ORIGINAL TO GENERAL FILES

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

OFFICE OF DESIGN POLICY & SUPPORT
INTERDEPARTMENTAL CORRESPONDENCE

FILE P.I. #0004732
STP00-0004-00(732)
Columbia County
SR 47 @ SR 223

OFFICE Design Policy & Support

DATE 12/20/2010

FROM for Brent Story, State Design Policy Engineer

TO SEE DISTRIBUTION

SUBJECT **APPROVED REVISED CONCEPT REPORT**

Attached is the approved Revised Concept Report for the above subject project.

Attachment

DISTRIBUTION:

Bobby Hilliard, State Program Delivery Engineer
Genetha Rice-Singleton, Program Control Adminstrator
Glenn Bowman, State Environmental Administrator
Kathy Zahul, State Traffic Engineer
Ron Wishon, State Project Review Engineer
Jeff Baker, State Utilities Engineer
Tony Collins, District Engineer
Jack Cooper, District Utilities Engineer
Angela Robinson, Financial Management Administrator
Cindy VanDyke, State Transportation Planning Administrator
Karyn Matthews, Project Manager

BOARD MEMBER - 10th Congressional District

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

REVISED PROJECT CONCEPT REPORT

Project Number: STP00-0004-00(732)
County: Columbia
P. I. Number: 0004732
Federal Route Number: N/A
State Route Number: 47 & 223

Revise the four-legged intersection at SR 47 & SR 223 from a stop and go traffic signal with left and right turn auxiliary lanes to a roundabout with right turn bypass lanes in two quadrants.

Submitted for approval:

DATE 10/21/2010 — State Roadway Design Engineer

DATE 11/3/2010 — State Program Delivery Engineer

DATE 11/3/2010 — Project Manager

Recommendation for approval:

DATE 11/9/2010 — Glenn Bowman * — State Environmental Administrator

DATE 11/29/2010 — Kathy Zahul * — State Traffic Engineer

DATE _____ — N/A — State Bridge Engineer

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

DATE 11/15/2010 — Angela Alexander * — State Transportation Planning Administrator

* Recommendations on file. KKF

REVISED PROJECT CONCEPT REPORT

Need and Purpose: The purpose for this project is to improve the operation of the intersection of SR 47 with SR 223 in Columbia County. Accident history for this intersection showed six accidents from the year 1999 to 2000, five of these were right angle collisions with one fatality and one left turn collision. All six accidents were of the type susceptible to the correction by a stop and go traffic signal with turn lanes.

Project location: The intersection of SR 47 @ SR 223 is located approximately 3.91 miles north of the City Limits of Harlem and 17.25 miles south of the Lincoln County Line. The proposed length of the project is approximately 0.52 miles. The beginning and ending mile logs for SR 47 are 17.13 and 17.38, respectively. The beginning and ending mile logs for SR 223 are 5.07 and 5.34, respectively. SR 47 is a minor arterial that connects the City of Harlem and the Appling Community. SR 223 is a major collector west of SR 47 and a minor arterial east of SR 47. SR 223 connects the City of Grovetown in Columbia County and the city of Thomson in McDuffie County. There are two schools located within two and a half (2½) miles of this intersection; Harlem High School and Euchee Creek Elementary School.

Description of the approved concept: It is recommended that installation of a stop and go traffic signal and the installation of left turn lanes in conjunction with the installation of right turn auxiliary lanes at all approaches. Adding the left turn lanes will help accommodate the heavy left turn volume. Adding auxiliary right turn lanes are needed to avoid rear end type accidents by separating vehicles slowing to make right turn movements from the through vehicles with higher operating speeds. With the increase of traffic volumes and the close proximity of two Columbia County Schools to the intersection, these improvements are warranted. The addition of turn lanes with a stop and go traffic signal will improve the operational efficiency of the intersection, thereby improving the overall operation of traffic flow.

PDP Classification: Major_____ Minor X

Federal Oversight: Full Oversight ( ), Exempt (X), State Funded ( ), or Other ( )

Functional Classification:

- SR47: Rural Minor Arterial.
- SR223: Rural Major Collector (West of SR 47), Rural Minor Arterial (East of SR 47).

U. S. Route Number(s): N/A **State Route Number(s):** SR47 & SR223

Traffic (AADT) as shown in the approved concept:

SR 47 Current Year: (1998) 5800 Design Year: (2018) Not provided

SR 223 Current Year: (1998) 2200 Design Year: (2018) Not provided

Updated traffic data (AADT):

SR 47 Current Year: (2012) 7500 Design Year: (2032) 11700

SR 223 Current Year: (2012) 3100 Design Year: (2032) 4800

Programmed/Schedule:

P.E.: FY 2003 R/W: FY 2012 Construction: FY 2013

VE Study Required **Yes( )** **No(X)**

Benefit/Cost Ratio N/A

Is the project located in an Ozone Non-attainment area? Yes _____ No X

Is the project located in a PM2.5 Non-attainment area? Yes _____ No X

Approved Features:	**Proposed Features:**

• Typical sections
  o Two 12-foot lanes, with a 12-foot left turn lane and a 12-foot auxiliary right turn lane on all approaches
  o 10.5 foot shoulder (6.5 foot paved & 4 foot grassed) on all approaches
• Project termini
  o SR 47
  ▪ Begin mile log: 17.13
  ▪ End mile log: 17.38
  o SR 223
  ▪ Begin mile log: 5.07
  ▪ End mile log: 5.34
• Right-of-Way limits
  o Approximately 35,928 square feet of right-of-way would be required
	• Typical section(s):
	  o Two 11-foot lanes transitioning into 15-foot lanes on all approaches
	  o Single lane roundabout, 20-foot circulatory roadway width
	  o 22-foot truck apron
	  o Non-mountable central island
	  o Splitter island on all approaches
	  o Curb & Gutter on all approaches
	  o 12-foot shoulder w/ sidewalk
	  o 12-foot right-turn bypass lanes on northbound and southbound approaches
	  o Lighting on all approaches
	• Project termini:
	  o SR 47
	  ▪ Begin mile log: 17.30
	  ▪ End mile log: 17.48
	  o SR 223
	  ▪ Begin mile log: 5.25
	  ▪ End mile log: 5.43
	• Right-of-way limits:
	  o The roundabout would require approximately 7958 fewer square feet of right-of-way than the current design.

Reason for change:
Based on the current and future volumes and the attached roundabout analysis, a roundabout would improve the operation at this intersection compared to a stop and go traffic signal. Analysis shows adding bypass lanes in the northwest and southeast quadrants, where there are heavy right turn movements, would decrease the AM peak delay by 33 percent; the PM peak would decrease by 48 percent. Compared to a conventional four-legged intersection, a roundabout would decrease the conflict points by 75 percent. Roundabouts can also decrease the severity of crashes and eliminate certain types of crashes, i.e. angle and head-on. Between 2004 and 2008, there were 17 crashes at this intersection; 11 of those crashes were angle crashes.

If approved, the four-legged intersection would be revised from a stop and go traffic signal with left and right turn auxiliary lanes to a roundabout, with right turn bypass lanes in two quadrants. The proposed length of the project would be reduced from approximately 0.52 miles to approximately 0.36 miles.

Columbia County has signed a support letter, dated September 21, 2010, with conditions including the maintenance of the central island landscaping and lighting for the proposed project. A formal lighting and maintenance agreement will be sent to the County for execution.

Potential Environmental Impacts of Proposed Revision: There are possible impacts to ecology due to increased project footprint. Seasonal surveys are required which will affect the project schedule.

Have proposed Revisions Been Reviewed by Environmental Staff? (X) Yes ( ) No

Environmental Responsibilities (Studies/Documents/Permits):

NEPA: The environmental document will need to be updated due to the revised project footprint.
Ecology: The existing culvert will need to be extended.
Archeology: No effects.
History: No effects.
Air/Noise: No effects.
Public Involvement: PIOH was held on 3/09/10. Additional outreach may be required.

Updated Preliminary Cost Estimates:

• Construction	$ 735,734
• Fuel Adjustment	$ 73,104
• Right-of-Way	$ 62,000
• Utilities (reimbursable)*	$ 0
• Utility Contingencies	$ 0

*The reimbursable amount could increase to $68,300.00 if the City of Harlem was to apply for utility assistance for the relocation of their facilities.

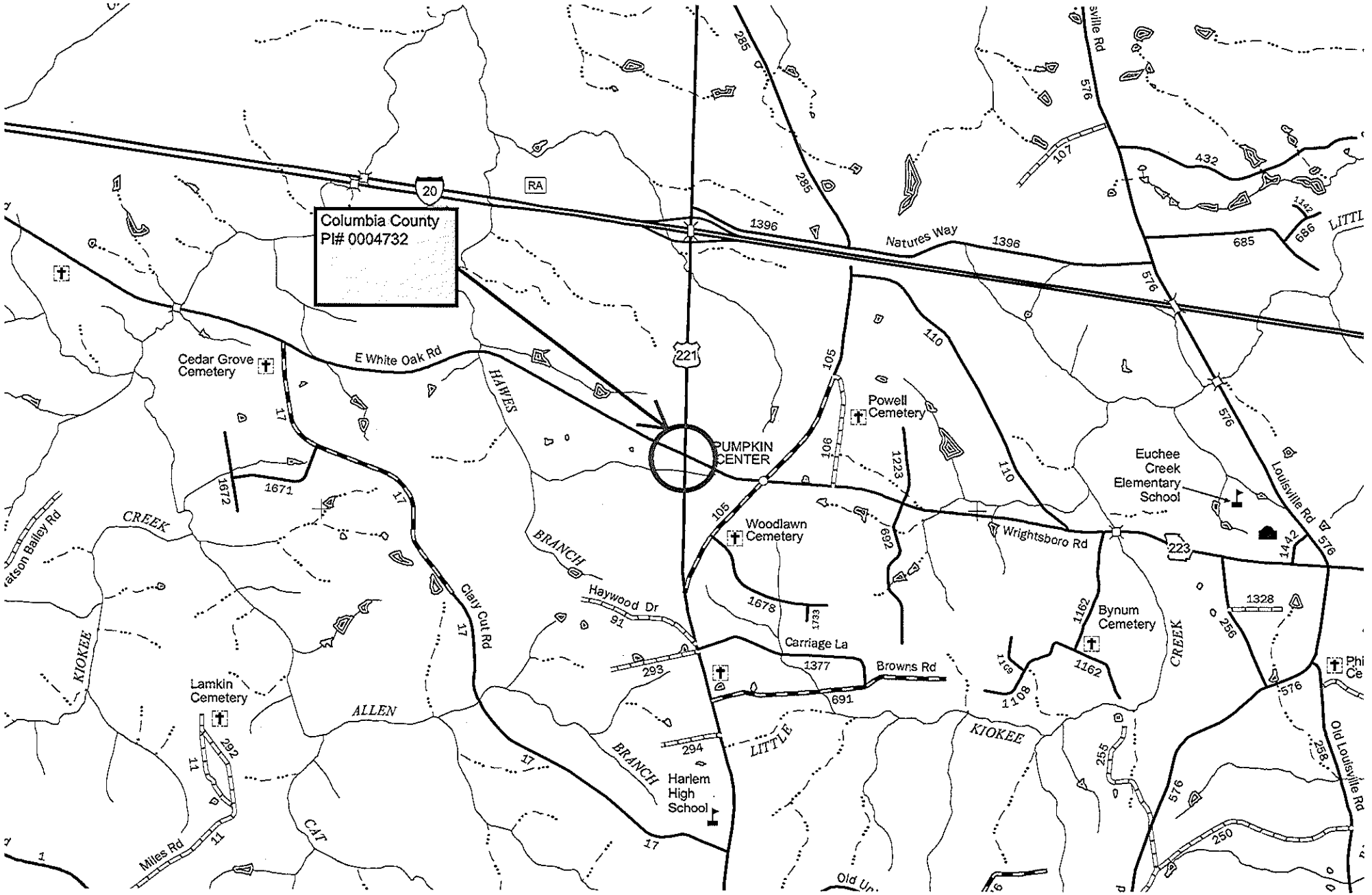
Recommendation: This office recommends the proposed revision to the concept be approved for implementation.

