ORIGINAL TO GENERAL FILES

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

OFFICE OF DESIGN POLICY & SUPPORT
INTERDEPARTMENTAL CORRESPONDENCE

FILE P.I. # 721010-
STP00-9496-00(001)
Fulton County
GDOT District 7 - Metro Atlanta
SR 9 from Dunwoody Place to SR 120 in Roswell

OFFICE Design Policy & Support

DATE 2/5/2013

FROM for Brent Story, State Design Policy Engineer

TO SEE DISTRIBUTION

SUBJECT **APPROVED CONCEPT REPORT**

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

Attachment

DISTRIBUTION:

Bobby Hilliard, Program Control Administrator
Genetha Rice-Singleton, State Program Delivery Engineer
Glenn Bowman, State Environmental Administrator
Cindy VanDyke, State Transportation Planning Administrator
Ben Rabun, State Bridge Engineer
Kathy Zahul, State Traffic Engineer
Angela Robinson, Financial Management Administrator
Lisa Myers, State Project Review Engineer
Charles "Chuck" Hasty, State Materials Engineer
Jeff Baker, State Utilities Engineer
Ken Thompson, Statewide Location Bureau Chief
Tamaya Huff, State Pedestrian and Bicycle Coordinator
Rachel Brown, District Engineer
Scott Lee, District Preconstruction Engineer
Jonathan Walker, District Utilities Engineer
Derrick Brown, Project Manager
BOARD MEMBER - 6th Congressional District

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
PROJECT CONCEPT REPORT

Project Type:	Widening	P.I. Number:	721010
GDOT District:	7	County:	Fulton
Federal Route Number:	N/A	State Route Number:	SR 9

Project to remove 3-lane reversible lanes on SR 9 between HWY 120 and the Chattahoochee River (1.1 miles) with 4-lane divided roadway and replace deficient bridge on Riverside Road over Vickery Creek.

Submitted for approval:

Parsons Brinckerhoff Consultant Designer & Firm		10-2-2012 DATE
City of Roswell Local Government		10-2-2012 DATE
Office Head		11/8/2012 DATE
Derrick Brown GDOT Project Manager		11/8/12 DATE

Resubmitted w/corrections 1/29/2013

Recommendation for approval:

Program Control Administrator GLENN BOWMAN	** T.N.	DATE 10/23/2012
State Environmental Administrator KATHY ZAHUL	** T.N.	DATE 10/29/2012
State Traffic Engineer LISA MYERS	** T.N.	DATE 10/24/2012
Project Review Engineer PATRICK ALLEN	** T.N.	DATE 10/23/2012
State Utilities Engineer		DATE
District Engineer BEN RABUN	** T.N.	DATE 11/19/2012
State Bridge Design Engineer		DATE
State Transportation Financial Management Administrator		DATE

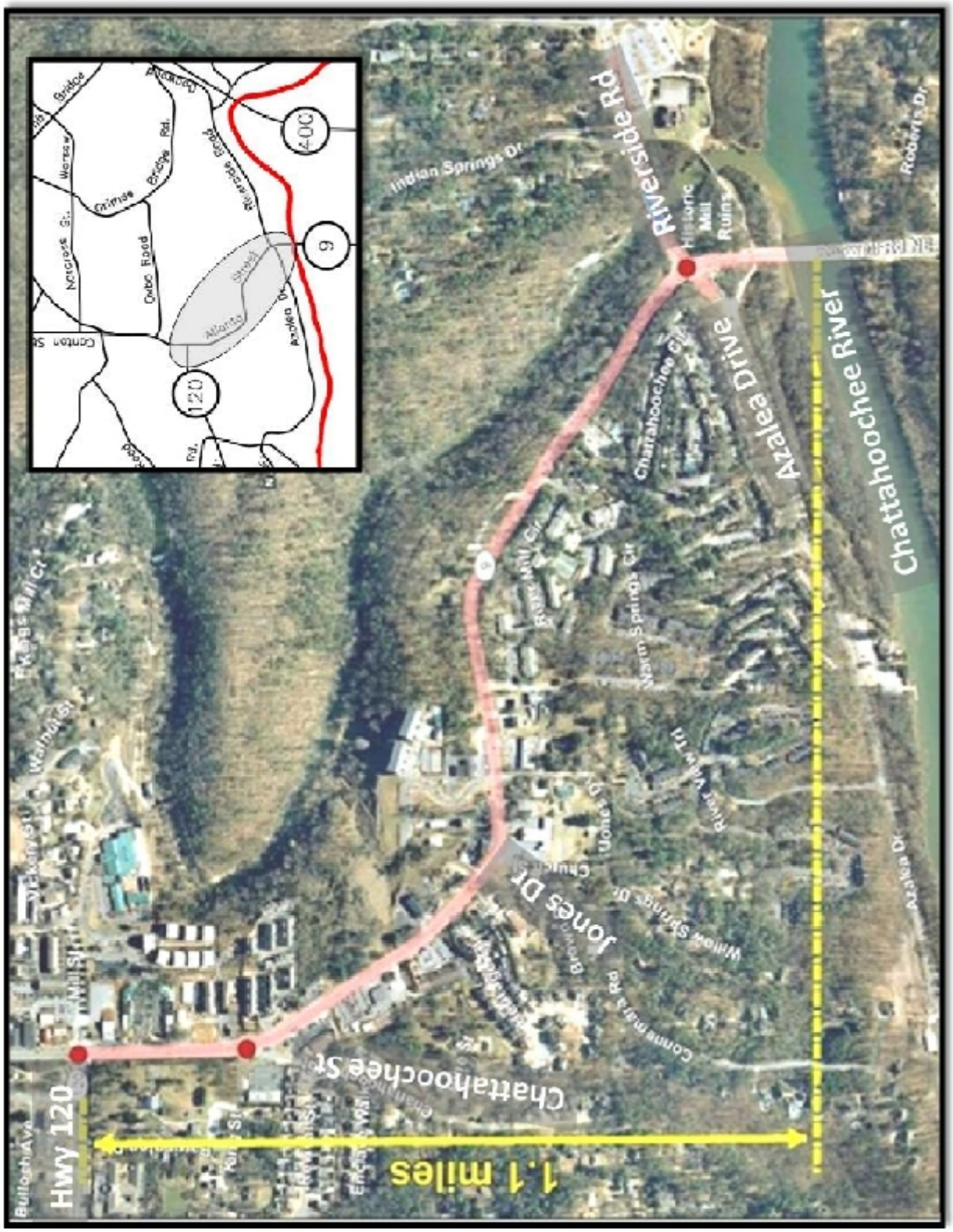
** RECOMMENDATION ON FILE

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).

State Transportation Planning Administrator	12-14-12 DATE

* This Project is CONSISTENT with the CURRENT RTP. However, this Project is NOT in the Current TIP. The Project MAY be advanced in the TIP, as Funding + Scheduling Allow.

Project Location Map



PLANNING & BACKGROUND DATA

Project Justification Statement

Project Initiation

The proposed project is within the state program, as it is in the state RTP and Plan 2040 model and has a PI number (721010) from the Department's last initiation of the project 15 years ago. Project public involvement, planning and environmental studies through preliminary design was initiated by the City of Roswell in partnership with the Georgia Department of Transportation. The City and GDOT signed a Project Framework Agreement (PFA) that is included at Attachment A-13.

The project is intended to address the following operational, crash reduction and quality of life issues:

- *Operations*: The SR 9 / Riverside Road / Azalea Drive intersection currently operates at LOS F / E in the morning and afternoon peak periods respectively (see Table 1 in the Traffic Engineering report included as Appendix A-6). The poor LOS operations results in significant queuing and congestion in the peak directions on SR 9 during peak periods. The off-peak direction also experiences congestion and queuing during peak hours because the single lane limits capacity at intersections and through vehicles are impeded by bus stops and turning vehicles.
- *Crash Rates*: In the study area, the SR 9 corridor had a crash rate more than twice the statewide average crash rate for each of the years between 2007 and 2009. Injury crash rates were nearly at or exceeded twice the statewide average injury crash rates, and injury rates ranged from 1.5 to nearly twice the statewide average injury rates each of the years during the same three-year period. There was one fatal crash that occurred in 2009. The full crash data analysis is provided in Attachment A-4 and summarized in Table 1 below. The reversible lanes are a major reason for the high crash rates and frequencies, as they are confusing to motorists and impact intersection operations.
- *Bridge Deficiency*: The project replaces the structurally deficient Riverside Road bridge over Vickery Creek.
- *Bike and Pedestrian Connectivity*: There are no bike lanes and the sidewalks are not continuous along the corridor. The corridor intersects the Chattahoochee River trail system and does not connect this resource with the Roswell historic square. The project goals include complete street implementation along SR 9.

Table 1: Summary of Roadway Crash Rates - SR 9 from SR 120 to Riverside/Azalea
SR 9 Project Corridor Length of 1.1 Miles

		All Crashes	Injuries	Injury Crashes	Fatalities	Fatal Crashes
2007	Total Number of Crashes	156	36	26	0	0
	Crash Rate per MVMT	1,673.7	386.2	279.0	0	0
	Statewide Average per MVMT	649.1	226.7	151.3	1.53	1.51
	Crash Rate as % of Statewide Average	258%	170%	184%	0%	0%
2008	Total Number of Crashes	137	36	28	0	0
	Crash Rate per MVMT	1,561.7	410.4	319.2	0	0
	Statewide Average per MVMT	611.9	213.4	142.0	1.33	1.27
	Crash Rate as % of Statewide Average	255%	192%	225%	0%	0%
2009	Total Number of Crashes	117	28	26	1	1
	Crash Rate per MVMT	1,372.1	328.4	304.9	11.7	11.7
	Statewide Average per MVMT	602.6	213.7	141.3	1.32	1.26
	Crash Rate as % of Statewide Average	228%	154%	216%	886%	929%

- *Transit*: There are inadequate connections to transit stops along the corridor, with no protected pedestrian crossings of SR 9 for a one-mile stretch of the corridor. Buses block the single travel lane in the off-peak direction during alightings.
- *Preservation of History and Environment*: The corridor crosses the Chattahoochee River and wetlands, runs parallel to a National Park and traverses a historic district of Roswell. Innovative and context sensitive solutions will be required to minimize impacts to these resources.

Traffic Data and Forecasts

Average daily traffic (ADT) and intersection turning movement counts (TMC's) were collected in September and October of 2010 on days representative of typical weekday traffic conditions. The collected raw counts were balanced to meet the GDOT traffic review standards. The expected opening year for the project is 2017 and the design year is 2037. The future conditions traffic volumes, both ADT and Design Hour Traffic (DHV) were projected from existing ADT and DHV counts according to a growth rate calculated from the Atlanta Regional Commission (ARC) 20-County Plan 2040 Model projections for growth on SR- 9. ARC model runs for the years 2010, 2015 and 2035 were used to extrapolate a growth rate of 0.8% per annum for the corridor. ADT and TMC volume diagrams were developed and submitted to GDOT Planning for approval, and the approved traffic data is included in Attachment A-5 of this Concept Report.

Based on the approved traffic data, existing and future no-build level of service (LOS) analyses were performed at the study area intersections for the morning and afternoon commuter peak conditions. A traffic engineering report was prepared and is included as Attachment A-6 of this concept report. The existing and future No-Build LOS analysis results are summarized in Table 3 below. The results show that future No-Build intersection LOS will continue to be poor and degrade from LOS E to LOS F at the SR 120 and Riverside / Azalea intersection in the afternoon peak hour and from LOS C to LOS F at Chattahoochee Circle in the afternoon peak hour.

Table 2: Existing, Opening and Design Year LOS

Intersection	Existing Control	2011 Existing Year AM Peak	2011 Existing Year PM Peak	2037 No-Build AM Peak	2037 No-Build PM Peak
SR 9 at SR 120 / Mill St	Signalized	F	E	F	F
SR 9 at Chattahoochee/King St	Unsignalized	C	F	F	F
SR 9 at Heritage Trail	Unsignalized	B	A	C	A
SR 9 at Jones Drive	Unsignalized	A	A	A	A
SR 9 at Overland Dr/Jones Dr	Unsignalized	A	A	A	A
SR 9 at Warm Springs Circle	Unsignalized	A	A	A	A
SR 9 at Chattahoochee Circle	Unsignalized	F	C	F	F
SR 9 at Riverside / Azalea	Signalized	F	E	F	F

Initial Project Limit Recommendation

The initial 1.1-mile project limit recommendation for SR 9 begins at SR 120 as the northern terminus of the corridor and runs through the Riverside Road / Azalea Drive intersection as the southern terminus of the project. These limits match the extent of the three-lane reversible section on the SR 9 corridor. There are four lanes (two in each direction) both north of the Hwy 120 intersection and south of the Riverside/Azalea Intersection. Improvements made as part of this 1.1 mile project will not require or prohibit additional transportation projects on other adjacent sections of SR 9.

Throughout the public involvement and concept development process, crash reduction and improved mobility were identified as two of the main goals for the project. Corridor performance measures show current and future capacity and crash rate deficiencies under a reversible lane system. The two key intersections, SR 9 at SR 120 and Riverside Road/Azalea Drive, both operate at unacceptable LOS in the peak period. Due to the reversible lanes, congestion in the off-peak direction can be as bad as or worse than congestion in the peak direction. The removal of the reversible lanes in this section of SR 9 will both decrease corridor crash rates and improve intersection and roadway mobility, and match roadway capacity with the adjacent sections on SR 9.

Description of the Proposed Project:

The Roswell Historic Gateway Transportation Improvement Project will remove the reversible lanes along Atlanta Street (SR 9) between Marietta Highway (SR 120) and the SR 9 bridge over the Chattahoochee River, a corridor distance of 1.1 miles. The project is entirely within the City limits of Roswell and Fulton County, Georgia. The current design speed of 35-mph will be maintained throughout the SR 9 corridor. The current three-lane reversible roadway will be improved to a divided four-lane highway between Riverside Road/Azalea Drive and Warm Springs Road, with a median that supports large oak trees. North of Warm Springs Drive, the roadway transitions to a narrow, continuous median between dual-lane roundabouts at Jones Drive and Chattahoochee/King Streets that facilitate left turns to/from driveways along the corridor through the "historic district" portion of the corridor. The project will also grade separate the intersection of SR 9 over Riverside/Azalea and replace the deficient bridge on Riverside Road over Vickery Creek. The project also proposes sidewalks and/or a multi-use path on both sides of SR 9 for the length of the project to connect the Chattahoochee River trails with the Historic Square in Roswell. A HAWK pedestrian signal is included between River Mill Circle and Chattahoochee Circle to connect the apartments on the west side of SR 9 to the multi-use trail and transit stops on the east side of SR 9. Existing right-of-way varies from 50 to 100 feet and the proposed project has some but limited right-of-way impacts along the corridor. The project corridor transects a CBD area and roadway improvements will be designed according to "complete street" guidelines.

Federal Oversight: [ ] Full Oversight [X] Exempt [ ] State Funded [ ] Other

MPO: Atlanta Regional Commission (ARC) MPO Project ID ORP-FN-255

Regional Commission: Atlanta Regional Commission RC Project ID

Congressional District(s): 6

Projected Traffic: ADT

Current Year (2010): 28,900 Open Year (2017): 30,100 Design Year (2037): 34,700

Traffic Projections Performed by: *Parsons Brinckerhoff*

Functional Classification (Mainline): Urban Principal Arterial

Is this a 3R (Resurfacing, Restoration, & Rehabilitation) Project? [X] No [ ] Yes

Is this project on a designated Bike Route, Pedestrian Plan, or Transit Network?

[ ] None [X] Bike Route [X] Pedestrian Plan [X] Transit Network

CONTEXT SENSITIVE SOLUTIONS

Issues of Concern:

Within the project study area, SR 9 transects the Historic District of Roswell and borders the Chattahoochee River National Recreational Area. Existing ROW is limited and additional ROW will have impacts on both Historic and Park resources. The four quadrants surrounding the intersection of SR 9 with Riverside Road / Azalea Drive contain National Park Service land, a historic Mill Ruins site, flood plains along the Chattahoochee River and apartments atop a 40-foot embankment.

Context Sensitive Solutions:

The project considered alternatives that minimized impacts to resources and ROW. The preferred design concept requires between 0 to 30 feet of ROW along SR 9 frontage, and takes only one structure (at the Jones Drive roundabout location). There was community consensus to grade-separate Riverside / Azalea under SR 9 to reduce crash rates and separate these roadways with different functions. A single-quadrant interchange (with innovative design to minimize environmental impacts) will provide significant crash reduction and capacity benefits compared to the current full-movement at-grade intersection. The project will also look for feasible opportunities to implement MS4 water quality measures such as off system bio-filtrations landscape areas within ROW (see preliminary investigation sites in Attachment A-14).

DESIGN AND STRUCTURAL DATA

Roadway Name/Identification: SR9

Mainline Design Features: On southern section, four 11-foot lanes, inside header curb with 1-foot offset, outside curb and gutter, an 8-foot planting strip & 10-foot multi-use trail on east side and a 2-foot planting strip & 5-foot sidewalk on west side; On northern section, four 11-foot lanes, inside header curb with 1-foot offset, outside curb and gutter, an 8-foot planting strip and an 8-foot sidewalk.

Feature	Existing	Standard*	Proposed	
Typical Section			South Section	North Section
- Number of Lanes	3 (reversible)	4-lane divided	4-lane divided	4-lane divided
- Lane Width(s)	11’ / 12’ / 11’	11-12’	11’	11’
- Median Width & Type	none	20’	18.5’	6.5’
- Outside Shoulder Width & Type	none	curb & gutter	30” curb & gutter	30” curb & gutter
- Outside Shoulder Slope	varies	n/a	n/a	n/a
- Inside Shoulder Width & Type	none	curb & gutter	9” vertical curb	9” vertical curb
- Sidewalks	Varies; 4-5’ where exists	5-6’	5’sidewalk (west) 10’ MU trail (east)	8’ sidewalk outside (both sides)
- Auxiliary Lanes	n/a	n/a	n/a	n/a
- Bike Lanes	none	none	none	none
Posted Speed	35 mph		35 mph	35 mph
Design Speed	30 mph		35 mph	35 mph
Min Horizontal Curve Radius	275’	371’ (4% emax)	371’	371’
Superelevation Rate	NC	NC	NC	NC
Grade	6%	8% max	7-8%	<2%
Access Control	permit	permit	permit	permit
Right-of-Way Width	50’-80’	84’	95’	90’
Maximum Grade – Crossroad	~7%	9% max	6-8.5%	6-8.5%
Design Vehicle	WB-50	WB-50	WB-50	WB-50

Roadway Name/Identification: Riverside Road

Mainline Design Features: Two 11-foot lanes with shoulder and sidewalk to access multi-use trail

Feature	Existing	Standard*	Proposed
Typical Section			
- Number of Lanes	2	2	2
- Lane Width(s)	11’	11-12’	11’
- Median Width & Type	none	None	None
- Outside Shoulder Width & Type	2’ paved	2’ paved, 8’ overall	2’ paved, 8’ overall
- Outside Shoulder Slope	4:1 cross slope	6%	6%
- Inside Shoulder Width & Type	N/A	N/A	N/A
- Sidewalks	none	5’ sidewalk	10’ sw/mu trail
- Auxiliary Lanes	none	none	none
- Bike Lanes	none	None	none
Posted Speed	25 mph		25 mph
Design Speed	30 mph	30 mph	30 mph
Min Horizontal Curve Radius	1930’	371’ (4% emax)	371’
Superelevation Rate	NC	NC	NC
Grade	~7%	9% max	6-8.5%
Access Control	none	none	none
Right-of-Way Width	80	-	Varies
Maximum Grade – Crossroad	6%	8% max	7-8%
Design Vehicle	P-30	Bus-40	Bus-40
- Outside Shoulder Width & Type	2’ paved	2’ paved, 8’ overall	2’ paved, 8’ overall

*According to current GDOT design policy if applicable

Major Structures:

Structure	Existing	Proposed
121-0304-0 (Riverside Rd over Vickery Creek)	Four-span bridge with total span 160-feet; bridge has two 10-foot lanes and no sidewalks; Bridge has 2010 sufficiency rating of 27.7	Two new structures approximately 160 feet in length; Will investigate possibility of clear span of Creek below. Bridge 1 (southern) has two 11-foot lanes and standard shoulders and no sidewalks; Bridge 2 (northern) two has three lanes, a 10-foot sidewalk and standard shoulders.
Retaining wall	None	Anticipate 200-300’ section of 8-10 high retaining wall on west side of SR 9 just north of Azalea

Major Interchanges/Intersections:

1. SR 9 at HWY 120 – high volume intersection constrained by historic features (Barrington Hall, Roswell Square); proposed improvements include northbound dual left turn lane.
2. SR 9 at King/Chattahoochee/Neil Reid Drive – Five leg intersection with high crash rate; proposed to be converted into a roundabout
3. SR 9 at Riverside/Azalea – high volume intersection with high crash rate constrained by historic and environmentally sensitive features (Historic Mill Ruins, National Park, wetlands) and river crossings on two legs); proposed grade separation of SR 9 over Riverside/Azalea with innovative single-quadrant road connection.

Utility Involvements:

Existing overhead power lines (GA Power) along corridor that are under consideration for potential burial for portions of the corridor. Newly constructed waterline runs along western edge of the corridor. A Level B Subsurface Utility Engineering survey was conducted to identify sewer, fiber and gas lines in the corridor.

Public Interest Determination Policy and Procedure Recommended (Utilities)? ☐ YES ☒ NO

SUE Required: ☒ Yes ☐ No

Railroad Involvement: N/A

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

Warrants met: ☐ None ☒ Bicycle ☒ Pedestrian ☒ Transit

Right-of-Way:

Required Right-of-Way anticipated: ☒ YES ☐ NO ☐ Undetermined

Easements anticipated: ☒ Temporary ☒ Permanent ☐ Utility ☐ Other

Anticipated number of impacted parcels:	55
Anticipated number of displacements (total):	1
Businesses:	1
Residences:	0
Other:	0

Location and Design Approval: ☐ Not Required ☒ Required

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

Transportation Management Plan [TMP] Required: ☐ No ☒ Yes

If Yes: Project classified as: ☒ Non-Significant ☐ Significant

TMP Components Anticipated: ☒ TTC ☐ TO ☐ PI

Design Exceptions to FHWA/AASHTO Controlling Criteria Anticipated:

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

Design Variances to GDOT Standard Criteria Anticipated:

GDOT Standard Criteria	Reviewing Office	No	Undeter-mined	Yes	Appvl Date (if applicable)
1. Access Control - Median Opening Spacing	DP&S	☒	☐	☐	
2. Median Usage & Width	DP&S	☒	☐	☐	
3. Intersection Skew Angle	DP&S	☒	☐	☐	
4. Lateral Offset to Obstruction	DP&S	☒	☐	☐	
5. Intersection Sight Distance	DP&S	☒	☐	☐	
6. Bike, Pedestrian & Transit Accommodations	DP&S	☒	☐	☐	
7. GDOT Drainage Manual	DP&S	☒	☐	☐	
8. Georgia Standard Drawings	DP&S	☒	☐	☐	
9. GDOT Bridge & Structural Manual	Bridge Design	☒	☐	☐	
10. Roundabout Illumination	DP&S	☒	☐	☐	
11. Rumble Strips	DP&S	☒	☐	☐	
12. Safety Edge	DP&S	☒	☐	☐	

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

Due to the complexity of the structures at the Riverside/Azalea intersection, the VE study will be scheduled after preliminary bridge layouts have been prepared, before preliminary design is significantly underway.

ENVIRONMENTAL DATA

Anticipated Environmental Document:

GEPA: ☐ NEPA: ☐ CE ☒ EA/FONSI ☐ EIS

Project Air Quality:

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

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

Environmental Permits/Variances/Commitments/Coordination anticipated:

Permit/ Variance/ Commitment/ Coordination Anticipated	No	Yes	Remarks
1. U.S. Coast Guard Permit	☐	☒	
2. Forest Service/Corps Land	☐	☒	
3. CWA Section 404 Permit	☐	☒	
4. Tennessee Valley Authority Permit	☒	☐	
5. Buffer Variance	☒	☐	
6. Coastal Zone Management Coordination	☒	☐	
7. NPDES	☐	☒	
8. FEMA	☐	☒	
9. Cemetery Permit	☒	☐	
10. Other Permits	☐	☒	Section 106 mitigation
11. Other Commitments	☐	☒	Section 4(f) coordination

The proposed project would require land from the Chattahoochee River National Recreation Area, which is under jurisdiction of the National Park Service (NPS). This will trigger Section 4(f) coordination. Depending on the results of the historic survey report and assessment of effects, it is possible that Section 4(f) might also be triggered for these resources.

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

NEPA/GEPA: An Environmental Assessment study is underway on the preferred concept alternative. Preliminary study has discovered no significant environmental impacts risks. A Section 4F study will be required as the project will have ROW impacts on National Park Service land; however, the project team has had early coordination with NPS and the project appears to have benefits to all parties.

Ecology: A Phase I Ecology Survey Report has been completed. At this point, no terrestrial protected species have been identified. An Aquatic Survey needs to be performed to determine if there are any protected aquatic species within the streams located in the project corridor.

History: The proposed project's northern terminus is located within the Roswell Historic District, which is listed in the National Register of Historic Places. A prior Department of Natural Resources historic resource survey of the City of Roswell (conducted 2000-2001) located multiple properties 50 years of age or older within the project's immediate vicinity and probable area of potential effects (APE). A Draft a Historic Resources Survey Report has been completed and has been submitted to the SHPO for concurrence. Potential project effects to the Roswell Historic District and any other historic properties identified as a result of the Section 106 process and consultation with the SHPO will be assessed, and efforts will be undertaken to avoid, minimize, and/or mitigate any adverse effects to these properties.

Archeology: Background research and survey for archaeological resources within the proposed project's APE is being conducted. Consultation with the SHPO is forthcoming. Ruins of mid-nineteenth-century industrial buildings are known to exist in the proposed project's vicinity.

Air & Noise:

- Ambient Noise Monitoring/Land Use Field Work
- Undeveloped Land Use Determination
- TNM Validation
- Predict Noise Levels for the Existing and No-Build and Build Conditions
- Predict Noise Levels for Undeveloped Properties
- Identify Noise Impacts
- Noise Mitigation Modeling
- Construction Noise
- Report Preparation

Public Involvement: The public has been involved in the Roswell Historic Gateway Transportation Project in a number of ways throughout the duration of the project. The public involvement process and engagement efforts incorporated a number of strategies aimed at encouraging community participation. These strategies included:

- Proactive engagement of business, civic and other stakeholder groups
- Formation of an active, engaged Community Advisory Group (CAG) and coordination with a Technical Advisory Group (TAG) that met regularly to provide input on each project phase

- Maintenance of a project webpage on the City of Roswell's Transportation site
- Regular media updates and stakeholder E-Blasts
- Regularly-scheduled project open houses
- Community briefings that allowed interested community members to receive current, accurate information
- Public Information Open House and Public Hearing

Five Public Information meetings were held between February 3, 2011 and June 28, 2012:

- *Public Meeting #1 – March 3, 2011*: Purpose was to inform the public that a process began, listen and document issues and concerns expressed regarding the project corridor.
- *Public Meeting #2 – May 19, 2011*: Purpose was to develop the project purpose and need and discuss the potential alternatives for the project.
- *Public Meeting #3 – September 22, 2011*: Purpose was to review and comment on the preliminary concept alternatives developed and review project purpose and need.
- *Public Meeting #4 – December 1, 2011*: Purpose was to review and evaluate the shortlisted concept alternatives, refinements made and traffic analysis/photosimulations.
- *PIOH Meeting – April 26, 2012*: The official Public Information Open House was held to solicit comments on the final shortlisted alternatives; a court reporter was on-hand to record comments, and written comments were also received.

Community and Technical Advisory Committee meetings were held prior to each public meeting to help vet the information displayed to the general public. A joint CAG/TAG meeting was held on June 28, 2012 for property and business owners along the corridor to review the final two selected alternatives and provide comments to be presented to council.

A number of community project briefings were held to allow community members an opportunity to receive current, accurate information (see example presentation in Attachment A-12):

- March 16, 2011 – Roswell Convention and Visitors Bureau Board of Directors
- March 29, 2011 – Joint Congregations of Zion Missionary Baptist Church, Pleasant Hill Missionary Baptist Church and Roswell Presbyterian Church
- March 31, 2011 – Roswell Rotary Club
- May 2, 2011 – Barrington Heights Homeowners Association
- May 5, 2011 – Roswell Neighborhood Senior Center
- May 11, 2011 – Bike Roswell and Roswell, Alpharetta Mountain Bike Organization (RAMBO)
- June 2, 2011 – Roswell Historical Society
- June 14, 2011 – Senator John Albers, Georgia District 56
- July 14, 2011 – Historic Roswell Kiwanis
- September 13, 2011 – East Roswell Joint Homeowners Association
- November 7, 2011 – The Bricks Homeowners Association
- January 29, 2011 – Olde Towne Roswell Homeowners Association
- February 7, 2012 – Chattahoochee Landing Apartments
- April 23, 2012 – Creekview Condominiums

Major stakeholders: A database of area stakeholders was developed. These major stakeholders included: Faith-based organizations, Homeowners' Associations, Residents, Local businesses, Community advocates, Cultural organizations, Emergency responders, Media, Public officials, Developers, Employers, Educational institutions, Environmental Justice groups and Environmental Organizations.

ROUNDABOUTS *See GDOT Design Policy Manual - Chapter 8 for further guidance.*

Roundabout Lighting Agreement/Commitment Letter Received: ☐ No ☒ Yes
Agreement or commitment letter should be attached

Planning Level assessment: There are three roundabouts planned. There are two multi-lane roundabouts on SR 9 at the Chattahoochee/King Street and Church Street intersections respectively. The third is a single lane roundabout at the intersection of Riverside Road at Indian Springs Road / Riverside Road connector. All three roundabouts were analyzed under current and future traffic conditions using the GDOT Roundabout Planning Analysis tool (see reports in Attachment A-7) and also evaluated in a VISSIM traffic-simulation model of the entire study corridor.

Feasibility Study: A Roundabout Feasibility study has been conducted per GODT policy guidelines. A peer review was also conducted according to policy guidelines and the findings are presented in Attachment A-8. As noted in the peer review comments, the dual-lane roundabouts "fastest path" will be carefully analyzed to control entry speeds.

Peer Review required: ☐ No ☒ Yes ☐ Completed – Date: 9/20/2012

CONSTRUCTION

Issues potentially affecting constructability/construction schedule:
Maintaining traffic on reversible lanes during construction will be problematic, particularly during peak periods as will constructing the multi-lane roundabout under traffic. The additional Riverside Road bridge crossing over Vickery Creek as part of the grade-separation will aid in construction phasing. A construction sequencing plan for the grade separation is included in Attachment A-14.

Early Completion Incentives recommended for consideration: ☒ No ☐ Yes

PROJECT RESPONSIBILITIES

Project Activities:

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

Lighting required: ☐ No ☒ Yes

City of Roswell will assume electric maintenance costs. Installation will be contractor's responsibility (see letter in Attachment A-13)

Initial Concept Meeting:

An Initial Coordination Meeting with the Department was held on July 27, 2011. A Draft Concept Meeting was held on May 2, 2012.

Concept Meeting: The Concept Report Meeting with the Department was held on May 2, 2012. Minutes for both the Initial and Concept Report meetings are included in Attachment A-11.

Other projects in the area:

A new pedestrian bridge parallel to SR 9 over the Chattahoochee River is in planning for construction (PI no 009640). The 10-foot multi-use trail on the structure will connect Sandy Springs to Roswell and tie into the Roswell City Parks trail system. This project will be complete several years prior to any construction for the Historic Gateway Project; however coordination has taken place to ensure that these projects will connect to an ultimate trail system with minimal reconstruction in the Historic Gateway Project.

Other coordination to date:

The Project Team has had three early coordination meetings with the National Parks Service (see meeting minutes in Attachment A-12). These meetings were held to keep the park service up to date on the concept alternatives and discuss potential environmental impacts. Overall, the meetings have been very cooperative and the Park Service has general acceptance of the preferred alternative concept, though they expect a more thorough investigation of the issues in the NEPA Section 4F process. The Project Team also briefed FHWA on September 1, 2011 at a monthly coordination meeting with the Department. At the meeting we discussed the proper environmental procedures for both NEPA and potential GEPA options.

Project Cost Estimate and Funding Responsibilities:

	Breakdown of PE	ROW	Utility	CST*	Environmental Mitigation**	Total Cost
By Whom	City of Roswell	TBD	Utility Owners	TBD	TBD	
$ Amount	$1.87M	$3.48M	$1.5M	$11.48M	$0.1M	$18.43M
Date of Estimate	7/11/2011	1/29/13	7/16/2012	11/15/2012	11/15/2012	

*CST Cost includes: Construction, 5% Engineering and Inspection, and Liquid AC Cost Adjustment

** Additional mitigation measures and cost may be incurred once the Section 4(f) is complete with the National Park Service

ALTERNATIVES DISCUSSION

Alternative selection:

After establishing the purpose and need for the project from the public, the project team brought forth several different alternatives that the public reviewed and shortlisted during a public process. A Preferred Concept was identified at a City Council Transportation Meeting on August 29, 2012 based on all of the project data and the comments received from the public and stakeholder meetings. The alternatives discussed during the process included:

Preferred Concept: Dual Roundabouts (Bowtie) with Riverside/Azalea Grade Separation			
Estimated Property Impacts:	55 properties w/ROW impacts; 1 structure take	Estimated CST Cost:	$11.5M
Estimated ROW Cost:	$3.5M	Estimated CST Time:	2-3 years
Rationale: Selected as best meeting project purpose and need, had least right-of-way/land impact in historic area, best corridor access management and provided greatest potential for economic development in the corridor			

Concept 2: One-Way Pair			
Estimated Property Impacts:	35 properties w/ ROW impacts; 3 structure takes	Estimated CST Cost:	$14.1M
Estimated ROW Cost:	$3.4M	Estimated CST Time:	2-3 years
Rationale: Was in final shortlist of two alternatives; however had greater ROW/land impacts was viewed as slightly lesser attractive to business development (created central island) and encouraged greater speeds through corridor.			

Alternative 3: Conventional Divided Median			
Estimated Property Impacts:	55 properties w/ROW impacts; 5 structure takes	Estimated CST Cost:	$14.8M
Estimated ROW Cost:	$5.9M	Estimated CST Time:	2-3 years
Rationale: Of the alternatives studied, this alterative had the highest cost and greatest impacts to properties and structures; community also had concerns over restriction in access as detrimental to business development. This concept received the least support from the community as was dropped earlier on in the public process.			

No-Build Alternative: Retain Reversible Lanes / Stripe Permanent Lanes (2-up 1-down or TWCLTL)			
Estimated Property Impacts:	None	Estimated Total Cost:	$250K (pavement overlay / removal of reversible lane equipment)
Estimated ROW Cost:	$0	Estimated CST Time:	3 mo.
Rationale: Single lane in during one or more peak periods would significantly increase delay / travel time; volume-to-capacity ratios > 1.6 in peak directions. Bottlenecks would stretch well beyond project study area on significant regional route (one of few crossings of Chattahoochee).			

Attachments:

1. Concept Layout
2. Typical Sections
3. Detailed Cost Estimates:
    a. CES Construction Estimate
    b. Utility Estimate, Right-of-Way
    c. Environmental Mitigation Estimate
4. Crash Data Summaries
5. Diagrams of Approved Traffic Forecasts
6. Summary of TE Study and Capacity Analyses
7. Roundabout Data
8. Roundabout Peer Review Studies
9. Bridge Inventory
10. ARC Conforming Plan Network Schematics
11. Minutes of Concept Report Meetings
12. Minutes of Other Agency or Stakeholder Meetings
13. Copy of PFA
14. Other items referred to in the body of the report
    a. Interchange profiles and construction sequencing
    b. Photosimulations
    c. E-mail from GDOT Planning confirming study area is considered a CBD
    d. Potential MS4 sites

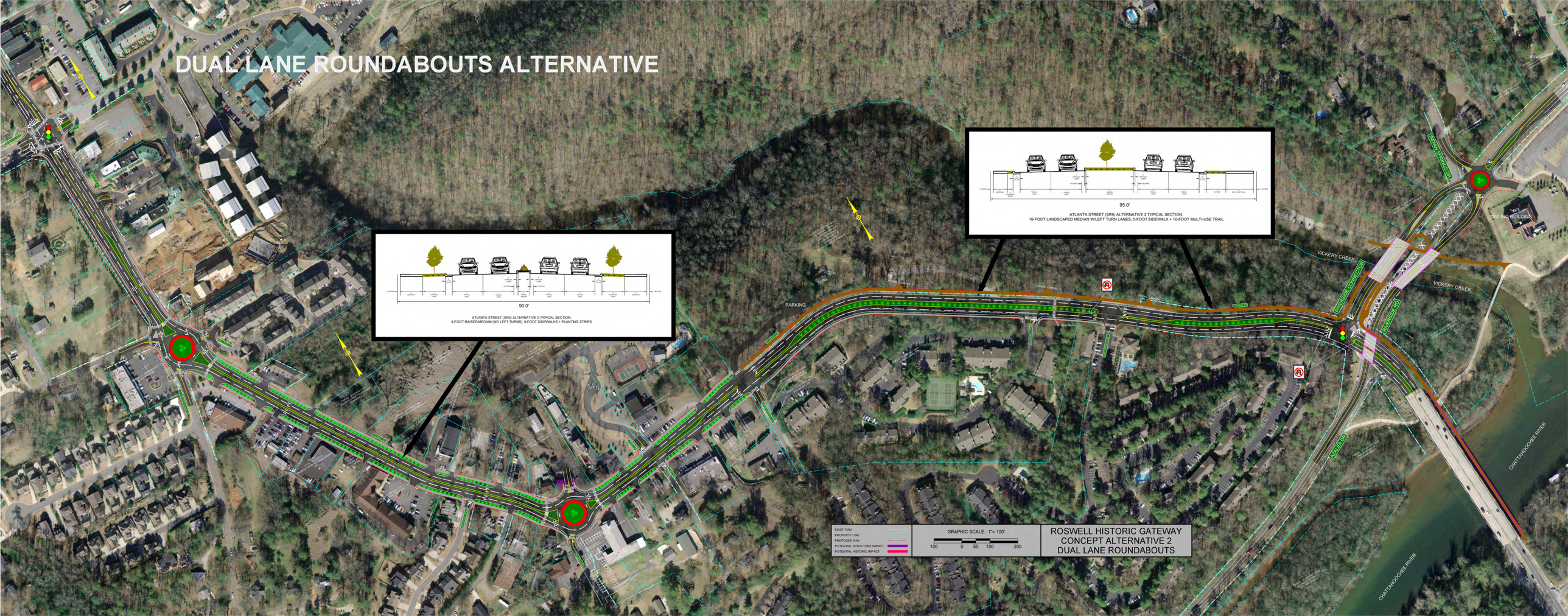
APPROVALS

Concur: _____
Director of Engineering

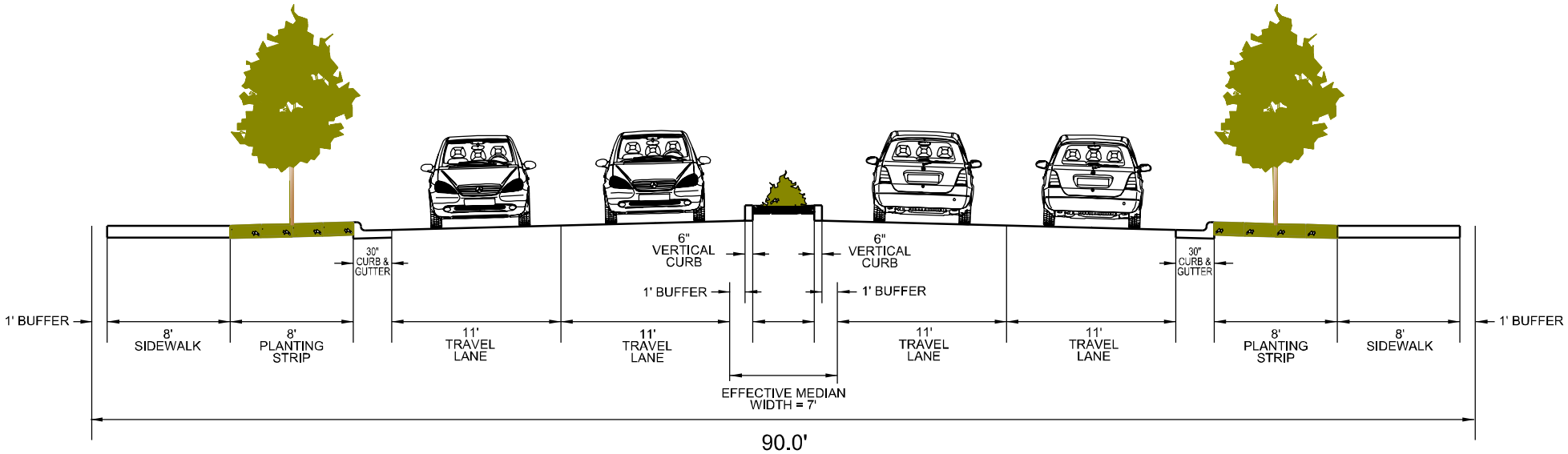
Approve: _____ 2/4/13
Chief Engineer Date

Attachment A-1: Concept Layout

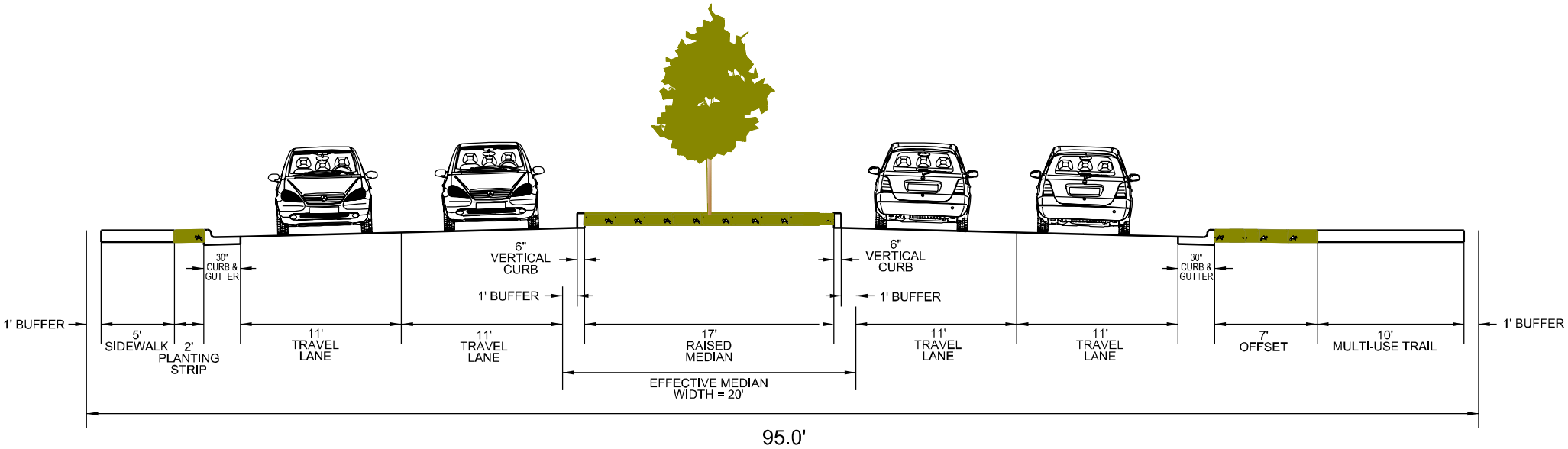
DUAL LANE ROUNDABOUTS ALTERNATIVE



Attachment A-2: Typical Sections



ATLANTA STREET (SR9) PREFERRED ALTERNATIVE TYPICAL SECTION:
4-FOOT RAISED MEDIAN (NO LEFT TURNS); 8-FOOT SIDEWALKS + PLANTING STRIPS



ATLANTA STREET (SR9) PREFERRED ALTERNATIVE TYPICAL SECTION:
17-FOOT LANDSCAPED MEDIAN W/LEFT TURN LANES; 5-FOOT SIDEWALK OR 10-FOOT MULTI-USE TRAIL

Attachment A-3: Detailed Cost Estimates:

PROJ. NO.			CALL NO.
P.I. NO.	721010		
DATE	11/16/2012		

INDEX (TYPE)	**DATE**	**INDEX**
REG. UNLEADED	Nov-12	$ 3.337
DIESEL		$ 3.961
LIQUID AC		$ 569.00

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)			**180515.25**	**$**	**180,515.25**
Monthly Asphalt Cement Price month placed (APM)	Max. Cap	60%	$ 910.40		
Monthly Asphalt Cement Price month project let (APL)			$ 569.00		
Total Monthly Tonnage of asphalt cement (TMT)			528.75		

ASPHALT	**Tons**	**%AC**	**AC ton**
Leveling		5.0%	0
12.5 OGFC		5.0%	0
12.5 mm	1821	5.0%	91.05
9.5 mm SP	27	5.0%	1.35
25 mm SP	6300	5.0%	315
19 mm SP	2427	5.0%	121.35
	10575		**528.75**

BITUMINOUS TACK COAT

Price Adjustment (PA)			**$ 14,249.96**	**$**	**14,249.96**
Monthly Asphalt Cement Price month placed (APM)	Max. Cap	60%	$ 910.40		
Monthly Asphalt Cement Price month project let (APL)			$ 569.00		
Total Monthly Tonnage of asphalt cement (TMT)			41.73979076		

Bitum Tack Gals	gals/ton	tons
9718	232.8234	41.7397908

PROJ. NO.		CALL NO.	
P.I. NO.	721010		
DATE	11/16/2012		

BITUMINOUS TACK COAT (surface treatment)

Price Adjustment (PA)			**22808.68274**	**$**	**22,808.68**
Monthly Asphalt Cement Price month placed (APM)	Max. Cap	60%	$ 910.40		
Monthly Asphalt Cement Price month project let (APL)			$ 569.00		
Total Monthly Tonnage of asphalt cement (TMT)			66.80926402		

Bitum Tack	SY	Gals/SY	Gals	gals/ton	tons
Single Surf. Trmt.	55435	0.20	11087	232.8234	47.61978392
Double Surf.Trmt.	10154	0.44	4467.76	232.8234	19.1894801
Triple Surf. Trmt		0.71	0	232.8234	0
					66.80926402

TOTAL LIQUID AC ADJUSTMENT	**$**	**217,573.90**

JOB ESTIMATE REPORT

JOB NUMBER : 721010 SPEC YEAR: 01
DESCRIPTION: ROSWELL HISTORIC GATEWAY

ITEMS FOR JOB 721010

LINE	ITEM	ALT	UNITS	DESCRIPTION	QUANTITY	PRICE	AMOUNT
0005	150-1000		LS	TRAFFIC CONTROL - ROSWELL GATEWAY	1.000	250000.00	250000.00
0020	150-5010		EA	TRAF CTRL,PORTABLE IMPACT ATTN	2.000	5473.52	10947.05
0025	153-1300		EA	FIELD ENGINEERS OFFICE TP 3	1.000	62941.82	62941.82
0030	163-0232		AC	TEMPORARY GRASSING	15.000	97.47	1462.08
0035	163-0300		EA	CONSTRUCTION EXIT	25.000	1029.44	25736.02
0040	163-0520		LF	CONSTR AND REMOVE TEMP PIPE SLOPE DRAIN	250.000	12.37	3093.94
0045	163-0531		EA	CONSTR & REM SEDIMENT BASIN,TP 1,STA NO- ROSWELL GATEWAY	2.000	9193.45	18386.90
0050	163-0550		EA	CONS & REM INLET SEDIMENT TRAP	66.000	113.25	7474.50
0054	171-0020		LF	TEMPORARY SILT FENCE, TYPE B	4107.000	3.00	12321.00
0055	165-0030		LF	MAINT OF TEMP SILT FENCE, TP C	4623.000	0.77	3588.60
0059	165-0020		LF	MAINT OF TEMP SILT FENCE, TP B	4107.000	1.00	4107.00
0060	165-0060		EA	MAINT OF TEMP SEDIMENT BASIN,STA NO -	2.000	1034.80	2069.62
0065	165-0101		EA	MAINT OF CONST EXIT	25.000	562.52	14063.12
0070	165-0105		EA	MAINT OF INLET SEDIMENT TRAP	66.000	52.77	3483.19
0073	167-1500		MO	WATER QUALITY INSPECTIONS	24.000	350.49	8411.93
0074	167-1000		EA	WATER QUALITY MONITORING AND SAMPLING	2.000	190.05	380.12
0075	171-0030		LF	TEMPORARY SILT FENCE, TYPE C	4623.000	2.25	10415.43
0079	210-0100		LS	GRADING COMPLETE - ROSWELL GATEWAY	1.000	750000.00	750000.00
0085	310-1101		TN	GR AGGR BASE CRS, INCL MATL	15226.000	16.37	249392.59
0090	402-3100		TN	REC AC 9.5 MM SP,TPI,GP1ORBL1,INCL BM&HL	27.000	91.27	2464.53
0095	402-3121		TN	RECYL AC 25MM SP,GP1/2,BM&HL	6300.000	54.06	340590.60
0100	402-3130		TN	RECYL AC 12.5MM SP,GP2,BM&HL	1821.000	66.07	120319.68
0105	402-3190		TN	RECYL AC 19 MM SP,GP 1 OR 2 ,INC BM&HL	2427.000	62.02	150526.18
0110	413-1000		GL	BITUM TACK COAT	9718.000	2.18	21279.02
0115	432-0206		SY	MILL ASPH CONC PVMT/ 1.50" DEP	38258.000	1.40	53918.53
0119	441-0016		SY	DRIVEWAY CONCRETE, 6 IN TK	10.000	34.88	348.80
0120	441-0018		SY	DRIVEWAY CONCRETE, 8 IN TK	10.000	47.13	471.32
0125	441-0204		SY	PLAIN CONC DITCH PAVING, 4 IN	11245.000	20.84	234371.21
0130	441-0740		SY	CONC MEDIAN, 4 IN	10464.000	18.94	198218.19
0135	441-4030		SY	CONC VALLEY GUTTER, 8 IN	1338.000	32.16	43039.71
0140	441-5001		LF	CONC HEADER CURB, 4", TP 1	10341.000	9.36	96791.76
0145	441-6022		LF	CONC CURB & GUTTER, 6"X30"TP2	17503.000	16.49	288708.48
0149	500-0100		SY	GROOVED CONCRETE	936.000	4.75	4453.89
0150	500-1006		LS	SUPERSTR CONCRETE, CL AA, BR NO - ROSWELL GATEWAY	1.000	1960800.00	1960800.00
0155	500-3002		CY	CL AA CONCRETE	1454.000	445.58	647883.44
0160	500-3200		CY	CL B CONC	8.000	389.21	3113.70
0165	550-1180		LF	STM DR PIPE 18",H 1-10	15448.000	28.10	434153.06

