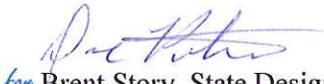


**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA**

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

FILE P.I. # 0009835 **OFFICE** Design Policy & Support
Douglas County
GDOT District 7 - Metro Atlanta **DATE** February 26, 2014
SR 166 @ SR 92/SR 154
Roundabout

FROM  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 / State Environmental Administrator
Joe Carpenter, Director of P3/Program Delivery
Genetha Rice-Singleton, Asst. Dir. of P3/Prog. Delivery / State Prog. Delivery Engineer
Bobby Hilliard, Program Control Administrator
Cindy VanDyke, State Transportation Planning Administrator
Kathy Zahul, State Traffic Engineer
Angela Robinson, Financial Management Administrator
Lisa Myers, State Project Review Engineer
Charles "Chuck" Hasty, State Materials Engineer
Mike Bolden, State Utilities Engineer
Paul Tanner, Asst. State Transportation Data Administrator
Attn: Systems & Classification Branch
Jeff Fletcher, Statewide Location Bureau Chief
Emmanuella Myrthil, State Safety Program Coordinator
Rachel Brown, District Engineer
Scott Lee, District Preconstruction Engineer
Patrick Allen, District Utilities Engineer
Perry Black, Project Manager
BOARD MEMBER - 13th Congressional District

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

Project Type: <u>Intersection Improvement</u>	P.I. Number: <u>0009835</u>
GDOT District: <u>Seven</u>	County: <u>Douglas</u>
Federal Route Number: <u>N/A</u>	State Route Number: <u>70/92/154/166</u>

SR 166/Duncan Memorial Highway @ SR 70/SR 92/SR 154/Campbellton Fairburn Road

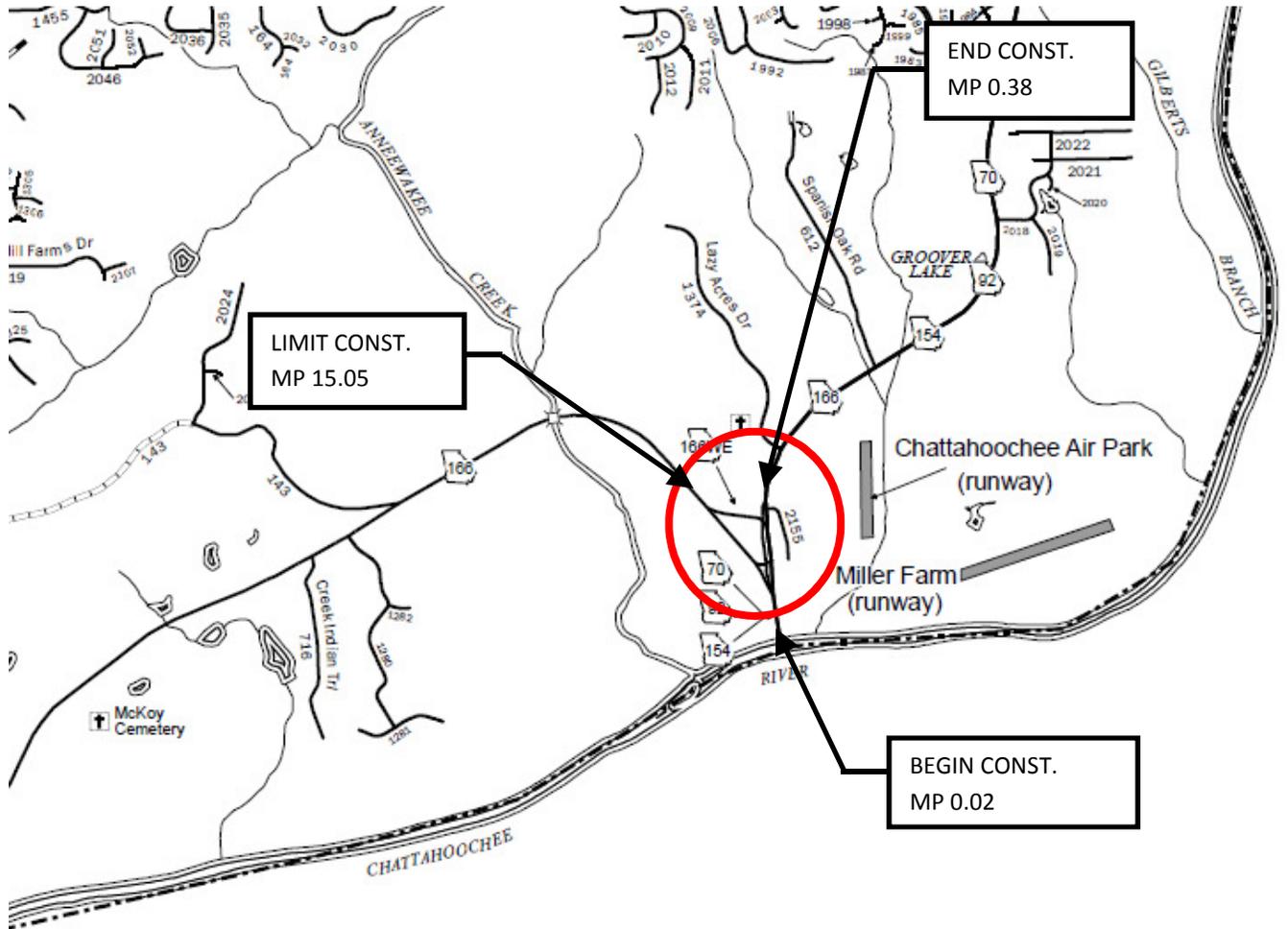
Submitted for approval:

<u><i>Marissa Martin</i></u> Marissa Martin, PE - Gresham, Smith and Partners	<u>10/25/13</u> DATE
<u><i>Benett King</i></u> Office Head (Program Delivery)	<u>11/1/2013</u> DATE
<u><i>Perry Black</i></u> GDOT Project Manager	<u>10/28/13</u> DATE

Recommendation for approval:

_____ Program Control Administrator	_____ DATE
* <u><i>Glenn Bowman/KLP</i></u> State Environmental Administrator	<u>11/6/2013</u> DATE
* <u><i>Kathy Zahul/KLP</i></u> State Traffic Engineer	<u>12/30/2013</u> DATE
* <u><i>Lisa Myers/KLP</i></u> Project Review Engineer	<u>11/4/2013</u> DATE
* <u><i>Jun Birnkammer/KLP</i></u> FOR State Utilities Engineer	<u>11/15/2013</u> DATE
* <u><i>Rachel Brown/KLP</i></u> District Engineer	<u>12/10/2013</u> DATE
_____ State Transportation Financial Management Administrator	_____ DATE
* <u><i>Recommendation on file</i></u> 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).	
<u><i>Cynthia L. Vanpe</i></u> State Transportation Planning Administrator	<u>11-5-13</u> DATE

Project Location Map



Center of Roundabout MP 0.18 SR 70/92/154 and 15.29 SR 166

PLANNING & BACKGROUND DATA

Project Justification Statement:

The proposed project will mitigate risk and improve operational efficiency at the intersection of SR 92/SR 154 at SR 166 in Douglas County, GA. In Georgia, nearly a third of fatal crashes occur at intersections making intersection crash frequency and severity reduction a focus area for the Georgia Department of Transportation. Nationally intersection crashes account for 40% of all reported crashes and approximately 20% of traffic fatalities. Of those fatalities, nearly 50% are the result of angle collisions. Angle collisions are often high speed, high impact crashes which often result in serious injuries or fatalities.

Roundabouts have been identified as one of nine proven countermeasures by the Federal Highway Administration (FHWA). The installation of roundabouts in comparison to traditional crash reduction 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 92/SR 154 is a two lane urban minor arterial with a posted speed limit of 55 mph and an AADT of 13,160 vehicles per day. SR 166 is a two lane urban minor arterial with a posted speed limit of 55 mph and an AADT of 8,660 vehicles per day. Currently, the 3-legged cross-over intersection is stop controlled on both of the cross-over approaches with yield control eastbound on SR 166 to SR 92/SR 154 southbound and from southbound SR 92/SR 154 to westbound SR 166.

Crash data from 2004-2008 indicated that 27 crashes occurred at these intersections resulting in 16 total injuries. Of those crashes 37% were angle collisions accounting for 63% 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.

Description of the proposed project: The proposed intersection improvement project is located at the intersection of SR 166/Duncan Memorial Highway and SR 70/SR 92/SR 154 within Douglas County. The existing intersection forms a triangle, with the northwest approach consisting of SR 166, the northeast approach consisting of SR 166, SR 92, and SR 154, and the southern approach consisting of SR 92 and SR 154. The eastbound and westbound SR 166 lanes are separated in the project area, intersecting SR 92/SR 154 approximately 1,100 feet apart. There is an existing undeveloped triangular area between the SR 166 lanes, within the center of the intersection. The northbound and southbound lanes on SR 92/SR 154 are separated by up to approximately 75 feet through the intersection. All directions of travel are signed as stop or yield conditions with the exception of the SR 92/SR 154 through movement. The project limits would extend approximately 1,200 feet northwest of the intersection on SR 166, 900 feet northeast of the intersection on SR 166/SR 92/SR 154, and 900 feet south of the intersection on SR 92/SR 154. The total project length would be approximately 2,700 feet along SR 92/SR 154.

The existing typical section consists of one through lane in each direction varying in width from twelve to twenty feet, with variable width unpaved shoulders within approximately 130 feet of right-of-way on all three of the approaches. The existing speed limit is 55 miles per hour (mph) on all three approaches.

The proposed project would consist of construction of a roundabout at the westbound SR 166 intersection with SR 92/SR 154. The majority of the proposed roundabout construction would be within the undeveloped triangle at the existing intersection. No right-of-way acquisition is currently anticipated. The speed limit would reduce to 35 mph on the approaches, and 20 mph through the roundabout.

Early in the project development, multiple concepts were evaluated to minimize impacts to environmental resources. These concepts included construction of a roundabout or signalized intersection. The survey area for environmental resources extended approximately 1,000 feet northwest of the intersection on SR 166, 1,250 feet northeast of the intersection on SR 166/SR 92/SR 154, and 1,050 feet south of the intersection on SR 92/SR 154.

This project lies within Flood Zone “AE” described as “Areas subject to flooding by the 1% annual chance flood – Base Flood Elevations determined” per FIRM Map No. 13097C0166D, dated August 18, 2009. This project does not appear to lie within 1 mile of a Biota Impaired Stream.

Federal Oversight: Full Oversight Exempt State Funded Other

MPO: N/A MPO - ARC
 MPO Project TIP # AR-118-2015

Regional Commission: N/A RC – Atlanta Regional Commission

Congressional District(s): 13

Projected Traffic AADT:

	Current Year 2012	Open Year 2016	Design Year 2036
SR 70/SR 92/SR 154	12,600	13,220	16,780
SR 166/Duncan Memorial Hwy	8,470	8,880	11,280

Functional Classification (SR 70/SR 92/SR 154): Urban Minor Arterial Street
(SR 166): Urban Minor Arterial Street

Is this project on a designated bike route? No YES

Is this project located on a pedestrian plan? No YES

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

CONTEXT SENSITIVE SOLUTIONS

Issues of Concern: Potential Historic Properties; Native American burial grounds, Civil War artifacts and ecological resources.

Context Sensitive Solutions: Roundabout approaches will be constructed within the existing right-of-way to minimize impacts to potential historic and archeological areas.

DESIGN AND STRUCTURAL DATA

Mainline Design Features:

Roadway Name/Identification: SR 70/SR 92/SR 154/Campbellton Fairburn Road

Feature	Existing	Standard*	Proposed
Typical Section			
- Number of Lanes	2	N/A	One circular lane within roundabout
- Lane Width(s)	12 ft.	11-12 ft. min	12 ft. lanes, 20' circular lane within roundabout
- Median Width & Type	N/A	N/A	Splitter Islands vary 4-32'
- Outside Shoulder Width & Type	0-2 ft. paved, 0-6 ft. grassed	6.5 ft. paved, 3.5 ft. grassed, 10-16 ft. Urban	6.5 ft. paved, 3.5 ft. grassed, 16 ft. Urban
- Outside Shoulder Slope	2:1 Max	2:1 Max	2:1 Max
- Inside Shoulder Width & Type	N/A	N/A	18' truck apron with type 9 header curb and type 7 header curb within roundabout
- Sidewalks	N/A	N/A	5-10 ft.
- Auxiliary Lanes	13 ft.	11 ft. Min.	12 ft.
- Bike Lanes	N/A	4.0 ft. paved	4.0 ft. paved
Posted Speed	55 mph		35 mph, 20 mph at roundabout
Design Speed Roadway Approach	55 mph		35 mph
Design Speed Roundabout	N/A		20 mph
Min Horizontal Curve Radius	2100 ft.	371 ft. Min	400 ft.
Superelevation Rate	2% Max	4% Max	4% Max
Grade	2% Max	4% Max	4% Max
Access Control	Permit		Permit
Right-of-Way Width	130 ft.		130 ft.
Maximum Grade – Crossroad	3%	4% Max	4% Max
Design Vehicle	WB-67	WB-67	WB-67

Sideroad Design Features:

Roadway Name/Identification: SR 166/Duncan Memorial Highway

Feature	Existing	Standard*	Proposed
Typical Section			
- Number of Lanes	2	N/A	One circular lane within roundabout
- Lane Width(s)	12 ft.	10 ft. min	12 ft. lanes, 20' circular lane within roundabout
- Median Width & Type	N/A	N/A	Splitter Islands vary 4-32.5'
- Outside Shoulder Width & Type	0 ft. paved, 0-2 ft. grassed	2 ft. paved 6 ft. grassed 10-16 ft. Urban	6.5 ft. paved 3.5 ft. grassed 10-16 ft. Urban
- Outside Shoulder Slope	2:1 Max	2:1 Max	2:1 Max
- Inside Shoulder Width & Type	N/A	N/A	18' truck apron with type 9 header curb and type 7 header curb within roundabout
- Sidewalks	N/A	N/A	5-10 ft.
- Auxiliary Lanes	N/A	11 ft. Min.	12 ft.
- Bike Lanes	N/A	N/A	4'
Posted Speed	55 mph		35 mph, 20 mph at roundabout
Design Speed Roadway Approach	55 mph		55 mph
Design Speed Roundabout	N/A		20 mph
Min Horizontal Curve Radius	N/A	912 ft. Min	1190 ft.
Superelevation Rate	2% Max	4% Max	4% Max
Grade	2% Max	4% Max	4% Max
Access Control	Permit		Permit
Right-of-Way Width	130 ft.	N/A	130 ft.
Design Vehicle	WB-67	WB-67	WB-67

*According to current GDOT design policy if applicable

Major Structures: N/A

Major Interchanges/Intersections: SR 70/SR 92/SR 154/Campbellton-Fairburn Road at SR 166/Duncan Memorial Highway

Utility Involvements: Telephone, Power, Gas, Water, Cable

Public Interest Determination Policy and Procedure recommended (Utilities)? YES NO

SUE Required: Yes No

Railroad Involvement: N/A

Right-of-Way:

Required Right-of-Way anticipated: YES NO Undetermined
 Easements anticipated: Temporary Permanent Utility Other

Anticipated number of impacted parcels:	0
Anticipated number of displacements (Total):	0
Businesses:	0
Residences:	0
Other:	0

Location and Design approval: Not Required Required

Off-site Detours Anticipated: No Yes Undetermined

Transportation Management Plan Anticipated: YES NO

Design Exceptions to FHWA/AASHTO controlling criteria anticipated:

FHWA/AASHTO Controlling Criteria	YES	NO	Undetermined
1. Design Speed	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Lane Width	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Shoulder Width	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Bridge Width	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Horizontal Alignment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6. Superelevation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7. Vertical Alignment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
8. Grade	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
9. Stopping Sight Distance	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
10. Cross Slope	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
11. Vertical Clearance	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
12. Lateral Offset to Obstruction	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
13. Bridge Structural Capacity	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Design Variances to GDOT standard criteria anticipated:

GDOT Standard Criteria	Reviewing Office	YES	NO	Undetermined
1. Access Control - Median Opening Spacing	DP&S	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Median Usage & Width	DP&S	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Intersection Skew Angle	DP&S	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Lateral Offset to Obstruction	DP&S	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Intersection Sight Distance	DP&S	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6. Bike & Pedestrian Accommodations	DP&S	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7. GDOT Drainage Manual	DP&S	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
8. Georgia Standard Drawings	DP&S	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
9. GDOT Bridge & Structural Manual	Bridge Design	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
10. Roundabout Illumination - (if applicable)	DP&S	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
11. Rumble Strips/Safety Edge	DP&S	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

VE Study anticipated: No Yes Completed – Date:

ENVIRONMENTAL DATA

Anticipated Environmental Document:

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

Air Quality:

Is the project located in a PM 2.5 Non-attainment area? No Yes
 Is the project located in an Ozone Non-attainment area? No Yes

The project is exempt from the conforming plan because the purpose of the project is to mitigate risk, improve operational efficiency, and reduce crashes at the intersection.

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

Environmental Permits/Variations/Commitments/Coordination anticipated:

Permit/ Variance/ Commitment/ Coordination Anticipated	YES	NO	Remarks
1. U.S. Coast Guard Permit	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
2. Forest Service/Corps Land	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
3. CWA Section 404 Permit	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
4. Tennessee Valley Authority Permit	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
5. Buffer Variance	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
6. Coastal Zone Management Coordination	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
7. NPDES	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

8. FEMA	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
9. Cemetery Permit	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
10. Other Permits	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
11. Other Commitments	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
12. Other Coordination	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Is a PAR required? No Yes Completed – Date:

NEPA/GEPA: A categorical exclusion will be required. A public meeting will likely be required.

Ecology: An ecological study and report will be required.

History: Historic properties have been identified within the proposed project area.

Archeology: Native American Burial Grounds and Civil War artifact sites have been identified within the proposed project area.

Air & Noise: An air quality analysis will be required.

Public Involvement: A public meeting will likely be required due to the public controversy associated with the roundabout in the project design.

Major stakeholders: The traveling public is a major stakeholder.

ROUNDABOUTS

Lighting agreement/commitment letter received: No Yes

Planning Level Assessment: A roundabout intersection is recommended at the SR 70/SR 92/SR 154 and SR 166 intersection based on traffic operations. The intersection does not meet traffic signal warrants based on projected Year 2036 Design Year traffic volumes.

Feasibility Study: N/A

Peer Review required: No Yes Completed – Date: 4/11/2013

CONSTRUCTION

Issues potentially affecting constructability/construction schedule: Coordination on archeological sites.

Early Completion Incentives recommended for consideration: No Yes

PROJECT RESPONSIBILITIES

Project Activities:

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

Lighting required: No Yes

GDOT will be responsible for the lighting installation and Douglas County will be responsible for the future operations and maintenance. The lighting agreement will be attached to this concept report.

Initial Concept Meeting: N/A

Concept Meeting: Held on September 12, 2013

Other projects in the area:

- PI # M004270 – SR 92 from CR 2043/South Fulton Pkwy to Douglas County Line – Resurfacing of SR 92
- PI # 0002101 – SR 70; SR 154; SR 166; CR 4797 & CR 4798 – Enhanced Recovery Area

Other coordination to date: N/A

Project Cost Estimate and Funding Responsibilities:

	Breakdown of PE	ROW	Reimbursable Utility	CST*	Environmental Mitigation	Total Cost
By Whom	GDOT/Consultant	GDOT	GDOT	GDOT	N/A	
\$ Amount	\$428,590	\$0	\$0	\$2,357,110		\$2,785,700
Date of Estimate	3/20/2012		10/8/2013	2/3/2014		

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

ALTERNATIVES DISCUSSION

Preferred Alternative: Roundabout			
Estimated Property Impacts:	0	Estimated Total Cost:	\$2,785,700
Estimated ROW Cost:	\$0	Estimated CST Time:	12-15 months
<p>Rationale: This alternative is anticipated to reduce crash frequency and severity while improving the intersection to a LOS A/A for the opening year and LOS B/A for the design year (AM/PM Peak) (Table 2 in the Capacity Analysis Summary). This roundabout is anticipated to improve operations at the intersection by reducing the overall number of conflict points from thirty-two to eight (a reduction of 75%) which includes reducing the crossing conflict points from sixteen to zero and the merge and diverge conflict points from sixteen to eight. A roundabout with the left-offset method would also reduce the operating speed at the intersection, allowing the drivers more time to react to potential conflicts and reduce crash severity. Based on FHWA’s <i>Roundabouts A Safer Choice</i> publication, in general roundabouts reduce fatalities by more than 90%*, reduce injuries by 76%** , reduce crashes by 35%** , and makes the intersection safer for pedestrians due to the slower speeds. Due to the greater LOS, improved operations and reduced total estimated cost when compared to a signalized intersection, the roundabout is considered the preferred alternative.</p>			

* "Safety Effect of Roundabout Conversions in the United States: Empirical Bayes Observational Before-After Study." Transportation Research Record 1751, Transportation Research Board (TRB), National Academy of Sciences (NAS), Washington, D.C., 2001.

** NCHRP Report 572: Roundabouts in the United States. National Cooperative Highway Research Program, TRB, NAS, Washington, D.C., 2007.

Alternative # 1: No Build				
Estimated Property Impacts:	0	Estimated Total Cost:	\$0	
Estimated ROW Cost:	\$0	Estimated CST Time:	0	
<p>Rationale: From 2007 to 2009, 21 crashes occurred along SR 70/SR 92/SR 154 and SR 166 (See Table 1 in the Crash Analysis Summary). From 2007 to 2012, 39 crashes occurred at the intersection (See Table 3 in the Crash Analysis Summary) with 20 of those crashes having been injury crashes.</p> <p>For the existing and no-build conditions, the HCM determines LOS for the whole intersection by computing the control delay at the intersection. The results of the capacity analysis for the no-build existing and anticipated future conditions are summarized in Table 1.</p>				
Table 1. Existing and No-Build Anticipated Future Level of Service				
Intersection	Traffic Control	Level of Service (AM/PM)		
		2012	2016 No-Build	2036 No-Build
SR 166/Duncan Memorial Hwy at SR 70/SR 92/SR 154	Divided Intersection/Stop Control in all directions	B/C	C/C	C/E
<p>This alternative would not reduce crash frequency and severity at this intersection nor would it improve the LOS. Therefore this alternative was not considered a viable alternative for the project.</p>				

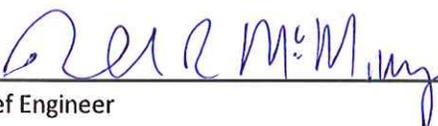
Alternative # 2: Signalized Intersection			
Estimated Property Impacts:	3	Estimated Total Cost:	\$3,000,000
Estimated ROW Cost:	\$300,000	Estimated CST Time:	18 months
Rationale:			

Attachments:

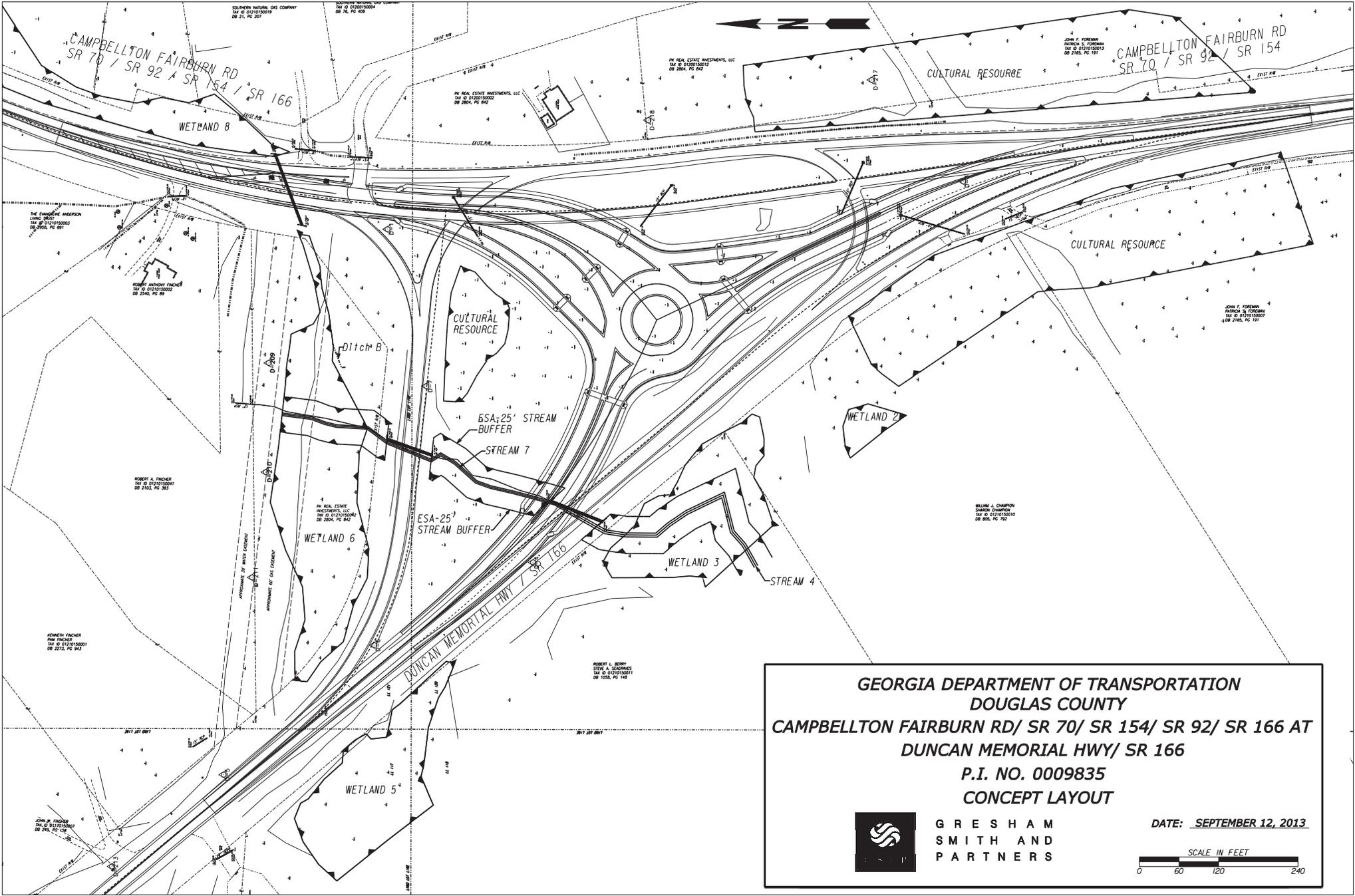
1. Concept Layout
2. Typical sections
3. Detailed Cost Estimates:
 - a. Construction including Engineering and Inspection
 - b. Completed Fuel & Asphalt Price Adjustment forms
 - c. Right-of-Way – N/A
 - d. Utilities
 - e. Environmental Mitigation (EPD, etc) – N/A
4. Crash Analysis
5. Indication of Roundabout Support – Douglas County
6. Traffic diagrams
7. Capacity Analysis Summary – Part of TE report
8. TE Report
9. Roundabout Data
 - a. Roundabout design vehicle turning paths
 - b. Roundabout fastest path analyses
 - c. Peer Review and responses – *Teleconference meetings held on 4/11/13 and 4/16/13. Minutes attached.*
10. Minutes of Concept meetings

