	257	130	0	4	7	12	0	75	2	69	0	952
08:00 AM	34	49	0	0	0	88	44	0	0	1	0	0	22	0	14	0	252
08:15 AM	32	44	0	0	1	51	36	0	1	2	1	0	15	0	16	0	199
08:30 AM	28	53	1	0	1	54	25	0	0	1	2	0	11	0	16	0	192
08:45 AM	40	48	0	0	2	49	16	0	1	2	3	0	10	0	12	0	183
Total	134	194	1	0	4	242	121	0	2	6	6	0	58	0	58	0	826
09:00 AM	33	42	1	0	0	30	28	0	0	0	2	0	8	1	16	0	161
09:15 AM	34	34	0	0	1	30	10	0	0	0	1	0	9	0	8	0	127
09:30 AM	25	35	0	0	0	35	9	0	0	0	3	0	9	1	13	0	130
09:45 AM	22	36	0	0	0	43	19	0	0	1	1	0	12	0	11	0	145
Total	114	147	1	0	1	138	66	0	0	1	7	0	38	2	48	0	563
10:00 AM	20	49	1	0	0	38	9	0	0	2	2	0	8	0	10	0	139
10:15 AM	23	35	1	0	0	27	9	0	1	1	1	0	8	0	18	0	124
10:30 AM	26	37	0	0	1	36	9	0	0	0	3	0	19	1	11	0	143
10:45 AM	21	40	1	0	0	37	20	0	0	0	0	0	6	2	17	0	144
Total	90	161	3	0	1	138	47	0	1	3	6	0	41	3	56	0	550
11:00 AM	15	36	0	0	0	34	15	0	0	1	1	0	7	0	17	0	126
11:15 AM	17	29	1	0	0	24	18	0	2	2	0	0	8	0	15	0	116
11:30 AM	18	44	0	0	1	40	16	0	2	0	1	0	7	2	22	0	153
11:45 AM	18	36	0	0	0	31	13	0	1	0	1	0	8	1	18	0	127
Total	68	145	1	0	1	129	62	0	5	3	3	0	30	3	72	0	522
12:00 PM	29	41	0	0	2	45	16	0	0	2	2	0	21	0	14	0	172
12:15 PM	17	46	2	0	1	34	18	0	2	0	3	0	15	3	20	0	161
12:30 PM	21	53	2	0	3	37	21	0	0	1	2	0	20	0	17	0	177
12:45 PM	14	30	0	0	0	38	12	0	1	2	2	0	12	1	15	0	127
Total	81	170	4	0	6	154	67	0	3	5	9	0	68	4	66	0	637
01:00 PM	16	39	1	0	1	42	17	0	0	1	0	0	16	1	21	0	155
01:15 PM	16	52	2	0	1	39	16	0	0	0	1	0	18	4	22	0	171
01:30 PM	25	46	0	0	0	42	9	0	0	2	0	0	16	2	24	0	166
01:45 PM	19	45	2	0	1	43	21	0	1	2	0	0	10	2	20	0	166
Total	76	182	5	0	3	166	63	0	1	5	1	0	60	9	87	0	658
02:00 PM	16	59	0	0	1	47	18	0	0	2	1	0	13	1	22	0	180
02:15 PM	20	58	0	0	0	43	9	0	0	5	1	0	20	0	23	0	179
02:30 PM	19	42	1	0	2	39	23	0	1	0	0	0	24	3	19	0	173
02:45 PM	23	50	1	0	2	48	35	0	0	3	0	0	35	1	24	0	222
Total	78	209	2	0	5	177	85	0	1	10	2	0	92	5	88	0	754

Wilburn Engineering, LLC

931 Lower Fayetteville Road, Suite I
Newnan, GA, 30263
678.423.0050

File Name : Jodeco Rd & Blackhall Rd - Longwood Dr
Site Code : 00000000
Start Date : 10/15/2014
Page No : 3

Start Time	Jodeco Rd EB					Jodeco Rd WB					Longwood DR NB					Blackhall Rd SB					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	42	49	0	0	91	1	51	22	0	74	0	0	6	0	6	17	0	13	0	30	201
07:30 AM	54	75	0	0	129	1	68	42	0	111	1	2	4	0	7	35	1	16	0	52	299
07:45 AM	40	53	0	0	93	0	75	40	0	115	3	3	0	0	6	16	1	26	0	43	257
08:00 AM	34	49	0	0	83	0	88	44	0	132	0	1	0	0	1	22	0	14	0	36	252
Total Volume	170	226	0	0	396	2	282	148	0	432	4	6	10	0	20	90	2	69	0	161	1009
% App. Total	42.9	57.1	0	0		0.5	65.3	34.3	0		20	30	50	0		55.9	1.2	42.9	0		
PHF	.787	.753	.000	.000	.767	.500	.801	.841	.000	.818	.333	.500	.417	.000	.714	.643	.500	.663	.000	.774	.844
Cars	166	222	0	0	388	1	279	145	0	425	4	6	9	0	19	86	2	67	0	155	987
% Cars	97.6	98.2	0	0	98.0	50.0	98.9	98.0	0	98.4	100	100	90.0	0	95.0	95.6	100	97.1	0	96.3	97.8
Trucks & Buses	4	4	0	0	8	1	3	3	0	7	0	0	1	0	1	4	0	2	0	6	22
% Trucks & Buses	2.4	1.8	0	0	2.0	50.0	1.1	2.0	0	1.6	0	0	10.0	0	5.0	4.4	0	2.9	0	3.7	2.2

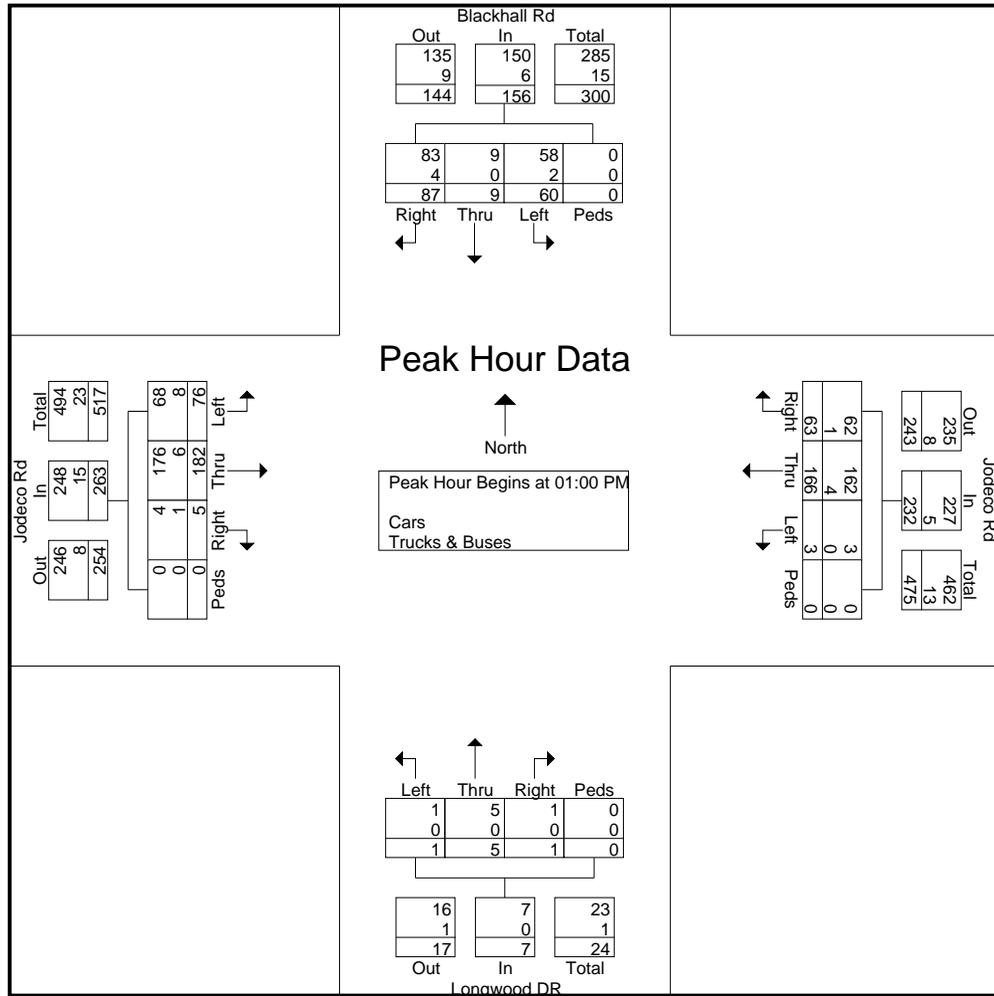


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678.423.0050

File Name : Jodeco Rd & Blackhall Rd - Longwood Dr
Site Code : 00000000
Start Date : 10/15/2014
Page No : 4

Start Time	Jodeco Rd EB					Jodeco Rd WB					Longwood DR NB					Blackhall Rd SB					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 01:00 PM																					
01:00 PM	16	39	1	0	56	1	42	17	0	60	0	1	0	0	1	16	1	21	0	38	155
01:15 PM	16	52	2	0	70	1	39	16	0	56	0	0	1	0	1	18	4	22	0	44	171
01:30 PM	25	46	0	0	71	0	42	9	0	51	0	2	0	0	2	16	2	24	0	42	166
01:45 PM	19	45	2	0	66	1	43	21	0	65	1	2	0	0	3	10	2	20	0	32	166
Total Volume	76	182	5	0	263	3	166	63	0	232	1	5	1	0	7	60	9	87	0	156	658
% App. Total	28.9	69.2	1.9	0		1.3	71.6	27.2	0		14.3	71.4	14.3	0		38.5	5.8	55.8	0		
PHF	.760	.875	.625	.000	.926	.750	.965	.750	.000	.892	.250	.625	.250	.000	.583	.833	.563	.906	.000	.886	.962
Cars	68	176	4	0	248	3	162	62	0	227	1	5	1	0	7	58	9	83	0	150	632
% Cars	89.5	96.7	80.0	0	94.3	100	97.6	98.4	0	97.8	100	100	100	0	100	96.7	100	95.4	0	96.2	96.0
Trucks & Buses	8	6	1	0	15	0	4	1	0	5	0	0	0	0	0	2	0	4	0	6	26
% Trucks & Buses	10.5	3.3	20.0	0	5.7	0	2.4	1.6	0	2.2	0	0	0	0	0	3.3	0	4.6	0	3.8	4.0

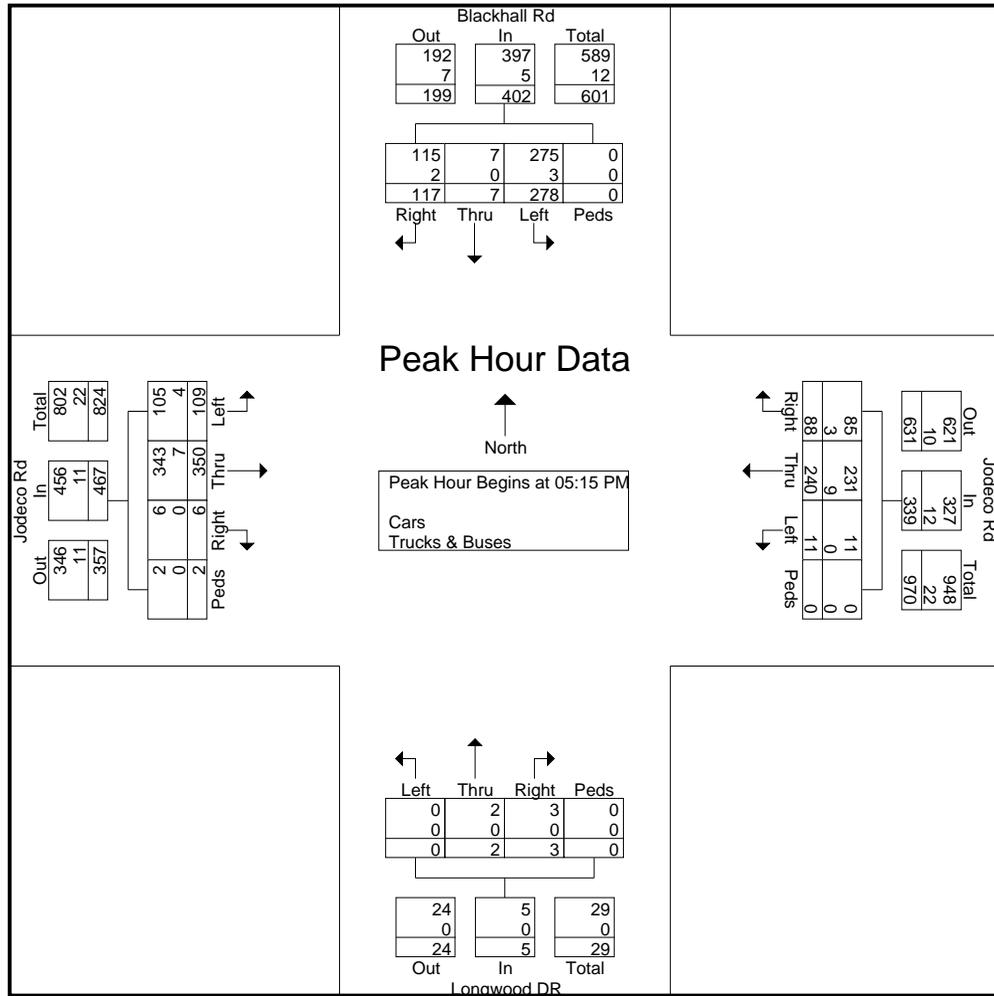


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678.423.0050

File Name : Jodeco Rd & Blackhall Rd - Longwood Dr
Site Code : 00000000
Start Date : 10/15/2014
Page No : 5

	Jodeco Rd EB					Jodeco Rd WB					Longwood DR NB					Blackhall Rd SB					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 06:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:15 PM																					
05:15 PM	28	112	0	0	140	2	55	18	0	75	0	1	2	0	3	59	2	29	0	90	308
05:30 PM	27	90	3	2	122	2	64	19	0	85	0	0	1	0	1	70	0	24	0	94	302
05:45 PM	26	76	1	0	103	2	76	21	0	99	0	1	0	0	1	67	2	19	0	88	291
06:00 PM	28	72	2	0	102	5	45	30	0	80	0	0	0	0	0	82	3	45	0	130	312
Total Volume	109	350	6	2	467	11	240	88	0	339	0	2	3	0	5	278	7	117	0	402	1213
% App. Total	23.3	74.9	1.3	0.4		3.2	70.8	26	0		0	40	60	0		69.2	1.7	29.1	0		
PHF	.973	.781	.500	.250	.834	.550	.789	.733	.000	.856	.000	.500	.375	.000	.417	.848	.583	.650	.000	.773	.972
Cars	105	343	6	2	456	11	231	85	0	327	0	2	3	0	5	275	7	115	0	397	1185
% Cars	96.3	98.0	100	100	97.6	100	96.3	96.6	0	96.5	0	100	100	0	100	98.9	100	98.3	0	98.8	97.7
Trucks & Buses	4	7	0	0	11	0	9	3	0	12	0	0	0	0	0	3	0	2	0	5	28
% Trucks & Buses	3.7	2.0	0	0	2.4	0	3.8	3.4	0	3.5	0	0	0	0	0	1.1	0	1.7	0	1.2	2.3



APPENDIX C
DAILY TRAFFIC VOLUMES

Wilburn Engineering, LLC

931 Lower Fayetteville Road, Suite I
Newnan, GA 30263
678.423.0050

Site Code: Jodeco Rd
Station ID:

Latitude: 0' 0.0000 Undefined

Start Time	13-Oct-14		14-Oct-14		15-Oct-14		16-Oct-14		17-Oct-14		Weekday Average		18-Oct-14		19-Oct-14	
	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
12:00 AM	*	*	*	*	*	*	27	31	*	*	27	31	*	*	*	*
01:00	*	*	*	*	*	*	16	19	*	*	16	19	*	*	*	*
02:00	*	*	*	*	*	*	6	13	*	*	6	13	*	*	*	*
03:00	*	*	*	*	*	*	14	7	*	*	14	7	*	*	*	*
04:00	*	*	*	*	*	*	26	12	*	*	26	12	*	*	*	*
05:00	*	*	*	*	*	*	98	61	*	*	98	61	*	*	*	*
06:00	*	*	*	*	*	*	203	172	*	*	203	172	*	*	*	*
07:00	*	*	*	*	*	*	383	296	*	*	383	296	*	*	*	*
08:00	*	*	*	*	*	*	277	273	*	*	277	273	*	*	*	*
09:00	*	*	*	*	*	*	238	206	*	*	238	206	*	*	*	*
10:00	*	*	*	*	*	*	246	196	*	*	246	196	*	*	*	*
11:00	*	*	*	*	*	*	269	222	*	*	269	222	*	*	*	*
12:00 PM	*	*	*	*	*	*	242	231	*	*	242	231	*	*	*	*
01:00	*	*	*	*	*	*	315	270	*	*	315	270	*	*	*	*
02:00	*	*	*	*	*	*	274	240	*	*	274	240	*	*	*	*
03:00	*	*	*	*	*	*	311	317	*	*	311	317	*	*	*	*
04:00	*	*	*	*	*	*	463	333	*	*	463	333	*	*	*	*
05:00	*	*	*	*	*	*	605	317	*	*	605	317	*	*	*	*
06:00	*	*	*	*	*	*	511	270	*	*	511	270	*	*	*	*
07:00	*	*	*	*	*	*	224	291	*	*	224	291	*	*	*	*
08:00	*	*	*	*	*	*	152	246	*	*	152	246	*	*	*	*
09:00	*	*	*	*	*	*	107	189	*	*	107	189	*	*	*	*
10:00	*	*	*	*	*	*	66	114	*	*	66	114	*	*	*	*
11:00	*	*	*	*	*	*	41	56	*	*	41	56	*	*	*	*
Total	0	0	0	0	0	0	5114	4382	0	0	5114	4382	0	0	0	0
Day	0	0	0	0	0	0	9496	9496	0	0	9496	9496	0	0	0	0
AM Peak	-	-	-	-	-	-	07:00	07:00	-	-	07:00	07:00	-	-	-	-
Vol.	-	-	-	-	-	-	383	296	-	-	383	296	-	-	-	-
PM Peak	-	-	-	-	-	-	17:00	16:00	-	-	17:00	16:00	-	-	-	-
Vol.	-	-	-	-	-	-	605	333	-	-	605	333	-	-	-	-

Comb. Total	0	0	0	9496	0	9496	0	0
ADT	ADT 9,496	AADT 9,496						

Wilburn Engineering, LLC

931 Lower Fayetteville Road, Suite I
Newnan, GA 30263
678.423.0050

Site Code: Jodeco Rd
Station ID:

Latitude: 0' 0.0000 Undefined

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
10/16/14	0	27	0	0	0	0	0	0	0	0	0	0	0	0	27
01:00	0	16	0	0	0	0	0	0	0	0	0	0	0	0	16
02:00	0	6	0	0	0	0	0	0	0	0	0	0	0	0	6
03:00	0	14	0	0	0	0	0	0	0	0	0	0	0	0	14
04:00	1	24	0	0	1	0	0	0	0	0	0	0	0	0	26
05:00	0	94	3	0	0	0	0	0	0	0	0	0	0	1	98
06:00	0	196	3	0	1	0	0	0	0	0	0	0	0	3	203
07:00	2	357	11	0	1	1	0	1	0	0	0	0	0	10	383
08:00	1	247	10	0	6	1	0	0	0	0	0	0	0	12	277
09:00	2	221	7	0	0	0	0	1	1	0	0	0	0	6	238
10:00	1	233	7	0	2	0	0	0	0	0	0	0	0	3	246
11:00	2	249	12	0	0	0	0	2	1	0	0	0	0	3	269
12 PM	1	227	5	0	1	1	0	0	0	0	0	1	0	6	242
13:00	0	292	9	0	0	1	0	1	0	0	0	0	0	12	315
14:00	2	258	5	0	1	1	0	0	1	0	0	0	0	6	274
15:00	1	292	10	0	2	0	0	0	0	0	0	0	0	6	311
16:00	5	431	10	0	2	0	0	1	0	0	0	0	0	14	463
17:00	8	571	8	0	1	1	0	3	1	0	0	0	0	12	605
18:00	1	483	14	0	2	1	0	0	0	0	0	0	0	10	511
19:00	4	209	9	0	0	0	0	0	0	0	0	0	0	2	224
20:00	1	142	7	0	1	0	0	0	0	0	0	0	0	1	152
21:00	0	102	1	0	0	0	0	1	1	0	0	0	0	2	107
22:00	1	64	0	0	0	0	0	0	0	0	0	0	0	1	66
23:00	0	41	0	0	0	0	0	0	0	0	0	0	0	0	41
Total	33	4796	131	0	21	7	0	10	5	0	0	1	0	110	5114
Percent	0.6%	93.8%	2.6%	0.0%	0.4%	0.1%	0.0%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	2.2%	
AM Peak	07:00	07:00	11:00		08:00	07:00		11:00	09:00					08:00	
Vol.	2	357	12		6	1		2	1					12	
PM Peak	17:00	17:00	18:00		15:00	12:00		17:00	14:00			12:00		16:00	
Vol.	8	571	14		2	1		3	1			1		14	
Grand Total	33	4796	131	0	21	7	0	10	5	0	0	1	0	110	5114
Percent	0.6%	93.8%	2.6%	0.0%	0.4%	0.1%	0.0%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	2.2%	

