

**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA**

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

FILE P.I. # 0011639 **OFFICE** Design Policy & Support
Gwinnett County
GDOT District 1 - Gainesville **DATE** 11/10/2014
Bike/Ped Facility: SR 13 from McGinnis
Ferry Road to George Pierce Park

FROM  for Brent Story, State Design Policy Engineer

TO SEE DISTRIBUTION

SUBJECT APPROVED CONCEPT REPORT

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

Attachment

DISTRIBUTION:

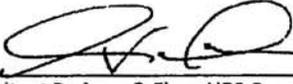
Glenn Bowman, Director of Engineering
Joe Carpenter, Director of P3/Program Delivery
Genetha Rice-Singleton, Assistant Director of P3/Program Delivery
Bobby Hilliard, Program Control Administrator
Albert Shelby, State Program Delivery Engineer
Cindy VanDyke, State Transportation Planning Administrator
Hiral Patel, State Environmental 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
Mike Bolden, State Utilities Engineer
Richard Cobb, Statewide Location Bureau
Katelyn Digioia, State Pedestrian and Bicycle Coordinator
Brent Cook, District Engineer
Neil Kantner, District Utilities Engineer
Kathe Ahmed, Project Manager
BOARD MEMBER - 7th Congressional District

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

Project Type: <u>Bicycle/Ped Facility</u>	P.I. Number: <u>0011639</u>
GDOT District: <u>1</u>	County: <u>Gwinnett</u>
Federal Route Number: <u>US 19</u>	State Route Number: <u>13</u>
Project Number: _____	<u>N/A</u>

The project will provide sidewalk and bicycle connectivity along SR 13 from McGinnis Ferry Road to George Pierce Park in Gwinnett County, Georgia. A roundabout located at the intersection of Russell Street and Buford Highway is also proposed. This project is not a vehicular capacity improvement project.

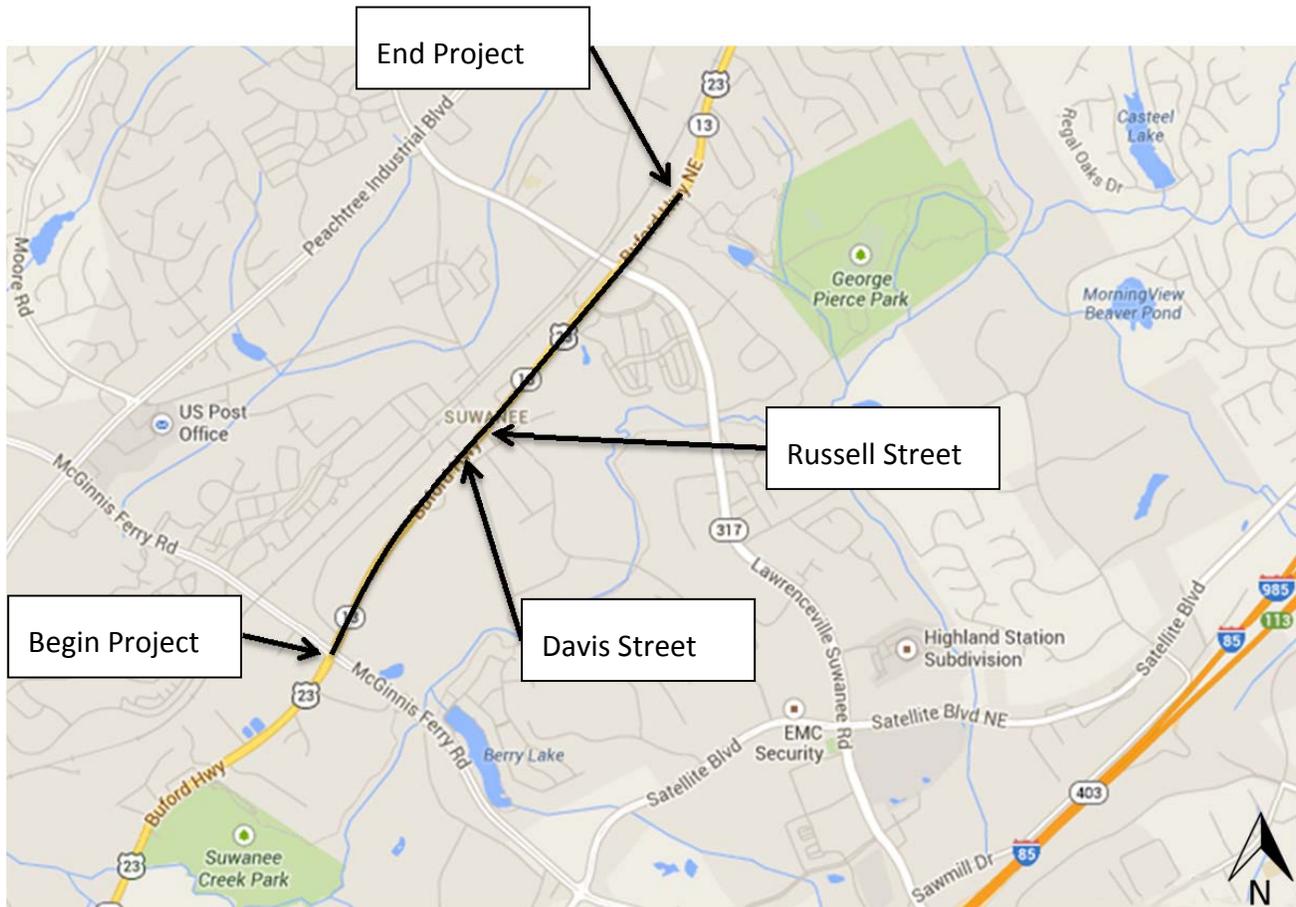
Submitted for approval:

 SEAN PHARR Consultant Designer & Firm, URS Corporation	AUGUST 5, 2014 Date
 Matthew D. Kilian Local Government Sponsor, City of Suwanee	8/5/14 Date
 Albert Shelby State Program Delivery Engineer	8/14/14 Date
 Kathe Ahmed GDOT Project Manager	8/5/14 Date
Recommendation for approval:	
Program Control Administrator Hiral Patel*	Date 08/27/2014
State Environmental Administrator	Date
State Traffic Engineer Lisa Myers*	Date 08/22/2014
Project Review Engineer Jun Birnkammer*	Date 08/26/2014
for State Utilities Engineer David Olson*	Date 08/22/2014
District Traffic Engineer Ben Rabun*	Date 08/22/2014
State Bridge Engineer	Date
State Transportation Financial Management Administrator	Date
The concept as presented herein and submitted for approval is consistent with that which is included in the Regional Transportation Plan (RTP) and/or the State Transportation Improvement Program (STIP).	
Cynthia L. VanDyke*	08/25/2014
State Transportation Planning Administrator	Date

* Recommendations on file

County: Gwinnett

PROJECT LOCATION MAP



SR 13/Buford Highway from McGinnis Ferry Rd to the entrance of George Pierce Park.

Gwinnett County

P.I. No. 0011639

County: Gwinnett

PLANNING AND BACKGROUND

Project Justification Statement:

The project justification statement has been prepared by URS Corporation. State Route 13/Buford Highway lacks sidewalk connectivity, bicycle facilities and multiuse paths. The primary need of the proposed improvements is to provide a complete street with context sensitive cross sections from McGinnis Ferry Road to George Pierce Park.

The project was identified through the Atlanta Regional Commissions' Livable Centers Initiative and its currently programmed funding source is M230. The need for a context sensitive complete street project was developed through The 2010 Buford Highway Transportation Study.

Multiple planning documents, including the Gwinnett Unified Plan and the Downtown Suwanee Master Plan, have identify the need to provide sidewalk and bicycle connectivity from the intersection of Buford Highway and Russell Street to Lawrenceville Suwanee Road. The proposed improvements along Buford Highway will accommodate alternative transportation modes that will enhance bicycle and sidewalk LOS and may mitigate accident frequency and severity by reducing travel speeds. The proposed pedestrian accommodations will be on both sides of Buford Highway north of Davis Street providing residents access to the city hall, commercial district, and George Pierce Park. The proposed roundabout at Russell Street and Buford Highway is expected to help reduce travel speeds in this area. A total of 16 crashes were reported during the years 2011 to 2014 at the intersection of Russell Street and Buford Highway. Of these crashes, 6 were property damage only and 10 resulted in injury. Roundabouts have been demonstrated to reduce crash frequency and severity at intersections under certain traffic conditions and it is believed that a roundabout of Russell Street and Buford Highway will provide this benefit. The roundabout also provides a gateway opportunity that will be enhanced by streetscaping which includes landscaping, hardscaping and wide sidewalks.

Existing conditions:

Buford Highway currently consists of two 12 foot wide vehicle lanes with center turn lanes at the following intersections: George Pierce Park, Lawrenceville Suwanee Road/Suwanee Dam Road, Town Center Avenue, Private driveway into Shoppes at Olde Towne, Private driveway into Suwanee Office Park and McGinnis Ferry Road. Several deceleration lanes are also located along the corridor. A 10 foot wide sidewalk runs from the entrance of George Pierce Park to Lawrenceville Suwanee Road on the east side of Buford Highway (.26 mile). A five foot wide sidewalk runs from Lawrenceville Suwanee Road to the entrance to the Gwinnett Federal Credit Union along the west side of Buford Highway (.3 mile). A 5 foot wide sidewalk runs from Town Center Avenue to Chicago Street on the east side of Buford Highway (325 feet). A five foot wide sidewalk runs along the frontage of the Suwanee Office Park on the east side of Buford Highway (285 feet). Curb and gutter is provided where sidewalks exist and at the major intersections of McGinnis Ferry Road and Lawrenceville Suwanee Road/Suwanee Dam Road.

State Route 13/Buford Highway is currently a mixture of both a two lane rural section and urban section, and is classified as an urban minor arterial road. Suwanee's Town Center is the physical and symbolic heart of the community. This true mixed-use area is anchored by a 10-acre urban-style park, embodying Suwanee's vision for live, work, play and shop. The construction of Town Center has expanded Suwanee's Downtown area across Buford Highway.

Other projects in the area:

- 0002393 – Widening SR 13 from Sugarloaf Parkway to SR 20 in Buford – Funding is in long range
- M004880 – SR 13 From CR 3761/Old Peachtree Road to SR 20 – Letting is scheduled for October 2014.
- Pedestrian improvement upgrades along Buford Highway south of McGinnis Ferry Road.

MPO: Atlanta Regional Commission (ARC)

MPO Project ID: GW-380

Regional Commission: Atlanta Regional Commission

RC Project ID: GW-380

Congressional District(s): 7

Federal Oversight: Full Oversight Exempt State Funded Other

Projected Traffic: ADT

Current Year (2014): 14,970 Open Year (2018): 16,040 Design Year (2038): 21,400
 Traffic Projections Performed by: URS Corporation

Functional Classification (Mainline): Urban Minor Arterial Street

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

Warrants met: None Bicycle Pedestrian Transit

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

Pavement Evaluation and Recommendations

Preliminary Pavement Evaluation Summary Report Required? No Yes
 Preliminary Pavement Type Selection Report Required? No Yes
 Feasible Pavement Alternatives: HMA PCC HMA & PCC

This is a sidewalk and bicycle connectivity project, and as such does not require a Pavement Evaluation.

DESIGN AND STRUCTURAL

Description of the proposed project: This project proposes to provide bicycle and pedestrian accommodations on SR 13/Buford Highway from McGinnis Ferry Road to George Pierce Park in Gwinnett County.

Major Structures:

Structure	Existing	Proposed
4'X5' Culvert near White Street Park	This culvert is located about 1400' south of Davis Street under Buford Highway. It runs from White Street Park on the west side of Buford Highway to a privately owned parcel of land on the east side of Buford Highway.	Retain existing culvert.

County: Gwinnett

Mainline Design Features: SR 13/Buford Highway

Feature	Existing	Standard*	Proposed (McGinnis Ferry to Davis Street)	Proposed (Davis Street to George Pierce Park)
Typical Section				
- Number of Lanes	2	2	2	2
- Lane Width(s)	12'	10' to 12'	12'	11'
- Median Width & Type	N/A	N/A	N/A	14'-18' raised in areas
- Outside Shoulder or Border Area Width	Varies	8'	10' rural	12' min. urban
- Outside Shoulder Slope	6% max	4%	4%	4%
- Inside Shoulder Width	N/A	N/A	N/A	N/A
- Sidewalks	Intermittent 5' Sidewalks	5'	10' Multiuse Path	5'-8'
- Auxiliary Lanes	N/A	N/A	N/A	N/A
- Bike Lanes	None	4'	N/A	5'
Posted Speed	45mph	45mph	45mph	35mph
Design Speed	45mph	45mph	45mph	Corridor - 35mph Roundabout – 25 mph
Min Horizontal Curve Radius	643'	45 mph-643' 35 mph – 371'	643'	371'
Maximum Superelevation Rate	6% max	Suburban-6% max Urban-4% max	6% max	4% max
Maximum Grade	0.5% to 7%	0.5% to 7%	0.5% to 7%	0.5% to 7%
Access Control	Permitted	Permitted	Permitted	Permitted
Design Vehicle	WB 67	WB 67	WB 67	WB 67
Pavement Type	Asphalt	Asphalt	Asphalt	Asphalt

*According to current GDOT design policy if applicable

Major Intersections: SR 13 and McGinnis Ferry Road, SR 13 and Lawrenceville Suwannee Road, and SR 13 and George Pierce Park are all currently signalized intersections. A roundabout is proposed at Russell Street.

Lighting required: No Yes

Lighting is required at the Russell Street Roundabout. Commitment letter attached. Pedestrian lighting will be provided from Russell Street to Lawrenceville Suwannee Road.

Off-site Detours Anticipated: No Undetermined Yes

Off-site detour is not required for this project.

Transportation Management Plan [TMP] Required: No Yes

If Yes: Project classified as: Non-Significant Significant
 TMP Components Anticipated: TTC TO PI

County: Gwinnett

Design Exceptions to FHWA/AASHTO controlling criteria anticipated:

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

Design Variances to GDOT Standard Criteria anticipated:

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

VE Study anticipated: No Yes Completed – Date:

UTILITY AND PROPERTY

Temporary State Route needed: No Yes Undetermined

Railroad Involvement: The project will require a minimal level of involvement from Norfolk Southern who owns a rail line running parallel to Buford Highway. Anticipated impacts include interconnect modifications with the warning devices at Suwanee Dam Road. The corridor does not cross the railroad at any point and is separated from the railroad by at least 180 feet and at most 1200 feet. However, all plans will be submitted to Norfolk Southern for consideration.

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Utility Involvements:

- Georgia Power
- Atlanta Gas Light Resources
- AT&T/Distribution
- City of Suwanee
- Gwinnett County Department of Water Resources
- Charter Communications
- Jackson EMC
- Gwinnett County Department of Water Resources

SUE Required: No Yes Undetermined

Concept utility coordination is underway. A determination for needs of SUE is pending. The project is on a state route and is to be let by GDOT

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

Right-of-Way (ROW): Existing width: 100 ft Proposed width: 100-115 ft

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

Anticipated total number of impacted parcels:	39
Displacements anticipated:	
Businesses:	1
Residences:	0
Other:	0
Total Displacements:	1

Location and Design approval: Not Required Required

ROUNDBABOUTS

A Roundabout is proposed at the intersection of Russell Street and Buford Highway. Traffic on Russell Street is currently stop controlled, while traffic on SR 13/Buford Highway is uncontrolled. The traffic study, done by URS, shows that a 4-way single lane roundabout provides an adequate LOS. Incorporation of a roundabout will require minor widening and realignment of the roadway approaches.

Roundabout Lighting Agreement/Commitment Letter received: No Yes

A lighting agreement letter from the City of Suwanee is in the attachments.

Roundabout Planning Level Assessment:

Based upon URS’s evaluation, and a roundabout peer review, a roundabout is a feasible alternative for the intersection of SR 13 (Buford Highway) at Russell Road.

Roundabout Feasibility Study:

URS evaluated the proposed roundabout build alternative using two methodologies to provide a range of expected performance. The capacity models utilized include the Highway Capacity Manual (HCM) 2010 procedures and SIDRA Intersection (an Australian Software package). The use of the two models is intended to provide some perspective on the potential range of long-term performance of the roundabouts. The following is a summary of the recommended roundabout performance during the design years. More detailed information is provided in a separate Traffic

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report for the project. All analysis outputs, turning movement volumes, and other documentation are also provided in the separate Transportation Analysis report.

Analysis Methodology	SIDRA Intersection			HCM 2010		
	Volume to Capacity Ratio	Approach Delay (sec/veh)	95th Percentile Queue (veh)	Volume to Capacity Ratio	Approach Delay (sec/veh)	95th Percentile Queue (veh)
AM Peak Hour						
Eastbound	0.283	12.3	2.0	0.344	16.2	1.2
Westbound	0.076	5.3	0.4	0.108	7.7	0.3
Northbound	0.405	6.5	3.1	0.564	11.3	3.4
Southbound	0.726	12.3	9.4	1.072	69.9	89.0
PM Peak Hour						
Eastbound	0.130	7.2	0.7	0.171	9.9	0.5
Westbound	0.519	31.4	4.7	0.369	17.9	1.3
Northbound	0.851	19.0	17.2	0.854	27.1	11.2
Southbound	0.632	11.3	6.0	1.245	135.5	134.7

Roundabout Peer Review Required: No Yes Completed – Date: 7/17/2014

A roundabout peer review was performed by Kittleson and Associates, Inc. The full report is attached. The results of this peer review indicate a single lane roundabout may be reasonable for the 2038 design year. The roundabout provides appropriate speed control and design vehicle accommodations, and there are minor suggestions regarding further refinement, which will be incorporated as part of the design. The roundabout has a “z” crosswalk design on all entries and a straight crossing alignment would be sufficient for this simple single-lane roundabout configuration. During the concept team meeting, the “z” crosswalk designs were preferred because they allow more storage area for cyclists, so they have been retained as a part of the design.

CONTEXT SENSITIVE SOLUTIONS

Issues of Concern:

Potential environmental and cultural resource impacts on the project corridor include the following:

- 1) Impacts to Waters of the United States
- 2) Impacts to stream buffers
- 3) Impacts to Section 4(f) properties
- 4) Impacts to Historic properties

The Gwinnett County Unified Plan (GCUP) shares the stated value of minimizing impacts to the above listed resources.

Additionally the GCUP expresses the goal to create pedestrian and bicycle friendly transportation facilities around the downtown center of Suwanee, where they could potentially have great benefit. The GCUP also pointed out that on street parking in Suwanee would help to make the city a more liveable community.

Gwinnett County must comply with the Atlanta Metropolitan Planning Organization (Atlanta Regional Commission-ARC) regarding transportation planning and clean-air standards. Because

County: Gwinnett

this project involves state and federal funding, it must be included in the ARC's Regional Plan and Transportation Improvement Program. Gwinnett County also participates in the ARC's Regional Plan update process. Gwinnett County is within the Metropolitan Region for Developments of Regional Impact (DRI). Therefore, Metropolitan standards apply to all projects in Gwinnett.

Gwinnett County is defined as a "MS4 Permitted Area" under the NPDES GDOT MS4 Permit (Permit). This Permit regulates new and existing point source discharges of stormwater from roadways and facilities owned and/or operated by GDOT to waters of the State of Georgia. This project, therefore, must comply with the Permit requirement to install structural post-construction stormwater BMPs.

As many residences and subdivisions are accessed from SR 13 along the project segment, construction staging must be done such that access is maintained for residents and residents are informed regarding changes to their access.

Context Sensitive Solutions Proposed:

Project stakeholders will be engaged at key milestones throughout the life of the project in compliance with the GDOT's public meeting process.

Below are the proposed context-sensitive solutions for the issues discussed above:

Issue: Create pedestrian and bicycle friendly transportation facilities.

Solution: This project proposes to provide bicycle and pedestrian accommodations on SR 13/Buford Highway from McGinnis Ferry Road to George Pierce Park in Gwinnett County.

Issue: Suwanee has a goal of attracting industry, businesses, and retail development to the city.

Solution: Providing multiuse paths, bike lanes, sidewalks, and on street parking would help to increase accessibility to commercial areas along this corridor.

Issue: The city of Suwanee desires to establish a clear and specific community identity in promoting economic development.