Attachments:

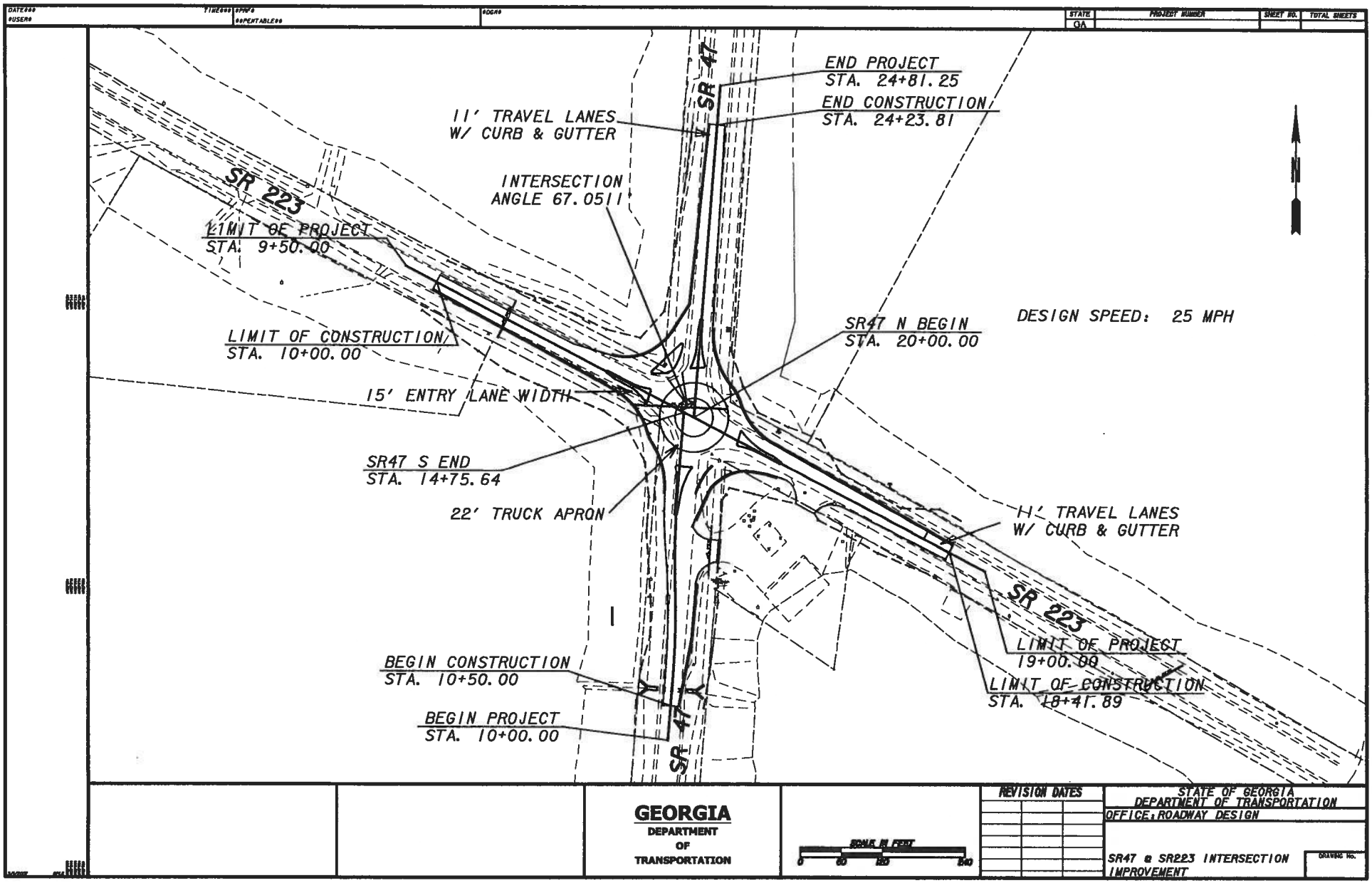
1. Sketch location map,
2. Preliminary Conceptual Layout
3. Typical Sections
4. Preliminary Cost Estimates (Construction, including E&I and Fuel & Liquid AC Adjustment; Right-of-Way; Utilities),
5. Crash summaries,
6. Roundabout Analysis Tool analysis,
7. Capacity analysis,
8. PIOH Response Letter,
9. Columbia County Support Letter.

Concur: _____
Director of Engineering

Approve: _____ Date: 12/15/2010
Chief Engineer



Columbia County
PI# 0004732
20
RA
221
223
Natures Way
1396
285
576
432
685
686
1142
107
110
105
106
1223
692
1678
1733
1377
691
1108
1162
1328
256
255
250
258
1672
1671
17
11
292
294
293
Cedar Grove Cemetery
E White Oak Rd
HAWES
BRANCH
PUMPKIN CENTER
Powell Cemetery
Woodlawn Cemetery
Euchee Creek Elementary School
Wrightsboro Rd
Louisville Rd
Bynum Cemetery
Haywood Dr
Carriage La
Browns Rd
Clary Cut Rd
Lamkin Cemetery
ALLEN
KIOKEE
CREEK
LITTLE
CAT
Harlem High School
Miles Rd
Old Louisville Rd



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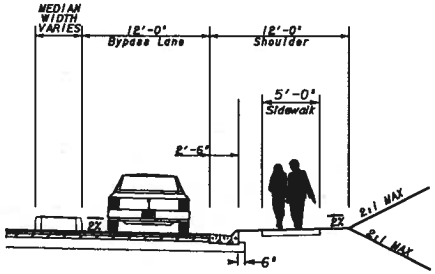
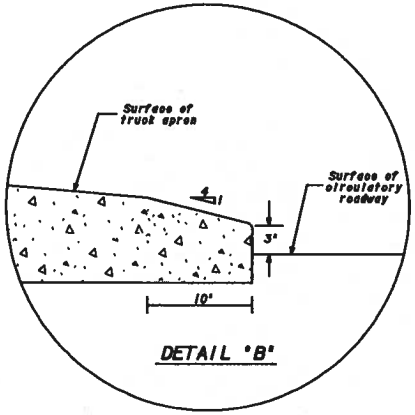
DATE=$$	TIME=$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
$USER$	$$PENTABLE$$			GA	STP00-0004-00(732)		



SR 47
RIGHT TURN/
BYPASS LANE

SEE PLAN SHEETS FOR LOCATION

DETAIL "A"



DETAIL "B"

		GEORGIA DEPARTMENT OF TRANSPORTATION	NO SCALE	REVISION DATES	STATE OF GEORGIA DEPARTMENT OF TRANSPORTATION OFFICE: ROADWAY DESIGN **TYPICAL SECTIONS** SR47 @ SR223 INTERSECTION IMPROVEMENT DRAWING NO. 5-02

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DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE PROJECT No. STP00-0004_00(732), Columbia County
SR 47 @ SR 223 Intersection Improvement
P.I. No. 0004732

OFFICE Roadway Design

DATE 11/10/2010

FROM Bobby Hiliard, P.E., State Program Delivery Engineer

TO Ronald E. Wishon, Project Review Engineer

SUBJECT REVISIONS TO PROGRAMMED COSTS

PROJECT MANAGER Karyn Matthews

MNGT LET DATE 3/15/2013

MNGT R/W DATE 12/16/2011

PROGRAMMED COST (TPro W/OUT INFLATION)		**LAST ESTIMATE UPDATE**
CONSTRUCTION	$420,000.00	DATE 3/7/2006
RIGHT OF WAY	$ 76,944.00	DATE 6/15/2009

REVISED COST ESTIMATES

CONSTRUCTION*	$ 809,168.86
RIGHT OF WAY	$ 62,000.00
UTILITIES**	$ 78,800.00

* Costs contain 5% Engineering and Inspection, 0% Construction Contingencies, and Fuel and Liquid AC Adjustments.

** Costs contain 0% contingency.

REASON FOR COST INCREASE Project revised to a single lane roundabout instead of a stop and go signal.

CONTINGENCY SUMMARY

Construction Cost Estimate: $ 700,699.11 (Base Estimate)

Engineering and Inspection:	$	35,034.96	(Base Estimate x 5 %)
Construction Contingency:	$	0.00	(Base Estimate x 0 %) (The Construction Contingency is based on the Project Improvement Type in TPro.)
Total Fuel Adjustment	$	24,297.55	(From attached worksheet)
Total Liquid AC Adjustment	$	49,137.24	(From attached worksheet)
Construction Total:	$	809,168.86	
Utility Cost Estimate:	$	78,800.00	
Utility Contingency:	$	0.00	0 %
Utility Total:	$	78,800.00	

REIMBURSABLE UTILITY COST

Utility Owner	Reimbursable Costs
City of Harlem Water & Sewer	$0
Jefferson Energy Corp.	$0
AT&T Georgia	$0

Attachments

JOB ESTIMATE REPORT

JOB NUMBER : 0004732 SPEC YEAR: 01
DESCRIPTION: SR 47 @ SR 223

ITEMS FOR JOB 0004732

LINE	ITEM	ALT	UNITS	DESCRIPTION	QUANTITY	PRICE	AMOUNT
0005	150-1000		LS	TRAFFIC CONTROL - STP00-0004-00(732)	1.000	50700.00	50700.00
0010	210-0100		LS	GRADING COMPLETE - STP00-0004-00(732)	1.000	244300.00	244300.00
0014	207-0203		CY	FOUND BKFILL MATL, TP II	8.000	58.61	468.91
0015	310-1101		TN	GR AGGR BASE CRS, INCL MATL	1544.000	21.20	32732.80
0020	402-3103		TN	REC AC 9.5 MM SP,TPII,GP2, INCL BM & HL	522.000	61.73	32223.06
0025	402-3121		TN	RECYL AC 25MM SP,GP1/2,BM&HL	1007.000	58.77	59181.39
0030	402-3190		TN	RECYL AC 19 MM SP,GP 1 OR 2 ,INC BM&HL	252.000	58.52	14747.04
0035	413-1000		GL	BITUM TACK COAT	500.000	3.34	1671.34
0040	441-0303		EA	CONC SPILLWAY, TP 3	3.000	2070.19	6210.57
0045	441-0754		SY	CONC MEDIAN, 7 1/2 IN	395.000	45.21	17859.48
0050	441-4030		SY	CONC VALLEY GUTTER, 8 IN	975.000	38.18	37228.44
0055	441-5002		LF	CONC HEADER CURB, 6", TP 2	176.000	14.76	2599.19
0060	441-6740		LF	CONC CURB & GUTTER/ 8"X30" TP7	1715.000	10.40	17850.41
0065	500-3101		CY	CLASS A CONCRETE	30.000	554.19	16625.88
0070	511-1000		LB	BAR REINF STEEL	1935.000	1.02	1977.86
0075	550-1180		LF	STM DR PIPE 18",H 1-10	975.000	34.83	33962.56
0080	550-1240		LF	STM DR PIPE 24",H 1-10	224.000	44.46	9961.07
0084	550-2180		LF	SIDE DR PIPE 18",H 1-10	100.000	27.53	2753.67
0085	550-4218		EA	FLARED END SECT 18 IN, ST DR	1.000	519.78	519.79
0089	550-3418		EA	SAFETY END SECTION 18",SD,4:1	4.000	494.17	1976.69
0090	610-9099		LS	REM WINGWALLS/PARAPETS, STA - 10+42 SR47	1.000	5000.00	5000.00
0095	632-0003		EA	CHANGEABLE MESS SIGN,PORT,TP 3	4.000	11372.10	45488.42
0100	634-1200		EA	RIGHT OF WAY MARKERS	8.000	104.60	836.86
0105	668-1100		EA	CATCH BASIN, GP 1	5.000	2520.65	12603.29
0110	668-2100		EA	DROP INLET, GP 1	6.000	2103.43	12620.63
0115	668-4300		EA	STORM SEW MANHOLE, TP 1	1.000	2571.72	2571.72
0120	163-0240		TN	MULCH	8.000	267.50	2140.08
0125	700-6910		AC	PERMANENT GRASSING	2.000	635.87	1271.75
0130	700-7000		TN	AGRICULTURAL LIME	6.000	48.61	291.69
0135	700-7010		GL	LIQUID LIME	5.000	23.69	118.47
0140	700-8000		TN	FERTILIZER MIXED GRADE	1.000	503.88	503.88
0145	700-8100		LB	FERTILIZER NITROGEN CONTENT	100.000	2.89	289.88
0150	163-0300		EA	CONSTRUCTION EXIT	8.000	1468.25	11746.05
0155	163-0529		LF	CNST/REM TEMP SED BAR OR BLD STRW CK DM	2800.000	3.10	8690.53
0160	165-0071		LF	MAINT OF SEDIMENT BARRIER - BALED STRAW	2800.000	0.80	2252.24
0165	165-0101		EA	MAINT OF CONST EXIT	8.000	790.23	6321.85
0170	653-1501		LF	THERMO SOLID TRAF ST 5 IN, WHI	3380.000	0.48	1623.75
0175	653-1502		LF	THERMO SOLID TRAF ST, 5 IN YEL	1690.000	0.46	777.86