Wilburn Engineering, LLC

931 Lower Fayetteville Road, Suite I

Newnan, GA 30263

678.423.0050

Site Code: Jodeco Rd

Station ID:

Latitude: 0' 0.0000 Undefined

EB, WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
10/16/14	0	56	2	0	0	0	0	0	0	0	0	0	0	0	58
01:00	0	35	0	0	0	0	0	0	0	0	0	0	0	0	35
02:00	0	19	0	0	0	0	0	0	0	0	0	0	0	0	19
03:00	0	19	2	0	0	0	0	0	0	0	0	0	0	0	21
04:00	1	35	1	0	1	0	0	0	0	0	0	0	0	0	38
05:00	0	147	10	0	0	1	0	0	0	0	0	0	0	1	159
06:00	0	335	26	0	8	0	0	0	0	0	0	0	0	6	375
07:00	2	605	43	0	3	1	0	1	0	0	0	0	0	24	679
08:00	1	465	50	0	10	3	0	0	0	0	0	0	0	21	550
09:00	2	385	35	1	3	0	0	4	2	0	0	0	0	12	444
10:00	2	387	42	0	3	0	0	0	0	0	0	0	0	8	442
11:00	3	427	46	0	1	1	0	3	1	0	0	0	0	9	491
12 PM	3	414	41	1	3	1	0	1	0	0	0	1	0	8	473
13:00	0	499	59	0	3	1	0	1	0	0	1	0	0	21	585
14:00	6	454	33	0	4	1	0	2	1	0	0	0	0	13	514
15:00	1	566	35	0	7	0	0	0	0	0	0	0	0	19	628
16:00	5	708	43	0	6	1	0	1	0	0	0	0	0	32	796
17:00	12	835	35	0	2	2	0	4	1	0	0	0	0	31	922
18:00	4	708	44	0	2	2	0	0	0	0	0	0	0	21	781
19:00	8	462	35	0	0	0	0	2	0	0	0	0	0	8	515
20:00	1	360	30	0	1	0	0	0	0	0	0	0	0	6	398
21:00	1	270	14	0	2	1	0	1	1	0	0	0	0	6	296
22:00	2	166	11	0	0	0	0	0	0	0	0	0	0	1	180
23:00	0	94	3	0	0	0	0	0	0	0	0	0	0	0	97
Total	54	8451	640	2	59	15	0	20	6	0	1	1	0	247	9496
Percent	0.6%	89.0%	6.7%	0.0%	0.6%	0.2%	0.0%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	2.6%	
AM Peak	11:00	07:00	08:00	09:00	08:00	08:00		09:00	09:00					07:00	
Vol.	3	605	50	1	10	3		4	2					24	
PM Peak	17:00	17:00	13:00	12:00	15:00	17:00		17:00	14:00		13:00	12:00		16:00	
Vol.	12	835	59	1	7	2		4	1		1	1		32	
Grand Total	54	8451	640	2	59	15	0	20	6	0	1	1	0	247	9496
Percent	0.6%	89.0%	6.7%	0.0%	0.6%	0.2%	0.0%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	2.6%	

Wilburn Engineering, LLC

931 Lower Fayetteville Road, Suite I
Newnan, GA 30263
678.423.0050

Site Code: Jodeco Rd
Station ID:

Latitude: 0' 0.0000 Undefined

EB

Start Time	1	36	41	46	51	56	61	66	71	76	81	86	91	96	Total
	35	40	45	50	55	60	65	70	75	80	85	90	95	999	
10/16/14	10	8	8	1	0	0	0	0	0	0	0	0	0	0	27
01:00	8	5	2	0	1	0	0	0	0	0	0	0	0	0	16
02:00	4	0	2	0	0	0	0	0	0	0	0	0	0	0	6
03:00	7	4	3	0	0	0	0	0	0	0	0	0	0	0	14
04:00	9	12	5	0	0	0	0	0	0	0	0	0	0	0	26
05:00	43	37	13	5	0	0	0	0	0	0	0	0	0	0	98
06:00	154	43	6	0	0	0	0	0	0	0	0	0	0	0	203
07:00	287	79	16	1	0	0	0	0	0	0	0	0	0	0	383
08:00	194	67	16	0	0	0	0	0	0	0	0	0	0	0	277
09:00	119	91	27	1	0	0	0	0	0	0	0	0	0	0	238
10:00	133	91	20	2	0	0	0	0	0	0	0	0	0	0	246
11:00	155	93	19	2	0	0	0	0	0	0	0	0	0	0	269
12 PM	141	87	14	0	0	0	0	0	0	0	0	0	0	0	242
13:00	180	106	28	0	1	0	0	0	0	0	0	0	0	0	315
14:00	167	89	16	2	0	0	0	0	0	0	0	0	0	0	274
15:00	162	120	26	3	0	0	0	0	0	0	0	0	0	0	311
16:00	326	124	13	0	0	0	0	0	0	0	0	0	0	0	463
17:00	460	128	17	0	0	0	0	0	0	0	0	0	0	0	605
18:00	354	143	14	0	0	0	0	0	0	0	0	0	0	0	511
19:00	150	55	17	2	0	0	0	0	0	0	0	0	0	0	224
20:00	100	39	12	1	0	0	0	0	0	0	0	0	0	0	152
21:00	62	37	8	0	0	0	0	0	0	0	0	0	0	0	107
22:00	33	19	11	3	0	0	0	0	0	0	0	0	0	0	66
23:00	16	15	10	0	0	0	0	0	0	0	0	0	0	0	41
Total	3274	1492	323	23	2	0	5114								
Grand Total	3274	1492	323	23	2	0	5114								

15th Percentile : 11 MPH
 50th Percentile : 21 MPH
 85th Percentile : 33 MPH
 95th Percentile : 38 MPH

Statistics Mean Speed(Average) : 22 MPH
 10 MPH Pace Speed : 15-24 MPH
 Number in Pace : 1844
 Percent in Pace : 36.1%
 Number of Vehicles > 45 MPH : 25
 Percent of Vehicles > 45 MPH : 0.5%

Wilburn Engineering, LLC

931 Lower Fayetteville Road, Suite I
Newnan, GA 30263
678.423.0050

Site Code: Jodeco Rd
Station ID:

Latitude: 0' 0.0000 Undefined

WB

Start Time	1	36	41	46	51	56	61	66	71	76	81	86	91	96	Total
	35	40	45	50	55	60	65	70	75	80	85	90	95	999	
10/16/14	18	5	4	4	0	0	0	0	0	0	0	0	0	0	31
01:00	9	2	5	2	1	0	0	0	0	0	0	0	0	0	19
02:00	7	3	1	2	0	0	0	0	0	0	0	0	0	0	13
03:00	5	1	0	1	0	0	0	0	0	0	0	0	0	0	7
04:00	2	4	4	1	0	1	0	0	0	0	0	0	0	0	12
05:00	10	13	22	15	1	0	0	0	0	0	0	0	0	0	61
06:00	42	58	53	14	5	0	0	0	0	0	0	0	0	0	172
07:00	128	82	66	19	1	0	0	0	0	0	0	0	0	0	296
08:00	93	82	83	15	0	0	0	0	0	0	0	0	0	0	273
09:00	78	48	56	18	6	0	0	0	0	0	0	0	0	0	206
10:00	71	49	50	25	1	0	0	0	0	0	0	0	0	0	196
11:00	88	64	57	12	1	0	0	0	0	0	0	0	0	0	222
12 PM	95	73	51	11	1	0	0	0	0	0	0	0	0	0	231
13:00	98	91	65	16	0	0	0	0	0	0	0	0	0	0	270
14:00	105	68	51	14	2	0	0	0	0	0	0	0	0	0	240
15:00	173	90	48	5	1	0	0	0	0	0	0	0	0	0	317
16:00	184	84	50	15	0	0	0	0	0	0	0	0	0	0	333
17:00	187	77	44	7	1	1	0	0	0	0	0	0	0	0	317
18:00	130	77	50	13	0	0	0	0	0	0	0	0	0	0	270
19:00	158	86	35	7	5	0	0	0	0	0	0	0	0	0	291
20:00	147	52	39	8	0	0	0	0	0	0	0	0	0	0	246
21:00	84	60	33	11	1	0	0	0	0	0	0	0	0	0	189
22:00	51	27	23	9	4	0	0	0	0	0	0	0	0	0	114
23:00	25	9	16	6	0	0	0	0	0	0	0	0	0	0	56
Total	1988	1205	906	250	31	2	0	4382							
Grand Total	1988	1205	906	250	31	2	0	4382							

15th Percentile : 12 MPH
 50th Percentile : 23 MPH
 85th Percentile : 37 MPH
 95th Percentile : 43 MPH

Statistics Mean Speed(Average) : 25 MPH
 10 MPH Pace Speed : 16-25 MPH
 Number in Pace : 1376
 Percent in Pace : 31.4%
 Number of Vehicles > 45 MPH : 283
 Percent of Vehicles > 45 MPH : 6.5%

Wilburn Engineering, LLC

931 Lower Fayetteville Road, Suite I
Newnan, GA 30263
678.423.0050

Site Code: Jodeco Rd
Station ID:

Latitude: 0' 0.0000 Undefined

EB, WB

Start Time	1	36	41	46	51	56	61	66	71	76	81	86	91	96	Total
	35	40	45	50	55	60	65	70	75	80	85	90	95	999	
10/16/14	28	13	12	5	0	0	0	0	0	0	0	0	0	0	58
01:00	17	7	7	2	2	0	0	0	0	0	0	0	0	0	35
02:00	11	3	3	2	0	0	0	0	0	0	0	0	0	0	19
03:00	12	5	3	1	0	0	0	0	0	0	0	0	0	0	21
04:00	11	16	9	1	0	1	0	0	0	0	0	0	0	0	38
05:00	53	50	35	20	1	0	0	0	0	0	0	0	0	0	159
06:00	196	101	59	14	5	0	0	0	0	0	0	0	0	0	375
07:00	415	161	82	20	1	0	0	0	0	0	0	0	0	0	679
08:00	287	149	99	15	0	0	0	0	0	0	0	0	0	0	550
09:00	197	139	83	19	6	0	0	0	0	0	0	0	0	0	444
10:00	204	140	70	27	1	0	0	0	0	0	0	0	0	0	442
11:00	243	157	76	14	1	0	0	0	0	0	0	0	0	0	491
12 PM	236	160	65	11	1	0	0	0	0	0	0	0	0	0	473
13:00	278	197	93	16	1	0	0	0	0	0	0	0	0	0	585
14:00	272	157	67	16	2	0	0	0	0	0	0	0	0	0	514
15:00	335	210	74	8	1	0	0	0	0	0	0	0	0	0	628
16:00	510	208	63	15	0	0	0	0	0	0	0	0	0	0	796
17:00	647	205	61	7	1	1	0	0	0	0	0	0	0	0	922
18:00	484	220	64	13	0	0	0	0	0	0	0	0	0	0	781
19:00	308	141	52	9	5	0	0	0	0	0	0	0	0	0	515
20:00	247	91	51	9	0	0	0	0	0	0	0	0	0	0	398
21:00	146	97	41	11	1	0	0	0	0	0	0	0	0	0	296
22:00	84	46	34	12	4	0	0	0	0	0	0	0	0	0	180
23:00	41	24	26	6	0	0	0	0	0	0	0	0	0	0	97
Total	5262	2697	1229	273	33	2	0	9496							
Grand Total	5262	2697	1229	273	33	2	0	9496							

15th Percentile : 11 MPH
 50th Percentile : 22 MPH
 85th Percentile : 35 MPH
 95th Percentile : 40 MPH

Statistics
 Mean Speed(Average) : 23 MPH
 10 MPH Pace Speed : 15-24 MPH
 Number in Pace : 3236
 Percent in Pace : 34.1%
 Number of Vehicles > 45 MPH : 308
 Percent of Vehicles > 45 MPH : 3.2%

Wilburn Engineering, LLC

931 Lower Fayetteville Road, Suite I
Newnan, GA 30263
678.423.0050

Site Code: Blackhall Rd
Station ID:

Latitude: 0' 0.0000 Undefined

Start Time	13-Oct-14		14-Oct-14		15-Oct-14		16-Oct-14		17-Oct-14		Weekday Average		18-Oct-14		19-Oct-14	
	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB
12:00 AM	*	*	*	*	*	*	9	31	*	*	9	31	*	*	*	*
01:00	*	*	*	*	*	*	6	13	*	*	6	13	*	*	*	*
02:00	*	*	*	*	*	*	8	15	*	*	8	15	*	*	*	*
03:00	*	*	*	*	*	*	10	11	*	*	10	11	*	*	*	*
04:00	*	*	*	*	*	*	20	11	*	*	20	11	*	*	*	*
05:00	*	*	*	*	*	*	86	23	*	*	86	23	*	*	*	*
06:00	*	*	*	*	*	*	215	80	*	*	215	80	*	*	*	*
07:00	*	*	*	*	*	*	266	171	*	*	266	171	*	*	*	*
08:00	*	*	*	*	*	*	253	112	*	*	253	112	*	*	*	*
09:00	*	*	*	*	*	*	150	107	*	*	150	107	*	*	*	*
10:00	*	*	*	*	*	*	149	119	*	*	149	119	*	*	*	*
11:00	*	*	*	*	*	*	153	122	*	*	153	122	*	*	*	*
12:00 PM	*	*	*	*	*	*	84	244	*	*	84	244	*	*	*	*
01:00	*	*	*	*	*	*	53	367	*	*	53	367	*	*	*	*
02:00	*	*	*	*	*	*	168	193	*	*	168	193	*	*	*	*
03:00	*	*	*	*	*	*	194	259	*	*	194	259	*	*	*	*
04:00	*	*	*	*	*	*	189	404	*	*	189	404	*	*	*	*
05:00	*	*	*	*	*	*	193	522	*	*	193	522	*	*	*	*
06:00	*	*	*	*	*	*	202	426	*	*	202	426	*	*	*	*
07:00	*	*	*	*	*	*	145	202	*	*	145	202	*	*	*	*
08:00	*	*	*	*	*	*	102	159	*	*	102	159	*	*	*	*
09:00	*	*	*	*	*	*	79	115	*	*	79	115	*	*	*	*
10:00	*	*	*	*	*	*	35	81	*	*	35	81	*	*	*	*
11:00	*	*	*	*	*	*	20	42	*	*	20	42	*	*	*	*
Total	0	0	0	0	0	0	2789	3829	0	0	2789	3829	0	0	0	0
Day	0	0	0	0	0	0	6618	6618	0	0	6618	6618	0	0	0	0
AM Peak	-	-	-	-	-	-	07:00	07:00	-	-	07:00	07:00	-	-	-	-
Vol.	-	-	-	-	-	-	266	171	-	-	266	171	-	-	-	-
PM Peak	-	-	-	-	-	-	18:00	17:00	-	-	18:00	17:00	-	-	-	-
Vol.	-	-	-	-	-	-	202	522	-	-	202	522	-	-	-	-

Comb. Total	0	0	0	6618	0	6618	0	0
ADT	ADT 6,618	AADT 6,618						

Wilburn Engineering, LLC

931 Lower Fayetteville Road, Suite I

Newnan, GA 30263

678.423.0050

Site Code: Blackhall Rd

Station ID:

Latitude: 0' 0.0000 Undefined

SB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
10/16/14	24	7	0	0	0	0	0	0	0	0	0	0	0	0	31
01:00	10	3	0	0	0	0	0	0	0	0	0	0	0	0	13
02:00	10	5	0	0	0	0	0	0	0	0	0	0	0	0	15
03:00	4	5	0	0	0	0	0	0	0	0	0	0	0	2	11
04:00	7	2	0	0	0	0	0	0	2	0	0	0	0	0	11
05:00	11	9	0	0	0	0	0	0	0	0	0	0	0	3	23
06:00	13	30	1	0	1	0	0	0	0	0	0	0	0	35	80
07:00	83	49	2	0	0	0	0	0	0	0	0	0	0	37	171
08:00	55	39	2	0	3	1	0	0	0	0	0	0	0	12	112
09:00	67	30	0	0	2	1	0	0	0	0	0	0	0	7	107
10:00	63	43	1	0	0	0	0	0	0	0	0	0	0	12	119
11:00	80	32	0	0	1	0	0	0	0	0	0	0	0	9	122
12 PM	71	11	1	0	1	0	0	0	0	0	0	0	0	160	244
13:00	43	16	0	0	2	0	0	0	0	0	0	0	0	306	367
14:00	2	159	15	0	2	0	0	1	0	0	0	0	0	14	193
15:00	4	209	26	0	7	1	0	0	0	0	0	0	0	12	259
16:00	1	347	33	0	5	1	0	1	0	0	0	0	0	16	404
17:00	16	352	29	0	2	9	0	1	1	0	0	0	1	111	522
18:00	52	232	19	0	1	10	0	0	0	0	0	0	0	112	426
19:00	134	52	0	0	0	0	0	0	0	0	0	0	0	16	202
20:00	114	37	0	0	0	1	0	0	0	0	0	0	0	7	159
21:00	58	46	0	0	0	0	0	0	0	0	0	0	0	11	115
22:00	54	26	0	0	0	0	0	0	0	0	0	0	0	1	81
23:00	29	10	0	0	0	0	0	0	0	0	0	0	0	3	42
Total	1005	1751	129	0	27	24	0	3	3	0	0	0	1	886	3829
Percent	26.2%	45.7%	3.4%	0.0%	0.7%	0.6%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	23.1%	
AM Peak	07:00	07:00	07:00		08:00	08:00			04:00						07:00
Vol.	83	49	2		3	1			2					37	
PM Peak	19:00	17:00	16:00		15:00	18:00		14:00	17:00				17:00	13:00	
Vol.	134	352	33		7	10		1	1				1	306	
Grand Total	1005	1751	129	0	27	24	0	3	3	0	0	0	1	886	3829
Percent	26.2%	45.7%	3.4%	0.0%	0.7%	0.6%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	23.1%	

Wilburn Engineering, LLC

931 Lower Fayetteville Road, Suite I
Newnan, GA 30263
678.423.0050

Site Code: Blackhall Rd
Station ID:

Latitude: 0' 0.0000 Undefined

NB

Start Time	1	36	41	46	51	56	61	66	71	76	81	86	91	96	Total
	35	40	45	50	55	60	65	70	75	80	85	90	95	999	
10/16/14	0	0	1	4	2	1	0	1	0	0	0	0	0	0	9
01:00	0	0	0	1	1	1	1	2	0	0	0	0	0	0	6
02:00	0	0	0	0	3	2	1	1	1	0	0	0	0	0	8
03:00	3	0	1	0	1	1	3	1	0	0	0	0	0	0	10
04:00	2	0	1	4	7	4	1	0	0	0	1	0	0	0	20
05:00	0	0	3	5	18	18	17	15	4	4	2	0	0	0	86
06:00	27	3	3	16	39	53	44	21	7	2	0	0	0	0	215
07:00	35	4	9	42	61	57	38	14	4	2	0	0	0	0	266
08:00	22	9	21	54	55	54	27	9	1	1	0	0	0	0	253
09:00	6	3	13	28	43	33	14	7	2	0	0	0	1	0	150
10:00	12	4	9	46	36	23	13	2	2	1	0	0	1	0	149
11:00	13	8	12	39	50	22	6	3	0	0	0	0	0	0	153
12 PM	44	2	5	10	10	2	3	2	2	2	1	0	1	0	84
13:00	44	1	2	2	2	1	1	0	0	0	0	0	0	0	53
14:00	23	21	51	54	16	3	0	0	0	0	0	0	0	0	168
15:00	16	26	83	53	14	2	0	0	0	0	0	0	0	0	194
16:00	25	35	65	51	9	3	0	0	0	1	0	0	0	0	189
17:00	78	28	63	17	6	1	0	0	0	0	0	0	0	0	193
18:00	69	19	45	37	13	9	5	5	0	0	0	0	0	0	202
19:00	16	4	22	31	30	18	18	2	2	1	1	0	0	0	145
20:00	18	7	8	19	23	16	6	3	1	0	0	0	0	1	102
21:00	10	3	7	15	17	13	7	4	2	0	0	0	1	0	79
22:00	3	1	4	7	8	8	3	0	1	0	0	0	0	0	35
23:00	3	1	0	0	9	2	3	1	0	1	0	0	0	0	20
Total	469	179	428	535	473	347	211	93	29	15	5	0	4	1	2789
Grand Total	469	179	428	535	473	347	211	93	29	15	5	0	4	1	2789