APPROVALS

Concur: 
Director of Engineering

Approve: 
Chief Engineer

2/20/14
Date



GEORGIA DEPARTMENT OF TRANSPORTATION
DOUGLAS COUNTY
CAMPBELLTON FAIRBURN RD/ SR 70/ SR 154/ SR 92/ SR 166 AT
DUNCAN MEMORIAL HWY/ SR 166
P.I. NO. 0009835
CONCEPT LAYOUT

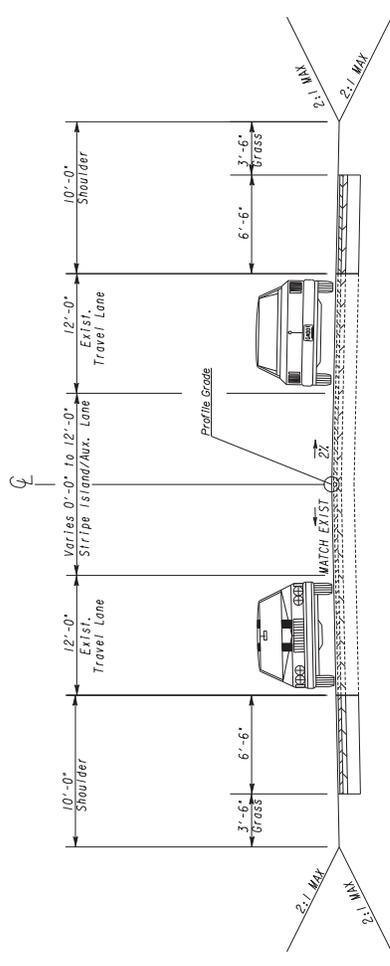


**GRESHAM
SMITH AND
PARTNERS**

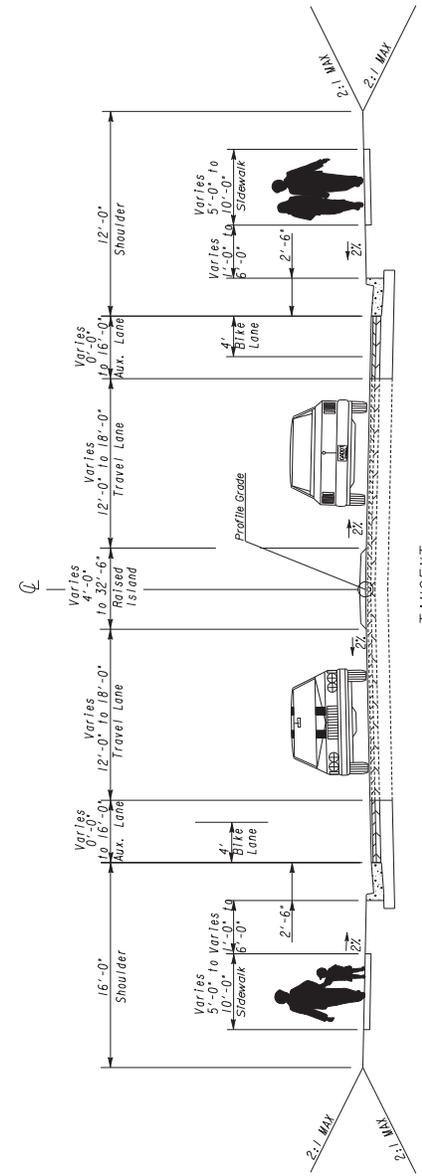
DATE: SEPTEMBER 12, 2013

SCALE IN FEET



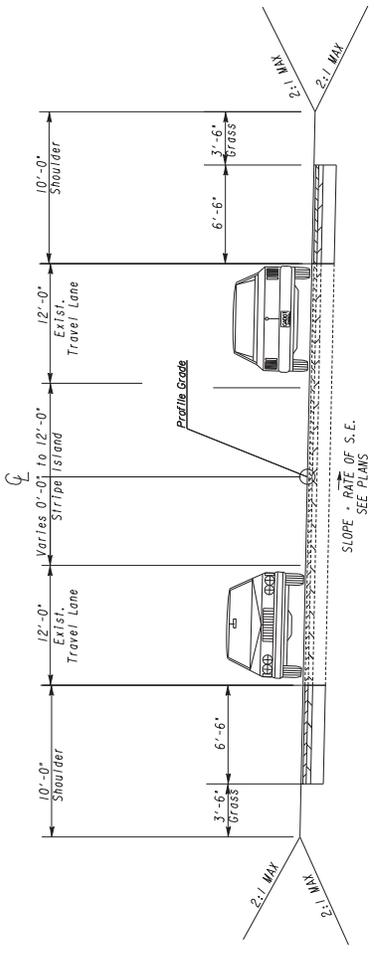


TANGENT RURAL SHOULDER SECTION

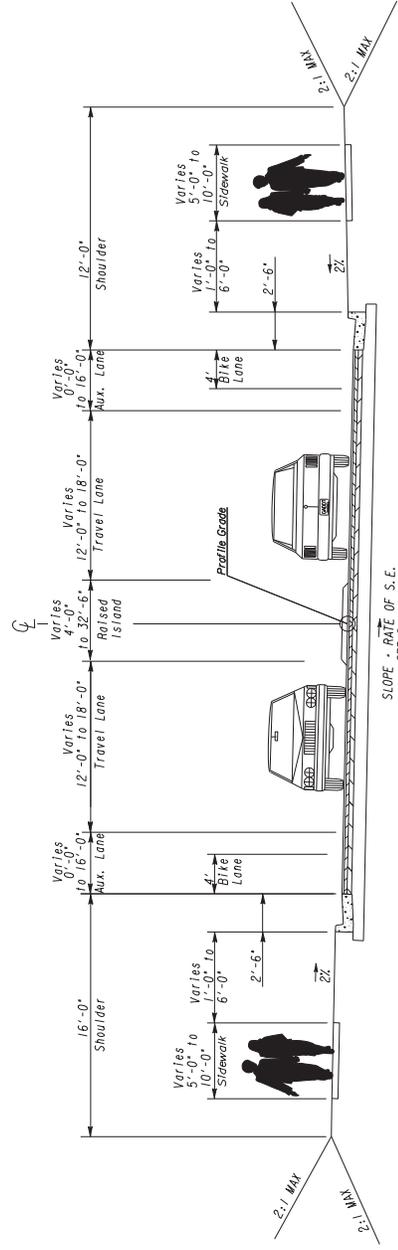


TANGENT URBAN SHOULDER SECTION

STATE GA		PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
01:08:540 [P]11:00096315 [Q]0009337775.0P				
4:36:31 PM [P]07-18 [P]07-18 [P]07-18				
01:08:540 [P]11:00096315 [Q]0009337775.0P				
GRESHAM SMITH AND PARTNERS		NOT TO SCALE		
		STATE OF GEORGIA DEPARTMENT OF TRANSPORTATION OFFICE:		
TYPICAL SECTIONS SR 166/DUNCAN MEMORIAL HIGHWAY @ SR 70/SR 92/SR 154/CAMPBELLTON FARM/BUCKLE ROAD 05-01		REVISION DATES COUNTY: DOUGLAS		



SUPERELEVATED RURAL SHOULDER SECTION



SUPERELEVATED URBAN SHOULDER SECTION

STATE GA		PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
REVISION DATES		STATE OF GEORGIA DEPARTMENT OF TRANSPORTATION		
OFFICE:		TYPICAL SECTIONS		
SR 166/DUNCAN MEMORIAL HIGHWAY @		SR 70/SR 92/SR 154/CAMPBELLTON FARM/JOHN ROAD		
COUNTY: DOUGLAS		05-02		



NOT TO SCALE

DETAILED COST ESTIMATE



Job: 0009835

JOB NUMBER 0009835

FED/STATE PROJECT NUMBER

SPEC YEAR: 01

DESCRIPTION: SR 70/92/154 AT SR 166

ITEMS FOR JOB 0009835

10 - ROADWAY

Line Number	ITEM	QUANTITY	UNITS	PRICE	DESCRIPTION	AMOUNT
0220	009-2000	1.000	LS	\$15,000.00000	LANDSCAPING WITH IRRIGATION	\$15,000.00
0010	150-1000	1.000	LS	\$50,000.00000	TRAFFIC CONTROL - TRAFFIC CONTROL FOR 0009835	\$50,000.00
0005	153-1300	1.000	EA	\$70,053.14846	FIELD ENGINEERS OFFICE TP 3	\$70,053.15
0015	210-0100	1.000	LS	\$150,000.00000	GRADING COMPLETE - GRADING COMPLETE FOR PI 0009835	\$150,000.00
0020	310-5100	10710.000	SY	\$17.69902	GR AGGR BS CRS 10IN INCL MATL	\$189,556.50
0025	318-3000	300.000	TN	\$18.90866	AGGR SURF CRS	\$5,672.60
0045	402-1812	1000.000	TN	\$89.30265	RECYL AC LEVELING,INC BM&HL	\$89,302.65
0040	402-3121	2360.000	TN	\$68.68925	RECYL AC 25MM SP,GP1/2,BM&HL	\$162,106.63
0030	402-3130	1520.000	TN	\$79.19476	RECYL AC 12.5MM SP,GP2,BM&HL	\$120,376.04
0035	402-3190	1180.000	TN	\$73.21507	RECYL AC 19 MM SP,GP 1 OR 2 ,INC BM&HL	\$86,393.78
0050	413-1000	1130.000	GL	\$2.54196	BITUM TACK COAT	\$2,872.41
0055	432-5010	7730.000	SY	\$4.31260	MILL ASPH CONC PVMT,VARB DEPTH	\$33,336.40
0060	441-0104	990.000	SY	\$27.65784	CONC SIDEWALK, 4 IN	\$27,381.26
0065	441-0748	750.000	SY	\$35.61377	CONC MEDIAN, 6 IN	\$26,710.33
0075	441-4020	20.000	SY	\$39.90940	CONC VALLEY GUTTER, 6 IN	\$798.19
0215	441-5008	350.000	LF	\$11.03069	CONC HEADER CURB, 6 IN, TP 7	\$3,860.74
0070	441-6022	2680.000	LF	\$13.89474	CONC CURB & GUTTER, 6"X30"TP2	\$37,237.90
0080	446-1100	1500.000	LF	\$5.04680	PVMT REF FAB STRIPS, TP2,18 INCH WIDTH	\$7,570.20
0210	500-3101	1350.000	CY	\$445.24942	CLASS A CONCRETE 31336-RED	\$601,086.72
0115	634-1200	20.000	EA	\$101.94283	RIGHT OF WAY MARKERS	\$2,038.86
0120	643-8200	1000.000	LF	\$1.20540	BARRIER FENCE (ORANGE), 4 FT	\$1,205.40
SUBTOTAL FOR ROADWAY:						\$1,682,559.76

20 - DRAINAGE

Line Number	ITEM	QUANTITY	UNITS	PRICE	DESCRIPTION	AMOUNT
0110	207-0203	200.000	CY	\$45.97515	FOUND BKFFILL MATL, TP II	\$9,195.03
0085	550-1180	1800.000	LF	\$42.09095	STM DR PIPE 18",H 1-10	\$75,763.71
0105	550-4218	2.000	EA	\$480.20966	FLARED END SECT 18 IN, ST DR	\$960.42
0090	668-1100	9.000	EA	\$2,047.15267	CATCH BASIN, GP 1	\$18,424.37
0095	668-2100	2.000	EA	\$1,896.22000	DROP INLET, GP 1	\$3,792.44
0100	668-4300	3.000	EA	\$1,816.69843	STORM SEW MANHOLE, TP 1	\$5,450.10
0135	668-4300	3.000	EA	\$1,816.69843	STORM SEW MANHOLE, TP 1	\$5,450.10
SUBTOTAL FOR DRAINAGE:						\$119,036.17

DETAILED COST ESTIMATE



Job: 0009835

30 - SIGNING AND MARKING

Line Number	ITEM	QUANTITY	UNITS	PRICE	DESCRIPTION	AMOUNT
0145	636-1033	1000.000	SF	\$13.94518	HWY SIGNS, TP1MAT,REFL SH TP 9	\$13,945.18
0140	636-2080	100.000	LF	\$9.97858	GALV STEEL POSTS, TP 8	\$997.86
0125	653-1501	8300.000	LF	\$0.39631	THERMO SOLID TRAF ST 5 IN, WHI	\$3,289.37
0130	653-1502	8300.000	LF	\$0.37042	THERMO SOLID TRAF ST, 5 IN YEL	\$3,074.49
SUBTOTAL FOR SIGNING AND MARKING:						\$21,306.90