ITEM TOTAL 700699.11
INFLATED ITEM TOTAL 700699.11

JOB ESTIMATE REPORT

TOTALS FOR JOB 0004732

ESTIMATED COST:	700699.10
CONTINGENCY PERCENT (0.0):	0.00
ESTIMATED TOTAL:	700699.10

Date 11/10/2010

P.I. Number 0.004732 County COLUMBIA

Project Number STP00-0004-00(732)

Special Provision, Section 109-Measurement and Payment

FUEL PRICE ADJUSTMENT (*ENGLISH 125% MAX)*

ENTER FPL DIESEL	2.986
ENTER FPM DIESEL	6.719

ENTER FPL UNLEADED	2.672
ENTER FPM UNLEADED	6.012

http://www.dot.ga.gov/doingbusiness/Materials/Pages/asphaltcementindex.aspx

INCREASE ADJUSTMENT
125.00%

INCREASE ADJUSTMENT
125.00%

ROADWAY ITEMS	QUANTITY	DIESEL FACTOR	GALLONS DIESEL	UNLEADED FACTOR	GALLONS UNLEADED	REMARKS
Excavations paid as specified by Sections 205 **(CUBIC YARD)**		0.29		0.15		
Excavations paid as specified by Sections 206 **(CUBIC YARD)**		0.29		0.15		
GAB paid as specified by the ton under Section 310 **(TON)**	1544.000	0.29	447.76	0.24	370.56	
Hot Mix Asphalt paid as specified by the ton under Sections 400 **(TON)**		2.90		0.71		
Hot Mix Asphalt paid as specified by the ton under Sections 402 **(TON)**	1781.000	2.90	5164.90	0.71	1264.51	
PCC Pavement paid as specified by the square yard under Section 430 **(SY)**		0.25		0.20		

BRIDGE ITEMS	Quantity	Unit Price	QF/1000	Diesel Factor	Gallons Diesel	Unleaded Factor	Gallons Unleaded	REMARKS
Bridge Excavation (CY) Section 211				8.00		1.50		
Class __Concrete (CY) Section 500				8.00		1.50		
Class __Concrete (CY) Section 500				8.00		1.50		
Class __Concrete (CY) Section 500				8.00		1.50		
Superstru Con Class__(CY) Section 500				8.00		1.50		
Superstru Con Class__(CY) Section 500				8.00		1.50		
Superstru Con Class__(CY) Section 500				8.00		1.50		
Concrete Handrail (LF) Section 500				8.00		1.50		
Concrete Barrier (LF) Section 500				8.00		1.50		

BRIDGE ITEMS	Quantity	Unit Price	QF/1000	Diesel Factor	Gallons Diesel	Unleaded Factor	Gallons Unleaded	REMARKS
Stru Steel Plan Quantity (LB) Section 501				8.00		1.50		
Stru Steel Plan Quantity (LB) Section 501				8.00		1.50		
PSC Beams_____ (LF) Section 507				8.00		1.50		
PSC Beams_____ (LF) Section 507				8.00		1.50		
PSC Beams_____ (LF) Section 507				8.00		1.50		
Stru Reinf Plan Quantity(LB) Section 511				8.00		1.50		
Stru Reinf Plan Quantity(LB) Section 511				8.00		1.50		
Bar Reinf Steel (LB) Section 511				8.00		1.50		
Piling___inch (LF) Section 520				8.00		1.50		
Piling___inch (LF) Section 520				8.00		1.50		
Piling___inch (LF) Section 520				8.00		1.50		
Piling___inch (LF) Section 520				8.00		1.50		
Piling___inch (LF) Section 520				8.00		1.50		
Piling___inch (LF) Section 520				8.00		1.50		
Drilled Caisson,___ (LF) Section 524				8.00		1.50		
Drilled Caisson,___ (LF) Section 524				8.00		1.50		
Drilled Caisson,___ (LF) Section 524				8.00		1.50		
Pile Encasement,___(LF) Section 547				8.00		1.50		
Pile Encasement,___(LF) Section 547				8.00		1.50		

SUM QF DIESEL=	5612.66	SUM QF UNLEADED=	1635.07

DIESEL PRICE ADJUSTMENT($)	$19,273.31
UNLEADED PRICE ADJUSTMENT($)	$5,024.24

ASPHALT CEMENT PRICE ADJUSTMENT
(BITUMINOUS TACK COAT 125% MAX)

APPLICABLE TO CONTRACTS/PROJECTS CONTAINING THE 413 SPECIFICATION, SECTION 413.5.01 ADJUSTMENTS ASPHALT PRICE ADJUSTMENT FOR BITUMINOUS TACK COAT

http://www.dot.ga.gov/doingbusiness/Materials/Pages/asphaltcementindex.aspx

ENTER APL 449 ENTER APM 1010.25

125.00%	INCREASE ADJUSTMENT

L.I.N.	TYPE	TACK (GALLONS)	TACK (TONS)	REMARKS
0413	PG 58-22	500	2.1476	

TMT = 2.1476

PRICE ADJUSTMENT($)	$1,157.10

400 / 402 ASPHALT CEMENT PRICE ADJUSTMENT 125% MAX

ENTER APL 449 ENTER APM 1010.25

http://www.dot.ga.gov/doingbusiness/Materials/Pages/asphaltcementindex.aspx

125.00%	INCREASE ADJUSTMENT

L.I.N. / Spec Number	MIX TYPE	HMA	JMF AC%	AC	REMARKS
402-3103	9.5 mm SP TP2	522	5.00	26.10	
402-3190	19 mm SP	252	5.00	12.60	
402-3121	25 mm SP	1007	5.00	50.35	
			5.00		
			5.00		
			5.00		
			5.00		
			5.00		
			5.00		
			5.00		
			5.00		
			5.00		
			5.00		
			5.00		
			5.00		
			5.00		
			TMT =	89.05	

PRICE ADJUSTMENT($)	$47,980.14

ASPHALT CEMENT PRICE ADJUSTMENT FOR BITUMINOUS TACK COAT(Surface Treatment 125% MAX)

APPLICABLE TO CONTRACTS CONTAINING THE 413 SPEC. SECTION 413.5.01 ADJUSTMENTS ASPHALT PRICE ADJUSTMENT FOR BITUMINOUS TACK COAT

http://www.dot.ga.gov/doingbusiness/Materials/Pages/asphaltcementindex.aspx

ENTER APL 449 ENTER APM 1010.25

125.00%	INCREASE ADJUSTMENT

Use this side for Asphalt Emulsion Only		
L.I.N.	TYPE	ASPHALT EMULSION (GALLONS)
TMT =		
REMARKS:		

Use this side for Asphalt Cement Only		
L.I.N.	TYPE	TACK (GALLONS)
TMT =		
REMARKS:		

MONTHLY PRICE ADJUSTMENT($)	

ADJUSTMENT SUMMARY

FUEL PRICE ADJUSTMENT (*ENGLISH 125% MAX)*

DIESEL PRICE ADJUSTMENT($)	$19,273.31
UNLEADED PRICE ADJUSTMENT($)	$5,024.24
ASPHALT CEMENT PRICE ADJUSTMENT (BITUMINOUS TACK COAT 125% MAX)	$1,157.10
400 / 402 ASPHALT CEMENT PRICE ADJUSTMENT 125% MAX	$47,980.14
ASPHALT CEMENT PRICE ADJUSTMENT FOR BITUMINOUS TACK COAT(Surface Treatment 125% MAX)	

REMARKS:	

TOTAL ADJUSTMENTS	$73,434.80

DWM 10/08

Preliminary Right of Way Cost Estimate

Phil Copeland
Right of Way Administrator
By: LaShone B. Alexander

Date: October 14, 2010
Project: STP00-0004-00(732) Columbia
Existing/Required R/W: Varies/Varies
Project Termini : SR 47 @ SR 223 Roundabout
Project Description: Intersection Improvement

P.I. Number: 0004732
No. Parcels: 4

Land: Agricultural/Residential RW 3510 SF @ $.60/SF	$	2,106
Light Commercial RW 727 SF @ $ 2.00/SF	$	1,454
Easements 30,881 SF @ $ .60/SF X 50%	$	9,264
	$	12,824
Improvements : misc. sign site improvements	$	12,000
Relocation: Commercial (0)		
Residential (0)		0
Damage : Proximity		
Consequential		
Cost to Cure		0
Net Cost	$	24,824

Net Cost		$	24,824
Scheduling Contingency	55 %		13,653
Adm/Court Cost	60 %		23,086
		$	61,563

Total Cost $ 62,000

Note: The Market Appreciation (40%) is not included in the updated Preliminary Cost Estimate.

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE STP00-0004-00 (732) Columbia
P.I. No. 0004732

OFFICE Tennille

DATE October 18, 2010

FROM Jack D. Cooper, Jr.
District Utilities Engineer

TO Bobby Hilliard, Program Delivery
ATTN Karyn Matthews

SUBJECT PRELIMINARY UTILITY COST (ESTIMATE)

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

FACILITY OWNER	NON-REIMBURSABLE	REIMBURSABLE
Jefferson Energy Coop.	$10,500.00	
AT&T Georgia		
City of Harlem Water	$36,500.00	
City of Harlem Sewer	$31,800.00	
Totals	$78,800.00	$0.00

Total Reimbursement Cost: $ 0.00

At this time, the total reimbursable cost for the above project is $ 0.00.

*The reimbursable amount could increase to $68,300.00 if the City of Harlem was to apply for utility assistance for the relocation of their facilities.

If you have any questions, please contact Jamie Lindsey at 478-552-4637.