Solution: This roadway improvement, directly adjacent to the town center, and the old town village will add to the ambience of the existing vibrant town center by providing on street parking, landscaping, wide sidewalks, and pedestrian lighting. The roundabout will help add to this atmosphere by providing a gateway into the area.

Issue: Minimize impacts to environmentally sensitive areas (ESAs) and to historically significant structures/areas (Section 4(f) Resources). Protect the natural systems by managing erosion, sedimentation, and stormwater runoff.

Solution: The preferred alignment minimizes project impacts to ESAs and Section 4(f) resources. Temporary structural and vegetative erosion measures and permanent infiltration trenches will be installed to protect downstream areas from sedimentation, pollution, or flooding that could result from roadway runoff. Enhanced swales and infiltration trenches will also be installed to provide water quality treatment and channel protection.

Issue: Preserve greenspace and create an interconnected greenspace program including walking trails, bike trails, historical sites, and provide connectivity to local trail systems.

Solution: Wide sidewalks and bike lanes north of Russell Street Street and the multiuse path south of Russell Street will improve connectivity of the community to Town Center Park, George Pierce Park, and shopping along the corridor. By way of the existing multiuse trail on McGinnis Ferry Road, this project will increase accessibility to Suwanee’s Greenway Multiuse Trail. This project’s hardscaping and landscaping along the corridor will also help the road to have a park like atmosphere.

Issue: The project must comply with the Atlanta Metropolitan Planning Organization (AMPO)/Atlanta Regional Commission (ARC) regarding transportation planning and clean-air standards

Solution: The project will comply with AMPO transportation planning and clean-air standards.

Issue: This project must comply with the NPDES GDOT MS4 Permit requirement to install post-construction stormwater BMPs.

Solution: Enhanced swales and infiltration trenches are proposed as structural post construction stormwater BMPs at the concept planning level to meet this requirement. More detailed designs of the BMPs will be developed during the PFPR phase of the project to meet MS4 requirements.

ENVIRONMENTAL & PERMITS

Anticipated Environmental Document:

GEPA: NEPA: CE EA/FONSI EIS

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

See the Post-Construction Stormwater Report in the attachments.

Environmental Permits/Variations/Commitments/Coordination anticipated:

Permit/ Variance/ Commitment/ Coordination Anticipated	No	Yes	Remarks
1. U.S. Coast Guard Permit	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. Forest Service/Corps Land	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3. CWA Section 404 Permit	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
4. Tennessee Valley Authority Permit	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5. Buffer Variance	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
6. Coastal Zone Management Coordination	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
7. NPDES	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
8. FEMA	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
9. Cemetery Permit	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
10. Other Permits	<input checked="" type="checkbox"/>	<input type="checkbox"/>	None known
11. Other Commitments	<input checked="" type="checkbox"/>	<input type="checkbox"/>	None known
12. Other Coordination	<input checked="" type="checkbox"/>	<input type="checkbox"/>	None known

Is a PAR required? No Yes Completed – Date:

Environmental Comments and Information:

At most, only minor project-related impacts to environmental resources (e.g., historic resources, jurisdictional waters of the U.S., etc.) are anticipated. Buford Highway exists within a 100' wide right-of-way which generally accommodates the proposed improvements. The project does cross through the City's historic Old Town area, and will be designed to minimize impacts to any properties listed on the state or national register of historic places or any similarly listed historic districts or sites. The City anticipates that this project will require a Categorical Exclusion which will be supported by history, archaeology and ecology studies, assessments of effects (if applicable), and air and noise screenings. These will be prepared by URS.

NEPA/GEPA: As a trail/sidewalk project and intersection upgrade, this project should qualify as a categorical exclusion. The most significant NEPA concern appears to be the Section 4(f) protected resources within the project area of potential effect. These consist of three publicly owned parks (White Street Park, Town Center Park and George Pierce Park), as many as 21 potentially eligible historic structures and Old Suwanee Cemetery. We anticipate that any takes from parks will be minor and will be consistent with current park use; therefore, de minimis 4(f) should apply. With regard to historic resources, designers should take care to minimize impacts in order to avoid the need for a full 4(f) evaluation.

Ecology: A full ecology study will be required, consisting of waters delineations, protected species/habitat assessments, and an invasive species assessment. USFWS has indicated that a protected bat survey will not be required for this project. Based on background research and a site visit, there are several jurisdiction waters in the project area. Furthermore, there are 12 federally and/or state protected species listed for Gwinnett County.

History: There is no previously recorded historic resource for the project area listed in the NRHP or the 2005 DNR Gwinnett County survey. However, review of the Gwinnett County Tax Assessor's website and a site visit revealed as many as 21 properties 50 years old or older. Furthermore, Old Suwanee Cemetery is adjacent to the corridor at the intersection of Suwanee Dam Road and Buford Hwy. Eligibility determinations for these resources are required. It is likely that some of these resources will be found eligible for the NRHP. Avoidance and/or minimization of impacts to eligible resources is recommended to avoid the need for a full 4(f) evaluation (see NEPA/GEPA section above).

Archaeology: The Old Suwanee Cemetery is within the project's area of potential effect; avoidance of this resource is recommended. Furthermore, there are previously recorded archaeological sites listed within a mile of the project area. However, because of the low-impact nature of the project and the fact that the project will be constructed largely within existing right-of-way, it is unlikely that proposed improvements will impact significant archaeological resources.

County: Gwinnett

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

This project will not add capacity, nor will it signalize intersections; therefore, carbon monoxide modeling is not possible. The proposed project is a type not anticipated to be a cause for air quality concern. A qualitative air quality analysis should satisfy this requirement.

Noise Effects: The project should qualify as a Type III action; the need for noise modeling and mitigation is not anticipated.

Public Involvement:

Two previous public involvement meetings were held on 2-25-2010 and 3-18-2010. A summary of both of these public meetings can be found in attachment 14.

The results of the 2-25-2010 meeting were 100% of participants stating that the preferred design alternative is visually and aesthetically pleasing. Also the responses indicated that the preferred design alternative for Buford Highway—retaining the two-lane cross section and basing the design of the corridor on a transect from rural to historic to town center— provides vehicular (60 percent), pedestrian (91 percent) and bicyclist (86 percent) safety while retaining the unique character of the City of Suwanee (95 percent). The element of the preferred design alternative that was least liked by respondents was the reduction or limitation of traffic flow (due to retaining the current two-lane cross section). However, tree cover, pedestrian access (sidewalks) and bicycle lanes were all listed as elements liked the most by respondents.

The results of the 3-18-2010 meeting were that a number of attendees supported the roundabout concept at Buford Highway and Russell Street. Concerns were expressed about the addition of medians in the Town Center section and whether it would affect property access and close existing driveways. Some attendees commented that they did not think the recommended design would adequately handle the growth in traffic demands over time and traffic will have to take alternate routes. Others cited a reduced speed limit as a concern in that it would reduce traffic volumes on Buford Highway. Some attendees indicated that they were concerned about being able to safely enter and exit their property located on Buford Highway. Several attendees indicated general support for the concept for Buford Highway.

Two additional public meetings will be held. A public information open house meeting will be held during preliminary design and a public workshop meeting will be held prior to right of way acquisition.

Major stakeholders:

Travelling Public, City of Suwanee, GDOT, ARC, Gwinnett County, City of Duluth and Norfolk Southern Railroad.

County: Gwinnett

CONSTRUCTION**Issues potentially affecting constructability/construction schedule:** None**Early Completion Incentives recommended for consideration:** No Yes**COORDINATION, ACTIVITIES, RESPONSIBILITIES, AND COSTS****Coordination Meeting with District 1 Staff:**

Held on 6/11/2014. See attached meeting minutes.

Concept Team Meeting:

Held on 7/18/2014. See attached meeting minutes.

Other coordination to date:

The City has held multiple coordination meetings to discuss the project. Two transportation coordination meetings were held as part of the Buford Highway Transportation Study process. Representatives from the following agencies were invited to participate: Atlanta Regional Commission, City of Suwanee Public Works, Georgia Department of Transportation District 1 Engineers and Office of Program Delivery, City of Duluth, Gwinnett County Department of Transportation and Norfolk Southern. An initial meeting held in November of 2009 was scheduled to discuss the future needs and potential improvements to Buford Highway. The Buford Highway Transportation Study purpose, background and initial study findings were discussed in detail. A second transportation coordination meeting was held in March 2010 to discuss potential strategies for the study. Potential strategies discussed included:

- Petitioning for reduced speed limit
- Working with GDOT to implement a context-sensitive road design
- Moving the state and federal route designation to another route

Short-term and long-term operations and safety projects along with future roadway and design alternatives were also discussed during the meeting. The minutes from both transportation coordination meetings are attached (See attachment G of the LCI Scoping Study, attachment 1). City officials and staff also held an additional meeting, near the end of the plan development, with Georgia DOT officials in order to establish support for the plan from state DOT officials.

More recently, the City hosted a scoping study meeting in February 2012 that involved representatives from the Atlanta Regional Commission, Georgia DOT and City staff (See meeting minutes in attachment E of the LCI scoping study, attachment 1). Representatives from Gwinnett DOT and Norfolk Southern were also invited to attend. During the meeting, staff discussed the recommendations, traffic study and preferred alternative for Buford Highway from the Buford Highway Transportation Study. Staff received input regarding the scoping study process and Georgia DOT requirements. The minutes from this meeting are attached.

County: Gwinnett

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

Project Cost Estimate Summary and Funding Responsibilities:

	Breakdown of PE	ROW	Reimbursable Utility	CST*	Environmental Mitigation	Total Cost
Funded By	GDOT/City	City	City	GDOT/City	City	
\$ Amount	\$375,000.00 /\$86,381.51	\$1,843,000.00	\$970,000.00	\$3,745,288.00/ \$1,926,435.16	\$25,500	\$8,971,604.67
Date of Estimate	12/17/2013	6/19/2014	7/25/2014	7/3/2014	7/28/2014	

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

ALTERNATIVES DISCUSSION

Alternative selection:

Multiple alternatives were evaluated. The first alternative is also the preferred alternative. From McGinnis Ferry Road to Davis Street the typical widens the rural shoulder on the east side of the road to the standard 10-ft and includes a ditch, a 10-ft multiuse path, and 2:1 slopes or walls in high cuts. In this area, there are also streams and wetlands in the fill areas, and the multiuse path will be put on a boardwalk in these areas to minimize environmental impacts. The roadway typical from Davis Street to Chicago Street consists of 3 lane section with a flush median, and on-street parking. The pedestrian and cyclist accommodations consist of a 10-ft multiuse trail south of Russell Street and 8-ft sidewalks along with 5-ft bike lanes north of Russell Street. The typical from Chicago Street to Lawrenceville-Suwanee Road consists of 2 lane section with a raised median, 5-ft bike lanes, and 8-ft sidewalks. The typical from Lawrenceville-Suwanee Road to George Pierce Park consists of 2 lane section, 5-ft bike lanes, and an 8-ft sidewalk on the east side of the road. Auxiliary lanes are provided throughout the corridor as required.

The second alternative retains the same typical section as the first alternative from McGinnis Ferry Road to Davis Street. North of Davis Street, instead of bike lanes, a cycle track was evaluated. The typical from Davis Street to Chicago Street uses a 3 lane section with a flush median, on street parking, a 10-ft cycle track on the east side of the road, and 8-ft sidewalks. The typical from Chicago Street to Lawrenceville-Suwanee Road uses a 2 lane section with a raised median, a 10-ft cycle track on the east side of the road, and 8-ft sidewalks. The typical from Lawrenceville-Suwanee Road to George Pierce Park uses a 2 lane section and a 10-ft multiuse path on the east side of the road. Auxiliary lanes are provided throughout the corridor as required.

County: Gwinnett

The third alternative retains the same typical sections as the first alternative from Davis Street to George Pierce Park. This alternative, from McGinnis Ferry Road to Davis Street would extend the urban corridor from Davis Street to McGinnis Ferry Road. The typical section uses a two lane section, curb and gutter, a 5 foot landscaped area, a 10 foot multiuse trail on the east side of the road and a 5 foot sidewalk on the west side of the road. This alternative increases cost by requiring urban drainage and by requiring construction on both sides of the road. This alternative would also likely raise utility costs by placing urban drainage systems in the existing shoulder.

Alternative 1: Rural shoulders and multiuse path south of Davis Street. Multiuse path and sidewalks from Davis Street to north of Russell Street. Bike lanes and sidewalks north of Russell Street.			
Estimated Property Impacts:	40	Estimated Total Cost:	\$8,971,604.67
Estimated ROW Cost:	\$1,843,000.00	Estimated CST Time:	2 years
Rationale: This is the preferred alternative because construction costs are reduced and environmental impacts are minimized.			

Alternative 2: Rural shoulders and multiuse path south of Davis Street. Cycle track north of Davis Street.			
Estimated Property Impacts:	40	Estimated Total Cost:	\$9,375,000.00
Estimated ROW Cost:	\$2,188,000.00	Estimated CST Time:	2 years
Rationale: This alternative would require chicanes in the cycle track for speed control, requiring additional right of way. In areas with a raised median, wider lanes would be required to allow for emergency vehicle access which may raise vehicular travel speeds along the corridor. This alternative requires bicyclist to mix with pedestrians north of Lawrenceville Suwanee Road, instead of being in a dedicated bike lane. Much of the corridor is currently undeveloped, in road bike lanes eliminate the need for chicanes, reduce the right of way footprint, and allow more flexibility for development. A cycle track is designed with speed control and chicanes to slow down bicyclist near driveways and intersections. In addition to the design challenges of a cycle track, there are alternative bike routes both to the east and west of SR 13. The cycle track alternate is not preferred as it increases right of way, construction, and utility costs. Due to existing alternative bike routes adjacent to SR 13, the cycle track does not significantly enhance bike LOS vs traditional bike lanes.			

Alternative 3: Urban shoulders and multiuse path and sidewalk south of Davis Street. Bike lanes north of Davis Street.			
Estimated Property Impacts:	42	Estimated Total Cost:	\$12,831,000.00
Estimated ROW Cost:	\$2,000,000.00	Estimated CST Time:	2 years
Rationale: This alternative has higher construction costs due to the multiuse path/sidewalk on both sides of the road and urban drainage costs. This alternative would also require additional right of way on both sides of the road. This alternative would require additional landscaping cost and utility costs to bury the existing utilities. The			

No-Build Alternative:			
Estimated Property Impacts:	0	Estimated Total Cost:	\$0
Estimated ROW Cost:	\$0	Estimated CST Time:	none
Rationale: This alternative does not meet the project goal of providing pedestrian and bicycle access along the corridor.			

An additional alternative was evaluated in the area between McGinnis Ferry Road and Davis Street. An alternative that would not build walls or boardwalks was evaluated. This alternative keeps the same typical section as the preferred alternative. The typical section for this alternative widens

County: Gwinnett

out the existing rural shoulder on the east side of the road to the standard 10-ft and includes a ditch, a 10-ft multiuse path, and 2:1 slopes. This alternative reduces construction costs, which are offset by higher right of way costs and more environmental impacts. The construction cost savings comes from eliminating the walls and boardwalks, but this savings are offset somewhat by higher erosion control and grading costs. The total construction savings is less than 3% of the preferred alternative. The right of way costs are increased because more permanent easements are needed to tie in the high cut and fill slopes. The right of way costs are about 1.5% more than the preferred alternative. This alternative has more environmental impacts, impacting 4 more streams and 2 more wetlands than the preferred alternative. This alternative does save about 1.5% in total costs, but is not the preferred alternative due to the additional environmental impacts.

Comments:

LIST OF ATTACHMENTS/SUPPORTING DATA

1. Concept Layouts
2. Typical sections
3. Detailed Cost Estimates:
 - a. Construction including Engineering and Inspection
 - b. Completed Fuel & Asphalt Price Adjustment forms
 - c. Right-of-Way
 - d. Utilities
 - e. Environmental Mitigation
4. Traffic diagrams
5. Traffic Study
6. Roundabout Data
 - a. Roundabout Checklist
 - b. Roundabout Feasibility Study
 - c. Lighting agreement or commitment letter
 - d. Roundabout Peer Review
7. Concept Level Hydrology Study for MS4 Permit
8. Minutes of Concept meetings
 - a. Concept Team Meeting, 7/18/2014
 - b. Coordination Meeting with District 1 Staff, 6/11/2014
9. Minutes of any meetings that shows support or objection to the concept
 - a. Public Meeting Workshop Summary, 2-25-2010
 - b. Public Meeting Open House Summary, 3-18-2010
10. PFA
11. Preconstruction Status Report

County: Gwinnett

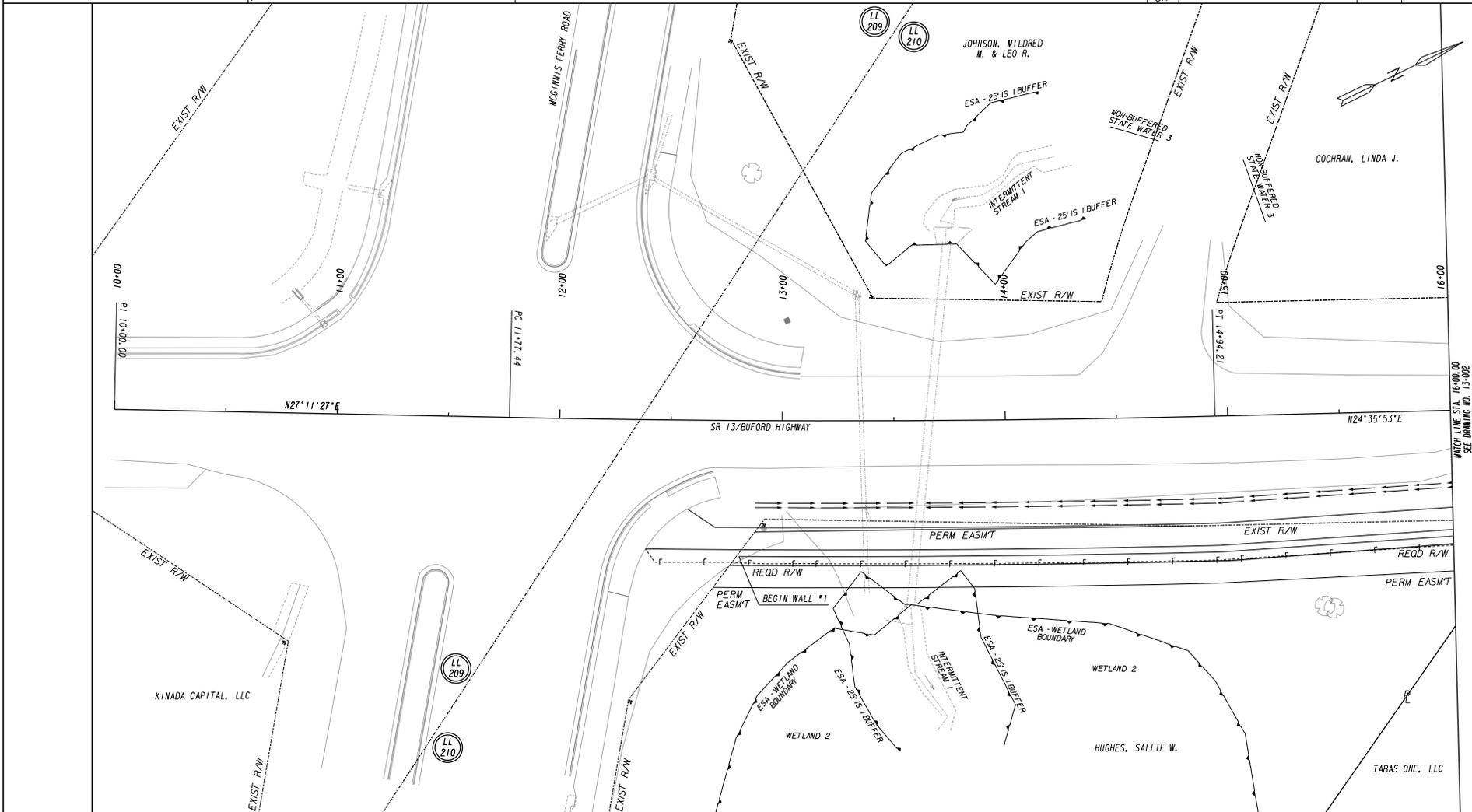
APPROVALS

Concur: *Alan Bonner*
Director of Engineering

Approve: *Alan Bonner*
Chief Engineer

 11/5/14
Date

Attachment #1



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PROPERTY AND EXISTING R/W LINE
 REQUIRED R/W LINE
 CONSTRUCTION LIMITS
 EASEMENT FOR CONSTR
 & MAINTENANCE OF SLOPES
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 EASEMENT FOR CONSTR OF DRIVES