15th Percentile : 15 MPH
 50th Percentile : 38 MPH
 85th Percentile : 55 MPH
 95th Percentile : 63 MPH

Statistics Mean Speed(Average) : 37 MPH
 10 MPH Pace Speed : 44-53 MPH
 Number in Pace : 632
 Percent in Pace : 22.7%
 Number of Vehicles > 45 MPH : 1713
 Percent of Vehicles > 45 MPH : 61.4%

Wilburn Engineering, LLC

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Latitude: 0' 0.0000 Undefined

SB

Start Time	1	36	41	46	51	56	61	66	71	76	81	86	91	96	Total
	35	40	45	50	55	60	65	70	75	80	85	90	95	999	
10/16/14	30	1	0	0	0	0	0	0	0	0	0	0	0	0	31
01:00	13	0	0	0	0	0	0	0	0	0	0	0	0	0	13
02:00	12	2	1	0	0	0	0	0	0	0	0	0	0	0	15
03:00	10	1	0	0	0	0	0	0	0	0	0	0	0	0	11
04:00	8	2	1	0	0	0	0	0	0	0	0	0	0	0	11
05:00	18	4	1	0	0	0	0	0	0	0	0	0	0	0	23
06:00	73	4	3	0	0	0	0	0	0	0	0	0	0	0	80
07:00	155	15	1	0	0	0	0	0	0	0	0	0	0	0	171
08:00	101	9	2	0	0	0	0	0	0	0	0	0	0	0	112
09:00	102	3	2	0	0	0	0	0	0	0	0	0	0	0	107
10:00	113	5	1	0	0	0	0	0	0	0	0	0	0	0	119
11:00	117	5	0	0	0	0	0	0	0	0	0	0	0	0	122
12 PM	236	3	2	1	1	0	0	1	0	0	0	0	0	0	244
13:00	353	8	4	0	0	1	0	1	0	0	0	0	0	0	367
14:00	50	50	73	20	0	0	0	0	0	0	0	0	0	0	193
15:00	55	71	92	35	6	0	0	0	0	0	0	0	0	0	259
16:00	120	115	119	48	2	0	0	0	0	0	0	0	0	0	404
17:00	417	56	37	12	0	0	0	0	0	0	0	0	0	0	522
18:00	362	19	30	11	4	0	0	0	0	0	0	0	0	0	426
19:00	199	3	0	0	0	0	0	0	0	0	0	0	0	0	202
20:00	156	3	0	0	0	0	0	0	0	0	0	0	0	0	159
21:00	110	4	1	0	0	0	0	0	0	0	0	0	0	0	115
22:00	79	2	0	0	0	0	0	0	0	0	0	0	0	0	81
23:00	39	3	0	0	0	0	0	0	0	0	0	0	0	0	42
Total	2928	388	370	127	13	1	0	2	0	0	0	0	0	0	3829
Grand Total	2928	388	370	127	13	1	0	2	0	0	0	0	0	0	3829

15th Percentile : 10 MPH
 50th Percentile : 19 MPH
 85th Percentile : 30 MPH
 95th Percentile : 38 MPH

Statistics Mean Speed(Average) : 21 MPH
 10 MPH Pace Speed : 14-23 MPH
 Number in Pace : 1564
 Percent in Pace : 40.8%
 Number of Vehicles > 45 MPH : 143
 Percent of Vehicles > 45 MPH : 3.7%

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NB, SB	1	36	41	46	51	56	61	66	71	76	81	86	91	96	Total
Start Time	35	40	45	50	55	60	65	70	75	80	85	90	95	999	
10/16/14	30	1	1	4	2	1	0	1	0	0	0	0	0	0	40
01:00	13	0	0	1	1	1	1	2	0	0	0	0	0	0	19
02:00	12	2	1	0	3	2	1	1	1	0	0	0	0	0	23
03:00	13	1	1	0	1	1	3	1	0	0	0	0	0	0	21
04:00	10	2	2	4	7	4	1	0	0	0	1	0	0	0	31
05:00	18	4	4	5	18	18	17	15	4	4	2	0	0	0	109
06:00	100	7	6	16	39	53	44	21	7	2	0	0	0	0	295
07:00	190	19	10	42	61	57	38	14	4	2	0	0	0	0	437
08:00	123	18	23	54	55	54	27	9	1	1	0	0	0	0	365
09:00	108	6	15	28	43	33	14	7	2	0	0	0	1	0	257
10:00	125	9	10	46	36	23	13	2	2	1	0	0	1	0	268
11:00	130	13	12	39	50	22	6	3	0	0	0	0	0	0	275
12 PM	280	5	7	11	11	2	3	3	2	2	1	0	1	0	328
13:00	397	9	6	2	2	2	1	1	0	0	0	0	0	0	420
14:00	73	71	124	74	16	3	0	0	0	0	0	0	0	0	361
15:00	71	97	175	88	20	2	0	0	0	0	0	0	0	0	453
16:00	145	150	184	99	11	3	0	0	0	1	0	0	0	0	593
17:00	495	84	100	29	6	1	0	0	0	0	0	0	0	0	715
18:00	431	38	75	48	17	9	5	5	0	0	0	0	0	0	628
19:00	215	7	22	31	30	18	18	2	2	1	1	0	0	0	347
20:00	174	10	8	19	23	16	6	3	1	0	0	0	0	1	261
21:00	120	7	8	15	17	13	7	4	2	0	0	0	1	0	194
22:00	82	3	4	7	8	8	3	0	1	0	0	0	0	0	116
23:00	42	4	0	0	9	2	3	1	0	1	0	0	0	0	62
Total	3397	567	798	662	486	348	211	95	29	15	5	0	4	1	6618
Grand Total	3397	567	798	662	486	348	211	95	29	15	5	0	4	1	6618

15th Percentile : 11 MPH
 50th Percentile : 21 MPH
 85th Percentile : 40 MPH
 95th Percentile : 53 MPH

Statistics Mean Speed(Average) : 25 MPH
 10 MPH Pace Speed : 14-23 MPH
 Number in Pace : 2335
 Percent in Pace : 35.3%
 Number of Vehicles > 45 MPH : 1856
 Percent of Vehicles > 45 MPH : 28.0%

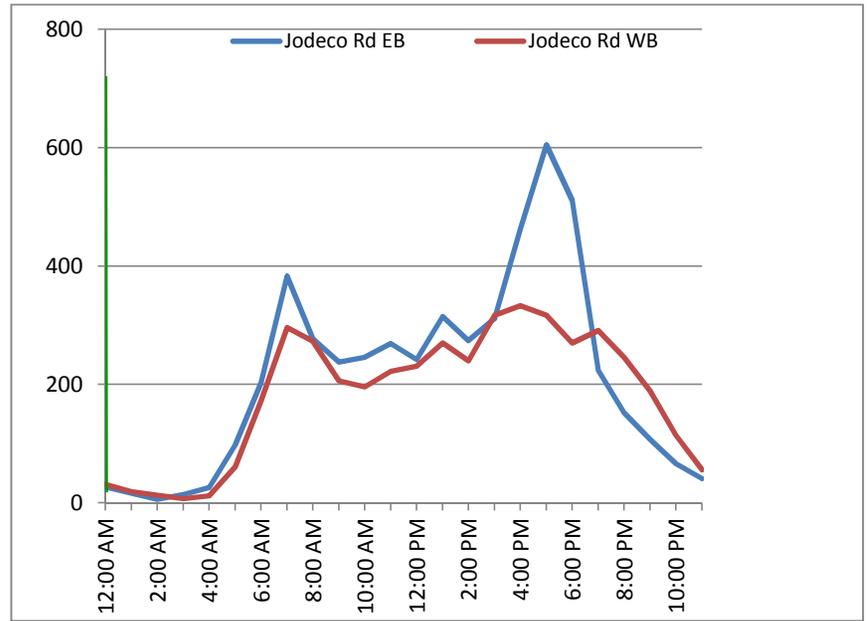
Hour	Jodeco Rd EB	Jodeco Rd WB	TOTAL
12:00 AM	27	31	58
1:00 AM	16	19	35
2:00 AM	6	13	19
3:00 AM	14	7	21
4:00 AM	26	12	38
5:00 AM	98	61	159
6:00 AM	203	172	375
7:00 AM	383	296	679
8:00 AM	277	273	550
9:00 AM	238	206	444
10:00 AM	246	196	442
11:00 AM	269	222	491
12:00 PM	242	231	473
1:00 PM	315	270	585
2:00 PM	274	240	514
3:00 PM	311	317	628
4:00 PM	463	333	796
5:00 PM	605	317	922
6:00 PM	511	270	781
7:00 PM	224	291	515
8:00 PM	152	246	398
9:00 PM	107	189	296
10:00 PM	66	114	180
11:00 PM	41	56	97

5114 4382 9496

7820

K =

Location: Jodeco Road



9.71%

D = 65.6%

922
9496
9.7%

Location: Blackhall Road

Hour	Blackhall Rd NB	Blackhall Rd SB	TOTAL
12:00 AM	9	31	40
1:00 AM	6	13	19
2:00 AM	8	15	23
3:00 AM	10	11	21
4:00 AM	20	11	31
5:00 AM	86	23	109
6:00 AM	215	80	295
7:00 AM	266	171	437
8:00 AM	253	112	365
9:00 AM	150	107	257
10:00 AM	149	119	268
11:00 AM	153	122	275
12:00 PM	84	244	328
1:00 PM	53	367	420
2:00 PM	168	193	361
3:00 PM	194	259	453
4:00 PM	189	404	593
5:00 PM	193	522	715
6:00 PM	202	426	628
7:00 PM	145	202	347
8:00 PM	102	159	261
9:00 PM	79	115	194
10:00 PM	35	81	116
11:00 PM	20	42	62

82%

5447

2789

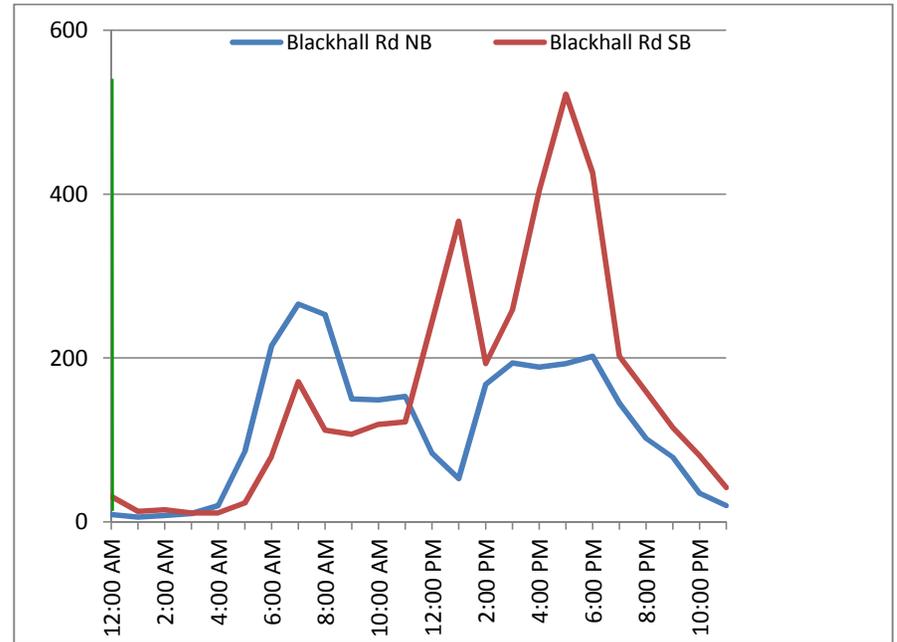
3829

6618

K =

10.80%

715
6618
10.8%



D = 73.0%

APPENDIX D
CRASH DATA

CRASH DATA

2010

AccidentNo	Date	Time	Route	IntersectingRoute	Injuries	Fatalities	MannerOfCollision	FirstHarmfulEvent	Light	Surface	DirVeh1	DirVeh2	MnvrVeh1	MnvrVeh2
3479934	3/11/2010	18:27:00	JODECO RD	BLACKHALL RD	2	0	Angle	Motor Vehicle In Motion	Dusk	Wet	East	Southeast	Turning Left	Straight
184294	3/19/2010	15:33:00	JODECO RD	BLACKHALL RD	2	0	Head On	Motor Vehicle In Motion	Daylight	Dry	East	West	Turning Left	Straight
3501621	4/23/2010	8:50:00	BLACK HALL RD	JODECO RD	1	0	Rear End	Motor Vehicle In Motion	Daylight	Dry	Northeast	Northeast	Straight	Turning Right
2601035	5/2/2010	14:40:00	BLACKHALL RD	JODECO RD	0	0	Angle	Motor Vehicle In Motion	Daylight	Dry	Northeast	West	Turning Left	Straight
3541894	7/11/2010	14:03:00	W JODECO RD	BLACKHALL RD	0	0	Sideswipe-Opposite Direction	Motor Vehicle In Motion	Daylight	Dry	Northeast	North	Straight	Turning Left
3455224	8/3/2010	17:26:00	JODECO RD	BLACKHALL RD	0	0	Rear End	Motor Vehicle In Motion	Daylight	Dry	West	West	Straight	Stopped
3690211	9/7/2010	17:23:00	BLACK HALL RD	JODECO RD	0	0	Rear End	Motor Vehicle In Motion	Daylight	Dry	South	South	Straight	Stopped
3550689	11/28/2010	17:30:00	BLACKHALL RD	JODECO RD	0	0	Angle	Motor Vehicle In Motion	Dark-Not Lighted	Dry	Southeast	North	Turning Left	Turning Left
3717299	11/30/2010	15:43:00	JODECO RD	BLACKHALL RD	0	0	Angle	Motor Vehicle In Motion	Daylight	Wet	South	West	Turning Left	Straight
3568480	12/23/2010	18:07:00	BLACKHALL RD	JODECO RD	0	0	Rear End	Motor Vehicle In Motion	Dark-Not Lighted	Dry	South	South	Straight	Stopped

2011

AccidentNo	Date	Time	Route	IntersectingRoute	Injuries	Fatalities	MannerOfCollision	FirstHarmfulEvent	Light	Surface	DirVeh1	DirVeh2	MnvrVeh1	MnvrVeh2
3608950	2/1/2011	8:23:00	JODECO RD	BLACKHALL RD	1	0	Rear End	Motor Vehicle In Motion	Daylight	Wet	West	West	Straight	Straight
3619788	2/16/2011	14:41:00	JODECO RD	BLACKHALL RD	2	0	Angle	Motor Vehicle In Motion	Daylight	Dry	South	East	Straight	Stopped
3633116	2/18/2011	15:43:00	JODECO RD	BLACK HALL RD	0	0	Rear End	Motor Vehicle In Motion	Daylight	Dry	East	East	Straight	Stopped
3637724	2/24/2011	19:34:00	JODECO RD	BLACKHALL RD	0	0	Not A Collision with Motor Vehicle	Animal	Dark-Not Lighted	Dry	East		Straight	
3676945	2/25/2011	8:05:00	JODECO RD	BLACKHALL RD	0	0	Head On	Motor Vehicle In Motion	Daylight	Wet	South	West	Straight	Straight
3739263	5/4/2011	0:10:00	JODECO RD	BLACKHALL RD	0	0	Not A Collision with Motor Vehicle	Ditch	Dark-Not Lighted	Wet				
3829163	8/1/2011	16:28:00	JODECO RD	BLACK HALL RD	1	0	Not A Collision with Motor Vehicle	Tree	Daylight	Dry	East		Straight	
3868357	7/30/2011	19:30:00	JODECO RD	BLACKHALL RD	0	0	Not A Collision with Motor Vehicle	Deer	Daylight	Wet	South		Straight	
3875602	8/12/2011	16:40:00	BLACKHALL RD	JODECO RD	0	0	Rear End	Motor Vehicle In Motion	Daylight	Dry	South	South	Turning Right	Turning Right

2012

AccidentNo	Date	Time	Route	IntersectingRoute	Injuries	Fatalities	MannerOfCollision	FirstHarmfulEvent	Light	Surface	DirVeh1	DirVeh2	MnvrVeh1	MnvrVeh2
4040459	3/25/2012	15:12:00	JODECO RD	BLACKHALL RD	1	0	Angle	Motor Vehicle In Motion	Daylight	Dry	South	East	Turning Left	Straight
4043816	3/29/2012	16:47:00	JODECO RD	BLACKHALL RD	0	0	Sideswipe-Opposite Direction	Motor Vehicle In Motion	Daylight	Dry	West	East	Straight	Straight
4104582	4/7/2012	22:57:00	JODECO RD	BLACKHALL RD	2	0	Angle	Motor Vehicle In Motion	Dark-Not Lighted	Dry	East	West	Turning Left	Straight
4106009	5/18/2012	5:00:00	JODECO RD	BLACKHALL RD	0	0	Not A Collision with Motor Vehicle	Animal	Dark-Not Lighted	Dry	West		Straight	
4151305	7/18/2012	18:30:00	JODECO RD	BLACKHALL RD	0	0	Not A Collision with Motor Vehicle	Tree	Daylight	Wet	West		Straight	
4253309	11/8/2012	17:54:00	BLACKHALL RD	JODECO RD	3	0	Rear End	Motor Vehicle In Motion	Dusk	Dry	South	South	Straight	Stopped
4330777	12/20/2012	16:40:00	BLACKHALL RD	JODECO RD	1	0	Rear End	Motor Vehicle In Motion	Daylight	Dry	South	South	Straight	Straight
4330780	12/22/2012	17:40:00	BLACKHALL RD	JODECO RD	1	0	Rear End	Motor Vehicle In Motion	Daylight	Wet	None	None		

2013

AccidentNo	Date	Time	Route	IntersectingRoute	Injuries	Fatalities	MannerOfCollision	FirstHarmfulEvent	Light	Surface	DirVeh1	DirVeh2	MnvrVeh1	MnvrVeh2
4368868	2/27/2013	14:40:00	WEST JODECO RD	BLACKHALL RD	0	0	Angle	Motor Vehicle In Motion	Daylight	Dry	South	North	Turning Left	Turning Left
4387918	3/20/2013	6:27:00	JODECO RD	BLACKHALL RD	2	0	Rear End	Motor Vehicle In Motion	Dark-Not Lighted	Dry	East	East	Straight	Stopped
4398311	3/29/2013	20:30:00	JODECO RD	BLACKHALL RD	1	0	Angle	Motor Vehicle In Motion	Dark-Not Lighted	Dry	East	West	Turning Left	Straight
4447799	5/18/2013	12:59:00	JODECO RD	BLACKHALL RD	2	0	Angle	Motor Vehicle In Motion	Daylight	Dry	South	West	Turning Left	Straight
4498735	7/5/2013	19:30:00	JODECO RD	BLACKHALL RD	0	0	Rear End	Motor Vehicle In Motion	Daylight	Wet	East	East	Straight	Stopped
4528263	7/5/2013	16:31:00	JODECO RD	BLACKHALL RD	2	0	Head On	Motor Vehicle In Motion	Daylight	Wet	East	East	Straight	Straight
4542371	8/18/2013	0:14:00	JODECO RD	BLACKHALL RD	1	0	Not A Collision with Motor Vehicle	Fence	Dark-Not Lighted	Wet	South		Straight	
4584822	9/27/2013	18:02:00	BLACKHALL RD	JODECO RD	0	0	Rear End	Motor Vehicle In Motion	Dusk	Dry	South	South	Turning Right	Stopped
4600915	9/9/2013	17:10:00	BLACKHALL	JODECO RD	0	0	Rear End	Motor Vehicle In Motion	Daylight	Dry	East	East	Turning Right	Stopped
4628795	11/1/2013	15:29:00	BLACKHALL RD	JODECO RD	0	0	Rear End	Motor Vehicle In Motion	Daylight	Dry	South	South	Straight	Stopped
4628796	11/1/2013	15:29:00	BLACKHALL RD	JODECO RD	0	0	Rear End	Motor Vehicle In Motion	Daylight	Dry	South	South	Straight	Stopped
4643691	11/16/2013	9:11:00	JODECO ROAD RD	BLACKHALL ROAD RD	0	0	Not A Collision with Motor Vehicle	Animal	Daylight	Wet	East		Straight	
4656945	11/27/2013	18:41:00	BLACKHALL RD	JODECO RD	1	0	Rear End	Motor Vehicle In Motion	Dark-Not Lighted	Dry	South	South	Straight	Stopped
4659447	12/1/2013	18:35:00	WEST JODECO RD	BLACKHALL RD	0	0	Angle	Motor Vehicle In Motion	Dark-Lighted	Dry	South	West	Turning Left	Straight

