ORIGINAL TO GENERAL FILES

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

OFFICE OF DESIGN POLICY & SUPPORT
INTERDEPARTMENTAL CORRESPONDENCE

FILE P.I. # 0009872
Effingham County
GDOT District 5 - Jesup
SR 275 @ CR 307/Rincon-Stillwell Road
Roundabout

OFFICE Design Policy & Support

DATE 6/18/2015

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
Ben Rabun, State Bridge Engineer
Andrew Heath, State Traffic Engineer
Angela Robinson, Financial Management Administrator
Lisa Myers, State Project Review Engineer
Charles "Chuck" Hasty, State Materials Engineer
Lee Upkins, State Utilities Engineer
Richard Cobb, Statewide Location Bureau Chief
Andy Casey, State Roadway Design Engineer
Troy Pitman, District Design Engineer
Ed David Adams, State Safety Program Manager
Karon Ivery, District Engineer
Will Murphy, District Preconstruction Engineer
Dallory Rozier, District Utilities Engineer
Cassius Edwards, Project Manager
BOARD MEMBER - 1st Congressional District

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
PROJECT CONCEPT REPORT

Project Type:	SAFETY	P.I. Number:	0009872
GDOT District:	5	County:	Effingham
Federal Route Number:	N/A	State Route Number:	SR 275/CR 307
		Project Number:	N/A

The proposed project ~~will~~ intends to enhance driving protection and improve operational efficiency at the intersection of SR 275 (MP 2.35) at CR 307/Rincon-Stillwelll Road in Effingham County, GA. The four-legged, one way stop controlled intersection will be redesigned into a 150' diameter roundabout.

Submitted for approval:

District 5 Road Design Engineer — Date: 1/23/15

Albert Shelby — Date: 2/6/15
State Program Delivery Engineer

GDOT Project Manager — Date: 1/23/15

* Recommendation on file

Recommendation for approval:

* Hiral Patel /KLP
State Environmental Administrator — Date: 6-1-15

* Ken Werho /KLP
FOR State Traffic Engineer — Date: 5-15-15

* Lisa Myers /KLP
Project Review Engineer — Date: 3-13-15

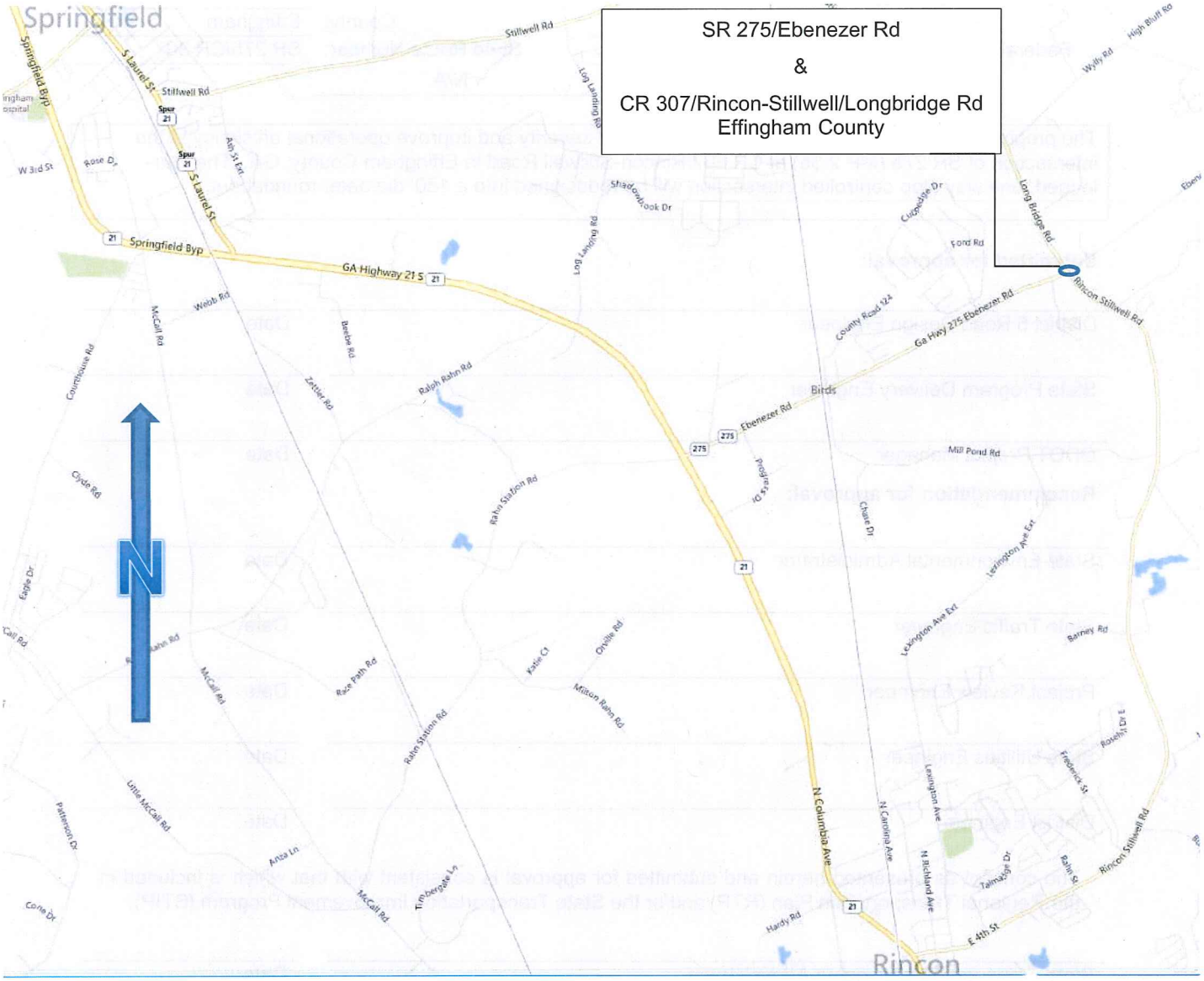
* Nicholas Fields /KLP
FOR State Utilities Engineer — Date: 3-19-15

District Engineer — Date: 1/28/2015

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

Cynthia L Vaughn
State Transportation Planning Administrator — Date: 3-16-15

PROJECT LOCATION MAP



PLANNING AND BACKGROUND

Project Justification Statement:

Prepared by: Office of Traffic Operations.

The proposed project will reduce crash frequency and severity while improving operational efficiency at the intersection of SR 275/Ebenezer Road at CR 307/Rincon-Stillwell Road/Long Bridge Road in Effingham County, GA. Nationally, intersection crashes account for 40% of all reported crashes and approximately 20% of traffic fatalities. Of those fatalities, nearly 50% are the result of angle collisions. Angle collisions are often high speed, high impact crashes which often result in serious injuries or fatalities.

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

In the project area, SR 275/Ebenezer Road is a two lane rural major collector with a posted speed limit of 45 mph and an AADT of 880 vehicles per day. CR 307/Rincon-Stillwell Road/Long Bridge Road is a two lane rural major collector with a posted speed limit of 55 mph and an AADT of 2,870 vehicles per day. Currently, the 4-legged intersection is stop controlled on the CR 307/Rincon-Stillwell Road approaches with no turn lanes in any direction.

Crash data from 2004 – 2013 indicated 16 correctable crashes occurred at this intersection resulting in 9 injury crashes. Of those crashes 88% were angle collisions accounting for 56% the injuries. Studies have shown that the installation of a roundabout typically results in nearly 80% reduction in fatal and serious injury crashes and nearly 40% reduction in property damage crashes. The Office of Traffic Operations recommends the construction of a single lane roundabout at this location.

Existing conditions: The project is located in Effingham County, just Northeast of the city of Rincon, at the intersection of SR 275/Ebenezer Road and CR 307/Rincon-Stillwell Road/Long Bridge Road. Currently, the 4-legged intersection is stop controlled on the CR 307/Rincon-Stillwell Road approaches with no turn lanes, bike lanes, or sidewalk in any direction with a Georgia Power Transmission line along the Southeast edge of Right of Way.

Other projects in the area: A maintenance resurfacing project, M004630 in the current STIP, being performed on SR 21 from 20 miles north of RR crossing, NS# 916917C, to Jack's Branch.

MPO: N/A - Project not in MPO **TIP #:** N/A

TIA Regional Commission: Coastal Georgia RC RC Project ID (if TIA project) N/A

Congressional District(s): 1

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

Traffic Projections Performed by: GDOT D5 Traffic Operations

Projected Traffic: ADT
SR 275/Ebenezer Road
Current Year (2013): 3000 Open Year (2018): 3200 Design Year (2038): 5200

Functional Classification (Mainline): Rural Major Collector

Projected Traffic: ADT
CR 307/Rincon-Stillwell Road/Long Bridge Road
Current Year (2013): 3900 Open Year (2018): 4200 Design Year (2038): 6700

Functional Classification (Mainline): Rural Major Collector

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

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

Pavement Evaluation and Recommendations

Preliminary Pavement Evaluation Summary Report Required? ☐ No ☒ Yes*
** Received 12/18/14*

Preliminary Pavement Type Selection Report Required? ☐ No ☒ Yes*
**Received 12/5/14*

Feasible Pavement Alternatives: ☐ HMA ☐ PCC ☒ HMA & PCC*
***Preliminary Pavement Evaluations Summary Recommended HMA with and alternative of PCC. The Preliminary Pavement Type Selection Report recommended PCC.*

DESIGN AND STRUCTURAL

Description of the proposed project: A 150' diameter, single lane roundabout is proposed at the intersection of SR 275/Ebenezer Road and CR 307/Rincon-Stillwell Road/Long Bridge Road. The intersection is located approximately 3.3 miles north of Rincon, GA and 2.6 miles south of Stillwell, GA in Effingham County. The construction will be approximately 500' in each direction of the intersection.

SR275/Ebenezer Road, Rural Major Collector
(Approach Legs up to Splitter Islands and shoulders up to roundabout)

Feature	Existing	Standard*		Proposed	
Typical Section					
- **Number of Lanes**	**2**	**N/A**		**2**	
- **Lane Width(s)**	**12'**	**11'-12'**		**12'**	
- **Median Width & Type**	**None**	**N/A**		**N/A**	
- **Outside Shoulder or Border Area Width**	**5'**	**10' Overall 6.5' Paved**	**10' -16' ****	**10' Overall 6.5' Paved**	**12' ****
- **Outside Shoulder Slope**	**2:1/4:1**	**2:1/4:1**		**4:1**	
- **Inside Shoulder Width**	**N/A**	**N/A**		**N/A**	
- **Sidewalks**	**None**	**N/A**	**5' ****	**N/A**	**5' ****
- **Auxiliary Lanes**	**None**	**N/A**		**N/A**	
- **Bike Lanes**	**None**	**N/A**		**N/A**	
Posted Speed	**45 MPH**			**N/A**	
Design Speed	**45 MPH**	**45 MPH**		**45 MPH**	
Min Horizontal Curve Radius	**N/A**	**643'-587'**		**711'**	
Maximum Superelevation Rate	**N/A**	**6-8%**		**4% Max**	
Maximum Grade	**N/A**	**7%**		**7% Max**	
Access Control	**N/A**	**Permitted**		**Permitted**	
Design Vehicle	**WB-67**	**WB-67**		**WB-67**	
Pavement Type	**Asphalt**	**Asphalt**		**Asphalt**	

***According to current GDOT design policy if applicable**
****Urban Section**

CR 307/Rincon-Stillwell Road / Longbridge Road, Rural Major Collector
(Approach Legs up to Splitter Islands and shoulders up to roundabout)

Feature	Existing	Standard*		Proposed	
Typical Section					
- **Number of Lanes**	**2**	**N/A**		**2**	
- **Lane Width(s)**	**12'**	**11'-12'**		**12'**	
- **Median Width & Type**	**None**	**N/A**		**N/A**	
- **Outside Shoulder or Border Area Width**	**7'**	**10' Overall 6.5' Paved**	**10' -16' ****	**10' Overall 6.5' Paved**	**12' ****
- **Outside Shoulder Slope**	**2:1/4:1**	**2:1/4:1**		**4:1**	
- **Inside Shoulder Width**	**N/A**	**N/A**		**N/A**	
- **Sidewalks**	**None**	**N/A**	**5' ****	**N/A**	**5' ****
- **Auxiliary Lanes**	**None**	**N/A**		**N/A**	
- **Bike Lanes**	**None**	**N/A**		**N/A**	
Posted Speed	**55 MPH**			**N/A**	
Design Speed	**55 MPH**	**55 MPH**		**55 MPH**	
Min Horizontal Curve Radius	**N/A**	**1190'-960'**		**1190'**	
Maximum Superelevation Rate	**N/A**	**6-8%**		**4% Max**	
Maximum Grade	**N/A**	**6%**		**6% Max**	
Access Control	**N/A**	**N/A**		**N/A**	
Design Vehicle	**WB-67**	**WB-67**		**WB-67**	
Pavement Type	**Asphalt**	**Asphalt**		**Asphalt**	

***According to current GDOT design policy if applicable**
****Urban Section**

Roundabout Information
(Including Splitter Islands)

Feature	GDOT	NCHRP 672	Proposed
Inscribed Circle Diameter	**-**	**130'-180'**	**150'**
Entry Lane Widths (EW)	**-**	**15'-20'**	**15' -22.5' ***
Circulatory Roadway Width	**-**	**1.0-1.2 x EW**	**18'-22.5'**
Truck Apron Width	**-**	**3'-15'**	**10'-15'**
Splitter Island Lengths	**100' min**	**200' MIN**	**200'-250'**
Design Speed (Entry)	**-**	**25 MPH (MAX)**	**25 MPH (MAX)**
Design Vehicle – Turning Movements	**WB-67**	**WB-67**	**WB-67**
Design Vehicle – Circulatory Roadway	**Bus-40/SU**	**Bus-40/SU**	**Bus-40/SU**

***Lane Width of Approaches through Splitter Island Sections varies from 12' to 22.5'**.

Major Interchanges/Intersections: N/A

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

Design Exceptions to FHWA/AASHTO controlling criteria anticipated:

FHWA/AASHTO Controlling Criteria	No	Undeter-mined	Yes	Appvl Date (if applicable)
1. Design Speed	☒	☐	☐	
2. Lane Width	☒	☐	☐	
3. Shoulder Width	☒	☐	☐	
4. Bridge Width	☒	☐	☐	
5. Horizontal Alignment	☒	☐	☐	
6. Superelevation	☒	☐	☐	
7. Vertical Alignment	☒	☐	☐	
8. Grade	☒	☐	☐	
9. Stopping Sight Distance	☒	☐	☐	
10. Cross Slope	☒	☐	☐	
11. Vertical Clearance	☒	☐	☐	
12. Lateral Offset to Obstruction	☒	☐	☐	
13. Bridge Structural Capacity	☒	☐	☐	

Design Variances to GDOT Standard Criteria anticipated:

GDOT Standard Criteria	Reviewing Office	No	Undeter--mined	Yes	Appvl Date (if applicable)
1. Access Control/Median Openings	DP&S	☒	☐	☐	
2. Intersection Sight Distance	DP&S	☒	☐	☐	
3. Intersection Skew Angle	DP&S	☒	☐	☐	
4. Lateral Offset to Obstruction	DP&S	☒	☐	☐	
5. Rumble Strips	DP&S	☒	☐	☐	
6. Safety Edge	DP&S	☒	☐	☐	
7. Median Usage	DP&S	☒	☐	☐	
8. Roundabout Illumination Levels	DP&S	☒	☐	☐	
9. Complete Streets	DP&S	☒	☐	☐	
10. ADA & PROWAG	DP&S	☒	☐	☐	
11. GDOT Construction Standards	DP&S	☒	☐	☐	
12. GDOT Drainage Manual	DP&S	☒	☐	☐	
13. GDOT Bridge & Structural Manual	Bridges	☒	☐	☐	

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

UTILITY AND PROPERTY

Temporary State Route needed: ☒ No ☐ Yes ☐ Undetermined

Railroad Involvement: N/A.

Utility Involvements: GA Power Distribution and Transmission aerial lines and Windstream Communications underground telephone lines.

SUE Required: ☒ No ☐ Yes ☐ Undetermined

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

Right-of-Way (ROW):

SR 275 Existing width: 80ft.

CR307 Existing width: 100ft.

Additional area required: 17,651.01 sq ft total.

Required Right-of-Way anticipated: ☐None ☒Yes ☐Undetermined
Easements anticipated: ☐None ☒Temporary ☐Permanent ☐Utility ☐Other

Anticipated total number of impacted parcels:		4
Displacements anticipated:	Businesses:	0
	Residences:	0
	Other:	0
	Total Displacements:	0

Location and Design approval: ☐ Not Required ☒ Required

ROUNDABOUTS

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

Roundabout Planning Level Assessment: N/A

Roundabout Feasibility Study: A Feasibility Study was completed in order to compare the operational efficiency and crash reducing performance of alternative traffic control types for the intersection of SR 275 and CR 307. Using operational performance, estimated crash reductions, and estimated construction costs as quantitative criteria of comparison, the study determined that a roundabout is the preferred alternative. The study analyzed the roundabout for left, right, and U-turn maneuvers using a WB-67 design vehicle and busses/single unit trucks in the circulatory roadway.

Roundabout Peer Review Required: ☐ No ☒ Yes ☒ Completed – Date: August 2014
Consultant (GHD) who performed feasibility study was also on pre-qualified list of roundabout peer reviewers.

CONTEXT SENSITIVE SOLUTIONS

Issues of Concern: There is an old house in the northwest quadrant of intersection that belongs to the Nease-Seckinger property that is proposed to be part of the National Register Boundary. Also, three of the four legs of the intersection are on the Historic Effingham-Ebenezer Scenic Byway. (See section 1.2.3 of the attached “Roundabout Feasibility Study”.)

Context Sensitive Solutions: Since the intersection lies within the “Historic Effingham-Ebenezer Scenic Byway” appropriate signing/marking shall be maintained for the corridor. Also, members of the scenic byway committee shall be consulted with any other occurring situations.

ENVIRONMENTAL & PERMITS

Anticipated Environmental Document:

GEPA: ☐ **NEPA:** ☐ **CE:** ☒ **EA/FONSI:** ☐ **EIS:** ☐

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

Environmental Permits/Variances/Commitments/Coordination anticipated:

Permit/ Variance/ Commitment/ Coordination Anticipated	No	Yes	Remarks
1. U.S. Coast Guard Permit	☒	☐	
2. Forest Service/Corps Land	☒	☐	
3. CWA Section 404 Permit	☒	☐	
4. Tennessee Valley Authority Permit	☒	☐	
5. 33 USC 408 Decision	☒	☐	
6. Buffer Variance	☒	☐	
7. Coastal Zone Management Coordination	☐	☒	
8. NPDES	☐	☒	
9. FEMA	☒	☐	
10. Cemetery Permit	☒	☐	
11. Other Permits	☒	☐	
12. Other Commitments	☒	☐	
13. Other Coordination	☒	☐	

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

Environmental Comments and Information:

NEPA/GEPA: An undetermined level of Section 4f may be required for impacts to historic properties.