JOB ESTIMATE REPORT

0170	550-1240	LF	STM DR PIPE 24",H 1-10	2742.000	34.51	94649.64
0175	550-1300	LF	STM DR PIPE 30",H 1-10	1838.000	40.62	74667.28
0180	550-4218	EA	FLARED END SECT 18 IN, ST DR	6.000	441.26	2647.60
0185	550-4224	EA	FLARED END SECT 24 IN, ST DR	4.000	561.20	2244.81
0190	550-4230	EA	FLARED END SECT 30 IN, ST DR	1.000	706.77	706.78
0195	550-4418	EA	FLARED END SECT 18 IN, SLP DR	3.000	495.00	1485.00
0200	576-1018	LF	SLOPE DRAIN PIPE, 18 IN	174.000	34.92	6077.77
0203	603-2036	SY	STN DUMPED RIP RAP, TP 1, 36"	84.000	48.41	4066.44
0204	603-2024	SY	STN DUMPED RIP RAP, TP 1, 24"	945.000	49.69	46963.84
0205	603-2181	SY	STN DUMPED RIP RAP, TP 3, 18"	99.000	28.72	2843.52
0209	603-2182	SY	STN DUMPED RIP RAP, TP 3, 24"	58.000	42.59	2470.74
0210	603-7000	SY	PLASTIC FILTER FABRIC	1507.000	4.14	6248.17
0215	611-4001	EA	RECONSTR MINOR DRAINAGE STR	1.000	1725.06	1725.06
0220	611-5300	LF	RESET GUARDRAIL	810.000	9.97	8075.70
0225	615-1200	LF	DIRECTIONAL BORE - ROSWELL GATEWAY	862.000	10.37	8944.35
0230	634-1200	EA	RIGHT OF WAY MARKERS	202.000	95.57	19306.94
0235	636-1020	SF	HWY SGN,TP1MAT,REFL SH TP3	1076.000	13.11	14115.14
0239	636-2070	LF	GALV STEEL POSTS, TP 7	1472.000	6.61	9733.35
0240	636-2080	LF	GALV STEEL POSTS, TP 8	187.000	9.41	1760.55
0244	636-2090	LF	GALV STEEL POSTS, TP 9	240.000	7.10	1704.11
0245	636-3010	EA	GROUND-MOUNTED BREAKAWAY SIGN SUPPORT	86.000	455.10	39138.80
0250	639-3014	EA	STEEL STR POLE,TP 4,LUMIN ARM	9.000	11541.21	103870.98
0255	639-4004	EA	STRAIN POLE, TP IV	6.000	5299.83	31799.00
0260	641-1100	LF	GUARDRAIL, TP T	700.000	35.57	24905.49
0265	641-1200	LF	GUARDRAIL, TP W	891.000	15.74	14031.28
0270	641-5001	EA	GUARDRAIL ANCHORAGE, TP 1	8.000	629.08	5032.71
0275	641-5012	EA	GUARDRAIL ANCHORAGE, TP 12	10.000	1732.85	17328.57
0280	681-1150	EA	LT STD, ALUM,14'MH,POST TOP	385.000	1453.92	559759.20
0285	681-6346	EA	LUMINAIRE,TP 3, 250W,HP SODIUM	770.000	1305.00	1004850.00
0290	682-9020	EA	ELEC JCT BOX	4.000	564.32	2257.28
0294	647-1000	LS	TRAF SIGNAL INSTALLATION NO - 2 ROSWELL GATEWAY	1.000	200000.00	200000.00
0295	647-1000	LS	TRAF SIGNAL INSTALLATION NO - ROSWELL GATEWAY	1.000	300000.00	300000.00
0300	653-0110	EA	THERM PVMT MARK, ARROW, TP 1	6.000	75.11	450.67
0305	653-2501	LM	THERMO SOLID TRAF ST, 5 IN, WH	25.000	1451.27	36281.86
0310	653-2502	LM	THERMO SOLID TRAF ST, 5 IN YE	39.000	1570.92	61266.12
0314	653-6004	SY	THERM TRAF STRIPING, WHITE	1182.000	3.92	4635.07
0315	653-6006	SY	THERM TRAF STRIPING, YELLOW	49900.000	3.31	165605.63
0320	653-4501	GLM	THERMO SKIP TRAF ST, 5 IN, WHI	3.000	975.85	2927.58
0325	653-0210	EA	THERM PVMT MARK, WORD , TP 1	10.000	121.91	1219.15
0330	668-1100	EA	CATCH BASIN, GP 1	51.000	1955.05	99707.71
0335	668-1110	LF	CATCH BASIN, GP 1, ADDL DEPTH	6.000	213.30	1279.83
0340	668-2100	EA	DROP INLET, GP 1	5.000	1741.63	8708.17
0345	668-2110	LF	DROP INLET, GP 1, ADDL DEPTH	2.000	178.70	357.41
0350	668-4311	LF	ST SEW MANHOLE,TP 1,A DEP,CL 1	8.000	151.06	1208.53
0355	668-5000	EA	JUNCTION BOX	2.000	1408.31	2816.64
0360	700-6910	AC	PERMANENT GRASSING	15.000	448.72	6730.86
0365	700-7000	TN	AGRICULTURAL LIME	30.000	68.95	2068.63
0370	700-8000	TN	FERTILIZER MIXED GRADE	2.000	532.08	1064.17
0375	716-2000	SY	EROSION CONTROL MATS, SLOPES	43047.000	0.78	33602.49
0380	682-1303	LF	CABLE, TP THW, AWG NO 12	10000.000	6.00	60000.00
0385	621-3007	LF	CONCRETE BARRIER, TYPE 7M	440.000	27.54	12117.60

JOB ESTIMATE REPORT

0390	682-7060	LF	CONDUIT DUCT BANK, TYPE 1	1.000	500.00	500.00
0395	668-3300	EA	SAN SEW MANHOLE, TP 1 ROSWELL GATEWAY	5.000	2656.59	13282.98
0400	009-3500	LS	MISC LANDSCAPE ITEMS	1.000	1500000.00	1500000.00

ITEM TOTAL 10695106.42
INFLATED ITEM TOTAL 10695106.42

TOTALS FOR JOB 721010

ESTIMATED COST: 10695106.41
CONTINGENCY PERCENT (0.0): 0.00
ESTIMATED TOTAL: 10695106.41

NOTE: The item totals include all alternate items. The estimated totals include only the low cost alternate items.

Department of Transportation

State of Georgia

Interdepartmental Correspondence

FILE	R/W Cost Estimate	**OFFICE**	Atlanta
		DATE	January 29, 2013
FROM	Phil Copeland, Right of Way Administrator		
TO	Derrick Brown, Project Manager		
SUBJECT	**Preliminary Right of Way Cost Estimate**		

Project: Fulton County
P.I. No.: 721010
Description: Roswell Historic Gateway Dual Roundabouts

As per your request, attached is a copy of the approved Preliminary Right of Way Cost Estimates on the above referenced projects.

If you have any questions, please contact LaShone Alexander at
One Georgia Center 600 West Parkway Street, NW Atlanta, GA 30308,
Right of Way Office at (478) 553-1569 or (478) 232-4045.

`

PC:LA
Attachments
c:

GEORGIA DEPARTMENT OF TRANSPORTATION
PRELIMINARY ROW COST ESTIMATE SUMMARY

Date:	1/29/2013	Project:	721010
Revised:		County:	Fulton County
		PI:	721010

Description: Roswell Historic Gateway
Project Termini: Dual Lane Roundabouts

Existing ROW: Varies
Parcels: 55
Required ROW: Varies

Land and Improvements	$2,395,530.00
Proximity Damage	*$0.00*
Consequential Damage	*$0.00*
Cost to Cures	*$0.00*
Trade Fixtures	*$0.00*
Improvements	*$1,225,000.00*
Valuation Services	$77,500.00
Legal Services	$374,625.00
Relocation	$125,000.00
Demolition	$25,000.00
Administrative	$477,500.00
TOTAL ESTIMATED COSTS	$3,475,155.00
TOTAL ESTIMATED COSTS (ROUNDED)	***$3,476,000.00***

Preparation Credits	Hours	Signature

Prepared By: LaShone Alexander CG#: 286999 01/29/2013
Approved By: LaShone Royal CG#: 286999 01/29/2013

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

allsop

Georgia Department of Transportation
Preliminary ROW Cost Estimate Worksheet

Project/County/PI 721010 Fulton County 721010

		A	B	C	D
	Land and Improvements	**Agriculture**	**Residential**	**Commercial**	**Industrial**
1	Estimate Low (ac)	$9,000.00	$85,000.00	$400,000.00	$0.00
2	Estimate High (ac)	$15,000.00	$120,000.00	$800,000.00	$0.00
3	Estimate Used (ac)	$10,500.00	$85,000.00	$420,000.00	$0.00
4	Fee Simple Area (ac)	2.84	2.00	0.41	0.00
5	Fee Simple Estimate	$29,820.00	$170,000.00	$172,200.00	$0.00
6	Perm Esmt Area (ac)	0.00	0.00	0.00	0.00
7	Perm Esmt Factor	0%	0%	0%	0%
8	Perm Esmt Estimate	$0.00	$0.00	$0.00	$0.00
9	Temp Esmt Area (ac)	0.00	0.00	0.00	0.00
10	Temp East Factor	0%	0%	0%	0%
11	Temp Esmt Estimate	$0.00	$0.00	$0.00	$0.00
12	Proximity Damages	$0.00	$0.00	$0.00	$0.00
13	Consequential Damages	$0.00	$0.00	$0.00	$0.00
14	Cost to Cures	$0.00	$0.00	$0.00	$0.00
15	Improvements	$150,000.00	$325,000.00	$750,000.00	$0.00
16	Trade Fixtures	$0.00	$0.00	$0.00	$0.00
17					
18	PROPERTY TYPE TOTALS	$179,820.00	$495,000.00	$922,200.00	$0.00
19			SUB TOTAL PROPERTY TYPES		$1,597,020.00
20			Counter Offers and Condemnation Increases		$798,510.00
21					
22			**GRAND TOTAL LANDS AND IMPROVEMENTS**		$2,395,530.00

Georgia Department of Transportation
Preliminary ROW Cost Estimate Worksheet

Project/County/PI 721010 Fulton County 721010

		A	B	C	D
	Valuation Services	**Agriculture**	**Residential**	**Commercial**	**Industrial**
1	Appraisals (# of Parcels)	24	24	7	0
2	Estimated Fees (per Parcel)	$1,000.00	$1,000.00	$2,000.00	$0.00
3	TOTAL APPRAISALS	$24,000.00	$24,000.00	$14,000.00	$0.00
4	Sign Estimates	0	0	0	0
5	Estimated Fees	$0.00	$0.00	$0.00	$0.00
6	TOTAL SIGN ESTIMATES	$0.00	$0.00	$0.00	$0.00
7	Specialty Reports	0	0	0	0
8	Estimated Fees	$0.00	$0.00	$0.00	$0.00
9	TOTAL SPECIALTY REPORTS	$0.00	$0.00	$0.00	$0.00
10	Septic/Well Reports	0	0	0	0
11	Estimated Fees	$0.00	$0.00	$0.00	$0.00
12	TOTAL SEPTIC/WELL REPORTS	$0.00	$0.00	$0.00	$0.00
13					
14					
15					
16	TOTAL VALUATION FEES	$24,000.00	$24,000.00	$14,000.00	$0.00
17			SUB TOTAL VALUATION SERVICES		$62,000.00
18			Updates and Incidentals (Min $2,500 or 25%)		$15,500.00
19			**GRAND TOTAL VALUATION SERVICES**		$77,500.00

Georgia Department of Transportation
Preliminary ROW Cost Estimate Worksheet

Project/County/PI 721010 Fulton County 721010

		A	B	C	D
	Legal Services	**Parcels**	**Estimated Fees**		**TOTALS**
1	Meeting with Attorney	55	$125.00		$6,875.00
2	Preliminary Titles	55	$200.00		$11,000.00
3	Closing and Final Title	55	$300.00		$16,500.00
4	Recording Fees	55	$50.00		$2,750.00
5	Condemnation Filing	9	$5,000.00		$45,000.00
6	Litigation Costs	9	$25,000.00		$225,000.00
7	Updates and Incidentials	9	$7,500.00		$67,500.00
8					
9					
10					
11					
12					
13					
14					
15					
16					
17			**GRAND TOTAL LEGAL SERVICES**		$374,625.00

Georgia Department of Transportation
Preliminary ROW Cost Estimate Worksheet

Project/County/PI 721010 Fulton County 721010

		A	B	C	D
	Relocation	**Displacements**	**Estimated Costs**		**TOTALS**
1	Business Displacement	1	$15,000.00		$15,000.00
2	Residential Tenant		$20,000.00		$0.00
3	Residential Owner		$40,000.00		$0.00
4	Pro-Rata Taxes	55	$1,000.00		$55,000.00
5	Property Pin Replacement	55	$1,000.00		$55,000.00
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17			**GRAND TOTAL RELOCATION**		$125,000.00

Georgia Department of Transportation
Preliminary ROW Cost Estimate Worksheet

Project/County/PI 721010 Fulton County 721010

		A	B	C	D
	Demolition	**Items/Improvements**	**Estimated Costs**		**TOTALS**
1	Residential Structures	0	$15,000.00		$0.00
2	Commercial Structures	1	$25,000.00		$25,000.00
3	Hotels/Apartments		$60,000.00		$0.00
4	UST's - Dispensers		$50,000.00		$0.00
5	Billboards		$8,000.00		$0.00
6	Signs - Light Standards		$1,500.00		$0.00
7	Water Vaults		$15,000.00		$0.00
8	Gas/Water Service Separation		$2,500.00		$0.00
9					
10					
11					
12					
13					
14					
15					
16					
17			**GRAND TOTAL DEMOLITION**		$25,000.00

Georgia Department of Transportation
Preliminary ROW Cost Estimate Worksheet

Project/County/PI 721010 Fulton County 721010

		A	B	C	D
	Administrative	**Parcels**	**Man hours per Parcel**		**TOTALS**
1	Pre-Acquisition	55	40		$110,000.00
2	Acquisition	55	100		$275,000.00
3	Relocation	5	50		$12,500.00
4	Administrative Appeals	14	50		$35,000.00
5	Post-Acquisition	9	100		$45,000.00
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17			**GRAND TOTAL INHOUSE**		$477,500.00

Preliminary Utility Estimate

Description	Quantity	Unit Cost	Cost
Water Line			
Remove Water Line	330	$282.50	$93,225.00
Replace Water line	650	$22.34	$14,521.00
Relocate Water Valves	4	$1,400.00	$5,600.00
Relocate Water meter	4	$503.00	$2,012.00
Fire Hydrant	6	$2,820.00	$16,920.00
Service Line	150	$11.27	$1,690.50
Telephone (Underground)			
Replace Telephone Line	1000	$5.00	$5,000.00
Junction Box	5	$550.00	$2,750.00
Power (Overhead)			
Relocate Power Lines	700	$7.80	$5,460.00
Relocate Poles	55	$10,000.00	$550,000.00
Gas			
Install Steel Gas Main	900	$886.03	$797,427.00
			$1,494,605.50

7/16.2012

Parsons Brinckerhoff, Inc.
3340 Peachtree Road
Tower Place 100, Suite 2400
Atlanta, Georgia 30326
Phone: 404-364-8193 Fax: 404-237-3015

Preliminary Mitigation Cost Estimate

Project:	**SR 9 Widening and Removal of Reversible Lanes**	Date:	11/14/2012
	STP00-0187-01(020), PI No. 721010	PB Project No.	173458B
Prepared By:	Travis Garnto	Cc: Project File	
Prepared On:	11/14/2012		

As requested for the concept cost estimate of the subject project, a preliminary mitigation cost estimate has been prepared as detailed below. The cost estimate is based on an anticipated cost of $18,000 per wetland credit and $34 per stream credit. This estimate was prepared as part of the PAR process.

Type of Mitigation	Amount of Impacts	Required Credits	Cost per Credit	Total Cost of Credits
Wetland	0.02 acre	0.01	$18,000.00	$95,472.00
Stream	644 linear feet	2808	$34.00	$180.00
			Total Mitigation Cost for Project	**$95,652.00**

WETLANDS AND OPEN WATERS MITIGATION WORKSHEETS
SR9 Widening and Removal of Reversible Lanes (HUC 03130001)
GDOT Project No. STP00-0187-01(020)
P.I. No. 721010

ADVERSE IMPACT FACTORS

Fator	Options						
Dominant Effect	Fill 2.0	Dredge 1.8	Impound 1.6	Drain 1.4	Flood 1.2	Clear 1.0	Shade 0.5
Duration of Effects	7+ years 2.0	5 - 7 years 1.5	3 -5 years 1.0	1 - 3 years 0.5	< 1 year 0.1		
Existing Condition	Class 1 2.0	Class 2 1.5	Class 3 1.0	Class 4 0.5	Class 5 0.1		
Lost Kind	Kind A 2.0	Kind B 1.5	Kind C 1.0	Kind D 0.5	Kind E 0.1		
Preventability	High 2.0	Moderate 1.0	Low 0.5	None 0			
Rarity Ranking	Rare 2.0	Uncommon 0.5	Common 0.1				

These factors are determined on a case-by-case basis.

REQUIRED MITIGATION CREDITS WORKSHEET

Factor	Ephemeral 6						
Dominant Effect	2						
Duration of Effect	2						
Existing Condition	2						
Lost Kind	0.5						
Preventability	0.5						
Rarity Ranking	0.1						
Sum of r Factors	7.1						
Impacted Areas	0.002						
R x AA =	0.01						

Total Required Credits = 0.01

Stream Mitigation Worksheet
SR 9 Widening and Removal of Reversible Lanes (HUC 03130001)
GDOT Project No. STP00-0187-01(020)
P.I. No. 721010

Stream Type Impacted	Intermittent 0.1			Perennial Stream >15' in width 0.4			Perennial Stream ≤ 15' in width 0.8		
Priority Area	Tertiary 0.5			Secondary 0.8			Primary 1.5		
Existing Condition	Fully Impaired 0.25			Somewhat Impaired 0.5			Fully Functional 1.0		
Duration	Temporary 0.05			Recurrent 0.1			Permanent 0.2		
Dominant Impact	Shade/ Clear 0.05	Utility X-ing 0.4	Bank Armor 0.7	Deten-tion 1.5	Stream Crossing (≤ 100') 1.7	Impound 2.7	Morpho-logic Change 2.7	Pipe >100' 3.0	Fill 3.0
Scaling Factor (Based on # linear feet Impacted	< 100' impact 0	100-200' impact 0.05	201'-500' impact 0.1	501-1000' 0.2	. 1000' impact 0.4 for each 1000' feet of impact (round impacts to the nearest 1000') (example: 2,200' of impact - scaling factor = 0.8; 2,800' of impact - scaling factor - 1.2)				

Reaches to Be Impacted	**Stream 2**	**Stream 3**	**Stream 5**	
	Complete the Following for Each Reach to Be Impacted			
Simon Channel Evolution Stage	II	III	III	
Rosgen Stream Type/D50	G	B	B	
Criteria for Selecting Existing Condition for Each Reach	Visual	Visual	Visual	
Bankfull Width and Depth	Width: 100.0 ft Depth: 3.0 ft	Width: 2.0 ft Depth: 0.3 ft	Width: 4.0 ft Depth: 0.4 ft	
Bankfulll Indicators (attach photograph showing bankfull for each)				

Factors	**Stream 2**	**Stream 3**	**Stream 5**	
Stream Type Impacted	0.4	0.1	0.1	
Priority Area	0.8	0.5	0.5	
Existing Condition	0.5	0.5	0.5	
Duration	0.2	0.2	0.2	
Dominant Impact	1.7	3	3	
Scaling Factor	0.05	0.2	0.2	
Sum of Factors M =	3.6	4.5	4.5	
Feet Stream in Reach Impacted LF=	100	330	214	
M X LF =	360.00	1485.00	963.00	

Total Mitigation Credits Required (M X LF) = 2808.00

Attachment A-4: Crash Data Summaries

Table 2: SR 9 Corridor Crash Rates

	SR 9 Corridor Segment (Fulton County)		Functional Classification	AADT	Segment Length (mi)	Rate (per 100 million Vehicle Miles of Travel)					Total Number of Crashes				
	From Azalea Drive/Riverside Road	To Marietta Highway/Mill Street				All Crashes	Injuries	Injury Crashes	Fatalities	Fatal Crashes	All Crashes	Injuries	Injury Crashes	Fatalities	Fatal Crashes
Year	2007		Urban Principal Arterial (Non-NHS)	24,320	1.05	1673.7	386.2	279.0	0.0	0.0	156	36	26	0	0
	2008		Urban Principal Arterial (Non-NHS)	22,890	1.05	1561.7	410.4	319.2	0.0	0.0	137	36	28	0	0
	2009		Urban Principal Arterial (Non-NHS)	22,250	1.05	1372.1	328.4	304.9	11.7	11.7	117	28	26	1	1
	2007 to 2009		Urban Principal Arterial (Non-NHS)	23,153	1.05	1540.2	375.6	300.5	3.76	3.76	410	100	80	1	1

Georgia Statewide Averages for comparison								
Facility	Avg Annual Vehicle Miles Traveled	Facility Length (mi)	Rate (per 100 million Vehicle Miles of Travel					
			All Crashes	Injuries	Injury Crashes	Fatalities	Fatal Crashes	
2009 Urban Principal Arterial (Non-NHS)	17,453	1,037	602.6	213.7	141.3	1.32	1.26	Applies to SR 9 Urban Principal Arterial (Non-NHS)
2008 Urban Principal Arterial (Non-NHS)	17,430	1,039	611.9	213.4	142.0	1.33	1.27	
2007 Urban Principal Arterial (Non-NHS)	18,218	1,039	649.1	226.7	151.3	1.53	1.51	
2007-2009 Statewide Average	*17,700*	*1,038*	*621.2*	*217.9*	*144.8*	*1.39*	*1.34*	

	Total Number of Crashes					Types of Crashes in Numbers					
	All Crashes	Injuries	Injury Crashes	Fatalities	Fatal Crashes	Angle	Rear-end	Head On	Not A Collision With A Motor	Sideswipe - Same Direction	Sideswipe - Opposite
2007	156	36	26	0	0	46	75	3	12	19	1
2008	137	36	28	0	0	41	72	1	9	10	4
2009	117	28	26	1	1	27	59	1	7	20	3
Total	410	100	80	1	1	114	206	5	28	49	8

	Types of Crashes in Percentages					
	Angle	Rear-end	Head On	Not A Collision With A Motor Vehicle	Sideswipe - Same Direction	Sideswipe - Opposite Direction
2007	29.5%	48.1%	1.9%	7.7%	12.2%	0.6%
2008	29.9%	52.6%	0.7%	6.6%	7.3%	2.9%
2009	23.1%	50.4%	0.9%	6.0%	17.1%	2.6%
Total (2007 to 2009)	27.8%	50.2%	1.2%	6.8%	12.0%	2.0%

Intersection Accident Data Summary along SR 9 Corridor (2007-2009)										
S. No.	Location	Number of Accidents	Number of Injuries	Number of Fatalities	Type of Accidents					
					Angle	Head On	Rear End	Side-swipe Same	Side-swipe Opposite	Other
1	SR 120	102	29	0	33	2	40	20	0	7
2	King St	15	0	0	3	0	6	5	0	1
3	Jones Dr	30	6	0	6	4	11	4	1	4
4	Warm Springs Cir	4	1	0	1	0	2	0	0	1
5	Azalea/Riverside	138	19	0	38	2	75	16	2	5
6	Midblock locations	106	30	0	20	0	63	8	2	13
	Total of 3 years	395	85	0	101	8	197	53	5	31

Georgia Statewide Intersection Average Crash Frequeny - 2007

Category	Average Frequency	Critical Frequency	Used to Compare at
1 - STATE ROUTE WITH STATE ROUTE, URBAN, SIGNALIZED	19.99	26.85	SR 9 @ SR 120
2 - STATE ROUTE WITH STATE ROUTE, RURAL, SIGNALIZED	4.93	8.08	
3 - STATE ROUTE WITH STATE ROUTE, URBAN, UNSIGNALIZED	4.08	6.9	
4 - STATE ROUTE WITH STATE ROUTE, RURAL, UNSIGNALIZED	1.23	2.55	
5 - STATE ROUTE WITH OTHER ROUTE, URBAN, SIGNALIZED	14.04	19.71	SR 9 @ Riverside/Azalea
6 - STATE ROUTE WITH OTHER ROUTE, RURAL, SIGNALIZED	3.99	6.78	
7 - STATE ROUTE WITH OTHER ROUTE, URBAN, UNSIGNALIZED	2	3.83	
8 - STATE ROUTE WITH OTHER ROUTE, RURAL, UNSIGNALIZED	0.37	0.87	

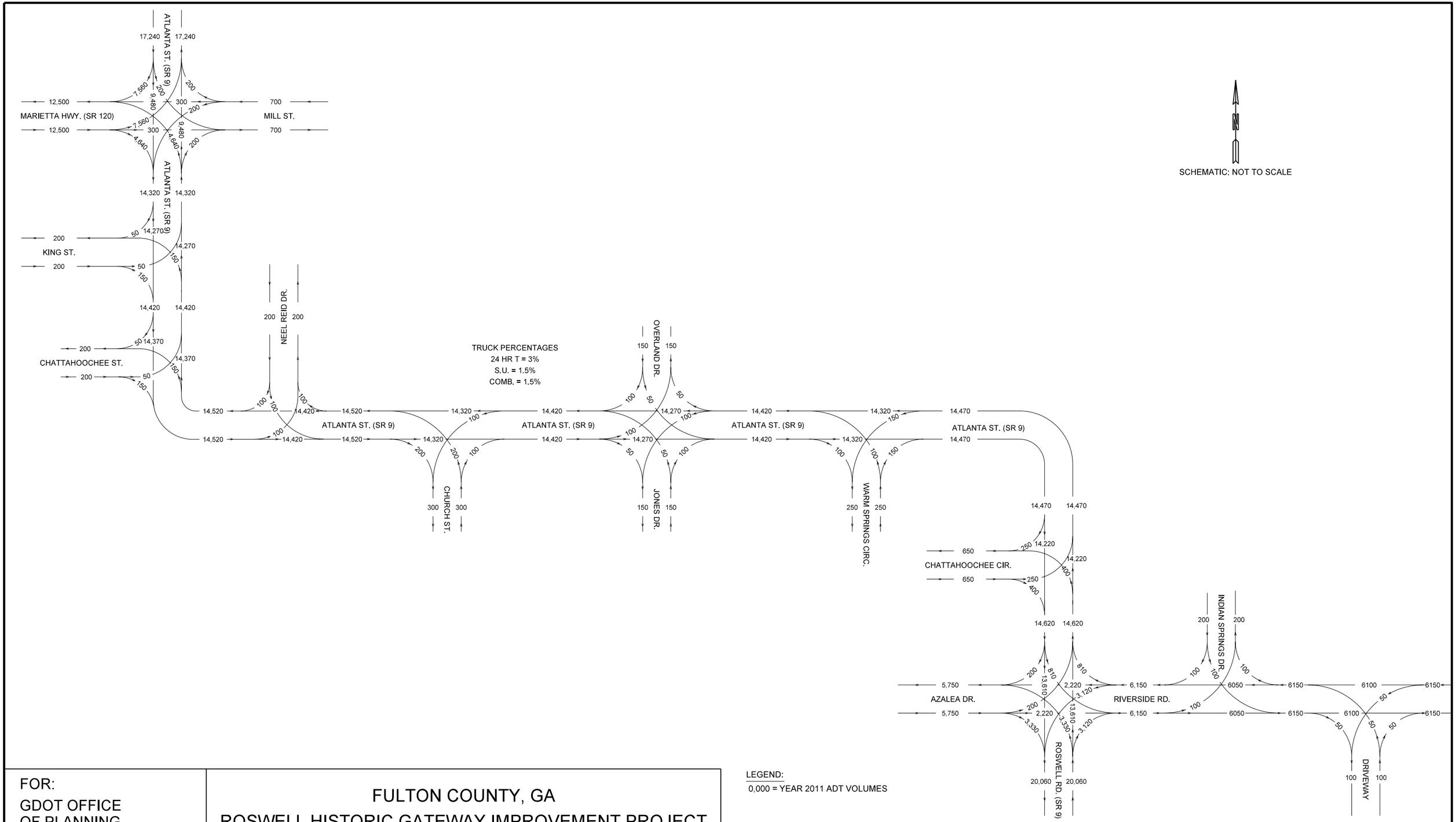
Georgia Statewide Intersection Average Crash Frequeny - 2008

Category	Average Frequency	Critical Frequency	Used to Compare at
1 - STATE ROUTE WITH STATE ROUTE, URBAN, SIGNALIZED	19.21	25.92	SR 9 @ SR 120
2 - STATE ROUTE WITH STATE ROUTE, RURAL, SIGNALIZED	4.66	7.71	
3 - STATE ROUTE WITH STATE ROUTE, URBAN, UNSIGNALIZED	4.14	6.98	
4 - STATE ROUTE WITH STATE ROUTE, RURAL, UNSIGNALIZED	1.22	2.54	
5 - STATE ROUTE WITH OTHER ROUTE, URBAN, SIGNALIZED	13.13	18.59	SR 9 @ Riverside/Azalea
6 - STATE ROUTE WITH OTHER ROUTE, RURAL, SIGNALIZED	3.61	6.23	
7 - STATE ROUTE WITH OTHER ROUTE, URBAN, UNSIGNALIZED	1.89	3.65	
8 - STATE ROUTE WITH OTHER ROUTE, RURAL, UNSIGNALIZED	0.35	0.83	

Georgia Statewide Intersection Average Crash Frequeny - 2009

Category	Average Frequency	Critical Frequency	Used to Compare at
1 - STATE ROUTE WITH STATE ROUTE, URBAN, SIGNALIZED	13.58	19.15	SR 9 @ SR 120
2 - STATE ROUTE WITH STATE ROUTE, RURAL, SIGNALIZED	3.36	5.87	
3 - STATE ROUTE WITH STATE ROUTE, URBAN, UNSIGNALIZED	2.93	5.24	
4 - STATE ROUTE WITH STATE ROUTE, RURAL, UNSIGNALIZED	0.85	1.87	
5 - STATE ROUTE WITH OTHER ROUTE, URBAN, SIGNALIZED	9.34	13.87	SR 9 @ Riverside/Azalea
6 - STATE ROUTE WITH OTHER ROUTE, RURAL, SIGNALIZED	2.7	4.91	
7 - STATE ROUTE WITH OTHER ROUTE, URBAN, UNSIGNALIZED	1.35	2.77	
8 - STATE ROUTE WITH OTHER ROUTE, RURAL, UNSIGNALIZED	0.24	0.55	

Attachment A-5: Diagrams of Approved Traffic Forecasts

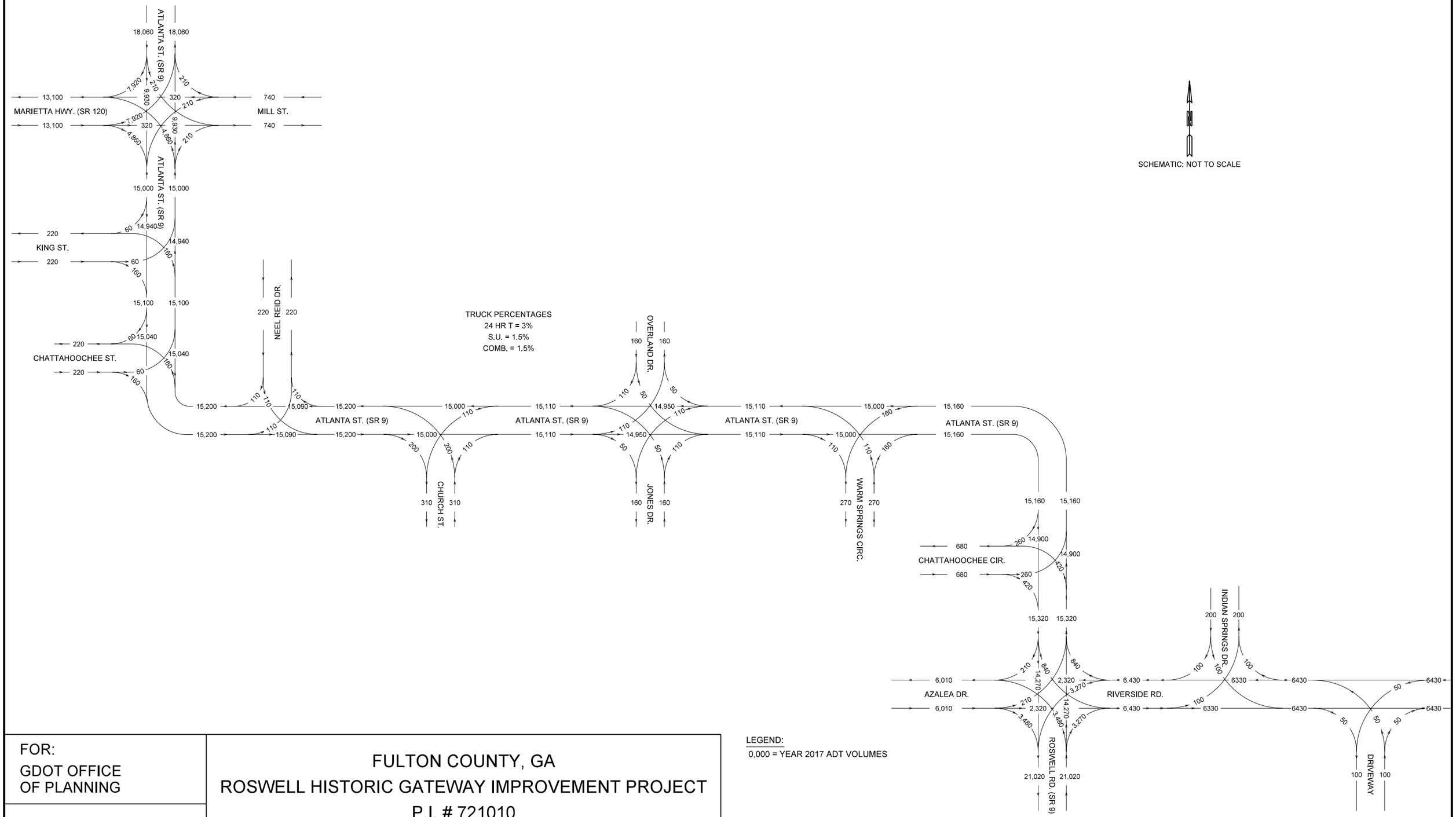


LEGEND:
0,000 = YEAR 2011 ADT VOLUMES

FOR:
GDOT OFFICE
OF PLANNING

BY:
PARSONS BRINCKERHOFF

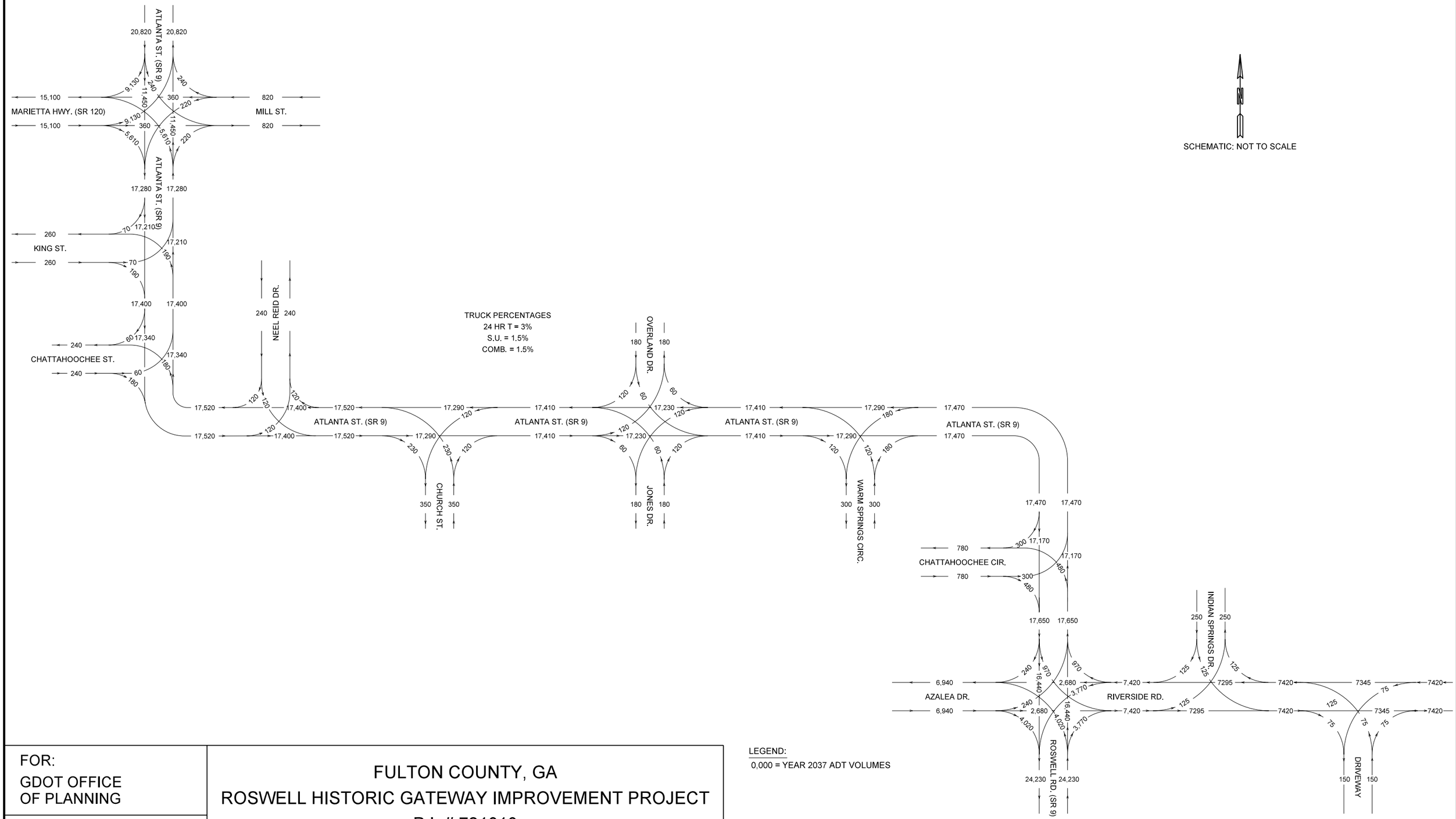
FULTON COUNTY, GA
ROSWELL HISTORIC GATEWAY IMPROVEMENT PROJECT
P.I. # 721010
2011 EXISTING ADT VOLUMES
FIGURE 1



FOR:
GDOT OFFICE
OF PLANNING

BY:
PARSONS BRINCKERHOFF

FULTON COUNTY, GA
ROSWELL HISTORIC GATEWAY IMPROVEMENT PROJECT
P.I. # 721010
2017 NO-BUILD ADT VOLUMES
FIGURE 2

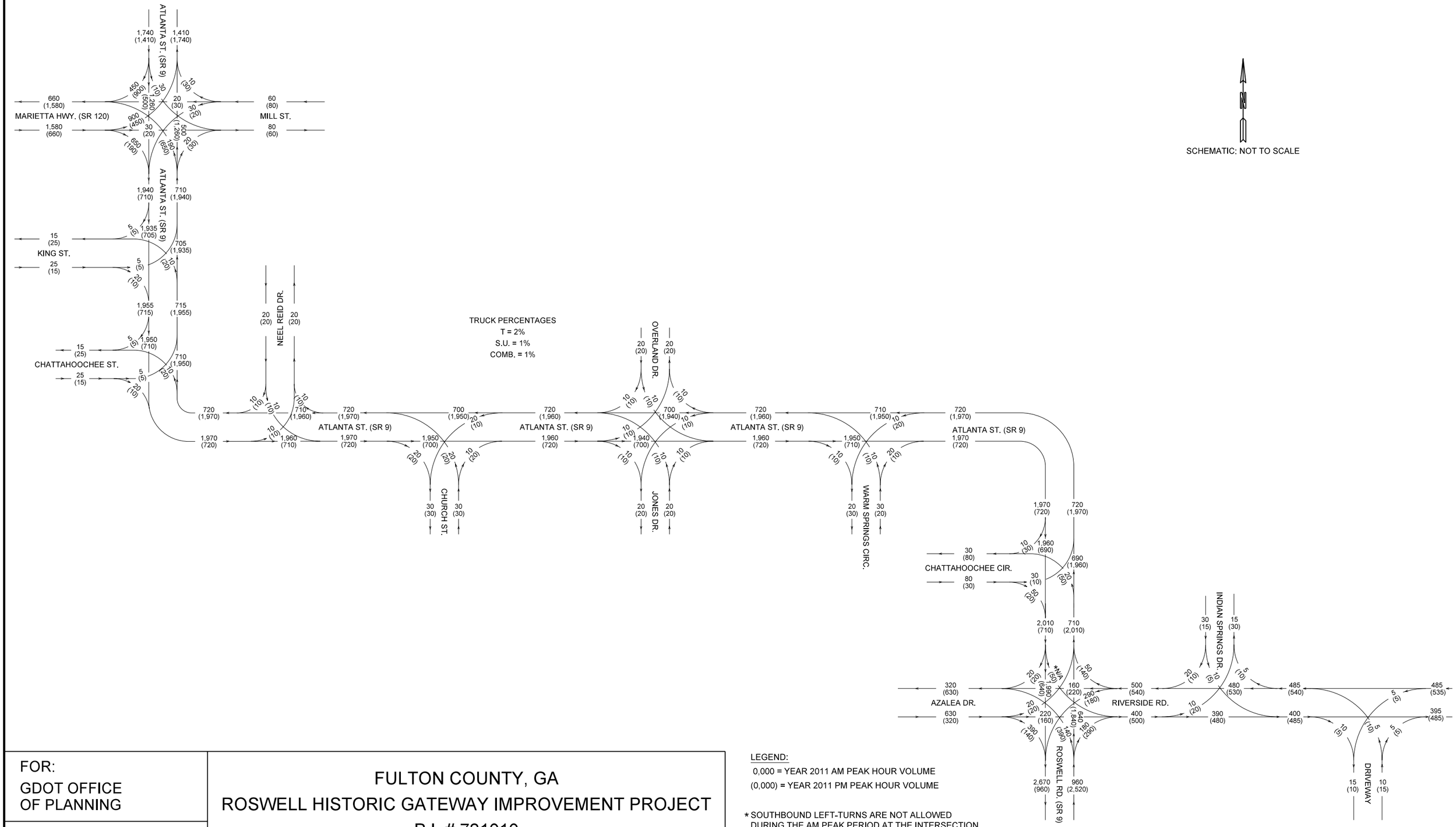


LEGEND:
0,000 = YEAR 2037 ADT VOLUMES

FOR:
GDOT OFFICE
OF PLANNING

BY:
PARSONS BRINCKERHOFF

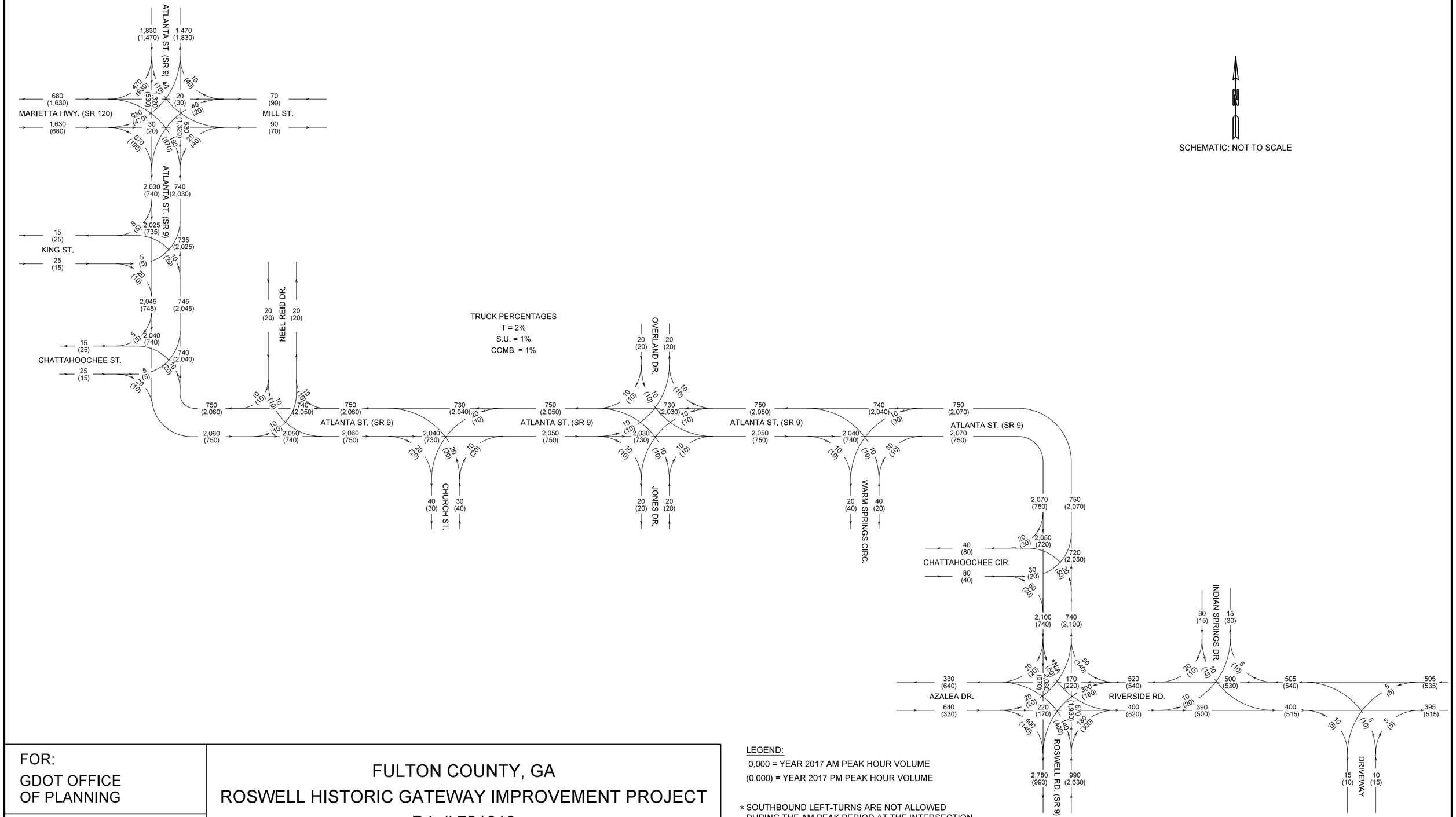
FULTON COUNTY, GA
ROSWELL HISTORIC GATEWAY IMPROVEMENT PROJECT
P.I. # 721010
2037 NO-BUILD ADT VOLUMES
FIGURE 3