2014

AccidentNo	Date	Time	Route	IntersectingRoute	Injuries	Fatalities	MannerOfCollision	FirstHarmfulEvent	Light	Surface	DirVeh1	DirVeh2	MnvrVeh1	MnvrVeh2
4726518	2/8/2014	20:54:00	BLACKHALL RD	W. JODECO RD	2	0	Angle	Motor Vehicle In Motion	Dark-Lighted	Dry	South	West	Turning Left	Straight
4734965	2/13/2014	14:10:00	W. JODECO RD	BLACKHALL RD	1	0	Angle	Motor Vehicle In Motion	Daylight	Dry	South	West	Turning Left	Straight
4785571	3/7/2014	15:00:00	BLACKHALL RD	JODECO RD	0	0	Rear End	Motor Vehicle In Motion	Daylight	Dry	South	South	Straight	Straight
4768902	3/21/2014	8:43:00	JODECO RD	BLACKHALL RD	0	0	Angle	Motor Vehicle In Motion	Daylight	Dry	East	West	Turning Left	Straight
4895457	7/2/2014	15:02:00	JODECO RD	BLACKHALL RD	0	0	Angle	Motor Vehicle In Motion	Daylight	Dry	South	East	Turning Left	Straight
4899301	7/7/2014	8:25:00	JODECO RD	BLACK HALL RD	0	0	Angle	Motor Vehicle In Motion	Daylight	Dry	South	West	Turning Left	Straight
4899302	7/7/2014	9:16:00	JODECO RD	BLACK HALL RD	0	0	Rear End	Motor Vehicle In Motion	Daylight	Dry	West	West	Straight	Stopped
4905469	7/12/2014	20:00:00	JODECO RD	BLACK HALL RD	1	0	Angle	Motor Vehicle In Motion	Daylight	Dry	West	West	Turning Left	Straight
5027702	10/23/2014	15:04:00	JODECO RD	BLACKHALL RD	0	0	Angle	Motor Vehicle In Motion	Daylight	Dry	South	North	Turning Left	Turning Left
5055611	11/18/2014	14:34:00	JODECO RD	BLACKHALL RD	0	0	Not A Collision with Motor Vehicle	Deer	Daylight	Dry	East		Straight	
5104045	12/22/2014	17:17:00	BLACKHALL RD	JODECO RD	1	0	Rear End	Motor Vehicle In Motion	Dark-Not Lighted	Wet	South	South	Straight	Stopped
5104047	12/22/2014	17:17:00	BLACKHALL RD	JODECO RD	0	0	Rear End	Motor Vehicle In Motion	Dark-Not Lighted	Wet	South	South	Straight	Straight

APPENDIX E
CAPACITY ANALYSIS - EXISTING

UNSIGNALIZED
1: Longwood Dr & Jodeco Rd

EXISTING
AM PEAK HOUR



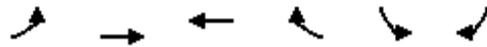
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	226	0	4	351	4	16
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.92	0.50	0.80	0.33	0.42
Hourly flow rate (vph)	301	0	8	439	12	38
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			301		756	301
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			301		756	301
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		97	95
cM capacity (veh/h)			1265		376	743

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	301	447	50
Volume Left	0	8	12
Volume Right	0	0	38
cSH	1700	1265	602
Volume to Capacity	0.18	0.01	0.08
Queue Length 95th (ft)	0	0	7
Control Delay (s)	0.0	0.2	11.5
Lane LOS		A	B
Approach Delay (s)	0.0	0.2	11.5
Approach LOS			B

Intersection Summary			
Average Delay		0.8	
Intersection Capacity Utilization		31.7%	ICU Level of Service
Analysis Period (min)		15	A

UNSIGNALIZED
2: Jodeco Rd & Blackhall Rd

EXISTING
AM PEAK HOUR



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	
Volume (veh/h)	176	66	284	148	90	71
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.79	0.75	0.80	0.84	0.64	0.66
Hourly flow rate (vph)	223	88	355	176	141	108
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	531				977	443
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	531				977	443
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	79				36	82
cM capacity (veh/h)	1041				219	615

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	311	531	248
Volume Left	223	0	141
Volume Right	0	176	108
cSH	1041	1700	303
Volume to Capacity	0.21	0.31	0.82
Queue Length 95th (ft)	20	0	170
Control Delay (s)	7.3	0.0	53.6
Lane LOS	A		F
Approach Delay (s)	7.3	0.0	53.6
Approach LOS			F

Intersection Summary			
Average Delay		14.3	
Intersection Capacity Utilization		56.5%	ICU Level of Service
Analysis Period (min)		15	B

UNSIGNALIZED
1: Longwood Dr & Jodeco Rd

EXISTING
PM PEAK HOUR



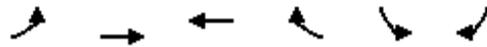
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	459	6	18	357	0	5
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.78	0.50	0.55	0.79	0.50	0.38
Hourly flow rate (vph)	588	12	33	452	0	13
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			600	1112	594	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			600	1112	594	
tC, single (s)			4.1	6.4	6.2	
tC, 2 stage (s)						
tF (s)			2.2	3.5	3.3	
p0 queue free %			97	100	97	
cM capacity (veh/h)			982	225	508	

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	600	485	13
Volume Left	0	33	0
Volume Right	12	0	13
cSH	1700	982	508
Volume to Capacity	0.35	0.03	0.03
Queue Length 95th (ft)	0	3	2
Control Delay (s)	0.0	1.0	12.3
Lane LOS		A	B
Approach Delay (s)	0.0	1.0	12.3
Approach LOS			B

Intersection Summary			
Average Delay		0.6	
Intersection Capacity Utilization	43.5%	ICU Level of Service	A
Analysis Period (min)	15		

UNSIGNALIZED
2: Jodeco Rd & Blackhall Rd

EXISTING
PM PEAK HOUR



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Volume (veh/h)	111	353	251	88	278	124
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.97	0.78	0.79	0.73	0.85	0.65
Hourly flow rate (vph)	114	453	318	121	327	191
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	438				1059	378
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	438				1059	378
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	90				0	71
cM capacity (veh/h)	1127				223	669

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	567	438	518
Volume Left	114	0	327
Volume Right	0	121	191
cSH	1127	1700	296
Volume to Capacity	0.10	0.26	1.75
Queue Length 95th (ft)	8	0	839
Control Delay (s)	2.7	0.0	381.5
Lane LOS	A		F
Approach Delay (s)	2.7	0.0	381.5
Approach LOS			F

Intersection Summary			
Average Delay		130.7	
Intersection Capacity Utilization		76.3%	ICU Level of Service
Analysis Period (min)		15	D

APPENDIX F
CAPACITY ANALYSIS – NO-BUILD

UN SIGNALIZED
1: Longwood Dr & Jodeco Rd

2017 CONSTRUCTION YEAR - NO-BUILD
AM PEAK HOUR



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Volume (veh/h)	240	0	5	375	5	20
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.92	0.50	0.80	0.33	0.42
Hourly flow rate (vph)	320	0	10	469	15	48
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			320		809	320
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			320		809	320
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		96	93
cM capacity (veh/h)			1246		350	725

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	320	479	63
Volume Left	0	10	15
Volume Right	0	0	48
cSH	1700	1246	576
Volume to Capacity	0.19	0.01	0.11
Queue Length 95th (ft)	0	1	9
Control Delay (s)	0.0	0.3	12.0
Lane LOS		A	B
Approach Delay (s)	0.0	0.3	12.0
Approach LOS			B

Intersection Summary			
Average Delay		1.0	
Intersection Capacity Utilization		33.7%	ICU Level of Service A
Analysis Period (min)		15	

UN SIGNALIZED
2: Jodeco Rd & Blackhall Rd

2017 CONSTRUCTION YEAR - NO-BUILD
AM PEAK HOUR



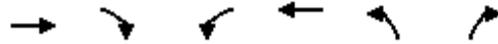
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↷	
Volume (veh/h)	185	75	300	160	95	80
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.79	0.75	0.80	0.84	0.64	0.66
Hourly flow rate (vph)	234	100	375	190	148	121
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	565				1039	470
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	565				1039	470
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	77				24	80
cM capacity (veh/h)	1011				196	593

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	334	565	270
Volume Left	234	0	148
Volume Right	0	190	121
cSH	1011	1700	281
Volume to Capacity	0.23	0.33	0.96
Queue Length 95th (ft)	22	0	234
Control Delay (s)	7.5	0.0	83.8
Lane LOS	A		F
Approach Delay (s)	7.5	0.0	83.8
Approach LOS			F

Intersection Summary			
Average Delay		21.5	
Intersection Capacity Utilization		59.9%	ICU Level of Service
Analysis Period (min)		15	B

UN SIGNALIZED
1: Longwood Dr & Jodeco Rd

2017 CONSTRUCTION YEAR - NO-BUILD
PM PEAK HOUR



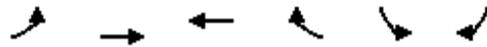
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Volume (veh/h)	485	10	20	380	0	5
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.78	0.50	0.55	0.79	0.50	0.38
Hourly flow rate (vph)	622	20	36	481	0	13
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			642		1186	632
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			642		1186	632
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		100	97
cM capacity (veh/h)			948		202	484

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	642	517	13
Volume Left	0	36	0
Volume Right	20	0	13
cSH	1700	948	484
Volume to Capacity	0.38	0.04	0.03
Queue Length 95th (ft)	0	3	2
Control Delay (s)	0.0	1.1	12.6
Lane LOS		A	B
Approach Delay (s)	0.0	1.1	12.6
Approach LOS			B

Intersection Summary			
Average Delay		0.6	
Intersection Capacity Utilization	46.3%		ICU Level of Service A
Analysis Period (min)		15	

UN SIGNALIZED
2: Jodeco Rd & Blackhall Rd

2017 CONSTRUCTION YEAR - NO-BUILD
PM PEAK HOUR



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	120	370	265	95	300	135
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.97	0.78	0.79	0.73	0.85	0.65
Hourly flow rate (vph)	124	474	335	130	353	208
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	466				1122	401
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	466				1122	401
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	89				0	68
cM capacity (veh/h)	1101				202	650

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	598	466	561
Volume Left	124	0	353
Volume Right	0	130	208
cSH	1101	1700	271
Volume to Capacity	0.11	0.27	2.07
Queue Length 95th (ft)	9	0	1031
Control Delay (s)	2.9	0.0	522.4
Lane LOS	A		F
Approach Delay (s)	2.9	0.0	522.4
Approach LOS			F

Intersection Summary			
Average Delay		181.4	
Intersection Capacity Utilization		80.7%	ICU Level of Service D
Analysis Period (min)		15	

UN SIGNALIZED
1: Longwood Dr & Jodeco Rd

2037 DESIGN YEAR - NO-BUILD
AM PEAK HOUR



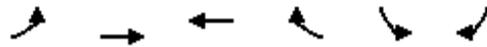
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	330	0	5	515	5	20
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.92	0.50	0.80	0.33	0.42
Hourly flow rate (vph)	440	0	10	644	15	48
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			440		1104	440
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			440		1104	440
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		94	92
cM capacity (veh/h)			1125		234	621

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	440	654	63
Volume Left	0	10	15
Volume Right	0	0	48
cSH	1700	1125	444
Volume to Capacity	0.26	0.01	0.14
Queue Length 95th (ft)	0	1	12
Control Delay (s)	0.0	0.2	14.4
Lane LOS		A	B
Approach Delay (s)	0.0	0.2	14.4
Approach LOS			B

Intersection Summary			
Average Delay		0.9	
Intersection Capacity Utilization		41.1%	ICU Level of Service
Analysis Period (min)		15	A

UN SIGNALIZED
2: Jodeco Rd & Blackhall Rd

2037 DESIGN YEAR - NO-BUILD
AM PEAK HOUR



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	255	95	415	220	135	105
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.79	0.75	0.80	0.84	0.64	0.66
Hourly flow rate (vph)	323	127	519	262	211	159
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	781				1422	650
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	781				1422	650
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	62				0	66
cM capacity (veh/h)	841				92	469

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	449	781	370
Volume Left	323	0	211
Volume Right	0	262	159
cSH	841	1700	141
Volume to Capacity	0.38	0.46	2.62
Queue Length 95th (ft)	45	0	821
Control Delay (s)	10.0	0.0	799.0
Lane LOS	A		F
Approach Delay (s)	10.0	0.0	799.0
Approach LOS			F

Intersection Summary			
Average Delay		187.6	
Intersection Capacity Utilization		78.3%	ICU Level of Service D
Analysis Period (min)		15	

UN SIGNALIZED
1: Longwood Dr & Jodeco Rd

2037 DESIGN YEAR - NO-BUILD
PM PEAK HOUR



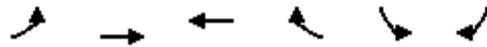
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Volume (veh/h)	665	10	20	530	0	5
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.78	0.50	0.55	0.79	0.50	0.38
Hourly flow rate (vph)	853	20	36	671	0	13
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			873		1606	863
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			873		1606	863
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			95		100	96
cM capacity (veh/h)			777		111	357

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	873	707	13
Volume Left	0	36	0
Volume Right	20	0	13
cSH	1700	777	357
Volume to Capacity	0.51	0.05	0.04
Queue Length 95th (ft)	0	4	3
Control Delay (s)	0.0	1.2	15.5
Lane LOS		A	C
Approach Delay (s)	0.0	1.2	15.5
Approach LOS			C

Intersection Summary			
Average Delay		0.7	
Intersection Capacity Utilization		54.1%	ICU Level of Service
Analysis Period (min)		15	A

UN SIGNALIZED
2: Jodeco Rd & Blackhall Rd

2037 DESIGN YEAR - NO-BUILD
PM PEAK HOUR



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	165	505	365	135	405	185
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.97	0.78	0.79	0.73	0.85	0.65
Hourly flow rate (vph)	170	647	462	185	476	285
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	647				1542	554
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	647				1542	554
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	82				0	46
cM capacity (veh/h)	943				104	532

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	818	647	761
Volume Left	170	0	476
Volume Right	0	185	285
cSH	943	1700	148
Volume to Capacity	0.18	0.38	5.13
Queue Length 95th (ft)	16	0	Err
Control Delay (s)	4.2	0.0	Err
Lane LOS	A		F
Approach Delay (s)	4.2	0.0	Err
Approach LOS			F

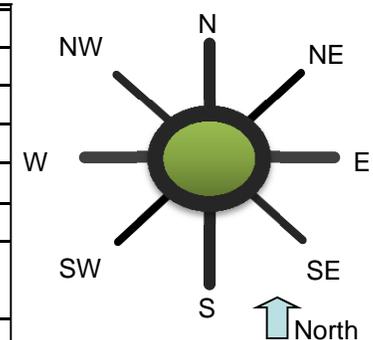
Intersection Summary			
Average Delay		3420.9	
Intersection Capacity Utilization		106.9%	ICU Level of Service
Analysis Period (min)		15	G

APPENDIX G
ROUNDBOUT ANALYSIS

Roundabout Analysis Tool
Single Lane

1/24/2015
Version 2.1

Analyst:	SPEEDY
Agency/Co:	WILBURN ENGINEERING
Date:	1/24/2015
Project or PI#:	PI# 0012642
Year, Peak Hour:	2017, AM PEAK HOUR
County/District:	HENRY
Intersection Name:	Jodeco Road & Longwood Drive/Blackhall Road



Volumes		Entry Legs (FROM)							
		N (1)	NE (2)	E (3)	SE (4)	S (5)	SW (6)	W (7)	NW (8)
Exit Legs (TO)	N (1), vph			160		10		185	
	NE (2), vph								
	E (3), vph	100				10		245	
	SE (4), vph								
	S (5), vph	5		5				0	
	SW (6), vph								
	W (7), vph	75		305		5			
	NW (8), vph								
Output	Total Vehicles	180	0	470	0	25	0	430	0

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	98%	100%	96%	100%	100%	100%	96%	100%
% Heavy Vehicles	2%	0%	1%	0%	0%	0%	1%	0%
% Bicycle	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians (ped/hr)	0	0	0	0	0	0	0	0
PHF	0.77	0.88	0.82	0.88	0.71	0.88	0.77	0.88
F _{HV}	0.980	1.000	0.990	1.000	1.000	1.000	0.990	1.000
F _{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pcu/h	0	0	197	0	14	0	243	0
NE (2), pcu/h	0	0	0	0	0	0	0	0
E (3), pcu/h	132	0	0	0	14	0	321	0
SE (4), pcu/h	0	0	0	0	0	0	0	0
S (5), pcu/h	7	0	6	0	0	0	0	0
SW (6), pcu/h	0	0	0	0	0	0	0	0
W (7), pcu/h	99	0	376	0	7	0	0	0
NW (8), pcu/h	0	0	0	0	0	0	0	0
Entry flow, pcu/h	238	0	579	0	35	0	564	0
Conflicting flow, pcu/h	389	0	264	0	696	0	145	0

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

Results: Approach Measures of Effectiveness

HCM 2010 Model (build)	N	NE	E	SE	S	SW	W	NW
Entry Capacity, vph	751	NA	859	NA	563	NA	968	NA
Entry Flow Rates, vph	234	NA	573	NA	35	NA	558	NA
V/C ratio	0.31		0.67		0.06		0.58	
Control Delay, s/veh	9		15		7		12	
LOS	A		C		A		B	
95th % Queue (ft)	34		132		5		96	
Calibrated Model (future)	N	NE	E	SE	S	SW	W	NW
Entry Capacity, vph	957	NA	1069	NA	764	NA	1175	NA
Entry Flow Rates, vph	234	NA	573	NA	35	NA	558	NA
V/C ratio	0.25		0.54		0.05		0.48	
Control Delay, sec/pcu	6		10		5		8	
LOS	A		A		A		A	
95th % Queue (ft)	25		85		4		68	

Notes:

v2.1

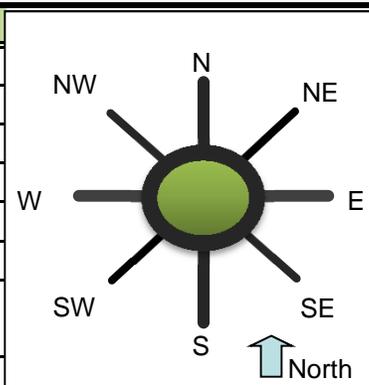
Unit Legend:

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)						
Does the bypass have a dedicated receiving lane?						
<i>Volumes</i>						
Right Turn Volume removed from Entry Leg						
<i>Volume Characteristics (for entry leg)</i>						
PHF						
F _{HV}						
F _{ped}						
NOTE: Volume Characteristics for Exit Leg are already taken into account						
<i>Entry/Conflicting Flows</i>						
Entry Flow, pcu/hr						
Conflicting Flow, pcu/hr						
Bypass Lane Results (HCM 2010 Model)						
Entry Capacity of Bypass, vph						
Flow Rates of Exiting Traffic, vph						
V/C ratio						
Control Delay, s/veh						
LOS						
95th % Queue (ft)						
Approach w/Bypass Delay, s/veh						
Approach w/Bypass LOS						

General & Site Information v2.1

Analyst:	SPEEDY
Agency/Co:	WILBURN ENGINEERING
Date:	1/24/2015
Project or PI#:	PI# 0012642
Year, Peak Hour:	2017, PM PEAK HOUR
County/District:	HENRY
Intersection Name:	Jodeco Road & Longwood Drive/Blackhall Road



Volumes Entry Legs (FROM)

		N (1)	NE (2)	E (3)	SE (4)	S (5)	SW (6)	W (7)	NW (8)
Exit Legs (TO)	N (1), vph			95		5		120	
	NE (2), vph								
	E (3), vph	300				5		375	
	SE (4), vph								
	S (5), vph	10		10				10	
	SW (6), vph								
	W (7), vph	130		260		0			
	NW (8), vph								
Output	Total Vehicles	440	0	365	0	10	0	505	0

Volume Characteristics

	N	NE	E	SE	S	SW	W	NW
% Cars	98%	100%	96%	100%	100%	100%	96%	100%
% Heavy Vehicles	2%	0%	1%	0%	0%	0%	1%	0%
% Bicycle	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians (ped/hr)	0	0	0	0	0	0	0	0
PHF	0.77	0.88	0.86	0.88	0.42	0.88	0.83	0.88
F _{HV}	0.980	1.000	0.990	1.000	1.000	1.000	0.990	1.000
F _{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows

	N	NE	E	SE	S	SW	W	NW
Flow to Leg #								
N (1), pcu/h	0	0	112	0	12	0	146	0
NE (2), pcu/h	0	0	0	0	0	0	0	0
E (3), pcu/h	397	0	0	0	12	0	456	0
SE (4), pcu/h	0	0	0	0	0	0	0	0
S (5), pcu/h	13	0	12	0	0	0	12	0
SW (6), pcu/h	0	0	0	0	0	0	0	0
W (7), pcu/h	172	0	305	0	0	0	0	0
NW (8), pcu/h	0	0	0	0	0	0	0	0
Entry flow, pcu/h	583	0	429	0	24	0	615	0
Conflicting flow, pcu/h	317	0	158	0	1000	0	422	0

Roundabout Type Standard Single Lane or Urban Compact

Enter type here...	Standard Single Lane
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Results: Approach Measures of Effectiveness

HCM 2010 Model (build)	N	NE	E	SE	S	SW	W	NW
Entry Capacity, vph	807	NA	955	NA	416	NA	733	NA
Entry Flow Rates, vph	571	NA	424	NA	24	NA	608	NA
V/C ratio	0.71		0.44		0.06		0.83	
Control Delay, s/veh	18		9		9		28	
LOS	C		A		A		D	
95th % Queue (ft)	154		59		5		232	
Calibrated Model (future)	N	NE	E	SE	S	SW	W	NW
Entry Capacity, vph	1014	NA	1163	NA	599	NA	941	NA
Entry Flow Rates, vph	571	NA	424	NA	24	NA	608	NA
V/C ratio	0.57		0.37		0.04		0.65	
Control Delay, sec/pcu	11		7		6		14	
LOS	B		A		A		B	
95th % Queue (ft)	97		43		3		127	

Notes:

v2.1

Unit Legend:

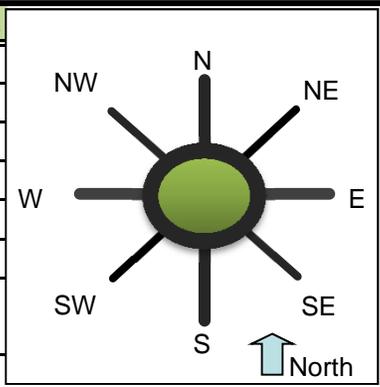
- vph = vehicles per hour
- PHF = peak hour factor
- F_{HV} = heavy vehicle factor
- pcu = passenger car unit

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)						
Does the bypass have a dedicated receiving lane?						
<i>Volumes</i>						
Right Turn Volume removed from Entry Leg						
<i>Volume Characteristics (for entry leg)</i>						
PHF						
F _{HV}						
F _{ped}						
NOTE: Volume Characteristics for Exit Leg are already taken into account						
<i>Entry/Conflicting Flows</i>						
Entry Flow, pcu/hr						
Conflicting Flow, pcu/hr						
Bypass Lane Results (HCM 2010 Model)						
Entry Capacity of Bypass, vph						
Flow Rates of Exiting Traffic, vph						
V/C ratio						
Control Delay, s/veh						
LOS						
95th % Queue (ft)						
Approach w/Bypass Delay, s/veh						
Approach w/Bypass LOS						

General & Site Information v2.1

Analyst:	SPEEDY
Agency/Co:	WILBURN ENGINEERING
Date:	1/24/2015
Project or PI#:	PI# 0012642
Year, Peak Hour:	2037, AM PEAK HOUR
County/District:	HENRY
Intersection Name:	Jodeco Road & Longwood Drive/Blackhall Road



Volumes Entry Legs (FROM)

		N (1)	NE (2)	E (3)	SE (4)	S (5)	SW (6)	W (7)	NW (8)
Exit Legs (TO)	N (1), vph			230		10		265	
	NE (2), vph								
	E (3), vph	145				10		355	
	SE (4), vph								
	S (5), vph	5		5				0	
	SW (6), vph								
	W (7), vph	110		440		5			
	NW (8), vph								
Output	Total Vehicles	260	0	675	0	25	0	620	0

Volume Characteristics

	N	NE	E	SE	S	SW	W	NW
% Cars	98%	100%	96%	100%	100%	100%	96%	100%
% Heavy Vehicles	2%	0%	1%	0%	0%	0%	1%	0%
% Bicycle	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians (ped/hr)	0	0	0	0	0	0	0	0
PHF	0.77	0.88	0.82	0.88	0.71	0.88	0.77	0.88
F _{HV}	0.980	1.000	0.990	1.000	1.000	1.000	0.990	1.000
F _{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows

	N	NE	E	SE	S	SW	W	NW
Flow to Leg #								
N (1), pcu/h	0	0	283	0	14	0	348	0
NE (2), pcu/h	0	0	0	0	0	0	0	0
E (3), pcu/h	192	0	0	0	14	0	466	0
SE (4), pcu/h	0	0	0	0	0	0	0	0
S (5), pcu/h	7	0	6	0	0	0	0	0
SW (6), pcu/h	0	0	0	0	0	0	0	0
W (7), pcu/h	146	0	542	0	7	0	0	0
NW (8), pcu/h	0	0	0	0	0	0	0	0
Entry flow, pcu/h	344	0	831	0	35	0	813	0
Conflicting flow, pcu/h	555	0	369	0	1005	0	205	0

Roundabout Type Standard Single Lane or Urban Compact

Enter type here...	Standard Single Lane
--------------------	----------------------

Results: Approach Measures of Effectiveness

HCM 2010 Model (build)	N	NE	E	SE	S	SW	W	NW
Entry Capacity, vph	636	NA	774	NA	413	NA	912	NA
Entry Flow Rates, vph	338	NA	823	NA	35	NA	805	NA
V/C ratio	0.53		1.06		0.09		0.88	
Control Delay, s/veh	15		73		10		30	
LOS	B		F		A		D	
95th % Queue (ft)	80		528		7		302	
Calibrated Model (future)	N	NE	E	SE	S	SW	W	NW
Entry Capacity, vph	838	NA	983	NA	596	NA	1120	NA
Entry Flow Rates, vph	338	NA	823	NA	35	NA	805	NA
V/C ratio	0.41		0.85		0.06		0.73	
Control Delay, sec/pcu	9		24		7		15	
LOS	A		C		A		B	
95th % Queue (ft)	52		267		5		171	

Notes:

v2.1

Unit Legend:

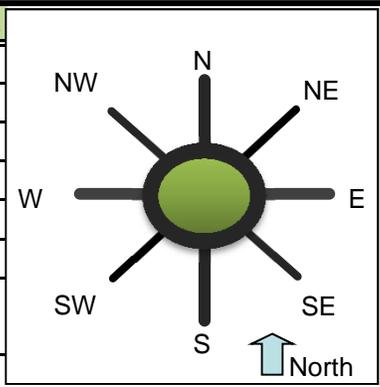
- vph = vehicles per hour
- PHF = peak hour factor
- F_{HV} = heavy vehicle factor
- pcu = passenger car unit

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)						
Does the bypass have a dedicated receiving lane?						
<i>Volumes</i>						
Right Turn Volume removed from Entry Leg						
<i>Volume Characteristics (for entry leg)</i>						
PHF						
F _{HV}						
F _{ped}						
NOTE: Volume Characteristics for Exit Leg are already taken into account						
<i>Entry/Conflicting Flows</i>						
Entry Flow, pcu/hr						
Conflicting Flow, pcu/hr						
Bypass Lane Results (HCM 2010 Model)						
Entry Capacity of Bypass, vph						
Flow Rates of Exiting Traffic, vph						
V/C ratio						
Control Delay, s/veh						
LOS						
95th % Queue (ft)						
Approach w/Bypass Delay, s/veh						
Approach w/Bypass LOS						

General & Site Information v2.1

Analyst:	SPEEDY
Agency/Co:	WILBURN ENGINEERING
Date:	1/24/2015
Project or PI#:	PI# 0012642
Year, Peak Hour:	2037, PM PEAK HOUR
County/District:	HENRY
Intersection Name:	Jodeco Road & Longwood Drive/Blackhall Road



Volumes Entry Legs (FROM)

		N (1)	NE (2)	E (3)	SE (4)	S (5)	SW (6)	W (7)	NW (8)
Exit Legs (TO)	N (1), vph			135		5		175	
	NE (2), vph								
	E (3), vph	430				5		540	
	SE (4), vph								
	S (5), vph	10		10				10	
	SW (6), vph								
	W (7), vph	185		375		0			
	NW (8), vph								
Output	Total Vehicles	625	0	520	0	10	0	725	0

Volume Characteristics

	N	NE	E	SE	S	SW	W	NW
% Cars	98%	100%	96%	100%	100%	100%	96%	100%
% Heavy Vehicles	2%	0%	1%	0%	0%	0%	1%	0%
% Bicycle	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians (ped/hr)	0	0	0	0	0	0	0	0
PHF	0.77	0.88	0.86	0.88	0.42	0.88	0.83	0.88
F _{HV}	0.980	1.000	0.990	1.000	1.000	1.000	0.990	1.000
F _{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows

	N	NE	E	SE	S	SW	W	NW
Flow to Leg #								
N (1), pcu/h	0	0	159	0	12	0	213	0
NE (2), pcu/h	0	0	0	0	0	0	0	0
E (3), pcu/h	570	0	0	0	12	0	657	0
SE (4), pcu/h	0	0	0	0	0	0	0	0
S (5), pcu/h	13	0	12	0	0	0	12	0
SW (6), pcu/h	0	0	0	0	0	0	0	0
W (7), pcu/h	245	0	440	0	0	0	0	0
NW (8), pcu/h	0	0	0	0	0	0	0	0
Entry flow, pcu/h	828	0	611	0	24	0	882	0
Conflicting flow, pcu/h	452	0	225	0	1440	0	595	0

Roundabout Type Standard Single Lane or Urban Compact

Enter type here...	Standard Single Lane
--------------------	----------------------

Results: Approach Measures of Effectiveness

HCM 2010 Model (build)	N	NE	E	SE	S	SW	W	NW
Entry Capacity, vph	705	NA	894	NA	268	NA	617	NA
Entry Flow Rates, vph	812	NA	605	NA	24	NA	873	NA
V/C ratio	1.15		0.68		0.09		1.41	
Control Delay, s/veh	106		15		15		216	
LOS	F		C		C		F	
95th % Queue (ft)	647		138		7		1014	
Calibrated Model (future)	N	NE	E	SE	S	SW	W	NW
Entry Capacity, vph	910	NA	1103	NA	421	NA	820	NA
Entry Flow Rates, vph	812	NA	605	NA	24	NA	873	NA
V/C ratio	0.91		0.55		0.06		1.08	
Control Delay, sec/pcu	33		10		9		76	
LOS	D		B		A		F	
95th % Queue (ft)	337		89		4		567	

Notes:

v2.1

Unit Legend:

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

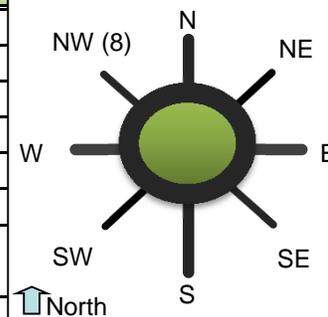
Bypass Lane Merge Point Analysis (if applicable)

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)						
Does the bypass have a dedicated receiving lane?						
<i>Volumes</i>						
Right Turn Volume removed from Entry Leg						
<i>Volume Characteristics (for entry leg)</i>						
PHF						
F _{HV}						
F _{ped}						
NOTE: Volume Characteristics for Exit Leg are already taken into account						
<i>Entry/Conflicting Flows</i>						
Entry Flow, pcu/hr						
Conflicting Flow, pcu/hr						
Bypass Lane Results (HCM 2010 Model)						
Entry Capacity of Bypass, vph						
Flow Rates of Exiting Traffic, vph						
V/C ratio						
Control Delay, s/veh						
LOS						
95th % Queue (ft)						
Approach w/Bypass Delay, s/veh						
Approach w/Bypass LOS						

APPENDIX H

MODIFIED MULTI-LANE ROUNDABOUT ANALYSIS

General & Site Information		v2.1
Analyst:	SPEEDY	
Agency/Co:	WILBURN ENGINEERING	
Date:	2.7.15	
Project or PI#:	PI# 0012642	
Year, Peak Hour:	2037, PM PEAK HOUR	
County/District:	HENRY	
Intersection:	Jodeco Road & Longwood Drive/Blackhall Road	



Volumes	Entry Legs (FROM)							
	N1 (1)	N2 (1)	NE1 (2)	NE2 (2)	E1 (3)	E2 (3)	SE1 (4)	SE2 (4)

Lane Designation	Left-Thru	SELECT	SELECT	SELECT	Left-Thru	SELECT	SELECT	SELECT
Exit Legs (TO)								
N (1), vph								
NE (2), vph								
E (3), vph	145	0						
SE (4), vph								
S (5), vph	5				5			
SW (6), vph								
W (7), vph	0				440			
NW (8), vph								
Entry Volume, vph	150	0	0	0	445	0	0	0

	S1 (5)	S2 (5)	SW1 (6)	SW2 (6)	W1 (7)	W2 (7)	NW1 (8)	NW2 (8)
--	--------	--------	---------	---------	--------	--------	---------	---------

Lane Designation	Lf-Th-Rt	SELECT	SELECT	SELECT	Left Only	Right-Thru	SELECT	SELECT
N (1), vph	10				265			
NE (2), vph								
E (3), vph	10					355		
SE (4), vph								
S (5), vph						0		
SW (6), vph								
W (7), vph	5							
NW (8), vph								
Entry Volume, vph	25	0	0	0	265	355	0	0

	N	NE	E	SE	S	SW	W	NW
# of Entry Flow Lanes	1	0	1	0	1	0	2	0
# of Conflict Flow Lanes	1	2	1	2	2	2	2	2

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
------------------------	---	----	---	----	---	----	---	----

% Cars	96%	100%	100%	100%	98%	100%	98%	100%
% Heavy Vehicles	4%	0%	0%	0%	2%	0%	2%	0%
% Bicycles	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians (ped/hr)	0	0	0	0	0	0	0	0
PHF	0.77	0.88	0.82	0.88	0.71	0.88	0.77	0.88
F _{hv}	0.962	1.000	1.000	1.000	0.980	1.000	0.978	1.000
F _{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to N (1), pcu/h	0	0	0	0	14	0	352	0

Leg #	NE (2), pcu/h	0	0	0	0	0	0	0
	E (3), pcu/h	196	0	0	0	14	0	472
	SE (4), pcu/h	0	0	0	0	0	0	0
	S (5), pcu/h	7	0	6	0	0	0	0
	SW (6), pcu/h	0	0	0	0	0	0	0
	W (7), pcu/h	0	0	537	0	7	0	0
	NW (8), pcu/h	0	0	0	0	0	0	0
	Entry flow, pcu/h	203	0	543	0	36	0	824
	Entry flow Lane 1, pcu/h	203	0	543	0	36	0	352
	Entry flow Lane 2, pcu/h	0	0	0	0	0	0	472
	Conflicting flow, pcu/h	550	0	374	0	1020	0	209

Results: Approach Measures of Effectiveness

HCM 2010 Model (build yr)	N		E		S		W	
	Left-Thru	Lane 2	Left-Thru	Lane 2	Lf-Th-Rt	Lane 2	Left Only	Right-Thru
Lane Designations								
Entry Capacity, veh/h	739	739	870	NA	543	NA	945	954
Entry Flow Rates, veh/h	195	0	543	NA	35	NA	344	461
V/C ratio	0.26	0.00	0.62		0.06	#VALUE!	0.36	0.48
Control Delay, s/veh	7.9	4.9	13.9		7.4	#VALUE!	7.8	9.7
LOS	A	A	B		A	#VALUE!	A	A
95th % Queue (ft)	27	0	112		5	#VALUE!	43	69
Approach Delay, LOS	8.2 sec, LOS A		12.2 sec, LOS B		7.4 sec, LOS A		8.9 sec, LOS A	
Calibrated Model (future yr)	NE		SE		SW		NW	
	Lane 1	Lane 2	Lane 1	Lane 2	Lane 1	Lane 2	Lane 1	Lane 2
Lane Designations								
Entry Capacity, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!			#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!			#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Approach Delay, LOS			#VALUE!				#VALUE!	
Calibrated Model (future yr)	N		E		S		W	
	Left-Thru	Lane 2	Left-Thru	Lane 2	Lf-Th-Rt	Lane 2	Left Only	Right-Thru
Lane Designations								
Entry Capacity, veh/h	961	961	1172	NA	642	NA	1301	1329
Entry Flow Rates, veh/h	195	0	543	NA	35	NA	344	461
V/C ratio	0.20	0.00	0.46		0.05	#VALUE!	0.26	0.35
Control Delay, s/veh	5.7	3.7	8.0		6.2	#VALUE!	5.1	5.9
LOS	A	A	A		A	#VALUE!	A	A
95th % Queue (ft)	20	0	63		4	#VALUE!	27	40
Approach Delay, LOS	6.9 sec, LOS A		8.3 sec, LOS A		6.2 sec, LOS A		5.5 sec, LOS A	
Calibrated Model (future yr)	NE		SE		SW		NW	
	Lane 1	Lane 2	Lane 1	Lane 2	Lane 1	Lane 2	Lane 1	Lane 2
Lane Designations								
Entry Capacity, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!			#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!			#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Approach Delay, LOS			#N/A				#N/A	

v2.1

Bypass Lane Merge Point Analysis (if applicable)

Bypass Characteristics	Bypass #1	Bypass #2	Bypass #3	Bypass #4	Bypass #5	Bypass #6
Select Entry Leg from Bypass (FROM)	N (1)	E (3)				
Select Exit Leg for Bypass (TO)	W (7)	N (1)				
Does the bypass have a dedicated receiving lane?	No	No				
# of Conflicting Exit Flow Lanes	1	1	2	2	2	2
<i>Volumes</i>						
Entry Leg: Insert Right Turn Volume	110	230				
Exit Leg: (Select Input Method)	HCM	HCM				
Lane Flow in Exit Leg***	544	366				
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***						
<i>Volume Characteristics</i>						
PHF (Entry Leg)	0.77	0.82				
F _{HV} (Entry Leg)	0.96	1.00				
F _{ped}	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.						
<i>Entry/Conflicting Flows</i>						
Entry Flow	149	280				
Conflicting Critical Flow	544	366				
Bypass Lane Results						
Entry Capacity of Bypass, veh/h	631	783				
Flow Rates of Exiting Traffic, veh/h	143	280				
V/C ratio	0.23	0.36				
Control Delay, sec/pcu	8.5	8.9				
LOS	A	A				
95th % Queue (ft)	23	41				

General & Site Information		v2.1																																																																															
Analyst:	SPEEDY																																																																																
Agency/Co:	WILBURN ENGINEERING																																																																																
Date:	2.12.15																																																																																
Project or PI#:	PI# 0012642																																																																																
Year, Peak Hour:	2037, PM PEAK HOUR																																																																																
County/District:	HENRY																																																																																
Intersection:	Jodeco Road & Longwood Drive/Blackhall Road																																																																																
Volumes		Entry Legs (FROM)																																																																															
		N1 (1)	N2 (1)	NE1 (2)	NE2 (2)	E1 (3)	E2 (3)	SE1 (4)	SE2 (4)																																																																								
Lane Designation		Left-Thru	SELECT	SELECT	SELECT	Left-Thru	SELECT	SELECT	SELECT																																																																								
Exit Legs (TO)	N (1), vph																																																																																
	NE (2), vph																																																																																
	E (3), vph	430	0																																																																														
	SE (4), vph																																																																																
	S (5), vph	10				10																																																																											
	SW (6), vph																																																																																
	W (7), vph	0				375																																																																											
	NW (8), vph																																																																																
	Entry Volume, vph		440	0	0	0	385	0	0	0																																																																							
		S1 (5)	S2 (5)	SW1 (6)	SW2 (6)	W1 (7)	W2 (7)	NW1 (8)	NW2 (8)																																																																								
Lane Designation		Lf-Th-Rt	SELECT	SELECT	SELECT	Left Only	Right-Thru	SELECT	SELECT																																																																								
	N (1), vph	5				175																																																																											
	NE (2), vph																																																																																
	E (3), vph	5					540																																																																										
	SE (4), vph																																																																																
	S (5), vph						10																																																																										
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	W (7), vph																																																																																
	NW (8), vph																																																																																
	Entry Volume, vph	10	0	0	0	175	550	0	0																																																																								
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	N	NE	E	SE	S	SW	W	NW																																																																									
# of Entry Flow Lanes	1	0	1	0	1	0	2	0																																																																									
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Volume Characteristics	N	NE	E	SE	S	SW	W	NW																																																																									
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Flow to N (1), pcu/h	0	0	0	0	6	0	190	0																																																																									