Ecology: Resource surveys have been conducted and suggest that wetlands exist near the project intersection. ESA's for waters can be found in attachment 6. They are outside of conceptual project limits. Additionally, potentially suitable habitat for silky camellia is present beyond the concept limits.

History: The survey report is complete and SHPO concurred with it on 5/12/14. Historic Resources are present. Level of impact will be discussed in the Cultural Resources Assessment of Effects.

Archeology: The survey has been completed. SHPO concurred with the report on 5/14/15 stating that the archeological site present (9EF305) is not eligible.

Air Quality:

Is the project located in a PM 2.5 Non-attainment area? ☒ No ☐ Yes
Is the project located in an Ozone Non-attainment area? ☒ No ☐ Yes
Is a Carbon Monoxide hotspot analysis required? ☒ No ☐ Yes

Noise Effects: Type III Project

Public Involvement: A Public Information Open House (PIOH) will be held.

Necessary Coordination will occur with Ebeneezer Elementary and Ebenezer Middle School (Effingham County Board of Education) involving the project construction schedule and bus routes.

Major stakeholders: Members of the Effingham-Ebenezer Scenic Byway Committee, County Schools

CONSTRUCTION

Issues potentially affecting constructability/construction schedule: Transmission line relocation only during non-peak seasons; potential offsite detours and/or road closures scheduled around nearby Elementary and Middle School breaks.

Early Completion Incentives recommended for consideration: ☒ No ☐ Yes

COORDINATION, ACTIVITIES, RESPONSIBILITIES, AND COSTS

Initial Concept Meeting: N/A

Concept Meeting: 12/15/14

Other coordination to date: None.

Project Activity	Party Responsible for Performing Task(s)
Concept Development	GDOT D5
Design	GDOT D5
Right-of-Way Acquisition	GDOT D5
Utility Relocation	Utility Owner
Letting to Contract	GDOT
Construction Supervision	GDOT D5
Providing Material Pits	Contractor
Providing Detours	GDOT D5
Environmental Studies, Documents, & Permits	Consultant
Environmental Mitigation	N/A
Construction Inspection & Materials Testing	GDOT D5
Utility Coordination	GDOT

Project Cost Estimate Summary and Funding Responsibilities

	Breakdown of PE	ROW	Reimbursable Utility	CST*	Environmental Mitigation	Total Cost
Funded By	GDOT	GDOT	GDOT	GDOT	N/A	
$ Amount	$250,000	$161,000	$493,500	$1,682,998	N/A	$2,587,498
Date of Estimate	1/24/2012	9/5/2014	8/21/2014	4/16/15	N/A	

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

ALTERNATIVES DISCUSSION

Preferred Alternative: *Single Lane Roundabout*			
Estimated Property Impacts:	4	**Estimated Total Cost:**	$2,587,498
Estimated ROW Cost:	$161,000	**Estimated CST Time:**	12 months
Rationale: The roundabout is predicted to operate with less delay/queuing in the design year and to operate with 111% of the residual capacity. The roundabout is expected to reduce injury and angle crashes by 88% and 91%, respectively.			

No-Build Alternative: Two Way Stop Control			
Estimated Property Impacts:	$0	**Estimated Total Cost:**	$0
Estimated ROW Cost:	$0	**Estimated CST Time:**	None
Rationale: The Two Way Stop Control is already operating at LOS C/D and will continue to decrease. This alternative doesn't reduce injury and angle crashes.			

Alternative 1: All-Way Stop Controlled (AWSC)			
Estimated Property Impacts:	None	**Estimated Total Cost:**	**<$25,000**
Estimated ROW Cost:	None	**Estimated CST Time:**	**1 week**
Rationale: An AWSC does not reduce delay or queuing as well as a roundabout. The injury and angle crashes are anticipated to be reduced by only 72% and 70%, respectively.			

LIST OF ATTACHMENTS/SUPPORTING DATA

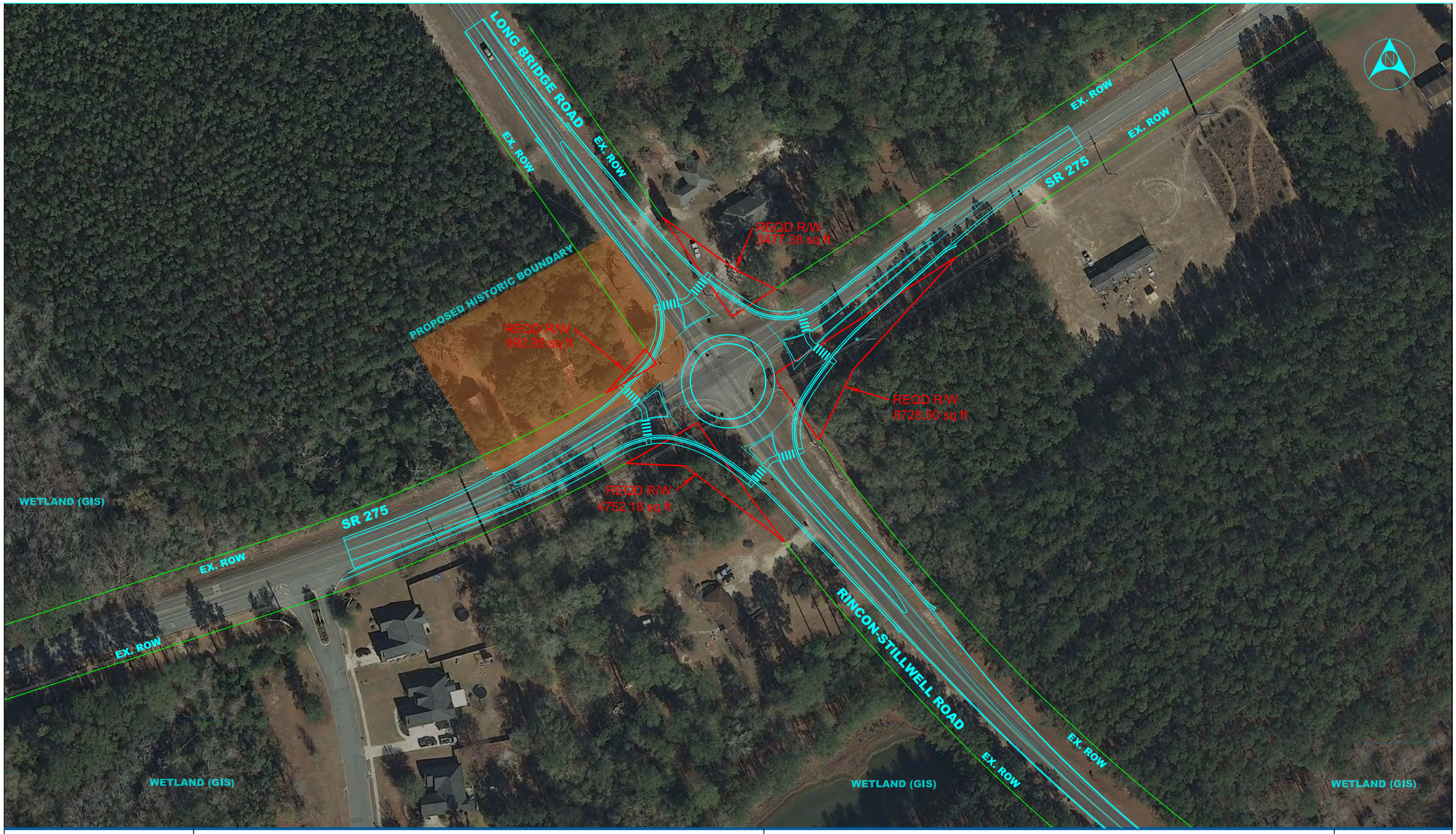
Concept Layout

1. Concept Layout
2. Typical sections
3. Detailed Cost Estimates:
    a. Construction including Engineering and Inspection
    b. Completed Liquid AC Cost Adjustment forms
    c. Right-of-Way
    d. Utilities
    e. Preliminary Mitigation Cost Estimate
4. Crash Data
5. Historical Property/The Nease-Seckinger Property
6. Layout with ESA's for Waters (Results of Ecology Resource Survey)
7. Roundabout Data
    a. Roundabout Feasibility Study (includes Abbreviated Summary of TE Study/Traffic Diagrams)
    b. Lighting agreement or commitment letter

APPROVALS

Concur: _____
Director of Engineering

Approve: _____ 6.11.15
Chief Engineer — Date



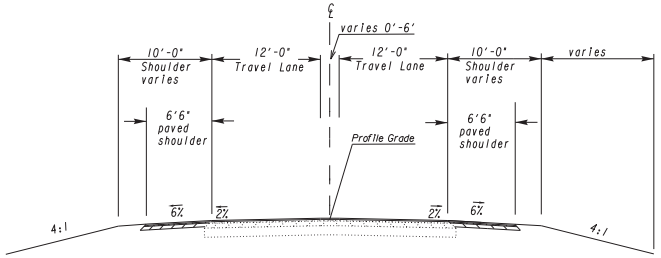
SR 275 at CR 307 / Rincon-Stillwell Road
P.I. # 0009872
Effingham County, GA

INTERSECTION LAYOUT

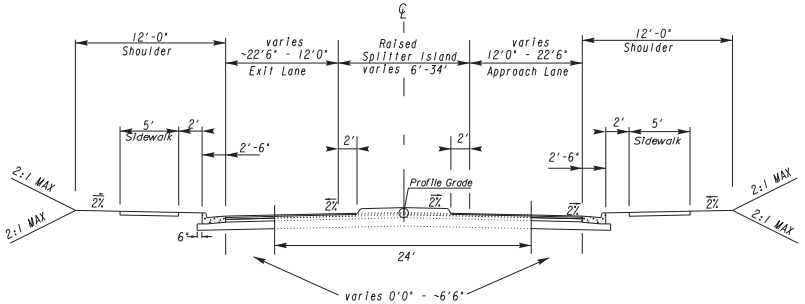
SCALE
0 50 100

EXHIBIT H1.1

Plot Date: $$...plottingdate...$$ File Name: $$...designfile....$$



SR 275 APPROACHES/CR 307 APPROACHES
(Prior to Raised Splitter Island)



SR 275 Approaches/ CR 307 Approaches
(Through Raised Splitter Island)

GEORGIA
DEPARTMENT OF TRANSPORTATION

NOT TO SCALE

REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: D5 Road Design

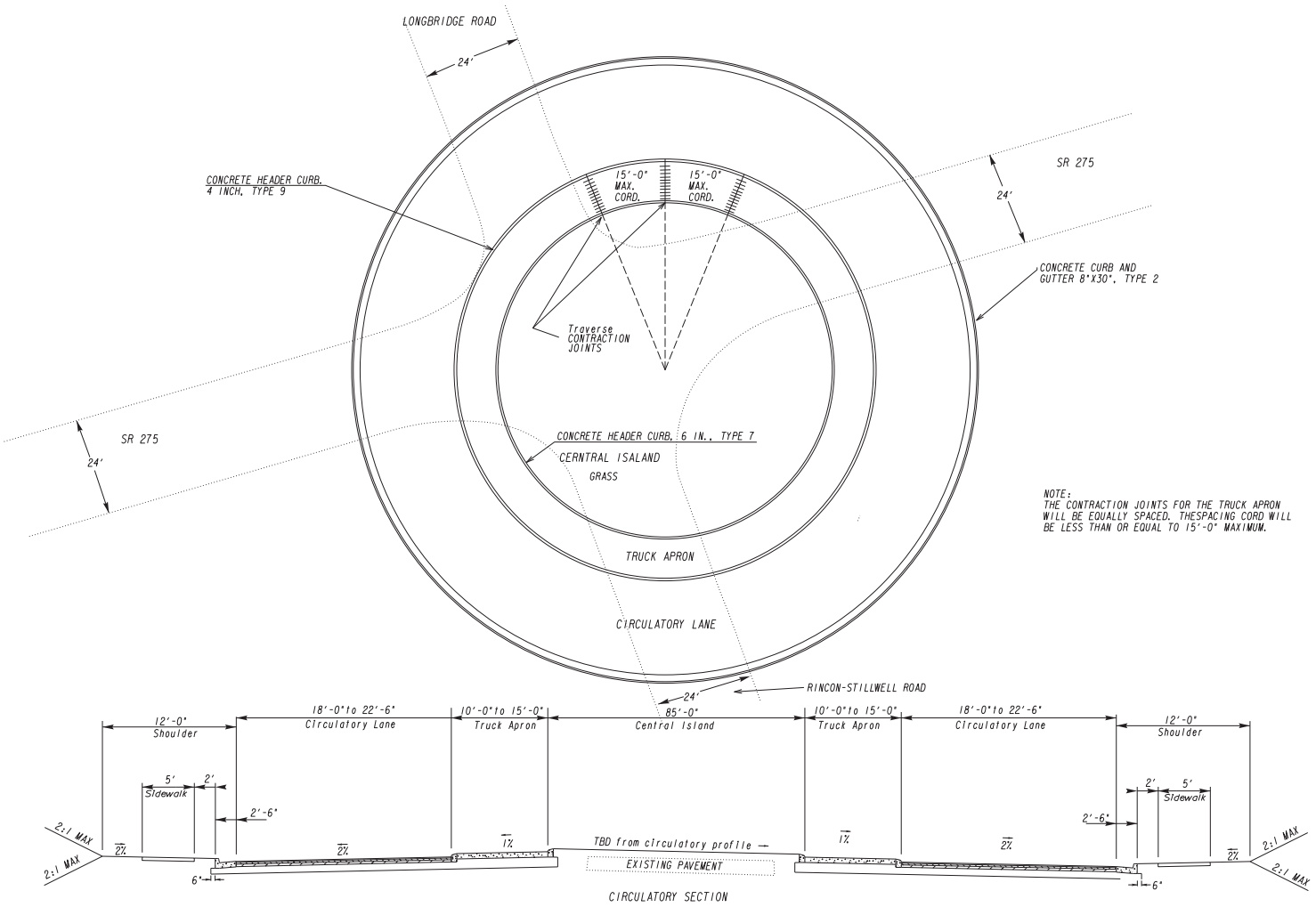
TYPICAL SECTIONS

Roundabout
SR 275/Ebenezer Rd @
CR 307/Rincon-Stillwell Rd

DRAWING No. 05-

12/14/2012 GPLN

4/8/2015 2:20:18 PM USER:jsapp	GPLOT-V8 gplotborder-V8I-PO.tbl	0009872 v8 Typical.dgn	STATE GA	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS



NOTE:
THE CONTRACTION JOINTS FOR THE TRUCK APRON WILL BE EQUALLY SPACED. THESPACING CORD WILL BE LESS THAN OR EQUAL TO 15'-0" MAXIMUM.

GEORGIA
DEPARTMENT OF TRANSPORTATION

NOT TO SCALE

REVISION DATES		

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: D5 Road Design

TYPICAL SECTIONS

Roundabout
SR 275/Ebenezer Rd @
CR 307/Rincon-Stillwell Rd

DRAWING No. 05-

12/14/2012 GPLN

DETAILED COST ESTIMATE

Georgia Department of Transportation

Job: 0009872

JOB NUMBER *0009872* **FED/STATE PROJECT NUMBER**

SPEC YEAR: *13*

DESCRIPTION: *SR 275 @ RINCON STILLWELL RD*

PARAMETRIC EST FOR ROUNDABOUT

ITEMS FOR JOB 0009872

0010 - ROADWAY

Line Number	ITEM	QUANTITY	UNITS	PRICE	DESCRIPTION	AMOUNT
0005	150-1000	1.000	LS	$150,000.00000	TRAFFIC CONTROL - 0009872	$150,000.00
0010	210-0100	1.000	LS	$165,000.00000	GRADING COMPLETE - 0009872	$165,000.00
0069	310-5080	3835.000	SY	$19.09000	GR AGGR BS CRS 8IN INCL MATL	$73,210.15
0070	310-5100	453.000	SY	$16.79000	GR AGGR BS CRS 10IN INCL MATL	$7,605.87
0040	402-1812	1518.000	TN	$69.99000	RECYL AC LEVELING,INC BM&HL	$106,244.82
0065	402-3100	1220.000	TN	$108.85000	REC AC 9.5 MM SP,TPI,GP1ORBL1,INCL BM&HL	$132,797.00
0045	402-3121	1594.000	TN	$60.70000	RECYL AC 25MM SP,GP1/2,BM&HL	$96,755.80
0055	402-3190	1063.000	TN	$65.03000	RECYL AC 19 MM SP,GP 1 OR 2 ,INC BM&HL	$69,126.89
0035	413-1000	1254.000	GL	$2.34000	BITUM TACK COAT	$2,934.36
0025	430-0200	466.000	SY	$38.25000	PLN PC CONC PVMT/CL1C/ 10 TK	$17,824.50
0075	432-5010	3460.000	SY	$1.52000	MILL ASPH CONC PVMT,VARB DEPTH	$5,259.20
0015	441-0104	913.000	SY	$23.04000	CONC SIDEWALK, 4 IN	$21,035.52
0020	441-0748	803.000	SY	$43.85000	CONC MEDIAN, 6 IN	$35,211.55
0018	441-3999	346.000	LF	$18.00000	CONCRETE V GUTTER	$6,228.00
0017	441-5008	242.000	LF	$11.67000	CONC HEADER CURB, 6 IN, TP 7	$2,824.14
0016	441-5025	347.000	LF	$12.33000	CONC HEADER CURB, 4, TP 9	$4,278.51
0019	441-6222	4247.000	LF	$11.89000	CONC CURB & GUTTER/ 8X30TP2	$50,496.83
0080	446-1100	935.000	LF	$3.08000	PVMT REF FAB STRIPS, TP2,18 INCH WIDTH	$2,879.80
0085	550-1180	1396.000	LF	$29.78000	STM DR PIPE 18,H 1-10	$41,572.88
0090	550-1240	976.000	LF	$37.23000	STM DR PIPE 24,H 1-10	$36,336.48
0095	550-1300	424.000	LF	$47.72000	STM DR PIPE 30,H 1-10	$20,233.28
0100	550-1360	72.000	LF	$57.25000	STM DR PIPE 36,H 1-10	$4,122.00
0105	550-4218	2.000	EA	$580.10000	FLARED END SECT 18 IN, ST DR	$1,160.20
0110	550-4224	1.000	EA	$646.89000	FLARED END SECT 24 IN, ST DR	$646.89
0125	603-2181	55.000	SY	$41.89000	STN DUMPED RIP RAP, TP 3, 18	$2,303.95
0115	603-7000	55.000	SY	$3.28000	PLASTIC FILTER FABRIC	$180.40
0120	634-1200	8.000	EA	$101.38000	RIGHT OF WAY MARKERS	$811.04
0030	668-1100	11.000	EA	$2,099.52000	CATCH BASIN, GP 1	$23,094.72
0029	668-2100	15.000	EA	$1,808.06000	DROP INLET, GP 1	$27,120.90
0028	668-5000	2.000	EA	$1,718.14000	JUNCTION BOX	$3,436.28
					SUBTOTAL FOR ROADWAY:	**$1,110,731.96**