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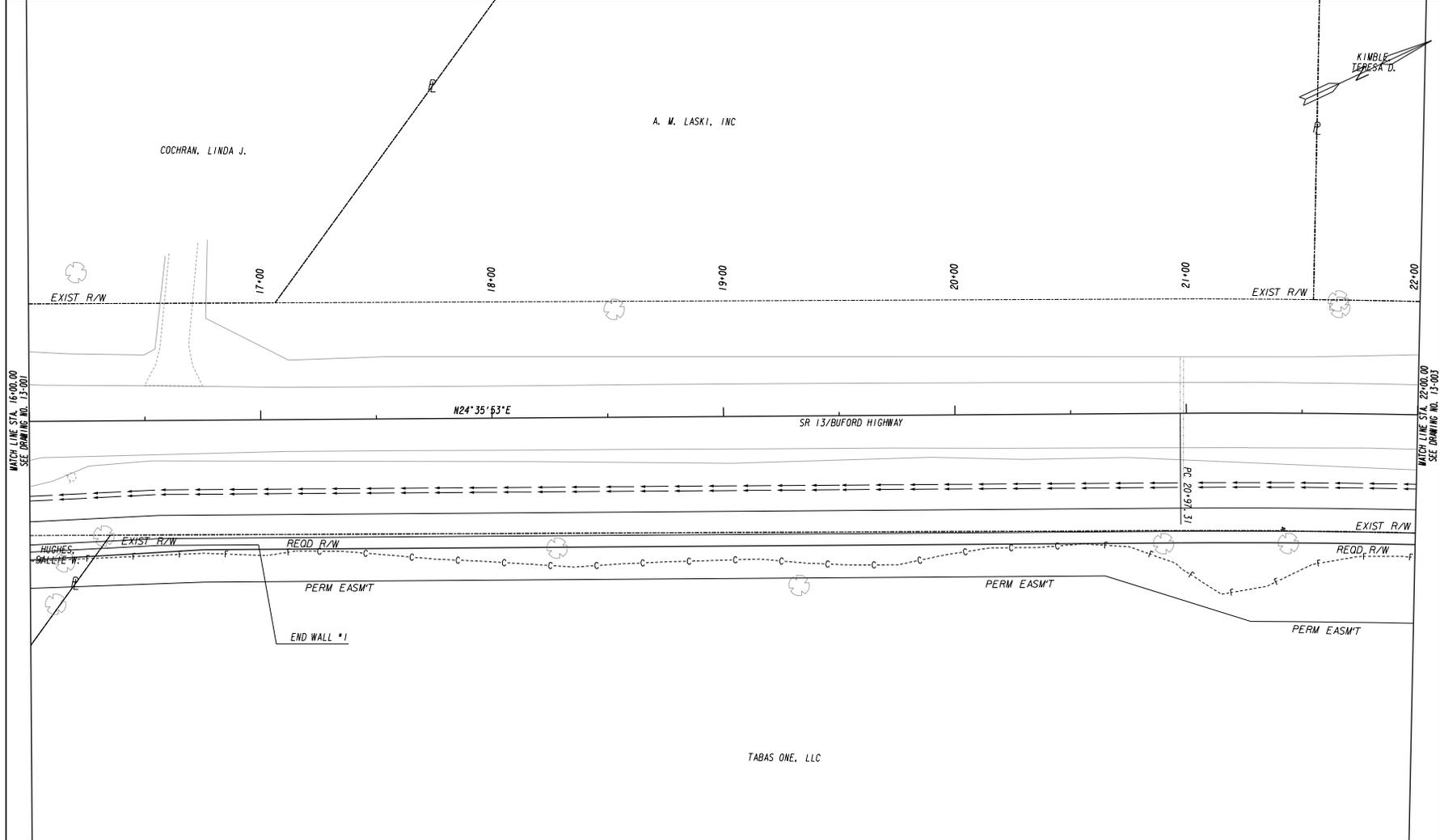
REVISION DATES	

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MAINLINE PLAN

SR 13 FROM MCGINNIS FERRY ROAD
 TO GEORGE PIERCE PARK

DRAWING No.
13-001



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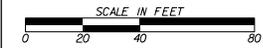
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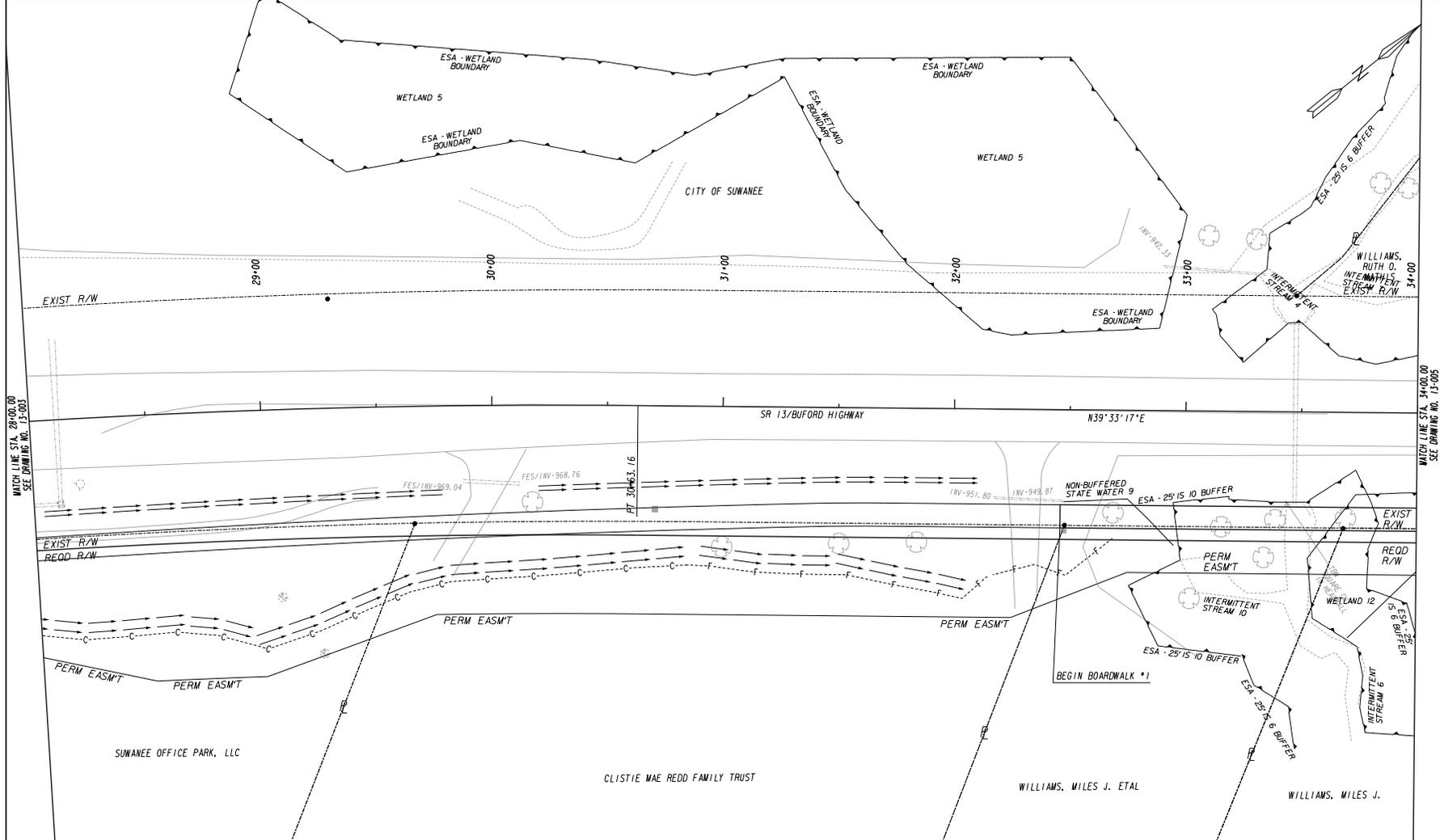
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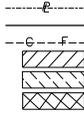
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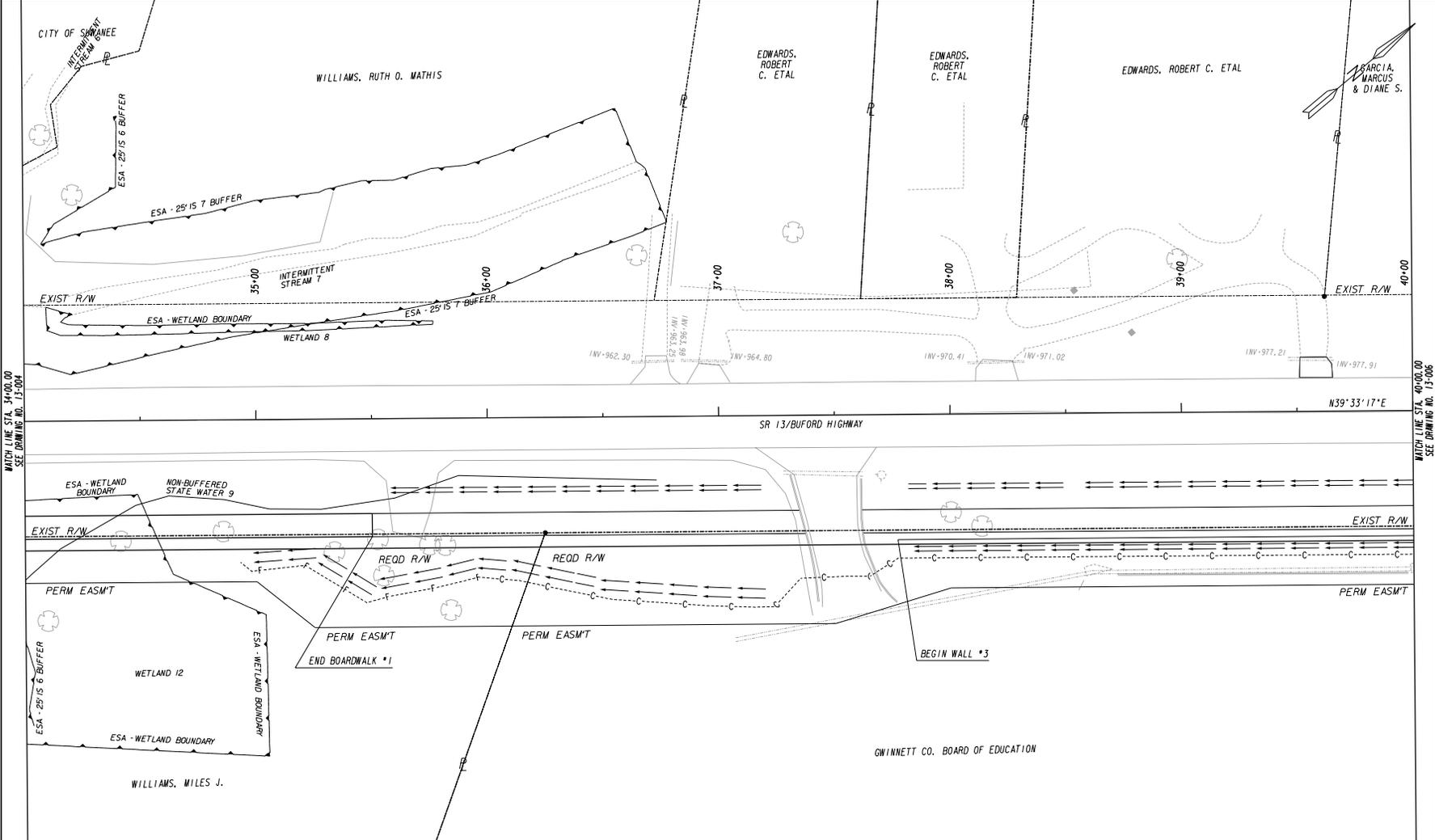
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SR 13 FROM MCGINNIS FERRY ROAD
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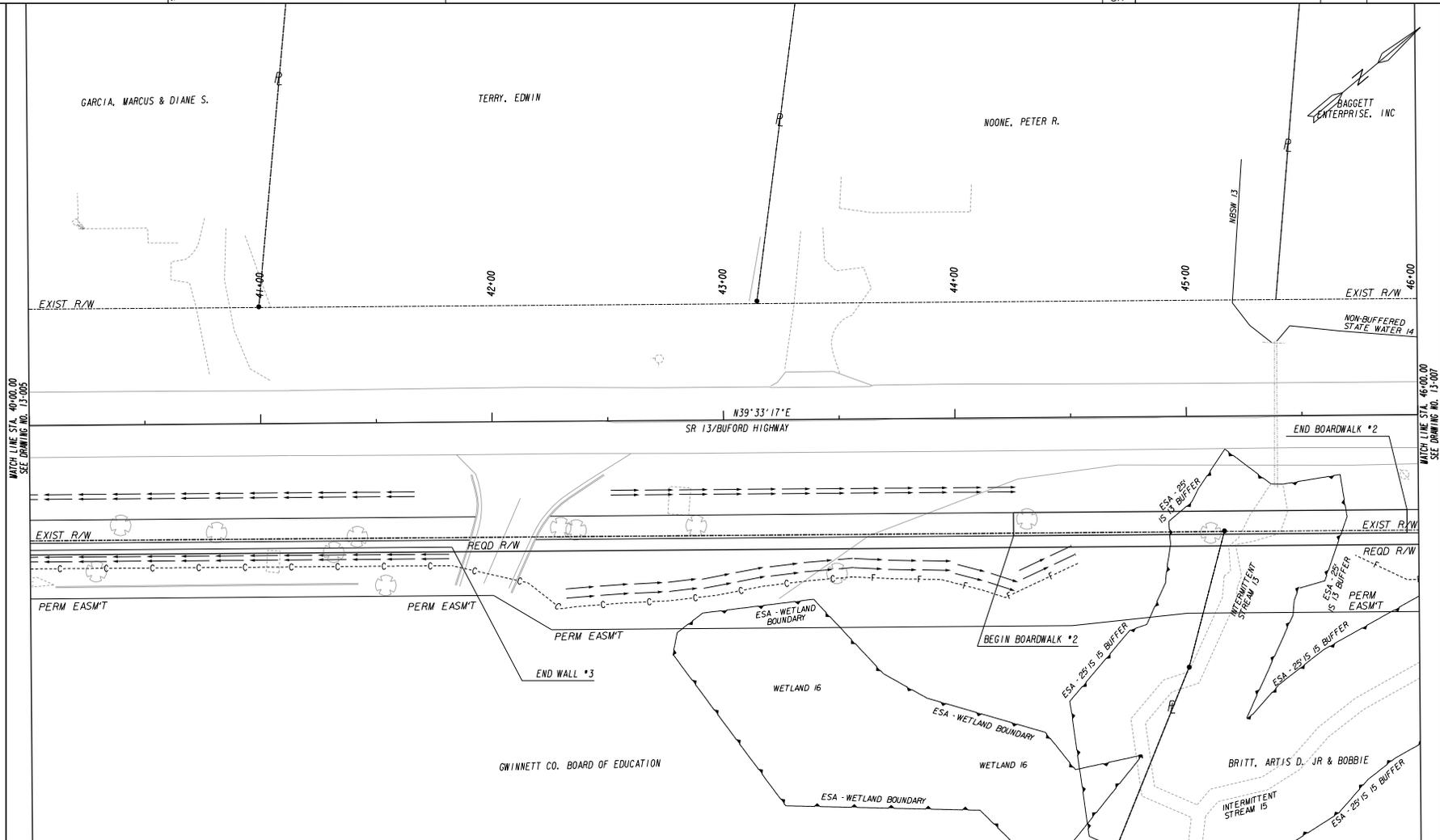
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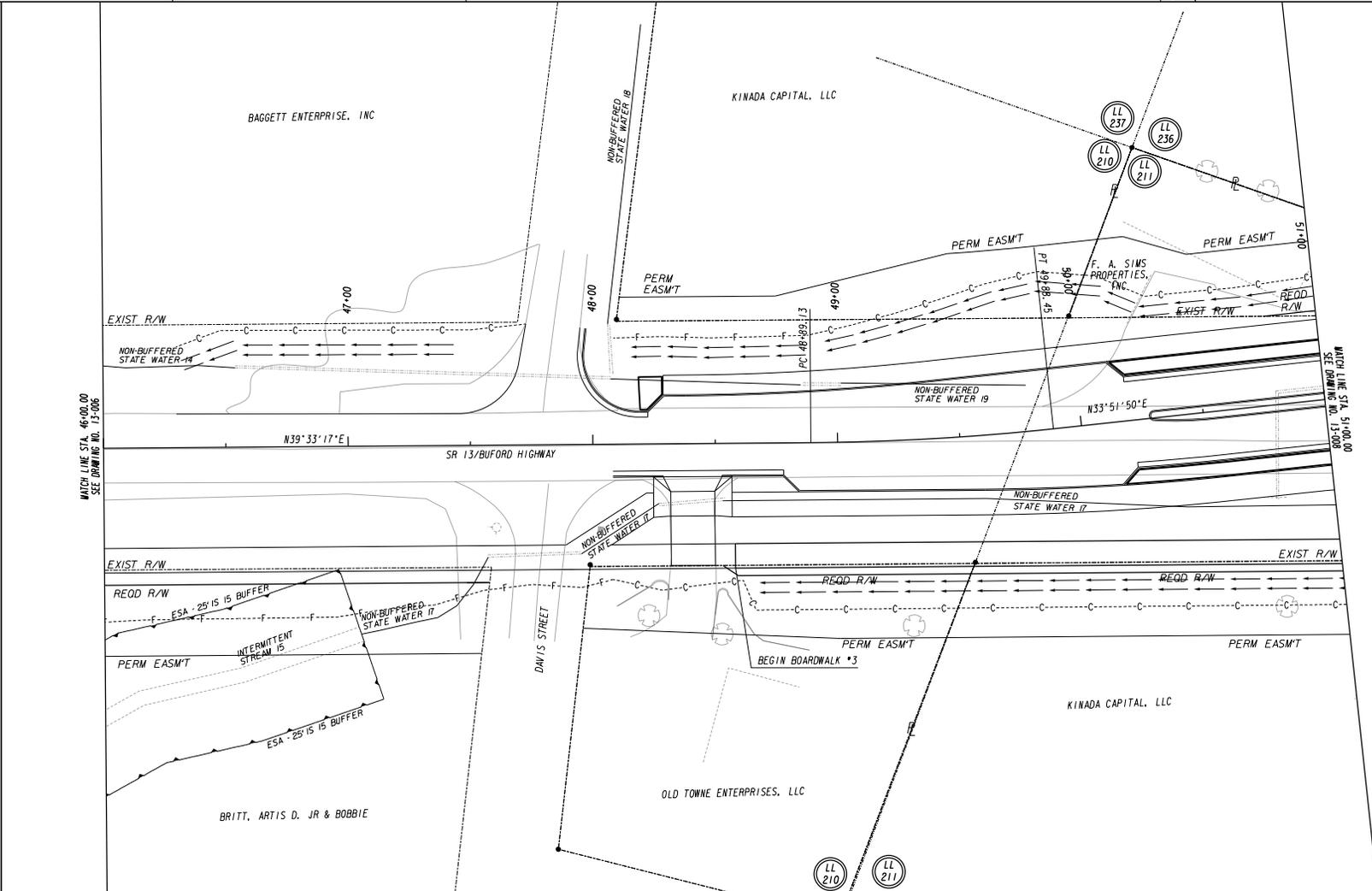
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SR 13 FROM MCGINNIS FERRY ROAD
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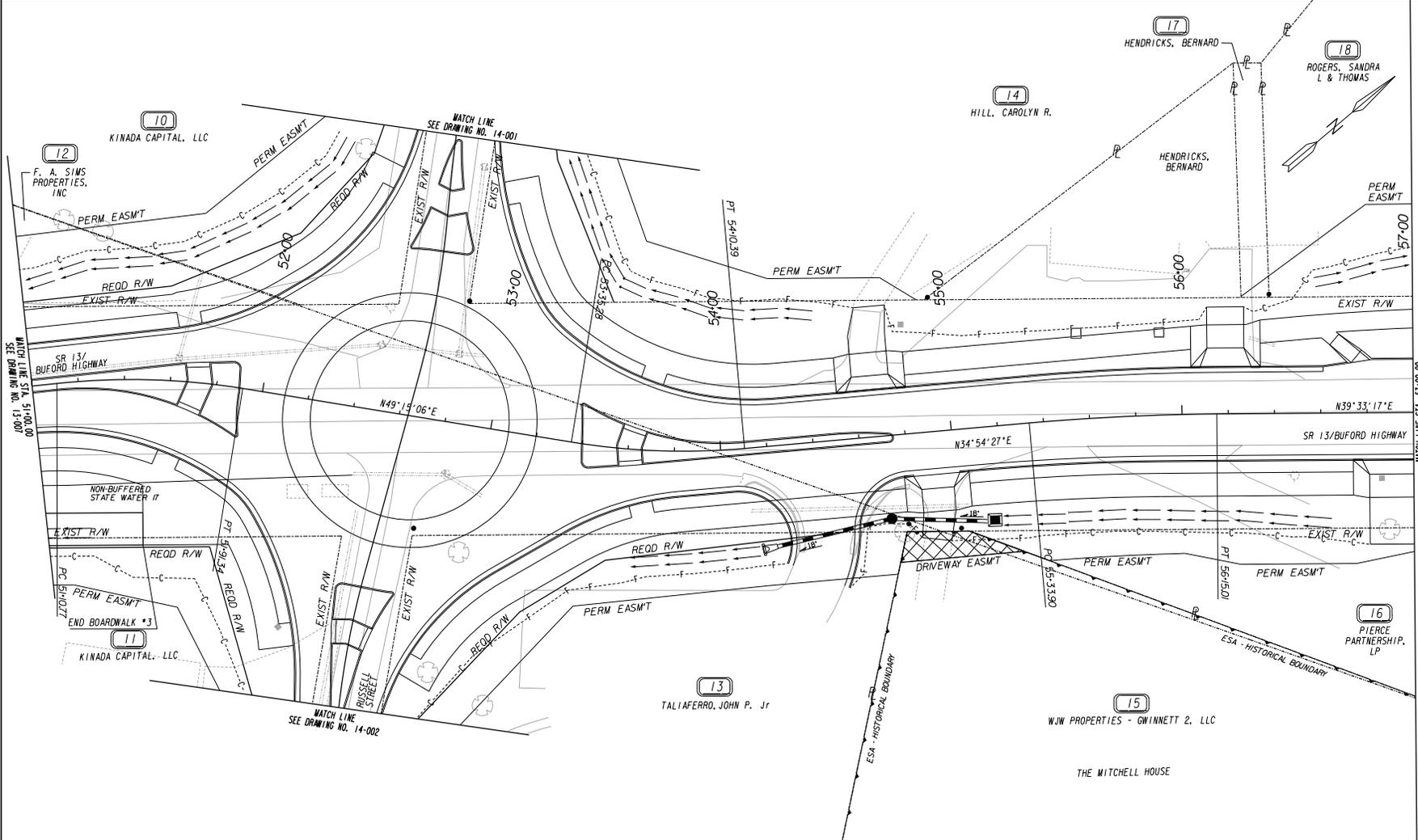
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13-007