JDC/JLL

C: Jeff Baker, State Utilities Engineer
Mike Keene, Area Engineer

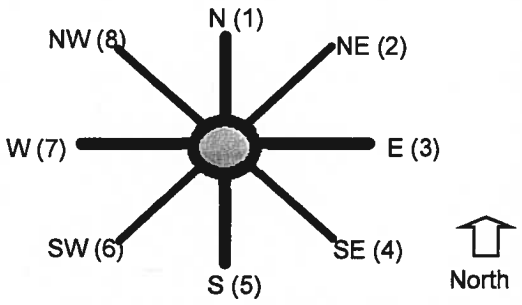
COLUMBIA COUNTY, SR 47 @ SR 223																				
Accident No	Year	Date	Time	County	Route Type	Route	Milelog	Int Rt Type	Intersecting Rt	Injuries	Fatalities	Harmful Event	Collision	Location of Impact	Light	Surface	DirVeh1	DirVeh2	MnvrVeh1	MnvrVeh2
'40220580	2004	1/13/2004	9:34 AM	Columbia	State Route	'004700	17.25	1	'022300	1	0	Motor Vehicle In Motion	Angle	On Roadway	Daylight	Dry	E	S	Straight	Straight
'40220642	2004	1/19/2004	8:59 AM	Columbia	State Route	'004700	17.25	1	'022300	0	0	Motor Vehicle In Motion	Angle	On Roadway	Daylight	Dry	E	S	Turning Left	Straight
'44040559	2004	11/12/2004	12:20 PM	Columbia	State Route	'004700	17.25	1	'022300	0	0	Motor Vehicle In Motion	Angle	On Roadway	Daylight	Wet	W	N	Straight	Straight
'44910578	2004	12/31/2004	7:22 PM	Columbia	State Route	'004700	17.25	1	'022300	0	0	Motor Vehicle In Motion	Rear End	On Roadway	Dark-Not Lighted	Dry	N	N	Stopped	Straight
'50050229	2005	1/9/2005	8:42 AM	Columbia	State Route	'004700	17.25	1	'022300	0	0	Motor Vehicle In Motion	Angle	On Roadway	Daylight	Dry	N	E	Straight	Straight
'51480564	2005	5/5/2005	10:18 PM	Columbia	State Route	'004700	17.39	1	'022300	0	0	Motor Vehicle In Motion	Angle	On Roadway	Dark-Lighted	Dry	E	S	Stopped	Turning Right
'60130595	2006	1/16/2006	5:17 PM	Columbia	State Route	'004700	17.39	1	'022300	0	0	Motor Vehicle In Motion	Rear End	On Roadway	Daylight	Dry	S	S	Stopped	Straight
'62560343	2006	7/9/2006	12:30 PM	Columbia	State Route	'004700	17.39	1	'022300	1	0	Motor Vehicle In Motion	Angle	On Roadway	Daylight	Dry	W	N	Straight	Straight
'62600561	2006	7/13/2006	4:58 PM	Columbia	State Route	'004700	17.39	1	'022300	0	0	Motor Vehicle In Motion	Angle	On Roadway	Daylight	Wet	W	N	Straight	Straight
'63070052	2006	8/18/2006	11:11 AM	Columbia	State Route	'004700	17.39	1	'022300	2	0	Motor Vehicle In Motion	Angle	On Roadway	Daylight	Dry	E	S	Straight	Straight
[redacted]	2006	3/3/2006	7:56 AM	Columbia	State Route	'004700	17.39	1	'022300	0	0	Deer	Not A Collision With A Motor Vehicle	On Roadway	Daylight	Dry	N		Straight	
'64060438	2006	10/19/2006	7:22 AM	Columbia	State Route	'004700	17.39	1	'022300	0	0	Motor Vehicle In Motion	Angle	On Roadway	Daylight	Wet	E	W	Turning Left	Turning Left
'72110393	2007	5/25/2007	1:55 PM	Columbia	State Route	'004700	17.39	1	'022300	1	0	Motor Vehicle In Motion	Angle	On Roadway	Daylight	Dry	W	N	Straight	Straight
'70040039	2007	1/6/2007	12:47 PM	Columbia	State Route	'004700	17.39	1	'022300	1	0	Overturn	Not A Collision With A Motor Vehicle	On Roadway	Daylight	Dry	N		Straight	
[redacted]	2007	9/8/2007	8:46 PM	Columbia	State Route	'004700	17.39	1	'022300	0	0	Deer	Not A Collision With A Motor Vehicle	On Roadway	Dark-Not Lighted	Dry	N		Straight	
[redacted]	2008	5/15/2008	8:47 PM	Columbia	State Route	'004700	17.39	1	'022300	0	0	Animal	Not A Collision With A Motor Vehicle	On Roadway	Dark-Not Lighted	Wet	S		Straight	
'81870467	2008	5/17/2008	3:18 PM	Columbia	State Route	'004700	17.39	1	'022300	0	0	Motor Vehicle In Motion	Angle	On Roadway	Daylight	Dry	S	N	Straight	Turning Left

Year	Crashes	Injuries	Fatalities
2004	4	1	0
2005	2	0	0
2006	6	3	0
2007	3	2	0
2008	2	0	0
Total	17	6	0

Roundabout Analysis Tool
Single Lane

7/2/2009
Version 1.0

General & Site Information	
Analyst:	Paul DeNard
Agency/Company:	GDOT
Date:	7/1/2009
Project Name or PI#:	0004732
Intersection:	SR 47 @ SR 223
Analysis Time Period:	Peak Hour (AM)
Year:	2012
County/District:	Columbia



Volumes		Entry Legs (FROM)							
		N (1)	NE (2)	E (3)	SE (4)	S (5)	SW (6)	W (7)	NW (8)
	N (1), vph			84		340		62	
Exit	NE (2), vph								
Legs	E (3), vph	34				36		29	
(TO)	SE (4), vph								
	S (5), vph	202		18				6	
	SW (6), vph								
	W (7), vph	56		23		24			
	NW (8), vph								
Output	Total Vehicles	292	0	125	0	400	0	97	0

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	91%	100%	91%	100%	91%	100%	91%	100%
% SU/ Bus	0%	0%	0%	0%	0%	0%	0%	0%
% Trucks	9%	0%	9%	0%	9%	0%	9%	0%
% Bicycle	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}	0.917	1.000	0.917	1.000	0.917	1.000	0.917	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pcu/h	0	0	104	0	421	0	77	0
NE (2), pcu/h	0	0	0	0	0	0	0	0
E (3), pcu/h	42	0	0	0	45	0	36	0
SE (4), pcu/h	0	0	0	0	0	0	0	0
S (5), pcu/h	250	0	22	0	0	0	7	0
SW (6), pcu/h	0	0	0	0	0	0	0	0
W (7), pcu/h	69	0	28	0	30	0	0	0
NW (8), pcu/h	0	0	0	0	0	0	0	0
Entry flow, pcu/h	362	0	155	0	495	0	120	0
Conflicting flow, pcu/h	81	0	528	0	155	0	315	0

Roundabout Type	Urban Compact=1 Standard Single Lane =2
Enter type here...	2

Results								
NCHRP-572 Model	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**
Entry Capacity, pcu/h	1043	NA	667	NA	968	NA	825	NA
Leg v/c ratio	**0.35**		**0.23**		**0.51**		**0.15**	
Control Delay, s/pcu	**5.3**		**7.0**		**7.6**		**5.1**	
LOS	A		A		A		A	
LOS (signalized)	A		A		A		A	
95th % Queue (veh)	2		1		3		1	
95th Percentile Queue (ft)	**43**		**24**		**82**		**14**	
FHWA 2000 Model	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**
Entry Capacity, pcu/h	1168	NA	925	NA	1128	NA	1041	NA
Leg v/c ratio	**0.31**		**0.17**		**0.44**		**0.12**	
Delay (s/veh)	**4**		**5**		**6**		**4**	
LOS	A		A		A		A	
95th % Queue (veh)	1		1		2		0	
95th % Queue (ft)	**36**		**16**		**62**		**11**	

Notes:

East, West Legs = Wrightsboro RD/SR 223
North, South Legs = Apling Harlem Rd/SR 47

NO Bypass Lane adjustments, analysis with all single lane approaches.

Default Values:

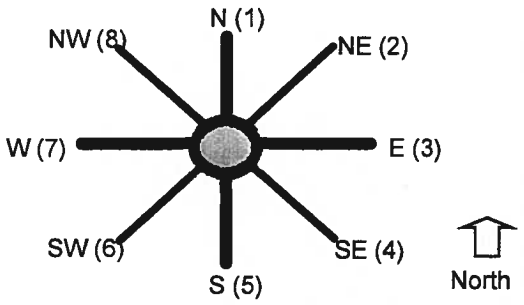
Equivalency Factors:

Car	1
Single-unit truck or bus	1.5
Truck with trailer	2
Bicycle or motorcycle	0.5

Default Car Length (ft) 25

Roundabout Analysis Tool — 7/2/2009
Single Lane — Version 1.0

General & Site Information	
Analyst:	Paul DeNard
Agency/Company:	GDOT
Date:	7/1/2009
Project Name or PI#:	0004732
Intersection:	SR 47 @ SR 223
Analysis Time Period:	Peak Hour (PM)
Year:	2012
County/District:	Columbia



Volumes		Entry Legs (FROM) N (1)	NE (2)	E (3)	SE (4)	S (5)	SW (6)	W (7)	NW (8)
	N (1), vph			34		202		56	
Exit	NE (2), vph								
Legs	E (3), vph	84				16		23	
(TO)	SE (4), vph								
	S (5), vph	340		36				24	
	SW (6), vph								
	W (7), vph	62		129		6			
	NW (8), vph								
Output	Total Vehicles	486	0	199	0	224	0	103	0

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	91%	100%	91%	100%	91%	100%	91%	100%
% SU/ Bus	0%	0%	0%	0%	0%	0%	0%	0%
% Trucks	9%	0%	9%	0%	9%	0%	9%	0%
% Bicycle	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}	0.917	1.000	0.917	1.000	0.917	1.000	0.917	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pcu/h	0	0	42	0	250	0	69	0
NE (2), pcu/h	0	0	0	0	0	0	0	0
E (3), pcu/h	104	0	0	0	20	0	28	0
SE (4), pcu/h	0	0	0	0	0	0	0	0
S (5), pcu/h	421	0	45	0	0	0	30	0
SW (6), pcu/h	0	0	0	0	0	0	0	0
W (7), pcu/h	77	0	160	0	7	0	0	0
NW (8), pcu/h	0	0	0	0	0	0	0	0
Entry flow, pcu/h	602	0	246	0	277	0	128	0
Conflicting flow, pcu/h	212	0	327	0	202	0	570	0

Roundabout Type	Urban Compact=1 Standard Single Lane =2
Enter type here...	2

Results								
NCHRP-572 Model	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**
Entry Capacity, pcu/h	914	NA	815	NA	923	NA	639	NA
Leg v/c ratio	**0.66**		**0.30**		**0.30**		**0.20**	
Control Delay, s/pcu	**11.2**		**6.3**		**5.6**		**7.0**	
LOS	B		A		A		A	
LOS (signalized)	B		A		A		A	
95th % Queue (veh)	5		1		1		1	
95th Percentile Queue (ft)	**139**		**35**		**35**		**20**	
FHWA 2000 Model	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**
Entry Capacity, pcu/h	1097	NA	1034	NA	1102	NA	902	NA
Leg v/c ratio	**0.55**		**0.24**		**0.25**		**0.14**	
Delay (s/veh)	**7**		**5**		**4**		**5**	
LOS	A		A		A		A	
95th % Queue (veh)	3		1		1		0	
95th % Queue (ft)	**94**		**25**		**27**		**13**	

Notes:

East, West Legs = Wrightsboro RD/SR 223
North, South Legs = Apling Harlem Rd/SR 47

NO Bypass Lane adjustments, analysis with all single lane approaches.