DETAILED COST ESTIMATE

Georgia Department of Transportation

Job: 0009872

0020 - EROSION CONTROL

Line Number	ITEM	QUANTITY	UNITS	PRICE	DESCRIPTION	AMOUNT
0130	163-0232	1.000	AC	$239.07000	TEMPORARY GRASSING	$239.07
0135	163-0240	22.000	TN	$154.65000	MULCH	$3,402.30
0140	163-0300	2.000	EA	$1,210.39000	CONSTRUCTION EXIT	$2,420.78
0145	163-0527	6.000	EA	$236.14000	CNST/REM RIP RAP CKDM,STN P RIPRAP/SN BG	$1,416.84
0150	163-0528	550.000	LF	$3.30000	CONSTR AND REM FAB CK DAM -TP C SLT FN	$1,815.00
0155	163-0529	440.000	LF	$3.61000	CNST/REM TEMP SED BAR OR BLD STRW CK DM	$1,588.40
0160	165-0010	9777.000	LF	$0.48000	MAINT OF TEMP SILT FENCE, TP A	$4,692.96
0165	165-0030	4787.000	LF	$0.45000	MAINT OF TEMP SILT FENCE, TP C	$2,154.15
0170	165-0041	605.000	LF	$0.87000	MAINT OF CHECK DAMS - ALL TYPES	$526.35
0175	165-0071	440.000	LF	$1.10000	MAINT OF SEDIMENT BARRIER - BALED STRAW	$484.00
0180	165-0101	2.000	EA	$495.15000	MAINT OF CONST EXIT	$990.30
0185	167-1000	2.000	EA	$276.34000	WATER QUALITY MONITORING AND SAMPLING	$552.68
0189	167-1500	12.000	MO	$480.58000	WATER QUALITY INSPECTIONS	$5,766.96
0190	171-0010	9777.000	LF	$2.16000	TEMPORARY SILT FENCE, TYPE A	$21,118.32
0195	171-0030	4787.000	LF	$2.54000	TEMPORARY SILT FENCE, TYPE C	$12,158.98
0200	700-6910	1.000	AC	$736.94000	PERMANENT GRASSING	$736.94
0205	700-7000	3.000	TN	$62.66000	AGRICULTURAL LIME	$187.98
0210	700-8000	1.000	TN	$455.52000	FERTILIZER MIXED GRADE	$455.52
0215	700-8100	55.000	LB	$2.22000	FERTILIZER NITROGEN CONTENT	$122.10
0201	700-9300	75.000	SY	$5.04000	SOD	$378.00
0220	716-2000	1408.000	SY	$0.96000	EROSION CONTROL MATS, SLOPES	$1,351.68
					SUBTOTAL FOR EROSION CONTROL:	**$62,559.31**

0030 - SIGNS AND MARKING

Line Number	ITEM	QUANTITY	UNITS	PRICE	DESCRIPTION	AMOUNT
0225	636-1033	110.000	SF	$15.83000	HWY SIGNS, TP1MAT,REFL SH TP 9	$1,741.30
0280	636-1036	48.000	SF	$21.41000	HWY SGN,TP1MAT,REFL SH TP 11	$1,027.68
0230	636-2070	275.000	LF	$5.85000	GALV STEEL POSTS, TP 7	$1,608.75
0235	652-5801	1462.000	LF	$4.25000	SOLID TRAF STRIPE, 8 IN, WHITE	$6,213.50
0240	653-0130	4.000	EA	$101.09000	THERM PVMT MARK, ARROW, TP 3	$404.36
0245	653-0296	4.000	EA	$192.28000	THERMO PVMT MARKING,WORD,TP 15	$769.12
0250	653-1501	8705.000	LF	$0.42000	THERMO SOLID TRAF ST 5 IN, WHI	$3,656.10
0255	653-1502	9570.000	LF	$0.44000	THERMO SOLID TRAF ST, 5 IN YEL	$4,210.80
0260	653-6004	58.000	SY	$2.89000	THERM TRAF STRIPING, WHITE	$167.62
0265	653-6006	191.000	SY	$3.12000	THERM TRAF STRIPING, YELLOW	$595.92
0270	654-1001	119.000	EA	$2.97000	RAISED PVMT MARKERS TP 1	$353.43
					SUBTOTAL FOR SIGNS AND MARKING:	**$20,748.58**

0040 - LIGHTING

Line Number	ITEM	QUANTITY	UNITS	PRICE	DESCRIPTION	AMOUNT
0275	682-9030	1.000	LS	$220,000.00000	LIGHTING SYSTEM	$220,000.00
					SUBTOTAL FOR LIGHTING:	**$220,000.00**

File Location: Div of Preconstruction > CES

DETAILED COST ESTIMATE

Georgia Department of Transportation

Job: 0009872

0050 - LANDSCAPING

Line Number	ITEM	QUANTITY	UNITS	PRICE	DESCRIPTION	AMOUNT
0305	700-9300	165.000	SY	$5.04000	SOD	$831.60
0285	702-0212	3.000	EA	$150.00000	CRATAEGUS VIRIDIS - 0009872	$450.00
0290	702-0470	217.000	EA	$39.31039	ILEX VOMITORIA NANA - 0009872	$8,530.35
0295	702-9005	230.000	LB	$3.08236	SPRING APPLICATION FERTILIZER	$708.94
0300	702-9025	466.000	SY	$4.66000	LANDSCAPE MULCH	$2,171.56
					SUBTOTAL FOR LANDSCAPING:	**$12,692.45**

TOTALS FOR JOB 0009872

ITEMS COST:	**$1,426,732.30**
COST GROUP COST:	**$0.00**
ESTIMATED COST:	**$1,426,732.30**
CONTINGENCY PERCENT:	**0.00**
ENGINEERING AND INSPECTION:	**0.00**
ESTIMATED COST WITH CONTINGENCY AND E&I:	**$1,426,732.30**

CONTINGENCY SUMMARY

A.	**CONSTRUCTION COST ESTIMATE:**	$ 1,426,732.30	Base Estimate From CES		
B.	**ENGINEERING AND INSPECTION (E & I):**	$ 71,336.62	Base Estimate (A) x	**5**	%
C.	**CONTINGENCY:**	$ 104,864.82	Base Estimate (A) + E & I (B) x	**7**	%
			See % Table in "Risk Based Cost Estimation" Memo		
D.	**TOTAL LIQUID AC ADJUSTMENT:**	$ 80,064.29	Total From Liquid AC Spreadsheet		
E.	**CONSTRUCTION TOTAL:**	$ **1,682,998.03**	(A + B + C + D = E)		

REIMBURSABLE UTILTY COSTS

UTILITY OWNER	REIMBURSABLE COST
GA Power - Distribution	$ 362,250.00
GA Power - Transmission	$ 131,250.00
TOTAL	**$ 493,500.00**

ATTACHMENTS:

Detailed Cost Estimate Printout From TRAQS
Liquid AC Adjustment Spreadsheet

PROJ. NO.		CALL NO.	9/29/2009
P.I. NO.	0009872		
DATE	4/14/2014		

INDEX (TYPE)	DATE	INDEX
REG. UNLEADED	Apr-15	$ 2.214
DIESEL		$ 2.788
LIQUID AC		$ 485.00

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)			**78497.25**	**$**	**78,497.25**
Monthly Asphalt Cement Price month placed (APM)	Max. Cap	60%	$ 776.00		
Monthly Asphalt Cement Price month project let (APL)			$ 485.00		
Total Monthly Tonnage of asphalt cement (TMT)			269.75		

ASPHALT	Tons	%AC	AC ton
Leveling	1518	5.0%	75.9
12.5 OGFC		5.0%	0
12.5 mm		5.0%	0
9.5 mm SP	1220	5.0%	61
25 mm SP	1594	5.0%	79.7
19 mm SP	1063	5.0%	53.15
	5395		**269.75**

BITUMINOUS TACK COAT

Price Adjustment (PA)			**$ 1,567.34**	**$**	**1,567.34**
Monthly Asphalt Cement Price month placed (APM)	Max. Cap	60%	$ 776.00		
Monthly Asphalt Cement Price month project let (APL)			$ 485.00		
Total Monthly Tonnage of asphalt cement (TMT)			5.386056556		

Bitum Tack Gals	gals/ton	tons
1254	232.8234	5.38605656

BITUMINOUS TACK COAT (surface treatment)

Price Adjustment (PA)			**0**	**$**	**-**
Monthly Asphalt Cement Price month placed (APM)	Max. Cap	60%	$ 776.00		
Monthly Asphalt Cement Price month project let (APL)			$ 485.00		
Total Monthly Tonnage of asphalt cement (TMT)			0		

Bitum Tack	SY	Gals/SY	Gals	gals/ton	tons
Single Surf. Trmt.		0.20	0	232.8234	0
Double Surf.Trmt.		0.44	0	232.8234	0
Triple Surf. Trmt		0.71	0	232.8234	0
					0

TOTAL LIQUID AC ADJUSTMENT	**$**	**80,064.59**

GEORGIA DEPARTMENT OF TRANSPORTATION
PRELIMINARY ROW COST ESTIMATE SUMMARY

Date: 9/5/2014
Revised:

Project: Round about
County: Effingham
PI: 0009872

Description: Intersection Improvement
Project Termini: SR 275/Ebenezer Rd@CR 307/Long Bridge Rd/Rincon Stillwell Rd

Existing ROW: Varies
Parcels: 4
Required ROW: Varies

Land and Improvements		$51,900.00
Proximity Damage	*$0.00*	
Consequential Damage	*$0.00*	
Cost to Cures	*$0.00*	
Trade Fixtures	*$0.00*	
Improvements	*$30,000.00*	
Valuation Services		$15,000.00
Legal Services		$40,200.00
Relocation		$8,000.00
Demolition		$0.00
Administrative		$45,500.00
TOTAL ESTIMATED COSTS		$160,600.00
TOTAL ESTIMATED COSTS (ROUNDED)		***$161,000.00***

Preparation Credits	Hours	Signature

Prepared By: Deshone Alexander CG#: 286999 09/05/2014 (DATE)
Approved By: Deshone Alexander CG#: 286999 09/05/2014 (DATE)

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

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE P.I. # 0009872 Effingham County

OFFICE Jesup

DATE 8-21-2014

FROM Dallory Rozier, District Utilities Engineer

TO Cassius Edwards, Project Manager

SUBJECT UPDATED UTILITY COST ESTIMATE

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

Facility Owner	Non-Reimbursable	Reimbursable	Comments
Georgia Power - Distribution	$ 0.00	$ 362,250.00	
Georgia Power - Transmission	$ 0.00	$ 131,250.00	
Windstream Communications	$ 68,399.00	$ 0.00	
Totals	**$ 68,399.00**	**$ 493,500.00**	
Total Reimbursement		**$ 493,500.00**	

CC; Angie Robinson, Office of Financial Management;
Lee Upkins, Assistant State Utilities Engineer
District Office File
Utilities Office File

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE P.I. #0009872, Effingham County **OFFICE** Environmental Services

DATE August 29, 2014

Hiral Patel/hdc

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

TO Cassius Edwards, Project Manager

SUBJECT Preliminary Mitigation Cost Estimate

As requested by your office, we are furnishing you with a preliminary cost estimate for the subject project. This project will construct a roundabout at the intersection of SR 275 and CR 307/Rincon-Stillwell Road in Effingham County. After reviewing the concept and based on the information provided, the proposed project would not impact any waters of the U.S. Therefore, no mitigation credits would be needed.

DISCLAIMER: The information provided is based solely on a desktop review of the information available. Once the ecology survey has been conducted a more detailed and accurate cost be estimated.

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

HP/HDC/lmw

cc: General File
James Sapp

AccidentNo	AccidentNumber	Date	Time	County	Route	Milelog	IntersectingRoute	RampSection	DistanceFrom	DirectionFrom	Injuries	Fatalities
2132562	2132562	1/18/2004	18:48:00	EFFINGHAM	EBENEZER RD	2.35	0307	0	0		4	0
2154350	2154350	1/21/2004	6:25:00	EFFINGHAM	HWY 275	2.35	0307	0	0		0	0
2226942	2226942	7/9/2004	7:21:00	EFFINGHAM	EBENEZER	2.35	0307	0	0		0	0
2213475	2213475	7/26/2004	12:43:00	EFFINGHAM	GA 275	2.35	0307	0	0		2	0
1498758	1498758	12/9/2004	8:18:00	EFFINGHAM	EBENEZER ROAD	1.35	RINCON STILLWELL	1	5280		0	0
1170065	1170065	12/27/2005	5:38:00	EFFINGHAM	EBENEZER RD	2.35	LONG BRIDGE RD	0	0		1	0
1354414	1354414	6/5/2006	21:33:00	EFFINGHAM	RINCON STILLWELL RD	0.06	EBENEZER RD	0	10560	West	0	0
1368502	1368502	6/25/2006	6:40:00	EFFINGHAM	LONG ACRES RD	3.95	EBENEZER RD	0	0		1	0
770585	770585	8/8/2006	6:07:00	EFFINGHAM	EBENEZER RD	0	LONG BRIDGE RD	0	0		0	0
830400	830400	12/22/2006	12:24:00	EFFINGHAM	EBENEZER RD	2.35	RINCON STILLWELL R	0	0		0	0
822371	822371	1/15/2007	10:00:00	EFFINGHAM	SR 275	3.96	LONG BRIDGE DR	0	500	West	0	0
811158	811158	1/23/2007	6:39:00	EFFINGHAM	RINCON STILLWELL RD	0.87	EBENEZER RD	0	0		0	0
823795	823795	1/26/2007	15:50:00	EFFINGHAM	RINCON STILLWELL RD	0.87	SR 275	0	0		0	0
834143	834143	3/27/2007	6:54:00	EFFINGHAM	SR 275	2.35	RINCON-STILLWELL RD	0	0		0	0
555139	555139	12/17/2007	22:31:00	EFFINGHAM	EBENEZER RD	3.95	LONG ACRES RD	0	0		0	0
573507	573507	2/22/2008	22:17:00	EFFINGHAM	HWY 275	3.95	LONG ACRES RD	0	0		0	0
585878	585878	5/2/2008	18:24:00	EFFINGHAM	SR 275	2.35	LONG BRIDGE RD	0	0		2	0
665125	665125	5/16/2008	7:00:00	EFFINGHAM	LONG BRIDGE RD	2.35	EBENEZER RD	0	0		2	0
619499	619499	6/26/2008	18:11:00	EFFINGHAM	SR 275	2.35	RINCON STILLWELL RD	0	0		3	0
652548	652548	7/9/2008	8:00:00	EFFINGHAM	LONG BRIDGE RD	5.81	EBENEZER RD	0	5280	North	0	0
132202	132202	12/31/2008	16:43:00	EFFINGHAM	EBENEZER RD	0	0307	0	0		3	0
3767771	3767771	5/16/2011	6:28:00	EFFINGHAM	EBENEZER RD	0	LONG BRIDGE RD	0	0		0	0
3968494	3968494	10/23/2011	15:42:00	EFFINGHAM	EBENEZER RD	0	RINCON STILLWELL RD	0	0		0	0
5150131	5150131	2/8/2012	15:54:00	EFFINGHAM	HIGHWAY 275	0	LONG BRIDGE RD	0	0	East	0	0
5154931	5154931	11/15/2012	13:25:00	EFFINGHAM	EBENEZER RD	0	LONG BRIDGE RD	0	0		0	0

7 inj	1.4
9 pdo	1.8
0 fat	0

MannerOfCollision	LocationOfImpact	FirstHarmfulEvent	Light	Surface	DirVeh1	DirVeh2	MnvrVeh1	MnvrVeh2	MicrofilmNo	LatDecimal	LongDecimal
Head On	On Roadway	Motor Vehicle In Motion	Dark-Lighted	Dry	Southeast	East	Turning Left	Straight	41760179	32.350402	-81.221276
Not A Collision with Motor Vehicle	On Roadway	Deer	Dark-Not Lighted	Dry	East		Straight		41760186	32.350402	-81.221276
Angle	On Roadway	Motor Vehicle In Motion	Daylight	Dry	North	Southeast	Straight	Turning Left	43750654	32.350402	-81.221276
Angle	On Roadway	Motor Vehicle In Motion	Daylight	Dry	Southeast	North	Straight	Straight	43170102	32.350402	-81.221276
Rear End	On Roadway	Other Non-Collision	Daylight	Wet	Northeast	Northeast	Stopped	Stopped	45050298	32.343989	-81.236571
Sideswipe-Opposite Direction	On Roadway	Motor Vehicle In Motion	Dark-Not Lighted	Dry	Northeast	East	Straight	Straight	55260458	32.350402	-81.221276
Not A Collision with Motor Vehicle	On Roadway	Deer	Dark-Not Lighted	Dry	Southeast		Straight		63000168	32.342023	-81.243591
Not A Collision with Motor Vehicle	Off Roadway	Tree	Daylight	Dry	Northeast		Straight		63000207	32.363684	-81.198822
Angle	On Roadway	Motor Vehicle In Motion	Dark-Not Lighted	Dry	Southeast	North	Turning Right	Turning Left	64760149	-1	-1
Angle	On Roadway	Motor Vehicle In Motion	Daylight	Wet	East	East	Passing	Turning Left	65510133	32.350402	-81.221276
Not A Collision with Motor Vehicle	On Roadway	Deer	Daylight	Dry	East		Straight		70390244	-1	-1
Angle	On Roadway	Motor Vehicle In Motion	Dark-Not Lighted	Dry	Northeast	North	Straight	Turning Left	70390262	-1	-1
Angle	On Roadway	Motor Vehicle In Motion	Daylight	Dry	North	Southeast	Straight	Straight	70390271	-1	-1
Angle	On Roadway	Motor Vehicle In Motion	Dark-Lighted	Dry	East	North	Straight	Straight	71110268	32.350402	-81.221276
Not A Collision with Motor Vehicle	On Roadway	Deer	Dark-Not Lighted	Dry	Southeast		Straight		76060536	32.363684	-81.198822
Not A Collision with Motor Vehicle	On Shoulder	Tree	Dark-Not Lighted	Wet	Northeast		Straight		81170173	32.363684	-81.198822
Angle	On Roadway	Motor Vehicle In Motion	Daylight	Dry	North	Northeast	Turning Left	Straight	81650224	32.350608	-81.221728
Angle	On Roadway	Motor Vehicle In Motion	Daylight	Dry	Northeast	Southeast	Straight	Straight	83180109	32.350608	-81.221728
Angle	On Roadway	Motor Vehicle In Motion	Daylight	Dry	Southeast	Northeast	Straight	Straight	82310729	32.350608	-81.221728
Not A Collision with Motor Vehicle	On Roadway	Animal	Daylight	Dry	Northeast		Straight		83180188	-1	-1
Angle	On Roadway	Motor Vehicle In Motion	Daylight	Dry	North	East	Straight	Straight	85590089	32.350402	-81.221276
Angle	On Roadway	Motor Vehicle In Motion	Daylight	Dry	South	West	Turning Right	Straight		32.350608	-81.221728
Angle	On Roadway	Motor Vehicle In Motion	Daylight	Dry	South	North	Turning Left	Stopped		32.350384	-81.221297
Not A Collision with Motor Vehicle	On Shoulder	Motor Vehicle In Motion	Daylight	Dry	East		Straight		E2650220	0	0
Angle	On Roadway	Motor Vehicle In Motion	Daylight	Dry	South	North	Turning Left	Stopped		32.350384	-81.221297
Not A Collision with Motor Vehicle	On Shoulder	Motor Vehicle In Motion	Daylight	Dry	East		Straight		E2650220	0	0
Angle	On Roadway	Motor Vehicle In Motion	Daylight	Dry	South	East	Straight	Straight	E2680256	0	0