FOR:
GDOT OFFICE
OF PLANNING

BY:
PARSONS BRINCKERHOFF

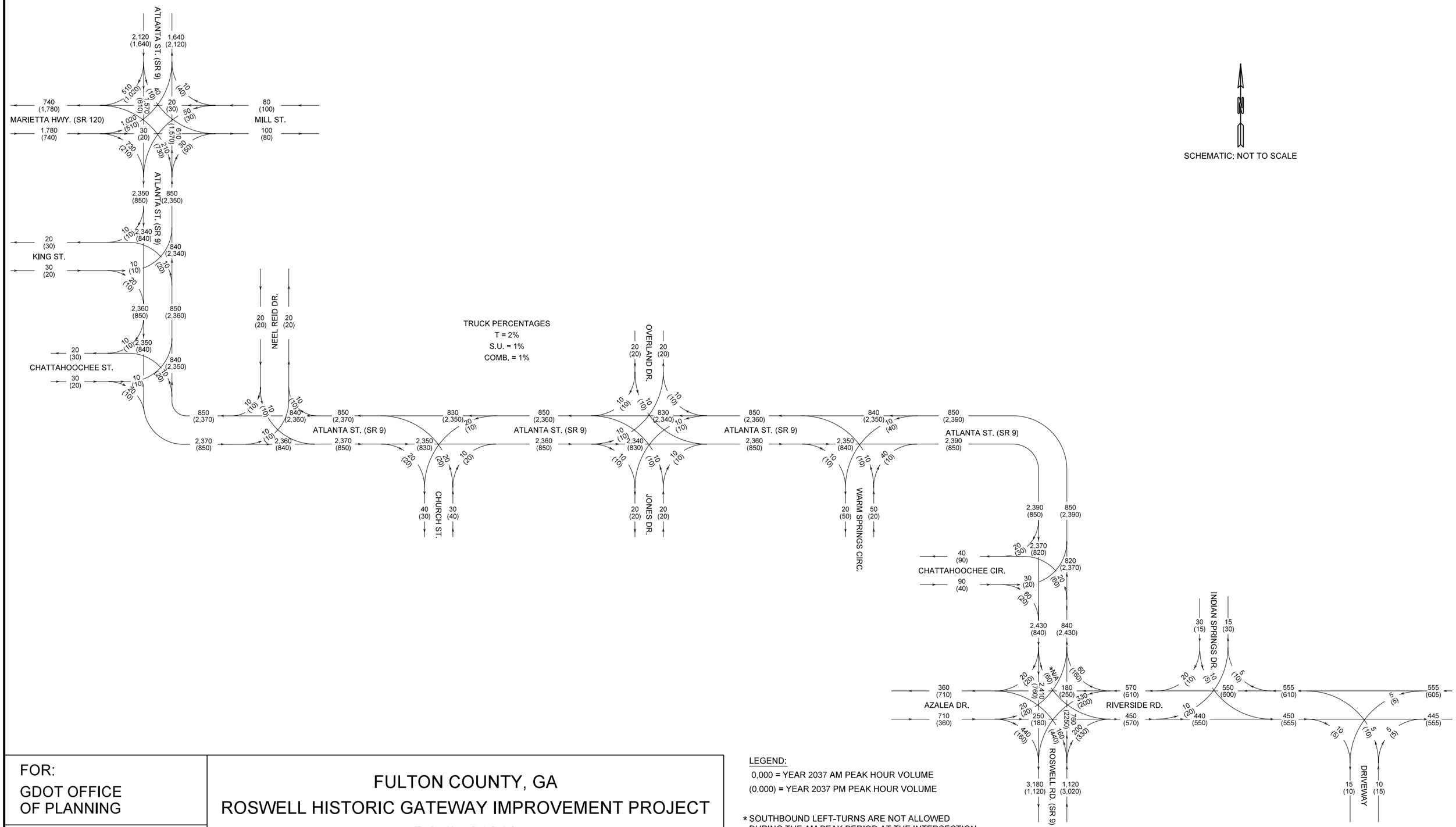
FULTON COUNTY, GA
ROSWELL HISTORIC GATEWAY IMPROVEMENT PROJECT
P.I. # 721010
2011 EXISTING PEAK HOUR VOLUMES
FIGURE 4



FOR:
GDOT OFFICE
OF PLANNING

BY:
PARSONS BRINCKERHOFF

FULTON COUNTY, GA
ROSWELL HISTORIC GATEWAY IMPROVEMENT PROJECT
P.I. # 721010
2017 NO-BUILD PEAK HOUR VOLUMES
FIGURE 5



LEGEND:

0,000 = YEAR 2037 AM PEAK HOUR VOLUME

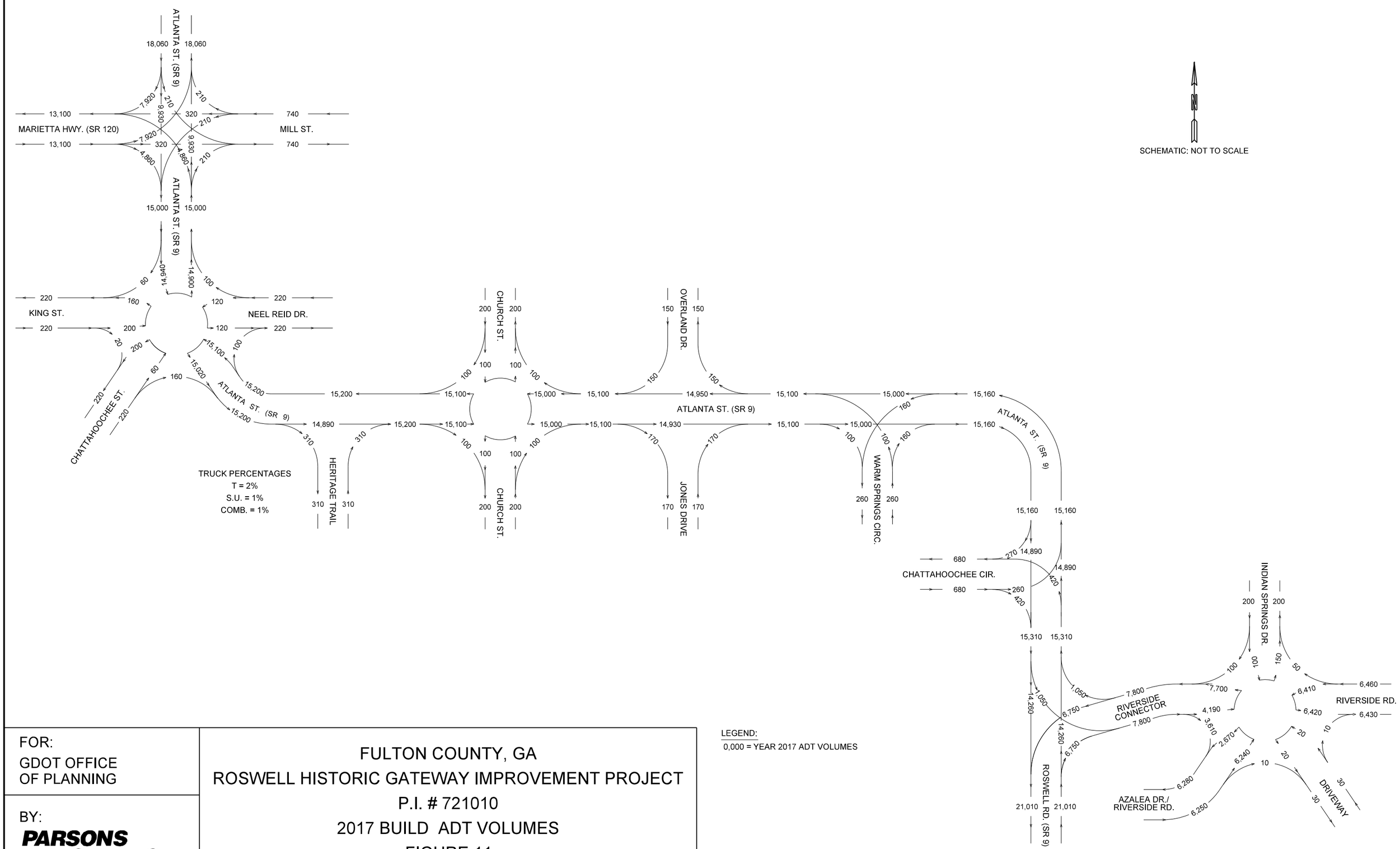
(0,000) = YEAR 2037 PM PEAK HOUR VOLUME

* SOUTHBOUND LEFT-TURNS ARE NOT ALLOWED DURING THE AM PEAK PERIOD AT THE INTERSECTION OF SR 9 AND AZALEA DRIVE/RIVERSIDE ROAD.

FOR:
GDOT OFFICE
OF PLANNING

BY:
PARSONS BRINCKERHOFF

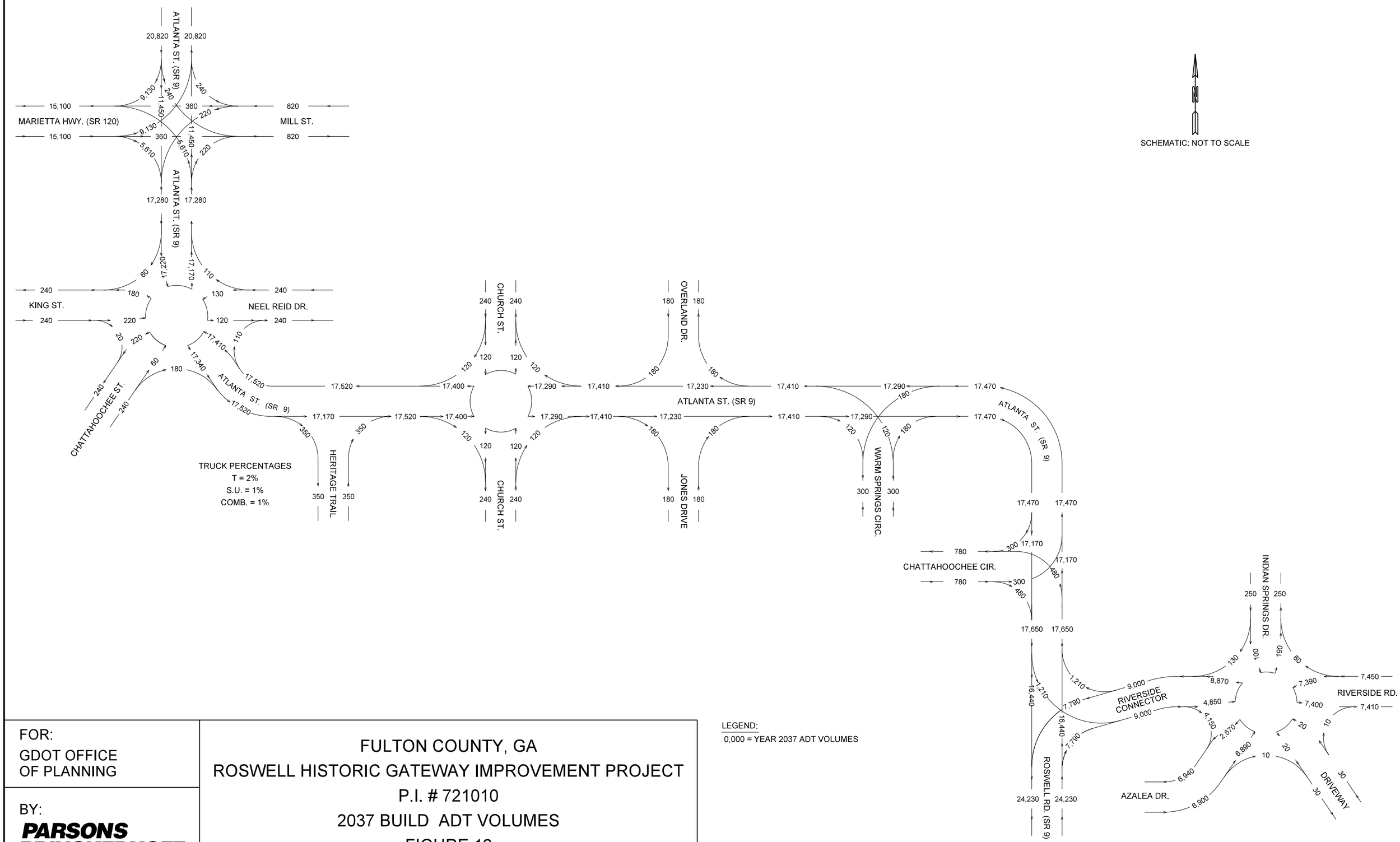
FULTON COUNTY, GA
ROSWELL HISTORIC GATEWAY IMPROVEMENT PROJECT
P.I. # 721010
2037 NO-BUILD PEAK HOUR VOLUMES
FIGURE 6



LEGEND:

0,000 = YEAR 2017 ADT VOLUMES

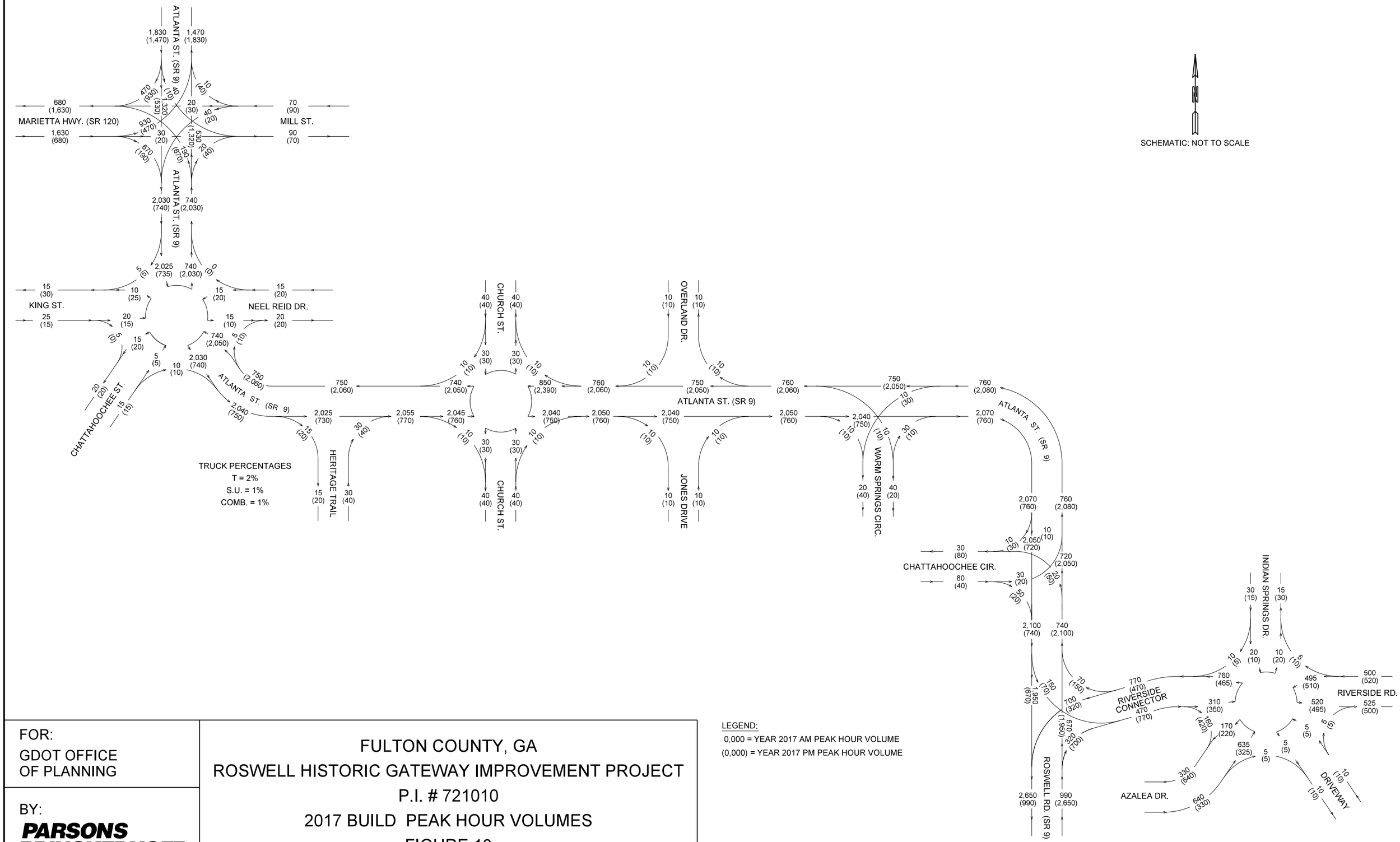
FOR: GDOT OFFICE OF PLANNING	FULTON COUNTY, GA ROSWELL HISTORIC GATEWAY IMPROVEMENT PROJECT P.I. # 721010 2017 BUILD ADT VOLUMES FIGURE 11
BY: **PARSONS BRINCKERHOFF**	



FOR:
GDOT OFFICE
OF PLANNING

BY:
PARSONS BRINCKERHOFF

FULTON COUNTY, GA
ROSWELL HISTORIC GATEWAY IMPROVEMENT PROJECT
P.I. # 721010
2037 BUILD ADT VOLUMES
FIGURE 12



LEGEND:

0,000 = YEAR 2017 AM PEAK HOUR VOLUME

(0,000) = YEAR 2017 PM PEAK HOUR VOLUME

FOR:

GDOT OFFICE OF PLANNING

BY:

PARSONS BRINCKERHOFF

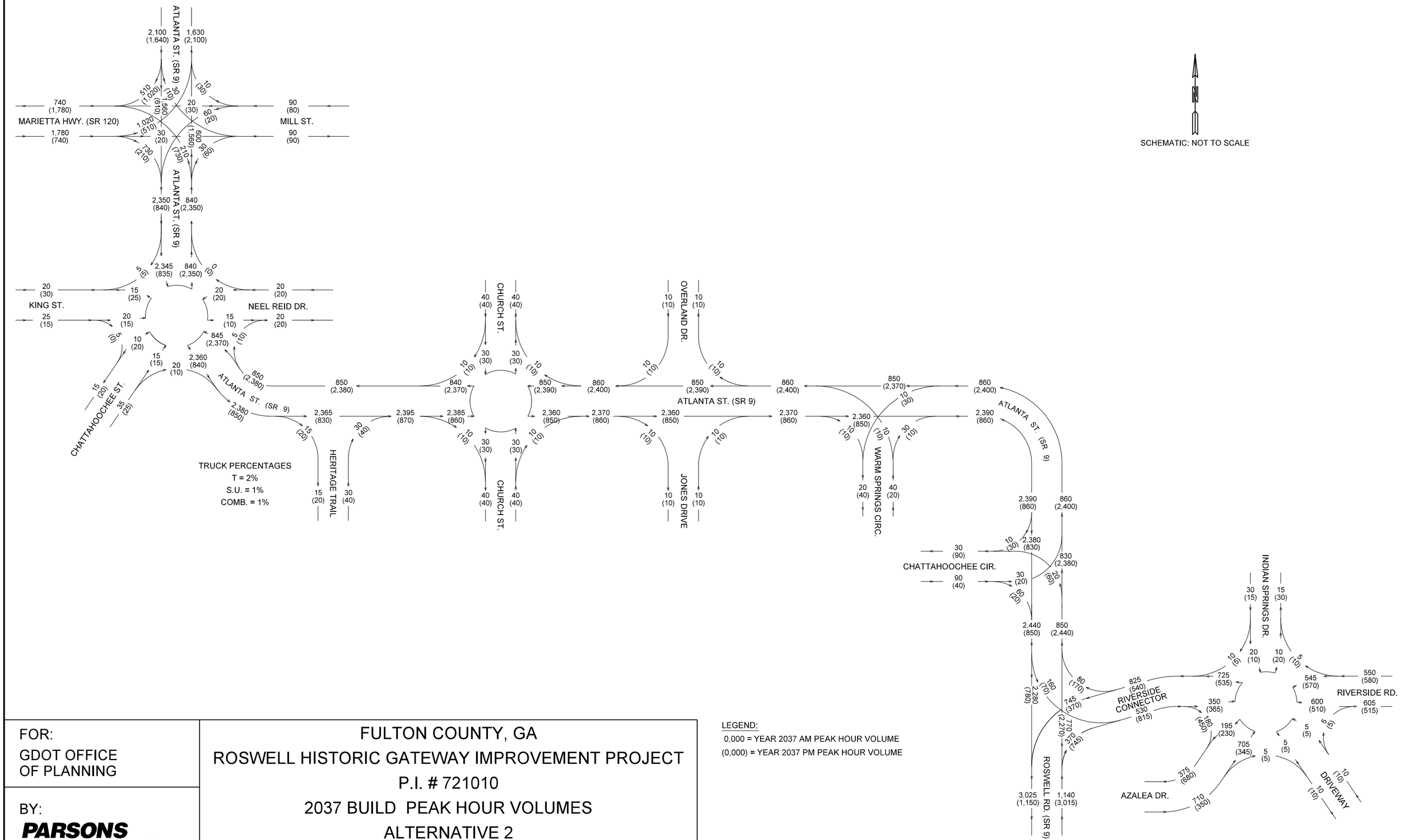
FULTON COUNTY, GA

ROSWELL HISTORIC GATEWAY IMPROVEMENT PROJECT

P.I. # 721010

2017 BUILD PEAK HOUR VOLUMES

FIGURE 13



LEGEND:

0,000 = YEAR 2037 AM PEAK HOUR VOLUME

(0,000) = YEAR 2037 PM PEAK HOUR VOLUME

FOR:

GDOT OFFICE OF PLANNING

BY:

PARSONS BRINCKERHOFF

FULTON COUNTY, GA

ROSWELL HISTORIC GATEWAY IMPROVEMENT PROJECT

P.I. # 721010

2037 BUILD PEAK HOUR VOLUMES

ALTERNATIVE 2

FIGURE 14

Attachment A-6: Summary of TE Study and Capacity Analyses

PARSONS BRINCKERHOFF

Technical Memorandum

Parsons Brinckerhoff
3340 Peachtree Road, NE
Suite 2400, Tower Place 100
Atlanta, GA 30326

Traffic Operations Analysis Summary for Roswell Historic Gateway Project

Introduction

This Technical Memorandum summarizes the corridor and intersection improvement analysis completed for the preferred concept for the Atlanta Street (SR 9) corridor between Marietta Highway (SR 120) and the Chattahoochee River in Roswell, Georgia. A site location map is included as Figure 1 and the concept plan for the preferred alternative is included as Appendix A.

The proposed project will remove the reversible lanes along the Atlanta Street (SR 9) corridor from the Riverside Road/Azalea Drive intersection to Marietta Highway (SR 120) by constructing one additional lane to achieve a divided four-lane highway through the project limits. The design concept includes a four-lane divided roadway on SR 9 between Riverside Road/Azalea Drive and Warm Springs Road and a four-lane divided roadway with a continual median that restricts left turns between dual lane roundabouts at Jones Drive and Chattahoochee/King Streets. The project would transition to its current five-lane section between Chattahoochee/King Streets and SR 120 but will add an additional northbound left turn lane at SR 120 creating dual left turn lanes onto westbound SR 120. The project will also grade separate the intersection of SR 9 over Riverside/Azalea and replace the deficient bridge on Riverside Road over Vickery Creek (see bridge sufficiency report in Attachment A-9). The project also proposes sidewalks or a multi-use path on both sides of SR 9 for the length of the project. Existing right-of-way (ROW) varies from 50 to 100 feet and the proposed project has minimal right-of-way impacts along the existing roadway corridor.

Existing Conditions

The SR 9 corridor includes signalized intersections at SR 120 and at Riverside Road / Azalea Drive, which are at the northern and southern terminus of the project respectively. Both intersections have significant congestion during the peak period and both have significant historic property and/or environmental constraints that limit the scope of conventional improvements at these intersections.

The SR 9 / Riverside Road / Azalea Drive intersection has the highest crash rate of any intersection within the City of Roswell, and the SR 9 corridor as a whole has a crash rate that is more than twice the statewide average. Table 1 summarizes the crash rates for major intersections along the corridor and Table 2 summarizes the crash rates for the corridor and a comparison to the statewide average.

Table 1: SR 9 Intersection Crash Rates

Intersection Accident Location Summary along SR 9 Corridor (2007-2009)								
SR 9 Intersection with	No. of Accidents	No. of Injuries	No. of Fatalities	Type of Accidents				
				Angle	Head On	Rear End	Side-swipe	Other
SR 120	102	29	0	33	2	40	20	7
King Street	15	0	0	3	0	6	5	1
Jones Drive	30	6	0	6	4	11	5	4
Warm Springs Circle	4	1	0	1	0	2	0	1
Azalea/Riverside	138	19	0	38	2	75	18	5
Midblock locations	106	30	0	20	0	63	10	13
Total of 3 years	395	85	0	101	8	197	58	31

Figure 1 – Project Study Area

Table 2: SR 9 Corridor Accident Rates

SR 9 Corridor Segment (Fulton County)		Functional Classification	AADT	Segment Length (mi)	Rate (per 100 million Vehicle Miles of Travel) 2007 to 2009					Total Number of Crashes (2007 to 2009)				
From Azalea Drive/Riverside Road	To Marietta Highway/Mill Street				All Crashes	Injuries	Injury Crashes	Fatalities	Fatal Crashes	All Crashes	Injuries	Injury Crashes	Fatalities	Fatal Crashes
2007 to 2009		Urban Principal Arterial (Non-NHS)	23,153	1.05	1540.2	375.6	300.5	3.76	3.76	410	100	80	1	1

Georgia Statewide Averages for comparison								
Facility	Avg Annual Vehicle Miles Traveled	Facility Length (mi)	Rate (per 100 million Vehicle Miles of Travel					
			All Crashes	Injuries	Injury Crashes	Fatalities	Fatal Crashes	
2009 Urban Principal Arterial (Non-NHS)	17,453	1,037	602.6	213.7	141.3	1.32	1.26	Applies to SR 9 Urban Principal Arterial (Non-NHS)
2008 Urban Principal Arterial (Non-NHS)	17,430	1,039	611.9	213.4	142.0	1.33	1.27	
2007 Urban Principal Arterial (Non-NHS)	18,218	1,039	649.1	226.7	151.3	1.53	1.51	
2007-2009 Statewide Average	*17,700*	*1,038*	*621.2*	*217.9*	*144.8*	*1.39*	*1.34*	

	Total Number of Crashes					Types of Crashes in Numbers					
	All Crashes	Injuries	Injury Crashes	Fatalities	Fatal Crashes	Angle	Rear-end	Head On	Not A Collision With A Motor	Sideswipe - Same Direction	Sideswipe - Opposite
2007	156	36	26	0	0	46	75	3	12	19	1
2008	137	36	28	0	0	41	72	1	9	10	4
2009	117	28	26	1	1	27	59	1	7	20	3
Total	410	100	80	1	1	114	206	5	28	49	8

	Types of Crashes in Percentages					
	Angle	Rear-end	Head On	Not A Collision With A Motor Vehicle	Sideswipe - Same Direction	Sideswipe - Opposite Direction
2007	29.5%	48.1%	1.9%	7.7%	12.2%	0.6%
2008	29.9%	52.6%	0.7%	6.6%	7.3%	2.9%
2009	23.1%	50.4%	0.9%	6.0%	17.1%	2.6%
Total (2007 to 2009)	27.8%	50.2%	1.2%	6.8%	12.0%	2.0%

Traffic Count Data Collected

Average daily traffic (ADT) and intersection turning movement counts (TMC's) were collected in September/October of 2010 for most locations and in December 2011 for one location on days are representative of typical weekday traffic conditions. The collected raw counts were balanced to meet the GDOT traffic review standards. Since the counts were collected in 2010 and the existing year conditions is 2011; the 2010 conditions counts were extrapolated to 2011 existing conditions using a historic growth rate of 0.8% for all through traffic and 0.5% for all other traffic. Resultant existing 2011 morning (AM peak) and afternoon (PM peak) hourly volumes are illustrated in Figures 1 and 4 respectively in Appendix B. The raw traffic count data collected is included in Appendix C.

Intersection Level of Service

Existing level of service (LOS) analyses were performed at the study area intersections for the morning and afternoon commuter peak conditions. The roadway network, intersection geometries and traffic volumes were input into a Synchro network and exported to Highway Capacity Software (HCS) for operations analysis results. The HCS intersection delay and LOS results for existing conditions are summarized in Table 2, with the full HCS printouts included in Appendix D.

Table 1: Existing (2011) LOS Analysis Results

Intersection	Control	AM Peak	PM Peak
SR 9 at SR 120 / Mill Street	Signalized	107.3/1.14/F	47.9/0.98/D
SR 9 at King / Chattahoochee / Neil Reid	Unsignalized	C / F	F / F
SR 9 at Church Street	Unsignalized	B / F	A / F
SR 9 at Jones Drive / Overland Drive	Unsignalized	A / F	A / F
SR 9 at Warm Springs Circle	Unsignalized	A / F	A / E
SR 9 at Chattahoochee Circle	Unsignalized	F / F	A / C
SR 9 at Riverside Road / Azalea Drive	Signalized	108.6/1.17/F	74.8/0.93/E
Riverside Road at Indian Springs Drive	Unsignalized	A / C	A / C

Legend: For signalized intersections: 00.0 / 0.00 / A = Delay (sec) / v/c / LOS;
For unsignalized intersections: A / A = overall intersection LOS / worst movement LOS

The existing intersection LOS analysis shows that both signalized intersections in the study area operate at failing (LOS F) conditions in at least one peak period, with is consistent with field observations. Most unsignalized intersections operate at LOS A or B overall but most have side-street movements at LOS F conditions, indicating that side-street traffic has difficulty entering the main street (SR 9) traffic stream during the peak periods.

The SR 9 / King Street / Chattahoochee Street intersection operates at an overall LOS of C and F in the AM and PM peak hours respectively. Safety and operations at this intersection is compromised by skewed geometry and overlapping turn movements. The reversible lanes currently begin operations at this intersection.

Opening and Design Year Conditions

The expected opening year for the project is 2017 and the design year is 2037. The future conditions traffic volumes, both ADT and Design Hour Traffic (DHV) were projected from existing (2011) ADT and DHV counts according to a growth rate calculated from the Atlanta Regional Commission (ARC) 20-County Demand Model projections for growth on SR- 9. Since the ARC model has two lanes in each direction coded into the current and future models for the corridor (the model cannot replicate reversible lane conditions), a new run of the ARC was not necessary to replicate the build conditions on SR 9 and existing model runs for the years 2010, 2015 and 2035 can be used to extrapolate growth percentages for the corridor. Table 3 summarizes the model growth rates for segments on the SR 9 study corridor based on ARC model results for 2010, 2015 and 2035.

Table 3: Growth Rate Determination and Future ADT / Intersection Volumes

ID	Segment	Annual Average Growth Rate of ADT	
		2010 to 2015	2015 to 2035
1	SR 120 west of SR 9	0.9%	1.1%
2	SR 9 north of SR 120	0.9%	0.7%
3	SR 9 south of SR 120	1.0%	0.7%
4	SR 9 north of Riverside/Azalea	0.9%	0.7%
5	SR 9 south of Riverside/Azalea	0.4%	0.8%
6	Riverside east of SR 9	0.5%	0.6%
	Average Growth Rate for SR 9	0.8%	0.8%

Source: Atlanta Regional Commission 20-County Demand Model

Using a straight line projection between 2010, 2015 and 2035 model traffic volumes, a growth rate of 0.8% per annum was calculated. To determine AM and PM peak hour volumes, growth rates of 0.8% for all through traffic along SR 9 corridor and 0.5% for all the other traffic on SR 9 was applied to all ADT and turning movements in the corridor to achieve 2017 and 2037 ADT and DHV's for the corridor. The 2017 and 2037 No-Build ADT and DHV traffic volumes are include in Appendix B as Figures 2-3 and 5-6 respectively.

The 2017 and 2037 Build Year ADT volumes remain the same as the No-Build conditions (the model growth assumes four lanes are already in place); however, DHV's at the intersection of Riverside Road / Azalea Drive were modified according to the change in intersection geometry. The intersection turning movement volumes were modified to reflect the grade-separation geometry and roundabout at Riverside Road / Indian Springs Drive. The 2017 and 2037 Build Year ADT and DHV traffic volumes are include in Appendix B as Figures 7-8 and 9-10 respectively.

A LOS analysis was performed for the 2017 Opening Year and 2037 Design Year Build conditions using the same methodology used in the Existing Conditions analysis. The Build Year conditions include the turn lane and grade-separation improvements presented in the concept plan. The LOS results are summarized in Table 4, with the complete HCS intersection printouts included in Appendix D.

Table 4: Opening and Design Year LOS Analysis Results

		2017 Opening Year		2037 Design Year	
Intersection	Control	AM Peak	PM Peak	AM Peak	PM Peak
SR 9 at SR 120 / Mill St	Signalized	83.4/1.06/E	53.8/1.08/D	126.5/1.25/F	73.7/1.19/E
SR 9 at Heritage Trail	RIRO	A / C	A / C	A / C	A / C
NB SR 9 at Overland Drive	RIRO	A / C	A / C	A / C	A / C
SB SR 9 at Jones Drive	RIRO	A / C	A / C	A / C	A / C
SR 9 at Warm Springs Circle	Unsignalized	A / C	A / F	A / F	A / F
SR 9 at Chattahoochee Circle	Unsignalized	C / F	C / F	D / F	D / F
SR 9 at Riverside Road Connector	Signalized	29.4/0.94/C	21.6/0.90/C	51.5/1.06/D	40.8/1.03/D

Legend: For signalized intersections: 00.0 / 0.00 / A = Delay (sec) / v/c / LOS;
For unsignalized or right-in/right-out (RIRO) intersections: A / A = overall intersection LOS / worst movement LOS

The concept design includes conversion of three intersections to roundabouts, including a dual-lane 5-leg roundabout at the intersection of SR 9 and Chattahoochee Drive/King Street/Neil Reid Drive, a dual-lane 4-leg roundabout at the intersection of SR 9 at Church Street, and a single-lane 5-leg roundabout at the intersection of Riverside Road/Riverside Connector/Indian Springs Drive. These roundabouts were analyzed with the GDOT Roundabout Analysis Tool (version 2.1) and the results are summarized in Table 5 with the complete results printed in Appendix E.

Table 5: Opening and Design Year Roundabout Analysis Results

Roundabout Approach	2017 Opening Year		2037 Design Year	
	AM	PM	AM	PM
SR 9 at King / Chattahoochee / Neil Reid				
NB SR 9	7.2/0.38/A	55.9/1.03/F	5.7/0.34/A	30.1/0.94/D
SB SR 9	53.3/1.02/F	7.5/0.38/A	30.0/0.94/D	5.8/0.34/A
Chattahoochee Street	17.5/0.07/C	6.1/0.03/A	33.1/0.25/D	5.6/0.04/A
King Street	18.6/0.12/C	6.2/0.03/A	29.7/0.18/D	5.5/0.02/A
Neil Reid Drive	6.1/0.03/A	18.3/0.10/C	5.6/0.03/A	29.0/0.15/D
SR 9 at Church Street				
NB SR 9	7.4/0.39/A	62.5/1.05/F	5.8/0.35/A	34.7/0.97/D
SB SR 9	59.4/1.04/F	7.5/0.40/A	36.3/0.97/D	5.9/0.35/A
EB Church Street (New Roadway)	19.5/0.15/C	6.6/0.05/A	37.1/0.30/E	6.1/0.07/A
WB Church Street (Existing)	6.5/0.05/A	19.9/0.15/C	6.0/0.06/A	18.1/0.14/C
Riverside Road at Indian Springs Drive				
EB Riverside Road	36.0/0.90/E	12.0/0.48/B	24.0/0.83/C	9.0/0.41/A
WB Riverside Road	27.0/0.80/D	14.0/0.63/B	17.0/0.71/C	11.0/0.59/B
Riverside Connector	8.0/0.37/A	10.0/0.44/A	7.0/0.36/A	7.0/0.38/A
Indian Springs Drive	10.0/0.08/B	7.0/0.03/A	7.0/0.06/A	6.0/0.02/A

Legend:: 00.0 / 0.00 / A = Delay (sec) / v/c / LOS based on GDOT Roundabout Analysis Tool Version 2.1; 2017 Opening Year results are based on HCM 2010 Model; 2037 Design Year results are based on Calibrated Model.

SR 9 and King Street/Chattahoochee Street/Neil Reid Drive Roundabout

In the 2017 Opening Year the dual-lane roundabout at the SR 9 and King Street/Chattahoochee Street/Neil Reid Drive intersection is expected to operate at LOS C or better for all approaches except for southbound SR 9 approach in the AM peak hour and northbound SR 9 approach in the PM peak hour. Analysis shows that both these approaches are just over capacity with v/c ratio of 1.02 and 1.03 respectively. However, this roundabout is expected at operate at acceptable levels (LOS D or better) for all approaches under the 2037 Design Year peak hour conditions using the Calibrated HCM Model which yields a higher entry capacity reflecting an increased driver familiarity with the roundabouts in the future.

SR 9 and Church Street Roundabout

In the 2017 Opening Year the dual-lane roundabout at the SR 9 and Church Street intersection is expected to operate at LOS C or better for all approaches except for southbound SR 9 approach in the AM peak hour and northbound SR 9 approach in the PM peak hour. Analysis shows that both these approaches are just over capacity with v/c ratio of 1.04 and 1.05 respectively. However, this roundabout is expected at operate at acceptable levels (LOS D or better) for all approaches under the 2037 Design Year peak hour conditions using the Calibrated HCM Model which yields a higher entry capacity reflecting an increased driver familiarity with the roundabouts in the future.

Riverside Road / Riverside Connector / Indian Springs Drive Roundabout

In the 2017 Opening Year, the single-lane roundabout at the Riverside Road / Riverside Connector / Indian Springs Drive intersection is expected to operate at LOS D or better for all approaches except the eastbound Riverside Road approach during the AM peak hour with an expected average delay of 36.0 seconds and LOS E (the limit for LOS D is 35.0 seconds of average delay). However, in the 2037 Design Year all approaches of this single-lane roundabout are expected to operate at LOS C or better during both AM and PM peak hours using the Calibrated HCM Model which yields a higher entry capacity reflecting an increased driver familiarity with the roundabouts in the future.

CONCLUSIONS

The proposed concept is expected to provide for sufficient intersection and corridor operations through the 2037 Design Year for the project. The Roswell Historic Gateway project proposes improvements including the removal of the reversible lanes by introduction of a median dividing the roadways, turn lane improvement at that SR 9 / and grade-separation of the SR 9 / Riverside Road / Azalea Drive intersection, which should collectively improve operations, safety and mobility along the SR 9 corridor.

HCM Signalized Intersection Capacity Analysis
1: SR 9 Atlanta St & SR 120 Marietta Hwy./Mill St.

2011 AM Existing Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	900	30	650	30	20	10	190	500	20	30	1260	450
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0
Lane Util. Factor	0.95	0.95	1.00		1.00	1.00	1.00	0.95	1.00		0.95	1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	0.96	1.00		0.97	1.00	0.95	1.00	1.00		1.00	1.00
Satd. Flow (prot)	1681	1691	1583		1808	1583	1770	3539	1583		3535	1583
Flt Permitted	0.95	0.96	1.00		0.97	1.00	0.09	1.00	1.00		0.93	1.00
Satd. Flow (perm)	1681	1691	1583		1808	1583	169	3539	1583		3274	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	978	33	707	33	22	11	207	543	22	33	1370	489
RTOR Reduction (vph)	0	0	148	0	0	10	0	0	8	0	0	182
Lane Group Flow (vph)	509	502	559	0	55	1	207	543	14	0	1403	307
Turn Type	Split	NA	pt+ov	Split	NA	Perm	pm+pt	NA	Perm	Perm	NA	pt+ov
Protected Phases	4	4	4 5	8	8		5	2			6	6 4
Permitted Phases						8	2		2	6		
Actuated Green, G (s)	26.1	26.1	42.2		7.5	7.5	60.2	60.2	60.2		38.1	70.2
Effective Green, g (s)	26.1	26.1	42.2		7.5	7.5	60.2	60.2	60.2		38.1	70.2
Actuated g/C Ratio	0.23	0.23	0.38		0.07	0.07	0.54	0.54	0.54		0.34	0.63
Clearance Time (s)	6.0	6.0			6.0	6.0	6.0	6.0	6.0		6.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	392	395	598		121	106	322	1906	852		1116	994
v/s Ratio Prot	c0.30	0.30	c0.35		c0.03		0.09	0.15				0.19
v/s Ratio Perm						0.00	0.25		0.01		c0.43	
v/c Ratio	1.30	1.27	0.93		0.45	0.01	0.64	0.28	0.02		1.26	0.31
Uniform Delay, d1	42.8	42.8	33.5		50.2	48.7	25.8	14.1	12.0		36.8	9.6
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	152.0	140.5	21.9		2.7	0.0	4.3	0.1	0.0		123.1	0.2
Delay (s)	194.8	183.3	55.4		52.9	48.7	30.2	14.1	12.0		160.0	9.8
Level of Service	F	F	E		D	D	C	B	B		F	A
Approach Delay (s)		134.1			52.2			18.4			121.2	
Approach LOS		F			D			B			F	

Intersection Summary			
HCM Average Control Delay	107.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.14		
Actuated Cycle Length (s)	111.8	Sum of lost time (s)	24.0
Intersection Capacity Utilization	96.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
2: SR 9 Atlanta St & King St./Neel Reid Dr

2011 AM Existing Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	0	40	10	0	10	20	690	10	10	1920	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	0	43	11	0	11	22	750	11	11	2087	11
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											774	
pX, platoon unblocked	0.67	0.67	0.67	0.67	0.67		0.67					
vC, conflicting volume	2918	2918	1049	1859	2913	750	2098			761		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2879	2879	98	1302	2871	750	1658			761		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	100	93	84	100	97	92			99		
cM capacity (veh/h)	4	10	631	69	10	354	259			847		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	54	22	772	11	1054	1054
Volume Left	11	11	22	0	11	0
Volume Right	43	11	0	11	0	11
cSH	22	115	259	1700	847	1700
Volume to Capacity	2.51	0.19	0.08	0.01	0.01	0.62
Queue Length 95th (ft)	175	17	7	0	1	0
Control Delay (s)	1062.2	43.5	3.5	0.0	0.4	0.0
Lane LOS	F	E	A		A	
Approach Delay (s)	1062.2	43.5	3.5		0.2	
Approach LOS	F	E				

Intersection Summary			
Average Delay	20.8		
Intersection Capacity Utilization	70.4%	ICU Level of Service	C
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
3: SR 9 Atlanta St & Church St.

2011 AM Existing Conditions

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	20	10	20	700	1950	20
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	11	22	761	2120	22
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2924	1060	2141			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2924	1060	2141			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	95	91			
cM capacity (veh/h)	11	220	249			

Direction, Lane #	EB 1	NB 1	SB 1	SB 2	SB 3
Volume Total	33	783	1060	1060	22
Volume Left	22	22	0	0	0
Volume Right	11	0	0	0	22
cSH	16	249	1700	1700	1700
Volume to Capacity	2.04	0.09	0.62	0.62	0.01
Queue Length 95th (ft)	117	7	0	0	0
Control Delay (s)	972.7	3.8	0.0	0.0	0.0
Lane LOS	F	A			
Approach Delay (s)	972.7	3.8	0.0		
Approach LOS	F				

Intersection Summary			
Average Delay	11.7		
Intersection Capacity Utilization	63.9%	ICU Level of Service	B
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
4: Jones Dr./Overland Dr./Jones Dr. & SR 9 Atlanta St

2011 AM Existing Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	1940	10	10	700	10	10	0	10	10	0	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	2109	11	11	761	11	11	0	11	11	0	11
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	772			2120			2935	2929	1060	1875	2929	766
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	772			2120			2935	2929	1060	1875	2929	766
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			96			0	100	95	73	100	97
cM capacity (veh/h)	839			254			6	14	220	40	14	345

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total	1065	1065	783	22	22
Volume Left	11	0	11	11	11
Volume Right	0	11	11	11	11
cSH	839	1700	254	12	72
Volume to Capacity	0.01	0.63	0.04	1.81	0.30
Queue Length 95th (ft)	1	0	3	88	28
Control Delay (s)	0.4	0.0	1.8	1012.8	75.6
Lane LOS	A		A	F	F
Approach Delay (s)	0.2		1.8	1012.8	75.6
Approach LOS				F	F

Intersection Summary			
Average Delay	8.6		
Intersection Capacity Utilization	68.5%	ICU Level of Service	C
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
5: Warm Springs Cricle & SR 9 Atlanta St

2011 AM Existing Conditions

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1950	10	10	710	10	20
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2120	11	11	772	11	22
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			2130		2913	1060
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			2130		2913	1060
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		7	90
cM capacity (veh/h)			251		12	220

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	NB 1
Volume Total	1060	1060	11	783	33
Volume Left	0	0	0	11	11
Volume Right	0	0	11	0	22
cSH	1700	1700	1700	251	32
Volume to Capacity	0.62	0.62	0.01	0.04	1.03
Queue Length 95th (ft)	0	0	0	3	89
Control Delay (s)	0.0	0.0	0.0	1.8	354.9
Lane LOS				A	F
Approach Delay (s)	0.0			1.8	354.9
Approach LOS					F

Intersection Summary			
Average Delay	4.4		
Intersection Capacity Utilization	63.9%	ICU Level of Service	B
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
6: Chattahoochee Circle & SR 9 Atlanta St

2011 AM Existing Conditions

Movement	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations						
Volume (veh/h)	20	690	1960	10	30	40
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	750	2130	11	33	43
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		890				
pX, platoon unblocked					0.78	
vC, conflicting volume	2141				2929	1071
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2141				3330	1071
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	91				0	80
cM capacity (veh/h)	249				4	217

Direction, Lane #	NB 1	SB 1	SB 2	NE 1
Volume Total	772	1420	721	76
Volume Left	22	0	0	33
Volume Right	0	0	11	43
cSH	249	1700	1700	10
Volume to Capacity	0.09	0.84	0.42	7.60
Queue Length 95th (ft)	7	0	0	Err
Control Delay (s)	3.8	0.0	0.0	Err
Lane LOS	A			F
Approach Delay (s)	3.8	0.0		Err
Approach LOS				F

Intersection Summary			
Average Delay	255.5		
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
7: SR 9 Roswell Rd/SR 9 Atlanta St & Azalea Dr./Riverside Rd.

2011 AM Existing Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	220	390	290	160	50	140	640	180	0	1980	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0			6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95			0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97			1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00			1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3423			3534	
Flt Permitted	0.95	1.00	1.00	0.21	1.00	1.00	0.06	1.00			1.00	
Satd. Flow (perm)	1770	1863	1583	395	1863	1583	113	3423			3534	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	239	424	315	174	54	152	696	196	0	2152	22
RTOR Reduction (vph)	0	0	15	0	0	41	0	22	0	0	1	0
Lane Group Flow (vph)	22	239	409	315	174	13	152	870	0	0	2173	0
Turn Type	Prot	NA	pt+ov	pm+pt	NA	Perm	pm+pt	NA			NA	
Protected Phases	7	4	4 5	3	8		5	2			6	
Permitted Phases				8		8	2					
Actuated Green, G (s)	4.8	18.4	28.4	40.4	29.6	29.6	70.0	70.0			60.0	
Effective Green, g (s)	4.8	18.4	28.4	40.4	29.6	29.6	70.0	70.0			60.0	
Actuated g/C Ratio	0.04	0.15	0.23	0.33	0.24	0.24	0.57	0.57			0.49	
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)	69	280	367	310	451	383	119	1958			1732	
v/s Ratio Prot	0.01	0.13	c0.26	c0.13	0.09		0.04	0.25			0.62	
v/s Ratio Perm				0.20		0.01	c0.69					
v/c Ratio	0.32	0.85	1.11	1.02	0.39	0.03	1.28	0.44			1.25	
Uniform Delay, d1	57.2	50.7	47.0	35.9	38.8	35.5	30.4	15.0			31.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2	2.7	21.5	81.3	55.3	0.6	0.0	174.6	0.2			119.6	
Delay (s)	59.9	72.2	128.3	91.2	39.3	35.5	204.9	15.2			150.8	
Level of Service	E	E	F	F	D	D	F	B			F	
Approach Delay (s)		106.5			69.1			42.8			150.8	
Approach LOS		F			E			D			F	

Intersection Summary			
HCM Average Control Delay	108.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	122.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	110.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
8: Riverside Rd. & Indian Springs Dr.

2011 AM Existing Conditions

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	5	395	490	5	10	10
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	429	533	5	11	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		812				
pX, platoon unblocked					0.88	
vC, conflicting volume	538				976	535
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	538				904	535
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				96	98
cM capacity (veh/h)	1030				269	545

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	435	538	22
Volume Left	5	0	11
Volume Right	0	5	11
cSH	1030	1700	360
Volume to Capacity	0.01	0.32	0.06
Queue Length 95th (ft)	0	0	5
Control Delay (s)	0.2	0.0	15.6
Lane LOS	A		C
Approach Delay (s)	0.2	0.0	15.6
Approach LOS			C

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	36.1%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
1: SR 9 Atlanta St. & SR 120 Marietta Hwy./Mill St.