Leg #	NE (2), pcu/h	0	0	0	0	0	0	0	0
	E (3), pcu/h	517	0	0	0	6	0	588	0
	SE (4), pcu/h	0	0	0	0	0	0	0	0
	S (5), pcu/h	12	0	11	0	0	0	11	0
	SW (6), pcu/h	0	0	0	0	0	0	0	0
	W (7), pcu/h	0	0	408	0	0	0	0	0
	NW (8), pcu/h	0	0	0	0	0	0	0	0
	Entry flow, pcu/h	529	0	418	0	12	0	789	0
	Entry flow Lane 1, pcu/h	529	0	418	0	12	0	190	0
	Entry flow Lane 2, pcu/h	0	0	0	0	0	0	599	0
	Conflicting flow, pcu/h	418	0	196	0	1295	0	540	0

Results: Approach Measures of Effectiveness

HCM 2010 Model (build yr)	N		E		S		W	
	Left-Thru	Lane 2	Left-Thru	Lane 2	Lf-Th-Rt	Lane 2	Left Only	Right-Thru
Lane Designations								
Entry Capacity, veh/h	811	811	985	NA	447	NA	737	757
Entry Flow Rates, veh/h	509	0	418	NA	12	NA	186	585
V/C ratio	0.63	0.00	0.42		0.03	#VALUE!	0.25	0.77
Control Delay, s/veh	14.8	4.4	8.5		8.4	#VALUE!	7.8	22.8
LOS	B	A	A		A	#VALUE!	A	C
95th % Queue (ft)	117	0	54		2	#VALUE!	26	193
Approach Delay, LOS	12.9 sec, LOS B		7.7 sec, LOS A		8.4 sec, LOS A		19.2 sec, LOS C	
Calibrated Model (future yr)	NE		SE		SW		NW	
	Lane 1	Lane 2	Lane 1	Lane 2	Lane 1	Lane 2	Lane 1	Lane 2
Lane Designations								
Entry Capacity, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!			#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!			#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Approach Delay, LOS			#VALUE!				#VALUE!	
Calibrated Model (future yr)	N		E		S		W	
	Left-Thru	Lane 2	Left-Thru	Lane 2	Lf-Th-Rt	Lane 2	Left Only	Right-Thru
Lane Designations								
Entry Capacity, veh/h	1082	1082	1374	NA	501	NA	934	986
Entry Flow Rates, veh/h	509	0	418	NA	12	NA	186	585
V/C ratio	0.47	0.00	0.30		0.02	#VALUE!	0.20	0.59
Control Delay, s/veh	8.6	3.3	5.3		7.5	#VALUE!	5.8	11.8
LOS	A	A	A		A	#VALUE!	A	B
95th % Queue (ft)	67	0	32		2	#VALUE!	19	104
Approach Delay, LOS	8.6 sec, LOS A		5.3 sec, LOS A		7.5 sec, LOS A		10.4 sec, LOS B	
Calibrated Model (future yr)	NE		SE		SW		NW	
	Lane 1	Lane 2	Lane 1	Lane 2	Lane 1	Lane 2	Lane 1	Lane 2
Lane Designations								
Entry Capacity, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!			#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!			#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Approach Delay, LOS			#N/A				#N/A	

v2.1

Bypass Lane Merge Point Analysis (if applicable)

Bypass Characteristics	Bypass #1	Bypass #2	Bypass #3	Bypass #4	Bypass #5	Bypass #6
Select Entry Leg from Bypass (FROM)	N (1)	E (3)				
Select Exit Leg for Bypass (TO)	W (7)	N (1)				
Does the bypass have a dedicated receiving lane?	No	No				
# of Conflicting Exit Flow Lanes	1	1	2	2	2	2
<i>Volumes</i>						
Entry Leg: Insert Right Turn Volume	185	135				
Exit Leg: (Select Input Method)	HCM	HCM				
Lane Flow in Exit Leg***	408	196				
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***						
<i>Volume Characteristics</i>						
PHF (Entry Leg)	0.87	0.92				
F _{HV} (Entry Leg)	0.96	1.00				
F _{ped}	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.						
<i>Entry/Conflicting Flows</i>						
Entry Flow	222	147				
Conflicting Critical Flow	408	196				
Bypass Lane Results						
Entry Capacity of Bypass, veh/h	723	929				
Flow Rates of Exiting Traffic, veh/h	214	147				
V/C ratio	0.30	0.16				
Control Delay, sec/pcu	8.5	5.4				
LOS	A	A				
95th % Queue (ft)	32	14				



SUBJECT: JODECO ROAD INTERSECTION IMPROVEMENTS AT BLACKHALL ROAD

MEETING DATE: September 30, 2014

LOCATION: 112 Zack Hinton Pkwy McDonough, GA 30253

MEETING MINUTES

Name	Organization	Phone No.	Email Address
Justin A. Banks	GDOT – Office of Program Delivery	404-631-1153	jubanks@dot.ga.gov
Roque Romero	Henry Co. SPLOST	770-288-7325	rromero@co.henry.ga.us
Allen Krivsky	Heath and Lineback	770-424-1668	akrivsky@heath-lineback.com
Tom Barwick	Heath and Lineback	770-424-1668	tbarwick@heath-lineback.com
Matt Calak	Heath and Lineback	770-424-1668	mcalak@heath-lineback.com
Chae H. Yi	Henry Co. SPLOST	770-288-7319	cyi@co.henry.ga.us

Meeting Summary

Introductions

Justin Banks, GDOT Program Manager introduced himself to the meeting attendees.

Roundabout

- A preliminary layout was presented by H&L. WB-40 or WB-67 trucks will be used based on GDOT design standards. This will help determine the radius of the roundabout (100' – 140').
- The plan is to tie in at the existing opening neighborhood.
- Trees and landscaping will be needed

- Lighting will be needed as well. It will be determined later how much is needed at this off system intersection.
- Curb and gutter may suffice as well.
- A pre-concept a public meeting will be held on 10/30/14 from 6:00 – 7:30 @ Red Oak Elementary School. This will allow the County to talk to the Longwood Neighborhood and allow decisions to be made before the project schedule advances. A meeting will help save time and money.

Traffic

- Counts will be worked on in the coming months to see what type of traffic is at the intersection.
- This will also help to decide what truck may be needed.
- Jodeco Road is a truck route

Schedule

- The goal is to complete the design in 18 months
- Environmental Doc and Studies will take 9 months
- ROW will be acquired by Henry Co (6 months) (Possible 7 parcels)

Action Items

- Find out what type of truck is needed for roundabout
- Find out what type and how many lights will be needed
- Find out if sidewalks are needed

October 30, 2014
6:00-7:30 p.m.

Jodeco Road @ Blackhall Road Public Information Meeting

Henry County SPLOST
Management

	Name:	Address:	Phone Number:
1	Lucie Britson	738 Lexington Ave	770-478-2882
2	Allen Krivsky		770 424 1668
3	Kay Kerscy	1090 Columbus Dr	770-478-6153
4	Art Kerscy	1090 Columbus Dr	
5	Tom Hudson	221 Jamestown Ave	678-610-2807
6	Marcia Hudson	221 Jamestown Ave	
7	BOB PAYNE	9213 Fairfax Ct	678-200-2855
8	STAN CREECY	3785 JAMAICA DR	770-4746133
9	KEN YOUNG	304 RICHMOND A.A.	770-471-6908
10	Frank Nichols	232 Jamestown Ave	404-234-9164
11	Barbara Nichols	232 Jamestown Ave	770-356-6049
12	BRAD HENDRY	1089 Columbus Drive	770-403-7959
13	HARRY SOY	3225 SBAY V	770-478-3060
14	EVELYN EDMOND	191 AMICALUNA WAY	770 507-5840
15	Doris Holmer	2140 WOODLAND CT	770-473-8015
16	Dow Kirkland	3464 South Bay Dr.	770-265-5669

October 30, 2014
6:00-7:30 p.m.

Jodeco Road @ Blackhall Road Public Information Meeting

Henry County SPLOST
Management

	Name:	Address:	Phone Number:
17	Barbara Bray	146 Amicalola Way (Falling Waters)	770-389-7381
18	MICHAEL JONES	319 TRENTON CIR.	404-561-6180
19	MARY JONES	319 TRENTON CIR.	404-561-6460
20	Rauson Newsome	137 Falling Waters Dr	770-389-8781
21	GARY FREDMAN	229 JAMESTOWN, Heritage	(7) 471-9353
22	Harold Jones	325 Trenton Cir	770-478-8913
23	Mark Jones	325 Trenton Cir	770 478 8913
24	Keith + Wanda Alderson	847 Plymouth Dr	770 478-3759
25	Duke Wayne	8430 Marina Bay Ct	7) 478-4171
26	Margie Wright	8450 Marina Bay Ct.	770-471-2955
27	Paige Moore	324 Trenton Cir	404-831-1095
28	Alicia Smith	8889 Blackhall	770-478-2742
29	Donna Harp	215 hawwood Dr.	770-477-6783
30	Toye Powell	515 Anglewood Trace	(678) 852-3011
31	DAVID Sherman	879 Plymouth Dr	404-583-0627
32	DAVID MATOS	225 Amicalola Way	770-389-0269
33	Michael Sawhney	2754 Orchard Walk	952 2179700

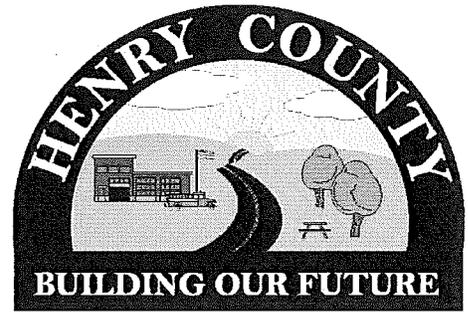
October 30, 2014
6:00-7:30 p.m.

Jodeco Road @ Blackhall Road Public Information Meeting

Henry County SPLOST
Management

	Name:	Address:	Phone Number:
34	NATALIE WILKINSON	166 AMICMOLA WAY	678479 9173
35	Tony Keller	345 Longwood Place	404-242-6320
36	Debbie & Ken Moss	4141 Jodeco Rd.	770-389-0469
37	Bob Nash	3000 EMERALD DR.	770-477-5160
38	Rocky Roman	112 S. Zack H. way	770-288-7319
39	Justin Bowles	602 W. PEACHTREE ST ATLANTA, GA 30308	404-631-1153
40			
41			
42			
43			
44			
45			
46			
47			
48			
49			
50			

Henry County SPLOST Management
112 South Zack Hinton Parkway
McDonough, Georgia 30253
770.288.7319
(770) 288.7354



Please print responses.

Name: DAVID Shofman

Address: 879 PLYMOUTH DR
Jonesboro, GA 30236 (HENRY CO)

Project Name: Jodeco Road @ Blackhall Road – SPLOST Intersection Improvement Project

Do you support this project? For Against Conditional Unconditional

Comments: Consider a westbound TURN LANE 1-3 CARS
DEEP ON Jodeco AT the ENTRANCE to Heritage
Ridge Subdivision AT Old Virginia & Jodeco Rd.

How did you hear about this meeting? TV Newspaper/Internet Signs Word of Mouth

Was the location of the meeting convenient for you to attend? Yes No

If no, please suggest a general location that is more convenient to your community.

Was the time of the meeting convenient for you to attend? Yes No

If no, please suggest a time frame that is more convenient for you.

Were your questions answered by the Henry County/SPLOST personnel? Yes No

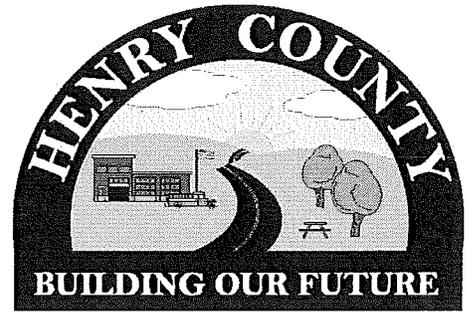
Do you better understand the project after attending this meeting? Yes No

Please share your suggestions on improving the way Henry County SPLOST conducts public meetings.

ALL the County & State Stakeholders
Were in Attendance

Mail To:
Right-of-Way Staff
Henry County SPLOST Management
112 South Zack Hinton Parkway
McDonough, GA 30253

Henry County SPLOST Management
112 South Zack Hinton Parkway
McDonough, Georgia 30253
770.288.7319
(770) 288.7354



Please print responses.

Name: Tony Kelley

Address: 345 Longwood Place
Jmesboro, Ga. 30236

Project Name: Jodeco Road @ Blackhall Road - SPLOST Intersection Improvement Project

Do you support this project? For Against Conditional Unconditional

Comments: can't wait for this project to be
completed - hopefully the round about
will have good lighting

How did you hear about this meeting? TV Newspaper/Internet Signs Word of Mouth

Was the location of the meeting convenient for you to attend? Yes No

If no, please suggest a general location that is more convenient to your community.

Was the time of the meeting convenient for you to attend? Yes No

If no, please suggest a time frame that is more convenient for you. _____

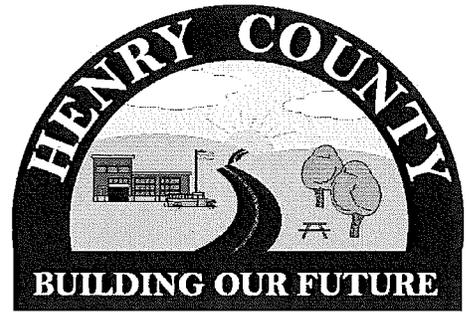
Were your questions answered by the Henry County/SPLOST personnel? Yes No

Do you better understand the project after attending this meeting? Yes No

Please share your suggestions on improving the way Henry County SPLOST conducts public meetings. no problems - attendee handled meeting
well

Mail To:
Right-of-Way Staff
Henry County SPLOST Management
112 South Zack Hinton Parkway
McDonough, GA 30253

Henry County SPLOST Management
112 South Zack Hinton Parkway
McDonough, Georgia 30253
770.288.7319
(770) 288.7354



Please print responses.

Name: Doug Kirkland
Address: 3464 South Bay Dr.
Lake Sprucey GA. 30236

Project Name: Jodeco Road @ Blackhall Road - SPLOST Intersection Improvement Project

Do you support this project? For Against Conditional Unconditional

Comments: Need much sooner - 2016 and
then 8 to 10 months to finish
is to long

How did you hear about this meeting? TV Newspaper/Internet Signs Word of Mouth

Was the location of the meeting convenient for you to attend? Yes No

If no, please suggest a general location that is more convenient to your community.

Was the time of the meeting convenient for you to attend? Yes No

If no, please suggest a time frame that is more convenient for you.

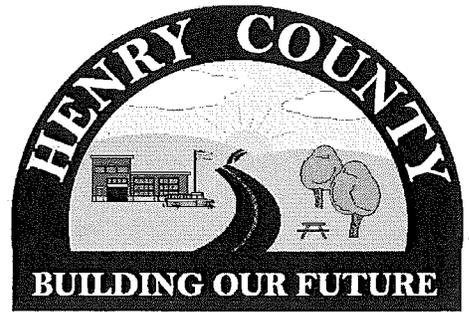
Were your questions answered by the Henry County/SPLOST personnel? Yes No

Do you better understand the project after attending this meeting? Yes No

Please share your suggestions on improving the way Henry County SPLOST conducts public meetings.

Mail To:
Right-of-Way Staff
Henry County SPLOST Management
112 South Zack Hinton Parkway
McDonough, GA 30253

Henry County SPLOST Management
112 South Zack Hinton Parkway
McDonough, Georgia 30253
770.288.7319
(770) 288.7354



Please print responses.

Name: Michael Sawbiny

Address: 2754 Orchard Wells
Jonesboro GA 30236

Project Name: Jodeco Road @ Blackhall Road - SPLOST Intersection Improvement Project

Do you support this project? For Against Conditional Unconditional

Comments: - Have a police officer direct traffic
during rush hour

How did you hear about this meeting? TV Newspaper/Internet Signs Word of Mouth

Was the location of the meeting convenient for you to attend? Yes No

If no, please suggest a general location that is more convenient to your community.

To much traffic @ the intersection

Was the time of the meeting convenient for you to attend? Yes No

If no, please suggest a time frame that is more convenient for you. _____

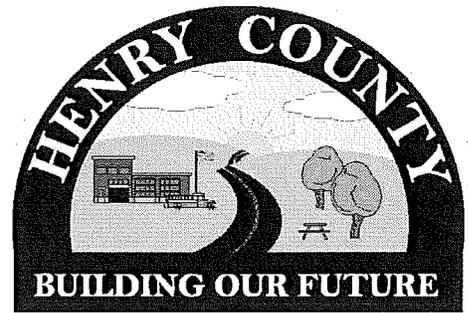
Were your questions answered by the Henry County/SPLOST personnel? Yes No

Do you better understand the project after attending this meeting? Yes No

Please share your suggestions on improving the way Henry County SPLOST conducts public meetings.

Mail To:
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112 South Zack Hinton Parkway
McDonough, GA 30253

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112 South Zack Hinton Parkway
McDonough, Georgia 30253
770.288.7319
(770) 288.7354



Please print responses.

Name: Denise Williams

Address: 420 Longwood Ct.

404-626-9308

Project Name: Jodeco Road @ Blackhall Road - SPLOST Intersection Improvement Project

Do you support this project? For Against Conditional Unconditional

Comments: _____

How did you hear about this meeting? TV Newspaper/Internet Signs Word of Mouth

Was the location of the meeting convenient for you to attend? Yes No

If no, please suggest a general location that is more convenient to your community.

Was the time of the meeting convenient for you to attend? Yes No

If no, please suggest a time frame that is more convenient for you. 6:30 p

Were your questions answered by the Henry County/SPLOST personnel? Yes No

Do you better understand the project after attending this meeting? Yes No

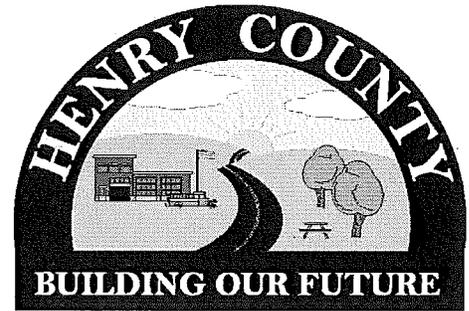
Please share your suggestions on improving the way Henry County SPLOST conducts public meetings. _____

Please contact Longwood subdivision for a meeting when preliminary drawings to understand any impact to the sub-division, etc. NFA

404-626-9308
Beach5101@gmail.com
Denise Williams
President - Longwood HOA.

Mail To:
Right-of-Way Staff
Henry County SPLOST Management
112 South Zack Hinton Parkway
McDonough, GA 30253

Henry County SPLOST Management
112 South Zack Hinton Parkway
McDonough, Georgia 30253
770.288.7319
(770) 288.7354



Please print responses.

Name: Toye Powell

Address: 515 Anglenwood
Trace Stockbridge, GA 30281

Project Name: Jodeco Road @ Blackhall Road - SPLOST Intersection Improvement Project

Do you support this project? For Against Conditional Unconditional

Comments: Great idea

How did you hear about this meeting? TV Newspaper/Internet Signs Word of Mouth

Was the location of the meeting convenient for you to attend? Yes No

If no, please suggest a general location that is more convenient to your community.

Was the time of the meeting convenient for you to attend? Yes No

If no, please suggest a time frame that is more convenient for you. _____

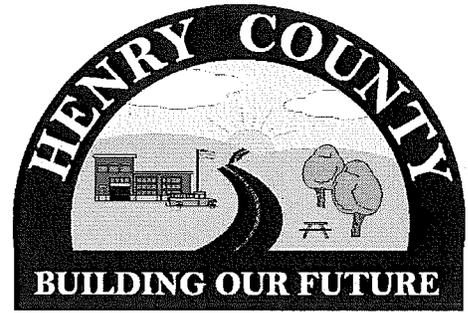
Were your questions answered by the Henry County/SPLOST personnel? Yes No

Do you better understand the project after attending this meeting? Yes No

Please share your suggestions on improving the way Henry County SPLOST conducts public meetings.
we need a video who have not
seen this.

Mail To:
Right-of-Way Staff
Henry County SPLOST Management
112 South Zack Hinton Parkway
McDonough, GA 30253

Henry County SPLOST Management
112 South Zack Hinton Parkway
McDonough, Georgia 30253
770.288.7319
(770) 288.7354



Please print responses.