U1Factors	U2Factors	RouteType	IntersectRouteType
Failed to Yield	No Contributing Factors		
Object Or Animal			
Failed to Yield	No Contributing Factors		
Failed to Yield	No Contributing Factors		
No Contributing Factors	Weather Conditions		
Failed to Yield	No Contributing Factors		
Object Or Animal			
D.U.I			
Failed to Yield	No Contributing Factors		
Weather Conditions	No Contributing Factors		
Object Or Animal		State Route	
Failed to Yield	No Contributing Factors		
Failed to Yield	No Contributing Factors		State Route
Failed to Yield	No Contributing Factors	State Route	
Object Or Animal			
D.U.I			
Failed to Yield	No Contributing Factors	State Route	
Failed to Yield	No Contributing Factors		
Failed to Yield	No Contributing Factors	State Route	
Object Or Animal			
Failed to Yield	No Contributing Factors		
Failed to Yield	No Contributing Factors		
Misjudged Clearance	No Contributing Factors		
Inattentive			
Failed to Yield	No Contributing Factors		

DEPARTMENT OF TRANSPORTATION

STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE P.I. #0009872 **OFFICE** Environmental Services

DATE May 1, 2014

FROM Chad Carlson

TO Files

SUBJECT GDOT P.I. #0009872, Effingham County;
HP #131119-009
Survey Report

Attached is the Survey Report for the subject project prepared by Leslie Brown of Edwards-Pitman Environmental, Inc. of Smyrna, GA. The Department concurs with the finding of this report. This document describes the Department's efforts to identify historic properties located within the proposed project's area of potential effects and the evaluation of all identified properties through the application of the Criteria of Eligibility to determine eligibility for inclusion in the National Register of Historic Places.

cbc/

cc: Rodney N. Barry, P.E., FHWA, w/attachment (Attn: Jennifer Giersch)
Coastal Regional Commission, w/attachment
David Crass, Deputy SHPO, w/attachment

CONCUR: _____ **DATE:** 5.12.14
for David Crass, Deputy SHPO

cc: Theresa Piazza, GDOT NEPA
Leslie Brown, Edwards-Pitman Environmental, Inc.

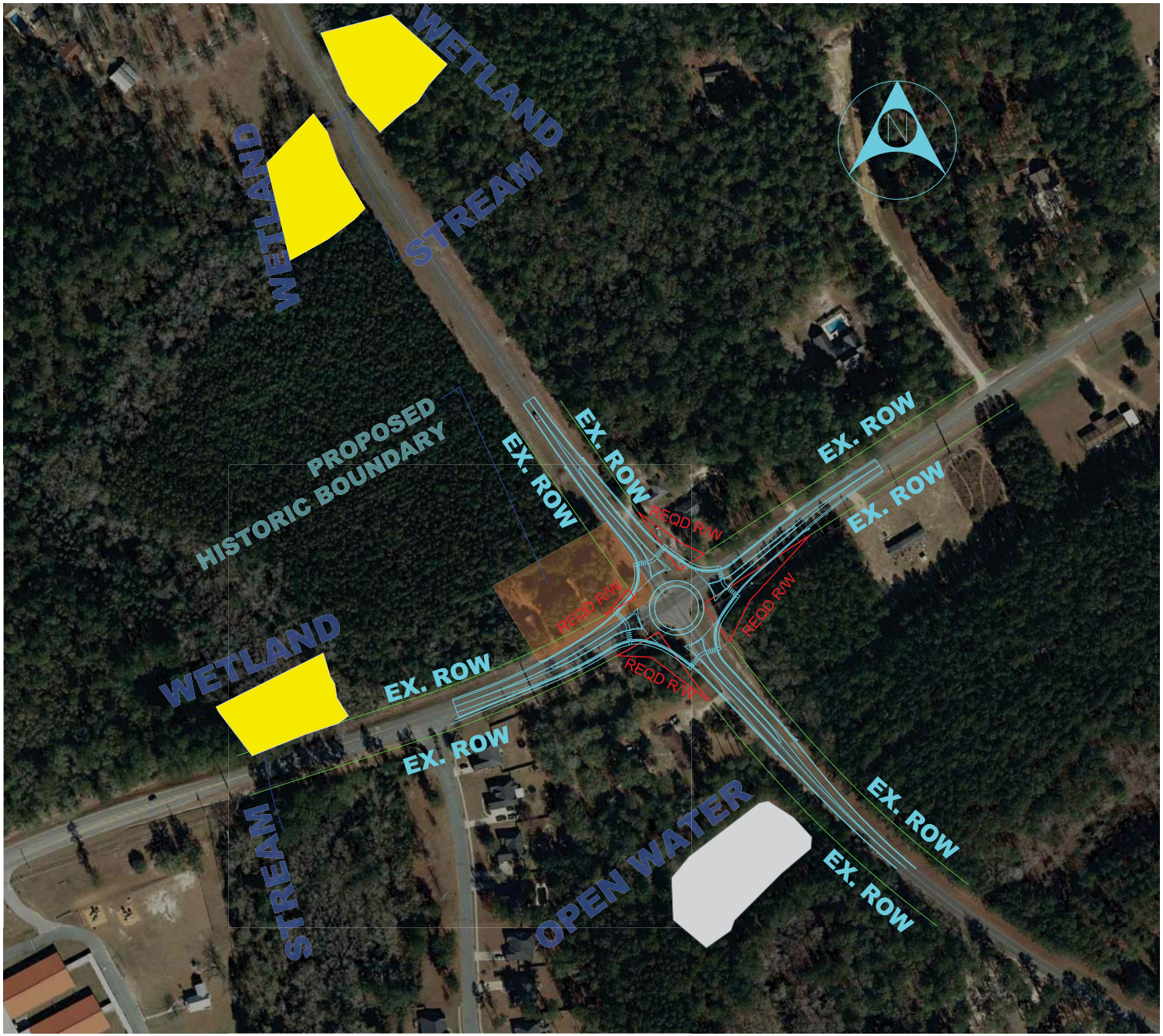
Proposed National Register Boundary for
The Nease-Seckinger Property (Resource 1)

GDOT P.I. No. 0009872, Effingham County
HP No. 131119-009

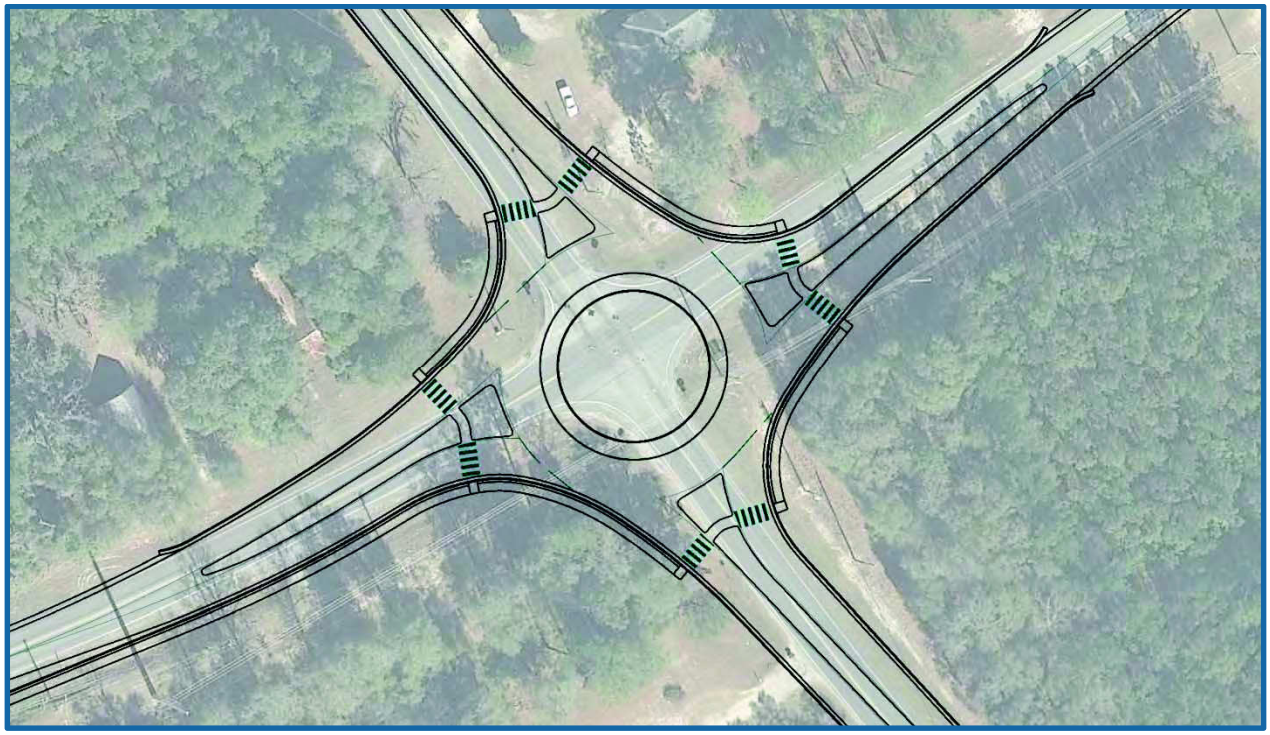
NOT TO SCALE

EDWARDS-PITMAN ENVIRONMENTAL, INC.

N


WETLAND
WETLAND
STREAM
N
PROPOSED
HISTORIC BOUNDARY
EX. ROW
EX. ROW
EX. ROW
EX. ROW
REQD R/W
REQD R/W
REQD R/W
REQD R/W
WETLAND
EX. ROW
EX. ROW
STREAM
OPEN WATER
EX. ROW
EX. ROW

Roundabout Feasibility Study



SR 275 at CR 307/Rincon-Stillwell Road

P.I. #0009872

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Reviewed by: Mark Lenters, PE

August 2014

Executive summary

The purpose of this study was to provide an evidence-based comparison of intersection alternatives (TWSC, AWSC and roundabout) to identify a preferred alternative for this location. The selected improvements must operate at a LOS C during the 2038 design year in accordance with GDOT policy for the intersection context and roadway classifications. The quantitative criteria used to compare traffic signals and a roundabout includes:

- Operational performance,
- Safety performance, and.
- Estimated construction costs.

Vehicle noise, fuel consumption, maintenance & operations, vehicle emissions, non-motorized users, maintenance and emergency services, speed control and aesthetics are discussed but compared only qualitatively.

The proposed project is intended to improve the safety and operational efficiency of the SR 275/CR 307 (Rincon-Stillwell Road) intersection in Effingham County. Although both the AWSC and roundabout alternatives are expected to operate acceptably in the design year and to improve the safety compared to the existing TWSC condition, the roundabout is the preferred alternative due to its superior operation and safety performance.

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

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1. Introduction

1.1 Background

At the request of GDOT District 5 and McGee Partners, Inc., GHD completed a feasibility study to compare the operational and safety performance of alternative traffic control types for the intersection of SR 275 (Ebenezer Road) and Rincon-Stillwell Road in Effingham County. It builds on the findings of a Traffic Engineering (TE) study dated September 27, 2013. According to the TE study, a signal is not warranted at this location. Therefore, GHD evaluated the following alternatives:

- Two-way stop control (no-build),
- All-way stop control, and
- Single-lane roundabout.

The proposed project is intended to enhance safety and improve operational efficiency at the intersection. The purpose of this study is to provide an evidence-based comparison of intersection alternatives to justify a preferred intersection type for this location. The quantitative criteria used to compare the alternatives includes:

- Operational performance,
- Safety performance, and
- Estimated construction costs.

Vehicle noise, fuel consumption, maintenance & operations, vehicle emissions, non-motorized users, maintenance and emergency services, speed control and aesthetics are discussed but compared only qualitatively.

1.2 Location & Context

The project is located at the intersection of State Route (SR) 275, Rincon Stillwell Road, and Long Bridge Road in Effingham County, approximately 2.37 miles northeast of SR 21. For the purposes of this report, SR 275 is assumed to be oriented in the east/west direction and Rincon Stillwell Road and Long Bridge Road are oriented in the north/south direction. The intersection is depicted in **Figure 2** on page 3.

1.2.1 Topography

SR 275 is classified as a rural major collector road. It begins at SR 21 at its westernmost terminus and continues in a northeasterly direction for 5.55 miles to its eastern terminus at the Savannah River. Through the study area, SR 275 consists of two 12-foot lanes and no shoulders.

Both Rincon Stillwell Road and Long Bridge Road are also classified as rural major collector roads. Through the study area, both roadways consist of two 12’ lanes and no shoulders.

GDOT measured intersection sight distance for the side road approaches in the field in accordance with AASHTO criteria. Their sight distance measurements are summarized in the following table.

Table 1: Existing Intersection Sight Distance		
Approach Roadway	**Looking West**	**Looking East**
Rincon Stillwell Road	950 feet	2,000 feet
Long Bridge Road	700 feet	1,500 feet

1.2.2 Existing Traffic Control

SR 275 is free flow through the study intersection. Existing intersection ahead warning signs with name plaques are located on each approach in advance of the intersection. Existing overhead flashing beacons with dual amber indications also advise motorists of the presence of intersecting roadways. The posted speed on SR 275 is 45 mph.

Rincon Stillwell Road and Long Bridge Road are stop controlled at the intersection. Stop (double indicated) and Stop Ahead (also double indicated) signs are provided on both approaches to the intersection. Existing overhead flashing beacons with dual red indications also advise motorists of the stop condition at SR 275. The posted speed limits on Rincon-Stillwell and Long Bridge roads are 55 mph.

According to a Traffic Engineering study completed by District 5 Traffic Operations in 2013, the two-way stop control (TWSC) alternative operates with LOS C or D during the peak hours in 2011. The Traffic Engineering study is attached in **Appendix A**.

1.2.3 Context

Three legs of the intersection lie on the Historic Effingham-Ebenzer Scenic Byway and there is a historic marker (*Historic Taverns on this Road)* located in the southwest quadrant of the intersection. In addition, there is a proposed National Register Boundary proposed for the perimeter of the Nease-Seckinger property in the northwest quadrant of the intersection. This boundary is indicated in the concept plan included in **Appendix H.**

Figure 1. Historic Marker

The land use immediately surrounding the intersection is zoned residential, institutional, agricultural or commercial. The Ebenezer Elementary and Middle school complex is located approximately 1,400 feet west of the intersection on the south side of SR 275.

GIS data obtained from Effingham County suggests that wetlands exist near the project intersection. These resources are also delineated on the concept plan included in **Appendix H**.

Existing utility information was not available at the time of this writing. But numerous overhead utilities were obvious during field visits, including a high voltage line running parallel to SR 275 through the project area.

A location map is provided in **Figure 2** on the following page.

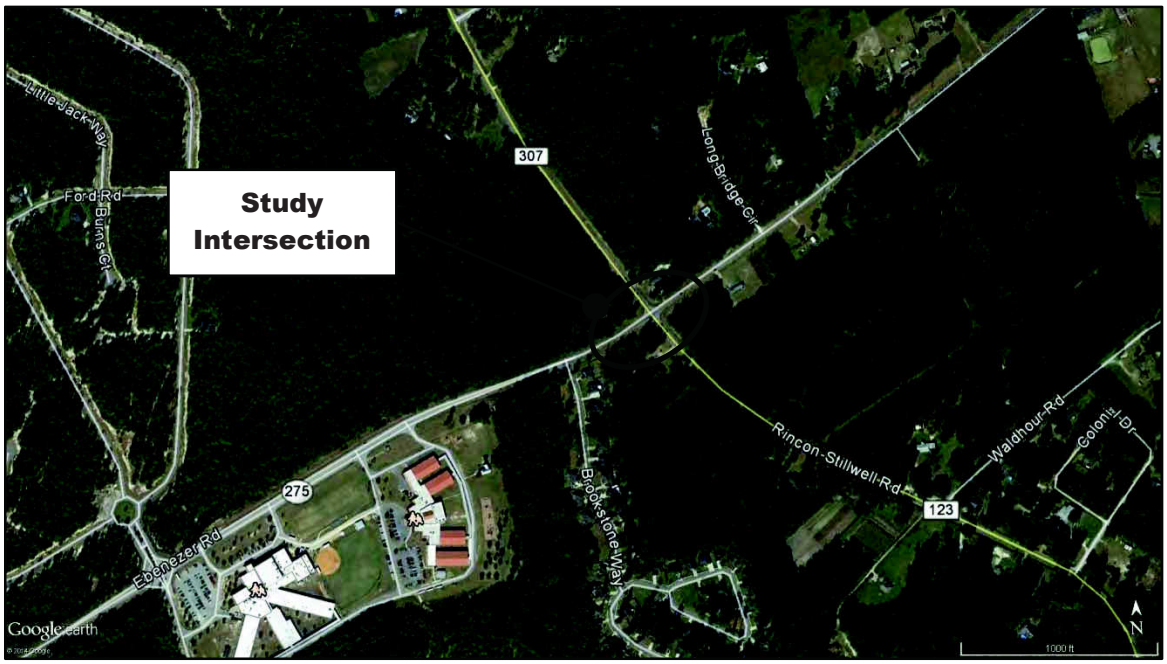

Figure 2. Location Map

1.3 Traffic Volumes

GDOT's Office of Planning provided ADTs and design hourly volumes (DHV) for the existing year (2013), the opening year (2018), and the design year (2038) for build and no-build conditions. The DHV's are summarized in **Tables 1** and **2** below and included in **Appendix B**. Given the rural nature of the proposed intersection, GHD assumed a peak hour factor of 0.88 (all movements) for the purpose of this study.