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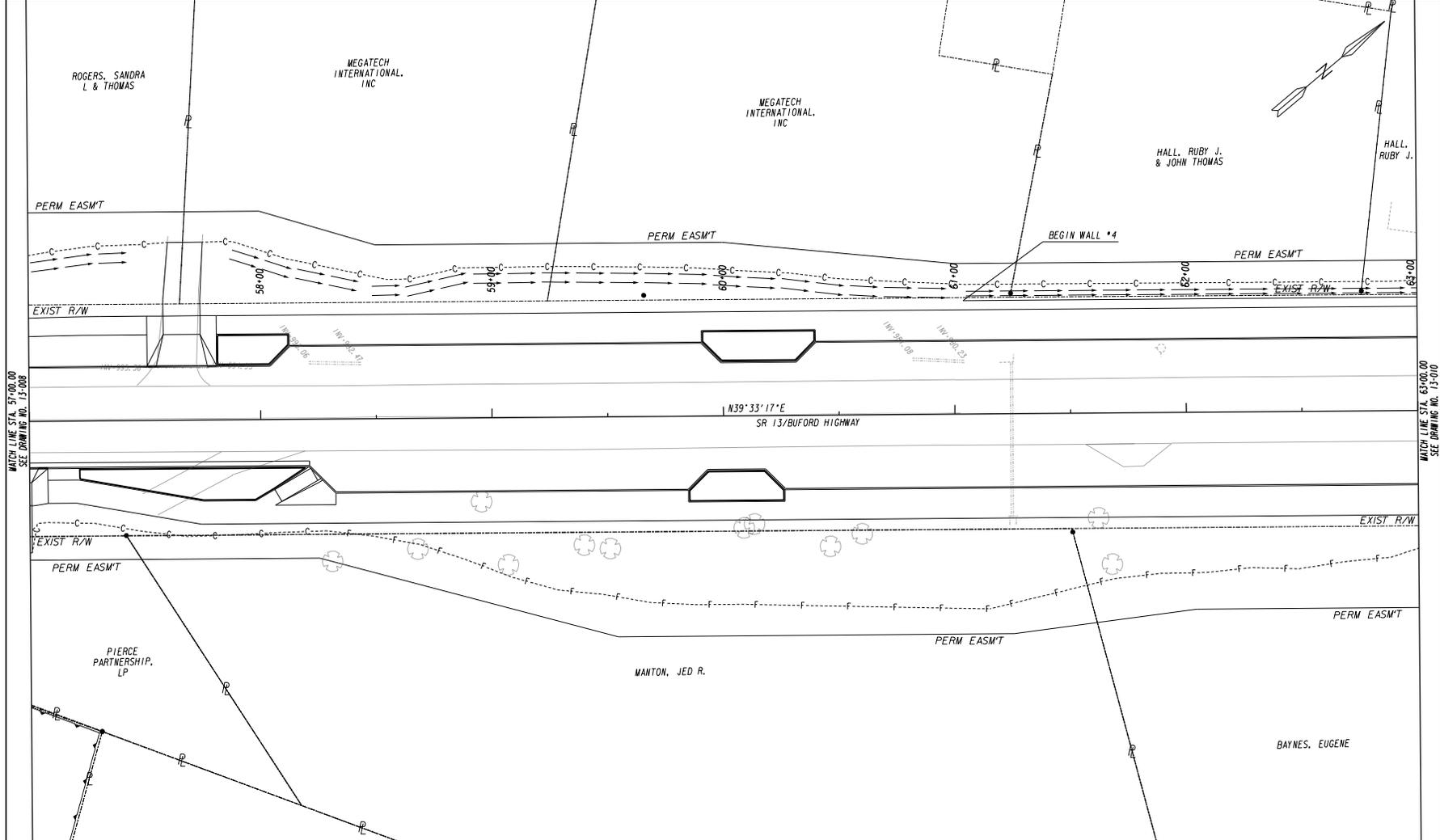
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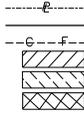
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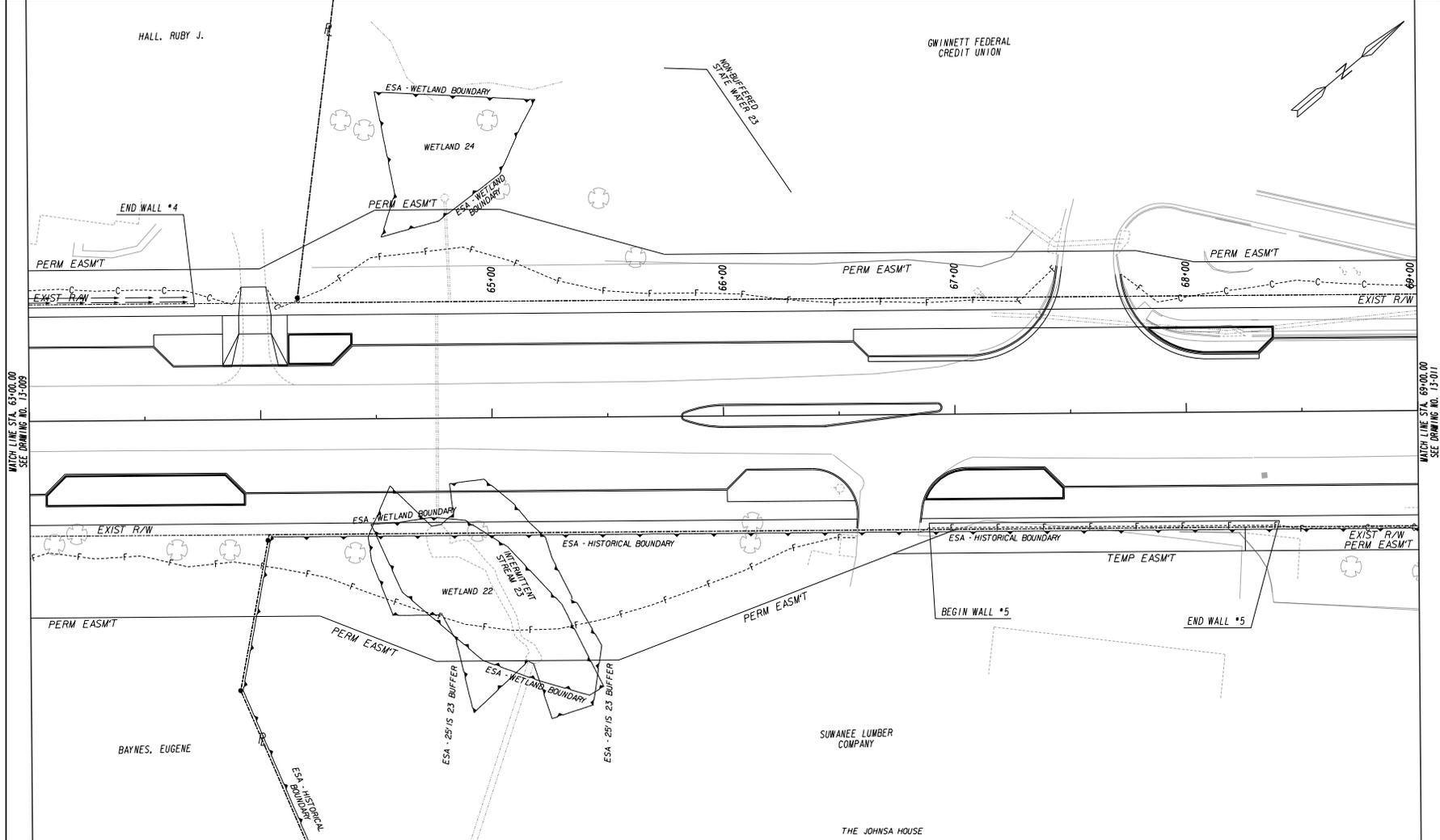
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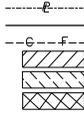
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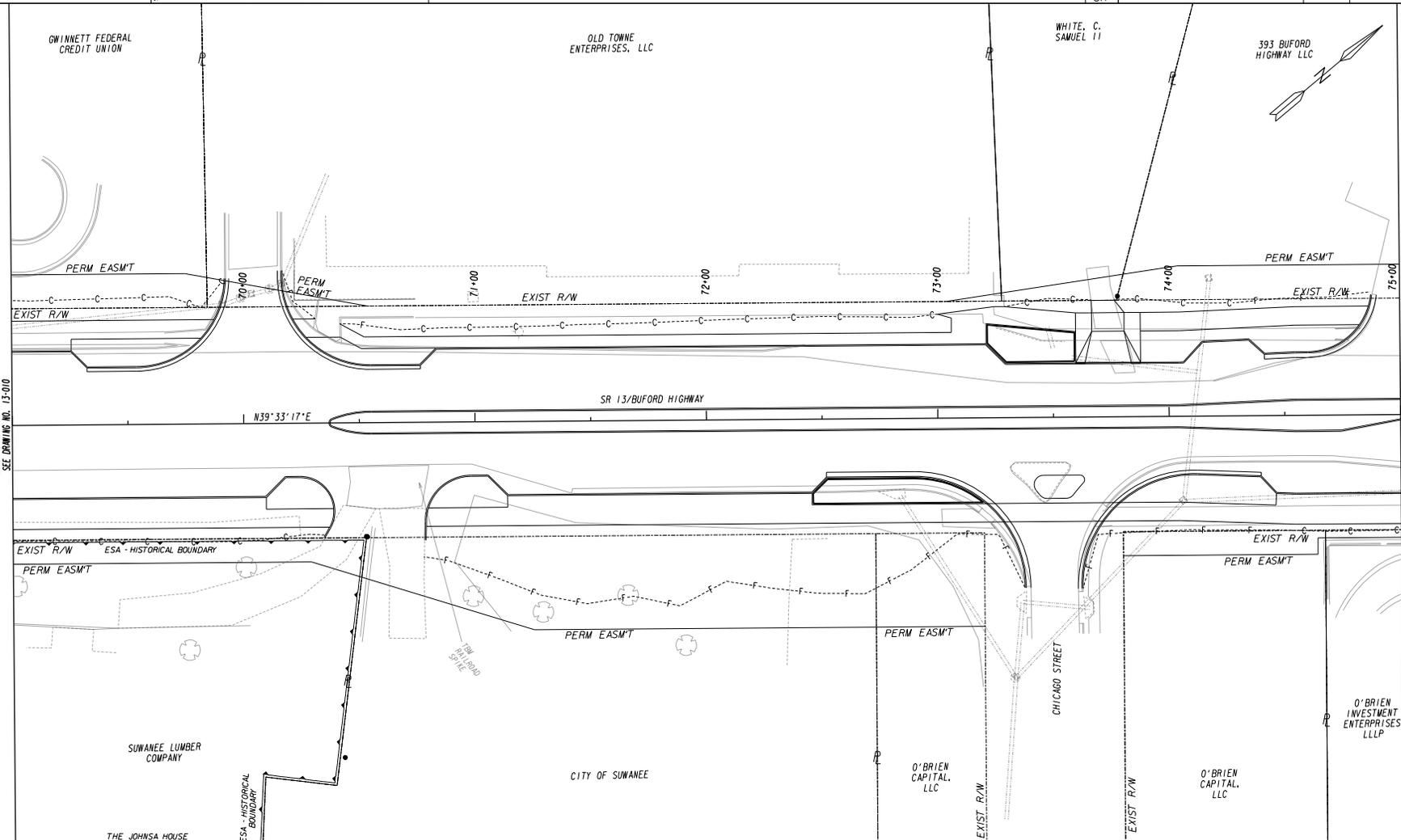
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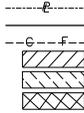
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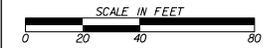
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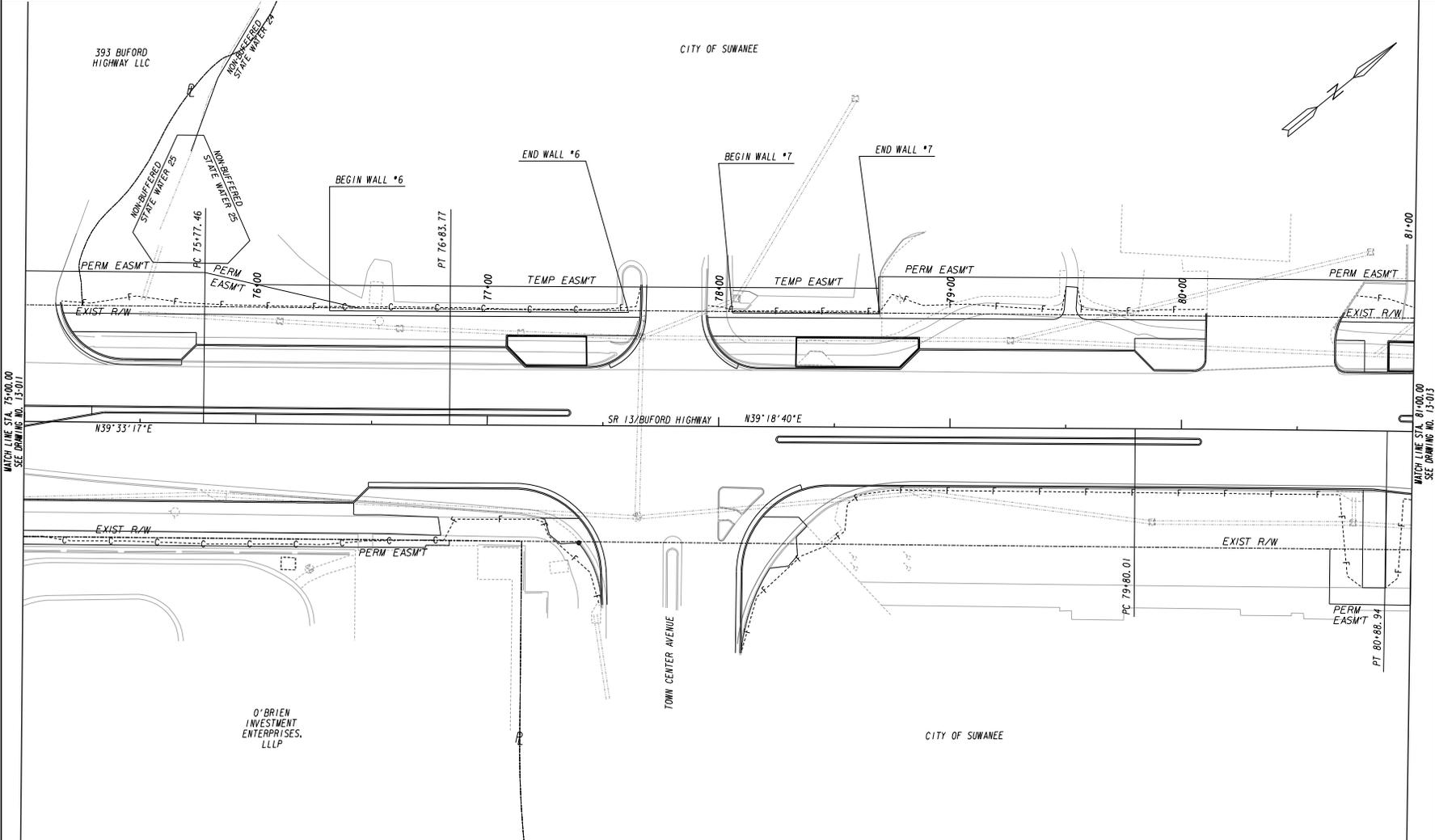
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13-011