Name: Kenita & Wanda Alderson

Address: 847 Plymouth Dr
Jonesboro, GA 30236

Project Name: Jodeco Road @ Blackhall Road – SPLOST Intersection Improvement Project

Do you support this project? For Against Conditional Unconditional

Comments: _____

How did you hear about this meeting? TV Newspaper/Internet Signs Word of Mouth

Was the location of the meeting convenient for you to attend? Yes No

If no, please suggest a general location that is more convenient to your community.

Was the time of the meeting convenient for you to attend? Yes No

If no, please suggest a time frame that is more convenient for you. _____

Were your questions answered by the Henry County/SPLOST personnel? Yes No

Do you better understand the project after attending this meeting? Yes No

Please share your suggestions on improving the way Henry County SPLOST conducts public meetings. _____

Mail To:
Right-of-Way Staff
Henry County SPLOST Management
112 South Zack Hinton Parkway
McDonough, GA 30253

Keith Golden, P.E., Commissioner



GEORGIA DEPARTMENT OF TRANSPORTATION

One Georgia Center, 600 West Peachtree Street, NW
Atlanta, Georgia 30308
Telephone: (404) 631-1000

April 15, 2014

Honorable Tommy Smith
Chairman, Henry County
140 Henry Parkway
McDonough, GA 30253

Dear Mr. Smith:

I am returning for your files an executed agreement between the Georgia Department of Transportation and Henry County for the following project:

Henry County, PI# 0012642

We look forward to working with you on the successful completion of the joint project.
Should you have any questions, please contact the Project Manager Justin Banks at (404) 631-1153.

Sincerely,

A handwritten signature in blue ink, appearing to read "Angela Robinson", with a long horizontal flourish extending to the right.

Angela Robinson,
Financial Management Administrator

AR:kp

Enclosure

c: Bob Rogers
Thomas Howell – District 3 Engineer
Jack Reed – District 3 Planning & Programming Engineer
Kerry Gore – District 3 Utilities Engineer
Mike Bolden – State Utilities Engineer

AGREEMENT
BETWEEN
DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
AND
HENRY COUNTY
FOR
TRANSPORTATION FACILITY IMPROVEMENTS

This Framework Agreement is made and entered into this 2nd day of April, 2014, by and between the DEPARTMENT OF TRANSPORTATION, an agency of the State of Georgia, hereinafter called the "DEPARTMENT", and HENRY COUNTY, acting by and through its Board of Commissioners, hereinafter called the "LOCAL GOVERNMENT".

WHEREAS, the LOCAL GOVERNMENT has represented to the DEPARTMENT a desire to improve the transportation facility described in Attachment A, attached and incorporated herein by reference and hereinafter referred to as the "PROJECT"; and

WHEREAS, the LOCAL GOVERNMENT has represented to the DEPARTMENT a desire to participate in certain activities including the funding of certain portions of the PROJECT and the DEPARTMENT has relied upon such representations; and

WHEREAS, the DEPARTMENT has expressed a willingness to participate in certain activities of the PROJECT as set forth in this Agreement; and

WHEREAS, the DEPARTMENT has provided an estimated cost to the LOCAL GOVERNMENT for its participation in certain activities of the PROJECT; and

WHEREAS, the Constitution authorizes intergovernmental agreements whereby state and local entities may contract with one another "for joint services, for the provision of services, or for the joint or separate use of facilities or equipment; but such contracts must deal with activities, services or facilities which the parties are authorized by law to undertake or provide." Ga. Constitution Article IX, §III, ¶I(a).

NOW THEREFORE, in consideration of the mutual promises made and of the benefits to flow from one to the other, the DEPARTMENT and the LOCAL GOVERNMENT hereby agree each with the other as follows:

1. The LOCAL GOVERNMENT has applied for and received "Qualification Certification" to administer federal-aid projects. The GDOT Local Administered Project (LAP) Certification Committee has reviewed, confirmed and approved the certification for the LOCAL GOVERNMENT to develop federal project(s) within the scope of its certification using the DEPARTMENT'S Local Administered Project Manual procedures. The LOCAL GOVERNMENT shall contribute to the PROJECT by funding all or certain portions of the PROJECT costs for the preconstruction engineering (design) activities, hereinafter referred to as "PE", all reimburseable utility relocations, all non-reimburseable utilities owned by the LOCAL GOVERNMENT, railroad costs, right of way acquisitions and construction, as specified in Attachment A, affixed hereto and incorporated herein by reference. In addition, the September 17, 2010 Planning Office memorandum titled "Preliminary Engineering Oversight for Project Managers/Project Delivery Staff", outlines the five (5) conditions when the LOCAL GOVERNMENT will be requested to fund the PE oversight activities at 100%. Attached as Attachment "C" and incorporated herein by reference. Expenditures incurred by the LOCAL GOVERNMENT prior to the execution of this AGREEMENT or subsequent funding agreements shall not be considered for reimbursement by the DEPARTMENT. PE expenditures incurred by the LOCAL GOVERNMENT after execution of this AGREEMENT shall be reimbursed by the DEPARTMENT once a written notice to proceed is given by the DEPARTMENT.

revised : 12/2011

2. The DEPARTMENT shall contribute to the PROJECT by funding all or certain portions of the PROJECT costs for the PE, right of way acquisitions, reimbursable utility relocations, railroad costs, or construction (specified in Attachment A) affixed hereto and incorporated herein by reference, and none of the five (5) conditions apply from the Planning Office memorandum dated September 17, 2010 (specified in Attachment C).

3. The DEPARTMENT shall provide a PE Oversight Estimate to the LOCAL GOVERNMENT, if appropriate, appended as Attachment "D" and incorporated by reference as if fully set out herein. The LOCAL GOVERNMENT will be responsible for providing payment, which represents 100% of the DEPARTMENT's PE Oversight Estimate at the time of the Project Framework Agreement execution.

If at any time the PE Oversight funds are depleted within \$5,000 of the remaining PE Oversight balance and project activities and tasks are still outstanding, the LOCAL GOVERNMENT shall, upon request, make additional payment to the DEPARTMENT. The payment shall be determined by prorating the percentage complete and using the same estimate methodology as provided in Attachment "D". If there is an unused balance after completion of all tasks and phases of the project, then pending a final audit, the remainder will be refunded to the sponsor.

4. It is understood and agreed by the DEPARTMENT and the LOCAL GOVERNMENT that the funding portion as identified in Attachment "A" of this Agreement only applies to the PE. The Right of Way and Construction funding estimate levels as specified in Attachment "A" are provided herein for planning purposes and do not constitute a funding commitment for right of way and construction. The DEPARTMENT will prepare LOCAL GOVERNMENT Specific Activity Agreements for funding applicable to other activities when appropriate.

Further, the LOCAL GOVERNMENT shall be responsible for repayment of any expended federal funds if the PROJECT does not proceed forward to completion due to a lack of available funding in future PROJECT phases, changes in local priorities or cancellation of the PROJECT by the LOCAL GOVERNMENT without concurrence by the DEPARTMENT.

5. In accordance with Georgia Code 32-2-2, The LOCAL GOVERNMENT shall be responsible for all costs for the continual maintenance and operations of any and all sidewalks and the grass strip between the curb and sidewalk within the PROJECT limits. The LOCAL GOVERNMENT shall also be responsible for the continual maintenance and operation of all lighting systems installed to illuminate any

roundabouts constructed as part of this PROJECT. Furthermore, the LOCAL GOVERNMENT shall also be responsible for the maintaining of all landscaping installed as part of any roundabout constructed as part of this PROJECT.

6. Both the LOCAL GOVERNMENT and the DEPARTMENT hereby acknowledge that Time is of the Essence. It is agreed that both parties shall adhere to the schedule of activities currently established in the approved Transportation Improvement Program/State Transportation Improvement Program, hereinafter referred to as "TIP/STIP". Furthermore, all parties shall adhere to the detailed project schedule as approved by the DEPARTMENT, attached as Attachment B and incorporated herein by reference. In the completion of respective commitments contained herein, if a change in the schedule is needed, the LOCAL GOVERNMENT shall notify the DEPARTMENT in writing of the proposed schedule change and the DEPARTMENT shall acknowledge the change through written response letter; provided that the DEPARTMENT shall have final authority for approving any change.

If, for any reason, the LOCAL GOVERNMENT does not produce acceptable deliverables in accordance with the approved schedule, the DEPARTMENT reserves the right to delay the PROJECT's implementation until funds can be re-identified for right of way or construction phases, as applicable.

7. The LOCAL GOVERNMENT shall certify that the regulations for
"CERTIFICATION OF COMPLIANCES WITH FEDERAL PROCUREMENT

REQUIREMENTS, STATE AUDIT REQUIREMENTS, and FEDERAL AUDIT REQUIREMENTS" are understood and will comply in full with said provisions.

8. The LOCAL GOVERNMENT shall accomplish the PE activities for the PROJECT. The PE activities shall be accomplished in accordance with the DEPARTMENT's Plan Development Process hereinafter referred to as "PDP", the applicable guidelines of the American Association of State Highway and Transportation Officials, hereinafter referred to as "AASHTO", the DEPARTMENT's Standard Specifications Construction of Transportation Systems, and all applicable design guidelines and policies of the DEPARTMENT to produce a cost effective PROJECT. Failure to follow the PDP and all applicable guidelines and policies will jeopardize the use of Federal Funds in some or all categories outlined in this agreement, and it shall be the responsibility of the LOCAL GOVERNMENT to make up the loss of that funding. The LOCAL GOVERNMENT's responsibility for PE activities shall include, but is not limited to the following items:

a. Prepare the PROJECT Concept Report and Design Data Book in accordance with the format used by the DEPARTMENT. The concept for the PROJECT shall be developed to accommodate the future traffic volumes as generated by the LOCAL GOVERNMENT as provided for in paragraph 7b and approved by the DEPARTMENT. The concept report shall be approved by the DEPARTMENT prior to the LOCAL GOVERNMENT beginning further development of the PROJECT plans. It is recognized by the parties that the approved concept may be updated or modified by the LOCAL GOVERNMENT as required by the

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DEPARTMENT and re-approved by the DEPARTMENT during the course of PE due to updated guidelines, public input, environmental requirements, Value Engineering recommendations, Public Interest Determination (PID) for utilities, utility/railroad conflicts, or right of way considerations.

b. Prepare a Traffic Study for the PROJECT that includes Average Daily Traffic, hereinafter referred to as "ADT", volumes for the base year (year the PROJECT is expected to be open to traffic) and design year (base year plus 20 years) along with Design Hour Volumes, hereinafter referred to as "DHV", for the design year. DHV includes morning (AM) and evening (PM) peaks and other significant peak times. The Study shall show all through and turning movement volumes at intersections for the ADT and DHV volumes and shall indicate the percentage of trucks on the facility. The Study shall also include signal warrant evaluations for any additional proposed signals on the PROJECT.

c. Prepare environmental studies, documentation reports and complete Environmental Document for the PROJECT along with all environmental re-evaluations required that show the PROJECT is in compliance with the provisions of the National Environmental Policy Act or the Georgia Environmental Policy Act as per the DEPARTMENT's Environmental Procedures Manual, as appropriate to the PROJECT funding. This shall include any and all archaeological, historical, ecological, air, noise, community involvement, environmental justice, flood plains, underground storage tanks, and hazardous waste site studies required. The

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completed Environmental Document approval shall occur prior to Right of Way funding authorization. A re-evaluation is required for any design change as described in Chapter 7 of the Environmental Procedures Manual. In addition, a re-evaluation document approval shall occur prior to any Federal funding authorizations if the latest approved document is more than 6 months old. The LOCAL GOVERNMENT shall submit to the DEPARTMENT all studies, documents and reports for review and approval by the DEPARTMENT, the FHWA and other environmental resource agencies. The LOCAL GOVERNMENT shall provide Environmental staff to attend all PROJECT related meetings where Environmental issues are discussed. Meetings include, but are not limited to, concept, field plan reviews and value engineering studies.

d. Prepare all PROJECT public hearing and public information displays and conduct all required public hearings and public information meetings with appropriate staff in accordance with DEPARTMENT practice.

e. Perform all surveys, mapping, soil investigations and pavement evaluations needed for design of the PROJECT as per the appropriate DEPARTMENT Manual.

f. Perform all work required to obtain all applicable PROJECT permits, including, but not limited to, Cemetery, TVA and US Army Corps of Engineers permits, Stream Buffer Variances and Federal Emergency Management Agency

(FEMA) approvals. The LOCAL GOVERNMENT shall provide all mitigation required for the project, including but not limited to permit related mitigation. All mitigation costs are considered PE costs. PROJECT permits and non-construction related mitigation must be obtained and completed 3 months prior to the scheduled let date. These efforts shall be coordinated with the DEPARTMENT.

g. Prepare the stormwater drainage design for the PROJECT and any required hydraulic studies for FEMA Floodways within the PROJECT limits. Acquire of all necessary permits associated with the Hydrology Study or drainage design.

h. Prepare utility relocation plans for the PROJECT following the DEPARTMENT's policies and procedures for identification, coordination and conflict resolution of existing and proposed utility facilities on the PROJECT. These policies and procedures, in part, require the Local Government to submit all requests for existing, proposed, and relocated facilities to each utility owner within the project area. Copies of all such correspondence, including executed agreements for reimbursable utility/railroad relocations, shall be forwarded to the DEPARTMENT's Project Manager and the District Utilities Engineer and require that any conflicts with the PROJECT be resolved by the LOCAL GOVERNMENT. If it is determined that the PROJECT is located on an on-system route or is a DEPARTMENT LET PROJECT, the LOCAL GOVERNMENT and the District Utilities Engineer shall ensure that permit applications are approved for each utility company in conflict with

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the project. If it is determined through the DEPARTMENT's Project Manager and State Utilities Office during the concept or design phases the need to utilize Overhead/Subsurface Utility Engineering, hereinafter referred to as "SUE", to obtain the existing utilities, the LOCAL GOVERNMENT shall be responsible for acquiring those services. SUE costs are considered PE costs.

i. Prepare, in English units, Preliminary Construction plans, Right of Way plans and Final Construction plans that include the appropriate sections listed in the Plan Presentation Guide, hereinafter referred to as "PPG", for all phases of the PDP. All drafting and design work performed on the project shall be done utilizing Microstation V8i and InRoads software respectively using the DEPARTMENT's Electronic Data Guidelines. The LOCAL GOVERNMENT shall further be responsible for making all revisions to the final right of way plans and construction plans, as deemed necessary by the DEPARTMENT, for whatever reason, as needed to acquire the right of way and construct the PROJECT.

j. Prepare PROJECT cost estimates for construction, Right of Way and Utility/railroad relocation along with a Benefit Cost, hereinafter referred to as "B/C ratio" at the following project stages: Concept, Preliminary Field Plan Review, Right of Way plan approval (Right of Way cost only), Final Field Plan Review and Final Plan submission using the applicable method approved by the DEPARTMENT. The cost estimates and B/C ratio shall also be updated annually if the noted project

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stages occur at a longer frequency. Failure of the LOCAL GOVERNMENT to provide timely and accurate cost estimates and B/C ratio may delay the PROJECT's implementation until additional funds can be identified for right of way or construction, as applicable.

k. Provide certification, by a Georgia Registered Professional Engineer, that the Design and Construction plans have been prepared under the guidance of the professional engineer and are in accordance with AASHTO and DEPARTMENT Design Policies.

l. Provide certification, by a Level II Certified Design Professional that the Erosion Control Plans have been prepared under the guidance of the certified professional in accordance with the current Georgia National Pollutant Discharge Elimination System.

m. Provide a written certification that all appropriate staff (employees and consultants) involved in the PROJECT have attended or are scheduled to attend the Department's PDP Training Course. The written certification shall be received by the Department no later than the first day of February of every calendar year until all phases have been completed.

9. The Primary Consultant firm or subconsultants hired by the LOCAL GOVERNMENT to provide services on the PROJECT shall be prequalified with the

DEPARTMENT in the appropriate area-classes. The DEPARTMENT shall, on request, furnish the LOCAL GOVERNMENT with a list of prequalified consultant firms in the appropriate area-classes. The LOCAL GOVERNMENT shall comply with all applicable state and federal regulations for the procurement of design services and in accordance with the Brooks Architect-Engineers Act of 1972, better known as the Brooks Act, for any consultant hired to perform work on the PROJECT.

10. The DEPARTMENT shall review and has approval authority for all aspects of the PROJECT provided however this review and approval does not relieve the LOCAL GOVERNMENT of its responsibilities under the terms of this agreement. The DEPARTMENT will work with the FHWA to obtain all needed approvals as deemed necessary with information furnished by the LOCAL GOVERNMENT.

11. The LOCAL GOVERNMENT shall be responsible for the design of all bridge(s) and preparation of any required hydraulic and hydrological studies within the limits of this PROJECT in accordance with the DEPARTMENT's policies and guidelines. The LOCAL GOVERNMENT shall perform all necessary survey efforts in order to complete the hydraulic and hydrological studies and the design of the bridge(s). The final bridge plans shall be incorporated into this PROJECT as a part of this Agreement.

12. The LOCAL GOVERNMENT unless otherwise noted in attachment "A" shall be responsible for funding all LOCAL GOVERNMENT owned utility relocations and all other reimbursable utility/railroad costs. The utility costs shall include but are not limited to PE, easement acquisition, and construction activities necessary for the utility/railroad to accommodate the PROJECT. The terms for any such reimbursable relocations shall be laid out in an agreement that is supported by plans, specifications, and itemized costs of the work agreed upon and shall be executed prior to certification by the DEPARTMENT. The LOCAL GOVERNMENT shall certify via written letter to the DEPARTMENT's Project Manager and District Utilities Engineer that all Utility owners' existing and proposed facilities are shown on the plans with no conflicts 3 months prior to advertising the PROJECT for bids and that any required agreements for reimbursable utility/railroad costs have been fully executed. Further, this certification letter shall state that the LOCAL GOVERNMENT understands that it is responsible for the costs of any additional reimbursable utility/railroad conflicts that arise during construction.

13. The DEPARTMENT will be responsible for all railroad coordination on DEPARTMENT Let and/or State Route (On-System) projects; the LOCAL GOVERNMENT shall address concerns, comments, and requirements to the satisfaction of the Railroad and the DEPARTMENT. If the LOCAL GOVERNMENT is shown to LET the construction in Attachment "A" on off-system routes, the LOCAL

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GOVERNMENT shall be responsible for all railroad coordination and addressing concerns, comments, and requirements to the satisfaction of the Railroad and the DEPARTMENT for PROJECT.

14. The LOCAL GOVERNMENT shall be responsible for acquiring a Value Engineering Consultant for the DEPARTMENT to conduct a Value Engineering Study if the total estimated PROJECT cost is \$10 million or more. The Value Engineering Study cost is considered a PE cost. The LOCAL GOVERNMENT shall provide project related design data and plans to be evaluated in the study along with appropriate staff to present and answer questions about the PROJECT to the study team. The LOCAL GOVERNMENT shall provide responses to the study recommendations indicating whether they will be implemented or not. If not, a valid response for not implementing shall be provided. Total project costs include PE, right of way, and construction, reimbursable utility/railroad costs.

15. The LOCAL GOVERNMENT, unless shown otherwise on Attachment A, shall acquire the Right of way in accordance with the law and the rules and regulations of the FHWA including, but not limited to, Title 23, United States Code; 23 CFR 710, et. Seq., and 49 CFR Part 24 and the rules and regulations of the DEPARTMENT. Upon the DEPARTMENT's approval of the PROJECT right of way plans, verification that the

approved environmental document is valid and current, a written notice to proceed will be provided by the DEPARTMENT for the LOCAL GOVERNMENT to stake the right of way and proceed with all pre-acquisition right of way activities. The LOCAL GOVERNMENT shall not proceed to property negotiation and acquisition whether or not the right of way funding is Federal, State or Local, until the right of way agreement named "Contract for the Acquisition of Right of Way" prepared by the DEPARTMENT's Office of Right of Way is executed between the LOCAL GOVERNMENT and the DEPARTMENT. Failure of the LOCAL GOVERNMENT to adhere to the provisions and requirements specified in the acquisition contract may result in the loss of Federal funding for the PROJECT and it will be the responsibility of the LOCAL GOVERNMENT to make up the loss of that funding. Right of way costs eligible for reimbursement include land and improvement costs, property damage values, relocation assistance expenses and contracted property management costs. Non reimbursable right of way costs include administrative expenses such as appraisal, consultant, attorney fees and any in-house property management or staff expenses. The LOCAL GOVERNMENT shall certify that all required right of way is obtained and cleared of obstructions, including underground storage tanks, 3 months prior to advertising the PROJECT for bids.