40 - EROSION CONTROL

Line Number	ITEM	QUANTITY	UNITS	PRICE	DESCRIPTION	AMOUNT
0180	163-0232	5.000	AC	\$287.80027	TEMPORARY GRASSING	\$1,439.00
0185	163-0240	300.000	TN	\$154.18188	MULCH	\$46,254.56
0170	163-0300	4.000	EA	\$1,202.18554	CONSTRUCTION EXIT	\$4,808.74
0155	163-0550	12.000	EA	\$129.24793	CONS & REM INLET SEDIMENT TRAP	\$1,550.98
0160	165-0010	5000.000	LF	\$0.51159	MAINT OF TEMP SILT FENCE, TP A	\$2,557.95
0150	165-0105	12.000	EA	\$37.15606	MAINT OF INLET SEDIMENT TRAP	\$445.87
0200	167-1000	2.000	EA	\$145.40130	WATER QUALITY MONITORING AND SAMPLING	\$290.80
0205	167-1500	18.000	MO	\$443.56063	WATER QUALITY INSPECTIONS	\$7,984.09
0165	171-0010	10000.000	LF	\$1.69422	TEMPORARY SILT FENCE, TYPE A	\$16,942.20
0175	700-6910	10.000	AC	\$816.72899	PERMANENT GRASSING	\$8,167.29
0190	700-7000	50.000	TN	\$114.25953	AGRICULTURAL LIME	\$5,712.98
0195	700-8000	200.000	TN	\$542.30086	FERTILIZER MIXED GRADE	\$108,460.17
SUBTOTAL FOR EROSION CONTROL:						\$204,614.63

50 - LIGHTING

Line Number	ITEM	QUANTITY	UNITS	PRICE	DESCRIPTION	AMOUNT
0225	500-3101	21.000	CY	\$566.86103	CLASS A CONCRETE	\$11,904.08
0230	511-1000	4200.000	LB	\$1.93487	BAR REINF STEEL	\$8,126.45
0235	615-1100	300.000	LF	\$46.33421	DIRECTIONAL BORE PIPE - LIGHTING FOR 0009835	\$13,900.26
0240	647-2130	5.000	EA	\$96.70488	PULL BOX, PB-3	\$483.52
0245	647-2140	1.000	EA	\$887.25809	PULL BOX, PB-4	\$887.26
0250	681-4120	8.000	EA	\$1,658.00000	LT STD, 12' MH, POST TOP	\$13,264.00
0255	681-4220	13.000	EA	\$2,750.00000	LT STD, 40' MH, POST TOP	\$35,750.00
0260	681-6220	7.000	EA	\$50.00000	LUMINAIRE, TP 2, 150W,HP SODIUM	\$350.00
0265	681-6346	10.000	EA	\$862.61590	LUMINAIRE, TP 3, 250W,HP SODIUM	\$8,626.16
0270	681-6366	4.000	EA	\$50.00000	LUMINAIRE, TP 3, 400W,HP SODIUM	\$200.00
0275	682-1504	10000.000	LF	\$0.95889	CABLE, TP RHH/RHW, AWG NO 10	\$9,588.90
0280	682-1505	948.000	LF	\$1.00000	CABLE, TP RHH/RHW, AWG NO 8	\$948.00
0285	682-6219	2400.000	LF	\$5.73581	CONDUIT, NONMETL, TP 2, 1 IN	\$13,765.94
0290	939-5010	1.000	EA	\$1,569.19139	ELEC PWR SVC ASSEMBLY,AERIAL SVC POINT	\$1,569.19
SUBTOTAL FOR LIGHTING:						\$119,363.76

TOTALS FOR JOB 0009835

DETAILED COST ESTIMATE



Job: 0009835

ITEMS COST:	\$2,146,881.22
COST GROUP COST:	\$0.00
ESTIMATED COST:	\$2,254,225.28
CONTINGENCY PERCENT:	0.00
ENGINEERING AND INSPECTION:	0.00
ESTIMATED COST WITH CONTINGENCY AND E&I:	\$2,254,225.28

Concept Utility Report

Project Number: n/a

District: 7

County: Douglas

Prepared by: Yulonda Pride-Foster

P.I. # 0009835

Date: 10/08/13

Project Description: SR 166 @ SR 92/SR 154

The information provided herein has been gathered from Georgia811 and/or field visits and serves as an estimate. Nothing contained in this report is to be used as a substitute for 1st Submission or SUE.

Are SUE services recommended? No Level: A B C D

Public Interest Determination (PID): Automatic Mandatory Consideration
 No Use Exempt

Is a separate utility funding phase recommended? No

Existing Facilities: Yes

Potential Project (Schedule/Budget) Impacts: None

Capital Improvement Projects (Utilities) Anticipated in the Area: Yes

Project Specific Recommendations for Avoidance/Mitigation: N

Right of Way Coordination: Austell Gas - Will the property remain GDOT's? And can they get an easement for their gas main in case the property is released from GDOT?

Environmental Coordination: Austell Gas- Main should be on the shoulder on the north side of the west bound lane of HWY 166, where stream #7 crosses, and it is a "one way" feed to customers on HWY 166 and a subdivision off of the highway. They need to make sure they can have access to this line and maintain the gas main in the future.

Additional Remarks: GreyStone needs to review lighting plans for potential conflict when available.

Please send a DGN copy of the current plans to request 1st & 2nd Utility Submission.

The following utilities have facilities within the project limits. Utilities have been located using Georgia811 and/or field visits.

UTILITY OWNER	DESCRIPTION OF FACILITIES
Atlanta Gas Light Company	AGL does not have any facilities in the project area or any immediate plans to install facilities there.
AT&T / BellSouth	AT&T has 1 buried 25 pair cable, 1 buried 200 pair cable along SR92 and 1 buried cable along SR166. They will be relocated to power company poles. AT&T has very minimal facilities in this corridor.
City of Atlanta Water	No comments at this time.
Austell Gas Company	<p>No conflicts with the gas lines unless the grade should change or the drainage changes.</p> <p>On the north end of the project, on the east side of Hwy 92/166, we have a Gate Station that is adjacent to the property shown on the plan sheet as Southern Natural Gas Company's property. This is just north of the driveways that show to be connected in the project. We have a high pressure 12" gas main that comes from the Gate Station and runs near the back of the ROW on the east side of Hwy 92/166 from the Southern Natural Gas property, north and past the project's end. This main is a <u>major feed</u> to our System from Southern Natural/El Paso/Kinder Morgan's pipeline.</p> <p>Low pressure 4" (plastic) main that crosses the ROW in front of the Southern Natural Gas property and runs (north and south) parallel with Hwy 92/166 on the west side and along the Hwy. it runs south until it turns along with west bound lane of Hwy 166. The 4" main runs along the north side of west bound lane of Hwy. 166 past the end of the project.</p> <p>1" steel service line that serves 2 or 3 houses on the east side of the project that is just south of the Southern Natural Gas property (it will be crossing the two driveways near where the plan shows work to be done for the driveway merge. This may be a steel line that has been inserted with a (plastic) service line.</p> <p>¾" steel service line to the house on the north end of the project, on the west side of Hwy. 92/166.</p>
Comcast Communications	No comments at this time.
Douglasville-Douglas County Water & Sewer Authority	No known conflicts at this time.
Fulton County Sewer	No comments at this time.
GreyStone Power Corporation	One guy pole to be relocated located within the proposed islands.
Southern Natural Gas	No comments at this time.
Douglas County Schools	Douglas County Schools Fiber does not run out this far at this point.
Georgia Power Distribution	No Facilities within the project limits.

PROJ. NO.

CSSFT-0009-00(835)

CALL NO.

P.I. NO.

0009835

DATE

1/20/2014

INDEX (TYPE)

REG. UNLEADED

Jan-14

\$ 3.240

DIESEL

\$ 3.828

LIQUID AC

\$ 557.00

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)

101262.6

\$

101,262.60

Monthly Asphalt Cement Price month placed (APM)

Max. Cap

60%

\$ 891.20

Monthly Asphalt Cement Price month project let (APL)

\$ 557.00

Total Monthly Tonnage of asphalt cement (TMT)

303

ASPHALT	Tons	%AC	AC ton
Leveling	1000	5.0%	50
12.5 OGFC	0	5.0%	0
12.5 mm	1520	5.0%	76
9.5 mm SP	0	5.0%	0
25 mm SP	2360	5.0%	118
19 mm SP	1180	5.0%	59
	6060		303

BITUMINOUS TACK COAT

Price Adjustment (PA)

\$ 1,622.03

\$

1,622.03

Monthly Asphalt Cement Price month placed (APM)

Max. Cap

60%

\$ 891.20

Monthly Asphalt Cement Price month project let (APL)

\$ 557.00

Total Monthly Tonnage of asphalt cement (TMT)

4.853464042

Bitum Tack

Gals	gals/ton	tons
1130	232.8234	4.85346404

PROJ. NO.

CSSFT-0009-00(835)

CALL NO.

P.I. NO.

0009835

DATE

1/20/2014

BITUMINOUS TACK COAT (surface treatment)

Price Adjustment (PA)						0	\$	-
Monthly Asphalt Cement Price month placed (APM)		Max. Cap	60%	\$	891.20			
Monthly Asphalt Cement Price month project let (APL)				\$	557.00			
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							\$	102,884.63
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SR 166

Year	Manner of Collision						Total Crashes	Type of Accident		
	Angle	Head On	Rear End	Sideswipe - Same Direction	Sideswipe - Opposite Direction	Not a Collision With a Motor Vehicle		PDO	Injury	Fatal
2007	0	0	1	0	0	2	3	3	0	0
2008	1	0	0	0	0	0	1	0	1	0
2009	0	0	0	0	0	0	0	0	0	0
Total	1	0	1	0	0	2	4	3	1	0

Summary of Traffic Crash History along SR 166 in Douglas County

Milelogs: 14.58 to 15.08

Year	Accidents			Accidents Per 100 Million Vehicle Miles ¹		
	Total	Injury	Fatal	Total	Injury	Fatal
2007	3	0	0	222 (514)	0 (126)	0.00 (1.34)
2008	1	1	0	74 (471)	74 (116)	0.00 (1.33)
2009	0	0	0	0 (463)	0 (114)	0.00 (1.05)
Total	4	1	0			
Average	1	0	0	74 (483)	0 (119)	0.00 (1.24)

Urban Minor Arterial

Year	Crashes Per 100 Million Vehicle Miles (Statewide Average)		
	Total	Injury	Fatal
2007	514	126	1.34
2008	471	116	1.33
2009	463	114	1.05
Total			
Average	483	119	1.24

Note: (1) The number in parentheses represents the statewide average crash rates for Urban Minor Arterials

Length in Miles 0.50
 AADT 7,410

SR 92 & SR 166

Year	Manner of Collision						Total Crashes	Type of Accident		
	Angle	Head On	Rear End	Sideswipe - Same Direction	Sideswipe - Opposite Direction	Not a Collision With a Motor Vehicle		PDO	Injury	Fatal
2007	0	0	8	0	0	2	10	5	5	0
2008	0	0	2	0	0	0	2	2	0	0
2009	0	0	0	0	0	0	0	0	0	0
2010	4	0	1	0	0	2	7	4	3	0
2011	10	1	0	0	0	0	11	5	6	0
2012	4	4	0	0	0	1	9	3	6	0
Total	18	5	11	0	0	5	39	19	20	0
Percentage	46.2%	12.8%	28.2%	0.0%	0.0%	12.8%	100.0%	48.7%	51.3%	0.0%

SR 92 & SR 166 (0166) at MP 0.22

Year	Manner of Collision						Total Crashes	Type of Accident		
	Angle	Head On	Rear End	Sideswipe - Same Direction	Sideswipe - Opposite Direction	Not a Collision With a Motor Vehicle		PDO	Injury	Fatal
2007	0	0	2	0	0	1	3	1	2	0
2008	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0
Total	0	0	2	0	0	1	3	1	2	0
Percentage	0.0%	0.0%	66.7%	0.0%	0.0%	33.3%	7.7%	33.3%	66.7%	0.0%

SR 92 & SR 166 (0166WE) at MP 0.31

Year	Manner of Collision						Total Crashes	Type of Accident		
	Angle	Head On	Rear End	Sideswipe - Same Direction	Sideswipe - Opposite Direction	Not a Collision With a Motor Vehicle		PDO	Injury	Fatal
2007	0	0	6	0	0	1	7	4	3	0
2008	0	0	2	0	0	0	2	2	0	0
2009	0	0	0	0	0	0	0	0	0	0
Total	0	0	8	0	0	1	9	6	3	0
Percentage	0.0%	0.0%	88.9%	0.0%	0.0%	11.1%	23.1%	66.7%	33.3%	0.0%

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 Douglas County supports the consideration of a roundabout at the location specified below.