Default Values:
Equivalency Factors:

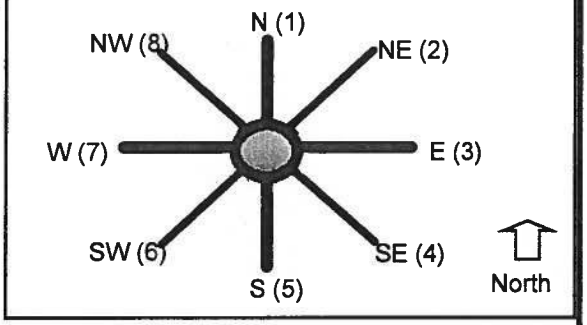
Car	1
Single-unit truck or bus	1.5
Truck with trailer	2
Bicycle or motorcycle	0.5

Default Car Length (ft) 25

Roundabout Analysis Tool
Single Lane

7/2/2009
Version 1.0

General & Site Information	
Analyst:	Paul DeNard
Agency/Company:	GDOT
Date:	7/1/2009
Project Name or PI#:	0004732
Intersection:	SR 47 @ SR 223
Analysis Time Period:	Peak Hour (AM)
Year:	2032
County/District:	Columbia



Volumes		Entry Legs (FROM)							
		N (1)	NE (2)	E (3)	SE (4)	S (5)	SW (6)	W (7)	NW (8)
	N (1), vph			135		530		95	
Exit	NE (2), vph								
Legs	E (3), vph	55				50		200	
(TO)	SE (4), vph								
	S (5), vph	315		25				10	
	SW (6), vph								
	W (7), vph	85		35		40			
	NW (8), vph								
Output	Total Vehicles	455	0	195	0	620	0	305	0

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	91%	100%	91%	100%	91%	100%	91%	100%
% SU/ Bus	0%	0%	0%	0%	0%	0%	0%	0%
% Trucks	9%	0%	9%	0%	9%	0%	9%	0%
% Bicycle	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}	0.917	1.000	0.917	1.000	0.917	1.000	0.917	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pcu/h	0	0	167	0	656	0	118	0
NE (2), pcu/h	0	0	0	0	0	0	0	0
E (3), pcu/h	68	0	0	0	62	0	248	0
SE (4), pcu/h	0	0	0	0	0	0	0	0
S (5), pcu/h	390	0	31	0	0	0	12	0
SW (6), pcu/h	0	0	0	0	0	0	0	0
W (7), pcu/h	105	0	43	0	50	0	0	0
NW (8), pcu/h	0	0	0	0	0	0	0	0
Entry flow, pcu/h	564	0	242	0	768	0	378	0
Conflicting flow, pcu/h	124	0	824	0	434	0	489	0

Roundabout Type	Urban Compact=1 Standard Single Lane =2
Enter type here...	2

Results								
NCHRP-572 Model	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**
Entry Capacity, pcu/h	998	NA	496	NA	732	NA	693	NA
Leg v/c ratio	**0.56**		**0.49**		**1.05**		**0.55**	
Control Delay, s/pcu	**8.2**		**14.0**		**65.2**		**11.2**	
LOS	A		B		F		B	
LOS (signalized)	A		B		E		B	
95th % Queue (veh)	4		3		19		3	
95th Percentile Queue (ft)	**99**		**72**		**527**		**90**	
FHWA 2000 Model	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**
Entry Capacity, pcu/h	1145	NA	763	NA	976	NA	945	NA
Leg v/c ratio	**0.49**		**0.32**		**0.79**		**0.40**	
Delay (s/veh)	**6**		**7**		**16**		**6**	
LOS	A		A		C		A	
95th % Queue (veh)	3		1		8		2	
95th % Queue (ft)	**76**		**37**		**228**		**53**	

Notes:

East, West Legs = Wrightsboro RD/SR 223
North, South Legs = Apling Harlem Rd/SR 47

NO Bypass Lane adjustments, analysis with all single lane approaches.

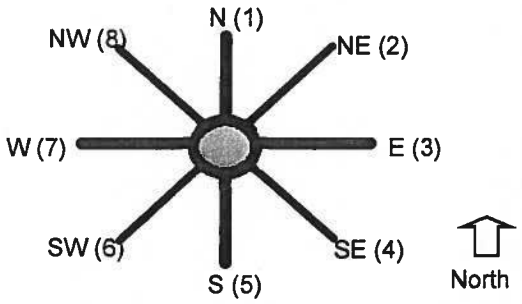
Default Values:
Equivalency Factors:

Car	1
Single-unit truck or bus	1.5
Truck with trailer	2
Bicycle or motorcycle	0.5

Default Car Length (ft) 25

Roundabout Analysis Tool 7/2/2009
Single Lane Version 1.0

General & Site Information	
Analyst:	Paul DeNard
Agency/Company:	GDOT
Date:	7/1/2009
Project Name or PI#:	0004732
Intersection:	SR 47 @ SR 223
Analysis Time Period:	Peak Hour (PM)
Year:	2032
County/District:	Columbia



Volumes		Entry Legs (FROM) N (1)	NE (2)	E (3)	SE (4)	S (5)	SW (6)	W (7)	NW (8)
	N (1), vph			55		315		85	
Exit	NE (2), vph								
Legs	E (3), vph	135				25		35	
(TO)	SE (4), vph								
	S (5), vph	530		50				40	
	SW (6), vph								
	W (7), vph	95		200		10			
	NW (8), vph								
Output	Total Vehicles	760	0	305	0	350	0	160	0

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	91%	100%	91%	100%	91%	100%	91%	100%
% SU/ Bus	0%	0%	0%	0%	0%	0%	0%	0%
% Trucks	9%	0%	9%	0%	9%	0%	9%	0%
% Bicycle	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}	0.917	1.000	0.917	1.000	0.917	1.000	0.917	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pcu/h	0	0	68	0	390	0	105	0
NE (2), pcu/h	0	0	0	0	0	0	0	0
E (3), pcu/h	167	0	0	0	31	0	43	0
SE (4), pcu/h	0	0	0	0	0	0	0	0
S (5), pcu/h	656	0	62	0	0	0	50	0
SW (6), pcu/h	0	0	0	0	0	0	0	0
W (7), pcu/h	118	0	248	0	12	0	0	0
NW (8), pcu/h	0	0	0	0	0	0	0	0
Entry flow, pcu/h	941	0	378	0	434	0	198	0
Conflicting flow, pcu/h	322	0	508	0	316	0	886	0

Roundabout Type	Urban Compact=1 Standard Single Lane =2
Enter type here...	2

Results								
NCHRP-572 Model	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**
Entry Capacity, pcu/h	819	NA	680	NA	824	NA	466	NA
Leg v/c ratio	**1.15**		**0.56**		**0.53**		**0.43**	
Control Delay, s/pcu	**96.4**		**11.7**		**9.1**		**13.3**	
LOS	F		B		A		B	
LOS (signalized)	F		B		A		B	
95th % Queue (veh)	28		3		3		2	
95th Percentile Queue (ft)	**761**		**94**		**85**		**57**	
FHWA 2000 Model	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**
Entry Capacity, pcu/h	1037	NA	935	NA	1040	NA	730	NA
Leg v/c ratio	**0.91**		**0.40**		**0.42**		**0.27**	
Delay (s/veh)	**26**		**6**		**6**		**7**	
LOS	D		A		A		A	
95th % Queue (veh)	14		2		2		1	
95th % Queue (ft)	**375**		**54**		**57**		**30**	

Notes:

East, West Legs = Wrightsboro RD/SR 223
North, South Legs = Apling Harlem Rd/SR 47

NO Bypass Lane adjustments, analysis with all single lane approaches.

Default Values:

Equivalency Factors:

Car	1
Single-unit truck or bus	1.5
Truck with trailer	2
Bicycle or motorcycle	0.5

Default Car Length (ft) 25

Roundabout Analysis Tool 7/2/2009
Single Lane Version 1.0

General & Site Information	
Analyst:	Paul DeNard
Agency/Company:	GDOT
Date:	7/1/2009
Project Name or PI#:	0004732
Intersection:	SR 47 @ SR 223
Analysis Time Period:	Peak Hour (AM)
Year:	2032
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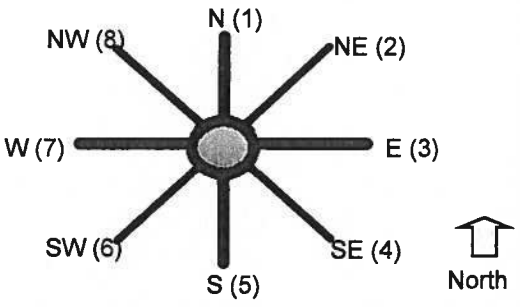


Volumes		Entry Legs (FROM)							
		N (1)	NE (2)	E (3)	SE (4)	S (5)	SW (6)	W (7)	NW (8)
Exit Legs (TO)	N (1), vph			135		530		95	
	NE (2), vph								
	E (3), vph	55				0		200	
	SE (4), vph								
	S (5), vph	315		25				10	
	SW (6), vph								
	W (7), vph	0		35		40			
	NW (8), vph								
Output	Total Vehicles	370	0	195	0	570	0	305	0

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	91%	100%	91%	100%	91%	100%	91%	100%
% SU/ Bus	0%	0%	0%	0%	0%	0%	0%	0%
% Trucks	9%	0%	9%	0%	9%	0%	9%	0%
% Bicycle	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}	0.917	1.000	0.917	1.000	0.917	1.000	0.917	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pcu/h	0	0	167	0	656	0	118	0
NE (2), pcu/h	0	0	0	0	0	0	0	0
E (3), pcu/h	68	0	0	0	0	0	248	0
SE (4), pcu/h	0	0	0	0	0	0	0	0
S (5), pcu/h	390	0	31	0	0	0	12	0
SW (6), pcu/h	0	0	0	0	0	0	0	0
W (7), pcu/h	0	0	43	0	50	0	0	0
NW (8), pcu/h	0	0	0	0	0	0	0	0
Entry flow, pcu/h	458	0	242	0	706	0	378	0
Conflicting flow, pcu/h	124	0	824	0	434	0	489	0

Roundabout Type	Urban Compact=1 Standard Single Lane =2
Enter type here...	2

Results								
NCHRP-572 Model	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**
Entry Capacity, pcu/h	998	NA	496	NA	732	NA	693	NA
Leg v/c ratio	**0.46**		**0.49**		**0.96**		**0.55**	
Control Delay, s/pcu	**6.6**		**14.0**		**43.7**		**11.2**	
LOS	A		B		E		B	
LOS (signalized)	A		B		D		B	
95th % Queue (veh)	2		3		15		3	
95th Percentile Queue (ft)	**67**		**72**		**401**		**90**	
FHWA 2000 Model	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**
Entry Capacity, pcu/h	1145	NA	763	NA	976	NA	945	NA
Leg v/c ratio	**0.40**		**0.32**		**0.72**		**0.40**	
Delay (s/veh)	**5**		**7**		**13**		**6**	
LOS	A		A		B		A	
95th % Queue (veh)	2		1		7		2	
95th % Queue (ft)	**53**		**37**		**179**		**53**	

Notes:

East, West Legs = Wrightsboro RD/SR 223
North, South Legs = Apling Harlem Rd/SR 47

Bypass Lanes included in this analysis, volumes were adjusted.

Default Values:
Equivalency Factors:

Car	1
Single-unit truck or bus	1.5
Truck with trailer	2
Bicycle or motorcycle	0.5

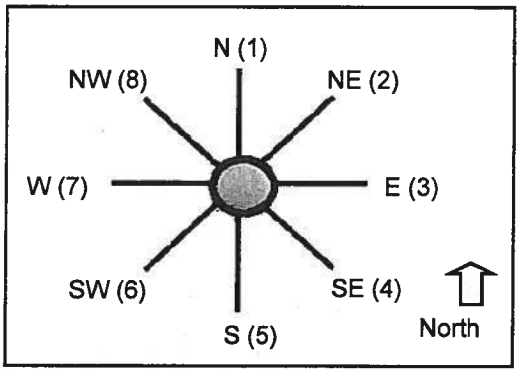
Default Car Length (ft) 25

Bypass Lane Merge Calculator for Single Lane Roundabouts

7/2/2009
Version 1.0

Bypass Lane Merge Point Analysis
of single exit lane and bypass lane

Bypass from Entry Leg to the Exit Leg adjacent in the counterclockwise direction.