16. The DEPARTMENT unless otherwise shown in Attachment "A" shall be responsible for Letting the PROJECT to construction, solely responsible for executing any agreements with all applicable utility/railroad companies and securing and awarding the construction contract for the PROJECT when the following items have been completed and submitted by the LOCAL GOVERNMENT:

- a. Submittal of acceptable PROJECT PE activity deliverables noted in this agreement.
- b. Certification that all needed rights of way have been obtained and cleared of obstructions.
- c. Certification that the environmental document is current and all needed permits and mitigation for the PROJECT have been obtained.
- d. Certification that all Utility/Railroad facilities, existing and proposed, within the PROJECT limits are shown, any conflicts have been resolved and reimbursable agreements, if applicable, are executed.

If the LOCAL GOVERNMENT is shown to LET the construction in Attachment "A", the LOCAL GOVERNMENT shall provide the above deliverables and certifications and shall follow the requirements stated in Chapters 10, 11, 12 and 13 of the DEPARTMENT's Local Administered Project Manual. The LOCAL GOVERNMENT shall be responsible for providing qualified construction oversight with their personnel or by employing a Consultant firm prequalified in Area Class 8.01 to perform construction

revised : 12/2011

oversight. The LOCAL GOVERNMENT shall be responsible for employing a GDOT prequalified consultant in area classes 6.04a and 6.04b for all materials testing on the PROJECT, with the exception of field concrete testing. All materials testing, including field concrete testing shall be performed by GDOT certified technicians who are certified for the specific testing they are performing on the PROJECT. The testing firm(s) and the individual technicians must be submitted for approval prior to Construction.

17. The LOCAL GOVERNMENT shall provide a review and recommendation by the engineer of record concerning all shop drawings prior to the DEPARTMENT review and approval. The DEPARTMENT shall have final authority concerning all shop drawings.

18. The LOCAL GOVERNMENT agrees that all reports, plans, drawings, studies, specifications, estimates, maps, computations, computer files and printouts, and any other data prepared under the terms of this Agreement shall become the property of the DEPARTMENT if the PROJECT is being let by the DEPARTMENT. This data shall be organized, indexed, bound, and delivered to the DEPARTMENT no later than the advertisement of the PROJECT for letting. The DEPARTMENT shall have the right to use this material without restriction or limitation and without compensation to the LOCAL GOVERNMENT.

19. The LOCAL GOVERNMENT shall be responsible for the professional quality, technical accuracy, and the coordination of all reports, designs, drawings, specifications, and other services furnished by or on behalf of the LOCAL GOVERNMENT pursuant to this Agreement. The LOCAL GOVERNMENT shall correct or revise, or cause to be corrected or revised, any errors or deficiencies in the reports, designs, drawings, specifications, and other services furnished for this PROJECT. Failure by the LOCAL GOVERNMENT to address the errors, omissions or deficiencies within 30 days of notification shall cause the LOCAL GOVERNMENT to assume all responsibility for construction delays and supplemental agreements caused by the errors and deficiencies. All revisions shall be coordinated with the DEPARTMENT prior to issuance. The LOCAL GOVERNMENT shall also be responsible for any claim, damage, loss or expense, to the extent allowed by law that is attributable to errors, omissions, or negligent acts related to the designs, drawings, specifications, and other services furnished by or on behalf of the LOCAL GOVERNMENT pursuant to this Agreement.

20. The DEPARTMENT shall be furnished with a copy of all contracts and agreements between the LOCAL GOVERNMENT and any other agency or contractor

associated with construction activities. The DEPARTMENT's Project Manager shall be the primary point of contact unless otherwise specified.

21. The LOCAL GOVERNMENT shall provide the DEPARTMENT with a detailed project schedule that reflects milestones, deliverables with durations for all pertinent activities to develop critical path elements. An electronic project schedule shall be submitted to the Project Manager after execution of this agreement.

This Agreement is made and entered into in FULTON COUNTY, GEORGIA, and shall be governed and construed under the laws of the State of Georgia.

The covenants herein contained shall, except as otherwise provided, accrue to the benefit of and be binding upon the successors and assigns of the parties hereto.

IN WITNESS WHEREOF, the DEPARTMENT and the LOCAL GOVERNMENT have caused these presents to be executed under seal by their duly authorized representatives.

DEPARTMENT OF
TRANSPORTATION

HENRY COUNTY

BY: [Signature]
Commissioner

BY: [Signature]
Name
Title

ATTEST: [Signature]
Treasurer



Signed, sealed and delivered this 19th day of December, 2013, in the presence of:

[Signature]
Witness

[Signature]
Notary Public



This Agreement Approved Local Government, the 19th day of December, 2013.

Attest
[Signature]
Name and Title

FEIN: 58-6000842

Attachment "A" Funding Sources and Distribution
 Project No.: 0012642 County: HENRY

Attach "Project Manager" Project Charging Form for Approval

Preliminary Engineering Phase I	Preliminary Engineering - Phase I					GDOT Oversight for PE (Phase I) ²			Preliminary Engineering Grand Total (Phase I) ²	
	Percentage	PE Amount	Maximum PE Participation Amount (\$)	Participant	PE Activity Sponsor	Percentage	Amount	Participant	Percentage	Amount
	1	80%	\$114,400.00	\$114,400.00	Federal	Local Government	0%	N/A	Federal	80%
2	0%	\$0.00	\$0.00	State	0%		N/A	State	0%	\$0.00
3	20%	\$28,600.00	*N/A	Local	0%		N/A	Local	20%	\$28,600.00
4	0%	\$0.00	\$0.00	Other	0%		N/A	Other	0%	\$0.00
Total	100%	\$143,000.00				0%	\$0.00		100%	\$143,000.00

*Total PE costs > \$143,000.00 will be 100% Local

Right of Way Phase II	Right of Way - Phase II					
	Percentage	ROW Amount	Maximum ROW Participation Amount (\$)	Participant	Acquisition By:	Acquisition Funds By:
	1	80%	\$240,000.00	\$240,000.00	Federal	Local Government
2	0%	\$0.00	\$0.00	State		
3	20%	\$60,000.00	*N/A	Local		
4	0%	\$0.00	\$0.00	Other		
Total	100%	\$300,000.00				

*Total Right of Way Costs > \$300,000 will be 100% Local

Utility Phase IV	Utility Relocation - Phase IV	
	Utility Funding By:	Railroad Funding By:
	GDOT: 80% up to \$80,000 *Local: 20% up to \$20,000	GDOT
100%	100%	

*Total Utility Relocation Costs > \$100,000 will be 100% Local

Construction Phase III	Construction - Phase III				
	Percentage	CST Amount	Maximum CST Participation Amount (\$)	Participant	Letting By:
	1	80%	\$814,400.00	\$814,400.00	Federal
2	0%	\$0.00	\$0.00	State	
3	20%	\$203,600.00	*N/A	Local	
4	0%	\$0.00	\$0.00	Other	
Total	100%	\$1,018,000.00			

*Total Construction Costs > \$1,018,000.00 will be 100% Local

Construction Oversight Phases V & VI	GDOT Oversight for CST (Phase III) ²	
	Testing (Phase V) Funding By:	Inspection (Phase VI) Funding By:
	GDOT	GDOT
100%	100%	

Summary of Phases II Through III	Grand Total Phases II through III			
	Percentage	CST Amount	Maximum ROW Participation Amount (\$)	Participant
	1	80%	\$814,400.00	\$240,000.00
2	0%	\$0.00	\$0.00	State
3	20%	\$203,600.00	N/A	Local
4	0%	\$0.00	\$0.00	Other
Total	100%	\$1,018,000.00		

The funding portion identified in Attachment "A" only applies to PE. The Right of Way and Construction funding estimates are provided for planning purposes and do not constitute a funding commitment for right of way and construction.

¹The Maximum allowable GDOT participating amounts for PE phase are shown above. Local Government will only be reimbursed the percentage of the accrued invoiced amounts up to but not to exceed the maximum amount indicated.

²GDOT Oversight for PE (Phase I) is detailed in Attachment "D".

³The GDOT Oversight check shall be remitted to the District Planning and Programming Engineer along with the signed Project Framework Agreement (PFA).

⁴ Right-of-Way and Construction amounts shown are for budget planning purposes only.

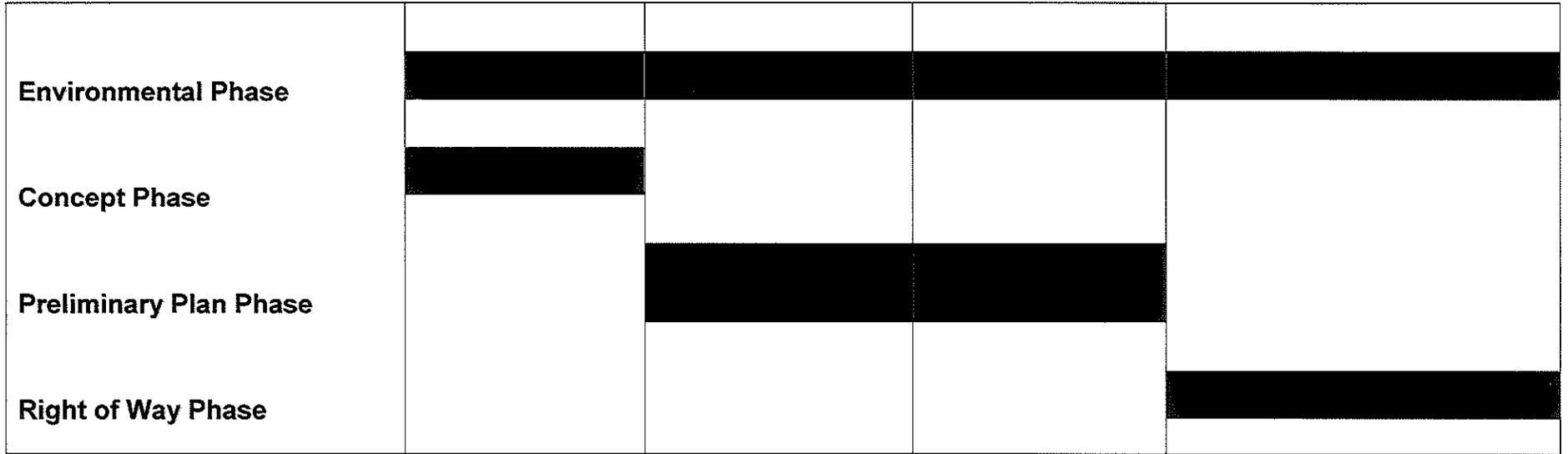
NOTE: Separate GDOT P.O.s will be established for each funding phase.

revised : 12/2011

ATTACHMENT "B" Project Timeline

PI # 0012642 – Henry

Proposed Project Timeline



Deadlines for Responsible Parties	Execute Agreement	March 2014 (Approve Concept)	February 2015 (Approve Env. Document)	September 2015 (Authorize Right of Way funds)	May 2016 (Authorize Const. funds)
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Annual Reporting Requirements

The Local Government shall provide a written status report to the Department's Project Manager with the actual phase completion date(s) and the percent complete/proposed completion date of incomplete phases. The written status report shall be received by the Department no later than the first day of February of every calendar year until all phases have been completed.

revised : 12/2011

ATTACHMENT "C"

D.O.T. 66

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENTAL CORRESPONDENCE

FILE OFFICE Planning
 DATE September 17, 2010
 FROM  Angela S. Alexander, State Transportation Planning Administrator
 TO Todd I. Long, PE, PTOE, Director of Planning
 Gerald M. Ross, PE, Chief Engineer/Deputy Commissioner
 SUBJECT Preliminary Engineering Oversight for Project Managers/Project Delivery Staff

Note: This memo supersedes the previous PE Oversight Memo, dated August 17, 2010. PE Oversight funding for Safe Route to School (SRTS) projects are eligible for PE Oversight funds, paid for with funding from the SRTS program. No other changes were made to the memo.

As you are aware, the Department is unable to continue funding PE oversight with 100% motor fuel funds due to the decline in motor fuel revenues. As a result, the Department needs an established procedure detailing the circumstances under which the Department will fund PE oversight with federal-aid funds (matched with state motor fuel funds) and when the Department will request that the local government/project sponsor fund the Department's expenses associated with PE oversight. The PE Oversight funds will be used to fund staff man-hours and any other associated expenses incurred by any GDOT employee working on the project. Please note that the process detailed below applies equally to routes both on and off the state highway system.

GDOT Funds PE Oversight with Federal-Aid:

The Department will fund PE oversight with federal-aid funds (and matching motor fuel funds), only if a subsequent project phase (ROW, UTL, CST) is programmed within the first 4 active years of the currently approved TIP/STIP. The source of federal-aid funds to be used for the PE oversight activities is as follows:

- 1) Projects on the National Highway System will use NHS funds (L050) to finance GDOT's PE oversight expenses
- 2) Projects *not* on the National Highway System but eligible for Surface Transportation Program (STP) funds, will follow one of the scenarios below:
 - a) Projects in urban areas between 5,000 and 199,999 in population will use L200 funds (with MPO approval, if applicable)
 - b) Projects in urban areas with a population greater than 200,000 will use L230 funds (with MPO approval)
 - c) Projects in rural areas with a population less than 5,000 will use L250 funds
 - d) The Department may, at the joint discretion of the Chief Engineer and Director of Planning, apply L240 funds to any federal-aid eligible project

- 3) Projects which have received an earmark in federal legislation, will use a portion of the earmark funding for GDOT's PE oversight expenses, pending MPO approval if applicable. (Note: earmark funded projects could receive PE oversight funding regardless of the funding being programmed within the first 4 active years of a currently approved TIP/STIP).
- 4) Projects funded with Safe Route to School (SRTS) funds will use SRTS funds to finance GDOT's PE oversight expenses, regardless of whether or not a subsequent phase of the project appears in the STIP/TIP.

GDOT Requests Local Government/Project Sponsor to Fund PE Oversight:

The Department will request that the local government fund PE oversight with 100% local funds under the following conditions:

- 1) A subsequent phase of the project is not programmed within the first 4 active years of the Currently approved TIP/STIP
- 2) The MPO has elected to not approve the use of L200 or L230 funds for GDOT's PE oversight expenses
- 3) The project is funded with CMAQ funds
- 4) The project is funded with an earmark identified in federal legislation and the local government/entity which secured the earmark (or MPO, if applicable) declines to allow GDOT to use a portion of the earmark for PE oversight expenses
- 5) The project is currently funded entirely with local funds; however, the local government intends to secure federal funding at a future date

Once the PE oversight process is implemented, it will be the responsibility of the GDOT Project Manager to work with the GDOT Office of Financial Management to establish an appropriate amount of federal-aid funded PE oversight funding, or work with the local government to secure locally sourced PE oversight funds.

If you approve of this process, please sign below. Once an acceptable process is developed and approved by both the Chief Engineer and Director of Planning, we will provide the finalized process to the Office of Program Control for distribution to the GDOT Project Managers and incorporation into future Project Framework Agreements. If you have any questions, please contact Matthew Fowler at 404-631-1777.

Approved: _____

Todd I. Long, PE, PTOE, Director of Planning

9/27/10
Date

Approved: _____

Gerald M. Ross, PE, Chief Engineer/Deputy Commissioner

10/7/20
Date

ATA:MF

ATTACHMENT D

GDOT Oversight Estimate for Consultant Project

PI Number **Project Number**
County **Project Length** Miles
Project Manager **Project Cost**
Project Type
Project Description
Expected Life of Project Years

Project Phase	Oversight	Oversight Cost
1. Procurement	0	-
2. Concept Development	0	-
3. Database Preparation	0	\$ -
4. Preliminary Design	0	-
5. Environmental		\$ -
6. Final Design		\$ -
Travel Expenses		\$ -
Total Oversight Estimate	0	\$ -
Percentage of Project Cost	0.00 %	

GDOT Oversight Estimate for Consultant and Locally Administered Projects - Version 2.0 - July 2011

revised : 12/2011

ATTACHMENT E

APPENDIX E--GEORGIA SECURITY AND IMMIGRATION COMPLIANCE ACT AFFIDAVIT

Name of Contracting Entity: HENRY COUNTY

Contract No. and Name: 0012642 HENRY

By executing this affidavit, the undersigned person or entity verifies its compliance with O.C.G.A. § 13-10-91, stating affirmatively that the individual, firm, or entity which is contracting with the Georgia Department of Transportation has registered with, is authorized to participate in, and is participating in the federal work authorization program commonly known as E-Verify, or any subsequent replacement program, in accordance with the applicable provisions and deadlines established in O.C.G.A. § 13-10-91.

The undersigned person or entity further agrees that it will continue to use the federal work authorization program throughout the contract period, and it will contract for the physical performance of services in satisfaction of such contract only with subcontractors who present an affidavit to the undersigned with the information required by O.C.G.A. § 13-10-91(b).

The undersigned person or entity further agrees to maintain records of such compliance and provide a copy of each such verification to the Georgia Department of Transportation within five (5) business days after any subcontractor is retained to perform such service.

46460
E-Verify / Company Identification Number

Angie Sorrow
Signature of Authorized Officer or Agent

July 1, 2007
Date of Authorization

Angie Sorrow
Printed Name of Authorized Officer or Agent

Interim Human Resource Director
Title of Authorized Officer or Agent

1-9-14
Date

SUBSCRIBED AND SWORN

revised : 12/2011

BEFORE ME ON THIS THE

9 DAY OF January, 2014Karrie E. Cromer
Notary PublicMy Commission Expires: 1-5-15**ATTACHMENT F****TITLE VI INTRODUCTION**

As a sub-recipient of federal funds from Georgia Department of Transportation, all municipalities are required to comply with Title VI of the Civil Rights Act of 1964 which provides that:

“No person in the United States shall, on the grounds of race, color, or national origin, be excluded from participation in, or be denied the benefits of, or be subjected To discrimination under any program or activity receiving federal assistance under This title or carried out under this title.”

Additionally, the Civil Rights Restoration Act of 1987, expanded the definition of the terms “programs and activities” to include all programs or activities of federal recipients, subrecipients, and contractors, whether or not such programs and activities are federally assisted.

The provisions of Title VI apply to all contractors, subcontractors, consultants and suppliers. And is a condition for receiving federal funds. All sub recipients must sign Title VI assurances that they will not discriminate as stated in Title VI of the Civil Rights Act of 1964. In the event that the sub recipient distributes federal aid funds to second tier entity, the sub-recipient shall include Title VI language in all written documents and will monitor for compliance. If, these assurances are not signed, the City or County government may be subjected to the loss of federal assistance.

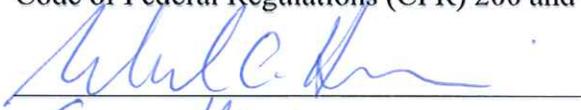
All sub recipients that receive federal assistance must also include Federal Highways Administrations 1273 in their contracts. The FHWA 1273 sets out guidance for ensuring non discrimination and encouraging minority participation and outreach.

Enclosed you will find Title VI acknowledgment form and the Title VI assurances. The Title VI acknowledgment form and Title VI assurances must be signed by your local government official if it has not been signed.

TITLE VI ACKNOWLEDGEMENT FORM

The Henry County Government assures that no person shall on the grounds or race, color, national origin or sex as provided by Title VI of the Civil Rights Act of 1964, and the Civil Rights Restoration Act of 1987 be excluded from participation in, be denied the benefits of, or otherwise be subjected to discrimination under any City or County sponsored program or activity. The Henry County Government assures that every effort will be made to ensure non discrimination in all of its programs or activities, whether those programs are federally funded or not.

Assurance of compliance therefore falls under the proper authority of the City Council or the County Board of Commissioners. The Title VI Coordinator or Liaison is authorized to ensure compliance with provisions of this policy and with the Law, including the requirements of 23 Code of Federal Regulations (CFR) 200 and 49 CFR 21.



 County Manager
 Official Name and Title

1/13/14

Date

Citations:

Title VI of the Civil Rights Act of 1964; 42 USC 2000d to 2000d-4; 42 USC 4601 to 4655; 23 USC 109(h); 23 USC 324; DOT Order 1050.2; EO 12250; EO 12898; 28CFR 50.3

Other Nondiscrimination Authorities Expanded the range and scope of Title VI coverage and applicability

The 1970 Uniform Act (42 USC 4601)
 Section 504 of the 1973 Rehabilitation Act (29 USC 790)
 The 1973 Federal-aid Highway Act (23 USC 324)
 The 1975 Age Discrimination Act (42 USC 6101)
 Implementing Regulations (49 CFR 21 & 23 CFR 200)
 Executive Order 12898 on Environmental Justice (EJ)
 Executive Order 13166 on Limited English Proficiency (LEP)