Local Street Names: _____ at _____

State/County Route Numbers: SR 166 at SR 92 / SR 154

Associated Conditions

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

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

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

This is the 7th day of December, 20 10

Attest:

Rose Watson
Clerk

By:

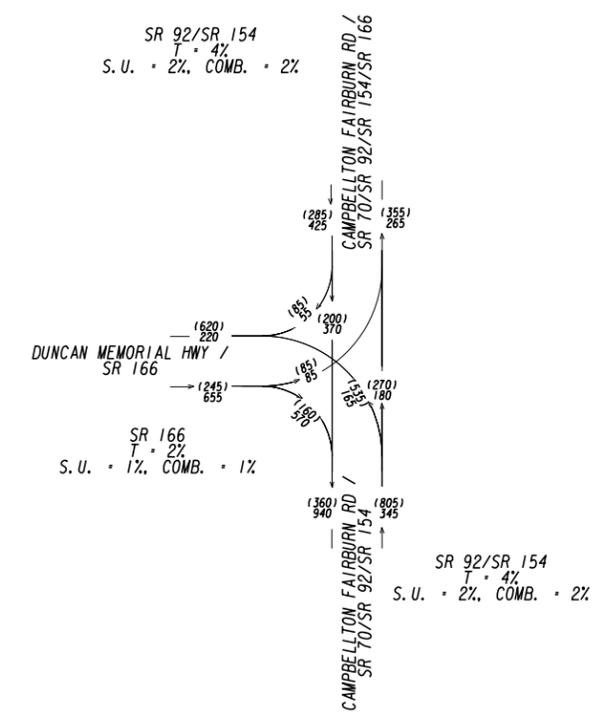
Don Leather

Title:

Chairman

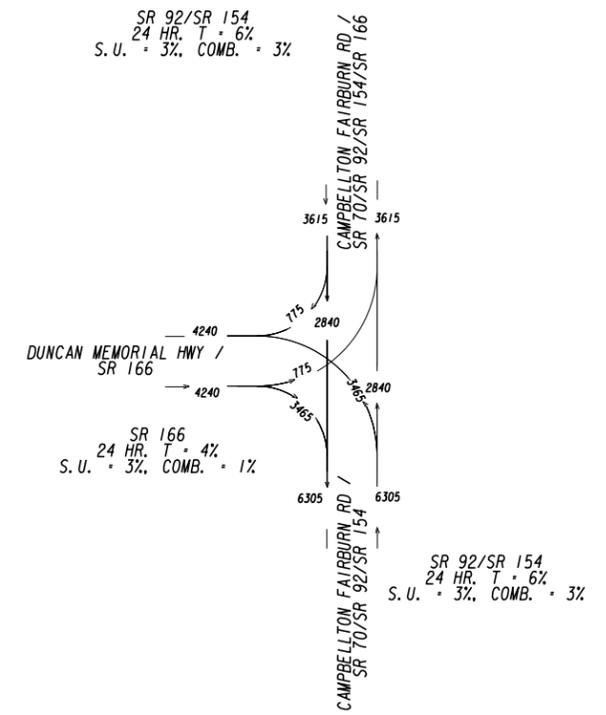


2012 EXISTING
AM AND PM PK HR
TRAFFIC VOLUMES



2012 PM DHV = (000)
2012 AM DHV = 000

2012 EXISTING
AADT TRAFFIC VOLUMES



2012 AADT = 000

P. I. NO: 0009835



GEORGIA
DEPARTMENT
OF
TRANSPORTATION

REVISION DATES		

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: PROGRAM DELIVERY

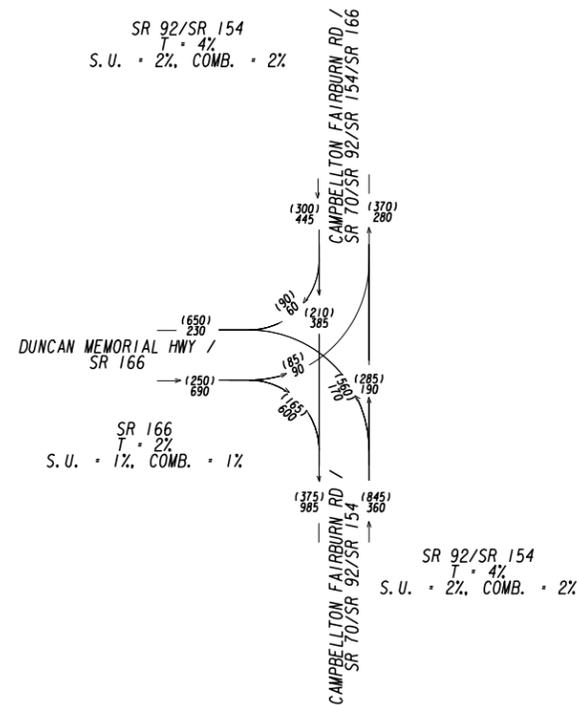
TRAFFIC DIAGRAM
SR 166 AT SR 92/SR 154

CSSTP-0009-00(835)
DOUGLAS COUNTY

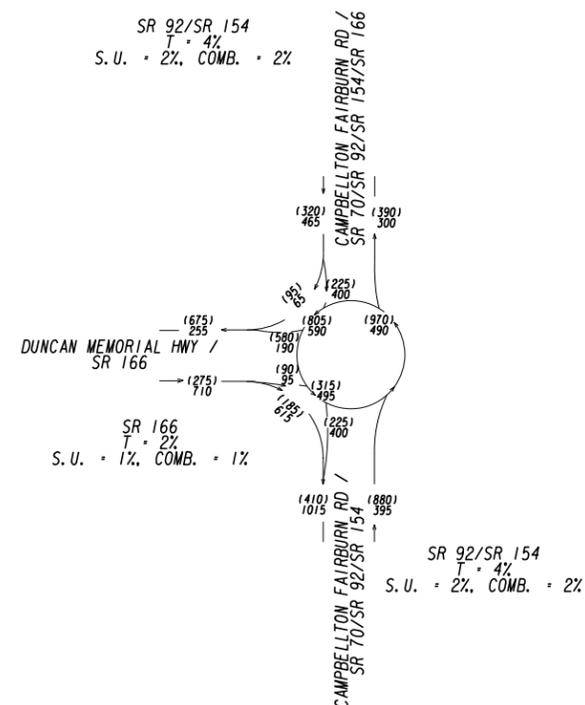
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2016 EXISTING
NO BUILD
AM AND PM PK HR
TRAFFIC VOLUMES