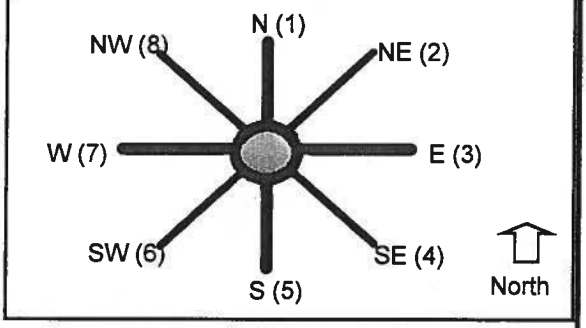
Bypass Characteristics	Bypass #1	Bypass #2	Bypass #3	Bypass #4	Bypass #5
Select Entry Leg from Bypass (FROM)	**S (5)**	**N (1)**			
Select Exit Leg for Bypass (TO)	**E (3)**	**W (7)**			
Volumes					
Right Turn Volume removed from Entry Leg	50	85			
Volume Characteristics (for entry leg)					
PHF	0.88	0.88			
F_{HV}	0.92	0.92			
***Volume Characteristics for Exit Leg are already taken into account*					
Entry/Conflicting Flows					
Entry Flow	62	105			
Conflicting Flow	316	93			
Bypass Lane Results (NCHRP-572 Model)					
Entry Capacity at merge point of bypass, pc/h	824	1030			
Bypass Lane v/c ratio	0.08	0.10			
Control Delay, s/pc	4.7	3.9			
LOS	A	A			
LOS (signalized)	A	A			
95th Percentile Queue (veh)	0	0			
95th Percentile Queue (ft)	7	9			

Notes:

Roundabout Analysis Tool
Single Lane

7/2/2009
Version 1.0

General & Site Information	
Analyst:	Paul DeNard
Agency/Company:	GDOT
Date:	7/1/2009
Project Name or PI#:	0004732
Intersection:	SR 47 @ SR 223
Analysis Time Period:	Peak Hour (PM)
Year:	2032
County/District:	Columbia



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			55		315		85	
	NE (2), vph								
	E (3), vph	135				0		35	
	SE (4), vph								
	S (5), vph	530		50				40	
	SW (6), vph								
	W (7), vph	0		200		10			
	NW (8), vph								
Output	Total Vehicles	665	0	305	0	325	0	160	0

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	91%	100%	91%	100%	91%	100%	91%	100%
% SU/ Bus	0%	0%	0%	0%	0%	0%	0%	0%
% Trucks	9%	0%	9%	0%	9%	0%	9%	0%
% Bicycle	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}	0.917	1.000	0.917	1.000	0.917	1.000	0.917	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pcu/h	0	0	68	0	390	0	105	0
NE (2), pcu/h	0	0	0	0	0	0	0	0
E (3), pcu/h	167	0	0	0	0	0	43	0
SE (4), pcu/h	0	0	0	0	0	0	0	0
S (5), pcu/h	656	0	62	0	0	0	50	0
SW (6), pcu/h	0	0	0	0	0	0	0	0
W (7), pcu/h	0	0	248	0	12	0	0	0
NW (8), pcu/h	0	0	0	0	0	0	0	0
Entry flow, pcu/h	824	0	378	0	403	0	198	0
Conflicting flow, pcu/h	322	0	508	0	316	0	886	0

Roundabout Type	Urban Compact=1 Standard Single Lane =2
Enter type here...	2

Results								
NCHRP-572 Model	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**
Entry Capacity, pcu/h	819	NA	680	NA	824	NA	466	NA
Leg v/c ratio	**1.01**		**0.56**		**0.49**		**0.43**	
Control Delay, s/pcu	**50.3**		**11.7**		**8.5**		**13.3**	
LOS	F		B		A		B	
LOS (signalized)	D		B		A		B	
95th % Queue (veh)	18		3		3		2	
95th Percentile Queue (ft)	**487**		**94**		**74**		**57**	
FHWA 2000 Model	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**
Entry Capacity, pcu/h	1037	NA	935	NA	1040	NA	730	NA
Leg v/c ratio	**0.79**		**0.40**		**0.39**		**0.27**	
Delay (s/veh)	**15**		**6**		**6**		**7**	
LOS	C		A		A		A	
95th % Queue (veh)	9		2		2		1	
95th % Queue (ft)	**238**		**54**		**50**		**30**	

Notes:

East, West Legs = Wrightsboro RD/SR 223
North, South Legs = Apling Harlem Rd/SR 47

Bypass Lanes included in this analysis, volumes were adjusted.

Default Values:

Equivalency Factors:

Car	1
Single-unit truck or bus	1.5
Truck with trailer	2
Bicycle or motorcycle	0.5

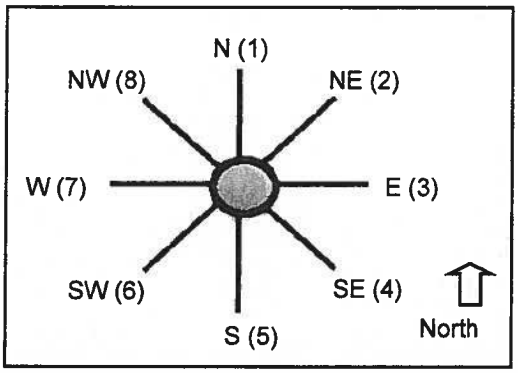
Default Car Length (ft) 25

Bypass Lane Merge Calculator for Single Lane Roundabouts

7/2/2009
Version 1.0

Bypass Lane Merge Point Analysis
of single exit lane and bypass lane

Bypass from Entry Leg to the Exit Leg adjacent in the counterclockwise direction.



Bypass Characteristics	Bypass #1	Bypass #2	Bypass #3	Bypass #4	Bypass #5
Select Entry Leg from Bypass (FROM)	**S (5)**	**N (1)**			
Select Exit Leg for Bypass (TO)	**E (3)**	**W (7)**			
Volumes					
Right Turn Volume removed from Entry Leg	25	95			
Volume Characteristics (for entry leg)					
PHF	0.88	0.88			
F_{HV}	0.92	0.92			
***Volume Characteristics for Exit Leg are already taken into account*					
Entry/Conflicting Flows					
Entry Flow	31	118			
Conflicting Flow	211	260			
Bypass Lane Results (NCHRP-572 Model)					
Entry Capacity at merge point of bypass, pc/h	915	871			
Bypass Lane v/c ratio	0.03	0.14			
Control Delay, s/pc	4.1	4.8			
LOS	A	A			
LOS (signalized)	A	A			
95th Percentile Queue (veh)	0	0			
95th Percentile Queue (ft)	3	13			

Notes:

ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	*Robert Graham*
Agency/Co.	
Date Performed	*8/24/2009*
Analysis Time Period	

Site Information

Intersection	*SR 47 @ SR 223*
Jurisdiction	*D2 A4*
Analysis Year	*2032 AM PEAK*

Project ID *0004732; STP00-0004-00(732); COLUMBIA COUNTY*

East/West Street: *SR 223* North/South Street: *SR 47*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	*95*	*200*	*10*	*25*	*35*	*135*
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	*40*	*530*	*50*	*55*	*315*	*85*
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	*LTR*		*LTR*		*LTR*		*LTR*	
PHF	*0.88*		*0.88*		*0.88*		*0.88*	
Flow Rate (veh/h)	*345*		*220*		*703*		*515*	
% Heavy Vehicles	*9*		*9*		*9*		*9*	
No. Lanes	*1*		*1*		*1*		*1*	
Geometry Group	*1*		*1*		*1*		*1*	
Duration, T	*0.25*							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	*0.3*		*0.1*		*0.1*		*0.1*	
Prop. Right-Turns	*0.0*		*0.7*		*0.1*		*0.2*	
Prop. Heavy Vehicle	*0.1*		*0.1*		*0.1*		*0.1*	
hLT-adj	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*
hRT-adj	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*
hHV-adj	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*
hadj, computed	*0.2*		*-0.2*		*0.1*		*0.1*	

Departure Headway and Service Time

hd, initial value (s)	*3.20*		*3.20*		*3.20*		*3.20*	
x, initial	*0.31*		*0.20*		*0.62*		*0.46*	
hd, final value (s)	*8.83*		*9.15*		*8.36*		*8.30*	
x, final value	*0.85*		*0.56*		*1.63*		*1.19*	
Move-up time, m (s)	*2.0*		*2.0*		*2.0*		*2.0*	
Service Time, t_s (s)	*6.8*		*7.1*		*6.4*		*6.3*	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	*405*		*381*		*703*		*515*	
Delay (s/veh)	*44.77*		*23.14*		*315.71*		*132.28*	
LOS								

	E	C	F	F
Approach: Delay (s/veh)	44.77	23.14	315.71	132.28
LOS	E	C	F	F
Intersection Delay (s/veh)	174.20			
Intersection LOS	F			

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ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	*Robert Graham*
Agency/Co.	
Date Performed	*8/24/2009*
Analysis Time Period	

Site Information

Intersection	*SR 47 @ SR 223*
Jurisdiction	*D2 A4*
Analysis Year	*2032 PM PEAK*

Project ID *0004732; STP00-0004-00(732); COLUMBIA COUNTY*

East/West Street: *SR 223* North/South Street: *SR 47*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	*85*	*35*	*40*	*50*	*200*	*55*
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	*10*	*315*	*25*	*135*	*530*	*95*
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	*LTR*		*LTR*		*LTR*		*LTR*	
PHF	*0.88*		*0.88*		*0.88*		*0.88*	
Flow Rate (veh/h)	*180*		*345*		*396*		*862*	
% Heavy Vehicles	*9*		*9*		*9*		*9*	
No. Lanes	*1*		*1*		*1*		*1*	
Geometry Group	*1*		*1*		*1*		*1*	
Duration, T	*0.25*							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	*0.5*		*0.2*		*0.0*		*0.2*	
Prop. Right-Turns	*0.3*		*0.2*		*0.1*		*0.1*	
Prop. Heavy Vehicle	*0.1*		*0.1*		*0.1*		*0.1*	
hLT-adj	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*
hRT-adj	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*
hHV-adj	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*
hadj, computed	*0.1*		*0.1*		*0.1*		*0.1*	

Departure Headway and Service Time

hd, initial value (s)	*3.20*		*3.20*		*3.20*		*3.20*	
x, initial	*0.16*		*0.31*		*0.35*		*0.77*	
hd, final value (s)	*9.03*		*8.17*		*7.91*		*7.68*	
x, final value	*0.45*		*0.78*		*0.87*		*1.84*	
Move-up time, m (s)	*2.0*		*2.0*		*2.0*		*2.0*	
Service Time, t_s (s)	*7.0*		*6.2*		*5.9*		*5.7*	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	*368*		*429*		*449*		*862*	
Delay (s/veh)	*19.25*		*34.83*		*44.44*		*403.97*	
LOS								

	C	D	E	F
Approach: Delay (s/veh)	19.25	34.83	44.44	403.97
LOS	C	D	E	F
Intersection Delay (s/veh)	213.86			
Intersection LOS	F			

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ROUNDABOUTS - UNSIGNALIZED INTERSECTIONS WORKSHEET

General Information		Site Information	
Analyst	*Robert Graham*	Intersection	*SR 47 @ SR 223*
Agency/Co.		Jurisdiction	
Date Performed	*7/13/2009*	Analysis Year	*2032*
Time Period	*Peak Hour (AM)*		