2011 PM Existing Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	450	20	190	20	30	30	650	1260	30	10	500	900
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0
Lane Util. Factor	0.95	0.95	1.00		1.00	1.00	1.00	0.95	1.00		0.95	1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	0.96	1.00		0.98	1.00	0.95	1.00	1.00		1.00	1.00
Satd. Flow (prot)	1681	1692	1583		1826	1583	1770	3539	1583		3536	1583
Flt Permitted	0.95	0.96	1.00		0.98	1.00	0.31	1.00	1.00		0.91	1.00
Satd. Flow (perm)	1681	1692	1583		1826	1583	571	3539	1583		3222	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	489	22	207	22	33	33	707	1370	33	11	543	978
RTOR Reduction (vph)	0	0	131	0	0	31	0	0	5	0	0	157
Lane Group Flow (vph)	254	257	76	0	55	2	707	1370	28	0	554	821
Turn Type	Split	NA	pt+ov	Split	NA	Perm	pm+pt	NA	Perm	Perm	NA	pt+ov
Protected Phases	4	4	4 5	8	8		5	2			6	6 4
Permitted Phases						8	2		2	6		
Actuated Green, G (s)	16.1	16.1	41.2		7.5	7.5	70.3	70.3	70.3		39.2	61.3
Effective Green, g (s)	16.1	16.1	41.2		7.5	7.5	70.3	70.3	70.3		39.2	61.3
Actuated g/C Ratio	0.14	0.14	0.37		0.07	0.07	0.63	0.63	0.63		0.35	0.55
Clearance Time (s)	6.0	6.0			6.0	6.0	6.0	6.0	6.0		6.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	242	243	583		122	106	628	2223	995		1129	867
v/s Ratio Prot	0.15	0.15	0.05		c0.03		c0.25	0.39				c0.52
v/s Ratio Perm						0.00	c0.46		0.02		0.17	
v/c Ratio	1.05	1.06	0.13		0.45	0.02	1.13	0.62	0.03		0.49	0.95
Uniform Delay, d1	47.9	47.9	23.5		50.2	48.8	17.8	12.6	7.9		28.5	23.8
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	71.5	73.7	0.1		2.6	0.1	75.8	0.5	0.0		0.3	18.7
Delay (s)	119.4	121.6	23.6		52.9	48.8	93.6	13.1	7.9		28.9	42.5
Level of Service	F	F	C		D	D	F	B	A		C	D
Approach Delay (s)		92.6			51.4			40.0			37.5	
Approach LOS		F			D			D			D	

Intersection Summary				
HCM Average Control Delay	47.9	HCM Level of Service	D	
HCM Volume to Capacity ratio	0.98			
Actuated Cycle Length (s)	111.9	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	110.1%	ICU Level of Service	H	
Analysis Period (min)	15			
c Critical Lane Group				

HCM Unsignalized Intersection Capacity Analysis
2: SR 9 Atlanta St. & King St./Neel Reid Dr

2011 PM Existing Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	0	20	10	0	10	40	1920	10	10	690	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	0	22	11	0	11	43	2087	11	11	750	11
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											774	
pX, platoon unblocked	0.81	0.81	0.81	0.81	0.81		0.81					
vC, conflicting volume	1918	2962	755	2973	2957	1043	761			2098		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2017	3305	581	3319	3298	1043	587			2098		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	56	100	94	0	100	95	95			96		
cM capacity (veh/h)	25	6	370	2	6	226	797			259		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1
Volume Total	33	22	739	1391	11	772
Volume Left	11	11	43	0	0	11
Volume Right	22	11	0	0	11	11
cSH	65	5	797	1700	1700	259
Volume to Capacity	0.50	4.69	0.05	0.82	0.01	0.04
Queue Length 95th (ft)	50	Err	4	0	0	3
Control Delay (s)	106.6	Err	1.4	0.0	0.0	1.7
Lane LOS	F	F	A			A
Approach Delay (s)	106.6	Err	0.5			1.7
Approach LOS	F	F				

Intersection Summary			
Average Delay	75.2		
Intersection Capacity Utilization	81.8%	ICU Level of Service	D
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
3: SR 9 Atlanta St. & Church St.

2011 PM Existing Conditions

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	20	20	10	1950	700	20
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	22	11	2120	761	22
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1842	761	783			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1842	761	783			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	67	94	99			
cM capacity (veh/h)	66	348	831			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	43	717	1413	761	22
Volume Left	22	11	0	0	0
Volume Right	22	0	0	0	22
cSH	111	831	1700	1700	1700
Volume to Capacity	0.39	0.01	0.83	0.45	0.01
Queue Length 95th (ft)	41	1	0	0	0
Control Delay (s)	57.2	0.3	0.0	0.0	0.0
Lane LOS	F	A			
Approach Delay (s)	57.2	0.1		0.0	
Approach LOS	F				

Intersection Summary				
Average Delay		0.9		
Intersection Capacity Utilization		70.9%	ICU Level of Service	C
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
4: Jones Dr./Overland Dr./Jones Dr. & SR 9 Atlanta St.

2011 PM Existing Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	700	10	10	1940	10	10	0	10	10	0	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	761	11	11	2109	11	11	0	11	11	0	11
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2120			772			1875	2929	766	2935	2929	1060
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2120			772			1875	2929	766	2935	2929	1060
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			99			73	100	97	0	100	95
cM capacity (veh/h)	254			839			40	14	345	6	14	220

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total	783	1065	1065	22	22
Volume Left	11	11	0	11	11
Volume Right	11	0	11	11	11
cSH	254	839	1700	72	12
Volume to Capacity	0.04	0.01	0.63	0.30	1.81
Queue Length 95th (ft)	3	1	0	28	88
Control Delay (s)	1.8	0.4	0.0	75.6	1012.8
Lane LOS	A	A		F	F
Approach Delay (s)	1.8	0.2		75.6	1012.8
Approach LOS				F	F

Intersection Summary				
Average Delay		8.6		
Intersection Capacity Utilization		68.5%	ICU Level of Service	C
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
5: Warm Springs Cricle & SR 9 Atlanta St.

2011 PM Existing Conditions

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	710	10	20	1950	10	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	772	11	22	2120	11	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			783		1875	772
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			783		1875	772
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		82	97
cM capacity (veh/h)			831		62	342

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	772	11	728	1413	22
Volume Left	0	0	22	0	11
Volume Right	0	11	0	0	11
cSH	1700	1700	831	1700	104
Volume to Capacity	0.45	0.01	0.03	0.83	0.21
Queue Length 95th (ft)	0	0	2	0	18
Control Delay (s)	0.0	0.0	0.7	0.0	48.3
Lane LOS			A		E
Approach Delay (s)	0.0		0.2		48.3
Approach LOS					E

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	78.0%	ICU Level of Service	D
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
6: Chattahoochee Circle & SR 9 Atlanta St.

2011 PM Existing Conditions

Movement	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations						
Volume (veh/h)	40	1960	690	30	10	20
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	43	2130	750	33	11	22
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		890				
pX, platoon unblocked					0.43	
vC, conflicting volume	783				1918	766
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	783				489	766
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	95				95	94
cM capacity (veh/h)	831				207	345

Direction, Lane #	NB 1	NB 2	SB 1	NE 1
Volume Total	754	1420	783	33
Volume Left	43	0	0	11
Volume Right	0	0	33	22
cSH	831	1700	1700	283
Volume to Capacity	0.05	0.84	0.46	0.12
Queue Length 95th (ft)	4	0	0	10
Control Delay (s)	1.4	0.0	0.0	19.4
Lane LOS	A			C
Approach Delay (s)	0.5		0.0	19.4
Approach LOS				C

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	92.7%	ICU Level of Service	F
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
7: SR 9 Roswell Rd/SR 9 Atlanta St. & Azalea Dr./Riverside Rd.

2011 PM Existing Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	160	140	180	220	140	390	1840	290	50	640	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0			6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95			0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98			1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00			1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3467			3512	
Flt Permitted	0.95	1.00	1.00	0.34	1.00	1.00	0.22	1.00			0.52	
Satd. Flow (perm)	1770	1863	1583	629	1863	1583	413	3467			1846	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	174	152	196	239	152	424	2000	315	54	696	22
RTOR Reduction (vph)	0	0	100	0	0	113	0	10	0	0	2	0
Lane Group Flow (vph)	22	174	52	196	239	39	424	2305	0	0	770	0
Turn Type	Prot	NA	pt+ov	pm+pt	NA	Perm	pm+pt	NA		Perm	NA	
Protected Phases	7	4	4 5	3	8		5	2			6	
Permitted Phases				8		8	2			6		
Actuated Green, G (s)	4.6	16.9	38.9	37.1	26.5	26.5	70.1	70.1			48.1	
Effective Green, g (s)	4.6	16.9	38.9	37.1	26.5	26.5	70.1	70.1			48.1	
Actuated g/C Ratio	0.04	0.14	0.33	0.31	0.22	0.22	0.59	0.59			0.40	
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)	68	264	517	332	414	352	425	2039			745	
v/s Ratio Prot	0.01	0.09	0.03	c0.07	0.13		0.13	c0.66				
v/s Ratio Perm				c0.11		0.02	0.45				0.42	
v/c Ratio	0.32	0.66	0.10	0.59	0.58	0.11	1.00	1.13			1.03	
Uniform Delay, d1	55.8	48.4	28.0	32.4	41.4	37.0	19.0	24.6			35.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2	2.8	5.8	0.1	2.8	2.0	0.1	42.7	65.5			42.0	
Delay (s)	58.5	54.3	28.1	35.2	43.3	37.1	61.7	90.0			77.5	
Level of Service	E	D	C	D	D	D	E	F			E	
Approach Delay (s)		43.1			39.0			85.7			77.5	
Approach LOS		D			D			F			E	

Intersection Summary			
HCM Average Control Delay	74.8	HCM Level of Service	E
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	119.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	118.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
8: Riverside Rd. & Indian Springs Dr.

2011 PM Existing Conditions

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	10	490	535	10	5	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	533	582	11	5	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		812				
pX, platoon unblocked					0.92	
vC, conflicting volume	592				1141	587
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	592				1111	587
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				97	99
cM capacity (veh/h)	983				211	510

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	543	592	11
Volume Left	11	0	5
Volume Right	0	11	5
cSH	983	1700	298
Volume to Capacity	0.01	0.35	0.04
Queue Length 95th (ft)	1	0	3
Control Delay (s)	0.3	0.0	17.5
Lane LOS	A		C
Approach Delay (s)	0.3	0.0	17.5
Approach LOS			C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	43.8%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
1: SR 9 Atlanta St. & SR 120 Marietta Hwy./Mill St.

2017 AM Preferred Alternative

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	930	30	670	40	20	10	190	530	20	30	1320	470
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0		6.0	6.0	6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	0.95	0.95	1.00		1.00	1.00	0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.96	1.00		0.97	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1690	1583		1803	1583	3433	3520		1770	3539	1583
Flt Permitted	0.95	0.96	1.00		0.97	1.00	0.95	1.00		0.43	1.00	1.00
Satd. Flow (perm)	1681	1690	1583		1803	1583	3433	3520		793	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1011	33	728	43	22	11	207	576	22	33	1435	511
RTOR Reduction (vph)	0	0	12	0	0	11	0	1	0	0	0	84
Lane Group Flow (vph)	526	518	716	0	65	0	207	597	0	33	1435	427
Turn Type	Split	NA	pm+ov	Split	NA	Perm	Prot	NA		pm+pt	NA	pm+ov
Protected Phases	4	4	5	8	8		5	2		1	6	4
Permitted Phases			4			8				6		6
Actuated Green, G (s)	51.0	51.0	80.0		6.0	6.0	29.0	97.0		74.4	71.2	122.2
Effective Green, g (s)	51.0	51.0	80.0		6.0	6.0	29.0	97.0		74.4	71.2	122.2
Actuated g/C Ratio	0.28	0.28	0.44		0.03	0.03	0.16	0.54		0.41	0.39	0.67
Clearance Time (s)	6.0	6.0	6.0		6.0	6.0	6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	473	476	699		60	52	549	1884		343	1391	1120
v/s Ratio Prot	c0.31	0.31	c0.16		c0.04		0.06	0.17		0.00	c0.41	0.11
v/s Ratio Perm			0.29			0.00				0.04		0.16
v/c Ratio	1.11	1.09	1.02		1.08	0.01	0.38	0.32		0.10	1.03	0.38
Uniform Delay, d1	65.1	65.1	50.6		87.6	84.7	68.0	23.6		32.1	55.0	12.9
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	75.6	67.2	40.2		141.1	0.1	0.4	0.1		0.1	32.6	0.2
Delay (s)	140.7	132.3	90.8		228.7	84.8	68.5	23.7		32.2	87.6	13.2
Level of Service	F	F	F		F	F	E	C		C	F	B
Approach Delay (s)		117.8			207.9			35.2			67.5	
Approach LOS		F			F			D			E	

Intersection Summary

HCM Average Control Delay	83.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	181.2	Sum of lost time (s)	24.0
Intersection Capacity Utilization	96.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
2: Chatahoochee St & SR 9 Atlanta St. & King St/Neel Reid Dr

2017 AM Preferred Alternative

Movement	EBL	EBT	EBR	WBL2	WBL	WBT	NBL2	NBL	NBT	NBR	SBL	SBT
Right Turn Channelized												
Volume (veh/h)	5	5	10	5	5	5	5	5	735	5	5	2015
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	5	11	5	5	5	5	5	799	5	5	2190
Approach Volume (veh/h)		22				16			815			2207
Crossing Volume (veh/h)		2217#				815			22			27
High Capacity (veh/h)		222				724			1361			1356
High v/c (veh/h)		0.10				0.02			0.60			1.63
Low Capacity (veh/h)		153				570			1140			1135
Low v/c (veh/h)		0.14				0.03			0.72			1.94

Intersection Summary

Maximum v/c High	1.63		
Maximum v/c Low	1.94		
Intersection Capacity Utilization	76.2%	ICU Level of Service	D

Crossing flow exceeds 1200, method is not applicable

Movement	SBR	SBR2	NEL	NER	NER2
Right Turn Channelized					
Volume (veh/h)	5	5	0	5	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	5	0	5	11
Approach Volume (veh/h)			16		
Crossing Volume (veh/h)			2223#		
High Capacity (veh/h)			221		
High v/c (veh/h)			0.07		
Low Capacity (veh/h)			152		
Low v/c (veh/h)			0.11		

Intersection Summary

HCM Unsignalized Intersection Capacity Analysis
3: Heritage Trail & SR 9 NB Atlanta St.

2017 AM Preferred Alternative

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	10	730	20	10	20	0	0	10	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	11	793	22	11	22	0	0	11	11
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	815			0			435	837	0	837	826	408
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	815			0			435	837	0	837	826	408
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			98	93	100	100	96	98
cM capacity (veh/h)	808			1622			480	299	1084	244	304	593

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	408	418	33	22
Volume Left	11	0	11	0
Volume Right	0	22	0	11
cSH	1622	1700	342	402
Volume to Capacity	0.01	0.25	0.10	0.05
Queue Length 95th (ft)	1	0	8	4
Control Delay (s)	0.3	0.0	16.6	14.5
Lane LOS	A		C	B
Approach Delay (s)	0.1		16.6	14.5
Approach LOS			C	B

Intersection Summary			
Average Delay		1.1	
Intersection Capacity Utilization		36.0%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
4: SR 9 SB Atlanta St. & Heritage Trail

2017 AM Preferred Alternative

Movement	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	SWL	SWR
Lane Configurations										
Volume (veh/h)	20	10	0	0	0	5	2030	5	10	10
Sign Control	Stop			Free			Free		Stop	
Grade	0%			0%			0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	11	0	0	0	5	2207	5	11	11
Pedestrians										
Lane Width (ft)										
Walking Speed (ft/s)										
Percent Blockage										
Right turn flare (veh)										
Median type				None			None			
Median storage veh)										
Upstream signal (ft)										
pX, platoon unblocked										
vC, conflicting volume	2220	1106	2212			0			1136	2223
vC1, stage 1 conf vol										
vC2, stage 2 conf vol										
vCu, unblocked vol	2220	1106	2212			0			1136	2223
tC, single (s)	6.5	6.9	4.1			4.1			7.5	6.5
tC, 2 stage (s)										
tF (s)	4.0	3.3	2.2			2.2			3.5	4.0
p0 queue free %	49	95	100			100			88	74
cM capacity (veh/h)	43	205	233			1622			89	43

Direction, Lane #	EB 1	SB 1	SB 2	SW 1
Volume Total	33	1109	1109	22
Volume Left	0	5	0	11
Volume Right	11	0	5	0
cSH	58	1622	1700	58
Volume to Capacity	0.56	0.00	0.65	0.38
Queue Length 95th (ft)	56	0	0	35
Control Delay (s)	127.5	0.1	0.0	101.3
Lane LOS	F	A		F
Approach Delay (s)	127.5	0.1		101.3
Approach LOS	F			F

Intersection Summary			
Average Delay		2.9	
Intersection Capacity Utilization		73.1%	ICU Level of Service D
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
5: Overland Dr. & SR 9 NB Atlanta St.

2017 AM Preferred Alternative

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	10	740	10	10	10	0	0	10	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	11	804	11	11	11	0	0	11	11
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	815			0			440	837	0	837	832	408
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	815			0			440	837	0	837	832	408
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			98	96	100	100	96	98
cM capacity (veh/h)	808			1622			475	299	1084	251	301	593

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	413	413	22	22
Volume Left	11	0	11	0
Volume Right	0	11	0	11
cSH	1622	1700	367	400
Volume to Capacity	0.01	0.24	0.06	0.05
Queue Length 95th (ft)	1	0	5	4
Control Delay (s)	0.3	0.0	15.4	14.5
Lane LOS	A		C	B
Approach Delay (s)	0.1		15.4	14.5
Approach LOS			C	B

Intersection Summary			
Average Delay		0.9	
Intersection Capacity Utilization		35.5%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
6: Jones Dr./Overland Dr. & SR 9 SB Atlanta St.

2017 AM Preferred Alternative

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	2030	10	0	0	0	0	10	10	10	10	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	2207	11	0	0	0	0	11	11	11	11	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	0			2217			2239	2234	1109	1141	2239	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			2217			2239	2234	1109	1141	2239	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			100	74	95	91	74	100
cM capacity (veh/h)	1622			232			18	42	204	117	41	1084

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	1114	1114	22	22
Volume Left	11	0	0	11
Volume Right	0	11	11	0
cSH	1622	1700	69	61
Volume to Capacity	0.01	0.66	0.31	0.35
Queue Length 95th (ft)	1	0	29	33
Control Delay (s)	0.2	0.0	79.0	93.2
Lane LOS	A		F	F
Approach Delay (s)	0.1		79.0	93.2
Approach LOS			F	F

Intersection Summary			
Average Delay		1.7	
Intersection Capacity Utilization		71.1%	ICU Level of Service C
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
7: Warm Springs Cricle & SR 9 NB Atlanta St.

2017 AM Preferred Alternative

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	10	740	10	10	10	0	0	10	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	11	804	11	11	11	0	0	11	11
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	815			0			440	837	0	837	832	408
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	815			0			440	837	0	837	832	408
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			98	96	100	100	96	98
cM capacity (veh/h)	808			1622			475	299	1084	251	301	593

Direction, Lane #	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	11	536	279	22	22
Volume Left	11	0	0	11	0
Volume Right	0	0	11	0	11
cSH	1622	1700	1700	367	400
Volume to Capacity	0.01	0.32	0.16	0.06	0.05
Queue Length 95th (ft)	1	0	0	5	4
Control Delay (s)	7.2	0.0	0.0	15.4	14.5
Lane LOS	A			C	B
Approach Delay (s)	0.1			15.4	14.5
Approach LOS				C	B

Intersection Summary			
Average Delay		0.8	
Intersection Capacity Utilization		35.2%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
8: Warm Springs Cricle & SR 9 SB Atlanta St.

2017 AM Preferred Alternative

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	2030	10	0	0	0	0	10	30	10	10	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	2207	11	0	0	0	0	11	33	11	11	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	0			2217			2239	2234	1109	1163	2239	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			2217			2239	2234	1109	1163	2239	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			100	74	84	89	74	100
cM capacity (veh/h)	1622			232			18	42	204	100	41	1084

Direction, Lane #	EB 1	EB 2	EB 3	NB 1	SB 1
Volume Total	11	1471	746	43	22
Volume Left	11	0	0	0	11
Volume Right	0	0	11	33	0
cSH	1622	1700	1700	104	59
Volume to Capacity	0.01	0.87	0.44	0.42	0.37
Queue Length 95th (ft)	1	0	0	44	34
Control Delay (s)	7.2	0.0	0.0	62.8	98.8
Lane LOS	A			F	F
Approach Delay (s)	0.0			62.8	98.8
Approach LOS				F	F

Intersection Summary			
Average Delay		2.2	
Intersection Capacity Utilization		70.8%	ICU Level of Service C
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
9: Chatahoochee Cir & SR 9 Atlanta St./SR 9 Atlanta St.

2017 AM Preferred Alternative

Movement	SEU	SET	SER	NWL	NWT	NEL	NER
Lane Configurations							
Volume (veh/h)	10	2050	10	20	720	30	50
Sign Control		Free			Free	Stop	
Grade		0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	2228	11	22	783	33	54
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		None			None		
Median storage veh)							
Upstream signal (ft)					704		
pX, platoon unblocked	0.00					0.89	
vC, conflicting volume	0			2239		2668	1120
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	0			2239		2627	1120
tC, single (s)	0.0			4.1		6.8	6.9
tC, 2 stage (s)							
tF (s)	0.0			2.2		3.5	3.3
p0 queue free %	0			90		0	73
cM capacity (veh/h)	0			228		16	201

Direction, Lane #	SE 1	SE 2	SE 3	NW 1	NW 2	NW 3	NE 1
Volume Total	1486	754	0	22	391	391	87
Volume Left	0	0	0	22	0	0	33
Volume Right	0	11	0	0	0	0	54
cSH	1700	1700	1700	228	1700	1700	37
Volume to Capacity	0.87	0.44	0.00	0.10	0.23	0.23	2.37
Queue Length 95th (ft)	0	0	0	8	0	0	241
Control Delay (s)	0.0	0.0	0.0	22.5	0.0	0.0	857.6
Lane LOS				C			F
Approach Delay (s)	0.0			0.6			857.6
Approach LOS							F

Intersection Summary			
Average Delay	24.0		
Intersection Capacity Utilization	68.4%	ICU Level of Service	C
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
10: SR 9 NB Atlanta St./SR 9 Atlanta St. & Riverside Conn

2017 AM Preferred Alternative

Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations						
Volume (vph)	670	320	150	1950	700	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	
Frt	1.00	0.85	1.00	1.00	0.99	
Flt Protected	1.00	1.00	0.95	1.00	0.96	
Satd. Flow (prot)	3539	1583	1770	3539	3410	
Flt Permitted	1.00	1.00	0.29	1.00	0.96	
Satd. Flow (perm)	3539	1583	549	3539	3410	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	728	348	163	2120	761	76
RTOR Reduction (vph)	0	74	0	0	7	0
Lane Group Flow (vph)	728	274	163	2120	830	0
Turn Type	NA	pm+ov	pm+pt	NA	NA	
Protected Phases	2	3	1	6	3	
Permitted Phases		2	6			
Actuated Green, G (s)	63.3	93.3	76.3	76.3	30.0	
Effective Green, g (s)	63.3	93.3	76.3	76.3	30.0	
Actuated g/C Ratio	0.54	0.79	0.64	0.64	0.25	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	1894	1329	426	2283	865	
v/s Ratio Prot	0.21	0.05	0.02	c0.60	c0.24	
v/s Ratio Perm		0.12	0.22			
v/c Ratio	0.38	0.21	0.38	0.93	0.96	
Uniform Delay, d1	16.1	3.2	9.4	18.6	43.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	0.1	0.6	7.3	21.1	
Delay (s)	16.2	3.2	10.0	25.9	64.7	
Level of Service	B	A	B	C	E	
Approach Delay (s)	12.0			24.7	64.7	
Approach LOS	B			C	E	

Intersection Summary			
HCM Average Control Delay	29.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	118.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	86.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
11: Riverside Rd/Indian Springs Dr & Water Treatment Plant & Riverside Con/Riverside Rd.

2017 AM Preferred Alternative

Movement	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	NBR2
Right Turn Channelized												
Volume (veh/h)	5	300	5	160	5	155	335	5	420	5	210	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	326	5	174	5	168	364	5	457	5	228	5
Approach Volume (veh/h)		511					543			696		
Crossing Volume (veh/h)		201					478			353		
High Capacity (veh/h)		1183					950			1049		
High v/c (veh/h)		0.43					0.57			0.66		
Low Capacity (veh/h)		978					769			858		
Low v/c (veh/h)		0.52					0.71			0.81		

Intersection Summary			
Maximum v/c High		0.66	
Maximum v/c Low		0.81	
Intersection Capacity Utilization		102.9%	ICU Level of Service G

Movement	SBL2	SBT	SBR	NWL2	NWL
Right Turn Channelized					
Volume (veh/h)	10	10	10	5	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	11	11	5	5
Approach Volume (veh/h)		33			11
Crossing Volume (veh/h)		1005			1033
High Capacity (veh/h)		620			606
High v/c (veh/h)		0.05			0.02
Low Capacity (veh/h)		480			469
Low v/c (veh/h)		0.07			0.02

Intersection Summary

HCM Signalized Intersection Capacity Analysis
1: SR 9 Atlanta St. & SR 120 Marietta Hwy./Mill St.

2017 PM Preferred Alternative

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	470	20	190	20	30	30	670	1320	40	10	530	930
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0		6.0	6.0	6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	0.95	0.95	1.00		1.00	1.00	0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.96	1.00		0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1692	1583		1826	1583	3433	3524		1770	3539	1583
Flt Permitted	0.95	0.96	1.00		0.98	1.00	0.95	1.00		0.14	1.00	1.00
Satd. Flow (perm)	1681	1692	1583		1826	1583	3433	3524		262	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	511	22	207	22	33	33	728	1435	43	11	576	1011
RTOR Reduction (vph)	0	0	41	0	0	32	0	2	0	0	0	26
Lane Group Flow (vph)	266	267	166	0	55	1	728	1476	0	11	576	985
Turn Type	Split	NA	pm+ov	Split	NA	Perm	Prot	NA		pm+pt	NA	pm+ov
Protected Phases	4	4	5	8	8		5	2		1	6	4
Permitted Phases			4			8				6		6
Actuated Green, G (s)	40.0	40.0	66.0		4.0	4.0	26.0	53.6		29.2	28.4	68.4
Effective Green, g (s)	40.0	40.0	66.0		4.0	4.0	26.0	53.6		29.2	28.4	68.4
Actuated g/C Ratio	0.33	0.33	0.54		0.03	0.03	0.21	0.44		0.24	0.23	0.56
Clearance Time (s)	6.0	6.0	6.0		6.0	6.0	6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	549	553	854		60	52	729	1543		72	821	962
v/s Ratio Prot	0.16	0.16	0.04		c0.03		c0.21	c0.42		0.00	0.16	c0.33
v/s Ratio Perm			0.06			0.00				0.04		0.29
v/c Ratio	0.48	0.48	0.19		0.92	0.02	1.00	0.96		0.15	0.70	1.02
Uniform Delay, d1	33.0	32.9	14.5		59.0	57.3	48.2	33.3		37.6	43.1	27.0
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.7	0.7	0.1		85.9	0.2	32.7	13.9		1.0	2.7	35.1
Delay (s)	33.6	33.6	14.6		144.9	57.5	80.9	47.1		38.5	45.8	62.1
Level of Service	C	C	B		F	E	F	D		D	D	E
Approach Delay (s)		28.3			112.1			58.3			56.1	
Approach LOS		C			F			E			E	

Intersection Summary			
HCM Average Control Delay	53.8	HCM Level of Service	D
HCM Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	122.4	Sum of lost time (s)	24.0
Intersection Capacity Utilization	95.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
3: Heritage Trail & SR 9 NB Atlanta St.

2017 PM Preferred Alternative

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	10	2040	20	10	20	0	0	10	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	11	2217	22	11	22	0	0	11	11
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2239			0			1147	2261	0	2261	2250	1120
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2239			0			1147	2261	0	2261	2250	1120
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			91	46	100	100	73	95
cM capacity (veh/h)	228			1622			115	40	1084	13	41	201

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	1120	1130	33	22
Volume Left	11	0	11	0
Volume Right	0	22	0	11
cSH	1622	1700	51	68
Volume to Capacity	0.01	0.66	0.64	0.32
Queue Length 95th (ft)	1	0	63	29
Control Delay (s)	0.2	0.0	156.9	81.3
Lane LOS	A		F	F
Approach Delay (s)	0.1		156.9	81.3
Approach LOS			F	F

Intersection Summary			
Average Delay		3.1	
Intersection Capacity Utilization		72.3%	ICU Level of Service C
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
4: SR 9 SB Atlanta St. & Heritage Trail

2017 PM Preferred Alternative

Movement	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	SWL	SWR
Lane Configurations										
Volume (veh/h)	20	20	0	0	0	10	730	10	10	10
Sign Control	Stop			Free			Free		Stop	
Grade	0%			0%			0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	22	0	0	0	11	793	11	11	11
Pedestrians										
Lane Width (ft)										
Walking Speed (ft/s)										
Percent Blockage										
Right turn flare (veh)										
Median type				None			None			
Median storage veh)										
Upstream signal (ft)										
pX, platoon unblocked										
vC, conflicting volume	821	402	804			0			451	826
vC1, stage 1 conf vol										
vC2, stage 2 conf vol										
vCu, unblocked vol	821	402	804			0			451	826
tC, single (s)	6.5	6.9	4.1			4.1			7.5	6.5
tC, 2 stage (s)										
tF (s)	4.0	3.3	2.2			2.2			3.5	4.0
p0 queue free %	93	96	100			99			98	96
cM capacity (veh/h)	306	598	816			1622			446	304

Direction, Lane #	EB 1	SB 1	SB 2	SW 1
Volume Total	43	408	408	22
Volume Left	0	11	0	11
Volume Right	22	0	11	0
cSH	405	1622	1700	361
Volume to Capacity	0.11	0.01	0.24	0.06
Queue Length 95th (ft)	9	1	0	5
Control Delay (s)	15.0	0.3	0.0	15.6
Lane LOS	B	A		C
Approach Delay (s)	15.0	0.1		15.6
Approach LOS	B			C

Intersection Summary			
Average Delay		1.2	
Intersection Capacity Utilization		37.5%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
7: Warm Springs Cricle & SR 9 NB Atlanta St.

2017 PM Preferred Alternative

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	20	2050	10	10	10	0	0	10	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	22	2228	11	11	11	0	0	11	11
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2239			0			1174	2283	0	2283	2277	1120
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2239			0			1174	2283	0	2283	2277	1120
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			90	72	100	100	72	95
cM capacity (veh/h)	228			1622			108	39	1084	17	39	201

Direction, Lane #	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	22	1486	754	22	22
Volume Left	22	0	0	11	0
Volume Right	0	0	11	0	11
cSH	1622	1700	1700	57	65
Volume to Capacity	0.01	0.87	0.44	0.38	0.33
Queue Length 95th (ft)	1	0	0	35	31
Control Delay (s)	7.3	0.0	0.0	103.0	85.6
Lane LOS	A			F	F
Approach Delay (s)	0.1			103.0	85.6
Approach LOS				F	F

Intersection Summary			
Average Delay		1.8	
Intersection Capacity Utilization		71.4%	ICU Level of Service C
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
8: Warm Springs Cricle & SR 9 SB Atlanta St.

2017 PM Preferred Alternative

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	740	10	0	0	0	0	10	10	10	20	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	804	11	0	0	0	0	11	11	11	22	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	0			815			842	832	408	440	837	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			815			842	832	408	440	837	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			100	96	98	98	93	100
cM capacity (veh/h)	1622			808			242	301	593	475	299	1084

Direction, Lane #	EB 1	EB 2	EB 3	NB 1	SB 1
Volume Total	11	536	279	22	33
Volume Left	11	0	0	0	11
Volume Right	0	0	11	11	0
cSH	1622	1700	1700	400	341
Volume to Capacity	0.01	0.32	0.16	0.05	0.10
Queue Length 95th (ft)	1	0	0	4	8
Control Delay (s)	7.2	0.0	0.0	14.5	16.7
Lane LOS	A			B	C
Approach Delay (s)	0.1			14.5	16.7
Approach LOS				B	C

Intersection Summary			
Average Delay		1.1	
Intersection Capacity Utilization		35.7%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
9: Chatahoochee Cir & SR 9 Atlanta St./SR 9 Atlanta St.

2017 PM Preferred Alternative

Movement	SEU	SET	SER	NWL	NWT	NEL	NER
Lane Configurations							
Volume (veh/h)	10	720	30	50	2050	20	20
Sign Control		Free			Free	Stop	
Grade		0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	783	33	54	2228	22	22
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		None			None		
Median storage veh)							
Upstream signal (ft)					704		
pX, platoon unblocked	0.00					0.39	
vC, conflicting volume	0			815		2022	408
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	0			815		474	408
tC, single (s)	0.0			4.1		6.8	6.9
tC, 2 stage (s)							
tF (s)	0.0			2.2		3.5	3.3
p0 queue free %	0			93		88	96
cM capacity (veh/h)	0			808		188	593

Direction, Lane #	SE 1	SE 2	SE 3	NW 1	NW 2	NW 3	NE 1
Volume Total	522	293	0	54	1114	1114	43
Volume Left	0	0	0	54	0	0	22
Volume Right	0	33	0	0	0	0	22
cSH	1700	1700	1700	808	1700	1700	285
Volume to Capacity	0.31	0.17	0.00	0.07	0.66	0.66	0.15
Queue Length 95th (ft)	0	0	0	5	0	0	13
Control Delay (s)	0.0	0.0	0.0	9.8	0.0	0.0	19.9
Lane LOS				A			C
Approach Delay (s)	0.0			0.2			19.9
Approach LOS							C

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
10: SR 9 NB Atlanta St./SR 9 Atlanta St. & Riverside Conn

2017 PM Preferred Alternative

Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations						
Volume (vph)	1950	700	70	670	320	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	
Frt	1.00	0.85	1.00	1.00	0.95	
Flt Protected	1.00	1.00	0.95	1.00	0.97	
Satd. Flow (prot)	3539	1583	1770	3539	3328	
Flt Permitted	1.00	1.00	0.05	1.00	0.97	
Satd. Flow (perm)	3539	1583	93	3539	3328	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2120	761	76	728	348	163
RTOR Reduction (vph)	0	49	0	0	49	0
Lane Group Flow (vph)	2120	712	76	728	462	0
Turn Type	NA	pm+ov	pm+pt	NA	NA	
Protected Phases	2	3	1	6	3	
Permitted Phases		2	6			
Actuated Green, G (s)	73.9	93.1	82.9	82.9	19.2	
Effective Green, g (s)	73.9	93.1	82.9	82.9	19.2	
Actuated g/C Ratio	0.65	0.82	0.73	0.73	0.17	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	2292	1375	112	2571	560	
v/s Ratio Prot	c0.60	0.09	c0.02	0.21	c0.14	
v/s Ratio Perm		0.36	0.48			
v/c Ratio	0.92	0.52	0.68	0.28	0.82	
Uniform Delay, d1	17.7	3.3	26.5	5.4	45.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	7.0	0.3	15.1	0.1	9.6	
Delay (s)	24.7	3.7	41.6	5.4	55.4	
Level of Service	C	A	D	A	E	
Approach Delay (s)	19.1			8.9	55.4	
Approach LOS	B			A	E	

Intersection Summary			
HCM Average Control Delay	21.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	114.1	Sum of lost time (s)	18.0
Intersection Capacity Utilization	82.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
1: SR 9 Atlanta St. & SR 120 Marietta Hwy./Mill St.

2037 AM Preferred Alternative

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1020	30	730	60	20	10	210	600	30	30	1560	510
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0		6.0	6.0	6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	0.95	0.95	1.00		1.00	1.00	0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.95	1.00		0.96	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1692	1583		1832	1615	3433	3517		1805	3539	1583
Flt Permitted	0.95	0.95	1.00		0.96	1.00	0.95	1.00		0.39	1.00	1.00
Satd. Flow (perm)	1681	1692	1583		1832	1615	3433	3517		743	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1109	33	793	65	22	11	228	652	33	33	1696	554
RTOR Reduction (vph)	0	0	6	0	0	11	0	2	0	0	0	75
Lane Group Flow (vph)	566	576	787	0	87	0	228	683	0	33	1696	479
Heavy Vehicles (%)	2%	0%	2%	0%	0%	0%	2%	2%	0%	0%	2%	2%
Turn Type	Split	NA	pm+ov	Split	NA	Perm	Prot	NA		pm+pt	NA	pm+ov
Protected Phases	4	4	5	8	8		5	2		1	6	4
Permitted Phases			4			8				6		6
Actuated Green, G (s)	37.0	37.0	56.0		5.0	5.0	19.0	74.0		59.8	57.4	94.4
Effective Green, g (s)	37.0	37.0	56.0		5.0	5.0	19.0	74.0		59.8	57.4	94.4
Actuated g/C Ratio	0.26	0.26	0.39		0.04	0.04	0.13	0.52		0.42	0.40	0.66
Clearance Time (s)	6.0	6.0	6.0		6.0	6.0	6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	437	440	623		64	57	458	1828		330	1427	1116
v/s Ratio Prot	0.34	c0.34	c0.17		c0.05		0.07	0.19		0.00	c0.48	0.11
v/s Ratio Perm			0.33			0.00				0.04		0.19
v/c Ratio	1.30	1.31	1.26		1.36	0.01	0.50	0.37		0.10	1.19	0.43
Uniform Delay, d1	52.7	52.7	43.2		68.7	66.3	57.3	20.4		24.4	42.5	11.3
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	149.0	154.7	131.0		234.9	0.0	0.9	0.1		0.1	92.1	0.3
Delay (s)	201.7	207.4	174.2		303.6	66.4	58.1	20.5		24.5	134.6	11.6
Level of Service	F	F	F		F	E	E	C		C	F	B
Approach Delay (s)		192.1			277.0			29.9			103.2	
Approach LOS		F			F			C			F	

Intersection Summary			
HCM Average Control Delay	126.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.25		
Actuated Cycle Length (s)	142.4	Sum of lost time (s)	24.0
Intersection Capacity Utilization	107.7%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
3: Heritage Trail & SR 9 NB Atlanta St.

2037 AM Preferred Alternative

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	10	830	10	10	20	0	0	10	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	11	902	11	11	22	0	0	11	11
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	913			0			489	935	0	940	929	457
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	913			0			489	935	0	940	929	457
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			98	92	100	100	96	98
cM capacity (veh/h)	742			1622			436	262	1084	203	264	551

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	462	462	33	22
Volume Left	11	0	11	0
Volume Right	0	11	0	11
cSH	1622	1700	303	357
Volume to Capacity	0.01	0.27	0.11	0.06
Queue Length 95th (ft)	1	0	9	5
Control Delay (s)	0.2	0.0	18.3	15.7
Lane LOS	A		C	C
Approach Delay (s)	0.1		18.3	15.7
Approach LOS			C	C

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	38.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
4: SR 9 SB Atlanta St. & Heritage Trail

2037 AM Preferred Alternative

Movement	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	SWL	SWR
Lane Configurations										
Volume (veh/h)	20	10	0	0	0	10	2350	20	10	10
Sign Control	Stop			Free			Free		Stop	
Grade	0%			0%			0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	11	0	0	0	11	2554	22	11	11
Pedestrians										
Lane Width (ft)										
Walking Speed (ft/s)										
Percent Blockage										
Right turn flare (veh)										
Median type				None			None			
Median storage veh)										
Upstream signal (ft)										
pX, platoon unblocked										
vC, conflicting volume	2587	1288	2576			0			1321	2598
vC1, stage 1 conf vol										
vC2, stage 2 conf vol										
vCu, unblocked vol	2587	1288	2576			0			1321	2598
tC, single (s)	6.5	6.9	4.1			4.1			7.5	6.5
tC, 2 stage (s)										
tF (s)	4.0	3.3	2.2			2.2			3.5	4.0
p0 queue free %	12	93	100			99			59	55
cM capacity (veh/h)	25	155	167			1622			26	24

Direction, Lane #	EB 1	SB 1	SB 2	SW 1
Volume Total	33	1288	1299	22
Volume Left	0	11	0	11
Volume Right	11	0	22	0
cSH	34	1622	1700	25
Volume to Capacity	0.95	0.01	0.76	0.86
Queue Length 95th (ft)	85	1	0	66
Control Delay (s)	309.8	0.3	0.0	350.6
Lane LOS	F	A		F
Approach Delay (s)	309.8	0.1		350.6
Approach LOS	F			F

Intersection Summary			
Average Delay		6.8	
Intersection Capacity Utilization		82.6%	ICU Level of Service E
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
7: Warm Springs Cricle & SR 9 NB Atlanta St.

2037 AM Preferred Alternative

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	10	840	10	10	10	0	0	10	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	11	913	11	11	11	0	0	11	11
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	924			0			495	946	0	946	940	462
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	924			0			495	946	0	946	940	462
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			97	96	100	100	96	98
cM capacity (veh/h)	735			1622			432	258	1084	208	260	547

Direction, Lane #	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	11	609	315	22	22
Volume Left	11	0	0	11	0
Volume Right	0	0	11	0	11
cSH	1622	1700	1700	323	353
Volume to Capacity	0.01	0.36	0.19	0.07	0.06
Queue Length 95th (ft)	1	0	0	5	5
Control Delay (s)	7.2	0.0	0.0	16.9	15.9
Lane LOS	A			C	C
Approach Delay (s)	0.1			16.9	15.9
Approach LOS				C	C

Intersection Summary			
Average Delay		0.8	
Intersection Capacity Utilization		38.0%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
8: Warm Springs Cricle & SR 9 SB Atlanta St.

2037 AM Preferred Alternative

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	2350	10	0	0	0	0	10	30	10	10	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	2554	11	0	0	0	0	11	33	11	11	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	0			2565			2587	2582	1283	1337	2587	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			2565			2587	2582	1283	1337	2587	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			100	56	79	81	56	100
cM capacity (veh/h)	1622			169			8	25	156	58	25	1084

Direction, Lane #	EB 1	EB 2	EB 3	NB 1	SB 1
Volume Total	11	1703	862	43	22
Volume Left	11	0	0	0	11
Volume Right	0	0	11	33	0
cSH	1622	1700	1700	67	35
Volume to Capacity	0.01	1.00	0.51	0.64	0.63
Queue Length 95th (ft)	1	0	0	70	54
Control Delay (s)	7.2	0.0	0.0	126.3	215.5
Lane LOS	A			F	F
Approach Delay (s)	0.0			126.3	215.5
Approach LOS				F	F

Intersection Summary			
Average Delay		3.9	
Intersection Capacity Utilization		79.7%	ICU Level of Service D
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
9: Chatahoochee Cir & SR 9 Atlanta St./SR 9 Atlanta St.

2037 AM Preferred Alternative

Movement	SEU	SET	SER	NWL	NWT	NEL	NER
Lane Configurations							
Volume (veh/h)	10	2370	10	20	820	30	50
Sign Control		Free			Free	Stop	
Grade		0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	2576	11	22	891	33	54
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		None			None		
Median storage veh)							
Upstream signal (ft)					704		
pX, platoon unblocked	0.00					0.87	
vC, conflicting volume	0			2587		3071	1293
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	0			2587		3082	1293
tC, single (s)	0.0			4.1		6.8	6.9
tC, 2 stage (s)							
tF (s)	0.0			2.2		3.5	3.3
p0 queue free %	0			87		0	65
cM capacity (veh/h)	0			166		7	153

Direction, Lane #	SE 1	SE 2	SE 3	NW 1	NW 2	NW 3	NE 1
Volume Total	1717	870	0	22	446	446	87
Volume Left	0	0	0	22	0	0	33
Volume Right	0	11	0	0	0	0	54
cSH	1700	1700	1700	166	1700	1700	17
Volume to Capacity	1.01	0.51	0.00	0.13	0.26	0.26	5.02
Queue Length 95th (ft)	0	0	0	11	0	0	Err
Control Delay (s)	0.0	0.0	0.0	30.0	0.0	0.0	Err
Lane LOS				D			F
Approach Delay (s)	0.0			0.7			Err
Approach LOS							F

Intersection Summary			
Average Delay		242.6	
Intersection Capacity Utilization		77.2%	ICU Level of Service D
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis
10: SR 9 NB Atlanta St./SR 9 Atlanta St. & Riverside Conn

2037 AM Preferred Alternative

Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations						
Volume (vph)	760	370	160	2260	745	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	
Frt	1.00	0.85	1.00	1.00	0.99	
Flt Protected	1.00	1.00	0.95	1.00	0.96	
Satd. Flow (prot)	3539	1583	1770	3539	3407	
Flt Permitted	1.00	1.00	0.26	1.00	0.96	
Satd. Flow (perm)	3539	1583	480	3539	3407	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	826	402	174	2457	810	87
RTOR Reduction (vph)	0	89	0	0	7	0
Lane Group Flow (vph)	826	313	174	2457	890	0
Turn Type	NA	pm+ov	pm+pt	NA	NA	
Protected Phases	2	3	1	6	3	
Permitted Phases		2	6			
Actuated Green, G (s)	65.4	93.4	80.0	80.0	28.0	
Effective Green, g (s)	65.4	93.4	80.0	80.0	28.0	
Actuated g/C Ratio	0.55	0.78	0.67	0.67	0.23	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	1929	1311	412	2359	795	
v/s Ratio Prot	0.23	0.06	0.03	c0.69	c0.26	
v/s Ratio Perm		0.14	0.25			
v/c Ratio	0.43	0.24	0.42	1.04	1.12	
Uniform Delay, d1	16.2	3.6	9.1	20.0	46.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.2	0.1	0.7	30.4	70.1	
Delay (s)	16.4	3.7	9.8	50.4	116.1	
Level of Service	B	A	A	D	F	
Approach Delay (s)	12.2			47.8	116.1	
Approach LOS	B			D	F	

Intersection Summary

HCM Average Control Delay	51.5	HCM Level of Service	D
HCM Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	96.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
1: SR 9 Atlanta St. & SR 120 Marietta Hwy./Mill St.

4/19/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	510	20	210	20	30	30	730	1560	60	10	610	1020
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0		6.0	6.0	6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	0.95	0.95	1.00		1.00	1.00	0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.96	1.00		0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1691	1583		1826	1583	3433	3520		1770	3539	1583
Flt Permitted	0.95	0.96	1.00		0.98	1.00	0.95	1.00		0.13	1.00	1.00
Satd. Flow (perm)	1681	1691	1583		1826	1583	3433	3520		240	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	554	22	228	22	33	33	793	1696	65	11	663	1109
RTOR Reduction (vph)	0	0	39	0	0	32	0	2	0	0	0	25
Lane Group Flow (vph)	288	288	189	0	55	1	793	1759	0	11	663	1084
Turn Type	Split	NA	pm+ov	Split	NA	Perm	Prot	NA		pm+pt	NA	pm+ov
Protected Phases	4	4	5	8	8		5	2		1	6	4
Permitted Phases			4			8				6		6
Actuated Green, G (s)	36.0	36.0	63.0		4.0	4.0	27.0	57.3		31.9	31.1	67.1
Effective Green, g (s)	36.0	36.0	63.0		4.0	4.0	27.0	57.3		31.9	31.1	67.1
Actuated g/C Ratio	0.29	0.29	0.52		0.03	0.03	0.22	0.47		0.26	0.25	0.55
Clearance Time (s)	6.0	6.0	6.0		6.0	6.0	6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	496	499	817		60	52	759	1652		73	901	948
v/s Ratio Prot	0.17	0.17	0.05		c0.03		c0.23	c0.50		0.00	0.19	c0.34
v/s Ratio Perm			0.07			0.00				0.04		0.35
v/c Ratio	0.58	0.58	0.23		0.92	0.02	1.04	1.06		0.15	0.74	1.14
Uniform Delay, d1	36.6	36.6	16.2		58.9	57.2	47.5	32.4		36.6	41.7	27.5
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.7	1.6	0.1		85.9	0.2	45.0	41.6		1.0	3.2	77.1
Delay (s)	38.4	38.2	16.4		144.8	57.3	92.5	74.0		37.5	44.9	104.6
Level of Service	D	D	B		F	E	F	E		D	D	F
Approach Delay (s)		32.1			112.0			79.8			82.0	
Approach LOS		C			F			E			F	

Intersection Summary

HCM Average Control Delay	73.7	HCM Level of Service	E
HCM Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	122.1	Sum of lost time (s)	24.0
Intersection Capacity Utilization	102.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
3: Heritage Trail & SR 9 NB Atlanta St.

4/19/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	10	2360	10	10	20	0	0	10	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	11	2565	11	11	22	0	0	11	11
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2576			0			1321	2598	0	2603	2592	1288
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2576			0			1321	2598	0	2603	2592	1288
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			84	11	100	100	56	93
cM capacity (veh/h)	167			1622			69	24	1084	3	25	155

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	1293	1293	33	22
Volume Left	11	0	11	0
Volume Right	0	11	0	11
cSH	1622	1700	31	42
Volume to Capacity	0.01	0.76	1.05	0.51
Queue Length 95th (ft)	1	0	90	46
Control Delay (s)	0.3	0.0	366.1	158.1
Lane LOS	A		F	F
Approach Delay (s)	0.1		366.1	158.1
Approach LOS			F	F

Intersection Summary			
Average Delay		5.9	
Intersection Capacity Utilization		80.8%	ICU Level of Service D
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
4: SR 9 SB Atlanta St. & Heritage Trail

4/19/2012

Movement	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	SWL	SWR
Lane Configurations										
Volume (veh/h)	20	20	0	0	0	10	830	10	10	10
Sign Control	Stop			Free			Free		Stop	
Grade	0%			0%			0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	22	0	0	0	11	902	11	11	11
Pedestrians										
Lane Width (ft)										
Walking Speed (ft/s)										
Percent Blockage										
Right turn flare (veh)										
Median type				None			None			
Median storage veh)										
Upstream signal (ft)										
pX, platoon unblocked										
vC, conflicting volume	929	457	913			0			505	935
vC1, stage 1 conf vol										
vC2, stage 2 conf vol										
vCu, unblocked vol	929	457	913			0			505	935
tC, single (s)	6.5	6.9	4.1			4.1			7.5	6.5
tC, 2 stage (s)										
tF (s)	4.0	3.3	2.2			2.2			3.5	4.0
p0 queue free %	92	96	100			99			97	96
cM capacity (veh/h)	264	551	742			1622			403	262

Direction, Lane #	EB 1	SB 1	SB 2	SW 1
Volume Total	43	462	462	22
Volume Left	0	11	0	11
Volume Right	22	0	11	0
cSH	357	1622	1700	318
Volume to Capacity	0.12	0.01	0.27	0.07
Queue Length 95th (ft)	10	1	0	5
Control Delay (s)	16.5	0.2	0.0	17.2
Lane LOS	C	A		C
Approach Delay (s)	16.5	0.1		17.2
Approach LOS	C			C

Intersection Summary			
Average Delay		1.2	
Intersection Capacity Utilization		40.2%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
7: Warm Springs Cricle & SR 9 NB Atlanta St.