2016 EXISTING
BUILD
AM AND PM PK HR
TRAFFIC VOLUMES



P. I. NO: 0009835

2016 AM DHV = 000
2016 PM DHV = (000)



GRESHAM
SMITH AND
PARTNERS

GEORGIA
DEPARTMENT
OF
TRANSPORTATION

REVISION DATES		

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: PROGRAM DELIVERY

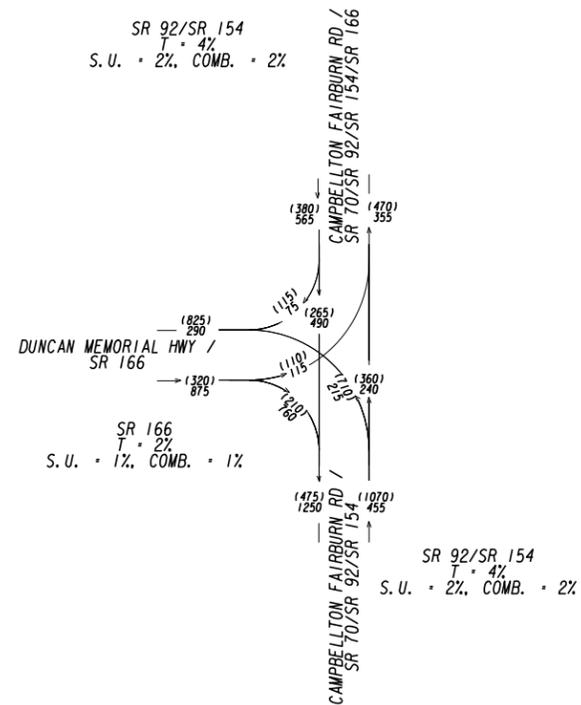
TRAFFIC DIAGRAM
SR 166 AT SR 92/SR 154

CSSTP-0009-00(835)
DOUGLAS COUNTY

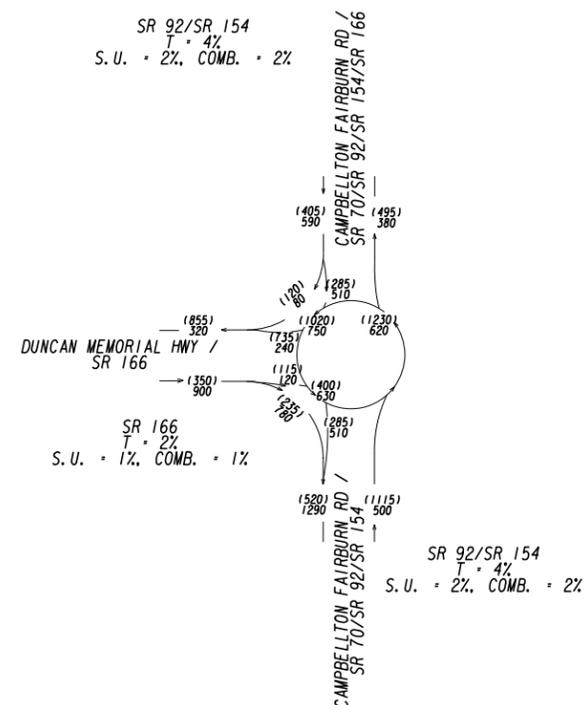
DRAWING No.
10-002



2036 EXISTING
NO BUILD
AM AND PM PK HR
TRAFFIC VOLUMES



2036 EXISTING
BUILD
AM AND PM PK HR
TRAFFIC VOLUMES



P. I. NO: 0009835

2036 AM DHV = 000
2036 PM DHV = (000)



GRESHAM
SMITH AND
PARTNERS

GEORGIA
DEPARTMENT
OF
TRANSPORTATION

REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: PROGRAM DELIVERY

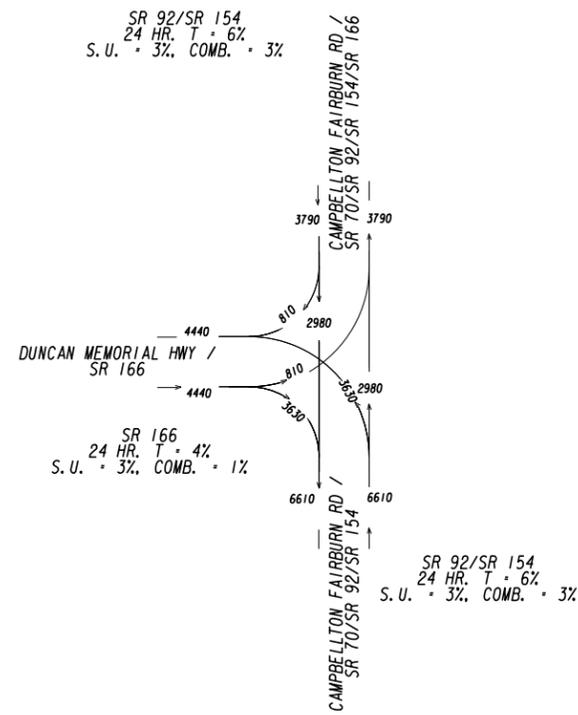
TRAFFIC DIAGRAM
SR 166 AT SR 92/SR 154

CSSTP-0009-00(835)
DOUGLAS COUNTY

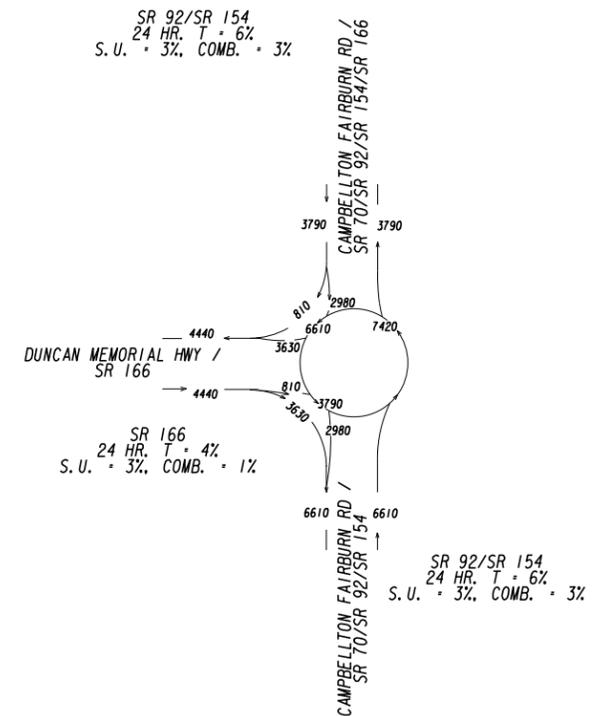
DRAWING No.
10-003



2016 EXISTING
NO BUILD
AADT TRAFFIC VOLUMES



2016 EXISTING
BUILD
AADT TRAFFIC VOLUMES



P. I. NO: 0009835

2016 AADT = 000



GRESHAM
SMITH AND
PARTNERS

GEORGIA
DEPARTMENT
OF
TRANSPORTATION

REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: PROGRAM DELIVERY

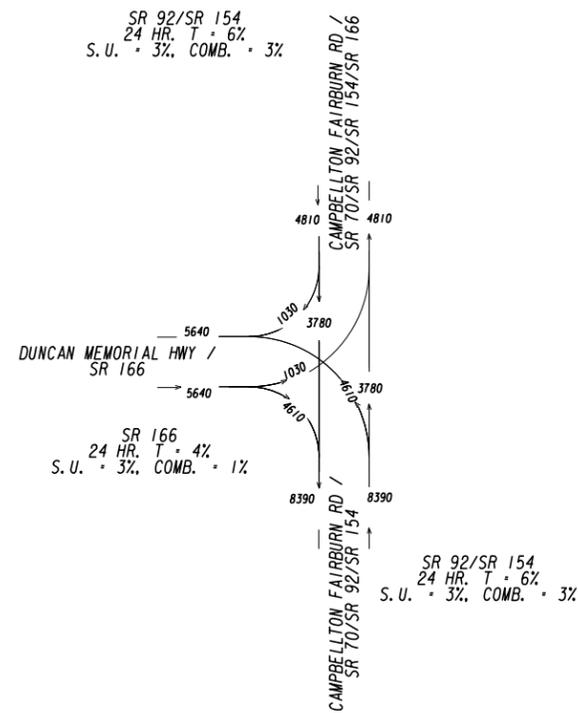
TRAFFIC DIAGRAM
SR 166 AT SR 92/SR 154

CSSTP-0009-00(835)
DOUGLAS COUNTY

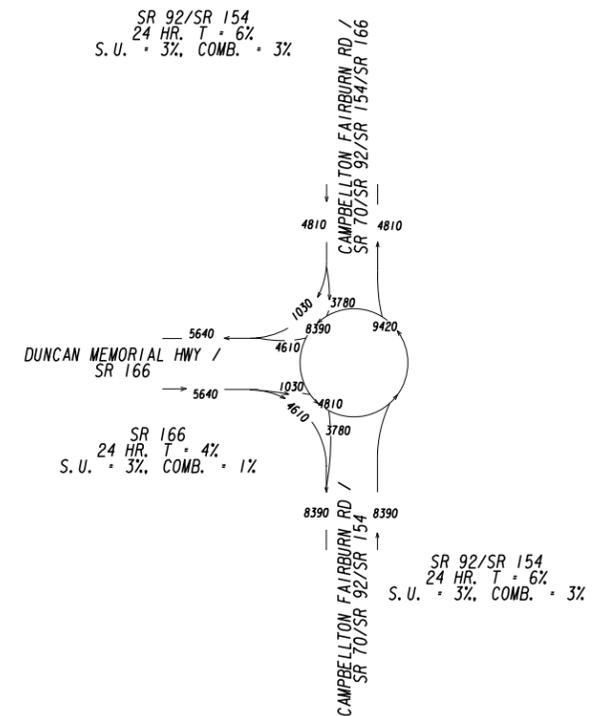
DRAWING No.
10-004



2036 EXISTING
NO BUILD
AADT TRAFFIC VOLUMES



2036 EXISTING
BUILD
AADT TRAFFIC VOLUMES



P. I. NO: 0009835

2036 AADT = 000



GRESHAM
SMITH AND
PARTNERS

GEORGIA
DEPARTMENT
OF
TRANSPORTATION

REVISION DATES	

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: PROGRAM DELIVERY
TRAFFIC DIAGRAM
SR 166 AT SR 92/SR 154
CSSTP-0009-00(835)
DOUGLAS COUNTY

DRAWING No.
10-005

DEPARTMENT OF TRANSPORTATION

STATE OF GEORGIA

TRAFFIC ENGINEERING REPORT

SR 70, 92, 154 & 166 @ SR 166, 166 WEST

Douglas County, Georgia

SR 70 @ SR 166 Milelog: 0.22

SR 70 @ SR 166 WEST Milelog : 0.31



Report prepared by:
Dwayne B. Maddox
District Traffic Operations Engineer
5025 New Peachtree Rd
Chamblee, Georgia 30341

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

Date prepared: 02/17/2011

LOCATION:

This study was conducted at the intersection of SR 70, 92, 154 & 166 @ SR 166 & 166 WEST in Douglas County.

REASON FOR INVESTIGATION:

This traffic study was requested by Douglas County.

DESCRIPTION OF THE INTERSECTION:

State Route 70, 92, 154 & 166 is a two lane roadway just north and south of this intersection. However at the intersection the 2 lanes are separated by a grass median approximately 1150 feet long and varying in width from approximately 5-50 feet. This roadway is classified as an Urban Minor Arterial and runs North/South in Douglas County. The current AADT is 12660. The nearest signalized intersection is 0.88 miles to the south and 3.47 miles to the north of this intersection.

SR 166 is a two lane roadway just west of this intersection. However at the intersection SR 166 is a single eastbound lane (on the southerly side of the intersection) for approximately 1200 feet. SR 166 is separated from SR 166 WEST by a grass median approximately 900 feet long and varying in width from approximately 10-620 feet. This roadway is classified as an Urban Minor Arterial and runs East/West in Douglas County. The nearest signalized intersection on SR 166 is more than 10 miles from this intersection.

SR 166 WEST is a single westbound lane (on the northerly side of the intersection, 0.16 miles in length) that connects SR 70, 92, 154 & 166 to SR 166. This roadway is classified as an Urban Minor Arterial and runs West in Douglas County. There are no signalized intersections located on SR 166 WEST.

EIGHT (8) HOUR TRAFFIC COUNT VOLUMES:

The tables below show the total volumes, movement and direction for the morning, mid-day and evening count periods.

SR 70, 92, 154 & 166								
TIME	NORTHBOUND				SOUTHBOUND			
	THRU	LEFT	RIGHT	PED'S	THRU	RIGHT	LEFT	PED'S
6:00AM-9:00AM	485	387	0	0	1012	150	0	0
11:00AM-1:00PM	292	229	0	0	262	62	0	0
3:30PM-6:30PM	926	1358	0	0	558	249	0	0
TOTAL	1703	1974	0	0	1832	461	0	0

SR 166 & 166 WEST								
TIME	EASTBOUND				WESTBOUND			
	THRU	LEFT	RIGHT	PED'S	THRU	RIGHT	LEFT	PED'S
6:00AM-9:00AM	9	277	1601	1	0	0	0	0
11:00AM-1:00PM	0	41	255	0	0	0	0	0
3:30PM-6:30PM	0	183	487	0	0	0	0	0
TOTAL	9	501	2343	1	0	0	0	0

PEAK HOUR VOLUMES:

The table below gives the peak hour volumes movement and direction. Peak hour counts are found by using any four consecutive 15-minute intervals during the two or three hour count periods.

TIME	SR 70, 92, 154 & 166								SR 166 & 166 WEST							
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND			
	THRU	LEFT	RIGHT	PED'S	THRU	LEFT	RIGHT	PED'S	THRU	LEFT	RIGHT	PED'S	THRU	LEFT	RIGHT	PED'S
7:00AM-7:15AM	27	29	0	0	95	0	10	0	0	31	186	0	0	0	0	0
7:15AM-7:30AM	40	38	0	0	162	0	16	0	3	39	174	0	0	0	0	0
7:30AM-7:45AM	55	63	0	0	144	0	26	0	0	29	182	0	0	0	0	0
7:45AM-8:00AM	43	48	0	0	88	0	21	0	0	33	146	0	0	0	0	0
TOTAL	165	178	0	0	489	0	73	0	3	132	688	0	0	0	0	0

EXISTING TRAFFIC CONTROL:

- SR 70, 92, 154 & 166 NB & SB is currently a Free Flow Condition for Thru Movements.
- SR 70, 92, 154 & 166 NB is currently a Stop Condition for Left Turning Movements.
- SR 70, 92, 154 & 166 SB is currently a Free Flow Condition for Right Turning Movements.
- SR 166 EB is currently a Stop Condition then a Yield Condition for Left Turning Movements.
- SR 166 EB is currently a Yield Condition for Right Turning Movements.
- SR 166 WEST WB is currently a Yield Condition where it intersects SR 70 NB Left Turning Traffic.

VEHICLE SPEEDS:

- The posted speed limit on SR 70, 92, 154 & 166 is 55 MPH.
- The posted speed limit on SR 166 is 55 MPH.
- The posted speed limit on SR 166 WEST is 55 MPH.

PEDESTRIAN MOVEMENTS:

There was only one pedestrian observed during the traffic counts. There are no sidewalks, crosswalks or other pedestrian facilities present at this intersection or in this area.

PARKING:

There was no parking observed or expected at the intersection.

CRASH HISTORY:

There were a total of 38 crashes with 14 injuries and 0 fatalities that occurred during the 4 year crash history reviewed at this intersection in Douglas County. Attached is a list of the type crashes that have occurred. Also shown, are the number of crashes and number of injuries, for each type of crash. Based on the posted speed limit some of these crashes are related to speed.

SR 70, 92, 154 & 166 @ SR 166, 166 WEST - Douglas County (M.L. 0.20 – M.L. 0.33)				
YEAR	2006	2007	2008	2009
# of CRASHES	16	14	5	3

The reason crash history is provided for 2 State Routes is because SR 70 was re-located in July 2007 and SR 92 began running common with SR 70.

Year	County	Route Type	Route Number	Beginning Milelog	Ending Milelog	No. Accidents	No. Vehicles	No. Injuries	No. Fatalities
2006	Douglas	State Route	007000	0.20	0.33	0	0	0	0
2006	Douglas	State Route	009200	0.20	0.33	16	34	8	0
2006 SubTotal						16	34	8	0
2007	Douglas	State Route	007000	0.20	0.33	0	0	0	0
2007	Douglas	State Route	009200	0.20	0.33	14	27	5	0
2007 SubTotal						14	27	5	0
2008	Douglas	State Route	007000	0.20	0.33	3	8	1	0
2008	Douglas	State Route	009200	0.20	0.33	2	4	0	0
2008 SubTotal						5	12	1	0
2009	Douglas	State Route	007000	0.20	0.33	3	7	0	0
2009	Douglas	State Route	009200	0.20	0.33	0	0	0	0
2009 SubTotal						3	7	0	0
All Year(s)Total						38	80	14	0

*NOTE: 2009 Accident Data is Incomplete. See attached report.

SIGHT DISTANCE:

Intersection Sight Distance (ISD) was found to be adequate from all approaches. The results are summarized in the chart below and on the attached Sight Distance Diagram.

Intersecting Road	Arterial Speed (mph)	Existing SDL (ft.)	Required SDL (ft.)	Existing SDR (ft.)	Required SDR (ft.)
SR 166 EB (at Stop Sign) @ SR 70, 92 154 & 166 SB (Thru)	55	1150	610	1970	610
SR 166 EB (at Yield Sign) @ SR 70, 92 154 NB (Thru)	55	N/A	N/A	1210	610
SR 166 EB (Slip Ramp) @ SR 70, 92 & 166 SB (Thru)	55	1360	610	N/A	N/A
SR 166 WEST (at Stop Sign) @ SR 70, 92, 154 & 166 SB (Thru)	55	N/A	N/A	730	610
SR 70, 92, 154 & 166 SB (Slip Ramp) @ SR 166 WEST (Thru)	55	2630	610	N/A	N/A

CONCLUSION:

There is a large delay during the peak hour for eastbound vehicles on SR 166 turning right onto SR 70, 92 & 154 southbound. Also, there are delays and traffic backups for vehicles traveling northbound on SR 70, 92 & 154 turning left (westbound) onto SR 166 WEST. Based on the study for a single lane roundabout with a right turn by-pass lane for SR 166 eastbound to SR 70, 92 & 154 southbound, the single-lane roundabout will improve operations of this intersection. The existing by-pass lane will remain to store the queue. SR 70, 92 & 154 needs capacity added, once this happens the by-pass will improve.

CAPACITY ANALYSIS COMPARISON CHART									
		HCS + UNSIGNALIZED				SIDRA ROUNDABOUT ANALYSIS			
Road Name	Approach	Delay(s)	LOS	V/C	Queue (ft)	Delay(s)	LOS	V/C	Queue (ft)
SR 70, 92 & 154	NB	9.00	A	0.16	14.75	9.90	A	0.35	76.90
	SB					7.30	A	0.59	157.10
SR 166	EB	121.90	F	1.18	597.75	16.30	C	0.22	40.40
	EB to SB					6.0	N/A ⁹	0.47	N/A ⁹
SR 166 WEST	WB								

N/A⁹ = SR 166 EB to SR 70, 92 & 154 SB is a Continuous Lane.