Table 2: 2018 Peak Hour Turning Movements

		EB SR 275			SB Long Bridge Road			WB SR 275			NB Rincon-Stillwell Road		
		L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	Volumes	25	40	55	15	65	45	30	25	10	65	65	15
	PHF		0.88			0.88			0.88			0.88	
PM Peak	Volumes	45	25	65	10	65	25	15	40	15	55	65	30
	PHF		0.88			0.88			0.88			0.88	

Table 3: 2038 Peak Hour Turning Movements

		EB SR 275			SB Long Bridge Road			WB SR 275			NB Rincon-Stillwell Road		
		L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	Volumes	40	65	85	25	110	70	45	50	15	105	105	25
	PHF		0.88			0.88			0.88			0.88	
PM Peak	Volumes	70	50	105	15	105	40	25	65	25	85	110	45
	PHF		0.88			0.88			0.88			0.88	

1.4 Purpose & Need

The proposed project will enhance safety and improve operational efficiency at the intersection of SR 275 at CR 307/Rincon-Stillwell Road in Effingham County, GA. In Georgia, nearly a third of fatal crashes occur at intersections making intersection safety a focus area for the Georgia Department of Transportation. Nationally intersection crashes account for 40% of all reported crashes and approximately 20% of traffic fatalities. Of those fatalities, nearly 50% are the result of angle collisions. Angle collisions are often high speed, high impact crashes which often result in serious injuries or fatalities.

Crash data collected from the years 2004-2008 and 2011 indicates that 13 crashes occurred at this intersection resulting in 17 total injuries. Of those crashes 75% were angle collisions accounting for 71% of the injuries. Studies have shown that the installation of a roundabout results in nearly 80% reduction in fatal and serious injury crashes and nearly 40% reduction in property damage crashes. (Source: *GDOT Project Justification memorandum*)

1.5 Signal Warrant Analysis

A signal warrant analysis was completed as part of the TE dated September 2013. An examination of traffic volumes and collision experience indicates that none of the MUTCD signal warrants are satisfied at this intersection using 100% values. The Signal Warrant Analysis is included in the TE Study in **Appendix A**.

2. Operational Analyses

GHD performed analyses of unsignalized (two-way stop and all-way stop control) conditions and a roundabout alternative for the opening and design years.

2.1 Analysis Inputs

GHD performed unsignalized analyses using HCS+ v. 5.6 which is based on the analysis methodology contained in the *Highway Capacity Manual (HCM)*. Roundabout analyses were completed in accordance with Chapter 8, Section 8.2.2 of the GDOT Design Policy Manual (DPM). Roundabouts were analyzed with GDOT's Roundabout Analysis Tool v. 2.1 and SIDRA Intersection v. 6. For the SIDRA analyses, we applied environmental factors of 1.2 and 1.1 for the opening and design year conditions, respectively, to account for the differences between the Australian and American experience with roundabout capacity. A threshold volume to capacity (v/c) ratio of 0.85 was assumed for the operational and sensitivity analyses.

The Levels of Service discussed herein are based on the 2010 Highway Capacity Manual for unsignalized intersections. Queues listed represent the 95th percentile queue length per lane assuming average vehicle lengths of 25 feet. Delay is presented in seconds per vehicle.

2.2 Two-Way Stop Controlled Intersection Analyses

Operational analyses for the TWSC alternative assuming opening (2018) and design (2038) year design hourly volumes are summarized in **Tables 4** and **5**, respectively. The level of service (LOS) and delay per vehicle are only reported for the stop-controlled approaches. Detailed *HCM* Unsignalized Capacity Analysis reports are included in **Appendix C** and a sketch of the alternative is included in Section 3.

As indicated below, the stop-controlled approaches are anticipated to operate acceptably in the opening year. However, by 2038, the stop-controlled approaches are operating poorly.

Table 4: 2018 TWSC Capacity Analysis

		EB SR 275	SB Long Bridge Road	WB SR 275	NB Rincon-Stillwell Road
AM Peak	Approach LOS	A	B	A	C
	Delay (seconds)	-	13.2	-	16.7
PM Peak	Approach LOS	A	B	A	C
	Delay (seconds)	-	13.3	-	16.2

Table 5: 2038 TWSC Capacity Analysis

		EB SR 275	SB Long Bridge Road	WB SR 275	NB Rincon-Stillwell Road
AM Peak	Approach LOS	A	D	A	F
	Delay (seconds)	-	26.2	-	113.5
PM Peak	Approach LOS	A	D	A	F
	Delay (seconds)	-	26.8	-	111.8

GHD also looked at the benefit of adding turn lanes on the stop-controlled approaches in attempt to improve the operations in 2038. As the data in **Table 6** indicates, the widened alternative is anticipated to operate more efficiently. However, the northbound Rincon-Stillwell approach is anticipated to operate at a LOS D in the design year. Therefore, the TWSC alternative was excluded from further consideration because it is expected to operate below the desirable LOS outlined in GDOT policy for Rural Collector Roadways (LOS C).

Table 6: 2038 TWSC (with additional lanes) Capacity Analysis

		EB SR 275	SB Long Bridge Road	WB SR 275	NB Rincon-Stillwell Road
AM Peak	Approach LOS	A	C	A	D
	Delay (seconds)	-	16.4	-	26.7
PM Peak	Approach LOS	A	C	A	C
	Delay (seconds)	-	20.5	-	23.2

2.3 All-Way Stop Controlled Intersection Analyses

Operational analyses for the AWSC alternative assuming opening (2018) and design (2038) year design hourly volumes are summarized in **Tables 7** and **8**, respectively. Detailed *HCM* Unsignalized Capacity Analysis reports are included in **Appendix D**. The level of service (LOS) and delay per vehicle are only reported for each approach.

As indicated below, the stop-controlled approaches are anticipated to operate acceptably through the design year but several additional approaches have reached or are approaching LOS C by 2038.

Table 7: 2018 AWSC Capacity Analysis

		EB SR 275	SB Long Bridge Road	WB SR 275	NB Rincon-Stillwell Road
AM Peak	Approach LOS	A	A	A	B
	Delay (seconds)	9.7	9.9	9.4	10.3
PM Peak	Approach LOS	A	A	A	B
	Delay (seconds)	9.8	9.2	9.1	10.7

Table 8: 2038 AWSC Capacity Analysis

		EB SR 275	SB Long Bridge Road	WB SR 275	NB Rincon-Stillwell Road
AM Peak	Approach LOS	B	B/C	B	C
	Delay (seconds)	14.6	15.0	12.6	17.5
PM Peak	Approach LOS	C	B	B	C
	Delay (seconds)	16.4	13.4	12.5	17.8

2.4 Roundabout Analyses

GHD developed a concept plan for a roundabout sized to accommodate the anticipated design vehicles (WB-67) and the design year traffic volumes. The single lane roundabout is depicted in **Figures 5** on page 10 and on the concept plan included in **Appendix H**.

The results of the roundabout analyses are summarized in **Tables 9 and 10** for the opening (2018) and design (2038) years, respectively. Detailed reports are included in **Appendix E**. The approach LOS, volume-to-capacity (v/c) ratio, 95th percentile queue length (back-of-queue, in feet), and average delay per vehicle (in seconds per pcu) are reported for each leg of the roundabout. A v/c ratio of 0.85 is generally considered to be the threshold for acceptable roundabout operations.

As the data in **Tables 9** and **10** indicate, a single lane roundabout is expected to operate well below capacity (maximum v/c ratio 0.36) through the design (2038) year. Additional analyses suggest that the single lane roundabout will operate with a residual capacity, above LOS E, of 111% in 2038.

Table 9. 2018 Single Lane Roundabout Capacity Analysis

			EB SR 275	SB Long Bridge Road	WB SR 275	NB Rincon-Stillwell Road
GDOT Tool (Calibrated)	AM Peak	LOS	A	A	A	A
		v/c	0.17	0.18	0.10	0.21
		Queue (ft)	25	25	25	25
		Delay (sec/pcu)	5.0	5.0	5.0	5.0
	PM Peak	LOS	A	A	A	A
		v/c	0.20	0.14	0.11	0.21
		Queue (ft)	25	25	25	25
		Delay (sec/pcu)	5.0	5.0	5.0	5.0
SIDRA	AM Peak	LOS	A	A	A	A
		v/c	0.18	0.20	0.11	0.21
		Queue (ft)	25	25	25	50
		Delay (sec/pcu)	1.4	1.4	1.7	1.0
	PM Peak	LOS	A	A	A	A
		v/c	0.20	0.15	0.12	0.22
		Queue (ft)	25	25	25	50
		Delay (sec/pcu)	1.1	1.2	1.8	1.0

Table 10. 2038 Single Lane Roundabout Capacity Analysis						
			EB SR 275	SB Long Bridge Road	WB SR 275	NB Rincon-Stillwell Road
GDOT Tool (Calibrated)	AM Peak	LOS	A	A	A	A
		v/c	0.30	0.33	0.19	0.35
		Queue (ft)	50	50	25	50
		Delay (sec/pcu)	7.0	7.0	6.0	7.0
	PM Peak	LOS	A	A	A	A
		v/c	0.35	0.24	0.21	0.36
		Queue (ft)	50	25	25	50
		Delay (sec/pcu)	7.0	6.0	6.0	7.0
SIDRA	AM Peak	LOS	A	A	A	A
		v/c	0.29	0.32	0.19	0.33
		Queue (ft)	50	50	25	75
		Delay (sec/pcu)	2.1	2.3	2.6	1.4
	PM Peak	LOS	A	A	A	A
		v/c	0.33	0.24	0.20	0.34
		Queue (ft)	75	50	50	75
		Delay (sec/pcu)	1.7	1.8	2.8	1.5

3. Alternative Sketches

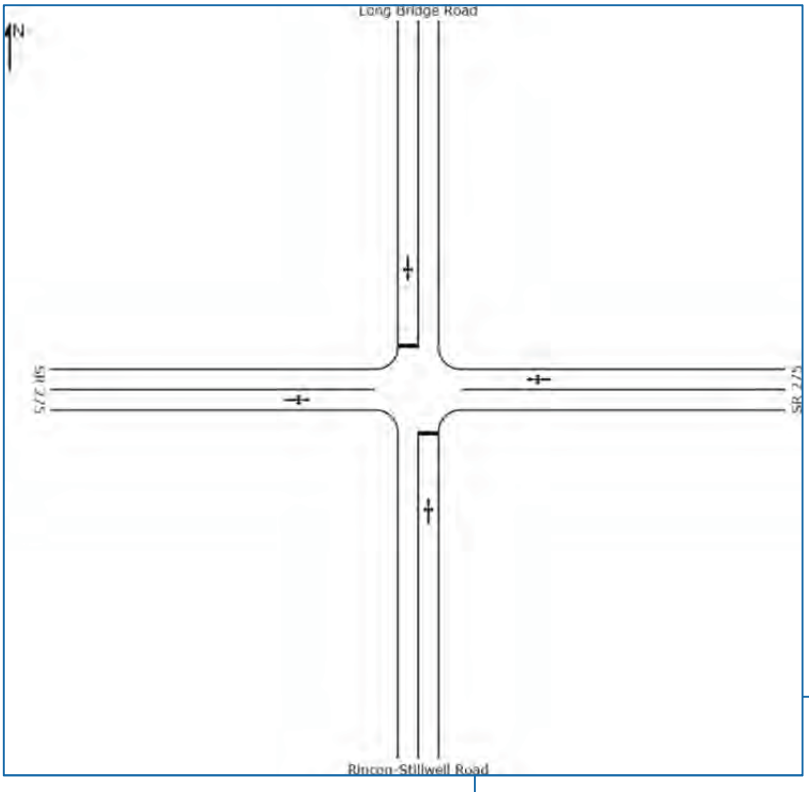

Figure 3. TWSC (existing) Configuration

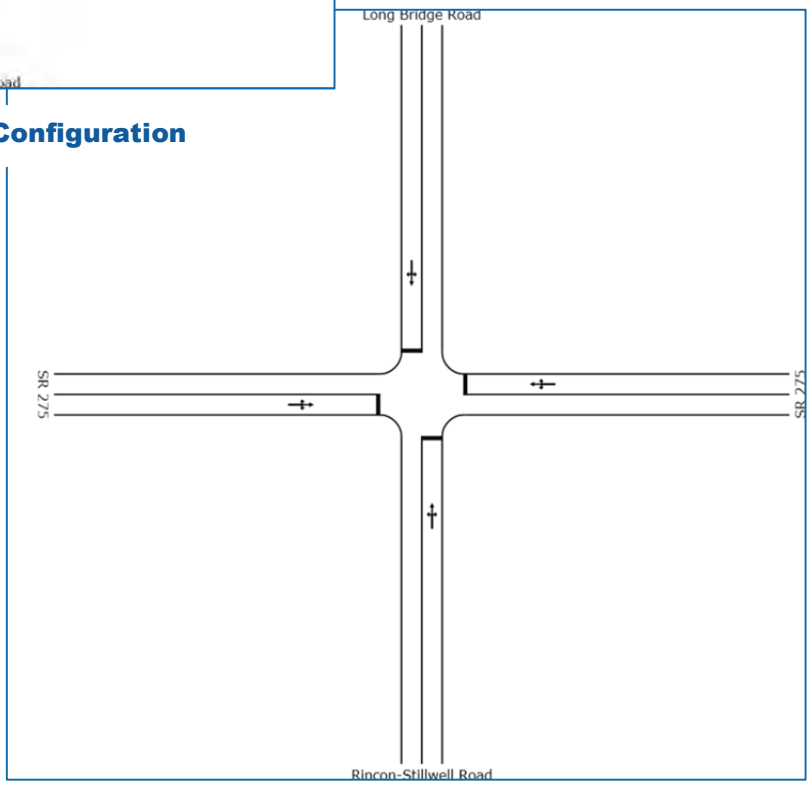

Figure 4. AWSC Alternative

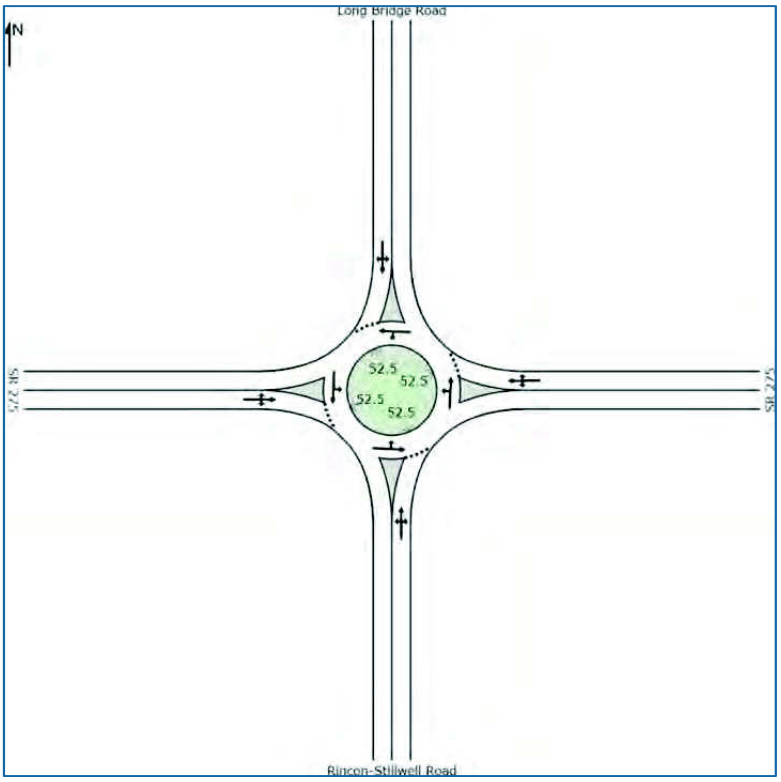

Figure 5. Single Lane Roundabout

4. Safety Assessment

GDOT collected collision data for the study intersection for the time period between January 2004 and January 2013. A total of 13 collisions were reported during this time period. A summary of the collision types by year is provided in **Table 11** and crash diagrams are included in the Traffic Engineering Study in **Appendix A**.

Table 11. Collision History

Collision Type	2004	2005	2006	2007	2008	2011
Right Angle	1	1		1	3	1
Left Turn	2		1		1	1
Rear End						
Head On						
Sideswipe			1			
Other						

The crash data indicates that 13 crashes occurred at this intersection resulting in 17 total injuries. Of those crashes, approximately 75% were angle collisions that accounted for 71% of the injuries.

GHD reviewed the Crash Modification Factors Clearinghouse website to obtain the most current and applicable crash modification factors (CMFs) for the various alternatives and the site characteristics. The clearinghouse is a Web-based database providing CMFs and supporting documentation to assist transportation engineers in identifying the most appropriate counter-measures for safety needs. A CMF is a multiplicative factor used to compute the expected number of crashes after implementing a given countermeasure at a specific site. A summary of the CMF's for each countermeasure is provided in **Table 12** below. Details for each CMF ID are included in **Appendix F**.

Table 12. Crash Modification Factors by Countermeasure

CMF ID (Year)	Description	CMF (CRF)	Crash Type	Crash Severity
3130 (2010)	Convert two-way (without flashing beacons) to all way stop control (without flashing beacons)	0.393 (60.7)	All	All
3131 (2010)		0.276 (72.4)	All	Fatal & Injury
3132 (2010)		0.299 (70.1)	Angle, Head-On, Lt & Rt Turns	All
4697 (2012)	Convert high-speed rural intersection to roundabout	0.320 (68.0)	All	All
4698 (2012)		0.120 (88.0)	All	Injury
4707 (2012)		0.090 (91.0)	Angle	Injury

The CMFs provided above suggest that both the AWSC and roundabout alternatives are expected to result in significant decreases in total and injury crashes compared to the current TWSC configuration. A roundabout, however, would be expected to reduce crashes – especially injury and angle crashes - to the greatest extent.