4/19/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	30	2360	10	10	10	0	0	10	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	33	2565	11	11	11	0	0	11	11
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2576			0			1364	2641	0	2641	2636	1288
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2576			0			1364	2641	0	2641	2636	1288
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			82	52	100	100	52	93
cM capacity (veh/h)	167			1622			61	23	1084	7	23	155

Direction, Lane #	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	33	1710	866	22	22
Volume Left	33	0	0	11	0
Volume Right	0	0	11	0	11
cSH	1622	1700	1700	33	40
Volume to Capacity	0.02	1.01	0.51	0.66	0.55
Queue Length 95th (ft)	2	0	0	56	49
Control Delay (s)	7.3	0.0	0.0	234.3	175.5
Lane LOS	A			F	F
Approach Delay (s)	0.1			234.3	175.5
Approach LOS				F	F

Intersection Summary			
Average Delay		3.4	
Intersection Capacity Utilization		80.0%	ICU Level of Service D
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
8: Warm Springs Cricle & SR 9 SB Atlanta St.

4/19/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	840	10	0	0	0	0	10	10	10	30	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	913	11	0	0	0	0	11	11	11	33	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	0			924			957	940	462	495	946	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			924			957	940	462	495	946	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			100	96	98	97	87	100
cM capacity (veh/h)	1622			735			191	260	547	432	258	1084

Direction, Lane #	EB 1	EB 2	EB 3	NB 1	SB 1
Volume Total	11	609	315	22	43
Volume Left	11	0	0	0	11
Volume Right	0	0	11	11	0
cSH	1622	1700	1700	353	287
Volume to Capacity	0.01	0.36	0.19	0.06	0.15
Queue Length 95th (ft)	1	0	0	5	13
Control Delay (s)	7.2	0.0	0.0	15.9	19.8
Lane LOS	A			C	C
Approach Delay (s)	0.1			15.9	19.8
Approach LOS				C	C

Intersection Summary			
Average Delay		1.3	
Intersection Capacity Utilization		39.0%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
9: Chatahoochee Cir & SR 9 Atlanta St./SR 9 Atlanta St.

4/19/2012

Movement	SEU	SET	SER	NWL	NWT	NEL	NER
Lane Configurations							
Volume (veh/h)	10	820	30	60	2370	20	20
Sign Control		Free			Free	Stop	
Grade		0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	891	33	65	2576	22	22
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		None			None		
Median storage veh)							
Upstream signal (ft)					704		
pX, platoon unblocked	0.00					0.35	
vC, conflicting volume	0			924		2326	462
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	0			924		1061	462
tC, single (s)	0.0			4.1		6.8	6.9
tC, 2 stage (s)							
tF (s)	0.0			2.2		3.5	3.3
p0 queue free %	0			91		69	96
cM capacity (veh/h)	0			735		69	547

Direction, Lane #	SE 1	SE 2	SE 3	NW 1	NW 2	NW 3	NE 1
Volume Total	594	330	0	65	1288	1288	43
Volume Left	0	0	0	65	0	0	22
Volume Right	0	33	0	0	0	0	22
cSH	1700	1700	1700	735	1700	1700	123
Volume to Capacity	0.35	0.19	0.00	0.09	0.76	0.76	0.35
Queue Length 95th (ft)	0	0	0	7	0	0	36
Control Delay (s)	0.0	0.0	0.0	10.4	0.0	0.0	49.4
Lane LOS				B			E
Approach Delay (s)	0.0			0.3			49.4
Approach LOS							E

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	75.5%	ICU Level of Service	D
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
10: SR 9 NB Atlanta St./SR 9 Atlanta St. & Riverside Conn

4/19/2012

Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations						
Volume (vph)	2260	745	70	770	370	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	
Frt	1.00	0.85	1.00	1.00	0.95	
Flt Protected	1.00	1.00	0.95	1.00	0.97	
Satd. Flow (prot)	3539	1583	1770	3539	3329	
Flt Permitted	1.00	1.00	0.05	1.00	0.97	
Satd. Flow (perm)	3539	1583	88	3539	3329	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2457	810	76	837	402	185
RTOR Reduction (vph)	0	45	0	0	47	0
Lane Group Flow (vph)	2457	765	76	837	540	0
Turn Type	NA	pm+ov	pm+pt	NA	NA	
Protected Phases	2	3	1	6	3	
Permitted Phases		2	6			
Actuated Green, G (s)	79.1	98.1	88.2	88.2	19.0	
Effective Green, g (s)	79.1	98.1	88.2	88.2	19.0	
Actuated g/C Ratio	0.66	0.82	0.74	0.74	0.16	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	2348	1382	109	2619	531	
v/s Ratio Prot	c0.69	0.09	c0.02	0.24	c0.16	
v/s Ratio Perm		0.39	0.50			
v/c Ratio	1.05	0.55	0.70	0.32	1.02	
Uniform Delay, d1	20.1	3.4	33.0	5.3	50.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	32.1	0.5	17.6	0.1	43.3	
Delay (s)	52.2	3.9	50.6	5.4	93.4	
Level of Service	D	A	D	A	F	
Approach Delay (s)	40.2			9.1	93.4	
Approach LOS	D			A	F	

Intersection Summary			
HCM Average Control Delay	40.8	HCM Level of Service	D
HCM Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	119.2	Sum of lost time (s)	18.0
Intersection Capacity Utilization	88.4%	ICU Level of Service	E
Analysis Period (min)	15		

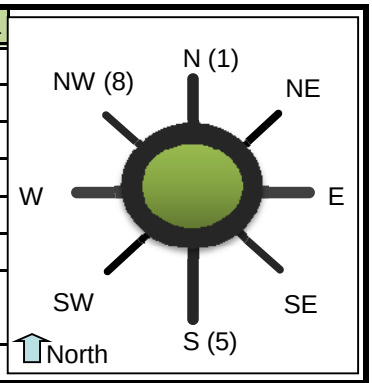
c Critical Lane Group

Attachment A-7: Roundabout Data

General & Site Information

v2.1

Analyst:	JK
Agency/Co:	Parsons Brinckherhoff
Date:	4/2/2012
Project or PI#:	721010 (Roswell Historic Gateway)
Year, Peak Hour:	2017 AM Peak
County/District:	Fulton County, GA
Intersection:	Atlanta Street at Chatahoochee St/King St/Neil Reid



Volumes

	Entry Legs (FROM)							
	N1 (1)	N2 (1)	NE1 (2)	NE2 (2)	E1 (3)	E2 (3)	SE1 (4)	SE2 (4)
Lane Designation	Left-Thru	Right-Thru	SELECT	SELECT	Lf-Th-Rt	SELECT	SELECT	SELECT
Exit Legs (TO) N (1), vph								
NE (2), vph								
E (3), vph	5							
SE (4), vph								
S (5), vph	1005	1005			10			
SW (6), vph	5	5						
W (7), vph		5			5			
NW (8), vph								
Entry Volume, vph	1015	1015	0	0	15	0	0	0

	S1 (5)	S2 (5)	SW1 (6)	SW2 (6)	W1 (7)	W2 (7)	NW1 (8)	NW2 (8)
Lane Designation	Left-Thru	Right-Thru	Lf-Th-Rt	SELECT	Lf-Th-Rt	SELECT	SELECT	SELECT
N (1), vph	365	365	5		5			
NE (2), vph								
E (3), vph		10			5			
SE (4), vph								
S (5), vph			10		10			
SW (6), vph	5				5			
W (7), vph	5							
NW (8), vph								
Entry Volume, vph	375	375	15	0	25	0	0	0

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

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	98%	100%	98%	100%	98%	98%	98%	100%
% Heavy Vehicles	2%	0%	2%	0%	2%	2%	2%	0%
% Bicycles	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians (ped/hr)	0	0	0	0	0	0	0	0
PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
F_{hv}	0.980	1.000	0.980	1.000	0.980	0.980	0.980	1.000
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows		N	NE	E	SE	S	SW	W	NW
Flow to	N (1), pcu/h	0	0	0	0	809	6	6	0
Leg #	NE (2), pcu/h	0	0	0	0	0	0	0	0
	E (3), pcu/h	6	0	0	0	11	0	6	0
	SE (4), pcu/h	0	0	0	0	0	0	0	0
	S (5), pcu/h	2228	0	11	0	0	11	11	0
	SW (6), pcu/h	11	0	0	0	6	0	6	0
	W (7), pcu/h	6	0	6	0	6	0	0	0
	NW (8), pcu/h	0	0	0	0	0	0	0	0
	Entry flow, pcu/h	2251	0	17	0	832	17	28	0
	Entry flow Lane 1, pcu/h	1125	0	17	0	416	17	28	0
	Entry flow Lane 2, pcu/h	1125	0	0	0	416	0	0	0
	Conflicting flow, pcu/h	28	0	832	0	22	2267	2262	0

Results: Approach Measures of Effectiveness

HCM 2010 Model *(build yr)*	N		E		S		W	
Lane Designations	*Left-Thru*	*Right-Thru*	*Lf-Th-Rt*	*Lane 2*	*Left-Thru*	*Right-Thru*	*Lf-Th-Rt*	*Lane 2*
Entry Capacity, veh/h	1078	1078	619	NA	1084	1084	227	NA
Entry Flow Rates, veh/h	1103	1103	16	NA	408	408	27	NA
V/C ratio	1.02	1.02	0.03		0.38	0.38	0.12	
Control Delay, s/veh	53.3	53.3	6.1		7.2	7.2	18.6	
LOS	F	F	A		A	A	C	
95th % Queue (ft)	561	561	2		45	45	10	
Approach Delay, LOS	53.3 sec, LOS F		6.1 sec, LOS A		7.2 sec, LOS A		18.6 sec, LOS C	
	NE		**SE**		**SW**		**NW**	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lf-Th-Rt*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	227	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	16	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!	0.07		#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!	17.5		#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!	C		#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!	6		#VALUE!	#VALUE!
Approach Delay, LOS			#VALUE!		17.5 sec, LOS C		#VALUE!	

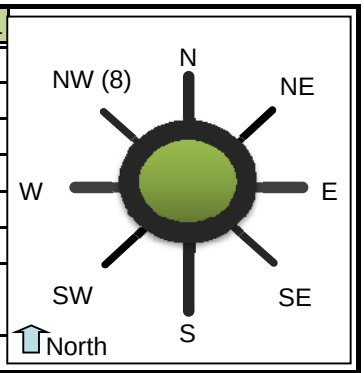
Calibrated Model *(future yr)*	N		E		S		W	
Lane Designations	*Left-Thru*	*Right-Thru*	*Lf-Th-Rt*	*Lane 2*	*Left-Thru*	*Right-Thru*	*Lf-Th-Rt*	*Lane 2*
Entry Capacity, veh/h	1373	1373	761	NA	1381	1381	210	NA
Entry Flow Rates, veh/h	1103	1103	16	NA	408	408	27	NA
V/C ratio	0.80	0.80	0.02		0.30	0.30	0.13	
Control Delay, s/veh	16.3	16.3	4.9		5.2	5.2	20.3	
LOS	C	C	A		A	A	C	
95th % Queue (ft)	244	244	2		32	32	11	
Approach Delay, LOS	16.3 sec, LOS C		4.9 sec, LOS A		5.2 sec, LOS A		20.3 sec, LOS C	
	NE		**SE**		**SW**		**NW**	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lf-Th-Rt*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	209	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	16	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!	0.08		#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!	19.1		#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!	C		#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!	6		#VALUE!	#VALUE!
Approach Delay, LOS			#N/A				#N/A	

v2.1

General & Site Information

v2.1

Analyst:	JK
Agency/Co:	Parsons Brinckherhoff
Date:	4/2/2012
Project or PI#:	721010 (Roswell Historic Gateway)
Year, Peak Hour:	2017 PM Peak
County/District:	Fulton County, GA
Intersection:	Atlanta Street at Chatahoochee St/King St/Neil Reid



Volumes

	Entry Legs (FROM)							
	N1 (1)	N2 (1)	NE1 (2)	NE2 (2)	E1 (3)	E2 (3)	SE1 (4)	SE2 (4)
Lane Designation	Left-Thru	Right-Thru	SELECT	SELECT	Lf-Th-Rt	SELECT	SELECT	SELECT
N (1), vph								
Exit NE (2), vph								
Legs E (3), vph	5							
(TO) SE (4), vph								
S (5), vph	365	360			10			
SW (6), vph		5			5			
W (7), vph		5			5			
NW (8), vph								
Entry Volume, vph	370	370	0	0	20	0	0	0

	S1 (5)	S2 (5)	SW1 (6)	SW2 (6)	W1 (7)	W2 (7)	NW1 (8)	NW2 (8)
Lane Designation	Left-Thru	Right-Thru	Lf-Th-Rt	SELECT	Lf-Th-Rt	SELECT	SELECT	SELECT
N (1), vph	1010	1010	5		5			
NE (2), vph								
E (3), vph		10			5			
SE (4), vph								
S (5), vph			10		5			
SW (6), vph	10							
W (7), vph	20							
NW (8), vph								
Entry Volume, vph	1040	1020	15	0	15	0	0	0

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

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	98%	100%	98%	100%	98%	98%	98%	100%
% Heavy Vehicles	2%	0%	2%	0%	2%	2%	2%	0%
% Bicycles	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians (ped/hr)	0	0	0	0	0	0	0	0
PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
F_{hv}	0.980	1.000	0.980	1.000	0.980	0.980	0.980	1.000
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows		N	NE	E	SE	S	SW	W	NW
Flow to	N (1), pcu/h	0	0	0	0	2240	6	6	0
Leg #	NE (2), pcu/h	0	0	0	0	0	0	0	0
	E (3), pcu/h	6	0	0	0	11	0	6	0
	SE (4), pcu/h	0	0	0	0	0	0	0	0
	S (5), pcu/h	804	0	11	0	0	11	6	0
	SW (6), pcu/h	6	0	6	0	11	0	0	0
	W (7), pcu/h	6	0	6	0	22	0	0	0
	NW (8), pcu/h	0	0	0	0	0	0	0	0
	Entry flow, pcu/h	820	0	22	0	2284	17	17	0
	Entry flow Lane 1, pcu/h	410	0	22	0	1153	17	17	0
	Entry flow Lane 2, pcu/h	410	0	0	0	1131	0	0	0
	Conflicting flow, pcu/h	55	0	2284	0	22	837	843	0

Results: Approach Measures of Effectiveness

HCM 2010 Model *(build yr)*	N		E		S		W	
Lane Designations	*Left-Thru*	*Right-Thru*	*Lf-Th-Rt*	*Lane 2*	*Left-Thru*	*Right-Thru*	*Lf-Th-Rt*	*Lane 2*
Entry Capacity, veh/h	1048	1048	224	NA	1084	1084	614	NA
Entry Flow Rates, veh/h	402	402	22	NA	1130	1109	16	NA
V/C ratio	0.38	0.38	0.10		1.04	1.02	0.03	
Control Delay, s/veh	7.5	7.5	18.3		58.7	53.0	6.2	
LOS	A	A	C		F	F	A	
95th % Queue (ft)	47	47	8		605	562	2	
Approach Delay, LOS	7.5 sec, LOS A		18.3 sec, LOS C		55.9 sec, LOS F		6.2 sec, LOS A	
	NE		**SE**		**SW**		**NW**	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lf-Th-Rt*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	617	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	16	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!	0.03		#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!	6.1		#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!	A		#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!	2		#VALUE!	#VALUE!
Approach Delay, LOS			#VALUE!		6.1 sec, LOS A		#VALUE!	

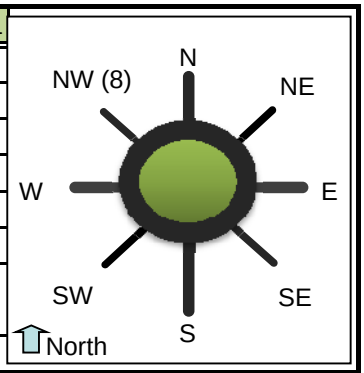
Calibrated Model *(future yr)*	N		E		S		W	
Lane Designations	*Left-Thru*	*Right-Thru*	*Lf-Th-Rt*	*Lane 2*	*Left-Thru*	*Right-Thru*	*Lf-Th-Rt*	*Lane 2*
Entry Capacity, veh/h	1336	1336	206	NA	1381	1381	753	NA
Entry Flow Rates, veh/h	402	402	22	NA	1130	1109	16	NA
V/C ratio	0.30	0.30	0.11		0.82	0.80	0.02	
Control Delay, s/veh	5.4	5.4	20.1		17.1	16.2	5.0	
LOS	A	A	C		C	C	A	
95th % Queue (ft)	33	33	9		260	243	2	
Approach Delay, LOS	5.4 sec, LOS A		20.1 sec, LOS C		16.7 sec, LOS C		5 sec, LOS A	
	NE		**SE**		**SW**		**NW**	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lf-Th-Rt*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	757	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	16	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!	0.02		#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!	5.0		#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!	A		#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!	2		#VALUE!	#VALUE!
Approach Delay, LOS			#N/A				#N/A	

v2.1

General & Site Information

v2.1

Analyst:	JK
Agency/Co:	Parsons Brinckherhoff
Date:	4/2/2012
Project or PI#:	721010 (Roswell Historic Gateway)
Year, Peak Hour:	2037 AM Peak
County/District:	Fulton County, GA
Intersection:	Atlanta Street at Chatahoochee St/King St/Neil Reid



Volumes

	Entry Legs (FROM)							
	N1 (1)	N2 (1)	NE1 (2)	NE2 (2)	E1 (3)	E2 (3)	SE1 (4)	SE2 (4)
Lane Designation	Left-Thru	Right-Thru	SELECT	SELECT	Lf-Th-Rt	SELECT	SELECT	SELECT
N (1), vph					0			
Exit NE (2), vph								
Legs E (3), vph	5							
(TO) SE (4), vph								
S (5), vph	1170	1165			15			
SW (6), vph		5			0			
W (7), vph		5			5			
NW (8), vph								
Entry Volume, vph	1175	1175	0	0	20	0	0	0

	S1 (5)	S2 (5)	SW1 (6)	SW2 (6)	W1 (7)	W2 (7)	NW1 (8)	NW2 (8)
Lane Designation	Left-Thru	Right-Thru	Lf-Th-Rt	SELECT	Lf-Th-Rt	SELECT	SELECT	SELECT
N (1), vph	415	420	5		5			
NE (2), vph								
E (3), vph		5	5		5			
SE (4), vph								
S (5), vph			20		10			
SW (6), vph	5				5			
W (7), vph	5		5					
NW (8), vph								
Entry Volume, vph	425	425	35	0	25	0	0	0

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

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	98%	100%	98%	100%	98%	98%	98%	100%
% Heavy Vehicles	2%	0%	2%	0%	2%	2%	2%	0%
% Bicycles	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians (ped/hr)	0	0	0	0	0	0	0	0
PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
F_{hv}	0.980	1.000	0.980	1.000	0.980	0.980	0.980	1.000
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows		N	NE	E	SE	S	SW	W	NW
Flow to	N (1), pcu/h	0	0	0	0	926	6	6	0
Leg #	NE (2), pcu/h	0	0	0	0	0	0	0	0
	E (3), pcu/h	6	0	0	0	6	6	6	0
	SE (4), pcu/h	0	0	0	0	0	0	0	0
	S (5), pcu/h	2589	0	17	0	0	22	11	0
	SW (6), pcu/h	6	0	0	0	6	0	6	0
	W (7), pcu/h	6	0	6	0	6	6	0	0
	NW (8), pcu/h	0	0	0	0	0	0	0	0
	Entry flow, pcu/h	2605	0	22	0	942	39	28	0
	Entry flow Lane 1, pcu/h	1303	0	22	0	471	39	28	0
	Entry flow Lane 2, pcu/h	1303	0	0	0	471	0	0	0
	Conflicting flow, pcu/h	39	0	953	0	33	2633	2622	0

Results: Approach Measures of Effectiveness

HCM 2010 Model *(build yr)*	N		E		S		W	
Lane Designations	*Left-Thru*	*Right-Thru*	*Lf-Th-Rt*	*Lane 2*	*Left-Thru*	*Right-Thru*	*Lf-Th-Rt*	*Lane 2*
Entry Capacity, veh/h	1066	1066	568	NA	1072	1072	177	NA
Entry Flow Rates, veh/h	1277	1277	22	NA	462	462	27	NA
V/C ratio	1.20	1.20	0.04		0.43	0.43	0.15	
Control Delay, s/veh	114.8	114.8	6.8		8.0	8.0	24.8	
LOS	F	F	A		A	A	C	
95th % Queue (ft)	989	989	3		56	56	14	
Approach Delay, LOS	114.8 sec, LOS F		6.8 sec, LOS A		8 sec, LOS A		24.8 sec, LOS C	
	NE		SE		SW		NW	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lf-Th-Rt*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	175	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	38	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!	0.22		#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!	27.2		#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!	D		#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!	20		#VALUE!	#VALUE!
Approach Delay, LOS			#VALUE!		27.2 sec, LOS D		#VALUE!	

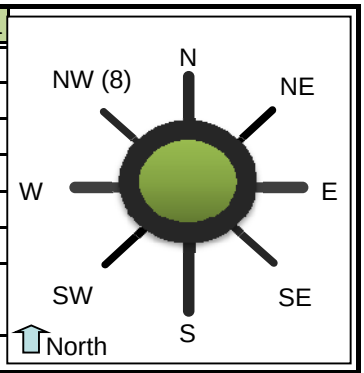
Calibrated Model *(future yr)*	N		E		S		W	
Lane Designations	*Left-Thru*	*Right-Thru*	*Lf-Th-Rt*	*Lane 2*	*Left-Thru*	*Right-Thru*	*Lf-Th-Rt*	*Lane 2*
Entry Capacity, veh/h	1358	1358	682	NA	1366	1366	152	NA
Entry Flow Rates, veh/h	1277	1277	22	NA	462	462	27	NA
V/C ratio	0.94	0.94	0.03		0.34	0.34	0.18	
Control Delay, s/veh	30.0	30.0	5.6		5.7	5.7	29.7	
LOS	D	D	A		A	A	D	
95th % Queue (ft)	444	444	3		39	39	16	
Approach Delay, LOS	30 sec, LOS D		5.6 sec, LOS A		5.7 sec, LOS A		29.7 sec, LOS D	
	NE		SE		SW		NW	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lf-Th-Rt*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	150	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	38	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!	0.25		#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!	33.1		#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!	D		#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!	24		#VALUE!	#VALUE!
Approach Delay, LOS			#N/A				#N/A	

v2.1

General & Site Information

v2.1

Analyst:	JK
Agency/Co:	Parsons Brinckherhoff
Date:	4/2/2012
Project or PI#:	721010 (Roswell Historic Gateway)
Year, Peak Hour:	2037 PM Peak
County/District:	Fulton County, GA
Intersection:	Atlanta Street at Chatahoochee St/King St/Neil Reid



Volumes

Entry Legs (FROM)

	N1 (1)	N2 (1)	NE1 (2)	NE2 (2)	E1 (3)	E2 (3)	SE1 (4)	SE2 (4)
Lane Designation	Left-Thru	Right-Thru	SELECT	SELECT	Lf-Th-Rt	SELECT	SELECT	SELECT
N (1), vph					0			
Exit NE (2), vph								
Legs E (3), vph	5							
(TO) SE (4), vph								
S (5), vph	415	410			5			
SW (6), vph		5			5			
W (7), vph		5			10			
NW (8), vph								
Entry Volume, vph	420	420	0	0	20	0	0	0

	S1 (5)	S2 (5)	SW1 (6)	SW2 (6)	W1 (7)	W2 (7)	NW1 (8)	NW2 (8)
Lane Designation	Left-Thru	Right-Thru	Lf-Th-Rt	SELECT	Lf-Th-Rt	SELECT	SELECT	SELECT
N (1), vph	1170	1180	10		0			
NE (2), vph								
E (3), vph		10	0		5			
SE (4), vph								
S (5), vph			10		10			
SW (6), vph	10				0			
W (7), vph	10		5					
NW (8), vph								
Entry Volume, vph	1190	1190	25	0	15	0	0	0

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

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	98%	100%	98%	100%	98%	98%	98%	100%
% Heavy Vehicles	2%	0%	2%	0%	2%	2%	2%	0%
% Bicycles	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians (ped/hr)	0	0	0	0	0	0	0	0
PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
F_{hv}	0.980	1.000	0.980	1.000	0.980	0.980	0.980	1.000
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows		N	NE	E	SE	S	SW	W	NW
Flow to	N (1), pcu/h	0	0	0	0	2605	11	0	0
Leg #	NE (2), pcu/h	0	0	0	0	0	0	0	0
	E (3), pcu/h	6	0	0	0	11	0	6	0
	SE (4), pcu/h	0	0	0	0	0	0	0	0
	S (5), pcu/h	915	0	6	0	0	11	11	0
	SW (6), pcu/h	6	0	6	0	11	0	0	0
	W (7), pcu/h	6	0	11	0	11	6	0	0
	NW (8), pcu/h	0	0	0	0	0	0	0	0
	Entry flow, pcu/h	931	0	22	0	2639	28	17	0
	Entry flow Lane 1, pcu/h	466	0	22	0	1319	28	17	0
	Entry flow Lane 2, pcu/h	466	0	0	0	1319	0	0	0
	Conflicting flow, pcu/h	50	0	2644	0	28	942	948	0

Results: Approach Measures of Effectiveness

HCM 2010 Model *(build yr)*	N		E		S		W	
Lane Designations	*Left-Thru*	*Right-Thru*	*Lf-Th-Rt*	*Lane 2*	*Left-Thru*	*Right-Thru*	*Lf-Th-Rt*	*Lane 2*
Entry Capacity, veh/h	1054	1054	174	NA	1078	1078	571	NA
Entry Flow Rates, veh/h	457	457	22	NA	1293	1293	16	NA
V/C ratio	0.43	0.43	0.12		1.20	1.20	0.03	
Control Delay, s/veh	8.2	8.2	24.2		115.4	115.4	6.6	
LOS	A	A	C		F	F	A	
95th % Queue (ft)	57	57	11		1003	1003	2	
Approach Delay, LOS	8.2 sec, LOS A		24.2 sec, LOS C		115.4 sec, LOS F		6.6 sec, LOS A	
	NE		**SE**		**SW**		**NW**	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lf-Th-Rt*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	573	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	27	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!	0.05		#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!	6.8		#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!	A		#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!	4		#VALUE!	#VALUE!
Approach Delay, LOS			#VALUE!		6.8 sec, LOS A		#VALUE!	

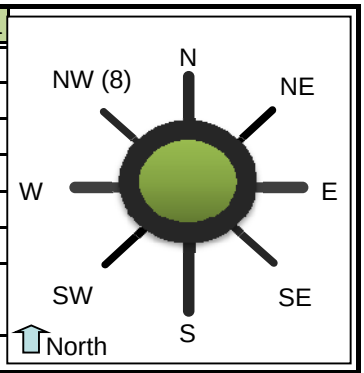
Calibrated Model *(future yr)*	N		E		S		W	
Lane Designations	*Left-Thru*	*Right-Thru*	*Lf-Th-Rt*	*Lane 2*	*Left-Thru*	*Right-Thru*	*Lf-Th-Rt*	*Lane 2*
Entry Capacity, veh/h	1343	1343	149	NA	1373	1373	685	NA
Entry Flow Rates, veh/h	457	457	22	NA	1293	1293	16	NA
V/C ratio	0.34	0.34	0.15		0.94	0.94	0.02	
Control Delay, s/veh	5.8	5.8	29.0		30.1	30.1	5.5	
LOS	A	A	D		D	D	A	
95th % Queue (ft)	39	39	13		449	449	2	
Approach Delay, LOS	5.8 sec, LOS A		29 sec, LOS D		30.1 sec, LOS D		5.5 sec, LOS A	
	NE		**SE**		**SW**		**NW**	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lf-Th-Rt*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	688	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	27	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!	0.04		#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!	5.6		#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!	A		#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!	3		#VALUE!	#VALUE!
Approach Delay, LOS			#N/A				#N/A	

v2.1

General & Site Information

v2.1

Analyst:	KP
Agency/Co:	Parsons Brinckherhoff
Date:	5/18/2012
Project or PI#:	721010 (Roswell Historic Gateway)
Year, Peak Hour:	2017 AM Peak
County/District:	Fulton County, GA
Intersection:	Atlanta Street at Jones Dr/Overland Dr



Volumes

Entry Legs (FROM)

	N1 (1)	N2 (1)	NE1 (2)	NE2 (2)	E1 (3)	E2 (3)	SE1 (4)	SE2 (4)
Lane Designation	Left-Thru	Right-Thru	SELECT	SELECT	Lf-Th-Rt	SELECT	SELECT	SELECT
Exit Legs (TO) N (1), vph					10			
NE (2), vph								
E (3), vph		10						
SE (4), vph								
S (5), vph	1020	1020			10			
SW (6), vph								
W (7), vph	10				10			
NW (8), vph								
Entry Volume, vph	1030	1030	0	0	30	0	0	0

	S1 (5)	S2 (5)	SW1 (6)	SW2 (6)	W1 (7)	W2 (7)	NW1 (8)	NW2 (8)
Lane Designation	Left-Thru	Right-Thru	SELECT	SELECT	Lf-Th-Rt	SELECT	SELECT	SELECT
N (1), vph	370	370			10			
NE (2), vph								
E (3), vph		10			10			
SE (4), vph								
S (5), vph					10			
SW (6), vph								
W (7), vph	10							
NW (8), vph								
Entry Volume, vph	380	380	0	0	30	0	0	0

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

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	98%	100%	98%	100%	98%	98%	98%	100%
% Heavy Vehicles	2%	0%	2%	0%	2%	2%	2%	0%
% Bicycles	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians (ped/hr)	0	0	0	0	0	0	0	0
PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
F_{hv}	0.980	1.000	0.980	1.000	0.980	1.000	0.980	1.000
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows		N	NE	E	SE	S	SW	W	NW
Flow to	N (1), pcu/h	0	0	11	0	820	0	11	0
Leg #	NE (2), pcu/h	0	0	0	0	0	0	0	0
	E (3), pcu/h	11	0	0	0	11	0	11	0
	SE (4), pcu/h	0	0	0	0	0	0	0	0
	S (5), pcu/h	2262	0	11	0	0	0	11	0
	SW (6), pcu/h	0	0	0	0	0	0	0	0
	W (7), pcu/h	11	0	11	0	11	0	0	0
	NW (8), pcu/h	0	0	0	0	0	0	0	0
	Entry flow, pcu/h	2284	0	33	0	843	0	33	0
	Entry flow Lane 1, pcu/h	1142	0	33	0	421	0	33	0
	Entry flow Lane 2, pcu/h	1142	0	0	0	421	0	0	0
	Conflicting flow, pcu/h	33	0	843	0	33	0	2284	0

Results: Approach Measures of Effectiveness

HCM 2010 Model *(build yr)*	N		E		S		W	
Lane Designations	*Left-Thru*	*Right-Thru*	*Lf-Th-Rt*	*Lane 2*	*Left-Thru*	*Right-Thru*	*Lf-Th-Rt*	*Lane 2*
Entry Capacity, veh/h	1072	1072	614	NA	1072	1072	224	NA
Entry Flow Rates, veh/h	1120	1120	33	NA	413	413	33	NA
V/C ratio	1.04	1.04	0.05		0.39	0.39	0.15	
Control Delay, s/veh	59.4	59.4	6.5		7.4	7.4	19.5	
LOS	F	F	A		A	A	C	
95th % Queue (ft)	604	604	4		47	47	13	
Approach Delay, LOS	59.4 sec, LOS F		6.5 sec, LOS A		7.4 sec, LOS A		19.5 sec, LOS C	
	NE		**SE**		**SW**		**NW**	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!			#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!			#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Approach Delay, LOS			#VALUE!				#VALUE!	

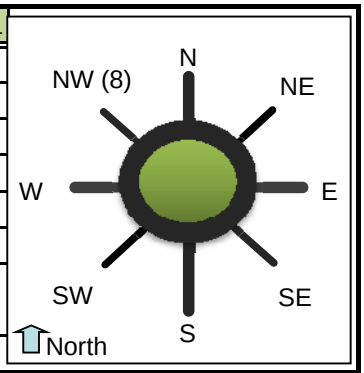
Calibrated Model *(future yr)*	N		E		S		W	
Lane Designations	*Left-Thru*	*Right-Thru*	*Lf-Th-Rt*	*Lane 2*	*Left-Thru*	*Right-Thru*	*Lf-Th-Rt*	*Lane 2*
Entry Capacity, veh/h	1366	1366	753	NA	1366	1366	206	NA
Entry Flow Rates, veh/h	1120	1120	33	NA	413	413	33	NA
V/C ratio	0.82	0.82	0.04		0.30	0.30	0.16	
Control Delay, s/veh	17.3	17.3	5.2		5.3	5.3	21.5	
LOS	C	C	A		A	A	C	
95th % Queue (ft)	261	261	3		33	33	14	
Approach Delay, LOS	17.3 sec, LOS C		5.2 sec, LOS A		5.3 sec, LOS A		21.5 sec, LOS C	
	NE		**SE**		**SW**		**NW**	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!			#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!			#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Approach Delay, LOS			#N/A				#N/A	

v2.1

General & Site Information

v2.1

Analyst:	KP
Agency/Co:	Parsons Brinckherhoff
Date:	5/18/2012
Project or PI#:	721010 (Roswell Historic Gateway)
Year, Peak Hour:	2017 PM Peak
County/District:	Fulton County, GA
Intersection:	Atlanta Street at Jones Dr/Overland Dr



Volumes

Entry Legs (FROM)

	N1 (1)	N2 (1)	NE1 (2)	NE2 (2)	E1 (3)	E2 (3)	SE1 (4)	SE2 (4)
Lane Designation	Left-Thru	Right-Thru	SELECT	SELECT	Lf-Th-Rt	SELECT	SELECT	SELECT
Exit Legs (TO) N (1), vph					10			
NE (2), vph								
E (3), vph		10						
SE (4), vph								
S (5), vph	380	380			10			
SW (6), vph								
W (7), vph	10				10			
NW (8), vph								
Entry Volume, vph	390	390	0	0	30	0	0	0

	S1 (5)	S2 (5)	SW1 (6)	SW2 (6)	W1 (7)	W2 (7)	NW1 (8)	NW2 (8)
Lane Designation	Left-Thru	Right-Thru	SELECT	SELECT	Lf-Th-Rt	SELECT	SELECT	SELECT
N (1), vph	1030	1030			10			
NE (2), vph								
E (3), vph		10			10			
SE (4), vph								
S (5), vph					10			
SW (6), vph								
W (7), vph	10							
NW (8), vph								
Entry Volume, vph	1040	1040	0	0	30	0	0	0

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

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	98%	100%	98%	100%	98%	98%	98%	100%
% Heavy Vehicles	2%	0%	2%	0%	2%	2%	2%	0%
% Bicycles	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians (ped/hr)	0	0	0	0	0	0	0	0
PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
F_{hv}	0.980	1.000	0.980	1.000	0.980	1.000	0.980	1.000
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows		N	NE	E	SE	S	SW	W	NW
Flow to	N (1), pcu/h	0	0	11	0	2284	0	11	0
Leg #	NE (2), pcu/h	0	0	0	0	0	0	0	0
	E (3), pcu/h	11	0	0	0	11	0	11	0
	SE (4), pcu/h	0	0	0	0	0	0	0	0
	S (5), pcu/h	843	0	11	0	0	0	11	0
	SW (6), pcu/h	0	0	0	0	0	0	0	0
	W (7), pcu/h	11	0	11	0	11	0	0	0
	NW (8), pcu/h	0	0	0	0	0	0	0	0
	Entry flow, pcu/h	865	0	33	0	2306	0	33	0
	Entry flow Lane 1, pcu/h	432	0	33	0	1153	0	33	0
	Entry flow Lane 2, pcu/h	432	0	0	0	1153	0	0	0
	Conflicting flow, pcu/h	33	0	2306	0	33	0	865	0

Results: Approach Measures of Effectiveness

HCM 2010 Model *(build yr)*	N		E		S		W	
Lane Designations	*Left-Thru*	*Right-Thru*	*Lf-Th-Rt*	*Lane 2*	*Left-Thru*	*Right-Thru*	*Lf-Th-Rt*	*Lane 2*
Entry Capacity, veh/h	1072	1072	221	NA	1072	1072	605	NA
Entry Flow Rates, veh/h	424	424	33	NA	1130	1130	33	NA
V/C ratio	0.40	0.40	0.15		1.05	1.05	0.05	
Control Delay, s/veh	7.5	7.5	19.9		62.5	62.5	6.6	
LOS	A	A	C		F	F	A	
95th % Queue (ft)	49	49	13		627	627	4	
Approach Delay, LOS	7.5 sec, LOS A		19.9 sec, LOS C		62.5 sec, LOS F		6.6 sec, LOS A	
	NE		**SE**		**SW**		**NW**	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!			#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!			#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Approach Delay, LOS			#VALUE!				#VALUE!	

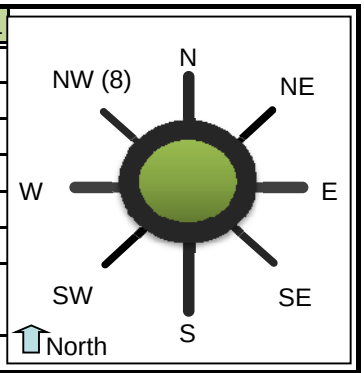
Calibrated Model *(future yr)*	N		E		S		W	
Lane Designations	*Left-Thru*	*Right-Thru*	*Lf-Th-Rt*	*Lane 2*	*Left-Thru*	*Right-Thru*	*Lf-Th-Rt*	*Lane 2*
Entry Capacity, veh/h	1366	1366	202	NA	1366	1366	738	NA
Entry Flow Rates, veh/h	424	424	33	NA	1130	1130	33	NA
V/C ratio	0.31	0.31	0.16		0.83	0.83	0.04	
Control Delay, s/veh	5.4	5.4	22.1		17.9	17.9	5.3	
LOS	A	A	C		C	C	A	
95th % Queue (ft)	34	34	14		270	270	4	
Approach Delay, LOS	5.4 sec, LOS A		22.1 sec, LOS C		17.9 sec, LOS C		5.3 sec, LOS A	
	NE		**SE**		**SW**		**NW**	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!			#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!			#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Approach Delay, LOS			#N/A				#N/A	

v2.1

General & Site Information

v2.1

Analyst:	KP
Agency/Co:	Parsons Brinckherhoff
Date:	5/18/2012
Project or PI#:	721010 (Roswell Historic Gateway)
Year, Peak Hour:	2037 AM Peak
County/District:	Fulton County, GA
Intersection:	Atlanta Street at Jones Dr/Overland Dr



Volumes

Entry Legs (FROM)

	N1 (1)	N2 (1)	NE1 (2)	NE2 (2)	E1 (3)	E2 (3)	SE1 (4)	SE2 (4)
Lane Designation	Left-Thru	Right-Thru	SELECT	SELECT	Lf-Th-Rt	SELECT	SELECT	SELECT
Exit Legs (TO) N (1), vph					10			
NE (2), vph								
E (3), vph		10						
SE (4), vph								
S (5), vph	1200	1200			10			
SW (6), vph								
W (7), vph	10				20			
NW (8), vph								
Entry Volume, vph	1210	1210	0	0	40	0	0	0

	S1 (5)	S2 (5)	SW1 (6)	SW2 (6)	W1 (7)	W2 (7)	NW1 (8)	NW2 (8)
Lane Designation	Left-Thru	Right-Thru	SELECT	SELECT	Lf-Th-Rt	SELECT	SELECT	SELECT
N (1), vph	420	420			10			
NE (2), vph								
E (3), vph		10			20			
SE (4), vph								
S (5), vph					10			
SW (6), vph								
W (7), vph	10							
NW (8), vph								
Entry Volume, vph	430	430	0	0	40	0	0	0

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

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	98%	100%	98%	100%	98%	98%	98%	100%
% Heavy Vehicles	2%	0%	2%	0%	2%	2%	2%	0%
% Bicycles	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians (ped/hr)	0	0	0	0	0	0	0	0
PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
F_{hv}	0.980	1.000	0.980	1.000	0.980	1.000	0.980	1.000
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows		N	NE	E	SE	S	SW	W	NW
Flow to	N (1), pcu/h	0	0	11	0	931	0	11	0
Leg #	NE (2), pcu/h	0	0	0	0	0	0	0	0
	E (3), pcu/h	11	0	0	0	11	0	22	0
	SE (4), pcu/h	0	0	0	0	0	0	0	0
	S (5), pcu/h	2661	0	11	0	0	0	11	0
	SW (6), pcu/h	0	0	0	0	0	0	0	0
	W (7), pcu/h	11	0	22	0	11	0	0	0
	NW (8), pcu/h	0	0	0	0	0	0	0	0
	Entry flow, pcu/h	2683	0	44	0	953	0	44	0
	Entry flow Lane 1, pcu/h	1342	0	44	0	477	0	44	0
	Entry flow Lane 2, pcu/h	1342	0	0	0	477	0	0	0
	Conflicting flow, pcu/h	44	0	953	0	44	0	2683	0

Results: Approach Measures of Effectiveness

HCM 2010 Model *(build yr)*	N		E		S		W	
Lane Designations	*Left-Thru*	*Right-Thru*	*Lf-Th-Rt*	*Lane 2*	*Left-Thru*	*Right-Thru*	*Lf-Th-Rt*	*Lane 2*
Entry Capacity, veh/h	1060	1060	568	NA	1060	1060	169	NA
Entry Flow Rates, veh/h	1315	1315	43	NA	467	467	43	NA
V/C ratio	1.24	1.24	0.08		0.44	0.44	0.26	
Control Delay, s/veh	132.2	132.2	7.2		8.3	8.3	29.7	
LOS	F	F	A		A	A	D	
95th % Queue (ft)	1105	1105	6		59	59	25	
Approach Delay, LOS	132.2 sec, LOS F		7.2 sec, LOS A		8.3 sec, LOS A		29.7 sec, LOS D	
	NE		SE		SW		NW	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!			#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!			#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Approach Delay, LOS			#VALUE!				#VALUE!	

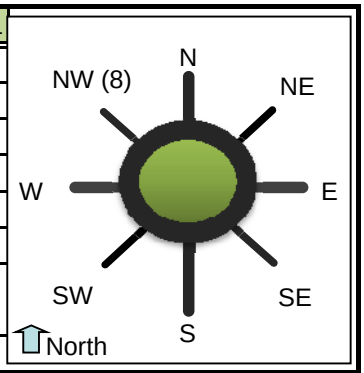
Calibrated Model *(future yr)*	N		E		S		W	
Lane Designations	*Left-Thru*	*Right-Thru*	*Lf-Th-Rt*	*Lane 2*	*Left-Thru*	*Right-Thru*	*Lf-Th-Rt*	*Lane 2*
Entry Capacity, veh/h	1351	1351	682	NA	1351	1351	144	NA
Entry Flow Rates, veh/h	1315	1315	43	NA	467	467	43	NA
V/C ratio	0.97	0.97	0.06		0.35	0.35	0.30	
Control Delay, s/veh	36.3	36.3	6.0		5.8	5.8	37.1	
LOS	E	E	A		A	A	E	
95th % Queue (ft)	513	513	5		40	40	30	
Approach Delay, LOS	36.3 sec, LOS E		6 sec, LOS A		5.8 sec, LOS A		37.1 sec, LOS E	
	NE		SE		SW		NW	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!			#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!			#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Approach Delay, LOS			#N/A				#N/A	

v2.1

General & Site Information

v2.1

Analyst:	KP
Agency/Co:	Parsons Brinckherhoff
Date:	5/18/2012
Project or PI#:	721010 (Roswell Historic Gateway)
Year, Peak Hour:	2037 PM Peak
County/District:	Fulton County, GA
Intersection:	Atlanta Street at Jones Dr/Overland Dr



Volumes

Entry Legs (FROM)

	N1 (1)	N2 (1)	NE1 (2)	NE2 (2)	E1 (3)	E2 (3)	SE1 (4)	SE2 (4)
Lane Designation	Left-Thru	Right-Thru	SELECT	SELECT	Lf-Th-Rt	SELECT	SELECT	SELECT
Exit Legs (TO) N (1), vph					10			
NE (2), vph								
E (3), vph		10						
SE (4), vph								
S (5), vph	430	430			10			
SW (6), vph								
W (7), vph	10				20			
NW (8), vph								
Entry Volume, vph	440	440	0	0	40	0	0	0

	S1 (5)	S2 (5)	SW1 (6)	SW2 (6)	W1 (7)	W2 (7)	NW1 (8)	NW2 (8)
Lane Designation	Left-Thru	Right-Thru	SELECT	SELECT	Lf-Th-Rt	SELECT	SELECT	SELECT
N (1), vph	1190	1190			10			
NE (2), vph								
E (3), vph		10			20			
SE (4), vph								
S (5), vph					10			
SW (6), vph								
W (7), vph	10							
NW (8), vph								
Entry Volume, vph	1200	1200	0	0	40	0	0	0

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

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	98%	100%	98%	100%	98%	98%	98%	100%
% Heavy Vehicles	2%	0%	2%	0%	2%	2%	2%	0%
% Bicycles	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians (ped/hr)	0	0	0	0	0	0	0	0
PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
F_{hv}	0.980	1.000	0.980	1.000	0.980	1.000	0.980	1.000
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows		N	NE	E	SE	S	SW	W	NW
Flow to	N (1), pcu/h	0	0	11	0	2639	0	11	0
Leg #	NE (2), pcu/h	0	0	0	0	0	0	0	0
	E (3), pcu/h	11	0	0	0	11	0	22	0
	SE (4), pcu/h	0	0	0	0	0	0	0	0
	S (5), pcu/h	953	0	11	0	0	0	11	0
	SW (6), pcu/h	0	0	0	0	0	0	0	0
	W (7), pcu/h	11	0	22	0	11	0	0	0
	NW (8), pcu/h	0	0	0	0	0	0	0	0
	Entry flow, pcu/h	976	0	44	0	2661	0	44	0
	Entry flow Lane 1, pcu/h	488	0	44	0	1330	0	44	0
	Entry flow Lane 2, pcu/h	488	0	0	0	1330	0	0	0
	Conflicting flow, pcu/h	44	0	2661	0	44	0	976	0

Results: Approach Measures of Effectiveness

HCM 2010 Model *(build yr)*	N		E		S		W	
Lane Designations	*Left-Thru*	*Right-Thru*	*Lf-Th-Rt*	*Lane 2*	*Left-Thru*	*Right-Thru*	*Lf-Th-Rt*	*Lane 2*
Entry Capacity, veh/h	1060	1060	172	NA	1060	1060	560	NA
Entry Flow Rates, veh/h	478	478	43	NA	1304	1304	43	NA
V/C ratio	0.45	0.45	0.25		1.23	1.23	0.08	
Control Delay, s/veh	8.4	8.4	29.1		128.0	128.0	7.4	
LOS	A	A	D		F	F	A	
95th % Queue (ft)	61	61	24		1075	1075	6	
Approach Delay, LOS	8.4 sec, LOS A		29.1 sec, LOS D		128 sec, LOS F		7.4 sec, LOS A	
	NE		**SE**		**SW**		**NW**	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!			#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!			#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Approach Delay, LOS			#VALUE!				#VALUE!	