RECOMMENDATION:

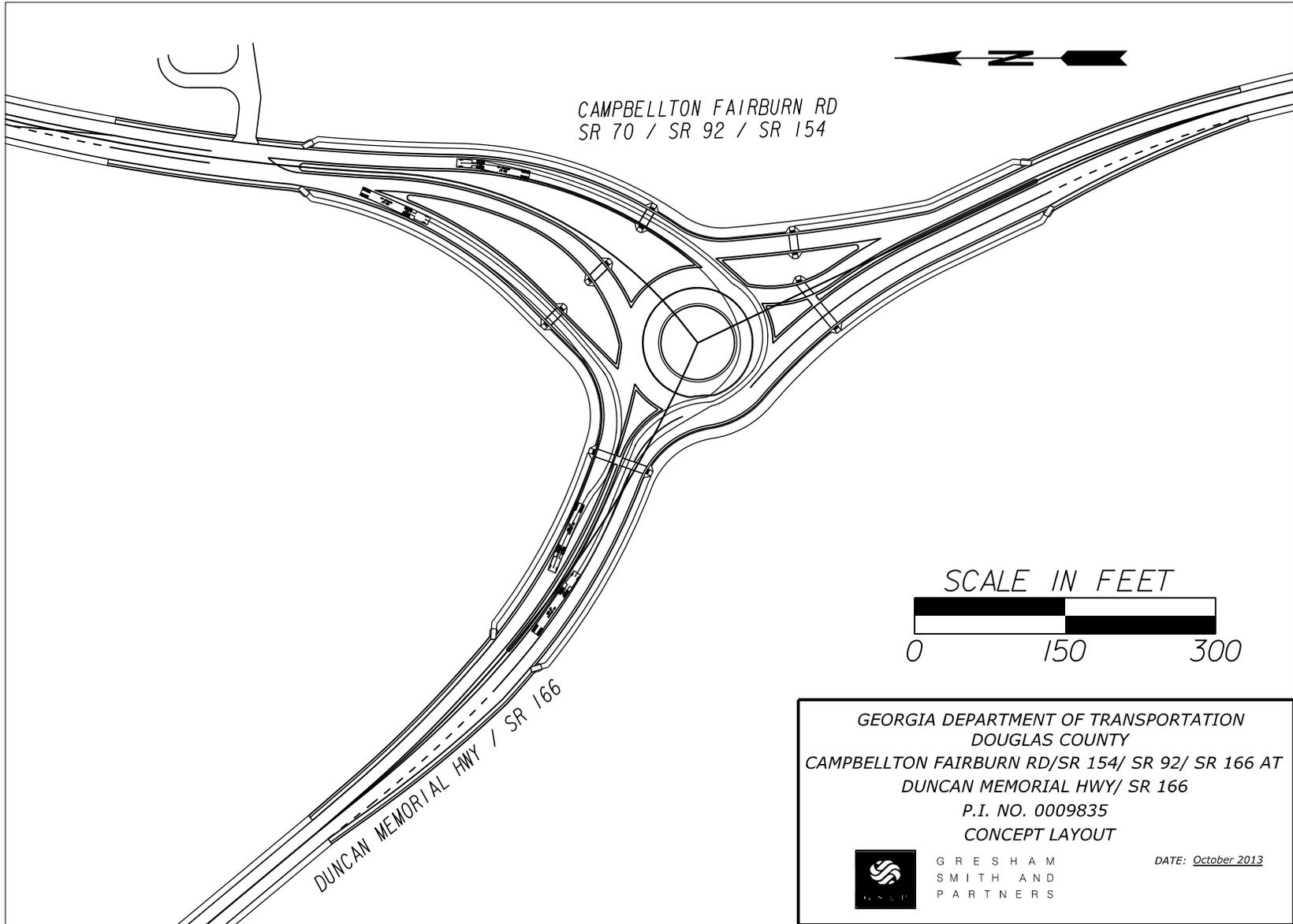
The District Seven Office of Traffic Operations recommends a single lane roundabout at the north intersection and keep the slip lane. Install a by-pass from north to west. The roundabout should provide gaps for the by-pass.

PREPARED BY: _____ **DATE:** _____
District Traffic Operations Engineer

RECOMMENDED BY: _____ **DATE:** _____
District Traffic Engineer

RECOMMENDED BY: _____ **DATE:** _____
State Traffic Engineer

RECOMMENDED BY: _____ **DATE:** _____
Director of Operations



CAMPBELLTON FAIRBURN RD
SR 70 / SR 92 / SR 154



SCALE IN FEET



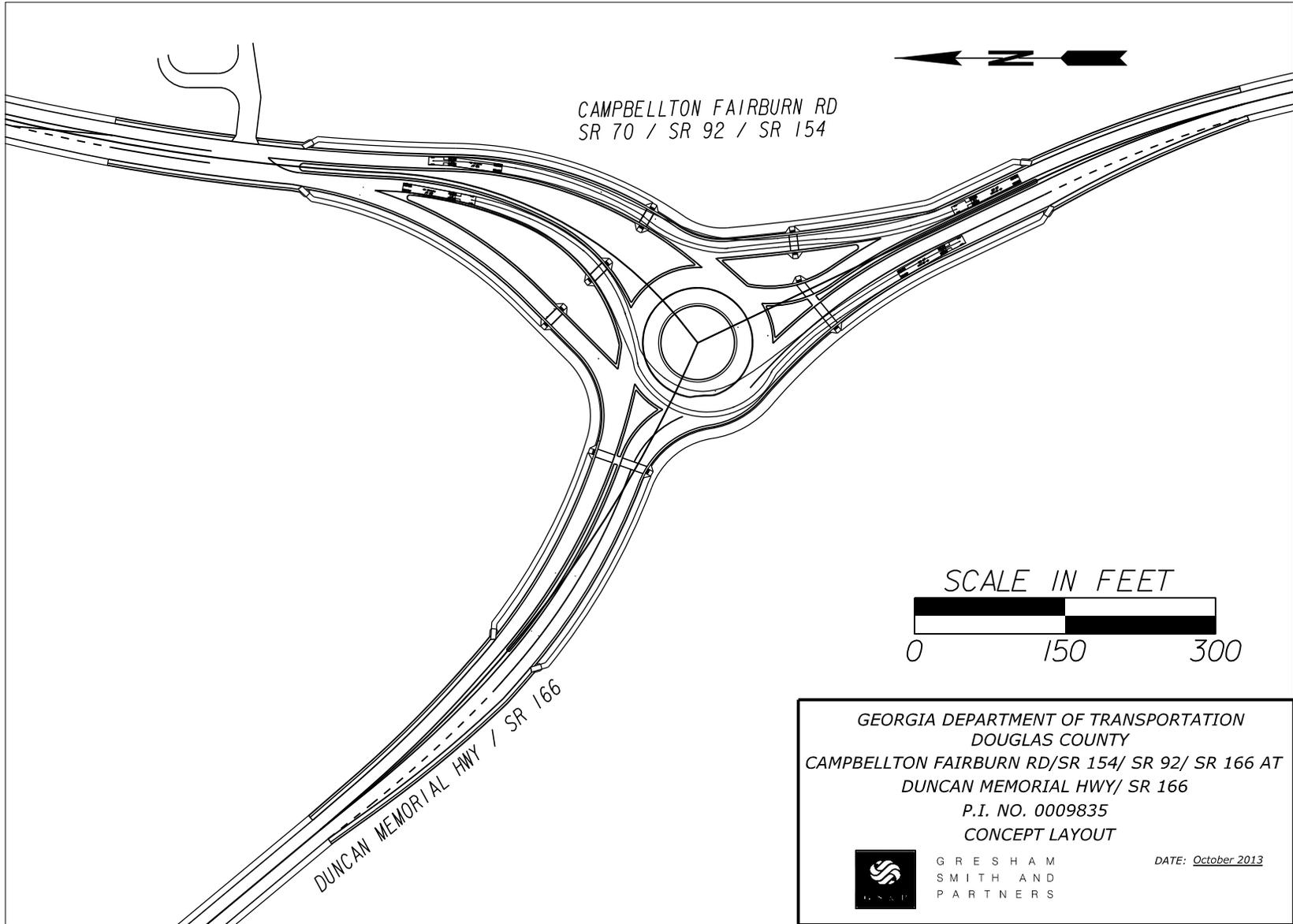
0 150 300

GEORGIA DEPARTMENT OF TRANSPORTATION
DOUGLAS COUNTY
CAMPBELLTON FAIRBURN RD/SR 154/ SR 92/ SR 166 AT
DUNCAN MEMORIAL HWY/ SR 166
P.I. NO. 0009835
CONCEPT LAYOUT



GRESHAM
SMITH AND
PARTNERS

DATE: October 2013



CAMPBELLTON FAIRBURN RD
SR 70 / SR 92 / SR 154



SCALE IN FEET



0 150 300

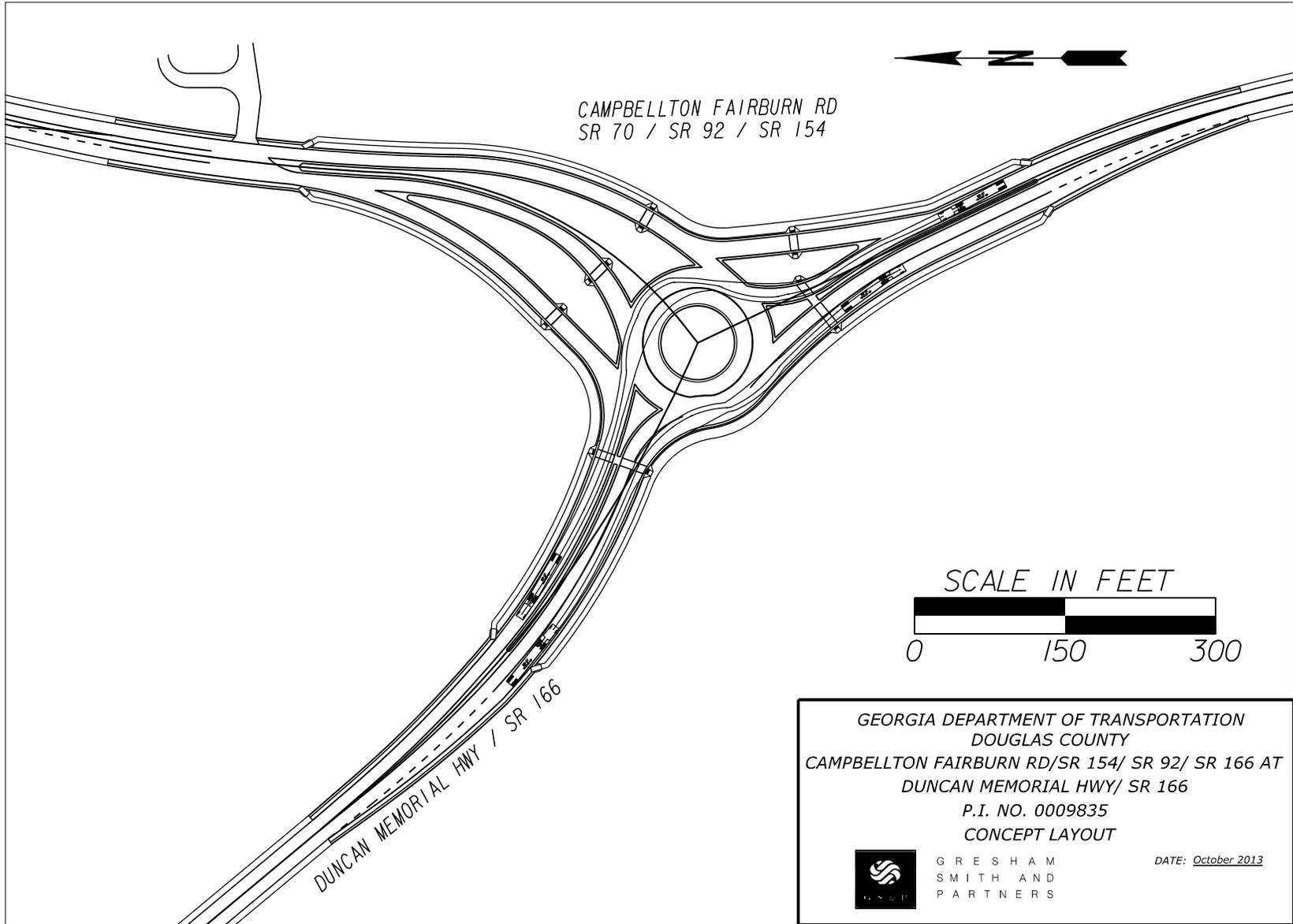
DUNCAN MEMORIAL HWY / SR 166

GEORGIA DEPARTMENT OF TRANSPORTATION
DOUGLAS COUNTY
CAMPBELLTON FAIRBURN RD/SR 154/ SR 92/ SR 166 AT
DUNCAN MEMORIAL HWY/ SR 166
P.I. NO. 0009835
CONCEPT LAYOUT