5. Cost Comparison

GDOT developed a cost estimate for the proposed roundabout configuration illustrated in Appendix H. The detailed estimate is based on the items, quantities and prices utilized for a recent roundabout of similar size. The total estimated construction cost including contingency and engineering & inspection (but excluding utility relocation and right of way) is $1.545M. The estimate is included in **Appendix G**.

A cost estimate was not developed for the AWSC alternative as the necessary improvements would be minor in nature (i.e. < $25,000).

6. Concept Development

A concept for the proposed roundabout is included in the Roundabout Documentation package in **Appendix H**. The roundabout was sized and located to balance a number of competing goals. First, offset left approach geometry was implemented to reinforce speed reduction on the approaches for this rural, high-speed context. Second, long splitter islands are proposed to reinforce speed control. And third, the roundabout was shifted south and east to the extent possible to minimize impacts to a historic property while also avoiding impacts to a high voltage power line. A number of key design elements are listed in **Table 13** below.

Table 13. Roundabout Geometric Overview

	GDOT Guidance[1]	NCHRP 672 Guidance[2]	Design Goal
Roundabout Classification	Rural	Rural	Rural
Entry Lanes per Approach	1[3]	1	1
Design Speed (entry)	-	25 mph (max.)	25 mph (max.)
Design Vehicle – Turning Movements	WB-67	WB-50/WB-67	WB-67
Design Vehicle – Circulatory Roadway	Bus-40/SU	Bus/SU	Bus-40/SU
Inscribed Circle Diameter	-	130 -180 ft.	150 ft.
Entry Lane Widths (EW)	-	15-20 ft.	~20 ft.[4]
Truck Apron Width	-	3-15 ft.[4]	10 ft.[4]
Circulatory Roadway Width	-	1.0-1.2 x EW[4]	22.5 ft.[4]
Splitter Island Lengths	100 ft. (min.)	200 ft. (min.)	200 or 250 ft.[5]
Normal Cross Slope	2%	2%	2%
Truck Apron Cross Slope	-	1-2%	1-2%
Maximum Approach Grade	-	3-4% (desirable)	Match existing
Minimum Sidewalk Set Back Distance	2’ (min.) 6’ (preferred)	2’ (min.)	2’ (min.)

1. Sources: GDOT Design Policy Manual, Chapters 8 & 9
2. Source: NCHRP 672
3. Lane configuration verified with GDOT’s Roundabout Analysis Tool v 2.1 and SIDRA Intersection v6
4. Entry, Circulatory Roadway and Truck Apron widths are dependent on selected design vehicles and speed consistency analyses. OSOW considerations may also play a role in determining final dimensions.
5. 200 and 250 foot long splitter islands are proposed for the 45 and 55 mph approaches, respectively.

7. Summary Evaluation/Recommendations

Table 14 summarizes the quantitative and qualitative evaluation for the AWSC and roundabout alternatives. Factors include intersection area operations; safety and speed control; nonmotorized users; freight movement; construction staging; maintenance and emergency service access; noise, fuel and emissions; and aesthetic value.

Table 14. Summary of Qualitative Evaluation

Evaluation Criteria	Comments	
	AWSC	Roundabout
Intersection Area Operations	The AWSC alternative provides little positive guidance for speed transition beyond intersection warning signs. AWSC is expected to operate at LOS B or C in 2038.	A roundabout introduces longer splitter islands to effect speed transition while maintaining access to existing driveways. The roundabout is anticipated to operate at LOS A in 2038.
Safety and Speed Control	Safety should improve compared to the existing TWSC condition. Stop conditions on SR 275 will reduce speeds in the vicinity of the intersection.	Roundabouts control speeds at all times. Speeds are uniform and low where conflicts are highest. The roundabout is anticipated to reduce angle crashes by 91%.
Non-motorized Users	No improvements for bicyclists or pedestrians.	Proposed design includes pedestrian accommodations from the roundabout to the school driveway. Slower motor vehicle speeds reduce the likelihood and severity of collisions for bicyclists.
Freight Movement	Intersection geometry allows for wide left and right turns if other drivers are courteous.	The proposed configuration accommodates WB-67 turning movements and buses/single unit trucks in the circulatory roadway. Additional consideration will be required for OSOW design vehicles.
Construction Staging	Minimal disruption to install additional signs and stop bars.	Staging is more complex. Temporary detours would reduce construction duration and simplify traffic management.
Maintenance and Emergency Service Access	Minimal additional maintenance required. Introducing stop conditions on SR 275 will increase delay for emergency services.	Increase in maintenance costs due to roadway lighting. Roundabouts provide adequate space to pass traffic on approaches and in the circulatory roadway.
Vehicle Noise, Fuel Consumption and Emissions	Noise likely to increase due to stopping/starting on SR 275.	Less starting and stopping reduces noise, especially for trucks. Expect reductions in fuel use and delay in proportion to reductions in average delay.
Aesthetic Value	Status quo	Central and splitter islands can be landscaped to augment the scenic byway or other civic themes.

7.1 Conclusion & Recommendations

Based on the operational analyses, safety assessment and construction costs for the SR 275/CR 307 (Rincon-Stillwell Road) intersection, the preferred alternative is a roundabout for the following reasons:

- While both the AWSC and roundabout alternatives will operate with acceptable levels of delay, the roundabout is predicted to operate with less delay and queuing in the design year. Additionally, where the performance of the AWSC alternative is expected to deteriorate to by the design year, the roundabout is projected to operate with a residual capacity of 111% in 2038.
- Delay costs are also reduced with the roundabout alternative. During off-peak periods, there will be virtually no delay as compared to the AWSC alternative that will experience control delay throughout the day.
- A review of the crash modification factors for the alternative countermeasures suggests that the roundabout is expected to reduce total crashes to the greatest degree. Furthermore, the roundabout is expected to reduce injury and angle crashes by 88% and 91%, respectively, compared to 72% and 70% for the AWSC alternative, respectively.
- GDOT estimated the construction cost for the roundabout to be $1.545M, excluding utility relocation and right-of-way costs.
- A review of permit records indicates that OSOW vehicles pass through this intersection on occasion. Special consideration will be required to accommodate these large vehicles through the roundabout but requisite provisions are not expected to increase the cost of the roundabout substantially.
- While the improvements associated with the roundabout encroach on a proposed National Register Boundary, the roundabout has been shifted to avoid impacts to existing structures. By minimizing impacts to the property, it is expected that the project will likely be determined to have no adverse effect on the historic resource.
- Both the AWSC and roundabout alternatives avoid impacts to the high voltage line that runs along SR 275 through the project area.

Disclaimer

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The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

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Document Status

Rev No.	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
0	ATD	Mark Lenters				

Appendices

Appendix A – Traffic Engineering Study

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENTAL CORRESPONDENCE

FILE: **SR 275 AT RINCON STILLWELL RD**
EFFINGHAM CO.
P.I. 0009872

OFFICE: Jesup, Georgia

DATE: September 27, 2013

FROM: Karon L. Ivery, District Engineer RTM

TO: Kathy Zahul, P.E., State Traffic Engineer
Atlanta, Georgia

ATTN: **Paul DeNard, P.E. Asst. State Traffic Operations Engineer, TMC**

SUBJECT: **TRAFFIC ENGINEERING STUDY (Roundabout)**

As discussed with Scott Zehngraff, please review and provide comments.

Thank you for your consideration in this matter, if you should have any questions or comments, please contact Neil Dubberly of this office at (912) 427-5704.

RTM:END

Enclosure

TRAFFIC ENGINEERING STUDY/ ROUNDABOUT EVALUATION
P.I. 0009872
SR 275 AT RINCON STILLWELL RD
EFFINGHAM COUNTY

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
September 27, 2013
M.P. 2.37

Prepared by

District 5
Traffic Operations

TRAFFIC ENGINEERING STUDY
SR 275 AT RINCON STILLWELL RD
EFFINGHAM COUNTY

STUDY LOCATION

The intersection of State Route (SR) 275 and Rincon Stillwell Road/Long Bridge Road in Effingham County has been examined for a proposed Roundabout Improvement Project. This intersection is located along SR 275, 2.37 miles North of SR 21. For the purposes of this report, SR 275 has a North/South orientation and Rincon Stillwell/Long Bridge Road has an East/West orientation. (See attached site map and adjacent signalized intersection map).

REASON FOR INVESTIGATION

The Department has investigated this location to determine if the installation of a roundabout would improve the traffic operations and overall safety of the study intersection.

TOPOGRAPHY

SR 275 is classified as a rural major collector road. SR 275 begins at SR 21 with its southern most termini and continues in a northerly direction for 5.55 miles to its northern termini at the Savannah River. At the study intersection SR 275 is a two lane roadway with both lanes being 12 feet in width.

Both Rincon Stillwell Road and Long Bridge Road are classified as rural major collector roads. At the study intersection both Rincon Stillwell Road and Long Bridge Road are two lane roadways with each lane being 12 feet in width.

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

Rincon Stillwell Rd Westbound approach looking North on SR 275	2000 ft.
Rincon Stillwell Rd Westbound approach looking South on SR 275	950 ft.
Long Bridge Rd Eastbound approach looking North on SR 275	1500 ft.
Long Bridge Rd Eastbound approach looking South on SR 275	700 ft.

TRAFFIC ENGINEERING STUDY
SR 275 AT RINCON STILLWELL RD
EFFINGHAM COUNTY

EXISTING TRAFFIC CONTROL

SR 275 carries free flow traffic at its intersection with Rincon Stillwell Road and Long Bridge Road. There are existing intersection warning signs with name plaques on both approaches at the study intersection. There is an existing overhead flashing beacon with dual amber indication too advise motorist of the intersecting roadway.

Rincon Stillwell Road and Long Bridge Road are both stop controlled approaches. Both approaches have existing double indicated stop ahead signs and stop signs. The overhead flashing beacon has dual red indications on both approaches that warn motorist of the stop condition at SR 275.

VEHICLE VOLUME HISTORY

Table 1- AADT for SR 275 and RINCON STILLWELL RD		
YEAR	SR 275 (TC#0193)	RINCON STILLWELL RD (TC#0222)
2012	3,360	2,700
2011	3,670	2,870

VEHICLUAR SPEEDS

The posted speed limit for both approaches on SR 275 is 45 MPH.
The posted speed limit for both Rincon Stillwell Road and Long Bridge Road is 55 MPH at the study intersection.

PEDESTRIAN MOVEMENTS

During the peak hour traffic counts, no pedestrians were recorded crossing any approach of the intersection. There are no sidewalks or crosswalks present at the study intersection.

PARKING

On-street parking is not permitted along SR 275 or Rincon Stillwell/Long Bridge Road in the vicinity of the intersection.

TRAFFIC ENGINEERING STUDY
SR 275 AT RINCON STILLWELL RD
EFFINGHAM COUNTY

COLLISION HISTORY

Collision data was available for the study intersection between the time period of January 2004 to January 2013. A total of 13 collisions were reported during this time period. Below see the type of collision per year of occurrence.

COLLISION	2004	2005	2006	2007	2008	2011
RIGHT ANGLE	1	1		1	3	1
LEFT TURN	2		1		1	1
REAR END						
HEAD ON						
SIDESWIPE			1			
OTHER						

(See attached collision diagram)

MUTCD SIGNAL WARRANT ANALYSIS

A traffic signal warrant analysis was performed for the intersection of SR 275 and Rincon Stillwell Road using the criteria provided in the Manual on Uniform Traffic Control Devices MUTCD, 2009 Edition. The data for the study was imported into the PC WARRANTS program for analysis and justification.
(See attached PC Warrants Analysis)

OTHER INFORMATION

A Preliminary sketch of the proposed Roundabout is included in this study.

A Highway Capacity Analysis was performed using HCS 2010. The analysis was performed for the existing two way stop operation and a possible four way stop operation. (See Attached Analysis).

A Roundabout analysis was run for the study intersection using GDOT Roundabout Analysis Tool v2.1 (See Attached Analysis)

Ebenezer Elementary School Zone begins 0.05 miles south of the study intersection on SR 275. There are existing post mounted flashers at this location.

TRAFFIC ENGINEERING STUDY
SR 275 AT RINCON STILLWELL RD
EFFINGHAM COUNTY

TRAFFIC VOLUMES

Traffic volumes were recorded at the study intersection on May 18, 2011. The traffic volumes were recorded from 0500-1800 Hrs. Volume data count sheets are included in the TE Study. These volumes were used to determine existing and proposed Level of Service and to perform signalization warrants for the study intersection.

INTERSECTION ANALYSIS SUMMARY

PK HR 1500-1600

	APPROACH LOS			
INTERSECTION OPERATION	SR 275 Northbound	SR 275 Southbound	LONG BRIDGE Eastbound	STILLWELL Westbound
TWO WAY STOP	A	A	C	D
ALL WAY STOP	C	A	A	B
ROUNDABOUT	A	A	A	A

TRAFFIC ENGINEERING STUDY
SR 275 AT RINCON STILLWELL RD
EFFINGHAM COUNTY

CONCLUSIONS

An examination of traffic volumes and collision experience indicates that none of the MUTCD signal warrants are satisfied at this intersection using 100% values.

Of the 13 collisions reported 12 of the reported collisions would be correctable by the installation of a Roundabout.

The Highway Capacity Analysis for the existing operation (two way stop) shows an approach LOS of "C" for the Eastbound approach and an approach LOS of "D" for the Westbound approach at the study intersection.

The Highway Capacity Analysis for an All Way Stop at the study intersection shows an overall intersection LOS "B".

The GDOT Roundabout Analysis Tool shows a LOS "A" for all approaches.

RECOMMENDATIONS

Based on an analysis of traffic data, collision experience and intersection operations. The following action is recommended.

- **It is recommended that a Single Lane Roundabout be installed at the study intersection.**
- **It is recommended that the Single Lane Roundabout be installed under GDOT Safety Project P.I. #0009872**

*RECOMMENDED BY:*_____ *DATE:*_____

District Traffic Engineer

Georgia Department of Transportation

District 5

Traffic Operations

Signal Warrants - Summary

Major Street Approaches

Northbound: **SR 275**
Number of Lanes: **1**
85% Speed < 40 MPH.
Total Approach Volume: **2,959**

Southbound: **SR 275**
Number of Lanes: **1**
85% Speed < 40 MPH.
Total Approach Volume: **523**

Minor Street Approaches

Eastbound: **LONG BRIDGE RD**
Number of Lanes: **1**

Total Approach Volume: **1,146**

Westbound: **RINCON-STILLWELL RD**
Number of Lanes: **1**

Total Approach Volume: **1,521**

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

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

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

Warrant 1B - Interruption of Continuous Traffic ..... Not Satisfied
Required volumes reached for 0 hours, 8 are needed

Warrant 1 A&B - Combination of Warrants ..... Not Satisfied
Required volumes reached for 0 hours, 8 are needed

Warrant 2 - Four Hour Volumes ..... **Not Satisfied**
Number of hours (0) volumes exceed minimum < minimum required (4).

Warrant 3 - Peak Hour ..... **Not Satisfied**

Warrant 3A - Peak Hour Delay ..... Not Satisfied
Approach volumes on minor street don't exceed minimums for any hour. Delay data not evaluated.

Warrant 3B - Peak Hour Volumes ..... Not Satisfied
Volumes do not exceed minimums for any hour.

Warrant 4 - Pedestrian Volumes ..... Not Evaluated

Warrant 5 - School Crossing ..... Not Evaluated

Warrant 6 - Coordinated Signal System ..... Not Evaluated

Warrant 7 - Crash Experience ..... **Not Satisfied**
Number of accidents (3) is less than minimum (5). Volume minimums are not met.

Warrant 8 - Roadway Network ..... Not Evaluated

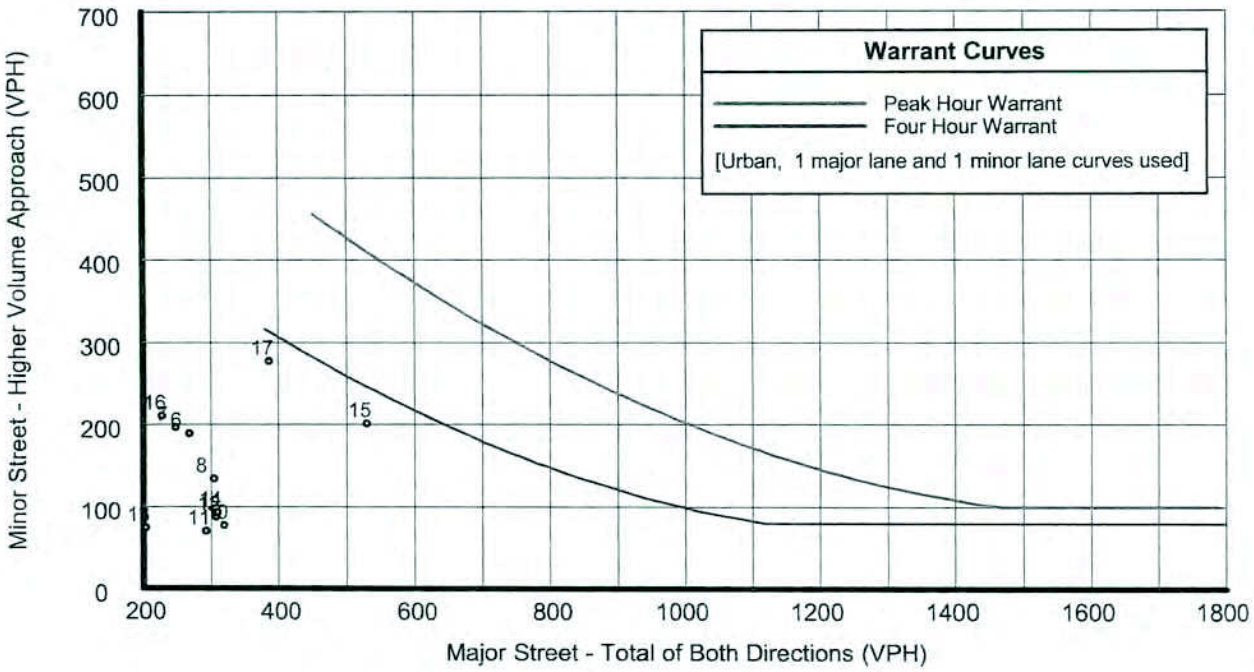
Warrant 9 - Intersection Near a Grade Crossing ..... Not Evaluated

Georgia Department of Transportation

District 5

Traffic Operations

Signal Warrants - Summary



Analysis of 8-Hour Volume Warrants:

War 1A-Minimum Volume

Hour Begin	Major Total	Minor Vol	Minor Dir	Maj 500	Min 150
14:15	529	201	W	Yes	Yes
17:00	386	277	W	No	Yes
16:45	386	277	W	No	Yes
16:30	386	277	W	No	Yes
16:15	386	277	W	No	Yes
10:00	319	77	W	No	No
09:45	319	77	W	No	No
09:30	319	77	W	No	No
09:15	319	77	W	No	No
14:00	309	93	W	No	No
13:45	309	93	W	No	No
13:30	309	93	W	No	No
13:15	309	93	W	No	No
12:00	307	87	W	No	No
11:45	307	87	W	No	No
11:30	307	87	W	No	No
11:15	307	87	W	No	No
08:00	304	134	W	No	No
07:45	304	134	W	No	No
07:30	304	134	W	No	No
07:15	304	134	W	No	No
11:00	292	70	W	No	No
10:45	292	70	W	No	No
10:30	292	70	W	No	No

War 1B-Interruption of Traffic

Hour Begin	Major Total	Minor Vol	Minor Dir	Maj 750	Min 75
15:00	529	201	W	No	Yes
14:45	529	201	W	No	Yes
14:30	529	201	W	No	Yes
14:15	529	201	W	No	Yes
17:00	386	277	W	No	Yes
16:45	386	277	W	No	Yes
16:30	386	277	W	No	Yes
16:15	386	277	W	No	Yes
10:00	319	77	W	No	Yes
09:45	319	77	W	No	Yes
09:30	319	77	W	No	Yes
09:15	319	77	W	No	Yes
14:00	309	93	W	No	Yes
13:45	309	93	W	No	Yes
13:30	309	93	W	No	Yes
13:15	309	93	W	No	Yes
12:00	307	87	W	No	Yes
11:45	307	87	W	No	Yes
11:30	307	87	W	No	Yes
11:15	307	87	W	No	Yes
08:00	304	134	W	No	Yes
07:45	304	134	W	No	Yes
07:30	304	134	W	No	Yes
07:15	304	134	W	No	Yes

War 1C-Combination of Warrants

Hour Begin	Major Total	Minor Vol	Minor Dir	Maj 600	Min 120
15:00	529	201	W	No	Yes
14:45	529	201	W	No	Yes
14:30	529	201	W	No	Yes
14:15	529	201	W	No	Yes
17:00	386	277	W	No	Yes
16:45	386	277	W	No	Yes
16:30	386	277	W	No	Yes
16:15	386	277	W	No	Yes
10:00	319	77	W	No	No
09:45	319	77	W	No	No
09:30	319	77	W	No	No
09:15	319	77	W	No	No
14:00	309	93	W	No	No
13:45	309	93	W	No	No
13:30	309	93	W	No	No
13:15	309	93	W	No	No
12:00	307	87	W	No	No
11:45	307	87	W	No	No
11:30	307	87	W	No	No
11:15	307	87	W	No	No
08:00	304	134	W	No	Yes
07:45	304	134	W	No	Yes
07:30	304	134	W	No	Yes
07:15	304	134	W	No	Yes

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	TRAFFIC OPS
Agency/Co.	GDOT
Date Performed	5/18/2011
Analysis Time Period	1500 HRS

Site Information

Intersection	SR 275 AT RINCON STILLWELL RD
Jurisdiction	D5
Analysis Year	2011

Project Description 0009872

East/West Street: RINCON STILLWELL RD | North/South Street: SR 275

Intersection Orientation: North-South | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	140	93	232	26	32	6
Peak-Hour Factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88
Hourly Flow Rate, HFR (veh/h)	159	105	263	29	36	6
Percent Heavy Vehicles	1	–	–	1	–	–
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	7	33	26	60	101	40
Peak-Hour Factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88
Hourly Flow Rate, HFR (veh/h)	7	37	29	68	114	45
Percent Heavy Vehicles	0	3	0	0	2	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR			LTR	
v (veh/h)	159	29		227			73	
C (m) (veh/h)	1573	1196		352			372	
v/c	0.10	0.02		0.64			0.20	
95% queue length	0.34	0.07		4.28			0.72	
Control Delay (s/veh)	7.5	8.1		32.0			17.0	
LOS	A	A		D			C	
Approach Delay (s/veh)	–	–	32.0			17.0		
Approach LOS	–	–	D			C		

HCS+™ Version 5.6 Generated: 9/26/2013 11:56 AM

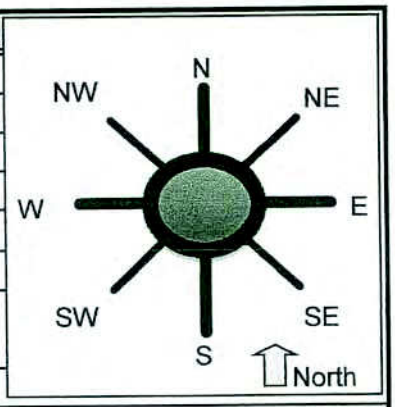
Roundabout Analysis Tool
Single Lane

9/17/2013
Version 2.1

General & Site Information

v2.1

Analyst:	GDOT
Agency/Co:	GDOT
Date:	5/18/2011
Project or PI#:	0009872
Year, Peak Hour:	2011, 1500
County/District:	EFFINGHAM/DISTRICT 5
Intersection Name:	SR 275 AT RINCON-STILLWELL RD



Volumes

		Entry Legs (FROM) N (1)	NE (2)	E (3)	SE (4)	S (5)	SW (6)	W (7)	NW (8)
	N (1), vph			40		93		7	
Exit	NE (2), vph								
Legs	E (3), vph	26				232		33	
(TO)	SE (4), vph								
	S (5), vph	32		60				26	
	SW (6), vph								
	W (7), vph	6		101		140			
	NW (8), vph								
Output	Total Vehicles	64	0	201	0	465	0	66	0

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	98%	100%	97%	100%	97%	100%	98%	100%
% Heavy Vehicles	2%	0%	3%	0%	3%	0%	2%	0%
% Bicycle	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians (ped/hr)	0	0	0	0	0	0	0	0
PHF	*0.88*	*0.92*	*0.88*	*0.92*	*0.88*	*0.92*	*0.88*	*0.92*
F_{HV}	0.980	1.000	0.971	1.000	0.971	1.000	0.980	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	47	0	109	0	8	0
NE (2), pcu/h	0	0	0	0	0	0	0	0
E (3), pcu/h	30	0	0	0	272	0	38	0
SE (4), pcu/h	0	0	0	0	0	0	0	0
S (5), pcu/h	37	0	70	0	0	0	30	0
SW (6), pcu/h	0	0	0	0	0	0	0	0
W (7), pcu/h	7	0	118	0	164	0	0	0
NW (8), pcu/h	0	0	0	0	0	0	0	0
Entry flow, pcu/h	74	0	235	0	544	0	77	0
Conflicting flow, pcu/h	352	0	281	0	77	0	137	0

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

Appendix B – Traffic Volume Data

SHEET 1 OF 1

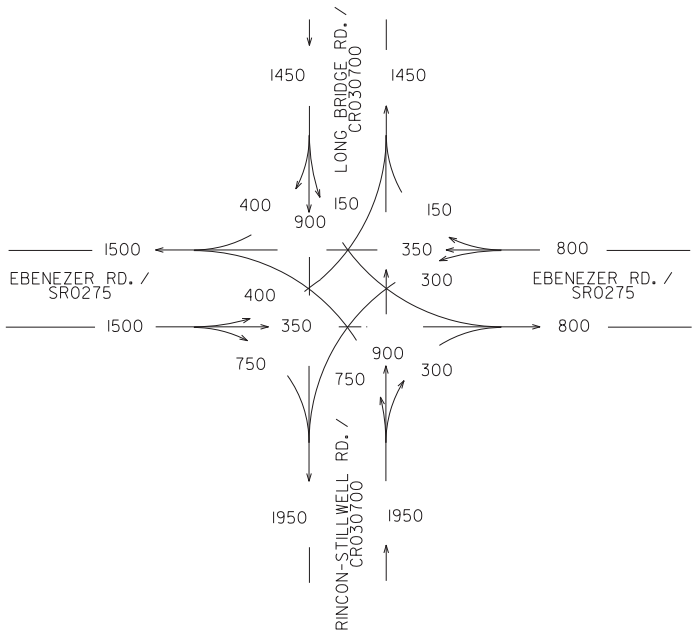
EFFINGHAM COUNTY

GEORGIA DEPARTMENT OF TRANSPORTATION
OFFICE OF PLANNING

TC # 0222

TC # 0193

TC # 0195



2013 EXISTING TRAFFIC

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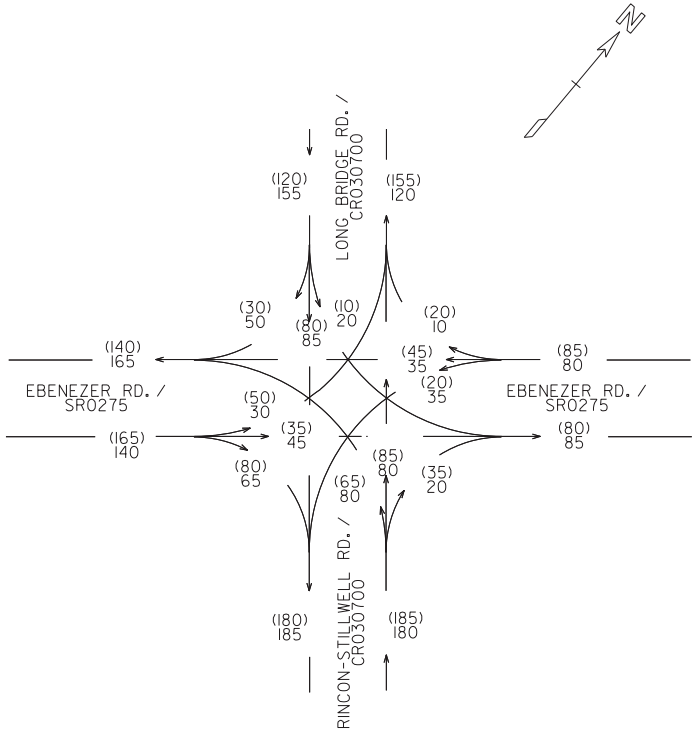
S.U. = 7.00%
COMB. = 1.50%



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COMB. = 0.50%

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

XXXXX-XXXX-XX(XXX)
P.I.# 0009872
EFFINGHAM COUNTY

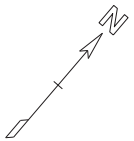
SR 275 @ CR 307/ RINCON-STILL ROAD

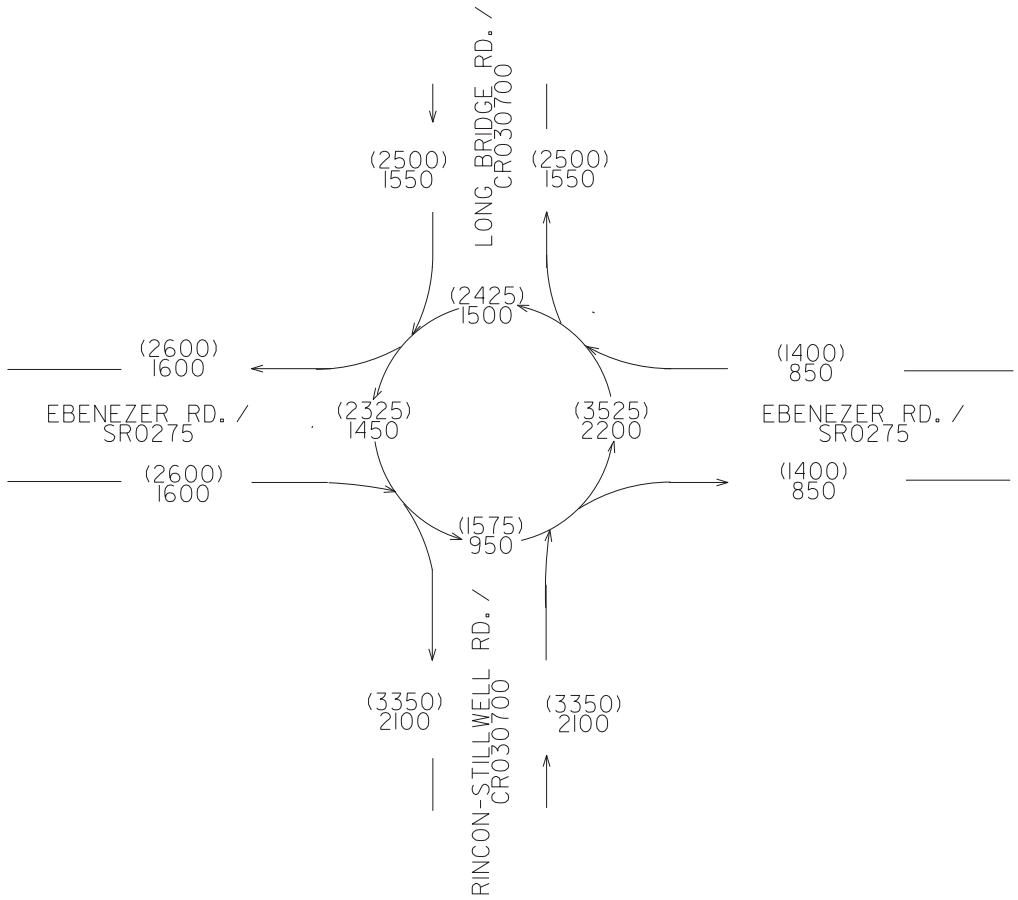
AMW
06/13

SHEET 1 OF 4

EFFINGHAM COUNTY
BUILD

GEORGIA DEPARTMENT OF TRANSPORTATION
OFFICE OF PLANNING





24 HR T = 9.75%
S.U. = 6.25%
COMB. = 3.50%

24 HR T = 7.75%
S.U. = 4.75%
COMB. = 3.00%

XXXXX-XXXX-XX(XXX)
P.I.# 0009872
EFFINGHAM COUNTY

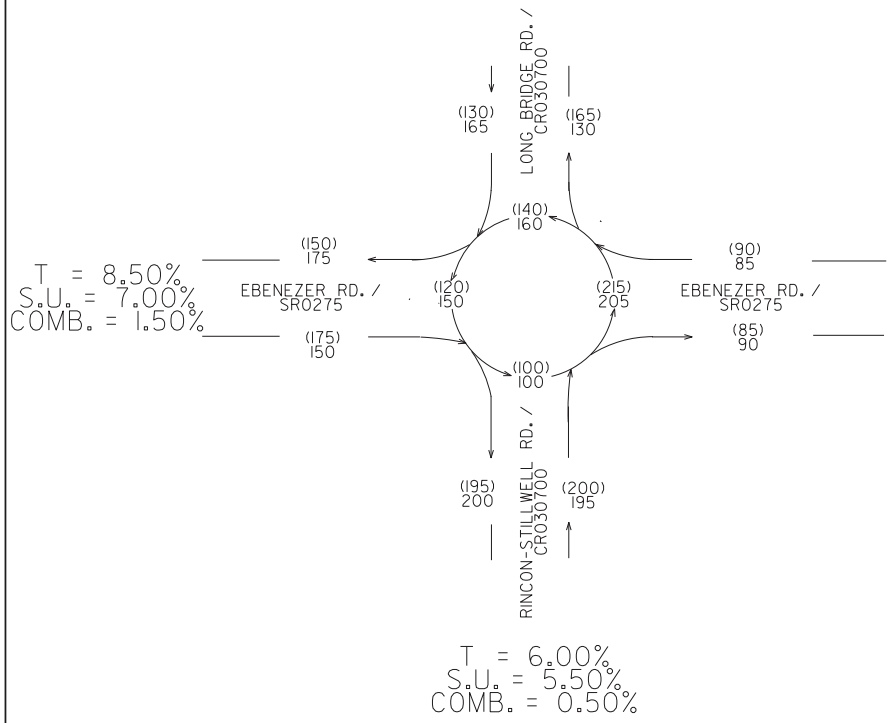
SR 275 @ CR 307/ RINCON-STILL ROAD

2038 ADT = (000)
2018 ADT = 000

AMW
06/13

EFFINGHAM COUNTY
BUILD

GEORGIA DEPARTMENT OF TRANSPORTATION
OFFICE OF PLANNING



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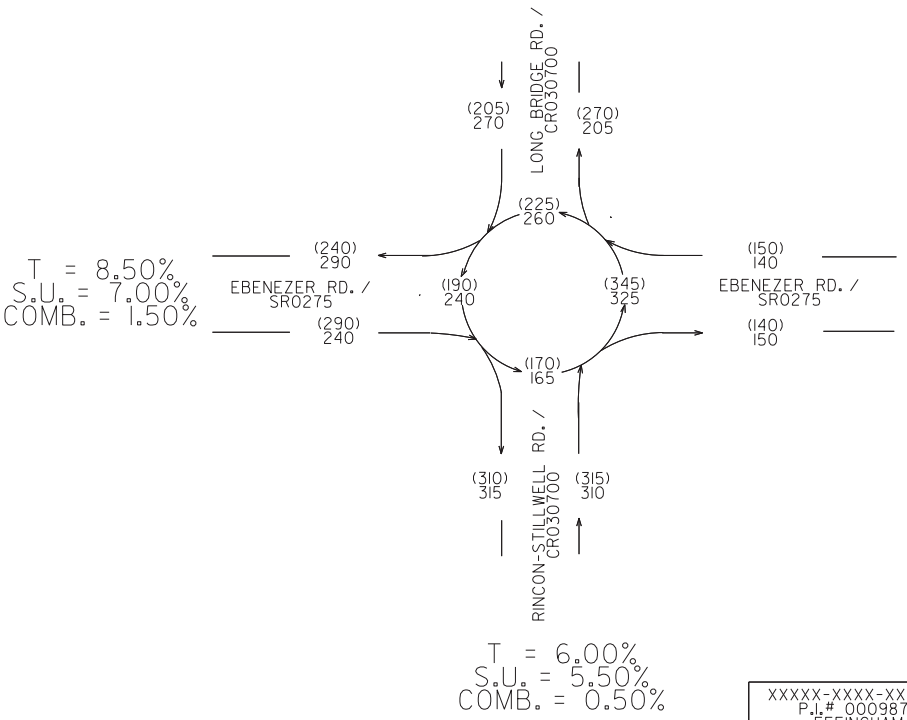

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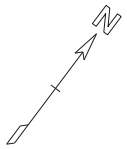
XXXXX-XXXX-XX(XXX)
P.I.# 0009872
EFFINGHAM
COUNTY