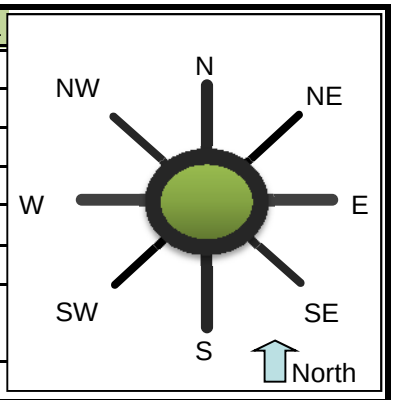
Calibrated Model *(future yr)*	N		E		S		W	
Lane Designations	*Left-Thru*	*Right-Thru*	*Lf-Th-Rt*	*Lane 2*	*Left-Thru*	*Right-Thru*	*Lf-Th-Rt*	*Lane 2*
Entry Capacity, veh/h	1351	1351	147	NA	1351	1351	668	NA
Entry Flow Rates, veh/h	478	478	43	NA	1304	1304	43	NA
V/C ratio	0.35	0.35	0.30		0.97	0.97	0.07	
Control Delay, s/veh	5.9	5.9	36.1		34.7	34.7	6.1	
LOS	A	A	E		D	D	A	
95th % Queue (ft)	41	41	30		495	495	5	
Approach Delay, LOS	5.9 sec, LOS A		36.1 sec, LOS E		34.7 sec, LOS D		6.1 sec, LOS A	
	NE		**SE**		**SW**		**NW**	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
V/C ratio			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Control Delay, sec/pcu			#VALUE!	#VALUE!			#VALUE!	#VALUE!
LOS			#VALUE!	#VALUE!			#VALUE!	#VALUE!
95th % Queue (ft)			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Approach Delay, LOS			#N/A				#N/A	

v2.1

General & Site Information

v2.1

Analyst:	JK
Agency/Co:	Parsons Brinckherhoff
Date:	4/2/2012
Project or PI#:	721010 (Roswell Historic Gateway)
Year, Peak Hour:	2017 AM Peak
County/District:	Fulton County, GA
Intersection Name:	Riverside Road at Indian Springs Drive



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			5			5	5	
	NE (2), vph								
	E (3), vph	10					210	300	
	SE (4), vph			5			5	5	
	S (5), vph								
	SW (6), vph	10		155	5			0	
	W (7), vph	10		335	5		420		
	NW (8), vph								
Output	Total Vehicles	30	0	500	10	0	640	310	0

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	98%	100%	98%	98%	100%	98%	98%	100%
% Heavy Vehicles	2%	0%	2%	2%	0%	2%	2%	0%
% Bicycle	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians (ped/hr)	0	0	0	0	0	0	0	0
PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
F_{HV}	0.980	1.000	0.980	0.980	1.000	0.980	0.980	1.000
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pcu/h	0	0	6	0	0	6	6	0
NE (2), pcu/h	0	0	0	0	0	0	0	0
E (3), pcu/h	11	0	0	0	0	233	333	0
SE (4), pcu/h	0	0	6	0	0	6	6	0
S (5), pcu/h	0	0	0	0	0	0	0	0
SW (6), pcu/h	11	0	172	6	0	0	0	0
W (7), pcu/h	11	0	371	6	0	466	0	0
NW (8), pcu/h	0	0	0	0	0	0	0	0
Entry flow, pcu/h	33	0	554	11	0	710	344	0
Conflicting flow, pcu/h	1026	0	488	1053	0	360	205	0

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

Results: Approach Measures of Effectiveness

HCM 2010 Model (build)	N	NE	E	SE	S	SW	W	NW
Entry Capacity, vph	397	NA	680	386	NA	773	902	NA
Entry Flow Rates, vph	33	NA	543	11	NA	696	337	NA
V/C ratio	0.08		0.80	0.03		0.90	0.37	
Control Delay, s/veh	10		27	10		36	8	
LOS	B		D	A		E	A	
95th % Queue (ft)	7		206	2		307	44	
Calibrated Model (future)	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**
Entry Capacity, vph	575	NA	885	563	NA	980	1109	NA
Entry Flow Rates, vph	33	NA	543	11	NA	696	337	NA
V/C ratio	0.06		0.63	0.02		0.72	0.31	
Control Delay, sec/pcu	7		14	7		16	6	
LOS	A		B	A		C	A	
95th % Queue (ft)	5		116	2		168	34	

Notes: v2.1

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

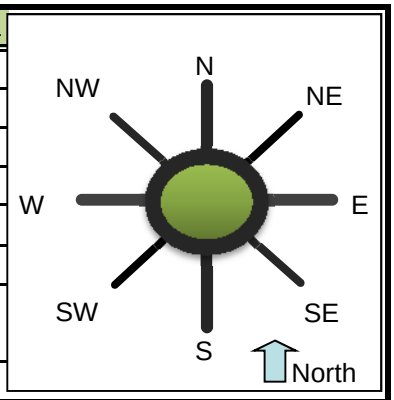
Bypass Lane Merge Point Analysis (if applicable)

Bypass Characteristics	Bypass #1	Bypass #2	Bypass #3	Bypass #4	Bypass #5	Bypass #6
Select Entry Leg from Bypass (FROM)	W (7)					
Select Exit Leg for Bypass (TO)	SW (6)					
Does the bypass have a dedicated receiving lane?	No					
Volumes						
Right Turn Volume removed from Entry Leg	160					
Volume Characteristics (for entry leg)						
PHF	0.92					
F_{HV}	0.98					
F_{ped}	1.00					
NOTE: Volume Characteristics for Exit Leg are already taken into account						
Entry/Conflicting Flows						
Entry Flow, pcu/hr	177					
Conflicting Flow, pcu/hr	188					
Bypass Lane Results (HCM 2010 Model)						
Entry Capacity of Bypass, vph	918					
Flow Rates of Exiting Traffic, vph	174					
V/C ratio	0.19					
Control Delay, s/veh	5.8					
LOS	A					
95th % Queue (ft)	18					
Approach w/Bypass Delay, s/veh	*7.4*					
Approach w/Bypass LOS	*A*					

General & Site Information

v2.1

Analyst:	JK
Agency/Co:	Parsons Brinckherhoff
Date:	4/2/2012
Project or PI#:	721010 (Roswell Historic Gateway)
Year, Peak Hour:	2017 PM Peak
County/District:	Fulton County, GA
Intersection Name:	Riverside Road at Indian Springs Drive



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			10			10	10	
	NE (2), vph								
	E (3), vph	5			5		155	335	
	SE (4), vph						5	5	
	S (5), vph								
	SW (6), vph	5		210	5				
	W (7), vph	5		300	5		160		
	NW (8), vph								
Output	Total Vehicles	15	0	520	15	0	330	350	0

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	98%	100%	98%	98%	100%	98%	98%	100%
% Heavy Vehicles	2%	0%	2%	2%	0%	2%	2%	0%
% Bicycle	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians (ped/hr)	0	0	0	0	0	0	0	0
PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
F_{HV}	0.980	1.000	0.980	0.980	1.000	0.980	0.980	1.000
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pcu/h	0	0	11	0	0	11	11	0
NE (2), pcu/h	0	0	0	0	0	0	0	0
E (3), pcu/h	6	0	0	6	0	172	371	0
SE (4), pcu/h	0	0	0	0	0	6	6	0
S (5), pcu/h	0	0	0	0	0	0	0	0
SW (6), pcu/h	6	0	233	6	0	0	0	0
W (7), pcu/h	6	0	333	6	0	177	0	0
NW (8), pcu/h	0	0	0	0	0	0	0	0
Entry flow, pcu/h	17	0	577	17	0	366	388	0
Conflicting flow, pcu/h	754	0	211	748	0	394	249	0

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

Results: Approach Measures of Effectiveness

HCM 2010 Model (build)	N	NE	E	SE	S	SW	W	NW
Entry Capacity, vph	521	NA	897	524	NA	747	863	NA
Entry Flow Rates, vph	16	NA	565	16	NA	359	380	NA
V/C ratio	0.03		0.63	0.03		0.48	0.44	
Control Delay, s/veh	7		14	7		12	10	
LOS	A		B	A		B	A	
95th % Queue (ft)	2		117	2		67	58	
Calibrated Model (future)	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**
Entry Capacity, vph	715	NA	1104	718	NA	954	1070	NA
Entry Flow Rates, vph	16	NA	565	16	NA	359	380	NA
V/C ratio	0.02		0.52	0.02		0.38	0.36	
Control Delay, sec/pcu	5		9	5		8	7	
LOS	A		A	A		A	A	
95th % Queue (ft)	2		80	2		46	43	

Notes: v2.1

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

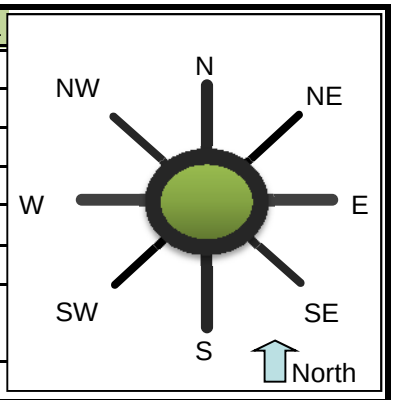
Bypass Lane Merge Point Analysis (if applicable)

Bypass Characteristics	Bypass #1	Bypass #2	Bypass #3	Bypass #4	Bypass #5	Bypass #6
Select Entry Leg from Bypass (FROM)	W (7)					
Select Exit Leg for Bypass (TO)	SW (6)					
Does the bypass have a dedicated receiving lane?	No					
Volumes						
Right Turn Volume removed from Entry Leg	420					
Volume Characteristics (for entry leg)						
PHF	0.92					
F_{HV}	0.98					
F_{ped}	1.00					
NOTE: Volume Characteristics for Exit Leg are already taken into account						
Entry/Conflicting Flows						
Entry Flow, pcu/hr	466					
Conflicting Flow, pcu/hr	244					
Bypass Lane Results (HCM 2010 Model)						
Entry Capacity of Bypass, vph	868					
Flow Rates of Exiting Traffic, vph	457					
V/C ratio	0.53					
Control Delay, s/veh	11.3					
LOS	B					
95th % Queue (ft)	80					
Approach w/Bypass Delay, s/veh	*10.5*					
Approach w/Bypass LOS	*B*					

General & Site Information

v2.1

Analyst:	JK
Agency/Co:	Parsons Brinckherhoff
Date:	4/2/2012
Project or PI#:	721010 (Roswell Historic Gateway)
Year, Peak Hour:	2037 AM Peak
County/District:	Fulton County, GA
Intersection Name:	Riverside Road at Indian Springs Drive



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			5	0		5	5	
	NE (2), vph								
	E (3), vph	10			0		250	340	
	SE (4), vph	0		5			5	5	
	S (5), vph								
	SW (6), vph	10		180	5				
	W (7), vph	10		360	5		450		
	NW (8), vph								
Output	Total Vehicles	30	0	550	10	0	710	350	0

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	98%	100%	98%	98%	100%	98%	98%	100%
% Heavy Vehicles	2%	0%	2%	2%	0%	2%	2%	0%
% Bicycle	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians (ped/hr)	0	0	0	0	0	0	0	0
PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
F_{HV}	0.980	1.000	0.980	0.980	1.000	0.980	0.980	1.000
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pcu/h	0	0	6	0	0	6	6	0
NE (2), pcu/h	0	0	0	0	0	0	0	0
E (3), pcu/h	11	0	0	0	0	277	377	0
SE (4), pcu/h	0	0	6	0	0	6	6	0
S (5), pcu/h	0	0	0	0	0	0	0	0
SW (6), pcu/h	11	0	200	6	0	0	0	0
W (7), pcu/h	11	0	399	6	0	499	0	0
NW (8), pcu/h	0	0	0	0	0	0	0	0
Entry flow, pcu/h	33	0	610	11	0	787	388	0
Conflicting flow, pcu/h	1114	0	521	1175	0	405	233	0

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

Results: Approach Measures of Effectiveness

HCM 2010 Model (build)	N	NE	E	SE	S	SW	W	NW
Entry Capacity, vph	364	NA	658	342	NA	739	878	NA
Entry Flow Rates, vph	33	NA	598	11	NA	772	380	NA
V/C ratio	0.09		0.91	0.03		1.04	0.43	
Control Delay, s/veh	11		41	11		69	9	
LOS	B		E	B		F	A	
95th % Queue (ft)	7		298	3		489	57	
Calibrated Model (future)	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**
Entry Capacity, vph	536	NA	861	510	NA	945	1085	NA
Entry Flow Rates, vph	33	NA	598	11	NA	772	380	NA
V/C ratio	0.06		0.71	0.02		0.83	0.36	
Control Delay, sec/pcu	7		17	7		24	7	
LOS	A		C	A		C	A	
95th % Queue (ft)	5		155	2		253	42	

Notes: v2.1

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

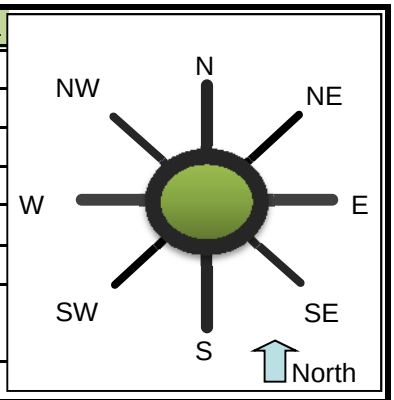
Bypass Lane Merge Point Analysis (if applicable)

Bypass Characteristics	Bypass #1	Bypass #2	Bypass #3	Bypass #4	Bypass #5	Bypass #6
Select Entry Leg from Bypass (FROM)	W (7)					
Select Exit Leg for Bypass (TO)	SW (6)					
Does the bypass have a dedicated receiving lane?	No					
Volumes						
Right Turn Volume removed from Entry Leg	180					
Volume Characteristics (for entry leg)						
PHF	0.92					
F_{HV}	0.98					
F_{ped}	1.00					
NOTE: Volume Characteristics for Exit Leg are already taken into account						
Entry/Conflicting Flows						
Entry Flow, pcu/hr	200					
Conflicting Flow, pcu/hr	216					
Bypass Lane Results (HCM 2010 Model)						
Entry Capacity of Bypass, vph	892					
Flow Rates of Exiting Traffic, vph	196					
V/C ratio	0.22					
Control Delay, s/veh	6.3					
LOS	A					
95th % Queue (ft)	21					
Approach w/Bypass Delay, s/veh	*8.3*					
Approach w/Bypass LOS	*A*					

General & Site Information

v2.1

Analyst:	JK
Agency/Co:	Parsons Brinckherhoff
Date:	4/2/2012
Project or PI#:	721010 (Roswell Historic Gateway)
Year, Peak Hour:	2037 PM Peak
County/District:	Fulton County, GA
Intersection Name:	Riverside Road at Indian Springs Drive



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			10	0		10	10	
	NE (2), vph								
	E (3), vph	5			5		155	350	
	SE (4), vph	0		0			5	5	
	S (5), vph								
	SW (6), vph	5		220	5				
	W (7), vph	5		350	5		180		
	NW (8), vph								
Output	Total Vehicles	15	0	580	15	0	350	365	0

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	98%	100%	98%	98%	100%	98%	98%	100%
% Heavy Vehicles	2%	0%	2%	2%	0%	2%	2%	0%
% Bicycle	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians (ped/hr)	0	0	0	0	0	0	0	0
PHF	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*	*0.92*
F_{HV}	0.980	1.000	0.980	0.980	1.000	0.980	0.980	1.000
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pcu/h	0	0	11	0	0	11	11	0
NE (2), pcu/h	0	0	0	0	0	0	0	0
E (3), pcu/h	6	0	0	6	0	172	388	0
SE (4), pcu/h	0	0	0	0	0	6	6	0
S (5), pcu/h	0	0	0	0	0	0	0	0
SW (6), pcu/h	6	0	244	6	0	0	0	0
W (7), pcu/h	6	0	388	6	0	200	0	0
NW (8), pcu/h	0	0	0	0	0	0	0	0
Entry flow, pcu/h	17	0	643	17	0	388	405	0
Conflicting flow, pcu/h	843	0	233	787	0	410	261	0

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

Results: Approach Measures of Effectiveness

HCM 2010 Model (build)	N	NE	E	SE	S	SW	W	NW
Entry Capacity, vph	477	NA	878	504	NA	735	854	NA
Entry Flow Rates, vph	16	NA	630	16	NA	380	397	NA
V/C ratio	0.03		0.72	0.03		0.52	0.46	
Control Delay, s/veh	8		17	8		13	10	
LOS	A		C	A		B	B	
95th % Queue (ft)	3		162	3		77	64	
Calibrated Model (future)	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**
Entry Capacity, vph	666	NA	1085	696	NA	941	1061	NA
Entry Flow Rates, vph	16	NA	630	16	NA	380	397	NA
V/C ratio	0.02		0.59	0.02		0.41	0.38	
Control Delay, sec/pcu	6		11	5		9	7	
LOS	A		B	A		A	A	
95th % Queue (ft)	2		104	2		52	46	

Notes: v2.1

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

Bypass Lane Merge Point Analysis (if applicable)

Bypass Characteristics	Bypass #1	Bypass #2	Bypass #3	Bypass #4	Bypass #5	Bypass #6
Select Entry Leg from Bypass (FROM)	W (7)					
Select Exit Leg for Bypass (TO)	SW (6)					
Does the bypass have a dedicated receiving lane?	No					
Volumes						
Right Turn Volume removed from Entry Leg	450					
Volume Characteristics (for entry leg)						
PHF	0.92					
F_{HV}	0.98					
F_{ped}	1.00					
NOTE: Volume Characteristics for Exit Leg are already taken into account						
Entry/Conflicting Flows						
Entry Flow, pcu/hr	499					
Conflicting Flow, pcu/hr	255					
Bypass Lane Results (HCM 2010 Model)						
Entry Capacity of Bypass, vph	858					
Flow Rates of Exiting Traffic, vph	489					
V/C ratio	0.57					
Control Delay, s/veh	12.4					
LOS	B					
95th % Queue (ft)	94					
Approach w/Bypass Delay, s/veh	*11.4*					
Approach w/Bypass LOS	*B*					

Attachment A-8: Roundabout Peer Review Studies

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING
225 E Robinson Street, Suite 450, Orlando, FL 32801 P 407.540.0555 F 407.540.0550

TECHNICAL MEMORANDUM

Atlanta Street at Jones Drive/Overland Drive (Roswell, Georgia)

Roundabout Peer Review

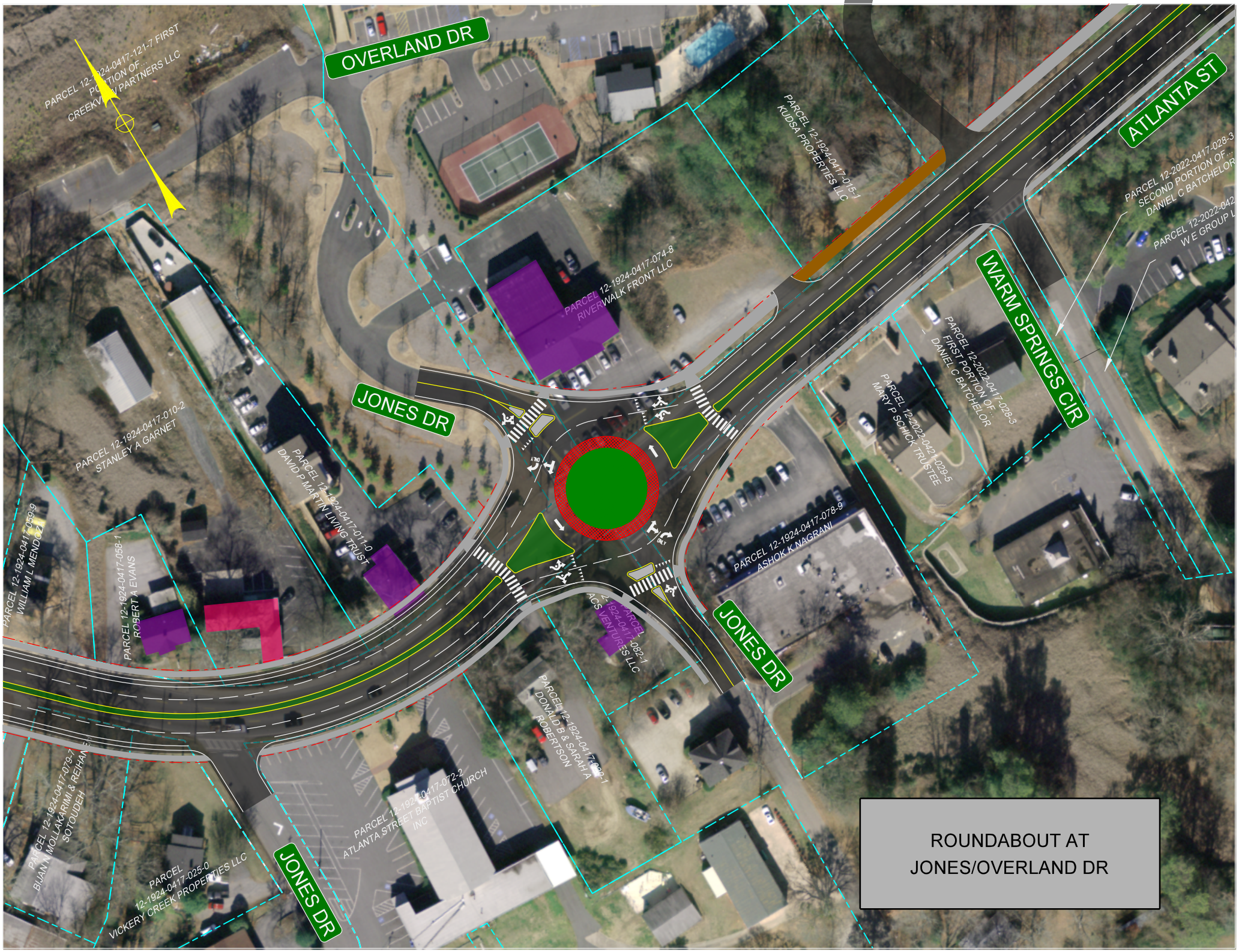
Date:	September 20, 2012	Project #: 12728
To:	City of Roswell, Georgia	
From:	Justin Bansen, P.E. and Brett Boncore	

INTRODUCTION

Pursuant to a request from the City of Roswell, Kittelson & Associates, Inc. (KAI) conducted a peer-review of the proposed roundabout at the intersection of Atlanta Street with Jones Drive/Overland Drive in Roswell, Georgia. The conceptual design was developed by Parsons Brinkerhoff (PB) and the KAI review was conducted based upon Microstation files received from PB on August 23, 2012. As shown in the conceptual layout on Page 2, the proposed roundabout is a 4-legged partial multilane configuration with two lanes entering and exiting the roundabout along Atlanta Street and single-lane entries and exits serving the side street legs.

The KAI review focused on two elements: (1) verifying the operational performance of the roundabout and appropriateness of the proposed lane configurations, and (2) the horizontal geometry of the roundabout concept. KAI reviewed the proposed roundabout concept in accordance with guidance provided in NCHRP 672, Roundabouts: An Informational Guide - Second Edition. Comments and opportunities for design refinement are summarized in the remainder of this memorandum along with attached redline mark-ups of the concept plans.

The roundabout design concept reflects a constrained urban environment where there are a variety of competing objectives that must be balanced when selecting the roundabout size, location, and approach alignments. Therefore, it is understood that some tradeoffs may be necessary in order to balance design performance and impacts. However, as outlined in this memorandum, our review concludes that some elements of the roundabout design should be considered for further refinement if the project proceeds forward into the design process. In particular, geometric modifications are recommended to reduce vehicle speeds entering the roundabout on the two multilane Atlanta Street entrances.


OVERLAND DR
ATLANTA ST
WARM SPRINGS CIR
JONES DR
JONES DR
JONES DR
PARCEL 12-1924-0417-121-7 FIRST PORTION OF... CREEKVIEW PARTNERS LLC
PARCEL 12-1924-0417-015-1 KUDSA PROPERTIES LLC
PARCEL 12-1924-0417-074-8 RIVERWALK FRONT LLC
PARCEL 12-2022-0417-028-3 SECOND PORTION OF... DANIEL C BATCHELOR
PARCEL 12-2022-0417-028-3 FIRST PORTION OF... DANIEL C BATCHELOR
PARCEL 12-2022-0421-029-5 MARY P SCHICK TRUSTEE
PARCEL 12-1924-0417-078-9 ASHOK K NAGRANI
PARCEL 12-1924-0417-010-2 STANLEY A GARNET
PARCEL 12-1924-0417-011-0 DAVID P MARTIN LIVING TRUST
PARCEL 12-1924-0417-058-1 ROBERT A EVANS
PARCEL 12-1924-0417-059-9 WILLIAM L MENDOZA
PARCEL 12-1924-0417-082-1 ACS VENTURES LLC
PARCEL 12-1924-0417-079-7 BIJAN MOLLAKARIMI & REIHANEH SOTOUDEH
PARCEL 12-1924-0417-072-2 ATLANTA STREET BAPTIST CHURCH INC
PARCEL 12-1924-0417-025-0 VICKERY CREEK PROPERTIES LLC
ROUNDABOUT AT
JONES/OVERLAND DR

navigate the roundabout. Minor refinements to address these comments could be addressed if the roundabout moves forward into design and do not affect the determination of feasibility.

SUMMARY OF FINDINGS

The operational analysis provided to KAI indicates the potential for over-capacity operations on one the Atlanta Street entrances during both the AM and PM peak hours. Expanding to three-lane entries and exits would be required to achieve sufficient capacity based upon HCM 2010 methodologies. However, it is unclear whether this would be an acceptable option based upon impacts to multimodal travel as well as physical impacts to adjacent properties due to the required increase in roundabout size. Given the potential for over-capacity conditions, the decision to move forward with the current partial two-lane roundabout configuration should consider how the roundabout (and corridor) operations compare to other control types and the potential implications of the queuing on upstream intersections. Based upon the available information, it is unclear whether the roundabout provides equivalent or better performance than the alternative control types.

From a design perspective, the current roundabout concept for the study intersection exhibits entry speeds that exceed NCHRP Report 672 recommendations. Consideration of additional design modifications is suggested to further reduce vehicle speeds. This may include adjustments to the size of the roundabout and/or approach alignments. Other opportunities for refinement are also noted in this memorandum pertaining to selected design vehicle paths, pedestrian and bicycle design elements, driver visibility, and markings. The attached redline mark-ups identify specific notes and comments.

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING
225 E Robinson Street, Suite 450, Orlando, FL 32801 P 407.540.0555 F 407.540.0550

TECHNICAL MEMORANDUM

Atlanta Street at Chattahoochee St./King St./Neil Reed Dr. (Roswell, Georgia)

Roundabout Peer Review

Date: September 20, 2012 Project #: 12728

To: City of Roswell, Georgia

From: Justin Bansen, P.E. and Brett Boncore

INTRODUCTION

Pursuant to a request from the City of Roswell, Kittelson & Associates, Inc. (KAI) conducted a peer-review of the proposed roundabout at the intersection of Atlanta Street with Chattahoochee/King Street/Neil Reed Dr. in Roswell, Georgia. The conceptual design was developed by Parsons Brinkerhoff (PB) and the KAI review was conducted based upon Microstation files received from PB on August 23, 2012. As shown in the conceptual layout on Page 2, the proposed roundabout is a 5-legged partial multilane configuration with two lanes entering and exiting the roundabout along Atlanta Street and single-lane entries and exits serving the remaining legs.

The KAI review focused on two elements: (1) verifying the operational performance of the roundabout and appropriateness of the proposed lane configurations, and (2) the horizontal geometry of the roundabout concept. KAI reviewed the proposed roundabout concept in accordance with guidance provided in NCHRP 672, Roundabouts: An Informational Guide - Second Edition. Comments and opportunities for design refinement are summarized in the remainder of this memorandum along with attached redline mark-ups of the concept plans.

The roundabout design concept reflects a constrained urban environment where there are a variety of competing objectives that must be balanced when selecting the roundabout size, location, and approach alignments. Therefore, it is understood that some tradeoffs may be necessary in order to balance design performance and impacts. However, as outlined in this memorandum, our review concludes that some elements of the roundabout design should be considered for further refinement if the project proceeds forward into the design process. In particular, geometric modifications are recommended to reduce vehicle speeds entering the roundabout on the two multilane Atlanta Street entrances.

ATLANTA ST
KING ST
NEEL REID DR
CHATTAHOOCHEE ST
PARCEL 12-1921-0383-082
CITY OF ROSWELL
PARCEL 12-1921-0383-083-2
CITY OF ROSWELL
PARCEL 12-1921-0383-084-0
CITY OF ROSWELL
PARCEL 12-1921-0383-032-9
ASF INVESTMENTS LLC
PARCEL 12-1921-0383-031-1
ASF INVESTMENT LLC
PARCEL 12-1921-0383-096-4
THE SAW COMPANIES INC
PARCEL 12-1923-0383-056-6
OLDE TOWNE ROSWELL
HOMEOWNERS ASSOC. INC
PARCEL 12-1921-0383-055-0
LONG RIVER INC
PARCEL 12-1921-0383-028-7
ARTHUR J PROPERTIES LLC
PARCEL 12-1922-0382-024-2
GEORGIA CAR MART LLC
PARCEL 12-1922-0382-022-0
GEORGIA CAR MART LLC
PARCEL
12-1922-0382-023-8
PROPERTY MANAGEMENT
INC
ROUNDABOUT AT
CHATTAHOOCHEE/ KING ST

OTHER GEOMETRIC CONSIDERATIONS

In addition to the improvement recommendations described above, KAI recommends that PB consider the following general geometric modifications:

- The single lane portions of the roundabout were observed to be 15 feet wide. Consider increasing this dimension to 18 feet. As identified in NCHRP Report 672, 16 to 20 feet is the typical range of width for a single-lane portion of the circulatory roadway.

SUMMARY OF FINDINGS

The operational analysis provided to KAI indicates the potential for over-capacity operations on one of the Atlanta Street entrances during both the AM and PM peak hours. Expanding to three-lane entries and exits would be required to achieve sufficient capacity based upon HCM 2010 methodologies. However, it is unclear whether this would be an acceptable option based upon impacts to multimodal travel as well as physical impacts to adjacent properties due to the required increase in roundabout size. Given the potential for over-capacity conditions, the decision to move forward with the current partial two-lane roundabout configuration should consider how the roundabout (and corridor) operations compare to other control types and the potential implications of the queuing on upstream intersections. Based upon the available information, it is unclear whether the roundabout provides equivalent or better performance than the alternative control types.

From a design perspective, the current roundabout concept for the study intersection exhibits entry speeds that exceed NCHRP Report 672 recommendations. Consideration of additional design modifications is suggested to further reduce vehicle speeds. This may include adjustments to the size of the roundabout and/or approach alignments. Other opportunities for refinement are also noted in this memorandum pertaining to selected design vehicle paths, pedestrian and bicycle design elements, driver visibility, and markings. The attached redline mark-ups identify specific notes and comments.

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING
225 E Robinson Street, Suite 450, Orlando, FL 32801 P 407.540.0555 F 407.540.0550

TECHNICAL MEMORANDUM

Riverside Road at Indian Springs Drive (Roswell, Georgia)

Roundabout Peer Review

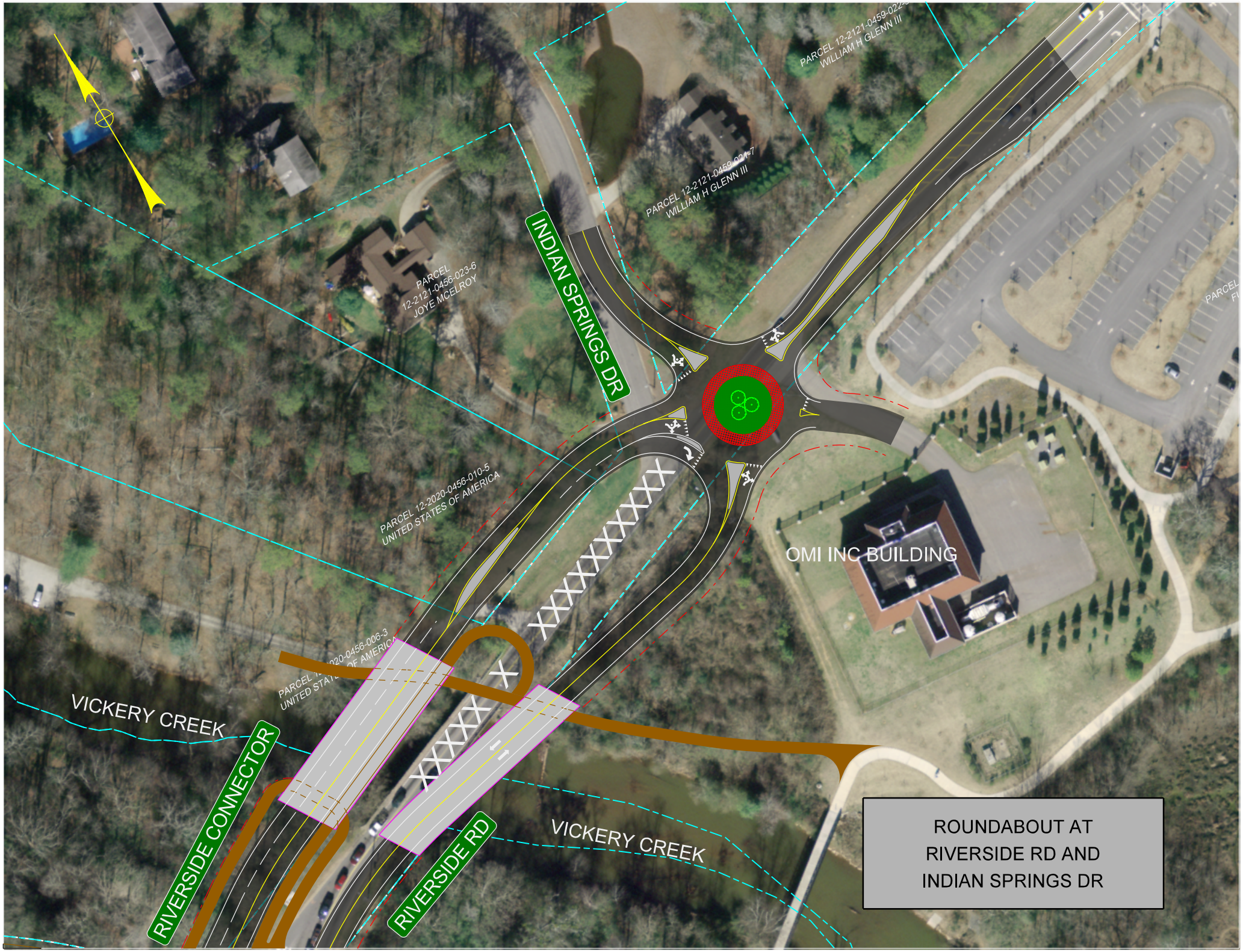
Date:	September 20, 2012	Project #: 12728
To:	City of Roswell, Georgia	
From:	Justin Bansen, P.E. and Alex Wong	

INTRODUCTION

Pursuant to a request from the City of Roswell, Kittelson & Associates, Inc. (KAI) conducted a peer-review of the proposed roundabout at the intersection of Riverside Road with Indian Springs Drive in Roswell, Georgia. The conceptual design was developed by Parsons Brinkerhoff (PB) and the KAI review was conducted based upon Microstation files received from PB on August 23, 2012. As shown in the conceptual layout on Page 2, the proposed roundabout is a 5-legged single-lane configuration with one of the legs serving as a business access.

The KAI review focused on two elements: (1) verifying the operational performance of the roundabout and appropriateness of the proposed lane configurations, and (2) the horizontal geometry of the roundabout concept. KAI reviewed the proposed roundabout concept in accordance with guidance provided in NCHRP 672, Roundabouts: An Informational Guide - Second Edition. Comments and opportunities for design refinement are summarized in the remainder of this memorandum along with attached redline mark-ups of the concept plans.

The roundabout design concept reflects a constrained urban environment where there are a variety of competing objectives that must be balanced when selecting the roundabout size, location, and approach alignments. Therefore, it is understood that some tradeoffs may be necessary in order to balance design performance and impacts. However, as outlined in this memorandum, our review concludes that some elements of the roundabout design should be considered for further refinement if the project proceeds forward into the design process. In particular, geometric modifications are recommended to improve design vehicle and emergency vehicle accommodation for all movements through the roundabout.


INDIAN SPRINGS DR
RIVERSIDE CONNECTOR
RIVERSIDE RD
VICKERY CREEK
VICKERY CREEK
OMI INC BUILDING
PARCEL 12-2121-0456-023-6
JOYE MCELROY
PARCEL 12-2121-0459-021-7
WILLIAM H GLENN III
PARCEL 12-2121-0459-022-5
WILLIAM H GLENN III
PARCEL 12-2020-0456-010-5
UNITED STATES OF AMERICA
PARCEL 12-2020-0456-006-3
UNITED STATES OF AMERICA
XXXXXXXXX
XXXXX
ROUNDABOUT AT
RIVERSIDE RD AND
INDIAN SPRINGS DR

- For the exit into the OMI Inc. Building, consider adjusting the exit curve to enable easier access out of the roundabout and avoid potential rear-ends due to sudden vehicle slow-downs on exiting. In general, if tied into the roundabout, this driveway should be designed as a standard roundabout leg with appropriately designed splitter islands. Alternatively, if the use of a raised island cannot be accommodated, consideration could be given to emphasizing this leg as a driveway with a standard driveway apron and geometric elements that distinguish it from the other legs to avoid drivers errantly exiting into the OMI Inc. parking lot.
- Consider increasing the radius of the eastbound exit onto Riverside Road. The concept design currently uses a 30 foot exit radius, which is lower than the typical range for single-lane roundabout of this type. Increasing the exit radii will help to better facilitate design vehicle movements and avoid a capacity constraint due to an overly-tight exit.

SUMMARY OF FINDINGS

The operational analysis provided to KAI indicates the potential for over-capacity operations on one approach (northbound Riverside Road) during the AM peak hour. Expanding to a two-lane entrance would be required to achieve sufficient capacity based upon HCM 2010 methodologies. However, the calibrated models suggest that sufficient capacity may be achieved without the additional lane. Tolerance for potential queuing and delay on this one approach during the AM peak hour should be taken into consideration when deciding whether to move forward with the proposed single-lane design.

From a design perspective, the current roundabout concept for the study intersection exhibits adequate fastest path entry speeds. However, the overall design is tight for design vehicle travel and may result in vehicles over-running the curblines in several locations. Consideration of additional design modifications are suggested to design improve design vehicle accommodation. This may include adjustments to the size of the roundabout and/or approach alignments. Other opportunities for refinement are also noted in this memorandum pertaining to driver view angle, splitter island lengths, and curb radii. The attached redline mark-ups identify specific notes and comments.

Attachment A-9: Bridge Inventory

Processed Date:6/18/2010

Parameters: Bridge Serial Num

Bridge Inventory Data Listing

Structure ID:121-0304-0 **Fulton** **SUFF. RATING: 27.27**

Location & Geography

Structure ID:	121-0304-0
200 Brdge Information:	06
*6A Feature Int:	BIG CREEK
*6B Critical Bridge:	0
*7A Route No Carried:	CR01437
*7B Facility Carried:	RIVERSIDE ROAD
9 Location:	IN SOUTH ROSWELL
2 Dot District:	7
207 Year Photo:	2009
*91 Inspection Frequency:	24 Date: 02/09/2009
92A Fract Crit Insp Freq:	0 Date: 02/01/1901
92B Underwater Insp Freq:	1 Date: 06/27/2006
92C Other Spc. Insp Freq:	0 Date: 02/01/1901
* 4 Place Code:	67284
*5 Inventory Route(O/U):	1
Type:	4
Designation:	1
Number:	09408
Direction:	0
*16 Latitude:	34 00.3800 HMMS Prefix:0
*17 Longitude:	84 -21.0090 HMMS Suffix:0 MP:0.00
98 Border Bridge:	000%Shared:00
99 ID Number:	000000000000000
*100 STRAHNET:	0
12 Base Highway Network:	1
13A LRS Inventory Route:	1218376717
13B Sub Inventory Route:	0
101 parellel Structure:	N
*102 Direction of Traffic:	2
*264 Road Inventory Mile Post:	001.89
*208 Inspection Area:	7 Initials: EFP
Engineer's Initials:	sgm
* Location ID No:	121-09408M-000.08E

*104 Highway System:	0
*26 Functional Classification:	16
*204 Federal Route Type:	M No: 09408
105 Federal Lands Highway:	0
*110 Truck Route:	0
2006 School Bus Route:	1
217 Benchmark Elevation:	0000.00
218 Datum:	0
*19 Bypass Length:	05
*20 Toll:	3
*21 Maintanance:	02
*22 Owner:	02
*31 Design Load:	2
37 Historical Significance:	5
205 Congressional District:	06
27 Year Constructed:	1958
106 Year Reconsrtucted:	0000
33 Bridge Medium:	0
34 Skew:	00
35 Structure Flared:	0
38 Navigation Control:	0
213 Special Steel Design:	0
267 Type of Paint:	0
*42 Type of Service On:	1
Type of Service Under:	5
214 Movable Bridge:	0
203 Type Bridge:	A
259 Pile Encasement	3
*43 Structure Type Main:	1 04
45 No.Spans Main:	004
44 Structure Type Appr:	0 00
46 No Spans Appr:	0000
226 Bridge Curve Horz	0 Vert: 0
111 pier Protection	0
107 Deck Structure Type:	1
108 Wearing Structure Type:	6
Membrane Type:	0
Deck Protection:	0

Signs & Attachments

225 Expansion Joint Type:	02
242 Deck Drains:	1
243 Parapet Location:	0
Height:	0
Width:	0
238 Curb Height:	1
Curb Material:	1
239 Handrail	1 1
*240 Medium Barrier Rail:	0
241 Bridge Median Height:	0
* Bridge Median Width:	0
230 Guardrail Loc. Dir. Rear:	0
Fwrd:	1
Oppo. Dir. Rear:	0
Oppo. Fwrd:	0
244 Aproach Slab	3
224 Retaining Wall:	0
233Posted Speed Limit:	40
236 Warning Sign:	0.00
234 Delineator:	0.00
235 Hazzard Boards:	1
237 Utilities Gas:	22
Water:	24
Electric:	23
Telephone:	22
Sewer:	22
247 Lighting Street:	0
Navigation:	0
Aerial:	0
*248 County Continuity No.:	00

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Bridge Inventory Data Listing

Structure ID:121-0304-0

Programming Data

201 Project No:	PR 2728 (1)
202 Plans Available:	4
249 Prop Proj No:	000000000000000000000000
250 Approval Status:	0000
251 PI Number:	0000000
252 Contract Date:	02/01/1901
260 Seismic No:	00000
75 Type Work:	31 1
94 Bridge Imp. Cost:	$354
95 Roadway Imp. Cost:	357
96 Total Imp Cost:	814
76 Imp Length:	001479
97 Imp Year:	1990
114Future ADT:	019380 Year:2027

Hydralic Data

215Waterway Data:	
High Water Elev:	0000.0 Year:1900
Flood Elev:	0000.0 Freq:00
Avg Streambed Elev:	0000.0
Drainage Area:	00000
Area of Opening:	000000
113 Scour Critical	U
216Water Depth:	6 Br.Height:18.9
222Slope Protection:	6
221Slope Protection	0 Fwd:0
219Fender System	0
220Dolphin:	0
223Current Cover:	000
Type:	0
No. Barrels:	0
* Width:	0.00 Height:0.00
* Length:	0 Apron:0
265 U/W Insp. Area	1 Diver:RMO
Location ID No:	121-09408M-000.08E

Measurements

*29ADT	012920 Year:2007
109%Trucks:	0
* 28 Lanes On:	02 Under:00
210 No. Tracks On:	00 Under:00
* 48 Max. Span Length	0040
* 49 Structure Length:	160
51 Br. Rwdy. Width	24.00
52 Deck Width:	30.50
* 47 Tot. Horiz. Cl:	24
50 Curb / Sidewalk Width	2.00 / 2.00
32 Approach Rdwy. Width	022
*229 Shoulder Width:	
Rear Lt:	2.00 Type:1 Rt:2.00
Fwd. Lt:	6.00 Type:8 Rt:6.00
Permanent Width:	
Rear:	22.00 Type:1
	22.00 Type:2
Intersection Rear:	1 Fwd: 0
36Safety Features Br. Rail:	2
Transition:	0
App. G. Rail:	0
App. Rail End:	0
53 Minimum Cl. Over:	99' 99"
Under:	
*228 Minimum Vertical Cl	
Act. Odm Dir::	99' 99"
Oppo. Dir:	99' 99"
Posted Odm. Dir:	00' 00"
Oppo. Dir:	00' 00"
55 Lateral Undercl. Rt:	N 0 0
56 Lateral Undercl. Lt:	0.00
*10 Max Min Vert Cl:	99' 99" Dir:0
39 Nav Vert Cl:	000 Horiz:0000
116 Nav Vert Cl Closed:	000
245 Deck Thickness Main	6.00
Deck Thick Approach:	0.00
246 Overlay Thickness:	4.00
212 Year Last Painted:	Sup:0000Sub:0000

65 Inventory Rating Mathod:	1
63 Operating Rating Method:	1
66 Inventory Type:	2 Rating: 11
64 Operating Type:	2 Rating: 11
231Calculated Loads:	
H-Modified:	11 1
HS-Modified:	12 1
Type 3:	11 1
Type 3s2:	17 1
Timber:	13 1
Piggyback:	00 0
261 H Inventory Rating:	10
262 H Operating Rating	17
67 Structural Evaluation:	2
58 Deck Condition:	7
59 Superstructure Condition:	7
* 227 Collision Damage:	0
60A Substructure Condition:	6
60B Scour Condition:	6
60C Underwater Condition	6
71 Waterway Adequacy:	8
61 Channel Protection Cond.:	5
68 Deck Geometry:	2
69 UnderClr. Horz/Vert:	N
72 Appr. Alignment:	6
62 Culvert:	N

Posting Data

70 Bridge Posting Required	0
41 Struct Open, Posted, CL:	P
* 103 Temporary Structure:	0
232 Posted Loads	
H-Modified:	11
HS-Modified:	12
Type 3:	11
Type 3s2:	17
Timber:	13
Piggyback	00
253 Notification Date:	02/01/1901
258 Fed Notify Date:	2/1/1901 12:00:00AM

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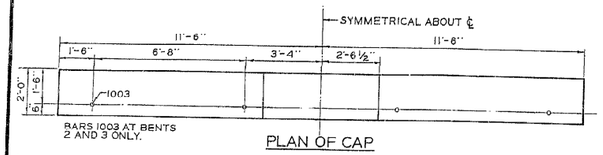
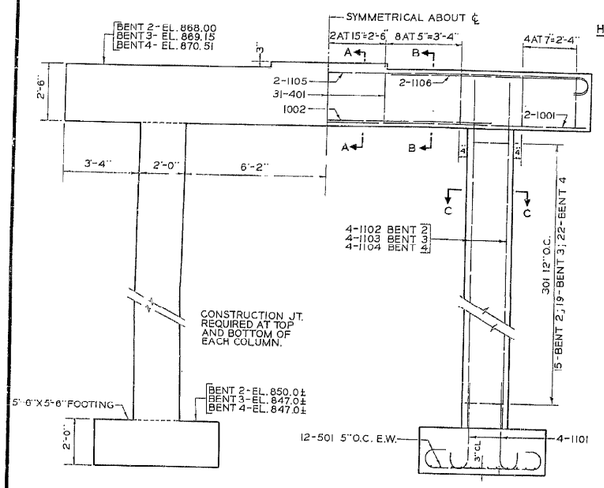
FED. ROAD DIV. No.	STATE	FED. AID PROJ. No.	STATE AID PROJ. No.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
3	GA.				10-A	



PLAN OF CAP

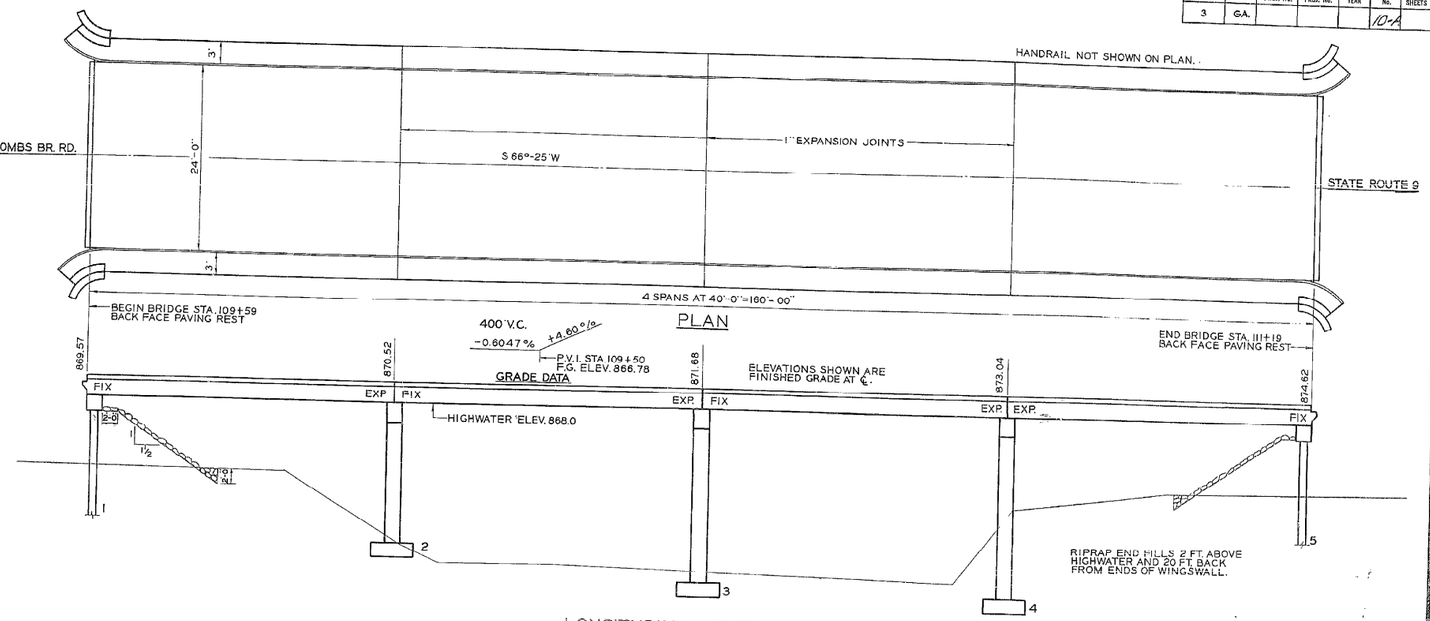


ELEVATION

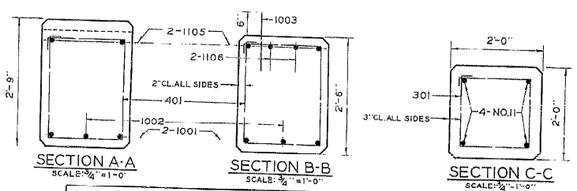
BENTS 2,3,AND 4 LOOKING BACK.