Project Description *0004732; STP00-0004-00(732); Columbia County*

Volume Adjustments

		EB	WB	NB	SB
LT Traffic	Volume, veh/h	*95*	*25*	*40*	*55*
	PHF	*0.88*	*0.88*	*0.88*	*0.88*
	Flow rate, veh/h	*107*	*28*	*45*	*62*
TH Traffic	Volume, veh/h	*200*	*35*	*530*	*315*
	PHF	*0.88*	*0.88*	*0.88*	*0.88*
	Flow rate, veh/h	*227*	*39*	*602*	*357*
RT Traffic	Volume, veh/h	*10*	*135*	*50*	*85*
	PHF	*0.88*	*0.88*	*0.88*	*0.88*
	Flow rate, veh/h	*11*	*153*	*56*	*96*

Approach Flow Computation

Approach Flow (veh/h)	Va (veh/h)
Vae	*345*
Vaw	*220*
Van	*703*
Vas	*515*

Circulating Flow Computation

Approach Flow (veh/h)	Vc (veh/h)
Vce	*447*
Vcw	*754*
Vcn	*396*
Vcs	*112*

Capacity Computation

		EB	WB	NB	SB
Capacity	Upper bound	*973*	*760*	*1014*	*1268*
	Lower bound	*790*	*602*	*826*	*1055*
v/c Ratio	Upper bound	*0.35*	*0.29*	*0.69*	*0.41*
	Lower bound	*0.44*	*0.37*	*0.85*	*0.49*

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ROUNDABOUTS - UNSIGNALIZED INTERSECTIONS WORKSHEET

General Information		Site Information	
Analyst	*Robert Graham*	Intersection	*SR 47 @ SR 223*
Agency/Co.		Jurisdiction	
Date Performed	*7/13/2009*	Analysis Year	*2032 (w/ bypass lanes)*
Time Period	*Peak Hour (AM)*		

Project Description *0004732; STP00-0004-00(732); Columbia County*

Volume Adjustments

		EB	WB	NB	SB
LT Traffic	Volume, veh/h	*95*	*25*	*40*	*55*
	PHF	*0.88*	*0.88*	*0.88*	*0.88*
	Flow rate, veh/h	*107*	*28*	*45*	*62*
TH Traffic	Volume, veh/h	*200*	*35*	*530*	*315*
	PHF	*0.88*	*0.88*	*0.88*	*0.88*
	Flow rate, veh/h	*227*	*39*	*602*	*357*
RT Traffic	Volume, veh/h	*10*	*135*	*0*	*0*
	PHF	*0.88*	*0.88*	*0.88*	*0.88*
	Flow rate, veh/h	*11*	*153*	*0*	*0*

Approach Flow Computation

Approach Flow (veh/h)	Va (veh/h)
Vae	*345*
Vaw	*220*
Van	*647*
Vas	*419*

Circulating Flow Computation

Approach Flow (veh/h)	Vc (veh/h)
Vce	*447*
Vcw	*754*
Vcn	*396*
Vcs	*112*

Capacity Computation

		EB	WB	NB	SB
Capacity	Upper bound	*973*	*760*	*1014*	*1268*
	Lower bound	*790*	*602*	*826*	*1055*
v/c Ratio	Upper bound	*0.35*	*0.29*	*0.64*	*0.33*
	Lower bound	*0.44*	*0.37*	*0.78*	*0.40*

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ROUNDABOUTS - UNSIGNALIZED INTERSECTIONS WORKSHEET

General Information		Site Information	
Analyst	*Robert Graham*	Intersection	*SR 47 @ SR 223*
Agency/Co.		Jurisdiction	*District 2 Area 4*
Date Performed	*7/13/2009*	Analysis Year	*2032*
Time Period	*Peak Hour (PM)*		

Project Description *0004732; STP00-0004-00(732); Columbia County*

Volume Adjustments

		EB	WB	NB	SB
LT Traffic	Volume, veh/h	*85*	*50*	*10*	*135*
	PHF	*0.88*	*0.88*	*0.88*	*0.88*
	Flow rate, veh/h	*96*	*56*	*11*	*153*
TH Traffic	Volume, veh/h	*35*	*200*	*315*	*530*
	PHF	*0.88*	*0.88*	*0.88*	*0.88*
	Flow rate, veh/h	*39*	*227*	*357*	*602*
RT Traffic	Volume, veh/h	*40*	*55*	*25*	*95*
	PHF	*0.88*	*0.88*	*0.88*	*0.88*
	Flow rate, veh/h	*45*	*62*	*28*	*107*

Approach Flow Computation

Approach Flow (veh/h)	Va (veh/h)
Vae	*180*
Vaw	*345*
Van	*396*
Vas	*862*

Circulating Flow Computation

Approach Flow (veh/h)	Vc (veh/h)
Vce	*811*
Vcw	*464*
Vcn	*288*
Vcs	*294*

Capacity Computation

		EB	WB	NB	SB
Capacity	Upper bound	*726*	*960*	*1104*	*1099*
	Lower bound	*572*	*778*	*907*	*902*
v/c Ratio	Upper bound	*0.25*	*0.36*	*0.36*	*0.78*
	Lower bound	*0.31*	*0.44*	*0.44*	*0.96*

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ROUNDABOUTS - UNSIGNALIZED INTERSECTIONS WORKSHEET

General Information		Site Information	
Analyst	*Robert Graham*	Intersection	*SR 47 @ SR 223*
Agency/Co.		Jurisdiction	*District 2 Area 4*
Date Performed	*7/13/2009*	Analysis Year	*2032 (w/ bypass lanes)*
Time Period	*Peak Hour (PM)*		

Project Description *0004732; STP00-0004-00(732); Columbia County*

Volume Adjustments

		EB	WB	NB	SB
LT Traffic	Volume, veh/h	*85*	*50*	*10*	*135*
	PHF	*0.88*	*0.88*	*0.88*	*0.88*
	Flow rate, veh/h	*96*	*56*	*11*	*153*
TH Traffic	Volume, veh/h	*35*	*200*	*315*	*530*
	PHF	*0.88*	*0.88*	*0.88*	*0.88*
	Flow rate, veh/h	*39*	*227*	*357*	*602*
RT Traffic	Volume, veh/h	*40*	*55*	*0*	*0*
	PHF	*0.88*	*0.88*	*0.88*	*0.88*
	Flow rate, veh/h	*45*	*62*	*0*	*0*

Approach Flow Computation

Approach Flow (veh/h)	Va (veh/h)
Vae	*180*
Vaw	*345*
Van	*368*
Vas	*755*

Circulating Flow Computation

Approach Flow (veh/h)	Vc (veh/h)
Vce	*811*
Vcw	*464*
Vcn	*288*
Vcs	*294*

Capacity Computation

		EB	WB	NB	SB
Capacity	Upper bound	*726*	*960*	*1104*	*1099*
	Lower bound	*572*	*778*	*907*	*902*
v/c Ratio	Upper bound	*0.25*	*0.36*	*0.33*	*0.69*
	Lower bound	*0.31*	*0.44*	*0.41*	*0.84*

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Vance C. Smith, Jr., Commissioner

GEORGIA DEPARTMENT OF TRANSPORTATION

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

October 15, 2010

<Distribution List>

Re: Project STP00-0004-00(732), Columbia County - P.I. No. 0004732 - SR 47/Ray Owens Road at SR 223/Wrightsboro Road safety and intersection improvement project

«GreetingLine»

Thank you for your comments concerning the proposed project referenced above. We appreciate your participation and all of the input that was received as a result of the March 9, 2010 Public Information Open House (PIOH). Every comment will be made part of the official record of the project.

On behalf of the Georgia Department of Transportation (Georgia DOT), please accept our sincere apologies for the delay in sending this response. Based on feedback received during the PIOH, it was determined that design modifications were necessary to address the concerns and transportation needs of the travelling public. The modifications included a reduction in right-of-way and additional accessibility of the Pumpkin Center.

In April 2010, we presented the modified roundabout and the operational analysis to Columbia County officials, who provided support for the proposed project revisions. A copy of the revised aerial view of the project is attached. The project is currently in the preliminary design phase, and we will continue to work with Columbia County officials and residents to address any additional concerns with the proposed project design.

A total of 48 people attended the PIOH. Of the 32 respondents who formally commented, 21 were opposed to the project, three (3) supported of the project, two (2) were uncommitted, and six (6) conditionally supported the project.

We have prepared one response letter that addresses all comments received so that everyone can be aware of the concerns raised and the responses given. In general, the comments received were either in overall support of the project or not in support of the project at all. For those that did not support the project, the reasons ranged from being too expensive to concern with safety and how larger trucks would maneuver the roundabout. Please find the comments summarized below (in italics) followed by our response.

- *Project Funding*

While we understand the concerns with funding transportation projects within this time of strained economic uncertainty, please know that our mission is to maintain and improve mobility by providing a safe, seamless, intermodal, environmentally-sensitive transportation system. Accomplishing our mission unavoidably requires taxpayer money.

Operation and maintenance costs vary significantly between roundabouts and other forms of intersection control beyond the basic elements. Roundabouts have slightly higher costs for signing, pavement marking, and the maintenance of any potential landscaping incorporated within the roundabout. While signalized intersections have considerable cost associated with signal power, bulb replacement, detection maintenance, etc. In addition, the costs to operate and maintain the proposed roundabout will require less additional land than a traffic signal with realigned approaches.

- *Safety*

Data from the National Cooperative Highway Research Program (NCHRP)[1] have found that one of the benefits of the roundabout installation is improvement in overall safety performance of intersections. This can be achieved by eliminating or altering conflict types (such as intersection angle conflicts, merging/diverging sideswipe conflicts, and rear-end conflicts), by reducing speed differentials at intersections, and by forcing drivers to decrease speeds as they proceed into and through the intersections.

Signing and marking will be provided on all approaches and within the roundabout to minimize confusion and improve safety. Changeable message signs can also be added to the approaches for a period of one week to advise drivers of anticipated changes in traffic patterns prior to the implementation of the new roundabout traffic pattern. The low speeds associated with roundabouts allow drivers more time to react to conflicts, consequently improving the safety of the intersections.

- *Truck Mobility*

Roundabouts can be designed to accommodate not only personal vehicles, but also commercial vehicles up to and including semi-tractor trailer trucks. Roundabouts on state routes are designed to accommodate the largest 18-wheeler tractor-trailer driven today, which is typically 67 feet. As presented at the PIOH and on the attached revised aerial photograph, this project is currently proposed as a single-lane circulating roadway roundabout, which will incorporate a mountable truck apron between the single-lane circulating roadway and a non-mountable center island. The non-mountable center island is a raised area in the center of the roundabout that is intentionally designed to discourage encroachment and to draw attention to the roundabout by blocking the view of the through roadway on the horizon. The truck apron is designed to provide the additional width needed for tracking the trailer wheels.

In addition to the issues raised above, we also received the following two comments.

- *One commenter believes that although the safety is the primary concern, aesthetics should not be ignored. What about attractive landscaping?*

We are open to adding suitable landscaping to this project; however, a commitment from Columbia County to maintain the proposed features would be needed. As noted above, we will continue to work with Columbia County officials and residents to address any additional concerns with the proposed project design.

- *One commenter believes a vote should have occurred at the PIOH.*

Georgia DOT utilizes an "open house" style PIOH for all its projects to maximize feedback. Although an official vote was not taken the night of the PIOH, the written comments and verbal statements given to the court reporter are summarized above. In addition, the design changes that have occurred since the PIOH were a direct result of the comments received.

[1] NCHRP Report 572: Roundabouts in the United States. 2007. < http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_572.pdf>

Again, thank you for your comments regarding this project. Should you have any further questions, comments, or concerns, please call Georgia DOT's project manager, Karyn Matthews, at (404) 631-1584 or the environmental analyst, Alexis H. John, at (404) 631-1407.