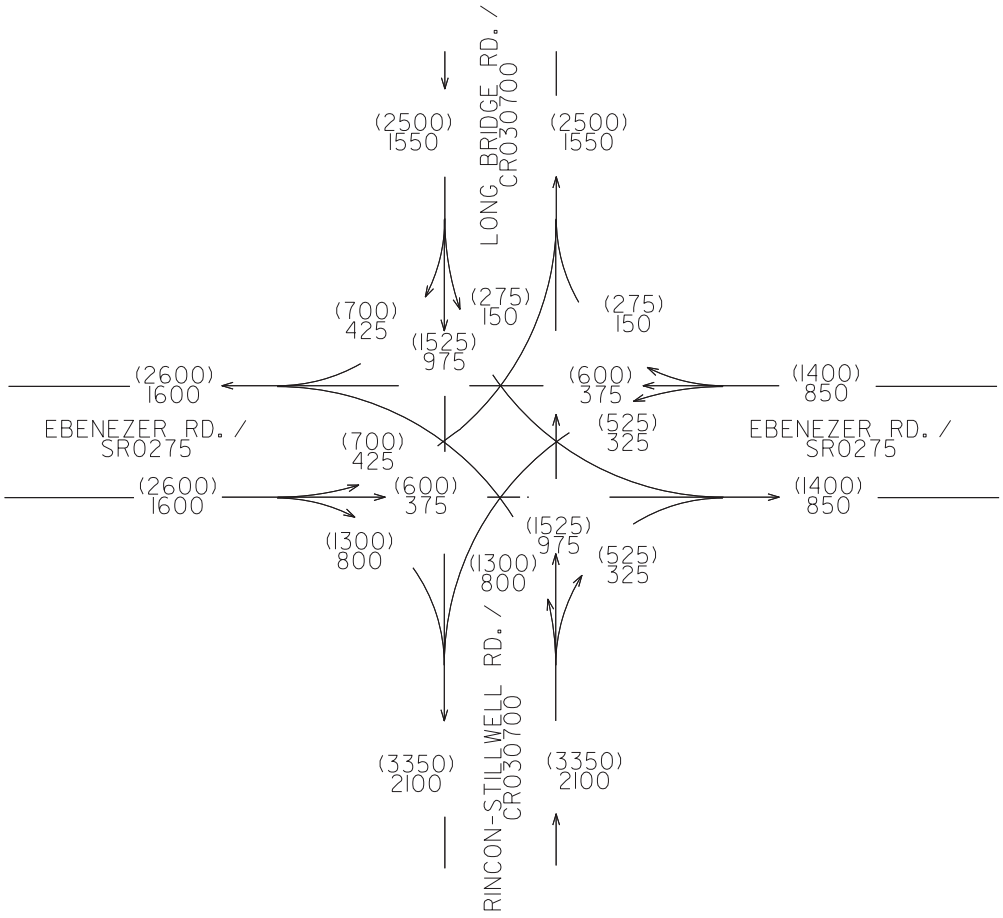
SR 275 @ CR 307/
RINCON-STILL ROAD

AMW
06/13

EFFINGHAM COUNTY
NO BUILD

GEORGIA DEPARTMENT OF TRANSPORTATION
OFFICE OF PLANNING





24 HR T = 9.75%
S.U. = 6.25%
COMB. = 3.50%

24 HR T = 7.75%
S.U. = 4.75%
COMB. = 3.00%

XXXXX-XXXX-XX(XXX)
P.I.# 0009872
EFFINGHAM COUNTY
SR 275 @ CR 307/ RINCON-STILL ROAD

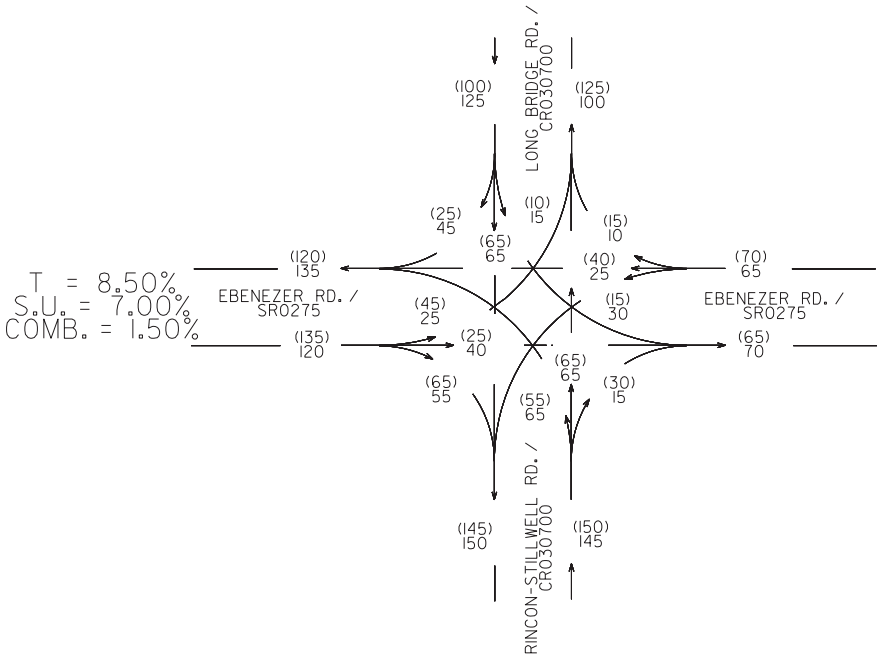
2038 ADT = (000)
2018 ADT = 000

AMW
06/13

SHEET 4 OF 4

EFFINGHAM COUNTY
NO BUILD

GEORGIA DEPARTMENT OF TRANSPORTATION
OFFICE OF PLANNING



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COMB. = 1.50%

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COMB. = 0.50%

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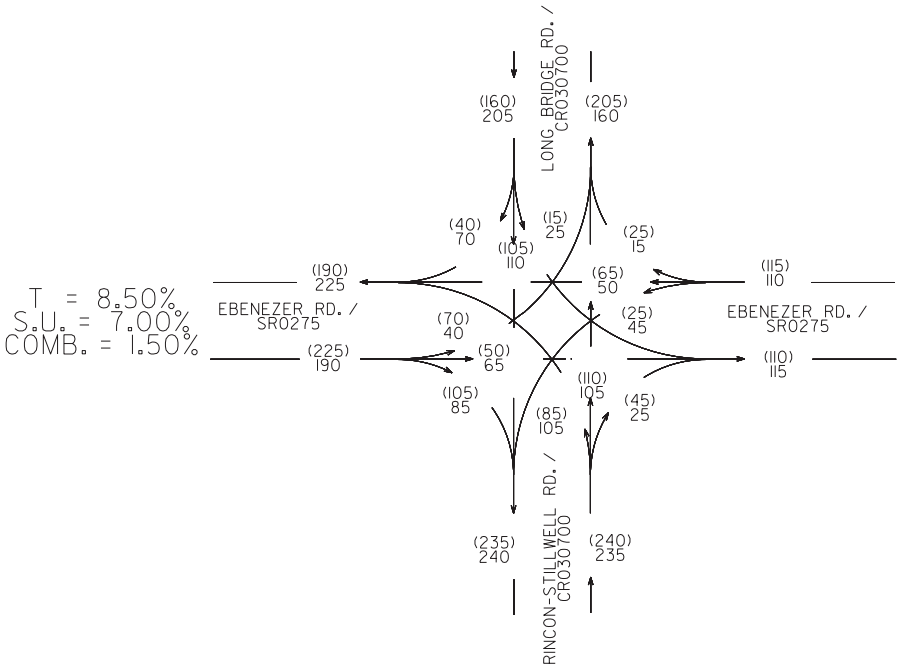

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COMB. = 0.50%

2038 PM DHV = (000)
2038 AM DHV = 000

XXXXX-XXXX-XX(XXX)
P.I.# 0009872
EFFINGHAM
COUNTY

SR 275 @ CR 307/
RINCON-STILL ROAD

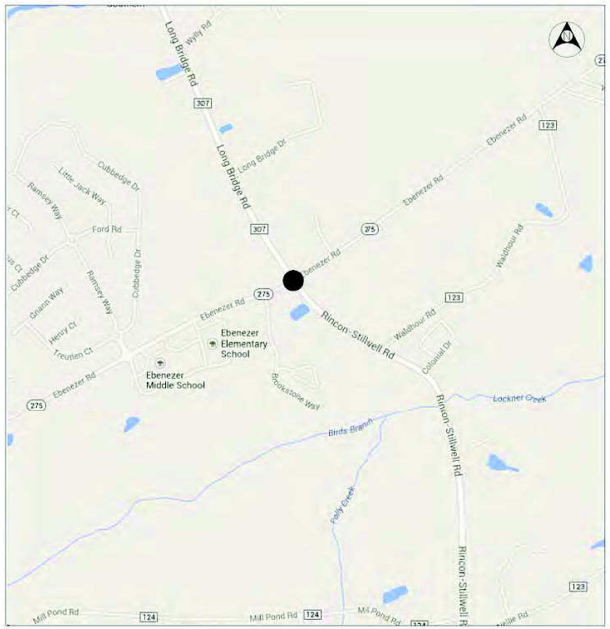
AMW
06/13

Appendix H – Roundabout Documentation

ROUNDABOUT DOCUMENTATION

SR 275 at CR 307/RICON-STILLWELL ROAD
EFFINGHAM COUNTY, GEORGIA

APPENDIX H

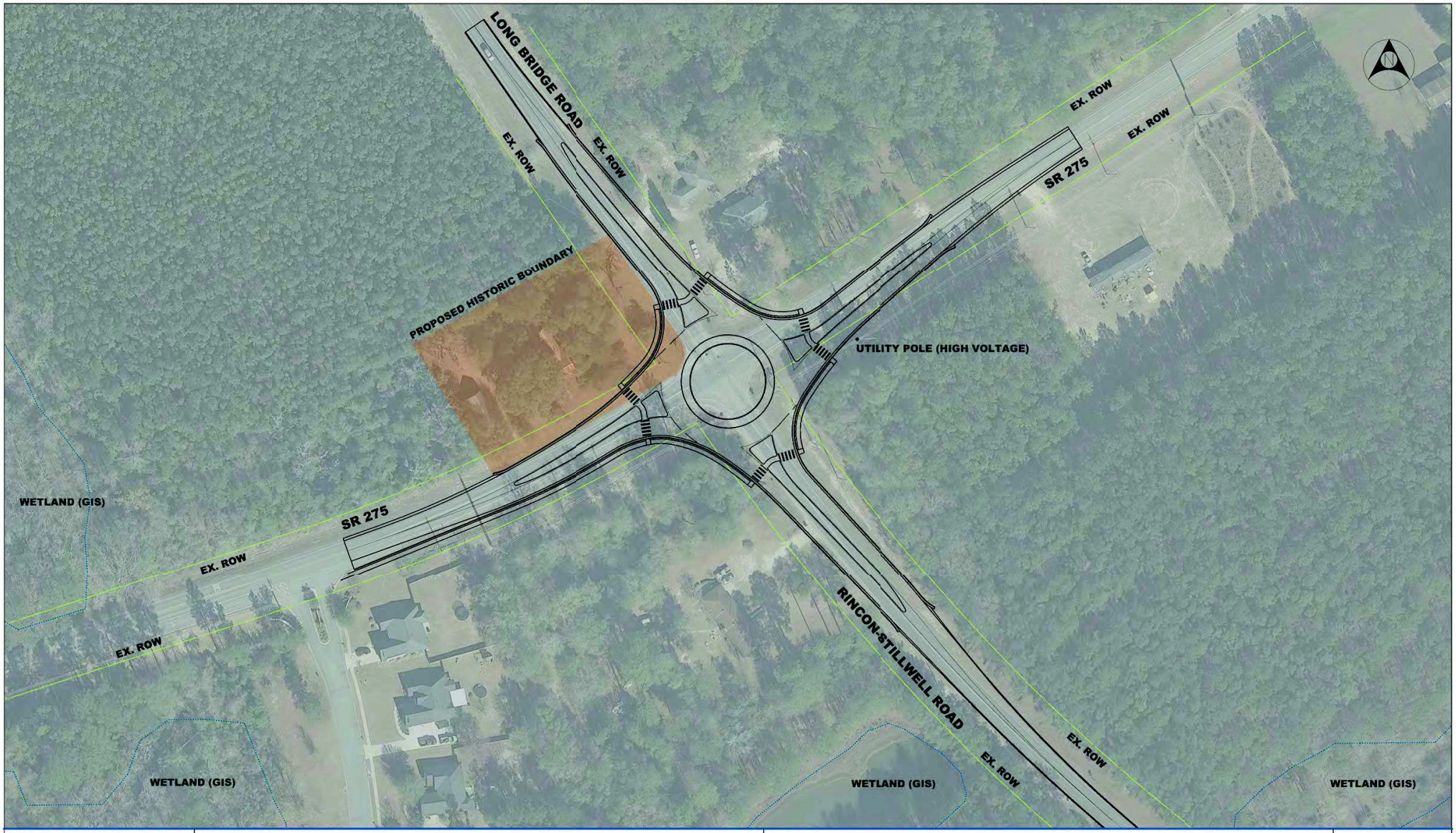


LOCATION MAP

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

5325 Wall Street, Suite 2305
Madison, WI 53718
T 608 249 4545 E madison@ghd.com

AUGUST 2014



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

5325 Wall Street, Suite 2305
Madison, WI 53718
T 608 249 4545

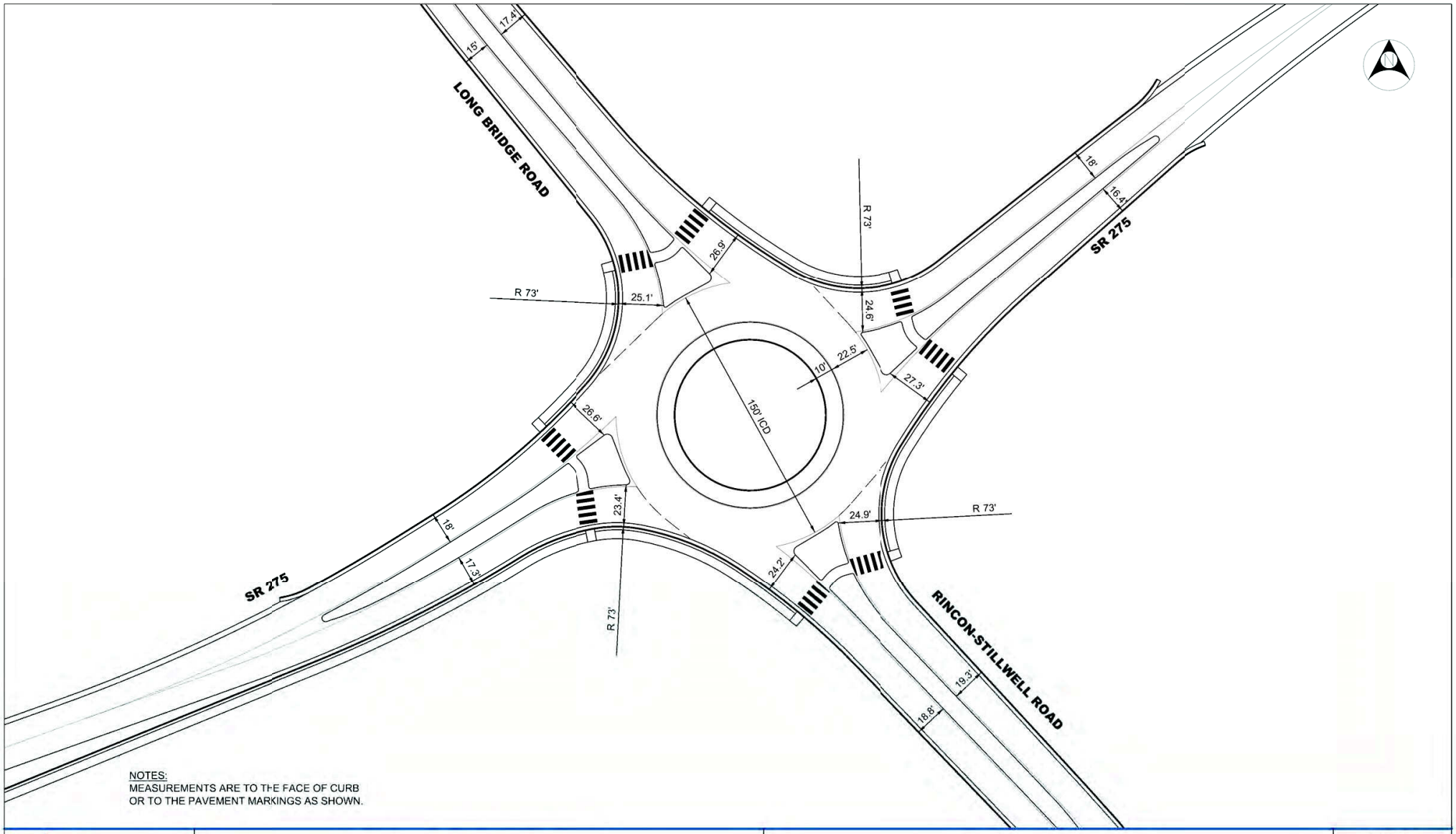
SR 275 at CR 307 / Rincon-Stillwell Road
P.I. # 0009872
Effingham County, GA

INTERSECTION OVERVIEW

SCALE
0 50 100

EXHIBIT H1.1

Plot Date: $$...plottingdate...$$ File Name: $$...designfile...$$



NOTES:
MEASUREMENTS ARE TO THE FACE OF CURB
OR TO THE PAVEMENT MARKINGS AS SHOWN.

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

5325 Wall Street, Suite 2305
Madison, WI 53718
T 608 249 4545

SR 275 at CR 307 / Rincon-Stillwell Road
P.I. # 0009872
Effingham County, GA

HORIZONTAL GEOMETRY

SCALE
0 25 50

EXHIBIT: H1.1

Plot Date: $$...plottingdate...$$ File Name: $$...designfile...$$

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INDICATION OF ROUNDABOUT SUPPORT

To the Georgia Department of Transportation:

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

Location

The Board of Commissioners in Effingham County supports the consideration of a roundabout at the location specified below.

Local Street Names: Ebenezer Road at Rincon-Stillwell Road

State/County Route Numbers: SR 275 at N/A

Associated Conditions

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

- The full and entire cost of the electric energy used for any lighting installed and the maintenance thereof (if needed)
- Any maintenance costs associated with the landscaping as approved by the local government and the Georgia Department of Transportation (after construction is complete)

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

This is the 15th day of Feb, 2011

Attest: Patrice Crawley
Clerk

By: [signature]

Title: CD Zeigler, Chairman