SCALE: ⅜"=1'-0"

NOTE: 2" WIDE STRIP EXPANSION MATERIAL AT BEAM SEATS: FORWARD FACE OF BENT 2 = 1⅛"; BENT 3 = 1¼"; BENT 4 = 1⅜".



LONGITUDINAL SECTION



SECTION A-A
SCALE: ¾"=1'-0"

SECTION B-B
SCALE: ¾"=1'-0"

SECTION C-C
SCALE: ¾"=1'-0"

QUANTITIES		
BENT	CU. YDS. CONCRETE	LBS. REINF. STEEL
2	13.43	2296
3	14.00	2493
4	15.06	2544

BAR DETAILS-BENTS 2,3,& 4

SIZE	BAR NO.	TYPE	MAKE	LENGTH	A	B
3	301	4	112	6'-8"	1'-6"	1'-6"
4	401	4	93	8'-4"	1'-8"	2'-2"
5	501	2	144	6'-2"	5'-0"	
10	1001	1	6	22'-8"		
	1002	1	3	14'-4"		
	1003	1	8	1'-3"		
11	1101	3	24	5'-4"	3'-9"	
	1102	1	8	17'-6"		
	1103	1	8	21'-8"		
	1104	1	8	25'-0"		
	1105	2	6	25'-10"	22'-8"	
	1106	3	12	10'-2"	8'-7"	

ALL BAR DIMENSIONS ARE OUT TO OUT.

BRIDGE CONSISTS OF

4 - 40'-0" CONCRETE T BEAM SPANS -- GEORGIA STANDARD NO. 3558 A AND B
2 - STEEL H PILE END BENTS ---------- GEORGIA STANDARD NO. 3256
3 - CONCRETE INTERMEDIATE BENTS ---------- SPECIAL DESIGN
CONCRETE HANDRAILING ---------- GEORGIA STANDARD NO. 3616

DRAINAGE DATA

DRAINAGE AREA ---------- 100.0 SQUARE MILES
AREA OF OPENING UNDER HIGHWATER ---------- 2,155 SQUARE FEET

DESIGN DATA

SPECIFICATIONS - A.A.S.H.O., 1953
TYPICAL H15-44 LOADING - IMPACT ALLOWED
FUTURE PAVING ALLOWANCE = 15 LBS. PER SQ. FT.

GENERAL NOTES

SPECIFICATIONS - GEORGIA STANDARD.
ALL CONCRETE SHALL BE CLASS "A".
COST OF ANY EXCAVATION NECESSARY FOR END BENT CONSTRUCTION SHALL BE INCLUDED IN PRICE BID FOR CLASS "A" CONCRETE.
DRIVE ONE 20 FT. TEST PILE AT BENT 1 AND ONE 30 FT. TEST PILE AT BENT 5. TEST PILES TO REMAIN IN PLACE AS PERMANENT PILES.
FOR OTHER GENERAL NOTES SEE GEORGIA STANDARDS NO. 3558, A AND B, NO. 3256, NO. 3616 AND SPECIAL PROVISIONS.

SUMMARY OF QUANTITIES

233	CU. YDS. CLASS "A" CONCRETE
54362	LBS. BAR REINFORCEMENT STEEL
331	LIN. FT. CONCRETE HANDRAILING
120	LIN. FT. STEEL H PILING 12 BP 53
2	EACH STEEL H TEST PILES 12 BP 53
1	EACH LOADING TEST (IF REQUIRED)
0.367	ACRES CLEARING AND GRUBBING BRIDGE SITE (LUMP SUM)
78	CU. YDS. BRIDGE EXCAVATION NO. 1
575	SQ. YDS. SAND CEMENT RIP RAP
	OR
288	TONS STONE PLAIN RIP RAP
LUMP	REMOVAL OF EXISTING BRIDGE RT. OF STA. 110+50

DATE | REVISIONS | BY

STATE HIGHWAY DEPARTMENT OF GEORGIA
BRIDGE DEPARTMENT

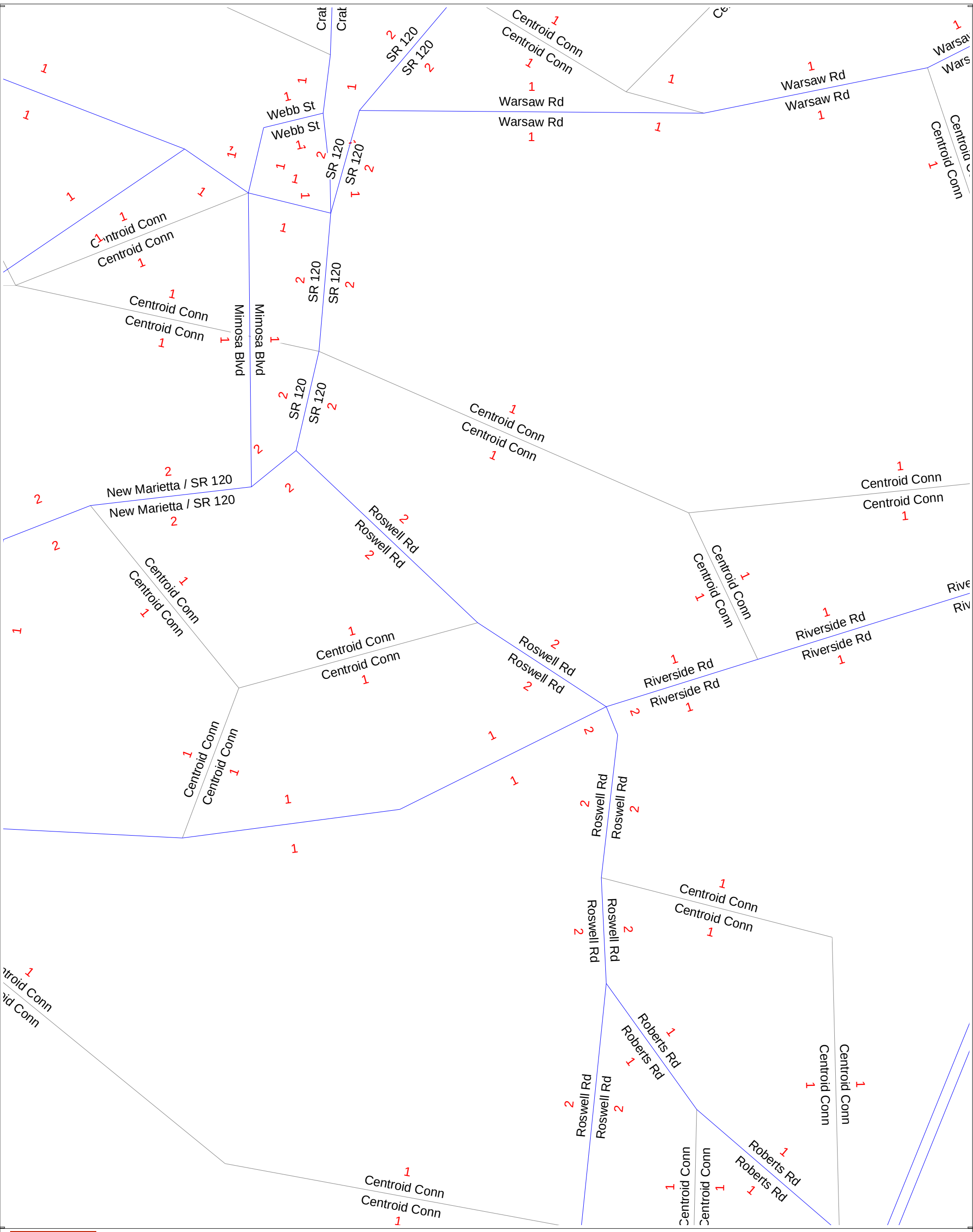
PLAN AND LONGITUDINAL SECTION
BRIDGE OVER BIG CREEK
STA. 109+59 TO STA. 111+19
FULTON COUNTY 3 R.R.-P.R. 2728(1)

SCALE: 1"=8'-0" UNLESS NOTED MARCH 1957

DESIGNED F.F.T. | TRACED J.A.B. | REVIEWED R.K.J.
DRAWN J.T.K. | CHECKED J.E.T. | APPROVED

Attachment A-10: ARC Conforming Plan Network Schematics

2010 Existing Conditions



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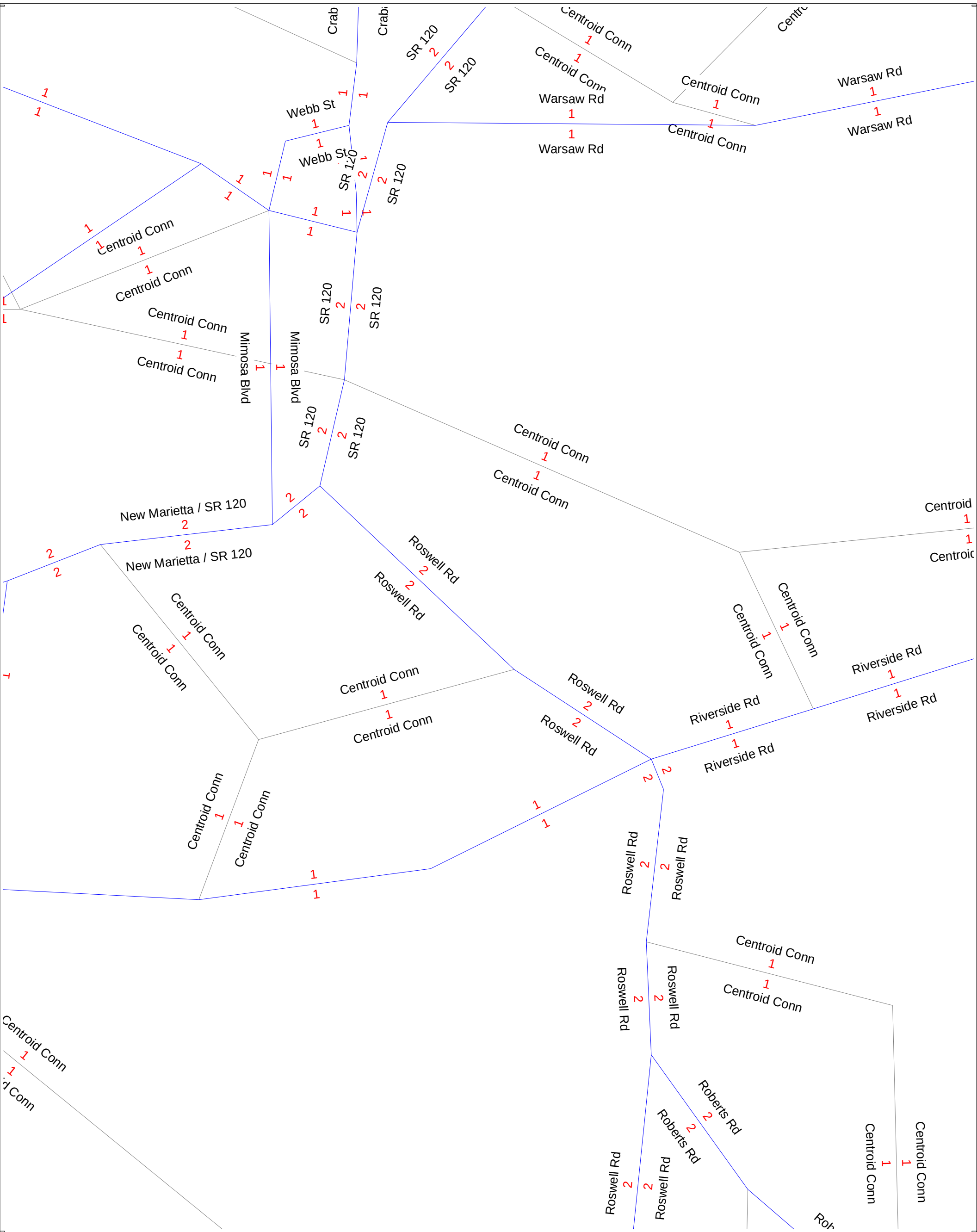
2040 Conditions



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Attachment A-11: Minutes of Concept Report Meetings

Roswell Historic Gateway Transportation Study

GDOT Coordination Meeting

Georgia Department of Transportation| One Georgia Center, 25th Floor| Atlanta, GA

Wednesday, July 27th, 2011

Meeting Attendees

Steve Acenbrak, Roswell DOT Director
Jody Braswell, Gresham Smith
Jonathan Reid, Parsons Brinckerhoff
Rob Dell-Ross, City Project Manager
Darrell Richardson, GDOT Roadway
Rob Dell-Ross, City of Roswell
Mac Cranford, GDOT District 7
Byron Rushing, GDOT Bike/Ped
Ban Rabun, GDOT Bridge
Franco DelMarco, City of Roswell
Brad Ehrman, GDOT District 7
Dave Peters, GDOT Design Policy
Stanley Hill, GDOT OPD

Meeting Summary

The meeting was called to order at 1:30pm. Rob Dell-Ross gave an overview of the project. The objective of the meeting was to discuss potential corridor design alternatives before they are presented to the public to ensure that what is presented is not contrary to GDOT design policy and standards. Also, the team wanted to understand what flexibility in design policy standards may be possible in order to achieve context sensitive design solutions in the corridor.

Steve Acenbrak explained the need for context sensitive solutions for this corridor given the environmental, right-of-way, grade and historic property constraints along the corridor. He reminded the group of the failed attempt 15 years ago where a conventional widening project was stopped due to citizen pushback. However, the removal of the reversible lanes continues to remain a top priority of the City and GDOT.

Jonathan gave and overview of the alternatives under consideration, that included a 1) conventional 4-lane divided highway with variable/narrow median width, 2) using two roundabouts to establish a narrow median through the historic property area, and 3) a one-way pair.

GDOT relayed that 11-foot lanes and variable median widths would be acceptable, such that the median widths and spacing (>660') were within design standards. In general, wider lanes are better than a wider median.

While the City presented the concept using two multi-lane roundabouts to District 7 in the past (and met with general acceptance), GDOT advised to review the new roundabout design standards.

GDOT advised to show right turn lanes on the concept plans, as there have been issues in the past where right turn lanes not shown in the concept plans were later required when a traffic study was complete. There is no warrant for right turn lanes, but GDOT typically requires them where right turn volumes exceed 50 vph.

The design speed for SR 9 will be 35 MPH. GDOT will not give a variance on design speed.

Grade separation of the SR9/Riverside/Azalea intersection will be difficult. GDOT may support a short-term closure of SR 9. However, the minimum clearance of 16.5 feet shall be maintained for any structure under or over SR 9.

GDOT does not allow unsignalized mid-block crossings and HAWK signals would have to be warranted (must have actual pedestrian volume data) before being installed. If the intent is to plan for the possibility, a 5-foot minimum median is required for pedestrian refuge.

Minimum curb offset (design exception): 1-foot from travel lane; will consider header curb but drainage becomes more challenging.

The group discussed a four-lane undivided corridor as an alternative. All parties agreed that this would not meet the safety goals of the project and that this would not be an alternative the City or GDOT would support.

GDOT supports the local road connections proposed to connect neighborhood streets and make connections to proposed roundabouts. The City noted that these are desired but would not be included in a federally funded project, but rather be built with local funds once their design feasibility and public acceptance is secured.

GDOT will not support on-street parking on SR 9, as historically on-street parking drastically increases accident rates.

These are the meeting minutes as best documented during the meeting. If there are additional or recommended changes to these comments, please contact Jonathan Reid at reid@pbworld.com within 7 days from issuance of these comments.

Sincerely,

Jonathan D. Reid

Jonathan Reid, Parsons Brinckerhoff
Project Consultant Project Manager

SR 9 WIDENING MTG 7/27/11

PI 721010

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JONATHAN REID	PARSONS BRINCKERHOFF	REIDE@PBWORLD.COM
FRANCO DEMARCO	City of Roswell	FDEMARCO@ROSWELLGOV.COM
Darrell Richardson	Roadway - GDOT	drichardson@...
Ben Raburn	Bridge	braburn@...
Byron Rushing	GDOT Bike/ped	brushing@dot....
Dave Peters	GDOT/Des. Policy	dpeters@dot.ga.gov

Roswell Historic Gateway Transportation Study

GDOT Draft Concept Report Meeting

Georgia Department of Transportation| One Georgia Center, 24th Floor| Atlanta, GA

Wednesday, May 2nd, 2012

Meeting Attendees

Chuck Sample, City of Roswell
Jody Braswell, Gresham Smith
Jonathan Reid, Parsons Brinckerhoff
Rob Dell-Ross, City of Roswell
Ben Rabun, GDOT Bridge
Kyle Mote, GDOT Planning
Nabil Raad, GDOT Traffic Ops
Bryant Poole, GDOT District 7
Paul Denard, GDOT Traffic Ops
Lisa Myers, Engineering Services
Mike Lobdell, Division 7
Michael Hester, Environmental Services
Matthew Fowler, GDOT Planning
Virginia Leming, Leming ROW Acq
Ulysses Mitchell, GDOT Planning
Derrick Brown, GDOT Program Delivery

Meeting Summary

Derrick Brown kicked off the meeting at 1:35 with a brief description of the project, followed by a more detailed description by Jonathan Reid and Rob Dell Ross. Jonathan reviewed the public involvement process including the PIOH meeting held April 23rd and discussed the corridor concepts and intersection elements of the preferred alternative.

Rob noted that the project is on the TIA list (confirmed by Ben to be in the band B of projects with money allocations in 2016-2019) but that should TIA not pass the project is not dead but would look for other funding sources.

The TPRO project listing is slightly different for this project as it is based on the previous project with different project termini. The current project terminus is at the Chattahoochee River bridge and not Dunwoody Place in Sandy Springs. The current capacity constraint is not the bridge itself but the intersection at Riverside/Azalea which is being improved by grade separation. Rob noted that the intersection grade separation is far cheaper than a bridge widening and that the bridge is not what killed the previous project many years ago – it was the citizens, who are now very much behind the current project because of the public involvement process.

The project will impact the National Park Service, but they have been brought in to the project process in early coordination and are aware of the potential impacts. The project will undergo a 4F process either through the NEPA process or with the Park Service as lead agency (should TIA pass and the project be funded entirely by local funds).

Jonathan ran the group though the details of the concept report. There are no design exception requests and potentially only two design variances that will be requested: 1) a median width of less than 20 feet in order to conserve impacts along the National Parks Services frontage and 2) a variance in taper length for the northbound through lanes (just north of HWY 120) to accommodate the northbound dual left turn lanes and to miss some buildings on the east side of the roadway.

Lisa Meyer asked that safety be included in Project Justification section in the concept report. Currently, crashes in the corridor are more than twice the statewide average. The removal of the reversible lanes, the roundabout and the Riverside/Azalea grade separation should all vastly improve safety in this corridor.

The roundabouts have not yet but will go through the Peer Review process. GDOT said that this request should be made by contacting Design Support Services. The City will contact one of the firms on the GDOT approved peer review list and that review will take place in the next few weeks to ensure it is completed before the VE study. Paul indicated one of the questions that will be asked is if the roundabout can accommodate WB-67 vehicles. Jonathan replied that it should accommodate them for through movement but was unsure about turning movements and whether that important in this corridor or not. Paul also advised to check fastest path for all movements, focusing on inbound speed control more than outbound.

Paul said he would also like to see the queuing length analysis in the TE study to be sure that the roundabouts are not going to spill back to the upstream signalized intersections. He indicated that VISSIM analysis results would be sufficient for review.

Utilities are still an unknown for the project. The cost of burial is high and the extent of burial will depend on project funding. The project will at minimum improve upon existing conditions by removing poles from within the sidewalks. The City is undecided if it wants to take on the Public Interest Determination Policy and make the contractor responsible for utility relocations. The type of lighting treatments are also unknown, though the City will commit to provide adequate lightings at the roundabouts.

Vickery Creek is major inlet into Chattahoochee (know as Big Creek to the north); Goal is to achieve clear-span bridges over Vickey Creek but even two span would be an improvement over current four span structure. Both structures would be a minimum of four feet higher than the current structure.

VE Study is anticipated due to the environmental sensitivities and constrains along the corridor. It will likely be conducted after the TIA vote to know the project funding and will be useful in identifying cost saving elements and means to reduce ROW along the National Park Service frontage. Ben recommended that preliminary bridge layouts be made available for the VE team to consider. Hydraulics may also be valuable for the reviewers.

Ben had concerns for pedestrians walking along the steep portions of the roadway and if the two-foot sidewalk and five-foot multi-use trail buffers are sufficient. The five-foot buffer would be sufficient to put in a safety barrier.

Concern was expressed over the usefulness of the pedestrian bridge or tunnel south of the Chattahoochee Circle. Most felt people would still scamper across the street than use the bridge. The use of a Hawk signal between Chattahoochee River and River Mill Roads would seem a more appropriate and less costly solution and Traffic Ops indicated they might support a Hawk signal as part of the concept for the project, as it is where the sidewalk ends and serves to connect two major apartment complexes to a transit stop.

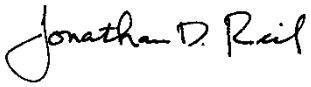
Paul asked the team to consider a roundabout treatment at the Warm Springs intersection as part of a "gateway" treatment and a means to slow traffic entering the historic area. Rob asked about the 90/10 rule (roundabouts should aim to have at least 10% traffic on the side streets) knowing that Warm Springs is not a major thoroughfare. Paul indicated that the gateway and speed reduction treatment would trump the volume criteria. Jonathan indicated that a roundabout at Warm Springs would solve a multitude of issues; however the roundabout would be in a bit of a downward slope. Paul said that if the slope is no greater than 4% it should not be a problem, just be conscience of how it will drain. Jonathan said the team would come up with a concept and submit as part of the roundabout peer review package.

Near the end of the meeting, it was noted that there no discussion about on-street parking. Rob indicated that the City was not pressing this issue anymore on the behalf of others who felt more strongly about them than the City.

The meeting was adjourned at 3:40pm.

These are the meeting minutes as best documented during the meeting. If there are additional or recommended changes to these comments, please contact Jonathan Reid at reid@pbworld.com within 7 days from issuance of these comments.

Sincerely,



Jonathan Reid, Parsons Brinckerhoff
Project Consultant Project Manager

PARSONS BRINCKERHOFF Computation Sheet

page ____ of ____

made by

date

checked by

date MAY 2, 2017

subject 721010 CONCEPT REPORT MTG
SIGN-IN SHEET

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Attachment A-12: Minutes of Other Agency or Stakeholder Meetings

Roswell Historic Gateway Transportation Study

Community Meeting #1
Founders Square | 555 Atlanta Road; Suites A-100 & A-200 | Roswell, GA
Thursday, March 3, 2011 (5:30 to 7:30pm)

Meeting Format

The meeting combined an open house area where attendees were welcome to look at the study area map and other displays relative to the project. The project consultant team gave two identical, formal presentations (the first at 6:00 PM and then again at 7:00 PM) in the adjacent room.

A welcome table was set up in the open house room. Attendees received a copy of the presentation, an exit survey to collect their input on the meeting, and a project comment card where they could provide additional comments for the project team's consideration. A total of 75 individuals signed in; however, not everyone signed in and total participants were estimated to be 100 citizens plus the project team.

Meeting Summary

Jonathan Reid, Project Manager, opened the meeting. Rich Dippolito, Roswell City Councilperson, welcomed the group and discussed the importance of the environmental aspects of the project, context sensitive solutions, and public participation throughout the process.

Jonathan gave an overview of the meeting setup and layout of the meeting space. He explained that the purpose of this meeting is to inform and listen to the public. A description of the project area was shown and discussed. There are many issues on the corridor that are known; however, the public is expected to provide ongoing feedback to the team with local and specific issues about which the team may not be aware.

This project is multi-modal – not a standard highway project. Quality of life, safety and serving the needs of the corridor are of equal importance. No solution has been developed yet. There will be a series of six public meetings. Alternatives will be developed and the most feasible will be analyzed during an environmental process. The last step is a final Public Hearing to show results of the process and to gain feedback on a final preferred solution.

The formation of a purpose and need of the project was discussed. The public will play a large role in finalizing this statement. Once agreed upon, the alternatives can be developed that address the needs and purpose of the corridor. Context Sensitive Solutions will be sought. The process is a collaborative one that will save money and time, and include the community as public partners during its development.

The outreach team and process was discussed. The process began with a citizen telephone survey to gain prevailing attitudes on corridor congestion and related issues. Formation of the Community Advisory Group (CAG) and a Technical Advisory Group (TAG) were also established. The CAG and TAG will meet regularly throughout the project. The 18-month public meeting schedule was discussed that will be in effect from the present through the completion of the public hearing process (August 2012). It

was mentioned to attendees that the City of Roswell's project webpage has been launched. Information from the meeting and interim deliverables can be viewed and downloaded on the site. Also, comments can be submitted to the website for response.

After the each formal presentation, the floor was opened to questions from attendees. The following summarizes the questions received and answers provided:

Questions/Comments

The following questions were raised after the formal presentations and are summarized with the response from the project team:

Q: Are you aware of the bill pending in the legislature regarding bike lanes that says that if bike lanes exist, cyclists must use them? This will be important for this project because cyclists will want to use the bike lanes.
A: Yes, it will be a multi-modal project that will address bike lanes.

Q: Is this study related to the study I saw a few years ago?
A: It is and it isn't. At that time we looked at a concept of a solution that could be built. We developed these solutions to start the dialogue with the Georgia Department of Transportation. The Department showed interest in these creative solutions. We will likely revisit the concept, but this is a fresh start that begins and is determined by community feedback.

Q: Can you describe the project boundary?
A: The limits are from Marietta Highway down to and including Azalea. The right-of-way varies along the corridor. Some places have room to widen; in other locations there is not enough room. There are also elevation and environmental constraints.

Q: Is there an opportunity to use the national recreation area near Azalea?
A: Yes. The National Park Service (NPS) is aware of the project and is involved on both the Community and Technical Advisory Groups. We will talk about paths along and adjacent to NPS land as well as other solutions that can be coordinated among the projects.

Q: I have not heard any sense of the period of time when this project will impact us. Will it have a 20 year or 50 year impact? It seems that this could very much change the objectives of thinking and reactions to costs, etc.
A: This will be the long term solution for the corridor or a 20-year design horizon. A lot of this area is fairly built out and traffic volumes have grown. This is a long term study, but some short term projects will be sought since there may be solutions that we can achieved in the meantime to improve the corridor.

Q: I think it is very important that this corridor plan tie into a future town plan. A group has been meeting for five years and has been pushing for a comprehensive plan for Roswell. How would this corridor study tie into a future master plan? The town square is where the issues begin. There is no town planning for the corridor/the square. The cart is before the horse by addressing transportation first.

A: One key issue along with those issues is economic development. This project will also address economic issues. Accessing the town center will impact the economic potential of the community. It is a historic gateway that has economic needs. We are considering all of these aspects while we plan for this corridor.

Q: Why is Wileo/Inverness cut out of the plan? There are already bicycle lanes there. This very important artery has been left out of the planning – can it be considered?
A: In addition to the corridor itself, this project will also consider what occurs at other intersections that feed into the corridor and that may in some way impact this study area. We cannot study all of Roswell, but this is our starting point.

Q: Is your intent to remove the reversible lanes?
A: Yes.

Q: Will the bridge at Riverside be addressed?
A: Yes. It is a deficient bridge and will be addressed.

Q: Regarding the 1.2 mile stretch, is it a true fact that there are some places where widening is impossible? If this is for the future, can we have some leeway with the road?
A: Yes, we can likely go from 12 ft lanes to 11 ft lanes and the potential for smaller medians exists. At the same time, there are other significant constraints (topography, historical home sites, etc). In some places, creativity will be required to gain additional lanes as needed.

Q: This is a state highway. Do they have any say so?
A: Yes, the state has the final say in what happens. We are working with the Georgia Department of Transportation throughout this process.

Q: Are we trying to increase capacity or the quality of life?
A: Both. Adding an additional lane will add capacity and improve safety. Certainly, the project will include roadside amenities to improve quality of life issues for non-auto (walking, biking, transit) modes.

Q: One issue is speed. Will there be solutions built into the project to address this issue? The police currently cannot patrol this street with their radar due to short distances and the geometry of the road.
A: Yes, there will be some geometric corrections made so that traffic can be calmed and so that police can safely patrol the area.

Q: What is the desired design speed?
A: The design speed will remain 35 mph.

Q: Can you talk about near term projects in the area that are being considered?
A: There is money earmarked for a new pedestrian bridge across Chattahoochee that our plan will coordinate with. The city is also making improvements to the Oxbo Road / Atlanta Street Intersection (design will kick off in a few months).

Q: How much of right-of-way and access do you have?
A: It varies greatly. There are some areas where we have as little as 50 feet and some places where we have in excess of 70 feet. There are places that already have 4 or more lanes. The project will find ways to creatively use the space we have as much as possible and minimize impacts to properties. The initial

question is what are we trying to fit? What will the typical section be? There may be different ways we treat the corridor in different places depending on its function.

Q: Is the goal 4 lanes?
A: Yes, most likely with some sort of median to ensure safety. Most people don't like the reversible lanes because they are unsafe. Making the necessary safety improvements will require adding a lane.

Q: In previous meetings roundabouts were brought up and we were told there wasn't enough room.
A: Last year, we put some concepts together to take to the Georgia Department of Transportation to show them that something could be done and to see if they would work with us. It wasn't their standard but they saw that something new could work. There much more of a willingness to partner now. We did look at a roundabout that did fit within existing right-of-way. It is a potential solution; not the only solution right now. This concept was developed to show that there is something different that may work there. It is GDOT's road and they have to approve it, but we need a collaborative project. GDOT shares our desire to remove the reversible lanes. They remember their previous effort and that the City has active citizens that care about context and environmental resources.

Q: Will the team investigate public-private partnerships to fund future phases of the project?
A: Yes, everything is being considered at this point.

Meeting Feedback & Input

Exit Survey Results

An exit survey with six questions was distributed to the meeting attendees. Questions were regarding the frequency of individuals' usage of the corridor; the mode of transportation; probability of using other modes if safer conditions were available; and any additional comments. They were also asked about their interest in scheduling a project spokesperson to attend their civic/community/business meeting to discuss the project and how they found out about the meeting. A total of 36 were returned on the night of the meeting. General results of the exit survey are as follows.

- The majority of respondents (86%) drive along Atlanta Street between Marietta Highway and the Chattahoochee River more than five times per week
- The majority of respondents (78%) replied that they do not have the option of taking a bus, carpool, vanpool, or bike during Roswell's rush hour traffic. Approximately 11% have the option to bike; 8% have the option to take a bus.
- A total of 24 respondents stated that they would use other commuting options including walking if convenient, reliable services and safer conditions were available. Most commented on this question that they would walk and/or bike more if the route were safer. The remaining 12 surveys included no response to this question.
- There were six requests for project staff to come and brief community organizations about the project.
- More than half of respondents (54%) found out about this meeting from "Other" sources. Some descriptions include email, the Roswell City website, and Rich Dippolito's Facebook page. Approximately 26% found out about the meeting from a friend, colleague or neighbor.

Other comments were collected on the Exit Survey as well. Responses are summarized below:

- Include bike lanes both sides
- When does the talking stop and the action start? There was already a plan in place on the Roswell website. Why do we need a new plan?
- I would like to get involved in the Community Advisory Group
- Enforce the speed limits and yield requirements
- Why does the project end at the square? Access problems (especially for pedestrians) are an issue beyond the square
- Is it part of the general plan that I saw last year involving rotary/roundabouts? That one seemed to feed off pedestrian traffic especially near Overland Drive.
- I'm glad the bridge on Riverside will be addressed. It is very dangerous to pull out of my subdivision (River Lake Shores).
- Balance between history and economic development

Project Comment Cards

A total of 34 comment cards were returned (27 included comments; 7 did not). They are summarized as follows.

- Of the cards which included user information, 25 of 34 (74%) live on the corridor.
- All respondents use their car as their primary mode of transportation. Twenty-nine percent use their car plus another mode (walking; bike).

Comments varied. All are summarized below:

- Travel occasionally, but not frequently. Try to use other routes - GA400 mostly, which is crowded also.
- Glad Roswell is addressing these issues. Discouraging to hear about all the surveys that have been done. I'm hoping for good things!
- I am concerned about the historical aspects of this area being damaged during construction. Also how commuters will cross river during construction.
- I would like to walk to river and to town safely. Put wires underground to increase space and be more aesthetically pleasing.
- I'd love to be able to walk or bike but it's too scary!
- Improve foot/bike paths (like the board); no medians w/landscaping; highlight what we already have on the sides of Hwy 9; plants should be native and drought tolerant
- Improved safety and traffic issues at Riverside/Azalea; make aesthetically pleasing gateway to our city; add pedestrian crosswalk on Riverside at St. Andrew Church.
- Please consider "historic" sign maker on Revival Street.
- Thank you for this get-together! Need historical sign on Revival Street.
- The switching of the lights with the Xs at times is very dangerous. The area has far outgrown the current street.
- Minimize industrial type options; focus on maintaining historic sense/scope of area while still improving access; project should not focus on attracting more traffic through neighborhoods.

- We need sidewalks, pedestrian bridges over Azalea/Riverside and Atlanta Street; underground utilities would allow widening.
- I avoid the corridor or bike - too dangerous; same w/running; not pedestrian friendly.
- I would walk more if the corridor had sidewalks along Barrington Hill and pedestrian crosswalk.
- Like flyover at Azalea; I am adamantly opposed to a median that will necessitate removal of trees especially if the plan entails planting new trees for us to maintain; we need four lanes and sidewalk only.
- Separate the pedestrian/bike path into North Park; add center median plantings (bury utilities) from Riverside to Warm Springs; close apartment entrances and redirect.
- Wife drives to work daily, I work from home. We walk to Canton 1-2 times per week.
- Signage to reduce "lost" buses coming to tourist destinations, such as Chattahoochee Nature Center, would reduce traffic impacts.
- I'm concerned that (1) the Citizens Advisory Committee doesn't include anyone east of Atlanta Street (Martin's Landing, etc). (2) We're cut off from the City.
- Live in Barrington Gates development and would like to request historic street signs for the corner of Revival and Chattahoochee Streets.
- Project should include corridor north of the square.
- Use Car on Atlanta St; Bike on Azalea and Northside. Expand Northside and Azalea to allow bike lane through Atlanta Street.
- Bicycle accessibility should be improved. Lessen wait times AM & PM on the road. The turn south bound on Hwy 9 to Azalea (east bound toward Dan White Park).
- Improved safety and beautification important to the quality of life, economic development and a vital and vibrant tourism program.
- Have you considered a TAD?
- I heard a good outlook from the presentation focused not on just improving traffic conditions but also providing a good safe quality of life plan. However, many of the questions [at the public meeting] have focused on moving traffic. I totally encourage the team to look at a 50-year plan and study beyond the corridor. I encourage the project to incorporate a focus on the type of community they want Roswell to be, and then build the corridor around that focus.
- Please widen the Vickery Creek Bridge to relieve traffic on Riverside.

Roswell Historic Gateway Transportation Study

Community Meeting #2

Roswell Presbyterian Church | 722 Mimosa Avenue | Roswell, GA
Thursday, May 19, 2011 (5:30 to 7:30pm)

Meeting Format

The meeting began with a presentation, followed by a break-out group activity at individual tables and a report-back/questions & answers period. Attendees were asked to sign in and sit at one of several round tables. A total of 38 individuals signed in.

Meeting Summary

Alice Wiggins gave greetings and welcomed everyone in attendance. She noted City staff present at the meeting. Jonathan Reid, Consultant Team Project Manager began the presentation with the meeting agenda and overview of the project. Jonathan discussed what the team has heard from the public so far. Valerie Birch, Project Consultant, gave an overview of Context Sensitive Solutions and how this approach could be applied to the project. She also showed national examples of Context Sensitive Solutions in practice.

Jonathan discussed some of the constraints along the corridor and showed schematics of the current design of the road. He also provided some potential solutions as well as the advantages and disadvantages of each. The project next steps were discussed and include development of alternatives and finalizing the Purpose and Need of the project.

Meeting Activity: Purpose & Need

Meeting attendees were then asked to work in break out groups to review and comment on the Purpose and Need. The groups reported their discussions back to the meeting attendees, as summarized below. The consultant team will take these ideas into account over the summer. In early September, concepts will be developed and presented for further discussion.

Group 1

Needs

- Improve safety – auto/cycle/walk
- Multi-use (not just for cars) – bike/walk
- Economic growth/business access – left turns out of business and residential
- Traffic flow @ River (slow)
- Park access (without crossing traffic)
- Discourage cut through use/encourage local traffic
- Land – needs to feel comfortable

Purpose

- Improve traffic flow while increasing pedestrian access from residential areas to parks and businesses without crossing traffic

Group 2

Deficiencies

- Lanes too narrow for traffic
- Turn left -> Riverside is dangerous from Riverlake Drive in AM

- Big Creek Bridge is too narrow for pedestrians, bike and backs up because of short collector lanes
- Zero pedestrian access
- Reversible lane is UNSAFE
- Zero pedestrian connectivity in corridor
- Needs more day to day businesses in corridor
- Needs sidewalk and new zoning

Needs (along SR 9)

- Wheelchair access, sidewalks and paths
- Change zoning to encourage practical businesses
- Safe, lighted, covered transit stops to encourage local shopping
- Reexamine zoning to determine what is worthy of protection
- Protect the integrity of the Barrington Hall grounds -> open space in higher density

<u>Group 3</u>

Needs

- Better traffic flow at Azalea/Riverside and Hwy 9
- Improve left turns
- Safety improvements for cars, pedestrians and bicycles
- Define limits of project area
- Protect and enhance historic resources
- Enhance aesthetics
- Provide infrastructure, environment and access that encourages businesses to thrive

Purpose

- Improve traffic flow
- Improve safety
- Improve aesthetics
- Protect historic resources
- To connect the historic square, the Rive, neighborhoods and businesses
- *Create a sense of place

<u>Group 4</u>

Needs

- Relieve congestion East/West as well as North/South
- Width of Riverside Road Bridge
- Timing on light
- Left turns, all 4
- Safety
- Egress and ingress to Hwy 9 between River and Hwy 120
- Traffic enforcement
- Pleasant entrance
- Welcome signage
- Reestablish the mountain town character of Roswell
- Keep trees
- Redevelop S. Atlanta St sidewalks and bike lanes

Purpose

- Safety
- Aesthetics
- Traffic flow
- Business rejuvenation

Group 5

Issues	Needs	Solutions
Bikes and cars	Bike path	Off road
Roundabouts (yield signs)	Can't be too small	Big roundabout
Suitable lanes	Better safety	Roundabout or more lanes or left turn signal
Preserve history	Aesthetics	Move but retain history
Traffic movement	Safety	Turn lanes and traffic signals
Economic development		

Group 6

Needs

- Safety issues: Inability to walk; inadequate pedestrian facilities
- Inability North/South and East/West as a driver
- Additional North/South access across the River
- Inadequate access from adjacent roads onto SR 9
- Lack of gateway sense of arrival into Roswell
- Minimize steep topographic slopes coming up from the Rive
- Maintain and enhance property values through the project
- Improve water quality feeding the Chattahoochee
- Need to define old verses historic
- Balance the need of all users

Purpose

- Improve safety for all modes of transportation
- Improve access to commercial and civic uses for all modes of transportation
- Improve commercial /quality economic development
- Brand and celebrate the rich history and culture of Roswell through the Gateway
- Protect and improve the natural environment resources
- Improve the quality of life for all users
- Preserve the small town scale of the project

Group 7

Needs

- Safe left turn to residential and business – in and out
- Safety
- Reduce speed
- Better sightlines
- Sensitive expansion or widening; respect existing business, residences and pedestrians
- Sidewalks – safe
- Move utilities – poles are hazard
- Azalea/Riverside park like, friendly – need this character in corridor
- Keep traffic moving
- Roundabout at Hwy 120 intersection, no in mid corridor

- Safe street crossings – access MARTA

Purpose

- Safety – vehicular, pedestrians
- Move traffic through corridor
- Increase sense of gateway and local community character and friendliness
- Enhance environment – transition parks to historic district
- Revitalization of business corridor – access and visibility

Other comments and input heard from meeting attendees include:

- Work on zoning; consider moving to a form-based zoning code which would be appropriate for this corridor
- Make sure project limits are better defined for future projects. Need to be careful to not limit the scope, but must also be careful to not expand the limits beyond the scope.
- This corridor can be the means for how people connect to where people want/need to go – not just a road but a "place"

Questions/Answers/Comments

Q: What happens past 120 beyond the project scope? Is there any plan to extend these ideas in the future?
A: Some of these ideas may encourage the next phase of development. We will do analysis beyond the project limits/our study area is broader and we will have ideas and recommendations. We don't want to make things worse.

C: You have to include Riverside and Azalea. You can't look at this without looking at that.

Q: You have to be sure that this project coordinates with other projects in the works now. We have to be aware of other project going on so that we do not undo what's going on somewhere else. Will projects be coordinated?
A: Our job is to coordinate with other projects. Our Technical Advisory Group does that for us – it includes people from different City Departments and MARTA so that we can be sure of what the public wants.

Meeting Feedback & Input

<u>Exit Survey Results</u>

An exit survey with five questions was distributed to the meeting attendees. Questions were regarding the frequency of individuals' usage of the corridor; the modal transportation options; probability of using other modes if safer conditions were available; and any additional comments. They were also asked about their interest in scheduling a project spokesperson to attend their civic/community/business meeting to discuss the project and how they found out about the meeting. A total of 11 were returned on the night of the meeting. General results of the exit survey are as follows.

- The majority of respondents (64%) drive along Atlanta Street between Marietta Highway and the Chattahoochee River more than three times per week.
- All of the respondents (100%) replied that they do not have the option of taking a bus, carpool, vanpool, or bike during Roswell's rush hour traffic.

- The majority of the respondents (82%) indicated they would use other transportation modes if convenient, reliable services and safer conditions were available. One respondent commented the use other modes if there was someplace, i.e. stores, but there are none within walking distance.
- There were three requests for project staff to come and brief community organizations about the project and a suggestion to provide briefings to the Roswell Woman's Club and Kiwanis.

Other comments were collected on the Exit Survey as well. Responses are summarized below:

- What has been proposed for designs?
- Expedite ground breaking

Roswell Historic Gateway Transportation Study

Community Meeting #3
Atlanta Street Baptist Church | 340 S. Atlanta Street| Roswell, GA
Thursday, September 22, 2011 (5:30 to 7:30pm)

Meeting Format

The meeting began with an open house session, followed by a brief presentation, and concluded with another open house session. Attendees were asked to sign-in, review the project displays, convene for a presentation, and were encouraged to speak with project staff one-on-one before completing a comment card. Attendees were also given sticky notes to write input on specific aspects of the concepts that they like and do not like. A total of 62 individuals signed in.

Meeting Summary

Steve Acenbrak, Director of Transportation for the City of Roswell gave the meeting welcome and talked briefly about the importance of this project and its main purpose, which is to improve safety. He stated that the process is designed to hear what the community has to say and that there are extremely difficult challenges in the study corridor: ruins/history, natural resources, and transportation needs. The goal is to balance those problems with a solution. He encouraged meeting participants to point out what they like and do not like on each of the concepts presented.

Jonathan Reid, project manager from PB, began the meeting presentation. The team is six months into this planning process. Over this time there have been briefings and meetings with citizens and the Community Advisory and Technical Advisory Groups. There has been coordination with the Georgia Department of Transportation, the Federal Highway Administration, and the National Park Service throughout the entire process. With this input, the team has developed a purpose and need and corridor and intersection concepts presented at this meeting. A final solution has not yet been developed, and the cost has not been determined.

Jonathan discussed what was heard in the public meetings held to date. There are diverse opinions but some common themes: the final solution should be an aesthetically pleasing corridor without reversible lanes that maintains the historic and environmental character of Roswell. The draft Purpose and Need statement focuses on these desires as well as safety, business development, a balanced transportation network and mobility, and the Riverside Bridge replacement.

There were three distinct preliminary alternatives presented, each with strengths and weaknesses.

- Concept #1: Conventional Four-Lane Divided Road with Median
- Concept #2: Narrow Median w/Dual-Lane Roundabouts
- Concept #3: One-Way Pair

The team presented six concepts for the Riverside/Azalea intersection along with artist renderings that visually depict these concepts from a pedestrian view. The final concept can be a combination of solutions from these preliminary concepts and there is still time to give input. Jonathan asked the attendees to offer a better solution for concepts they dislike. In December, the team will move forward with the most “fit” alternatives and present them in greater detail.

Next Steps

The next steps for the project are as follows:

- Review comments
- Refine alternatives
- Meeting in December with more detail
- Select preferred alternative
- Conduct final environmental studies
- Public open house in February
- Final public hearing in summer of 2012

Public Information Meeting #3
September 22, 2011

COMMENT CARD

Looking at the different concept alternatives, what concepts or elements of individual concepts do you like or dislike? Please record your answers below.

Concept Alternative	Please use this space to tell us what you LIKE or DISLIKE about the various alternatives. Be as descriptive as possible and be sure to discuss both the positives and negatives of each alternative and/or how they could be improved.
1 (Conventional four-lane divided)	
2 (Dual Lane Roundabouts)	
3 (One-Way Pair)	
4 (Riverside-Azalea Intersection – 6 alternatives)	
5 (Purpose & Need Statement)	

General Comments:

_____
_____
_____
_____
_____

Comments must be submitted at or within three days of this meeting to be included in the public meeting record

Name: _____ Organization: _____ Phone: _____

Roswell Historic Gateway Transportation Study

Community Meeting #4

First Baptist Church Roswell| 710 Mimosa Boulevard| Roswell, GA
Thursday, December 1, 2011 (5:30 to 7:30pm)

Meeting Format

The meeting began with an open house session, followed by a brief presentation, and concluded with another open house session. Attendees were asked to sign in, review the project displays, convene for a presentation, and were encouraged to speak with project staff one-on-one before completing a comment card. A total of 65 individuals signed in.

Meeting Summary

Alice Wiggins-Tolbert welcomed attendees and thanked them for being involved in the project for the last year. She introduced City Councilmember Rich Dippolito.

Councilmember Dippolito thanked the public for attending the meeting to provide feedback on the conceptual plans. He reiterated that this project remains in the planning phase and that no alternatives have been decided upon at this time. He stated that the feedback from the community has resulted in the recommendations and concepts presented at this meeting that will ultimately create a system that is safe and effective.

Steve Acenbrak, Director of Transportation, explained how public input fits into the overall planning process and stressed the importance of the public's feedback on improving safety in the corridor. He explained that the graphics shown at the meetings are to help the public visualize how improvements may look and to help the public understand what this corridor could become. Concepts can be mixed and matched to bring together design elements to make the ideal corridor. For this reason, Steve stressed that the public complete the comment forms and state what they like or dislike about each concept. Because this project will go to a federal agency, public input is an important piece of putting together the entire package. Steve reminded the attendees that Alice is the formal outreach coordinator and can be contacted at any time for assistance.

Jonathan Reid, Consultant Team project manager, gave a presentation which outlined the project schedule, what has been heard from the public over the past year, conceptual plans for the corridor and intersections, and the next steps. The presentation is summarized briefly below

This is the fourth public meeting. To date the public has been engaged through surveys, three previous meetings, and agency coordination meetings. The team has developed and refined concepts using data collected from these efforts. A final alternative will be selected and presented at a February meeting. Environmental studies will be conducted with a final public hearing planned for summer, 2012.

Since the last meeting, concepts have been refined and some details have been photo simulated. Traffic has been simulated and cost estimates have been developed. Jonathan discussed some public comments that have been heard over the course of the project including how utilities will be handled, the preservation of trees in the corridor, and if there will be any art/sculpture included in the project.

The public was also concerned with improving transit and the possibility of considering roundabouts at other locations on the corridor. Jonathan also talked about previous solutions that were considered but did not meet capacity, safety, or were otherwise not feasible. He then discussed each of the concepts that were considered.

> Concept 1: Conventional Median – received mostly negative feedback from the public and was dropped from consideration.
>
> Concept 2: Roundabouts w/Narrow Median – received mostly positive feedback from the public. There were some concerns including how multi-lane roundabouts work, if they are feasible for the area, and if they positively impact economic development. Jonathan addressed these concerns and showed photo simulations of impacts at King/Chattahoochee and the southern roundabout at Jones Drive. He also discussed the benefits of having a formal gateway and slower traffic. Refinements that have been made to Concept 2 were discussed, which included improvements at the Chattahoochee Circle intersection, scenic overlooks on the pedestrian/bike path, and the relocation of Allenbrook access to the north. A potential economic development plan was also developed.
>
> Concept 3A: One-Way Pair – this concept received mostly positive feedback and has least impacts to SR 9. Concerns are that one-way streets may be confusing, strong support from the community and developers would be necessary, and what can "live" between the pairs.
>
> Concept 3B: Extension of One-Way Pairs –favorable comments were submitted on this concept. The project would be a phase 2 and built after completion of the Historic Gateway Project. Photo simulations were shown of Concept 2.