PROPERTY AND EXISTING R/W LINE
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 & MAINTENANCE OF SLOPES
 EASEMENT FOR CONSTR OF SLOPES
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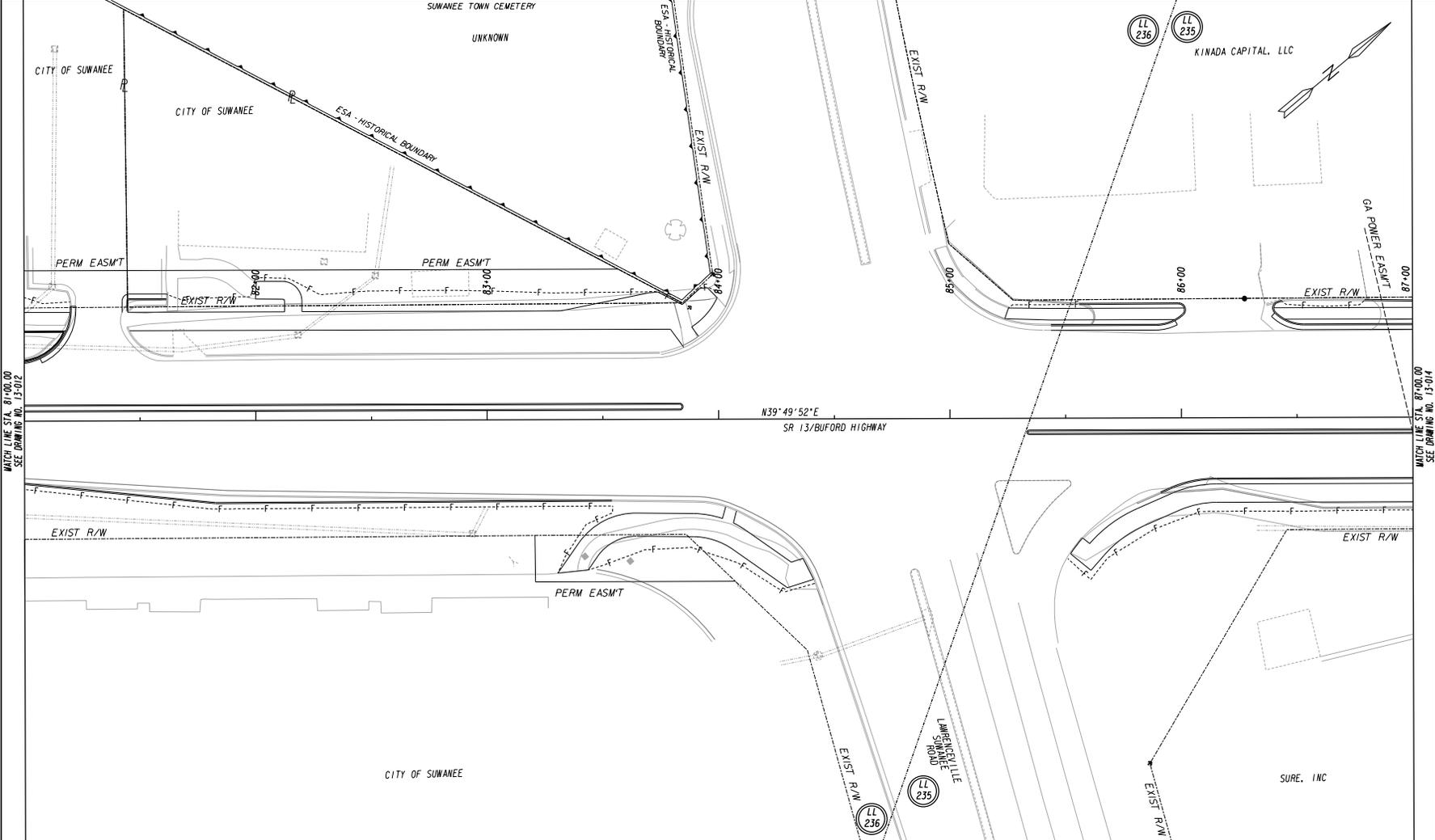
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DRAWING No.
13-012



PROPERTY AND EXISTING R/W LINE
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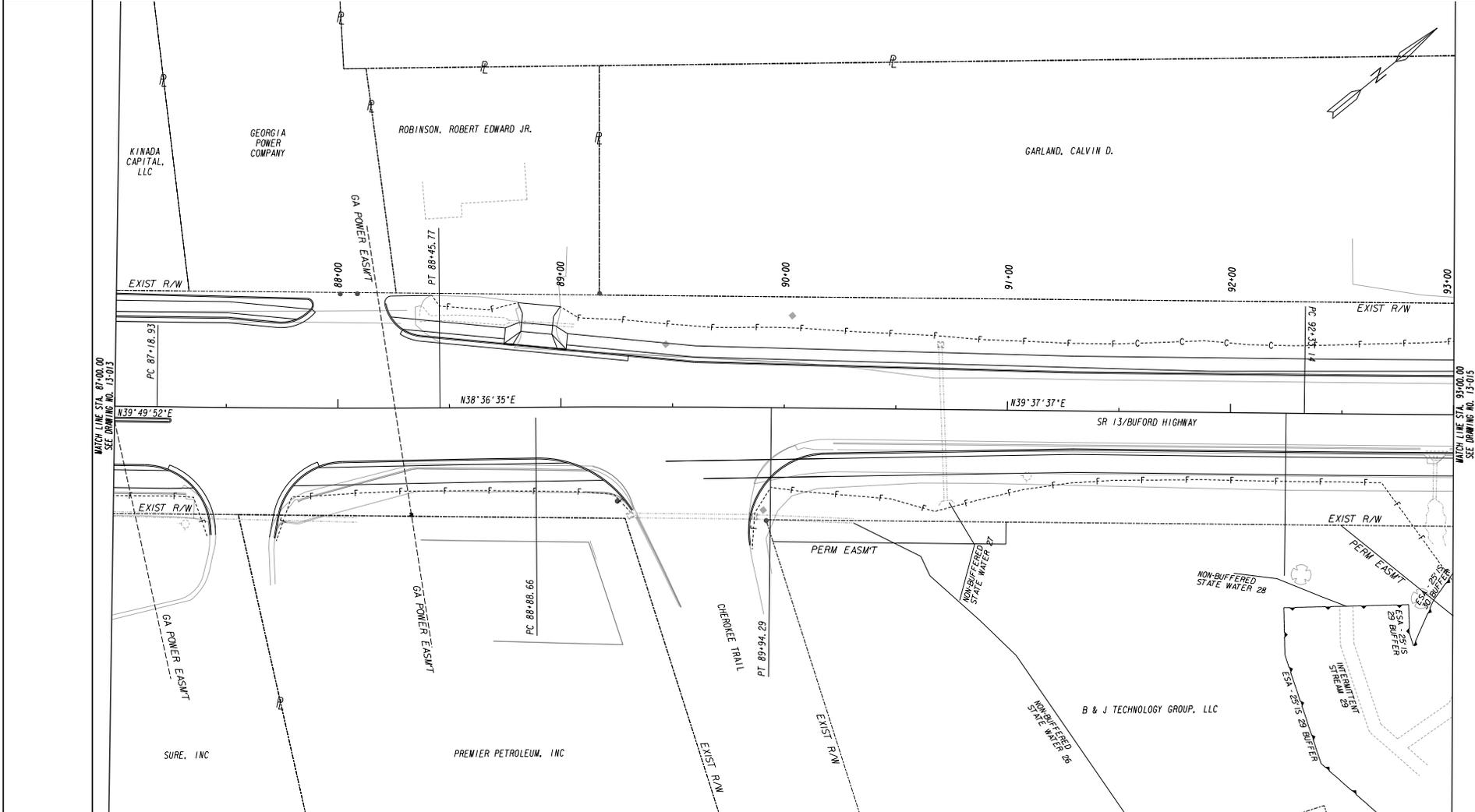
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13-013

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PROPERTY AND EXISTING R/W LINE
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 EASEMENT FOR CONSTR
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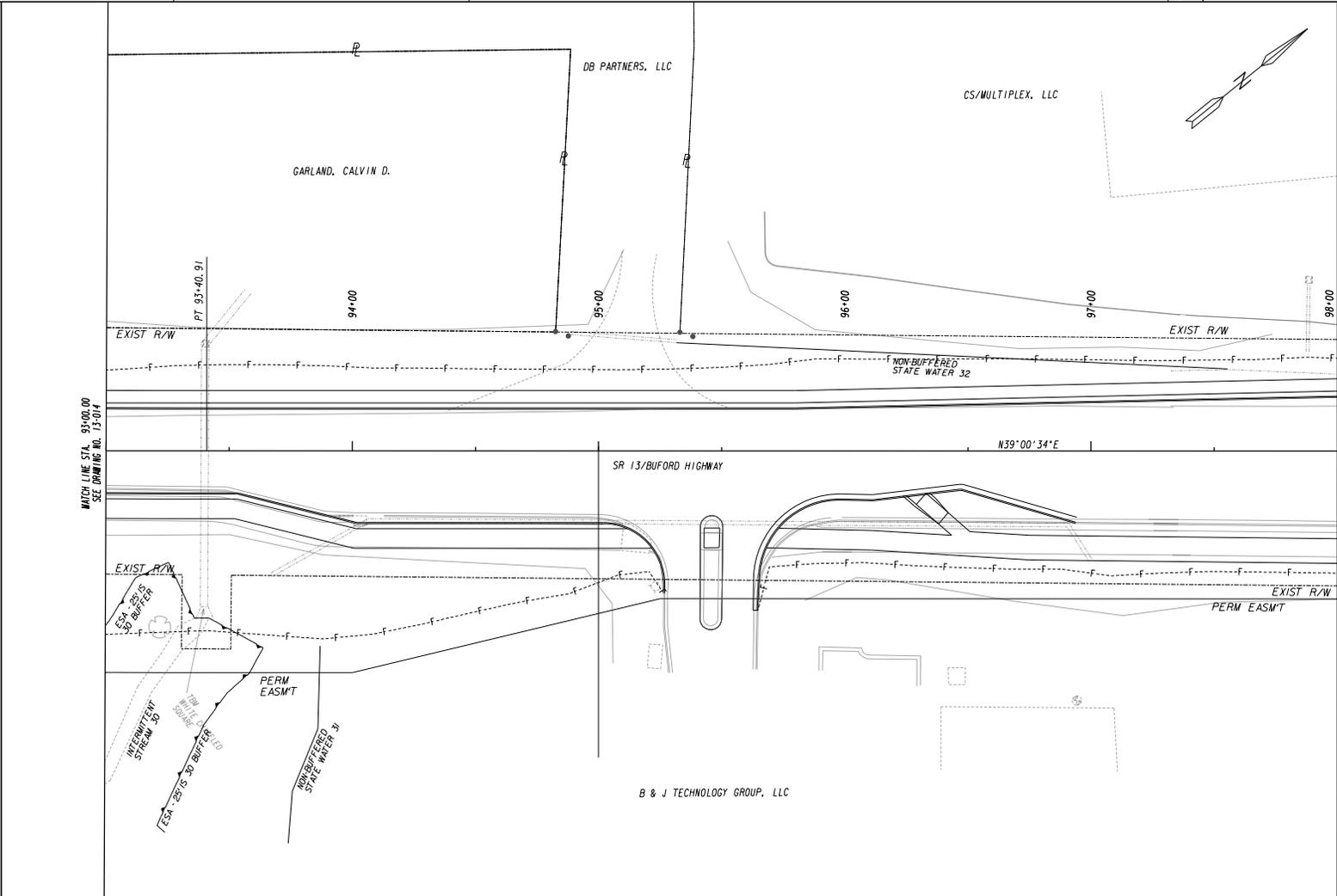
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 DEPARTMENT OF TRANSPORTATION
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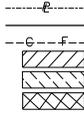
MAINLINE PLAN

SR 13 FROM MCGINNIS FERRY ROAD
 TO GEORGE PIERCE PARK

DRAWING No.
13-014



PROPERTY AND EXISTING R/W LINE
 REQUIRED R/W LINE
 CONSTRUCTION LIMITS
 EASEMENT FOR CONSTR
 & MAINTENANCE OF SLOPES
 EASEMENT FOR CONSTR OF SLOPES
 EASEMENT FOR CONSTR OF DRIVES



BEGIN LIMIT OF ACCESS.....BLA
 END LIMIT OF ACCESS.....ELA
 LIMIT OF ACCESS
 REQ'D R/W & LIMIT OF ACCESS

GEORGIA
 DEPARTMENT
 OF
 TRANSPORTATION

URS
 400 NORTH PARK TOWN CENTER
 1000 ABERNATHY ROAD, SUITE 900
 ATLANTA, GEORGIA 30328
 TEL: (478) 808-8800 FAX: (478) 808-8400

SCALE IN FEET
 0 20 40 80

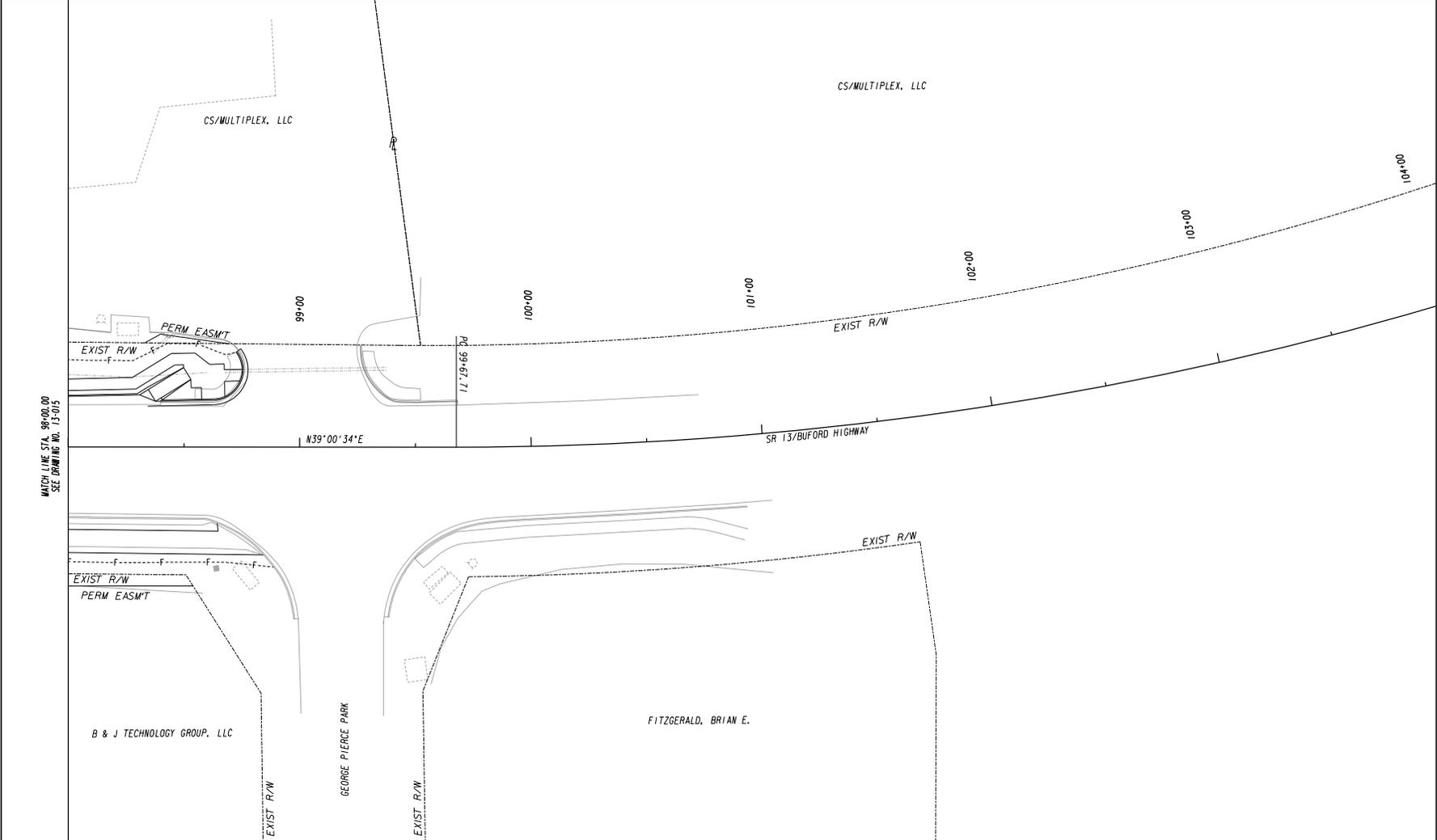
REVISION DATES	

STATE OF GEORGIA
 DEPARTMENT OF TRANSPORTATION
 OFFICE: PROGRAM DELIVERY

MAINLINE PLAN

SR 13 FROM MCGINNIS FERRY ROAD
 TO GEORGE PIERCE PARK

DRAWING No.
13-015



MATCH LINE STA. 98+00.00 SEE DRAWING NO. 13-015

PROPERTY AND EXISTING R/W LINE
 REQUIRED R/W LINE
 CONSTRUCTION LIMITS
 EASEMENT FOR CONSTR
 & MAINTENANCE OF SLOPES
 EASEMENT FOR CONSTR OF SLOPES
 EASEMENT FOR CONSTR OF DRIVES

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GEORGIA
 DEPARTMENT
 OF
 TRANSPORTATION

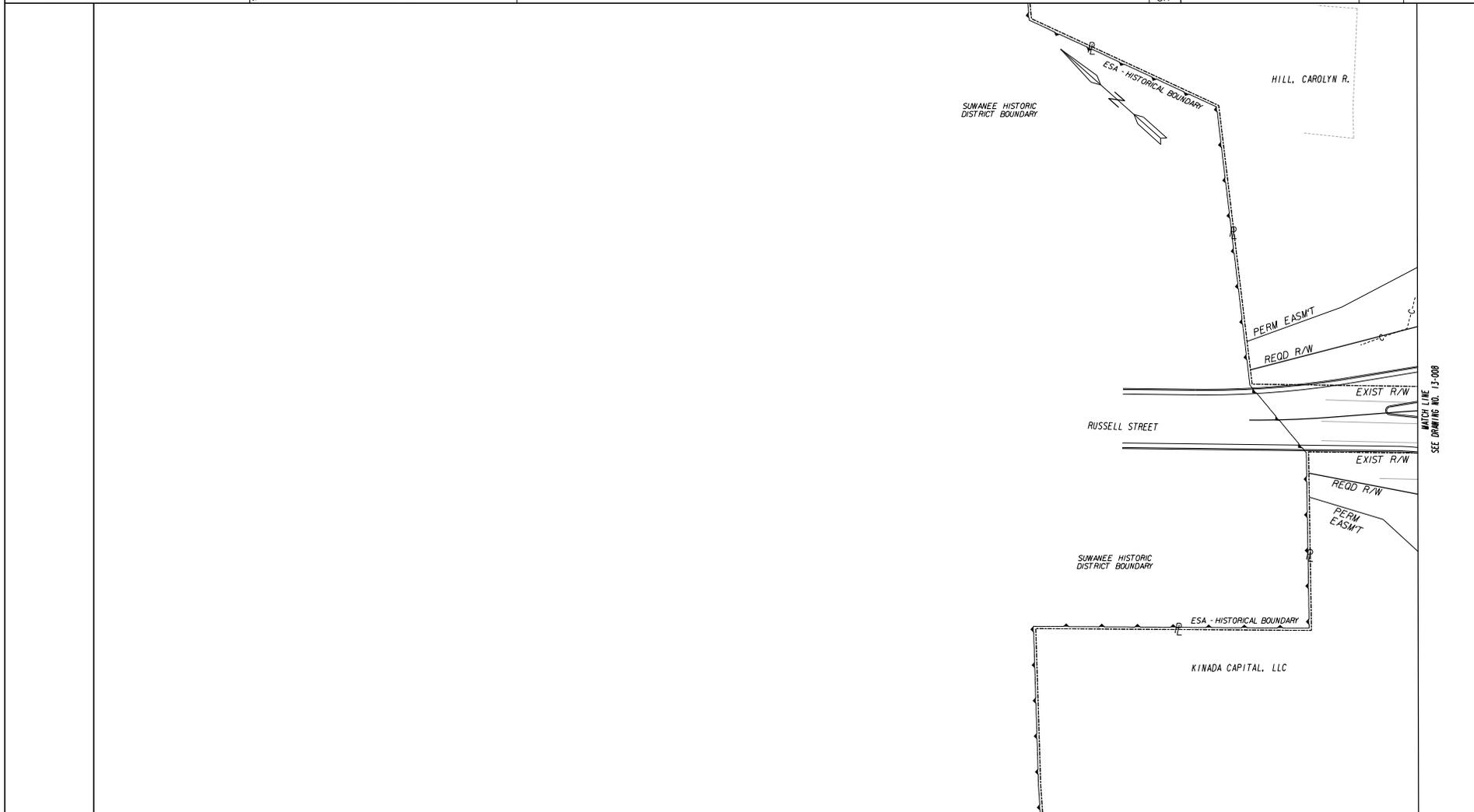
URS
 400 NORTH PARK TOWN CENTER
 1000 ABERNATHY ROAD, SUITE 900
 ATLANTA, GEORGIA 30328
 TEL: (478) 808-8800 FAX: (478) 808-8400

SCALE IN FEET
 0 20 40 80

REVISION DATES	

STATE OF GEORGIA
 DEPARTMENT OF TRANSPORTATION
 OFFICE: PROGRAM DELIVERY
MAINLINE PLAN
 SR 13 FROM MCGINNIS FERRY ROAD
 TO GEORGE PIERCE PARK

DRAWING No. 13-016



PROPERTY AND EXISTING R/W LINE
 REQUIRED R/W LINE
 CONSTRUCTION LIMITS
 EASEMENT FOR CONSTR
 & MAINTENANCE OF SLOPES
 EASEMENT FOR CONSTR OF SLOPES
 EASEMENT FOR CONSTR OF DRIVES

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 [X-hatched Box]

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 LIMIT OF ACCESS
 REQ'D R/W & LIMIT OF ACCESS

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GEORGIA
 DEPARTMENT
 OF
 TRANSPORTATION