Sincerely,

Glenn Bowman III

Glenn Bowman, P.E.
State Environmental Administrator

Attachment
GB/ahj

cc: Karyn Matthews, GDOT Project Manager

Title	First Name	Middle Intial	Last Name	Suffix	Address Line 1	City	State	ZIP Code
Mr.	Carl		Tankersley		6178 Wrightsboro Road	Harlem	GA	30814
Mr.	James		Osborne		6635 Green Plantation	Harlem	GA	30814
Mr.	Ken		Hair		6530 Haywood Drive	Harlem	GA	30814
Mr.	Ken		Roland		827 Madelyn Drive	Harlem	GA	30814
Ms.	Jane	P.	Haulbrook		6400 Browns Road	Harlem	GA	30814
Mrs.	Dede		Maddox		6496 Stanford Road	Harlem	GA	30814
Mr.	Dennis		Mack		773 Fairview Drive	Harlem	GA	30814
Mr.	James	M.	Maddox		6496 Stanford Road	Harlem	GA	30814
Mr.	Robert	E.	Milford	Jr.	6322 Wrightsboro Road	Harlem	GA	30814
Mr.	William	V.	Keasler		4270 Radford Gay Road	Harlem	GA	30814
Mr.	Alan		Makowsky		829 Madelyn Drive	Harlem	GA	30814
Ms.	Toni		Makowsky		829 Madelyn Drive	Harlem	GA	30814
Mr.	Scott		Dean		320 North Hick Street	Harlem	GA	30814
Ms.	Shelby		Farley		3945 E. White Oak Road	Appling	GA	30802
Mr.	David		Edens		6631 Wrightsboro Road	Harlem	GA	30814
Mr.	Don		Holley		6649 Wrightsboro Road	Harlem	GA	30814
Mr.	Jerry		Farley		3947 East White Oak Road	Appling	GA	30802
Ms.	Linda		Bourassa		6697 Wrightsboro Road	Harlem	GA	30814
Ms.	Karen		Gross		808 Creek's Edge Court	Grovetown	GA	30813
Mr.	William	G.	Nightingale		3936 E. White Oak Road	Appling	GA	30802
Mr.	John	V.	McClellan	P.E.	1575 Appling-Harlem Road	Appling	GA	30802
Ms.	Maxine		DeLong		3954 E. White Oak Road	Appling	GA	30802
Ms.	Joyce		Nightingale			Appling	GA	30802
Mr.	Kenneth		Hair		6530 Haywood Drive	Harlem	GA	30814
Mr.	Kenneth		Meyer		6349 Brown Road	Harlem	GA	30814
Mr.	Steve		Exley		P.O. Box 498	Evans	GA	30809
Mr.	David	E.	Payne		6623 Ponderosa Lane	Harlem	GA	30814
Mr.	Keith	L.	Milburn		1566 Intermediate Road	Harlem	GA	30814
Mr.	Lionel		Prather		2706 Bellevue Avenue	Augusta	GA	30909
Mr.	Raymond		Bain		1351 Intermediate Road	Harlem	GA	30814
Mr.	Bobby	(R.W.)	Culpepper		180 Ballard Road	Harlem	GA	30814

Vance C. Smith, Jr., Commissioner

GEORGIA DEPARTMENT OF TRANSPORTATION

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

October 20, 2010

Re: Project STP00-0004-00(732), Columbia County - P.I. No. 0004732 - SR 47/Ray Owens Road at SR 223/Wrightsboro Road safety and intersection improvement project

Dear Recipient:

We apologize that the revised aerial view of the project was not included in our October 15, 2010 response letter. Please find attached a copy for your use.

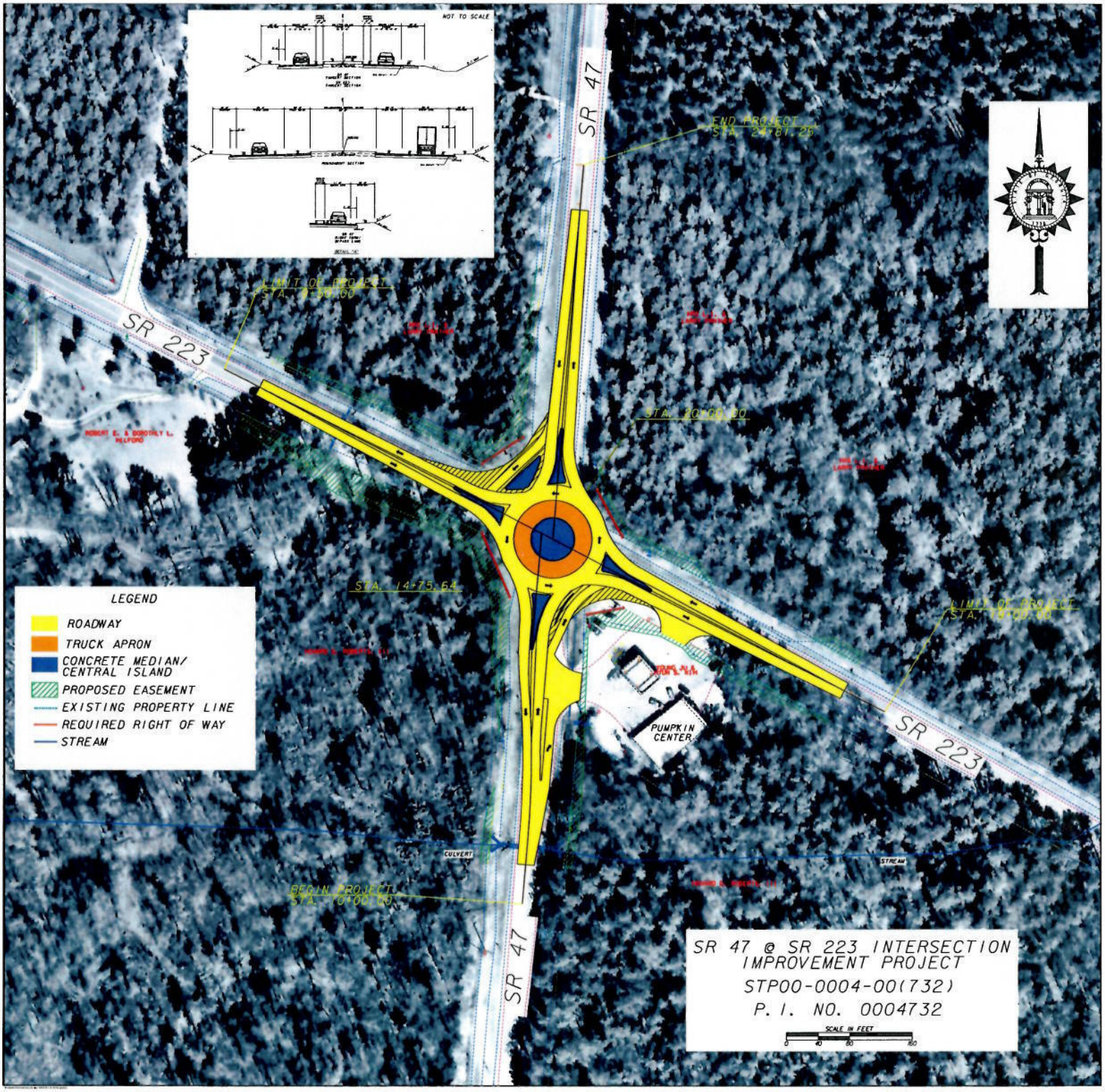
Again, thank you for your comments regarding this project. We apologize for any inconvenience. Should you have any further questions, comments, or concerns, please call Georgia DOT's project manager, Karyn Matthews, at (404) 631-1584 or the environmental analyst, Alexis H. John, at (404) 631-1407.

Sincerely,

Glenn Bowman, P.E.
State Environmental Administrator

Attachment
GB/ahj

cc: Karyn Matthews, GDOT Project Manager


NOT TO SCALE
SR 47
END PROJECT
STA. 24+87.25
LIMIT OF PROJECT
STA. 9+50.00
SR 223
STA. 10+00.00
STA. 14+75.64
LIMIT OF PROJECT
STA. 18+00.00
SR 223
PUMPKIN CENTER
CULVERT
STREAM
BEGIN PROJECT
STA. 10+00.00
SR 47
LEGEND
ROADWAY
TRUCK APRON
CONCRETE MEDIAN/ CENTRAL ISLAND
PROPOSED EASEMENT
EXISTING PROPERTY LINE
REQUIRED RIGHT OF WAY
STREAM
SR 47 @ SR 223 INTERSECTION IMPROVEMENT PROJECT
STP00-0004-00(732)
P. I. NO. 0004732
SCALE IN FEET
0
40
80
160

Georgia Department of Transportation
Quality Control and Quality Assurance Program

Component of Quality Assurance: **Revised: September 22, 2010**

1. Concept Report & Layout Review

Review Panel: Assistant Office Head, Design Group Manager, Lead Design Engineer
Review Schedule: Hold review 4 weeks prior to submission of the concept report or revised report.
Review Elements:

- ☑ Project addresses the Need & Purpose and is consistent with Logical Termini.
- ☑ Project conforms to RTP/TIP/STIP (model yr/open to traffic, # of lanes, termini, cost estimates).
- ☑ Traffic Volumes reflect current and design year estimates and cover side roads adequately.
- ☑ Geometric Design Policy has been adequately determined – functional classification, design speed, design vehicle, min radius, max grades, max SE rate, access control, clear zone, median usage. See Chapters 3, 4, and 5 of the GDOT DPM.
- ☑ Typical Sections (see Chapter 6 of the GDOT DPM).
- ☑ Capacity Analysis demonstrates acceptable Level of Service (LOS) for Functional Classification.
- ☑ Lane configuration (number of lanes, turn lanes) is consistent with the Capacity Analysis.
- ☐ Provisions for u-turns have been assessed at appropriate locations along the roadway. N/A
- ☑ Accident/Crash History - the concept addresses critical locations along the project?
- ☐ Avoidance of environmental resources has been adequately considered. None identified
- ☐ State Waters and Stream Buffers have been identified by the ecologist and noted on plans. None identifie
- ☐ FEMA Flood Plains, Biota Impaired Streams, Fish Passage has been assessed. None identified
- ☑ Avoidance of major utilities has been adequately considered.
- ☑ Considerations for pedestrian and bicycle access has been adequately addressed.
- ☑ Constructability has been assessed (staging, detours, road closures, access, major utilities, etc.).
- ☑ Structural elements have been adequately considered (bridge, culvert, retaining wall, noise wall).
- ☐ Vertical clearances are addressed (see GDOT Bridge and Structures Design Policy Manual). N/A
- ☐ FAA coordination has occurred (if project is within 2 miles of an airport or aviation facility). N/A
- ☑ Design Exceptions and Variances are addressed.
- ☑ Coordination with stakeholders has occurred (FHWA, local governments, civic groups, utility companies, railroad companies, other federal and state agencies, etc…).
- ☑ R/W & easement limits are reasonable (see Chapter 3 of the GDOT DPM).
- ☐ V.E. study recommendations have been implemented if applicable. N/A
- ☑ Feasible alternative alignments have been adequately considered and noted.
- ☑ **Roadway Quantities have been reviewed and are satisfactory.**

Action:

- Lead Design Engineer will incorporate revisions resulting from the review into the Concept Report and layout; and/or conduct additional studies to support decisions or resolve questions, and follow-up with Assistant Office Head for closure.
- Document and file, in QC/QA folder, a copy of the review notes and any actions taken by the review panel.

Project: 0004732 . AOH: _____ . Date: 11/28/10 .

Indication of Roundabout Support

Georgia Department of Transportation
Attention: Karyn Matthews
600 W Peachtree Street
25th Floor
Atlanta, GA 30308

Location

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

Local Street Names: Appling Harlem Road at Wrightsboro Road

State/County Route Numbers: SR 221 at SR 223

Associated Conditions

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

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

Upon approval of the concept, 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 21 day of September, 2010

By: _____

Title: Chairman

Attest: _____

Clerk