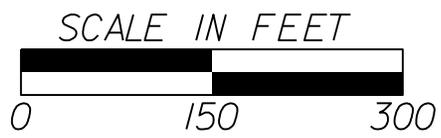
GRESHAM
SMITH AND
PARTNERS

DATE: October 2013



CAMPBELLTON FAIRBURN RD
SR 70 / SR 92 / SR 154

DUNCAN MEMORIAL HWY / SR 166

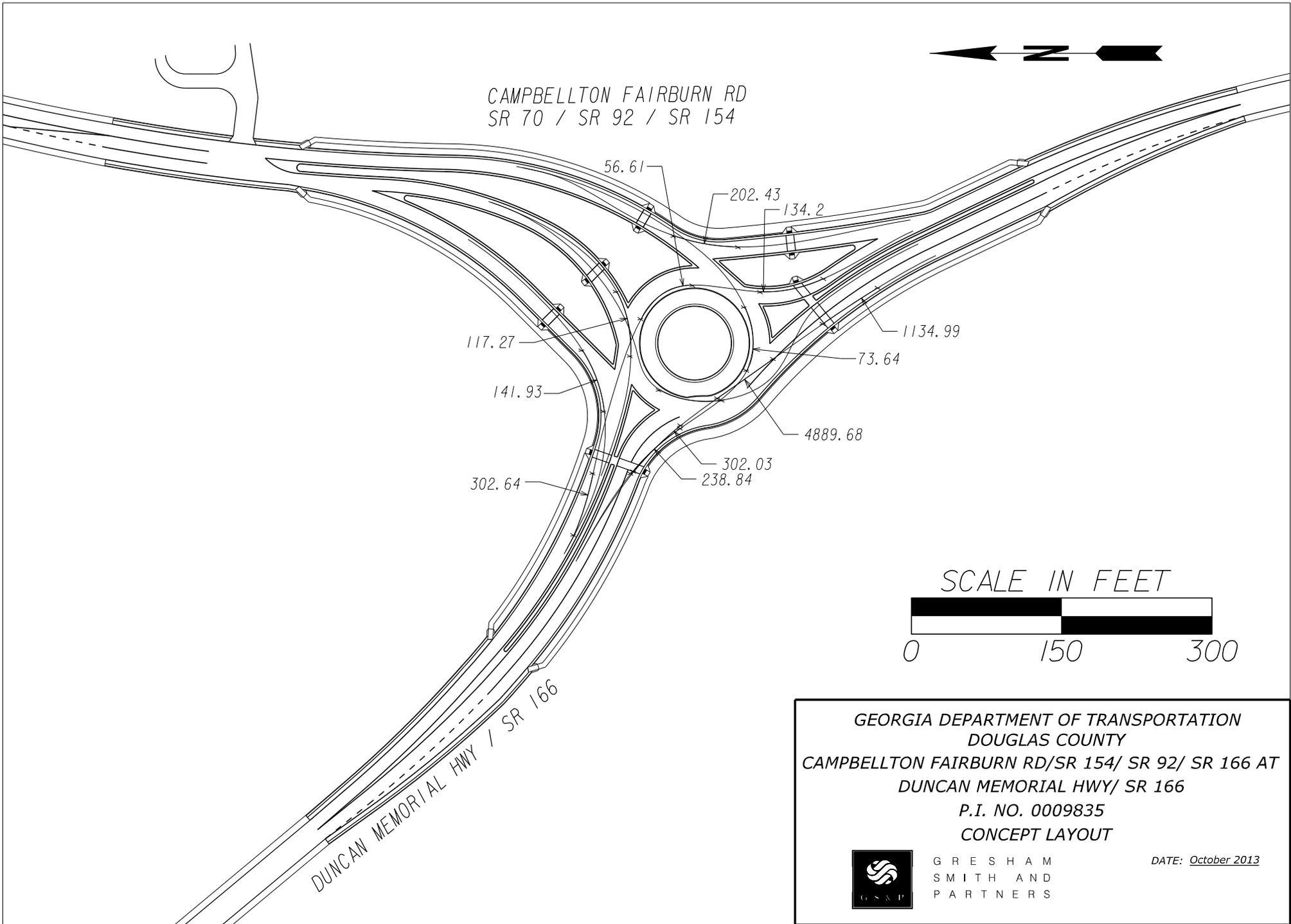


GEORGIA DEPARTMENT OF TRANSPORTATION
DOUGLAS COUNTY
CAMPBELLTON FAIRBURN RD/SR 154/ SR 92/ SR 166 AT
DUNCAN MEMORIAL HWY/ SR 166
P.I. NO. 0009835
CONCEPT LAYOUT



GRESHAM
SMITH AND
PARTNERS

DATE: October 2013

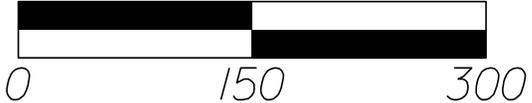


CAMPBELLTON FAIRBURN RD
 SR 70 / SR 92 / SR 154



56.61
 202.43
 134.2
 117.27
 141.93
 1134.99
 73.64
 4889.68
 302.64
 302.03
 238.84

SCALE IN FEET



DUNCAN MEMORIAL HWY / SR 166

GEORGIA DEPARTMENT OF TRANSPORTATION
 DOUGLAS COUNTY
 CAMPBELLTON FAIRBURN RD/SR 154/ SR 92/ SR 166 AT
 DUNCAN MEMORIAL HWY/ SR 166
 P.I. NO. 0009835
 CONCEPT LAYOUT



GRESHAM
 SMITH AND
 PARTNERS

DATE: October 2013



Ourston Roundabout Engineering

5325 Wall Street
Suite 2305
Madison, WI 53718

T.608-249.4545
F.608.249.4402
ourston.com

MEETING REPORT

DATE: April 16, 2013

PROJECT NO.: PI 0009835

LOCATION: Webmeeting

PROJECT NAME: SR 166 @ SR 92, Douglas Cnty

PRESENT: GDOT
Gresham, Smith & Partners (GSP)
Parsons
Ourston Roundabout Eng. (ORE)

- Perry Black
- Scott Shelton
- Marissa Martin
- Sunita Nadella
- Troy Pankratz

ABSENT:

ACTION BY

1. Troy provided comments on the four design alternatives that GSP had presented. The alternatives include:
 1. Standard T-intersection located at the existing north intersection
 2. Roundabout located at the existing north intersection
 3. Roundabout located near the southern intersection within the triangle shaped right-of-way space.
 4. Oval shaped roundabout located at the south intersection.
2. Comments regarding Alternative #1:
 - Concern about the capacity of the stop-controlled intersection
 - Major traffic movement becomes a left turn
3. Comments regarding Alternative #2:
 - Difficult to avoid historic boundary area
 - SB bypass lane is not required
 - Lane configuration is not correct
4. Comments regarding Alternative #3:
 - Lane configuration is not correct
 - Circle location could be adjusted to improve the angles of entry
 - Circle location adjustment may also eliminate the need for the SB right-turn bypass lane
 - Shifting the north SR 92 leg onto the existing NB roadway would assist with roundabout entry/exit geometry



ACTION BY

5. Comments regarding Alternative #4:
 - Circle location does not provide optimum roundabout geometry
 - Lane configuration is incorrect
 - Oval shape is not necessary

6. Lane configuration discussion: GSP
 - There was discussion revolving around whether free-flow bypass lanes should be provided. Pros and cons were discussed stating that free-flow bypass lanes generally present a situation where high-speed traffic is forced to merge with lower speed traffic exiting the roundabout. A roundabout can eliminate this type of merging conflict.
 - The roundabout lane configuration should consist of: NB thru lane, NB right-turn lane, SEB thru lane, SEB thru/left lane, SB right/left lane (SB right turn partial bypass may be required for geometric purposes).

7. GSP will explore the circle location shift that was suggested. Also approach alignment modifications will be explored to incorporate the revised circle location. GSP

NOTE: If the information in this report does not agree with your record of this meeting or if there are any omissions, will you kindly advise this office immediately, otherwise we shall assume its contents to be correct.

Meeting attendees

Distribution:



G R E S H A M
S M I T H A N D
P A R T N E R S

September 18, 2013

MEETING NOTES

**CONCEPT TEAM MEETING- GDOT DISTRICT 7
SR 166/DUNCAN MEMORIAL HIGHWAY AT SR 70/SR 92/SR 154/CAMPBELLTON
FAIRBURN ROAD**

P.I. NO. 0009835

GS&P Project No. 26340.19

MEETING DATE: September 12, 2013

PARTICIPANTS: See Attached

DISCUSSION: PROJECT CONCEPT TEAM MEETING

The concept team meeting for the above project was held September 12, 2013, at 10:00 a.m., in the District 7 office in Chamblee, GA. Please see page 3 for the list of attendees.

The meeting was opened by GDOT project manager Perry Black, who gave a brief description of the project. The detail of the proposed project concept was discussed by Marissa Martin, Gresham, Smith and Partners.

The proposed intersection improvement project is located at the intersection of SR 166/Duncan Memorial Highway and SR 70/SR 92/SR 154 in Douglas County. The existing intersection forms a triangle, with the northwest approach consisting of SR 166, the northeast approach consisting of SR 166, SR 92, SR 70, and SR 154, and the southern approach consisting of SR 70, SR 92 and SR 154. The eastbound and westbound SR 166 lanes are separated in the project area, intersecting SR 70/SR 92/SR 154 approximately 1,100 feet apart. There is an existing undeveloped triangular area between the SR 166 lanes, within the center of the intersection. The northbound and southbound lanes on SR 70/SR 92/SR 154 are separated by up to approximately 75 feet through the intersection. All directions of travel are signed as stop or yield conditions with the exception of the SR 70/SR 92/SR 154 through movement. The project limits would extend approximately 1,200 feet northwest of the intersection on SR 166, 900 feet northeast of the intersection on SR 166/SR 92/SR 154, and 900 feet south of the intersection on SR 70/SR 92/SR 154. The total project length would be approximately 2,700 feet along SR 70/SR 92/SR 154.

The existing typical section consists of one through lane in each direction varying in width from twelve to twenty feet, with variable width unpaved shoulders within approximately 130 feet of right-of-way on all three of the approaches. The existing speed limit is approximately 55 miles per hour (mph) on all three approaches.



MEETING NOTES

CONCEPT TEAM MEETING- GDOT DISTRICT 7

P.I. NO. 0009835

GS&P Project No. 26340.19

September 18, 2013

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Discussion was as follows:

GDOT requested further analysis for vehicles traveling on the exit lanes of eastbound SR 166 onto and merging onto southbound SR 70/SR 92/SR 154. GS&P responded that they would review and verify that the traffic merging from eastbound SR 166 to southbound SR 70/SR 92/SR 154. GDOT also requested that the radius of the eastbound exit lanes be lengthened to provide additional length for vehicles merging onto SR 70/SR 92/SR 154. GS&P responded that the radius used in the concept was per direction of the peer review, which recommended that the use of tighter radii for bypass lanes results in vehicles exceeding design speeds through the bypass lane.

GDOT asked GS&P if a speed study to determine the 85th percentile speed on SR 166 and SR 70/SR 92/SR 154. GS&P responded that a speed study was not conducted, and that the GDOT project manager will request if deemed warranted. GDOT asked GS&P for the truck percentages for SR 166 and SR 70/SR 92/SR 154. GS&P responded that the truck percentages would be added in the revised concept report.

GDOT recommended that the proposed type 7 curb and gutter in the design data table for the inside shoulders be changed to type 7 header curb. GS&P agreed to make the design change. GDOT recommended that the minimum splitter island width should be changed from 2 feet to 4 feet, GS&P agreed.

GDOT recommended that there be a clear, level width of 4 feet behind the sidewalks throughout the project, and that all areas that have a foreslope steeper than 4:1, less than 4 feet of clear space behind the sidewalk, and more than a 30 inch vertical drop will require hand railing in accordance with the *2005 Pedestrian Streetscape Guide*, pages 83-84. GS&P responded that they would consult the GDOT project manager if the use of 4 feet behind the sidewalks is feasible due to right of way constraints and ESA impacts, and noted that the recommended urban shoulder in the *GDOT Design Policy Manual* provides for 2'-6" behind the sidewalk.

GDOT noted that the existing section of westbound SR 166 could be converted to a multi-use path with the existing pavement being utilized for the path by saw-cutting the path width to 10 feet, along with the existing culvert remaining in place. The concept proposed the removal of the existing westbound SR 166 roadway with the existing culvert to be left in place. GDOT stated that the conversion of the existing roadway to a multi-use path could provide environmental mitigation for the project by reducing the pavement obliteration within the ESAs on the existing westbound SR 166 alignment. GS&P responded that the conversion of the existing roadway to a multi-use path was a



MEETING NOTES

CONCEPT TEAM MEETING- GDOT DISTRICT 7

P.I. NO. 0009835

GS&P Project No. 26340.19

September 18, 2013

Page 3

good suggestion, and stated that coordination with Douglas County would be required, since the conversion would require funding by the county.

Greystone Power stated that they have one power pole that would be impacted by the project. The power pole located on the east side of SR 70/SR 92/SR 154 would require relocation. Greystone Power also stated that the utility relocation would not be reimbursable. GDOT and Greystone Power requested GS&P to provide lighting plans to them upon plan development for utility coordination for the proposed lighting. GS&P responded that the plans will be provided upon development. No gas or water utility conflicts were discussed in the meeting. GS&P agreed to provide electronic design files to GDOT and utility owners following the meeting to locate all existing utilities and to verify no additional conflicts.

GDOT stated that the estimated construction time could be reduced from 18 months to 12 to 15 months because of the flat topography. GDOT also stated that the bicycle lanes will require transition to the travel lanes instead of terminating to paved shoulder as shown in the concept. GS&P responded that the bicycle lanes can be revised to include tapering to the travel lanes. GDOT stated that all roadway sections with a width less than 2 feet from back of curb to sidewalk will require a design variance. GS&P responded that those sections will be reviewed to determine if the width can be increased to 2 feet.

After reviewing the CES concept cost estimate, GDOT requested the addition of the colored Class A Concrete quantity for the concrete truck apron. GDOT also requested the TP IX reflective sign sheeting quantity to be increased from 900 sf to 1000 sf to provide enough material for all diagrammatic and warning signs, as well as the addition of landscaping quantities that follow GDOT details RA-1 and RA-2. It was recommended that the GDOT project manager contact Douglas County for landscaping plans. GDOT also requested that the type 7 curb and gutter quantity be changed to type 7 header curb. GS&P agreed to all of the quantity changes requested.

GDOT recommended that the location of the advance warning sign for the roundabout located on the northbound approach of SR 70/SR 92/SR 154 will require placement that is less than the recommended minimum spacing of 1,500 feet from the roundabout approach yield lines due to the location of a bridge crossing the Chattahoochee River being located 1,100 feet from the roundabout approach. GDOT recommended placement of the signs to avoid the bridge in order to prevent an environmental re-evaluation. The GDOT project manager will provide GS&P direction on sign placement in the preliminary design phase.



MEETING NOTES
CONCEPT TEAM MEETING- GDOT DISTRICT 7
P.I. NO. 0009835
GS&P Project No. 26340.19
September 18, 2013
Page 4

No required right of way acquisition is anticipated for this project. GDOT will be responsible for the Letting of the Contract and Supervision of Construction.

This represents our understanding of the items discussed at this meeting. If you have any questions or comments concerning any of the information contained herein, please contact me.

Prepared by: Marissa Martin, P.E.
Project Manager

Copy Participants

MEETING ATTENDEES

Perry Black	GDOT/Program Delivery	peblack@dot.ga.gov
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