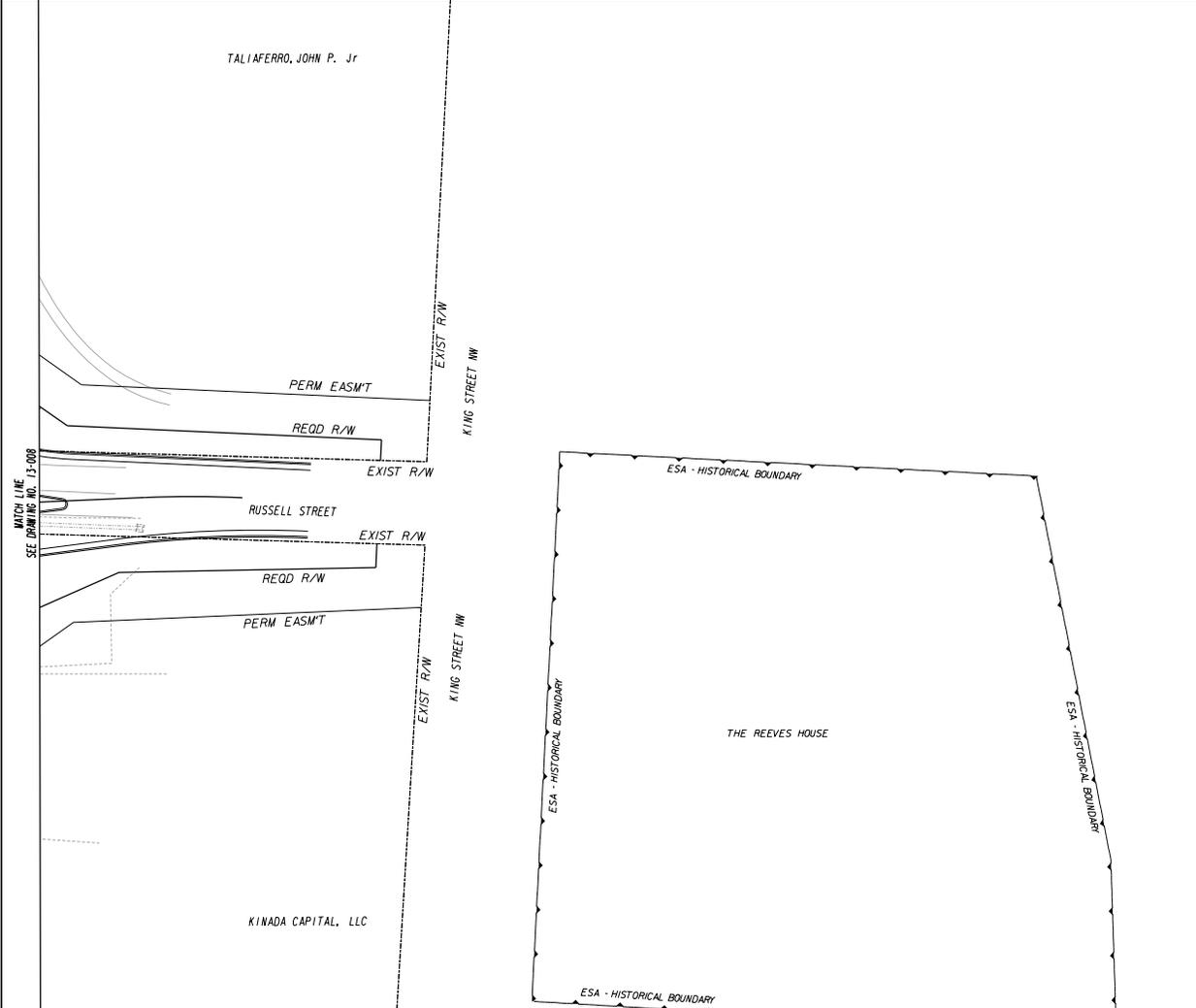
URS
 400 NORTH PARK TOWN CENTER
 1000 ABERNATHY ROAD, N.E. SUITE 900
 ATLANTA, GEORGIA 30328
 TEL: (678) 808-8800 FAX: (678) 808-8400



REVISION DATES	

STATE OF GEORGIA
 DEPARTMENT OF TRANSPORTATION
 OFFICE: PROGRAM DELIVERY
CROSSROAD PLAN
 SR 13 FROM MCGINNIS FERRY ROAD
 TO GEORGE PIERCE PARK

DRAWING No.
14-001



PROPERTY AND EXISTING R/W LINE
 REQUIRED R/W LINE
 CONSTRUCTION LIMITS
 EASEMENT FOR CONSTR
 & MAINTENANCE OF SLOPES
 EASEMENT FOR CONSTR OF SLOPES
 EASEMENT FOR CONSTR OF DRIVES

BEGIN LIMIT OF ACCESS.....BLA
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 LIMIT OF ACCESS
 REQ'D R/W & LIMIT OF ACCESS

GEORGIA
 DEPARTMENT
 OF
 TRANSPORTATION

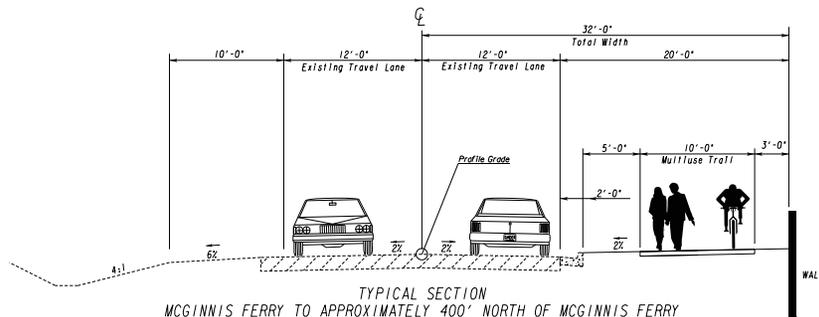
URS
 400 NORTH PARK TOWN CENTER
 1000 ABERNATHY ROAD, SUITE 900
 ATLANTA, GEORGIA 30328
 TEL: (478) 508-2800 FAX: (478) 508-8400



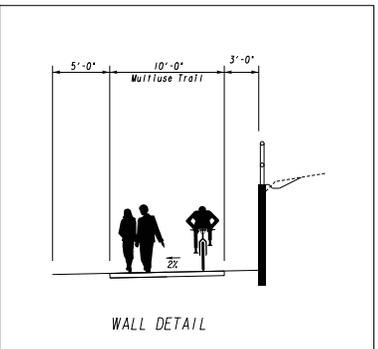
REVISION DATES	

STATE OF GEORGIA
 DEPARTMENT OF TRANSPORTATION
 OFFICE: PROGRAM DELIVERY
CROSSROAD PLAN
 SR 13 FROM MCGINNIS FERRY ROAD
 TO GEORGE PIERCE PARK
 DRAWING No. 14-002

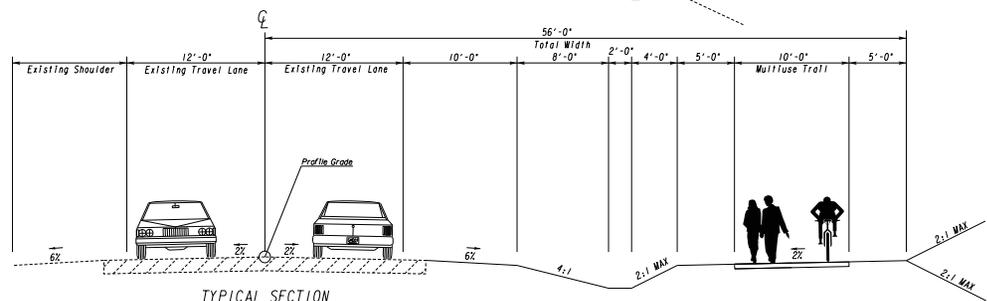
Attachment #2



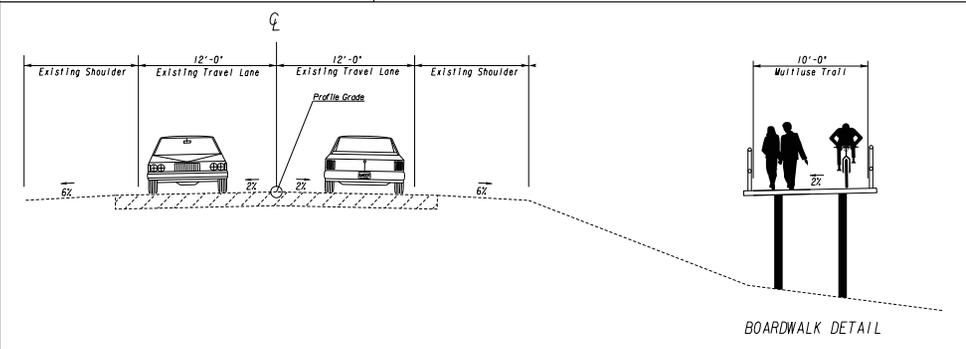
TYPICAL SECTION
MCGINNIS FERRY TO APPROXIMATELY 400' NORTH OF MCGINNIS FERRY



WALL DETAIL

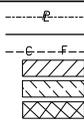


TYPICAL SECTION
APPROXIMATELY 400' NORTH OF MCGINNIS FERRY TO DAVIS STREET



BOARDWALK DETAIL

PROPERTY AND EXISTING R/W LINE
 REQUIRED R/W LINE
 CONSTRUCTION LIMITS
 EASEMENT FOR CONSTR
 & MAINTENANCE OF SLOPES
 EASEMENT FOR CONSTR OF SLOPES
 EASEMENT FOR CONSTR OF DRIVES



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 END LIMIT OF ACCESS.....ELA
 LIMIT OF ACCESS
 REQ'D R/W & LIMIT OF ACCESS

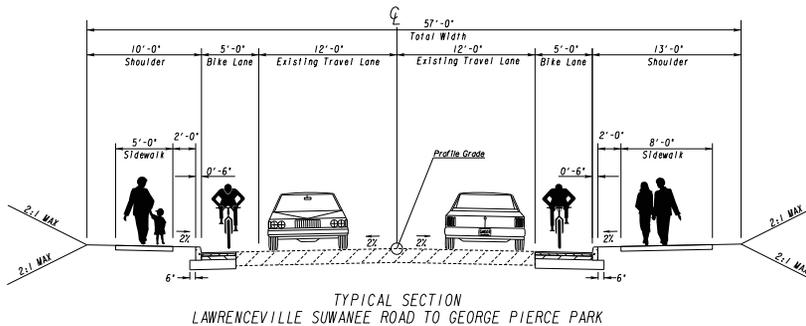
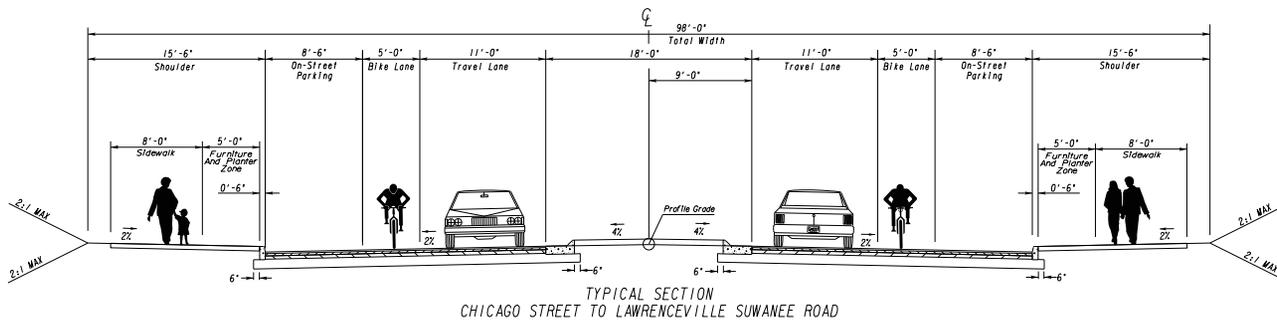
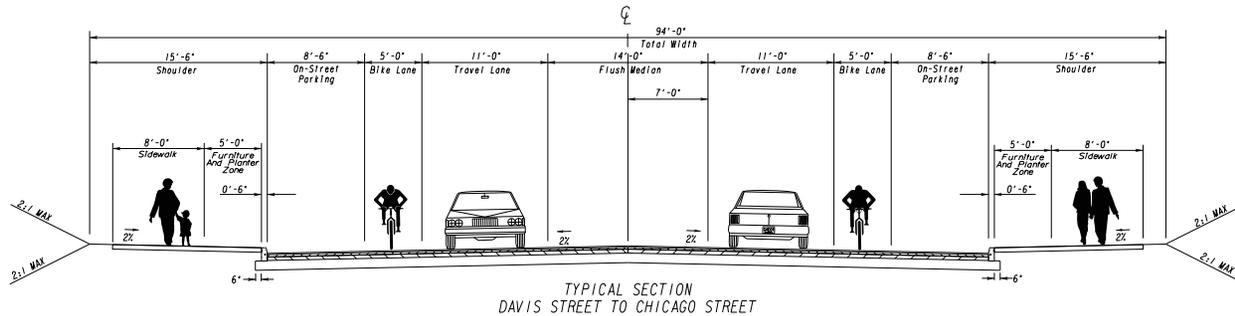
GEORGIA
 DEPARTMENT
 OF
 TRANSPORTATION

URS
 400 NORTH PARK TOWN CENTER
 1000 ADELPHI ROAD, N.E., SUITE 900
 ATLANTA, GEORGIA 30328
 TEL: (478) 808-8800 FAX: (478) 808-8400

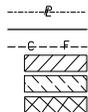
REVISION DATES	

STATE OF GEORGIA
 DEPARTMENT OF TRANSPORTATION
 OFFICE: PROGRAM DELIVERY
 TYPICAL SECTIONS
 SR 13 FROM MCGINNIS FERRY ROAD
 TO GEORGE PIERCE PARK

DRAWING NO.
 05-001



PROPERTY AND EXISTING R/W LINE
 REQUIRED R/W LINE
 CONSTRUCTION LIMITS
 EASEMENT FOR CONSTR
 & MAINTENANCE OF SLOPES
 EASEMENT FOR CONSTR OF SLOPES
 EASEMENT FOR CONSTR OF DRIVES



BEGIN LIMIT OF ACCESS.....BLA
 END LIMIT OF ACCESS.....ELA
 LIMIT OF ACCESS
 REQ'D R/W & LIMIT OF ACCESS

GEORGIA
 DEPARTMENT
 OF
 TRANSPORTATION

URS

400 NORTH PARK TOWN CENTER
 9000 ASENATHY ROAD, N.E., SUITE 900
 ATLANTA, GEORGIA, 30328
 TEL: (478) 808-8800 FAX: (478) 808-8400

REVISION DATES

NO.	DATE	DESCRIPTION

STATE OF GEORGIA
 DEPARTMENT OF TRANSPORTATION
 OFFICE: PROGRAM DELIVERY
 TYPICAL SECTIONS

SR 13 FROM MCGINNIS FERRY ROAD
 TO GEORGE PIERCE PARK

DRAWING NO.
 05-002

Attachment #3

STATE HIGHWAY AGENCY

DATE : 10/17/2014
PAGE : 1

JOB ESTIMATE REPORT

JOB NUMBER : 0011639-NORTH SPEC YEAR: 01
DESCRIPTION: BUFORD HIGHWAY, NORTH OF DAVIS

COST GROUPS FOR JOB 0011639-NORTH

COST GROUP	DESCRIPTION	QUANTITY	PRICE	AMOUNT	ACTIVE?
SGNL	TRAFFIC SIGNALS (EA)	1.000	150000.00000	150000.00	Y
SRTS	SIGNING AND MARKING (LS)	1.000	50000.00000	50000.00	Y
EROC	EROSION CONTROL (LS)	1.000	200000.00000	200000.00	Y
MISC	MS4 REQUIREMENTS	1.000	380000.00000	380000.00	Y
MISC	LANDSCAPING (LS)	1.000	825000.00000	825000.00	Y
MISC	PEDESTRIAN LIGHTING (LS)	1.000	1000000.00000	1000000.00	Y
MISC	HAWK SIGNAL (EA)	1.000	100000.00000	100000.00	Y
MISC	ROUNDAABOUT LIGHTING (LS)	1.000	80000.00000	80000.00	Y
MISC	BOARDWALK (SF)	3170.000	30.00000	95100.00	Y
ACTIVE COST GROUP TOTAL				2880100.00	
INFLATED COST GROUP TOTAL				2880100.00	

ITEMS FOR JOB 0011639-NORTH

LINE	ITEM	ALT	UNITS	DESCRIPTION	QUANTITY	PRICE	AMOUNT
0005	150-1000		LS	TRAFFIC CONTROL - 0011639	1.000	100000.00	100000.00
0010	210-0100		LS	GRADING COMPLETE - 0011639	1.000	130000.00	130000.00
0015	310-1101		TN	GR AGGR BASE CRS, INCL MATL	7710.000	18.45	142262.38
0020	402-3121		TN	RECYL AC 25MM SP,GP1/2,BM&HL	2370.000	72.35	171476.97
0025	402-3130		TN	RECYL AC 12.5MM SP,GP2,BM&HL	770.000	96.28	74140.92
0030	402-3190		TN	RECYL AC 19 MM SP,GP 1 OR 2 ,INC BM&HL	950.000	81.01	76968.39
0035	413-1000		GL	BITUM TACK COAT	1210.000	3.98	4824.67
0039	430-0200		SY	PLN PC CONC PVMT/CL1C/ 10" TK	415.000	120.00	49800.00
0040	441-0104		SY	CONC SIDEWALK, 4 IN	8300.000	23.82	197774.31
0045	441-0754		SY	CONC MEDIAN, 7 1/2 IN	275.000	59.69	16416.22
0049	441-5002		LF	CONC HEADER CURB, 6", TP 2 ACTUALLY 24" TALL	1610.000	20.00	32200.00
0050	441-5002		LF	CONC HEADER CURB, 6", TP 2	7585.000	9.47	71884.71
0055	441-5010		LF	CONC HDR CURB, 6 IN, TP 9	350.000	15.00	5250.00
0060	441-6222		LF	CONC CURB & GUTTER/ 8"X30"TP2	3890.000	17.32	67387.91
0064	500-3201		CY	CL B CONC, RET WALL	37.000	482.09	17837.70
0065	500-9999		CY	CL B CONC,BASE OR PVMT WIDEN	301.000	153.17	46106.14
0070	550-1180		LF	STM DR PIPE 18",H 1-10	7650.000	30.29	231756.52
0075	550-1240		LF	STM DR PIPE 24",H 1-10	2550.000	38.90	99208.31
0080	627-1000		SF	MSE WALL FACE, 0 - 10 FT HT, WALL NO - 0011639	920.000	47.53	43733.65
0085	668-1100		EA	CATCH BASIN, GP 1	51.000	2084.66	106317.82
ITEM TOTAL							1685346.61
INFLATED ITEM TOTAL							1685346.61

JOB ESTIMATE REPORT

=====

TOTALS FOR JOB 0011639-NORTH

ESTIMATED COST:	4565446.62
CONTINGENCY PERCENT (5.0):	228272.33
ESTIMATED TOTAL:	4793718.95

JOB ESTIMATE REPORT

JOB NUMBER : 0011639-SOUTH SPEC YEAR: 01
 DESCRIPTION: BUFORD HIGHWAY, SOUTH OF DAVIS

COST GROUPS FOR JOB 0011639-SOUTH

COST GROUP	DESCRIPTION	QUANTITY	PRICE	AMOUNT	ACTIVE?
MISC	BOARDWALK (SF)	5450.000	50.00000	272500.00	Y
EROC	EROSION CONTROL (LS)	1.000	30000.00000	30000.00	Y
MISC	MS4 REQUIREMENTS	1.000	50000.00000	50000.00	Y
MISC	LANDSCAPING (LS)	1.000	50000.00000	50000.00	Y
ACTIVE COST GROUP TOTAL				402500.00	
INFLATED COST GROUP TOTAL				402500.00	

ITEMS FOR JOB 0011639-SOUTH

LINE	ITEM	ALT	UNITS	DESCRIPTION	QUANTITY	PRICE	AMOUNT
0005	150-1000		LS	TRAFFIC CONTROL - 0011639	1.000	15000.00	15000.00
0010	210-0100		LS	GRADING COMPLETE - 0011639	1.000	80000.00	80000.00
0015	310-1101		TN	GR AGGR BASE CRS, INCL MATL	1180.000	22.39	26424.35
0020	402-3130		TN	RECYL AC 12.5MM SP,GP2,BM&HL	273.000	111.81	30525.47
0025	550-1180		LF	STM DR PIPE 18",H 1-10	300.000	40.91	12274.53
0030	627-1000		SF	MSE WALL FACE, 0 - 10 FT HT, WALL NO - 0011639	10725.000	42.74	458417.07
0035	668-1100		EA	CATCH BASIN, GP 1	2.000	2107.19	4214.39
ITEM TOTAL							626855.80
INFLATED ITEM TOTAL							626855.80

TOTALS FOR JOB 0011639-SOUTH

ESTIMATED COST:	1029355.81
CONTINGENCY PERCENT (0.0):	0.00
ESTIMATED TOTAL:	1029355.81

Cost Estimate for Buford Highway - Draft 05-16-14											
	Buford Highway from McGinnis										
	North of Davis St					South of Davis St					
ITEM DESCRIPTION	QUANTITY	UNIT	UNIT COST Project	LENGTH	COST	QUANTITY	UNIT	UNIT COST Project	LENGTH	COST	
										TOTAL	
UPCHARGE- Sidewalk- Brick Pavers	28700	SF	8.5		243950		SF	8.5		0 243950	
UPCHARGE- Furniture Zone- Brick Pavers	10825	SF	8.5		92012.5		SF	8.5		0 92012.5	
Trees	122	EA	1000		122000		EA	1000		0 122000	
Planting Beds	42125	SF	6.5		273812.5	6000	SF	6.5		39000 312812.5	
Benches	44	EA	1500		66000	8	EA	1500		12000 78000	
Trash Receptacles	22	EA	1200		26400		EA	1200		0 26400	
					824175					51000 875175	

1050210 TOTAL With 20% Contingency

PROJ. NO.	N/A	
P.I. NO.	0011639	Buford Highway, North of Davis
DATE	7/22/2014	

CALL NO.