Some refinements were made to Concept 3 since last meeting: the option for a roundabout at the southern end, northbound lanes were shifted further east, in street bike lanes were added on both pairs, and an economic development plan was shown that included streets that he served as north/south linkages between the pairs.

Mickey O'Brien presented the following Economic Development comparisons between Concepts 2 and 3A:

- Concept 2: great development opportunity and lower development costs; good central public space
- Concept 3A: more gateway opportunities, on street parking
- Both: protect the greenway system and celebrates views of the natural resources.

Intersection improvements are also being considered for this project and have been reduced to the three most feasible alternatives. Three that have moved forward are Alternative 1 (At-Grade intersection); Alternative 4 (Interchange w/access to Riverside); and Alternative 6 (Quadrant interchange). Jonathan described traffic patterns/movements anticipated for each concept.

Preliminary cost summaries were presented for each concept. The total costs are similar for both corridor concepts (Concept 2: $8.3M, Concept 3A: $8.2M). Preliminary costs for intersection concepts were also presented (Alternative 1: $3.0 M, Alternative 4: $5.6M, Alternative 6: $5.4M). The total range of costs for the entire project is $11 to $14M. These are current construction dollars and do not

include utilities, landscaping, etc. The final cost will be from $15 to $17M. This project has $20M earmarked in the TIA as potential funding if this passes. There is still potential for traditional funding from state and local funds.

The public was encouraged to provide input on the alternative. All materials presented at this meeting can be accessed via the City of Roswell website.

Questions/Comments

Q: Please explain intersection concept #4.
A: Concept 4 of the intersection alternatives is essentially a hybrid of the other alternatives.

Q: Do these concepts achieve the same goal while not increasing traffic volumes?
A: Yes. The roundabouts limit capacity of the road. At Riverside/Azalea, the at-grade crossing will limit the volume of traffic and should maintain the local character of this road by reducing traffic here. It improves safety more than it adds capacity, which is the purpose of this project and the need in the corridor.

Q: What about the Martin Road roundabout? Is that taken into consideration?
A: Yes. This project is 1.5 miles up the road and should not impact the Martin Road project.

Q: Regarding the roundabout at Jones Street, why do you have to do a tow-lane roundabout when there is a one-lane roundabout the same size at Grimes Creek? This would destroy the aesthetic you are trying to create.
A: The roundabout at Grimes Creek is much bigger and wider because it is a 5 street approach there.

C: As a business owner, I feel the roundabouts will hurt the businesses in the corridor because left turns will be prohibited.

C: If the area is beautified, people may want to get out of their cars to walk and visit businesses. That could be a benefit to businesses.

Q: In intersection alternative 4 when traveling east to west from Roswell Road, is there an underpass?
A: Yes. We have modeled an underpass with this concept. The back up in traffic is greatly reduced.

Q: How is the intersection traveling south on SR 9 to turn left on Riverside addressed?
A: The new concept will be a left turn lane, not a shared turn lane. There will also be a light at that intersection. Each alternative presented improves that turn in some way.

Public Information Meeting #4
December 1, 2011

COMMENT CARD

Looking at the different refined corridor and intersection concepts, which alternative do you like to see as the selected concept for the Roswell Historic Gateway Project? Please record your answers below.

Concept Alternative	Please use this space to tell us which concept you prefer and what you LIKE or DISLIKE about each concept. Be as descriptive as possible and discuss both the positives and negatives of each alternative which parts should be considered in the preferred alternative.
2 (Dual Lane Roundabouts)	
3A (One-Way Pair)	
3B (Extended One-Way Pair)	
Riverside-Azalea Intersection – 3 alternatives	

Please rate your agreement (1-5) with each of the following statements:
(1 – strongly disagree, 2 – somewhat disagree, 3 – neither agree nor disagree, 4 – somewhat agree, 5 – strongly agree)

__ Alternative 2 is my clear preferred alternative

__ Alternative 3A is my clear preferred alternative

__ Alternative 3B is my clear preferred alternative

__ Alternative 2 and Alternative 3A are equally suitable design solutions (pick one and move on!)

__ I like Alternative 3A but not Alternative 3B; Alternative 3A should be the stand alone solution

__ Despite higher costs, grade separating Riverside/Azalea from SR 9 is the best long term solution

__ I prefer in-street bike lanes on SR 9 as opposed to a mutli-use path for bicyclists

__ Despite greater right-of-way takes, I prefer a wider median up the hill to create a signature gateway

__ I feel that these concepts (and the process in general) has considered my input as a Roswell citizen

General Comments:

_____

_____

_____

Comments must be submitted at or within 3 days of this meeting to be included in the public meeting record

Name: _____ Organization: _____ E-mail: _____

Roswell Historic Gateway Transportation Study

Meeting with National Park Service

Island Ford NPS Office | Sandy Spring GA

Thursday, August 8, 2011

Meeting Attendees

National Park Service:
Patty Wissinger, Superintendent
Richard Lutz, Facility Manager
Rick Slade, Chief of Science & Resource Management
Scott Pfenniger, Chief of Operations
Nancy Waltham, Chief of Resource Education

City of Roswell:
Rob Dell-Ross, City Project Manager
Steve Acenbrak, Roswell DOT Director
Franco DelMarco, City Project Engineer

Parsons Brinckerhoff:
Jonathan Reid, Consultant Project Manager
Valerie Birch, Environmental Task Manager

Meeting Summary

The meeting began at 9:30, when Steve Acenbrak gave the NPS group a summary of the Roswell Historic Gateway project history, goals and objectives. Topics covered included:

- Riverside Bridge is among the oldest in Roswell and is structurally deficient (under weight restrictions and inadequate sidewalks) and will be replaced with this project.
- The City has full support for creating a pedestrian friendly, walkable, bicycle friendly connection between the river and the square.
- Reviewed the public process and support of improvements, including the grade separation of Riverside/Azalea with Atlanta Street. These two roadways have different character and serve different transportation purposes.
- The process is very different from traditional projects and focuses on context sensitive solutions that would minimize impacts to the historic district and park properties and preserve as much of the natural beauty of the corridor.
- One corridor alternative would minimize right-of-way impacts by using roundabouts at two locations to allow U-turn's rather than direct left turn movements.

The City is committed to a project that is minimally invasive to NPS land, but recognizes due to corridor constraints, zero impact is not possible. The City is looking to partner with NPS for needed land for this project in return for other City land holdings of interest to the NPS.

NPS regulations call for all reasonable solutions to be considered before land acquisition is considered.

Rick briefed the group on the walking trail plan for the Riverside Drive area that includes multiple crossings of Vickery Creek and the desire to link the northern areas to the mill ruin and Chattahoochee River. This effort is unfunded, primarily because the planning effort is incomplete. Funding can be requested once the plan is complete.

Allenbrook is isolated with difficult access. NPS would support realignment of apartment driveway and/or connection to developer plan to the north. It was noted that the alternative using roundabouts this could help access to Allenbrook, as vehicles leaving that site could use the roundabout to go south on Atlanta Street.

The section of the corridor toward the Riverside/Azalea intersection (with park land on the eastern boundary) has varying right-of-way and varying natural boundaries (including pinch points due to steep grades, particularly just north of the Riverside/Azalea intersection). The project team will seek to work with these constraints but the median treatment may be governed by the constraints. Steve noted that there may be a tradeoff in the width of median to the impact on park land. It was agreed that corridor aesthetics are important, but a final determination on impacts can only be considered when the concepts further refined.

Steve updated the group on the pedestrian bridge project that will connect Sandy Springs to the Roswell Trail system, with a connection to be made within the Roswell Gateway project study area. There will be additional coordination with the NPS at a meeting in September.

Jonathan reviewed overall corridor concepts and three concepts to grade separate the intersection of Azalea and Riverside Drive.

1. The first alternative reviewed took Riverside/Azalea up and over Atlanta Street. It was viewed as having the least impact to park land and significantly raised the height of a new bridge over Vickery Creek. A major drawback could be the cost, as the total length of improvements is approximately ½ mile. A double retaining wall would be required on the west side and a 30-foot tall structure is likely to be required on the east side. NPS staff saw the positives about it as a gateway concept (could dress up the retaining wall and bridge architecturally) and liked the fact that it would provide high clearance over Vickery Creek, which would improve trial accessibility. They also recognized that cost could be a major factor in the viability of this alternative. Jonathan said that the cost estimate of this and the other alternatives would be ready for the public meeting.
2. The second alternative takes Riverside/Azalea Road underneath Atlanta Street in roughly the same location as the existing intersection. It also constructs a new bridge over Vickery Creek that is slightly higher than the current structure and would provide sidewalks. NPS noted that this alternative would have more impacts but the impacts were not outside a reasonable level. It was noted that the bridge from Azalea up to Atlanta Street falls outside the jurisdiction of NPS. Steve had concerns that when Riverside/Azalea floods (1-2 times a year), access to Riverside would be lost (where currently only access to Azalea is lost). A few suggestions to provide this connection were offered including a ramp from westbound Riverside to northbound Atlanta Street to avoid having to go around the loop. It was also suggested that a roundabout be considered at the intersection of Azalea with the ramp up to Atlanta Street. Additional concept development and bridge construction staging will be developed for the public meeting in September.
3. The third alternative takes Riverside/Azalea underneath the existing Atlanta Street bridge structure, close to the location of the existing walking trail and then across Vickery Creek on a new structure. This alternative represented the lowest costs but also the greatest impact to NPS land. There were concerns that this section floods much more frequently (5-6 times a year) and building a roadway so close to the Chattahoochee would be problematic. The same concerns about losing access to Riverside Drive during a flood remain. NPS did not rule out this alternative, but given that there are other viable alternatives in consideration, they would have a harder time supporting this alternative. Steve thought that this would be a good temporary solution while interchange for concept 2 was constructed, but NPS advised that the same permitting process would have to be followed for a temporary road condition.

In summary, at this early stage in the process, the NPS preferred the first alternative, but more information on cost and overall project budget is needed to see if it is a financially feasible alternative. While Alternative 2 would result in impacts to the park, the NPS is willing to pursue this concept further. Additional concepts, design details, cost estimates, construction sequencing and visualizations will be prepared for this alternative. Given that Alternative 2 seems to be a viable alternative, Alternative 3 was viewed as having too many negative impacts to be considered further. However, the general consensus was to show all 3 alternatives at the September public meeting, with the disclaimer that Alternative 3 has the potential to flood more frequently and would have the most impacts on the park.

Maps/drawings of the 3 alternatives were left with the NPS staff so that they could note any additional thoughts/concepts that they might have and give them back to Steve.

Meeting adjourned at 11:15.

Attachment A-13: Copy of Project Framework Agreement and Lighting Responsibilities

Vance C. Smith, Jr., Commissioner

Historic Gateway

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

December 31, 2010

CITY OF ROSWELL
Received
JAN 19 2011
MAYOR'S OFFICE

1/19/11
→ original to Marbe P.
→ cc: Steve A.

The Honorable Jere Wood, Mayor
City of Roswell
38 Hill Street
Roswell, Georgia 30075

Dear Mr. Wood:

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

PROJECT#: STP00-9496-00(001) Fulton County, P.I. #721010-

We look forward to working with you on the successful completion of the joint project. Should you have any questions, please contact the Project Manager Derrick M. Brown at (404)631-1571.

Sincerely,

Angela Robinson,
Financial Management Administrator

AR:rm

Enclosure

c: Bob Rogers
Bryant Poole – District 7
Mac Cranford – District 7
Jonathan Walker – District 7
Jeff Baker – Utilities
Ted Rhinehart
Dave Pelton

DO NOT OBLIGATE

AGREEMENT

BETWEEN

DEPARTMENT OF TRANSPORTATION

STATE OF GEORGIA

AND

CITY OF ROSWELL

FOR

TRANSPORTATION FACILITY IMPROVEMENTS

This Framework Agreement is made and entered into this 13th day of December, 2019, by and between the DEPARTMENT OF TRANSPORTATION, an agency of the State of Georgia, hereinafter called the "DEPARTMENT", and the **CITY OF ROSWELL,** acting by and through its Mayor and City Council, hereinafter called the "LOCAL GOVERNMENT".

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

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

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

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

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

1. The LOCAL GOVERNMENT has applied for and received "Qualification Certification" to administer federal-aid projects. The GDOT Certification Committee has reviewed, confirmed and approved the certification for the Local Government to develop federal project(s) within the scope of its certification using the DEPARTMENT'S Local Administered Project Manual procedures. The Local Government shall contribute to the PROJECT by funding all or certain portions of the PROJECT costs for the preconstruction engineering (design) activities, hereinafter referred to as "PE", all reimburseable utility relocations, all non-reimburseable utilities owned by the LOCAL GOVERNMENT, railroad costs, right of way acquisitions and construction, as specified in Attachment A, attached hereto and incorporated herein by reference. Expenditures incurred by the LOCAL GOVERNMENT prior to the execution of this AGREEMENT or

subsequent funding agreements shall not be considered for reimbursement by the DEPARTMENT. PE expenditures incurred by the LOCAL GOVERNMENT after execution of this AGREEMENT shall be reimbursed by the DEPARTMENT once a written notice to proceed is given by the DEPARTMENT.

2. The DEPARTMENT shall contribute to the PROJECT by funding all or certain portions of the PROJECT costs for the PE, right of way acquisitions, reimbursable utility relocations, railroad costs, or construction as specified in Attachment A.

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

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

4. The LOCAL GOVERNMENT shall be responsible for all costs for the continual maintenance and operations of any and all sidewalks and the grass strip between the curb and sidewalk within the PROJECT limits.

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

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

6. The LOCAL GOVERNMENT shall certify that the regulations for "CERTIFICATION OF COMPLIANCES WITH FEDERAL PROCUREMENT REQUIREMENTS, STATE AUDIT REQUIREMENTS, and FEDERAL AUDIT REQUIREMENTS" are understood and will comply in full with said provisions.

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

a. Prepare the PROJECT Concept Report and Design Data Book in accordance with the format used by the DEPARTMENT. The concept for the PROJECT shall be developed to accommodate the future traffic volumes as generated by the LOCAL GOVERNMENT as provided for in paragraph 7b and approved by the DEPARTMENT. The concept report shall be approved by the DEPARTMENT prior to the LOCAL GOVERNMENT beginning further

development of the PROJECT plans. It is recognized by the parties that the approved concept may be updated or modified by the LOCAL GOVERNMENT as required by the DEPARTMENT and re-approved by the DEPARTMENT during the course of PE due to updated guidelines, public input, environmental requirements, Value Engineering recommendations, Public Interest Determination (PID) for utilities, utility/railroad conflicts, or right of way considerations.

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

c. Prepare environmental studies, documentation, reports and complete Environmental Document for the PROJECT along with all environmental re-evaluations required that show the PROJECT is in compliance with the provisions of the National Environmental Policy Act or the Georgia Environmental Policy Act as per the DEPARTMENT's Environmental Procedures Manual, as appropriate to the PROJECT funding. This shall include any and all

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

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

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

f. Perform all work required to obtain all applicable PROJECT permits, including, but not limited to, Cemetery, TVA and US Army Corps of Engineers permits, Stream Buffer Variances and Federal Emergency Management Agency (FEMA) approvals. The LOCAL GOVERNMENT shall provide all mitigation required for the project, including but not limited to permit related mitigation. All mitigation costs are considered PE costs. PROJECT permits and non-construction related mitigation must be obtained and completed 3 months prior to the scheduled let date. These efforts shall be coordinated with the DEPARTMENT.

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

h. Prepare utility relocation plans for the PROJECT following the DEPARTMENT's policies and procedures for identification, coordination and conflict resolution of existing and proposed utility facilities on the PROJECT. These policies and procedures, in part, require the Local Government to submit all requests for existing, proposed, and relocated facilities to each utility owner within the project area. Copies of all such correspondence, including executed agreements for reimbursable utility/railroad relocations, shall be forwarded to the DEPARTMENT's Project Manager and the District Utilities Engineer and require that any conflicts with the PROJECT be resolved by the LOCAL

GOVERNMENT. If it is determined that the PROJECT is located on an on-system route or is a DEPARTMENT LET PROJECT, the LOCAL GOVERNMENT and the District Utilities Engineer shall ensure that permit applications are approved for each utility company in conflict with the project. If it is determined through the DEPARTMENT's Project Manager and State Utilities Office during the concept or design phases the need to utilize Overhead/Subsurface Utility Engineering, hereinafter referred to as "SUE", to obtain the existing utilities, the LOCAL GOVERNMENT shall be responsible for acquiring those services. SUE costs are considered PE costs.

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

j. Prepare PROJECT cost estimates for construction, Right of Way and Utility/railroad relocation along with a Benefit Cost, hereinafter referred to as "B/C ratio" at the following project stages: Concept, Preliminary Field Plan Review, Right of Way plan approval (Right of Way cost only), Final Field Plan

Review and Final Plan submission using the applicable method approved by the DEPARTMENT. The cost estimates and B/C ratio shall also be updated yearly if the noted project stages occur at a longer frequency. Failure of the LOCAL GOVERNMENT to provide timely and accurate cost estimates and B/C ratio may delay the PROJECT's implementation until additional funds can be identified for right of way or construction, as applicable.

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

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

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

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

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

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

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

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

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

14. The LOCAL GOVERNMENT, unless shown otherwise on Attachment A, shall acquire the Right of way in accordance with the law and the rules and regulations of the FHWA including, but not limited to, Title 23, United States Code; 23 CFR 710, et. Seq., and 49 CFR Part 24 and the rules and regulations of the DEPARTMENT. Upon the DEPARTMENT's approval of the PROJECT right of way plans, verification that the approved environmental document is valid and current, a written notice to proceed will be provided by the DEPARTMENT for the LOCAL GOVERNMENT to stake the right of way and proceed with all pre-acquisition right of way activities. The LOCAL GOVERNEMENT shall not proceed to property negotiation and acquisition whether or not the right of way funding is Federal, State or Local, until the right of way agreement named "Contract for the Acquisition of Right of Way" prepared by the DEPARTMENT's Office of Right of Way is executed between the LOCAL GOVERNMENT and the DEPARTMENT. Failure of the LOCAL GOVERNMENT to adhere to the provisions and

requirements specified in the acquisition contract may result in the loss of Federal funding for the PROJECT and it will be the responsibility of the LOCAL GOVERNMENT to make up the loss of that funding. Right of way costs eligible for reimbursement include land and improvement costs, property damage values, relocation assistance expenses and contracted property management costs. Non reimbursable right of way costs include administrative expenses such as appraisal, consultant, attorney fees and any in-house property management or staff expenses. The LOCAL GOVERNMENT shall certify that all required right of way is obtained and cleared of obstructions, including underground storage tanks, 3 months prior to advertising the PROJECT for bids.

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

a. Submittal of acceptable PROJECT PE activity deliverables noted in this agreement.

b. Certification that all needed rights of way have been obtained and cleared of obstructions.

c. Certification that the environmental document is current and all needed permits and mitigation for the PROJECT have been obtained.

d. Certification that all Utility/Railroad facilities, existing and proposed, within the PROJECT limits are shown, any conflicts have been resolved and reimbursable agreements, if applicable, are executed.

If the LOCAL GOVERNMENT is shown to LET the construction in Attachment "A", the LOCAL GOVERNMENT shall provide the above deliverables and certifications and shall follow the requirements stated in Chapter 10 of the DEPARTMENT"s Local Administered Project Manual.

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

17. The LOCAL GOVERNMENT agrees that all reports, plans, drawings, studies, specifications, estimates, maps, computations, computer files and printouts, and any other data prepared under the terms of this Agreement shall become the property of the DEPARTMENT if the PROJECT is being let by the DEPARTMENT. This data shall be organized, indexed, bound, and delivered to the DEPARTMENT no later than the advertisement of the PROJECT for letting. The DEPARTMENT shall have the right to

use this material without restriction or limitation and without compensation to the LOCAL GOVERNMENT.

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

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

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

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

DEPARTMENT OF TRANSPORTATION

BY: _____
Commissioner

ATTEST: _____
Treasurer

CITY OF ROSWELL

BY: Kay D. Love
Name
Title City Administrator

Signed, sealed and delivered this 1st day of October, 2010, in the presence of:

Kathleen Baker
Witness

Betsy K. Branch
Notary Public

BETSY K BRANCH
NOTARY PUBLIC
MY COMMISSION EXPIRES FEBRUARY 17, 2014
FULTON COUNTY, GEORGIA

This Agreement approved by CITY OF ROSWELL, the 27th day of September, 2010.

Attest

Sue H. Creel, City Clerk
Name and Title

FEIN: 58-6000 655

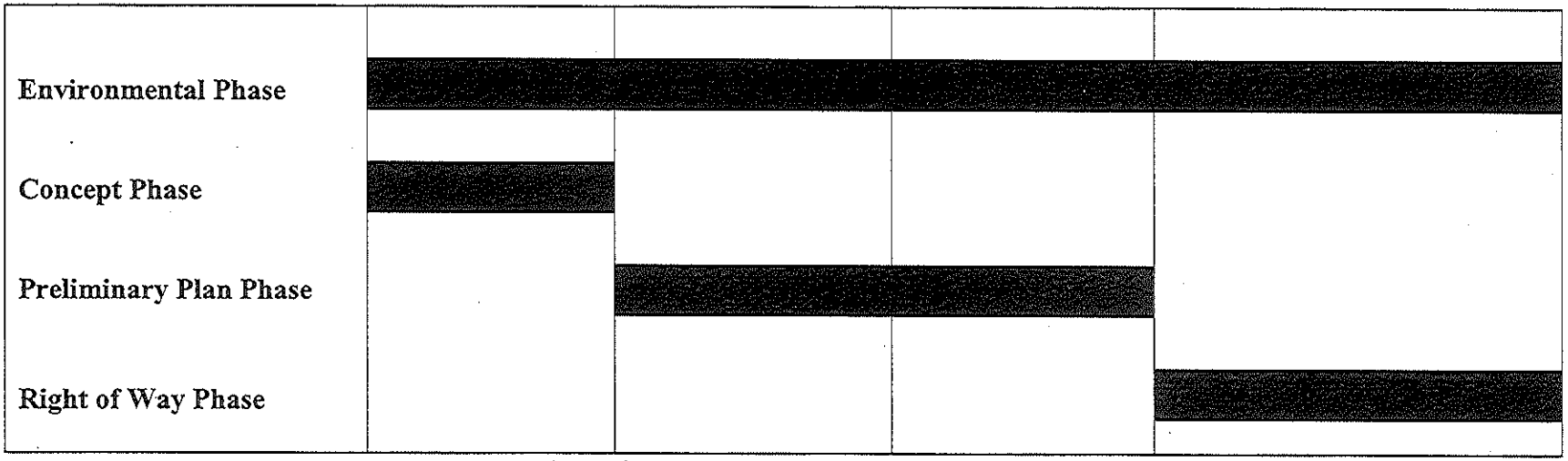
ATTACHMENT "A"
Project Number: 721010 – City of Roswell

Project	Preliminary Engineering		Right of Way			Construction		Utility Relocation	
(PI#, Project #, Description)	Funding	PE Activity by	*Funding of Real Property	Acq. by	Acq. Fund by	*Funding	Letting by	Utility Funding by	Railroad Funding by
P.I. # 721010 SR 9/Roswell fm Dunwoody Place to SR 120 in Roswell	(100%) Local Gov.	Local Gov.	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Note: Maximum allowable GDOT participating amounts for PE category shall be shown above. Local Government will only be reimbursed the percentage of the accrued invoiced amounts up to but not to exceed the maximum amount indicated. *R/W and Construction amounts shown are estimates for budget planning purposes only.

ATTACHMENT "B"
721010 – City of Roswell

Proposed Project Schedule



Deadlines for Responsible Parties	Execute Agreement	Nov 2012 Month/Year (Approve Concept)	Nov 2013 Month/Year (Approve Env. Document)	July 2014 Month/Year (Authorize Right of Way funds)	Dec 2016 Month/Year (Authorize Const. funds)

Annual Reporting Requirements

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

ROSWELL
GEORGIA
SINCE 1854

October 9, 2012

Mr. Derrick Brown
Georgia Department of Transportation – Program Delivery
One Georgia Center
600 West Peachtree Street, NW
25th Floor
Atlanta, GA 30308

Subject: SR 9 (Atlanta Street) Reversible Lane Removal and Widening (PI 721010)

Dear Derrick:

The City of Roswell will commit to funding the Energy, Operations and Maintenance costs of the installed lighting system. We are currently in the process of investigating alternative light bulbs including LED's and CFL's for this project and several others in order to reduce future operating costs.

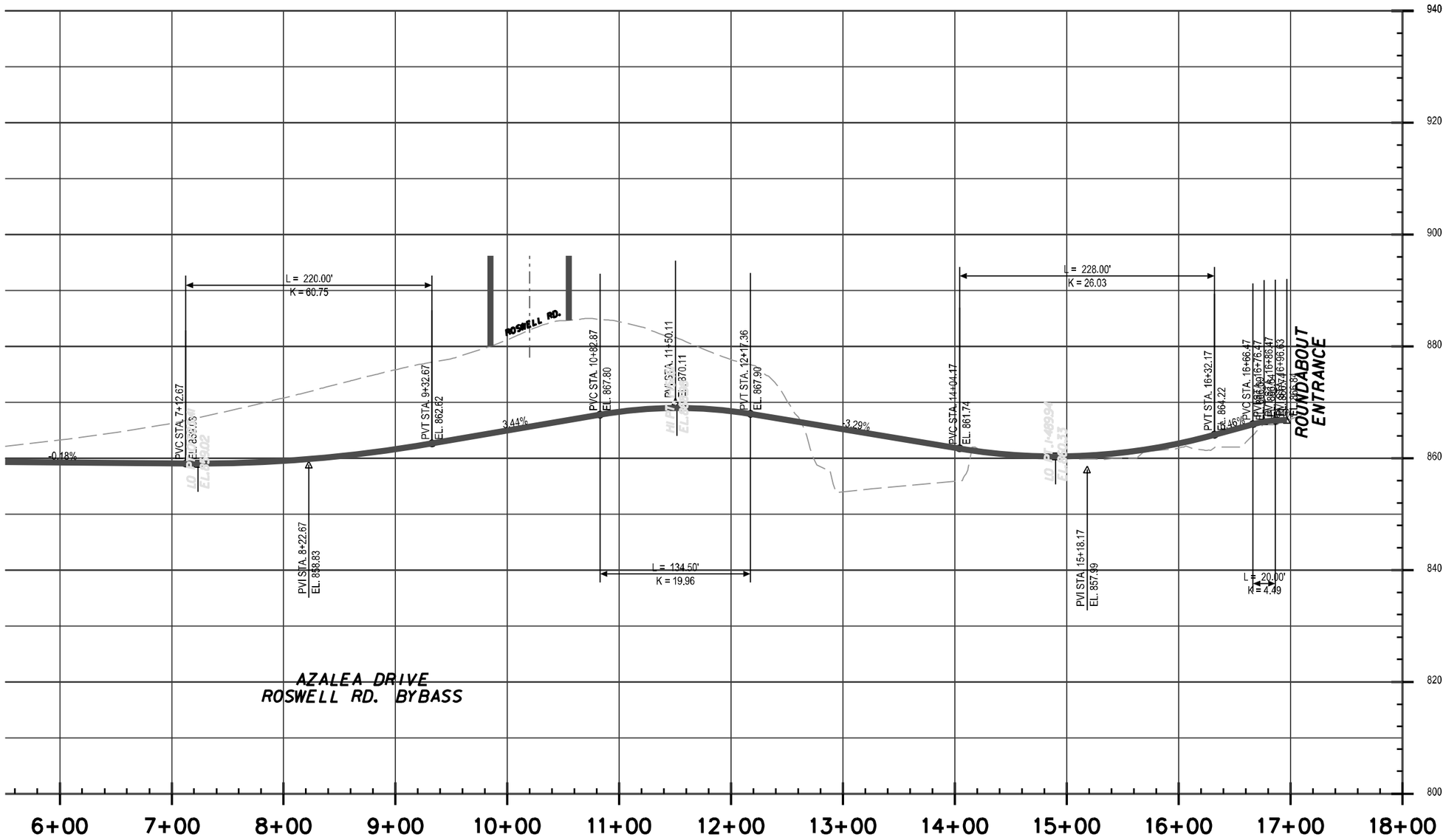
If you need any additional information, please contact Rob Dell-Ross (770-594-6292) or myself (770-594-6421).

Sincerely,

Steven D. Acenbrak, P.E., LEED AP
Director of Transportation

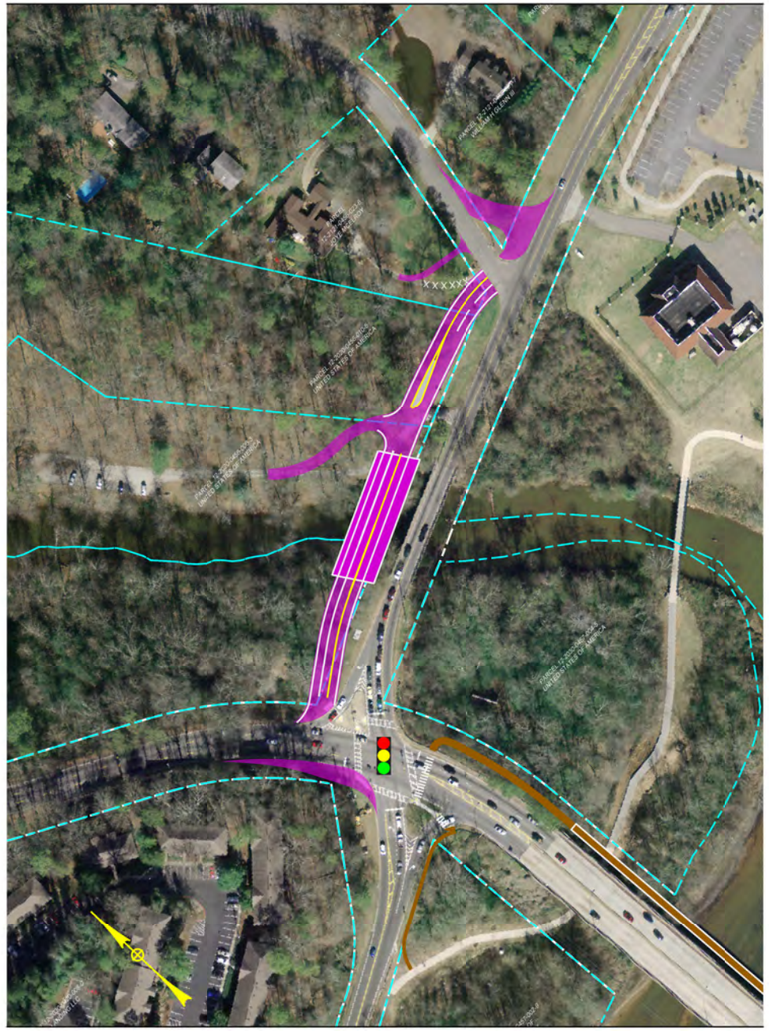
Attachment A-14: Other Reference Items

1. SR 9 / Riverside interchange and bridge profiles and construction sequencing
2. Photosimulation of proposed Chattahoochee / King Roundabout
3. Photosimulation of proposed Riverside/Azalea Interchange with SR 9
4. Photosimulation of proposed narrow median corridor
5. E-mail confirmation from GDOT Planning study area is in CBD
6. MS4 Preliminary Investigation Sites

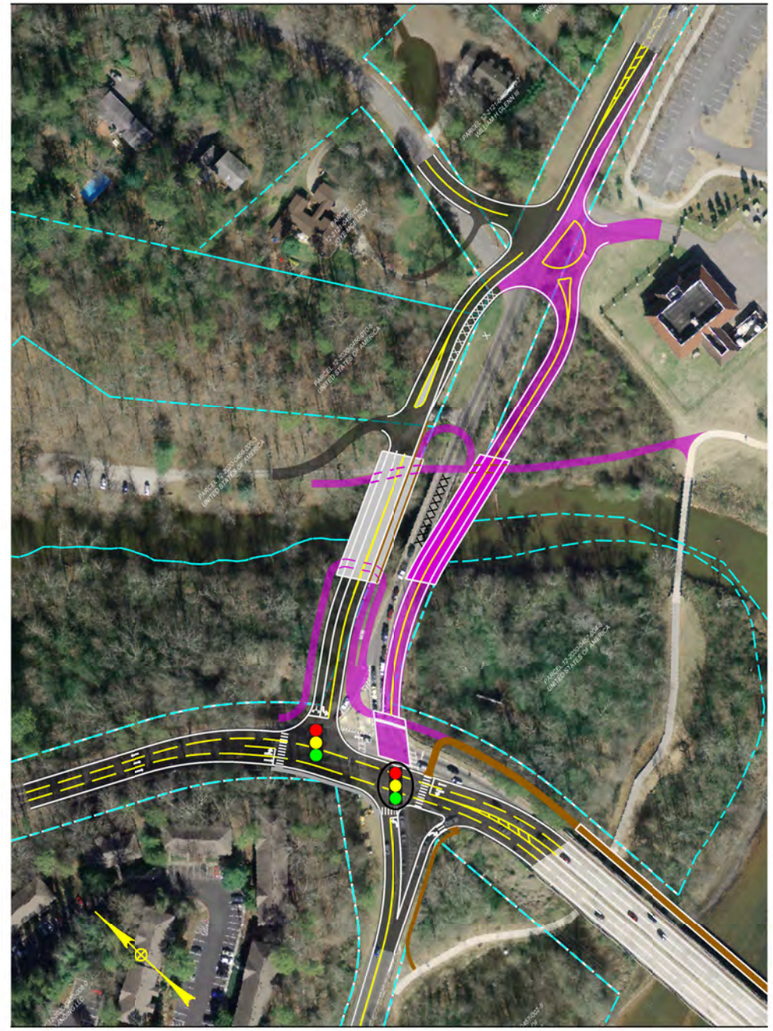

940
920
900
880
860
840
820
800
L = 220.00'
K = 60.75
ROSWELL RD.
PVC STA. 7+12.67
EL. 852.13
PVT STA. 9+32.67
EL. 862.62
PVC STA. 10+82.87
EL. 867.80
PVT STA. 12+17.36
EL. 867.90
PVC STA. 14+04.47
EL. 861.74
PVT STA. 16+32.17
EL. 864.22
PVC STA. 16+66.47
EL. 863.16
PVT STA. 16+76.47
EL. 863.16
PVT STA. 16+86.47
EL. 863.16
PVT STA. 16+96.63
EL. 863.16
PVT STA. 16+96.83
EL. 863.16
-0.18%
3.44%
-3.29%
-3.46%
L = 228.00'
K = 26.03
ROUNDABOUT
ENTRANCE
PVI STA. 8+22.67
EL. 858.83
L = 134.50'
K = 19.96
PVI STA. 15+18.17
EL. 857.99
L = 20.00'
K = 4.49
AZALEA DRIVE
ROSWELL RD. BYBASS
6+00
7+00
8+00
9+00
10+00
11+00
12+00
13+00
14+00
15+00
16+00
17+00
18+00

RIVERSIDE/AZALEA INTERCHANGE CONSTRUCTION SEQUENCING

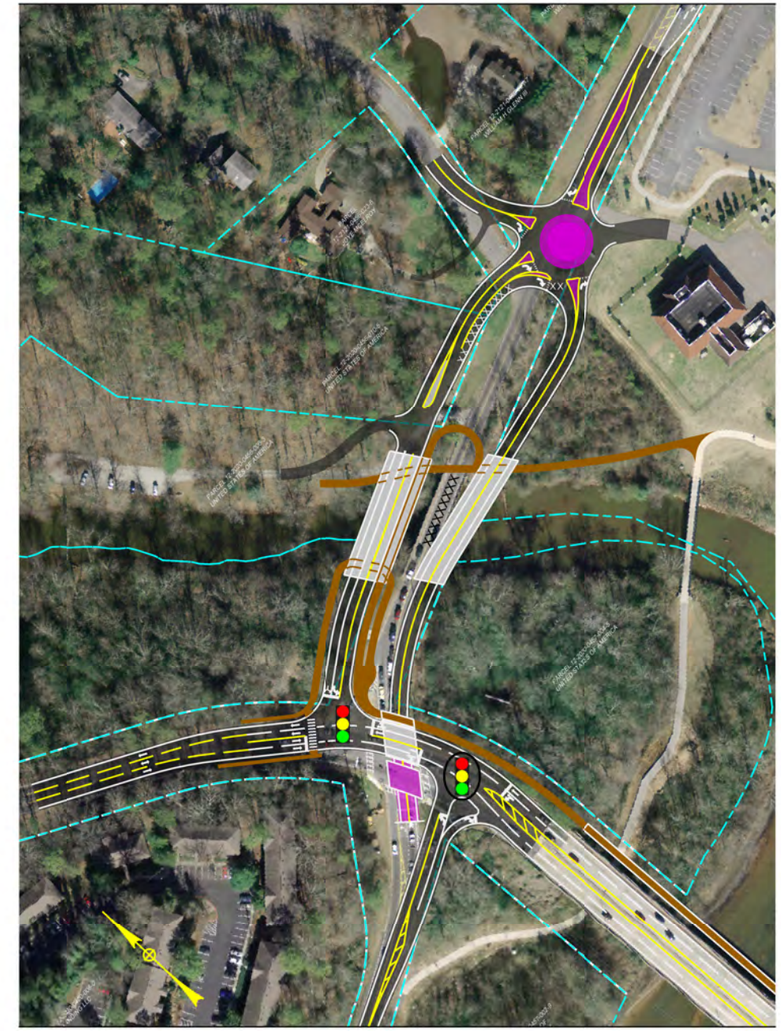
CONSTRUCTION SEQUENCE STAGE 1



CONSTRUCTION SEQUENCE STAGE 2



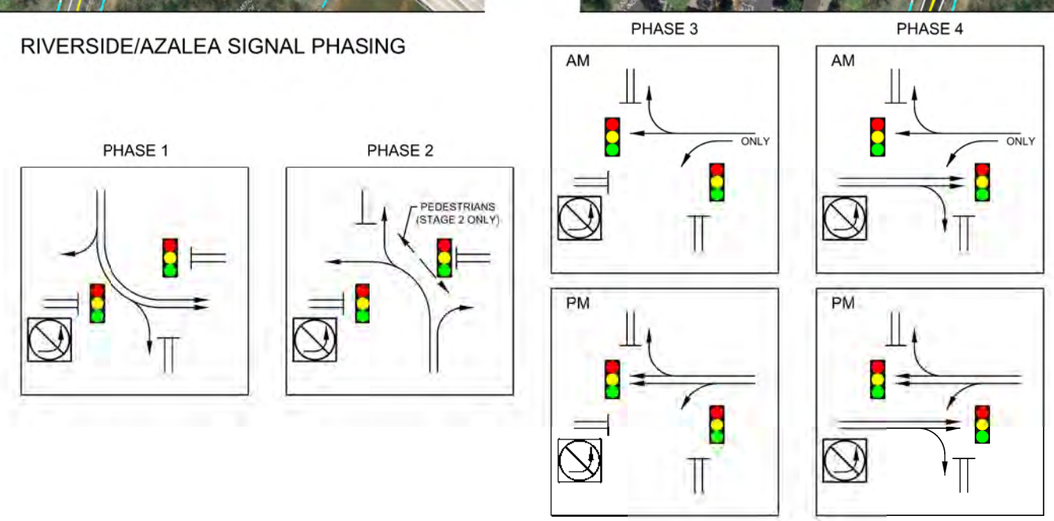
CONSTRUCTION SEQUENCE STAGE 3



LEGEND

- ROADWAY/PATH CONSTRUCTED DURING THIS PHASE
- EXISTING ROADWAY/PATH
- ROW/PROPERTY LINES
- PERMANENT TRAFFIC SIGNAL
- TEMPORARY TRAFFIC SIGNAL

RIVERSIDE/AZALEA SIGNAL PHASING



SR9 at King/Chattahoochee: Existing Conditions (left) and Proposed Roundabout (right)

Concept for Riverside Road / Azalea Drive Interchange with SR 9

Conditions before (top) and after (bottom) northern corridor section construction of four-lane divided roadway with narrow median

Reid, Jonathan

Subject: FW: SR 9 Follow up

From: Biagi, Davie [mailto:dbiagi@dot.ga.gov]
Sent: Thursday, August 30, 2012 7:44 AM
To: O'Brien, Mickey
Subject: RE: SR 9 Follow up

This would be considered a streetscape project with trees. You can use the 4 foot from the face of the curb setback.

Davie Biagi, A.S.L.A., PLA
Georgia Department of Transportation
Landscape Architect 2, Maintenance Division

General Office
One Georgia Center-10th Floor
600 West Peachtree Street NW
Atlanta, GA 30308

404-631-1399
fax: 404-631-1932

From: O'Brien, Mickey [mailto:mickey.obrien@urs.com]
Sent: Wednesday, August 29, 2012 4:13 PM
To: Biagi, Davie
Subject: Re: SR 9 Follow up

Davie,

Per our discussion, attached you will find an aerial I marked up with the existing zoning, a master plan for the area, a cross section and a section of the existing "transects" of the road. Our cross section applies to the mixed use transect character area shown on the transect section.

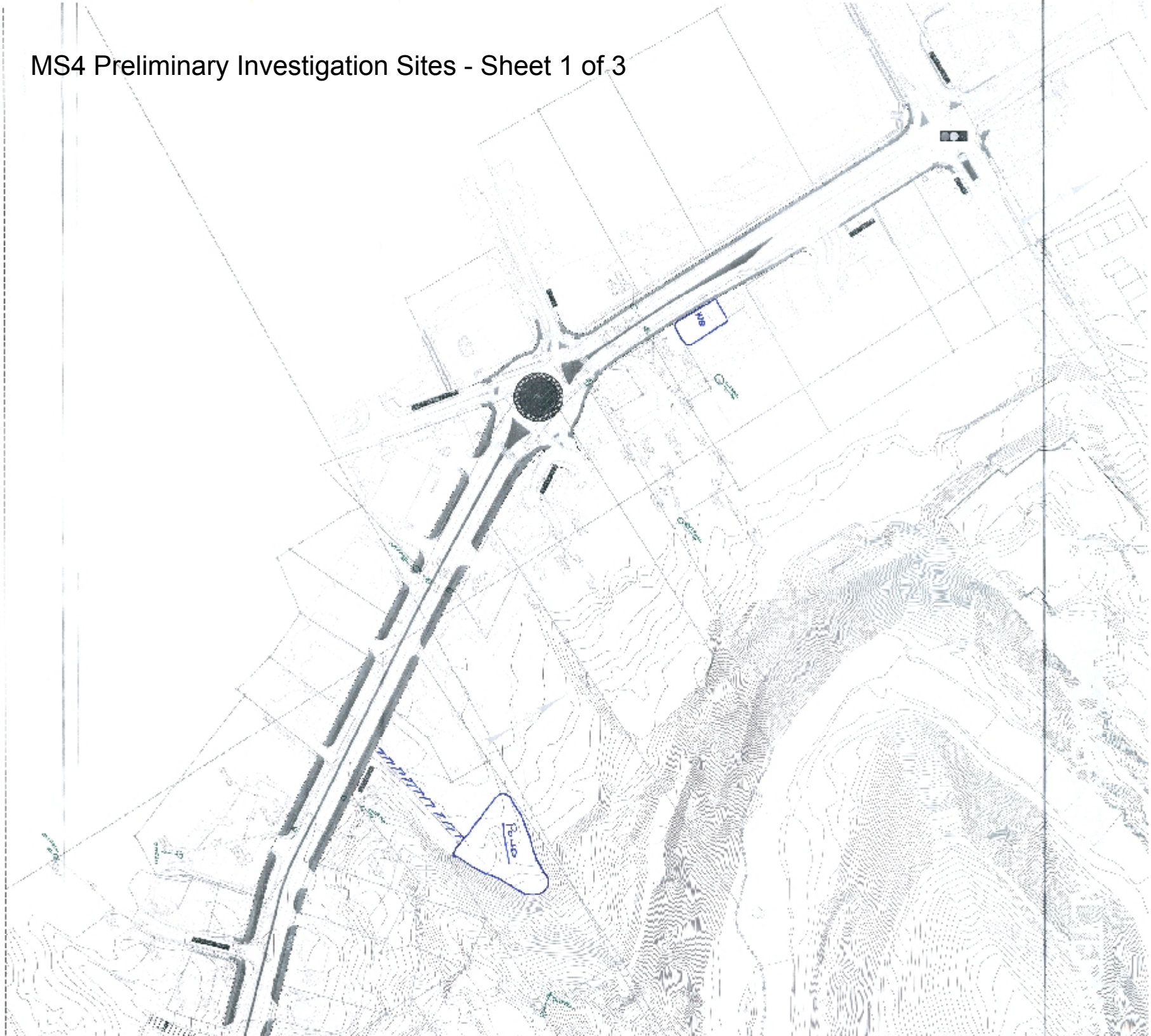
Please let me know if you need additional information or clarification. This project is located in the City of Roswell.
A Concept Report will be submitted in October so I wanted to proactive on the issue. The City advised us to do whatever it takes to get large shade trees associated with the project.

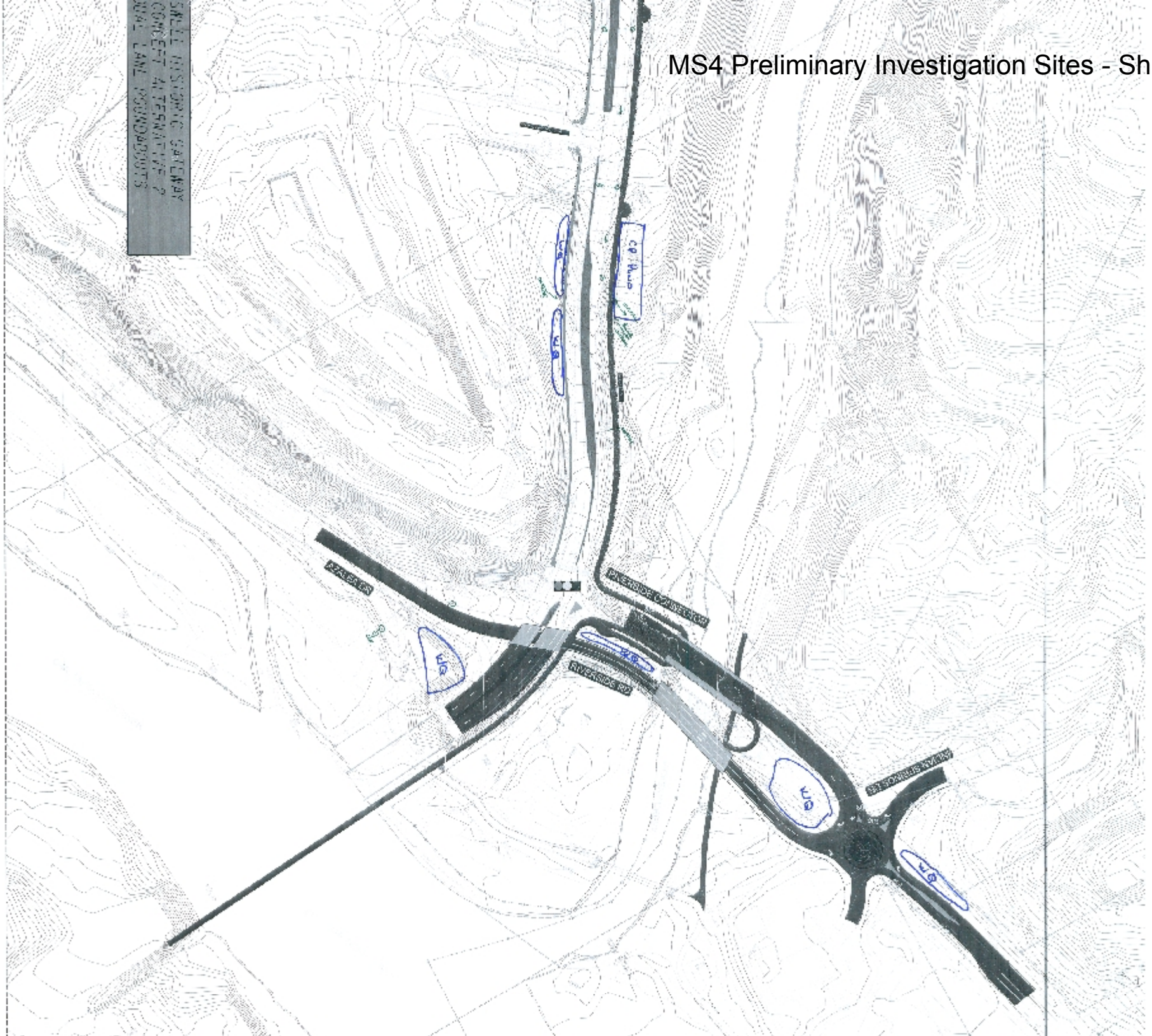
Thank you!

Mickey O'Brien, RLA, LEED AP BD+C
Senior Landscape Architect

URS - Infrastructure and Environment
O: (678) 808-8884 ‖ M: (404) 271-1879
Please consider the environment before printing this e-mail
Please note my email address has changed to:
mickey.obrien@urs.com

MS4 Preliminary Investigation Sites - Sheet 1 of 3



MS4 Preliminary Investigation Sites - Sheet 2 of 3

MS4 Preliminary Investigation Sites - Sheet 3 of 3