INDEX (TYPE)	DATE	INDEX
REG. UNLEADED	Jul-14	\$ 3.589
DIESEL		\$ 3.867
LIQUID AC		\$ 574.00

Link to Fuel and AC Index:
<http://www.dot.ga.gov/doingbusiness/Materials/Pages/asphaltcementindex.aspx>

LIQUID AC ADJUSTMENTS

$PA = \left[\frac{APM - APL}{APL} \right] \times TMT \times APL$

Asphalt

Price Adjustment (PA)				70429.8	\$	70,429.80
Monthly Asphalt Cement Price month placed (APM)	Max. Cap	60%	\$	918.40		
Monthly Asphalt Cement Price month project let (APL)			\$	574.00		
Total Monthly Tonnage of asphalt cement (TMT)				204.5		

ASPHALT	Tons	%AC	AC ton
Leveling	0	5.0%	0
12.5 OGFC	0	5.0%	0
12.5 mm	770	5.0%	38.5
9.5 mm SP	0	5.0%	0
25 mm SP	2370	5.0%	118.5
19 mm SP	950	5.0%	47.5
	4090		204.5

BITUMINOUS TACK COAT

Price Adjustment (PA)				\$	1,789.87	\$	1,789.87
Monthly Asphalt Cement Price month placed (APM)	Max. Cap	60%	\$	918.40			
Monthly Asphalt Cement Price month project let (APL)			\$	574.00			
Total Monthly Tonnage of asphalt cement (TMT)							5.197072116

Bitum Tack		
Gals	gals/ton	tons
1210	232.8234	5.19707212

PROJ. NO.

N/A

CALL NO.

P.I. NO.

0011639

Buford Highway, North of Davis

DATE

7/22/2014

BITUMINOUS TACK COAT (surface treatment)

Price Adjustment (PA)						0	\$	-
Monthly Asphalt Cement Price month placed (APM)		Max. Cap	60%	\$		918.40		
Monthly Asphalt Cement Price month project let (APL)				\$		574.00		
Total Monthly Tonnage of asphalt cement (TMT)						0		

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

TOTAL LIQUID AC ADJUSTMENT							\$	72,219.67
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PROJ. NO.	N/A	
P.I. NO.	0011639	Buford Highway, South of Davis
DATE	7/22/2014	

CALL NO.

INDEX (TYPE)	DATE	INDEX
REG. UNLEADED	Jul-14	\$ 3.589
DIESEL		\$ 3.867
LIQUID AC		\$ 574.00

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)				4701.06	\$	4,701.06
Monthly Asphalt Cement Price month placed (APM)	Max. Cap	60%	\$	918.40		
Monthly Asphalt Cement Price month project let (APL)			\$	574.00		
Total Monthly Tonnage of asphalt cement (TMT)				13.65		

ASPHALT	Tons	%AC	AC ton
Leveling	0	5.0%	0
12.5 OGFC	0	5.0%	0
12.5 mm	273	5.0%	13.65
9.5 mm SP	0	5.0%	0
25 mm SP	0	5.0%	0
19 mm SP	0	5.0%	0
	273		13.65

BITUMINOUS TACK COAT

Price Adjustment (PA)			\$	-	\$	-
Monthly Asphalt Cement Price month placed (APM)	Max. Cap	60%	\$	918.40		
Monthly Asphalt Cement Price month project let (APL)			\$	574.00		
Total Monthly Tonnage of asphalt cement (TMT)				0		

Bitum Tack		
Gals	gals/ton	tons
	232.8234	0

PROJ. NO.

N/A

CALL NO.

P.I. NO.

0011639

Buford Highway, South of Davis

DATE

7/22/2014

BITUMINOUS TACK COAT (surface treatment)

Price Adjustment (PA)						0	\$	-
Monthly Asphalt Cement Price month placed (APM)		Max. Cap	60%	\$		918.40		
Monthly Asphalt Cement Price month project let (APL)				\$		574.00		
Total Monthly Tonnage of asphalt cement (TMT)						0		

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

TOTAL LIQUID AC ADJUSTMENT							\$	4,701.06
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**GEORGIA DEPARTMENT OF TRANSPORTATION
PRELIMINARY ROW COST ESTIMATE SUMMARY**

	Date: 6/19/2014	Project:	
	Revised:	County: Gwinnett	
		PI:	
	Description: Buford Highway from McGinnis Ferry to George Pierce Park		
	Project Termini:		
		Existing ROW:	
	Parcels: 42	Required ROW:	
	Land and Improvements		\$1,016,280.00
	<i>Proximity Damage \$0.00</i>		
	<i>Consequential Damage \$0.00</i>		
	<i>Cost to Cures \$0.00</i>		
	<i>Trade Fixtures \$0.00</i>		
	<i>Improvements \$0.00</i>		
	Valuation Services		\$95,000.00
	Legal Services		\$290,850.00
	Relocation		\$84,000.00
	Demolition		\$0.00
	Administrative		\$356,500.00
	TOTAL ESTIMATED COSTS		\$1,842,630.00
	TOTAL ESTIMATED COSTS (ROUNDED)		\$1,843,000.00
	Preparation Credits	Hours	Signature
			<i>Mike Delaney</i>
			<i>6/19/14</i>
	Prepared By:	<i>Mike Delaney</i>	CG#:

MEMORANDUM

FILE: GDOT PI No. 0011639 OFFICE: Gainesville
 Buford Highway/SR 13 Improvements

FROM: Joe W. Ussery, III, PE, Columbia DATE: July 25, 2014

TO: Neil Kantner
 District Utilities Engineer

CC: Sean Pharr, URS
 Kathe Ahmed, GDOT
 Matt Dickinson, City of Suwanee
 Mike Bolden, State Utilities Engineer
 Lee Upkins, Assistant State Utilities Engineer
 Angela D. Robinson, Office of Financial Management
 Bayne Smith, District Engineer

SUBJECT: Preliminary Utility Estimate for Concept Report

As requested, Preliminary Utility Cost Estimates for each utility with facilities potentially located within the project limits are shown below:

Facility Owner	Non-Reimbursable Costs	Reimbursable Costs
GA Power		\$500,000
Atlanta Gas Light Resources	\$25,000	
AT&T/Distribution	\$100,000	
City of Suwanee		\$20,000
Gwinnett County Department of Water Resources		\$100,000
Charter Communications	\$100,000	
Jackson EMC	No apparent conflicts	
Gwinnett County Department of Transportation/Traffic Engineering		\$100,000
Subtotals:	\$225,000	\$970,000

Total Relocation Costs: \$1,195,000
 Contingency @ 20%: \$239,000
 Total Estimate: \$1,434,000

The information contained in this estimate is conceptual in nature and has been obtained via verbal discussions with each facility owner. The project is still in concept stage and initial utility coordination to identify each utility's exact facilities within the project limits of survey is still in progress. Therefore the extents of this project's impacts to each utility are not yet known. Please be advised that this utility estimate will be revised as utility coordination progresses, the project's impacts to utilities more clearly identified, and more reliable costs can be determined.

Also please be advised that no prior rights research has been completed yet for this project. Therefore, this estimate may be revised when prior rights research is completed.

JWU:jwu

Opinion of Probable Costs
Conceptual Environmental Mitigation Cost Estimate

GDOT PI# 0011639

July 28, 2014

Project impacts

Stream impacts - 108 Lin. Ft.

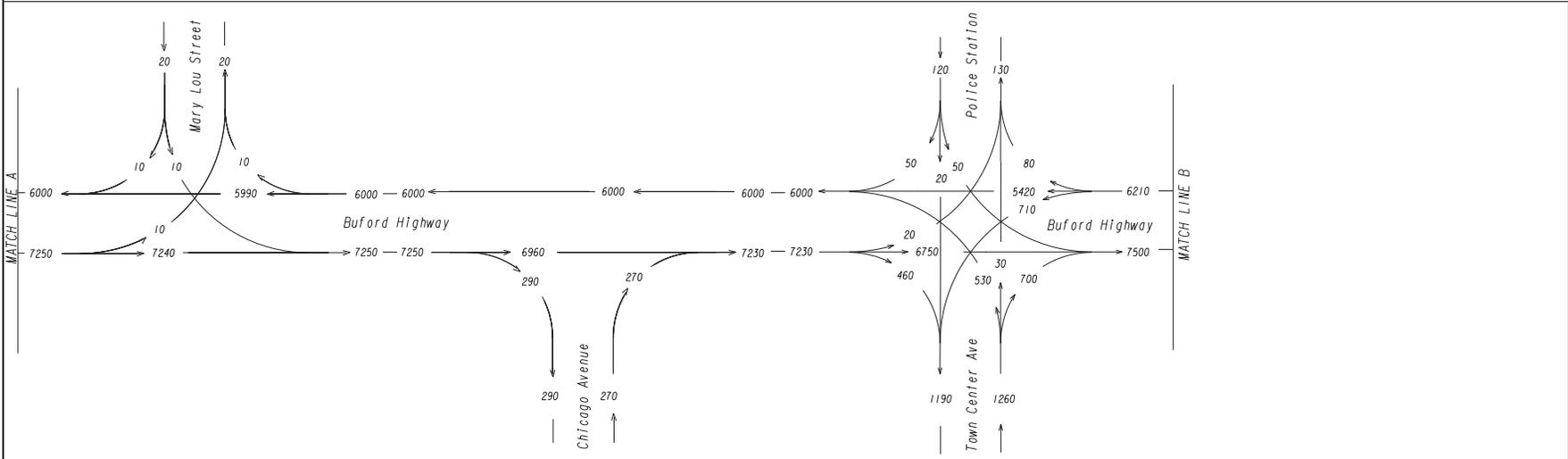
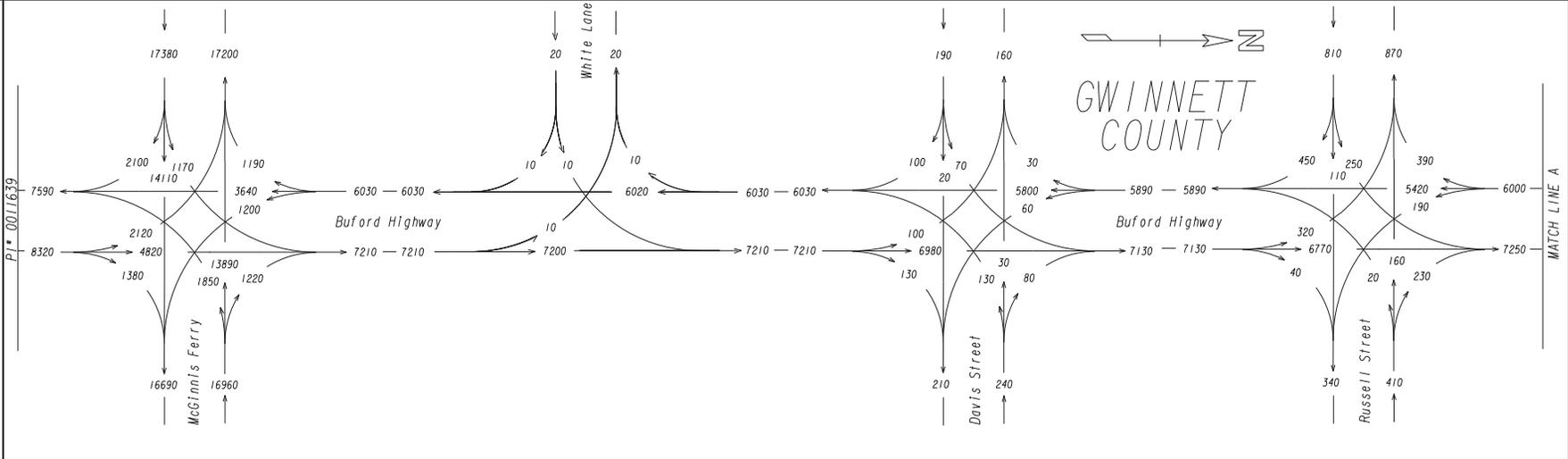
Estimated cost for stream mitigation = \$19,500

Wetland Impacts - 0.065 Acres

Estimated cost for wetland mitigation = \$6,000

Total cost: \$25,500

Attachment #4



PI* 0011639
 GWINNETT COUNTY
 SR 13 (US 19) FM MCGINNIS FERRY
 ROAD TO GEORGE PIERCE PARK

2014 ADT
 EXISTING

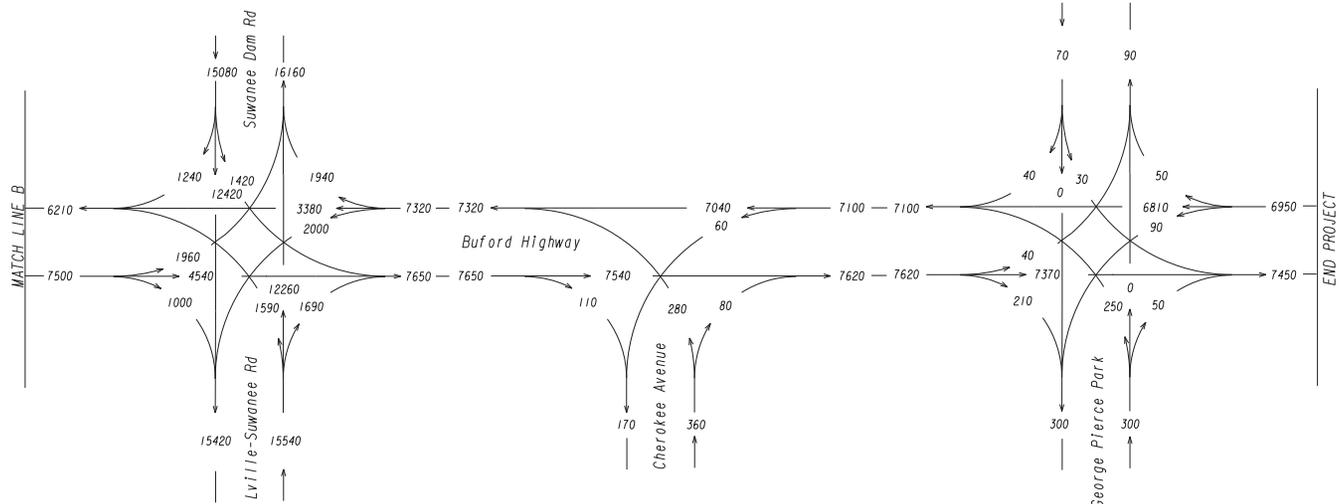
24 HOUR T = 8.9%
 SU = 7.1%
 COMB = 1.8%

T = 8.3%
 SU = 6.7%
 COMB = 1.7%

REVISION DATES	

STATE OF GEORGIA
 DEPARTMENT OF TRANSPORTATION
 OFFICE: PLANNING
TRAFFIC DIAGRAM

DRAWING No.
10-001



→ N
 GWINNETT COUNTY

PI# 0011639
 GWINNETT COUNTY
 SR 13 (US 19) FM MCGINNIS FERRY
 ROAD TO GEORGE PIERCE PARK

2014 ADT
 EXISTING

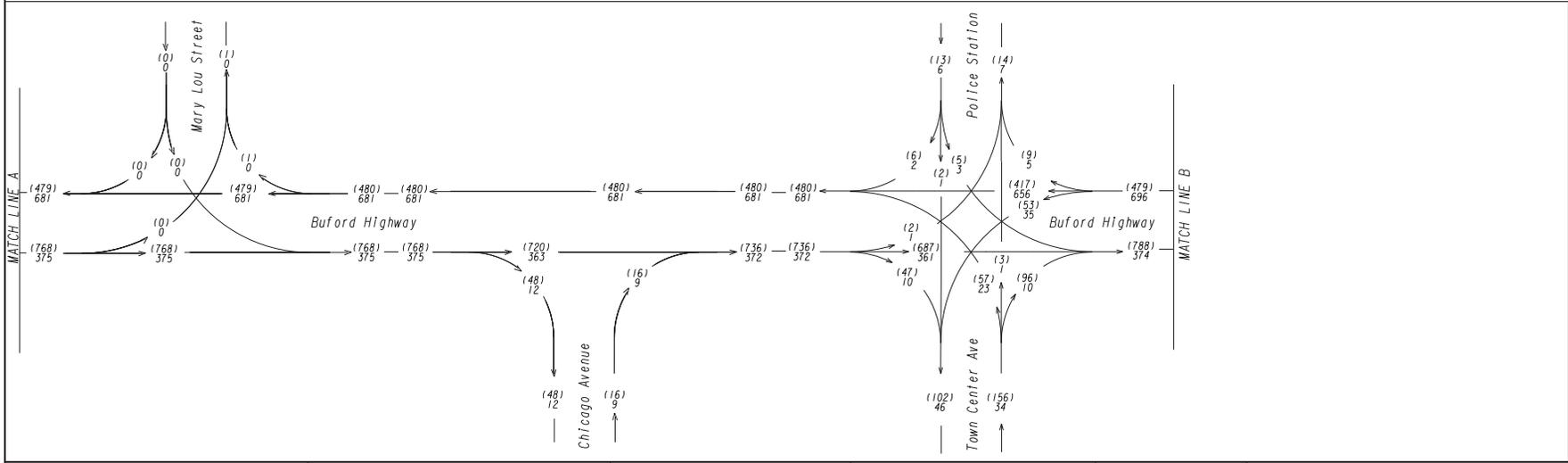
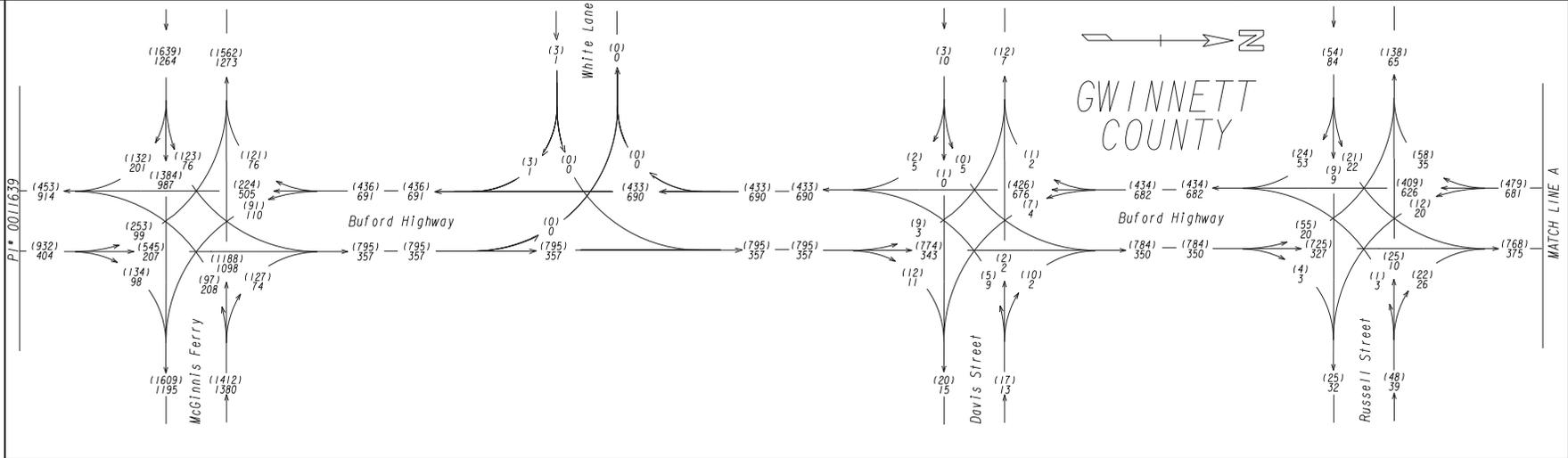
24 HOUR T = 8.9%
 SU = 7.1%
 COMB = 1.8%

T = 8.3%
 SU = 6.7%
 COMB = 1.7%

REVISION DATES

STATE OF GEORGIA
 DEPARTMENT OF TRANSPORTATION
 OFFICE: PLANNING
TRAFFIC DIAGRAM

DRAWING No.
 10-002



PI * 0011639
 GWINNETT COUNTY
 SR 13 (US 19) FM MCGINNIS FERRY
 ROAD TO GEORGE PIERCE PARK

2014 PM DHV = (000)
 2014 AM DHV = 000
 EXISTING

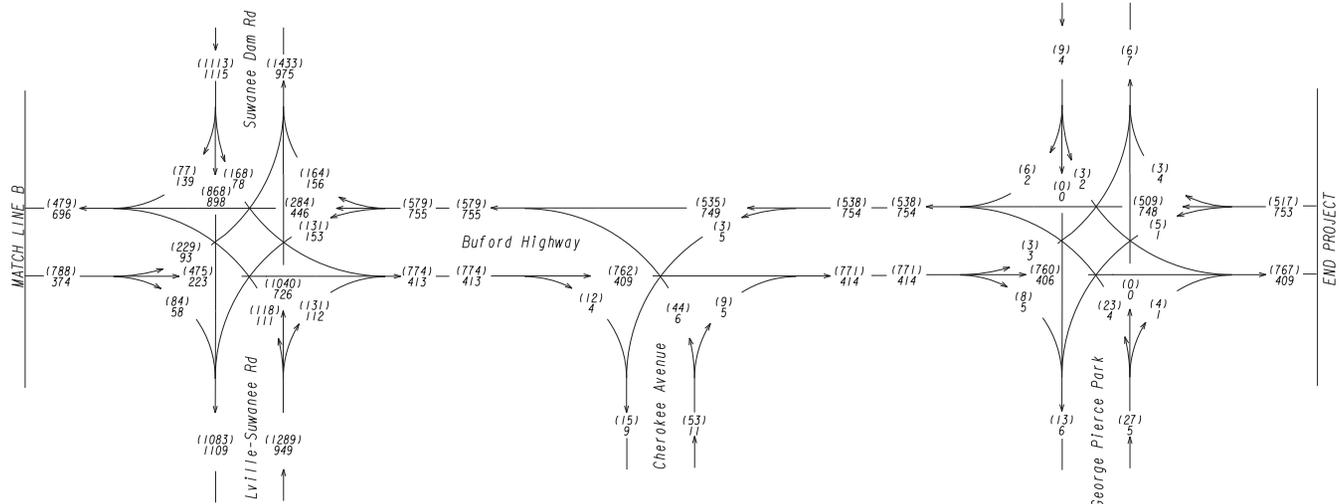
24 HOUR T = 8.9%
 SU = 7.1%
 COMB = 1.8%

T = 8.3%
 SU = 6.7%
 COMB = 1.7%

REVISION DATES	

STATE OF GEORGIA
 DEPARTMENT OF TRANSPORTATION
 OFFICE: PLANNING
TRAFFIC DIAGRAM

DRAWING No. 10-003



→ N
 GWINNETT COUNTY

PJ# 0011639
 GWINNETT COUNTY
 SR 13 (US 19) FM MCGINNIS FERRY
 ROAD TO GEORGE PIERCE PARK

2014 PM DHV = (000)
 2014 AM DHV = 000
 EXISTING

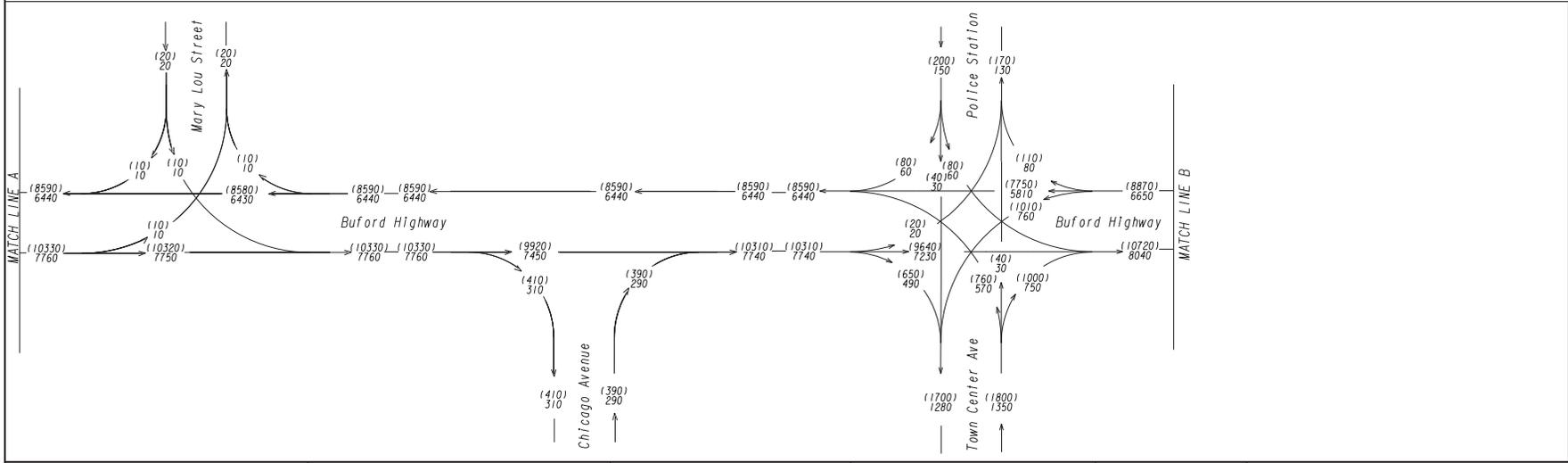
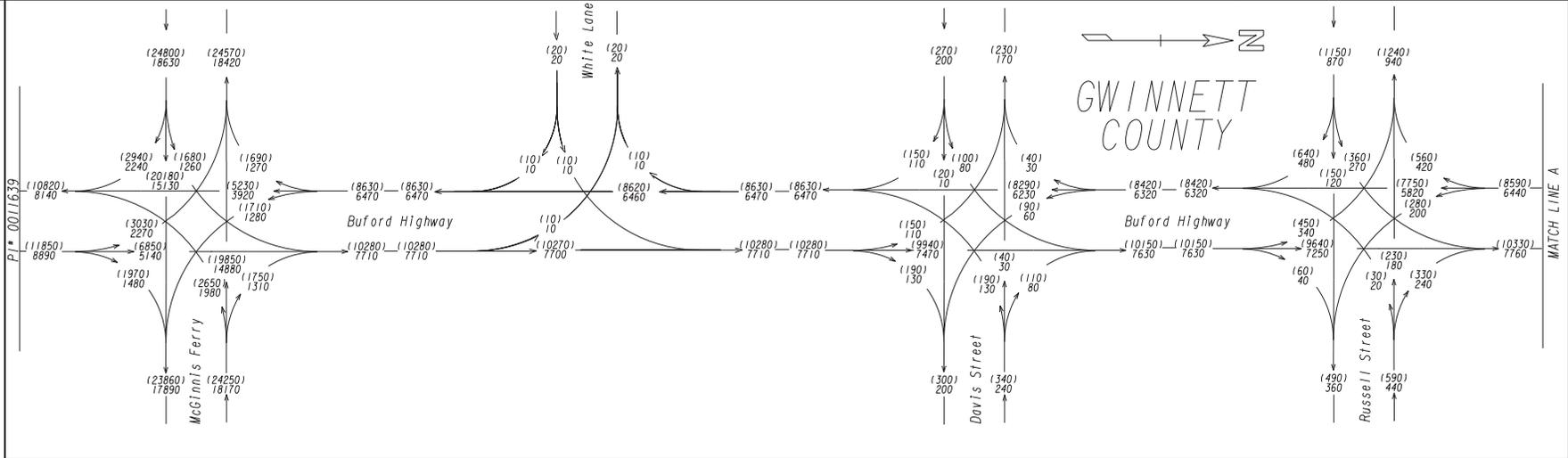
24 HOUR T = 8.9%
 SU = 7.1%
 COMB = 1.8%

T = 8.3%
 SU = 6.7%
 COMB = 1.7%

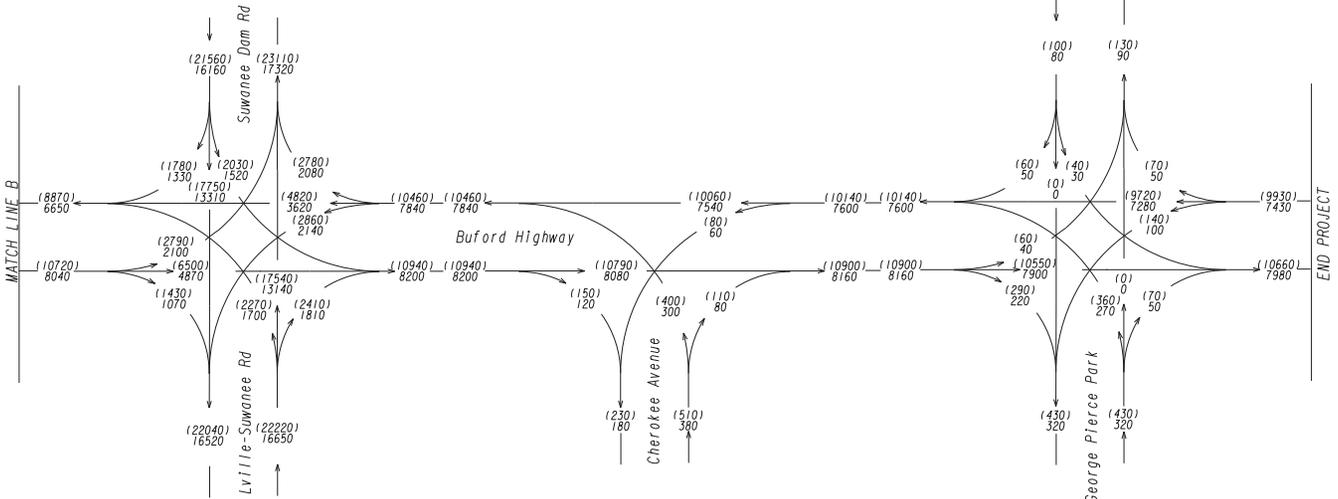
REVISION DATES

STATE OF GEORGIA
 DEPARTMENT OF TRANSPORTATION
 OFFICE: PLANNING
TRAFFIC DIAGRAM

DRAWING No.
 10-004



PJ* 0011639 GWINNETT COUNTY SR 13 (US 19) FM MCGINNIS FERRY ROAD TO GEORGE PIERCE PARK	2038 ADT = (000) 2018 ADT = 000 BUILD/NO BUILD	24 HOUR T = 8.9% SU = 7.1% COMB = 1.8%	T = 8.3% SU = 6.7% COMB = 1.7%	REVISION DATES	STATE OF GEORGIA
					DEPARTMENT OF TRANSPORTATION
				OFFICE:	PLANNING
					TRAFFIC DIAGRAM
					DRAWING No. 10-005



GWINNETT COUNTY

PJ* 0011639
 GWINNETT COUNTY
 SR 13 (US 19) FM MCGINNIS FERRY
 ROAD TO GEORGE PIERCE PARK

2038 ADT = (000)
 2018 ADT = 000
 BUILD/NO BUILD

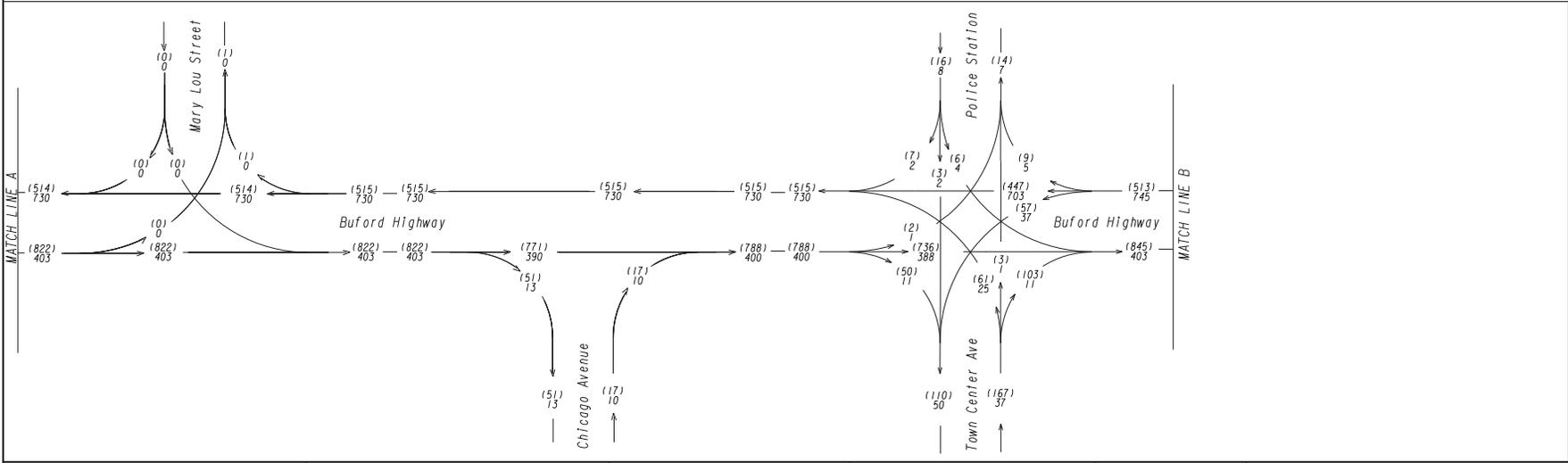
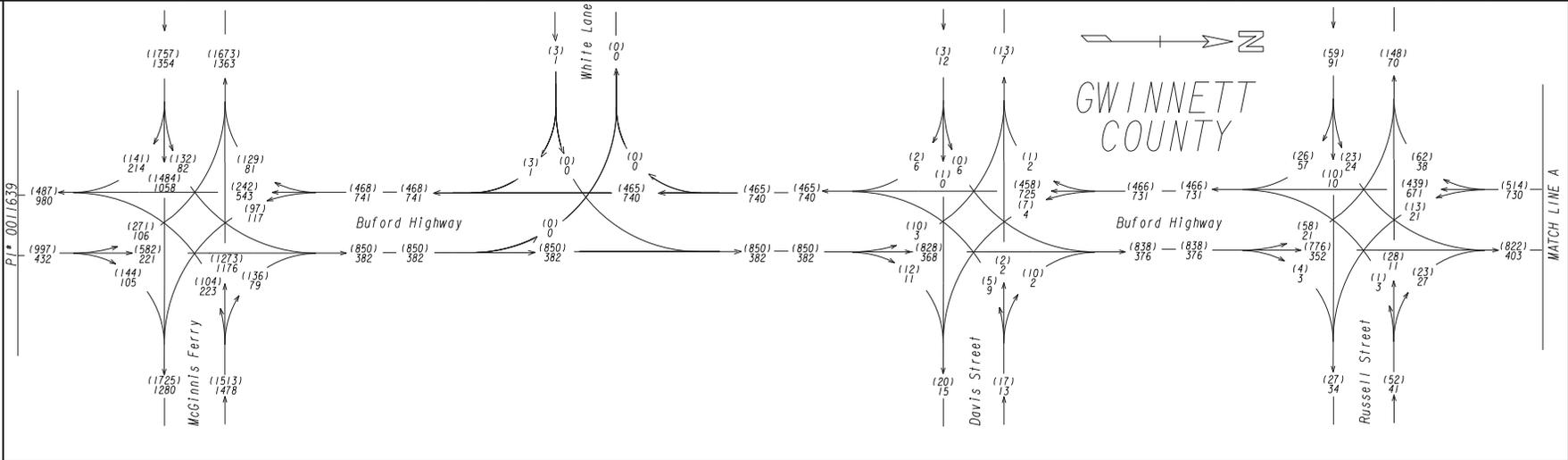
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 SU = 7.1%
 COMB = 1.8%

T = 8.3%
 SU = 6.7%
 COMB = 1.7%

REVISION DATES	

STATE OF GEORGIA
 DEPARTMENT OF TRANSPORTATION
 OFFICE: PLANNING
TRAFFIC DIAGRAM

DRAWING No.
 10-006



P1* 0011639
 GWINNETT COUNTY
 SR 13 (US 19) FM MCGINNIS FERRY
 ROAD TO GEORGE PIERCE PARK

2018 PM DHV = (000)
 2018 AM DHV = 000
 BUILD/NO BUILD

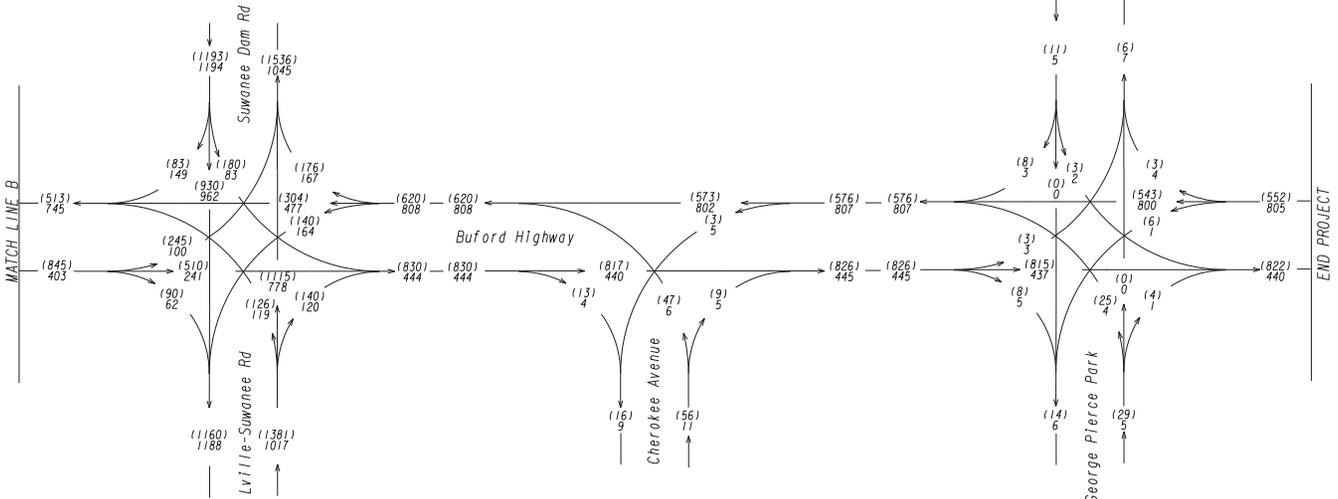
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 SU = 7.1%
 COMB = 1.8%

T = 8.3%
 SU = 6.7%
 COMB = 1.7%

REVISION DATES	

STATE OF GEORGIA
 DEPARTMENT OF TRANSPORTATION
 OFFICE: PLANNING
TRAFFIC DIAGRAM

DRAWING NO. 10-007



PJ* 0011639
 GWINNETT COUNTY
 SR 13 (US 19) FM MCGINNIS FERRY
 ROAD TO GEORGE PIERCE PARK

2018 PM DHV = (000)
 2018 AM DHV = 000
 BUILD/NO BUILD

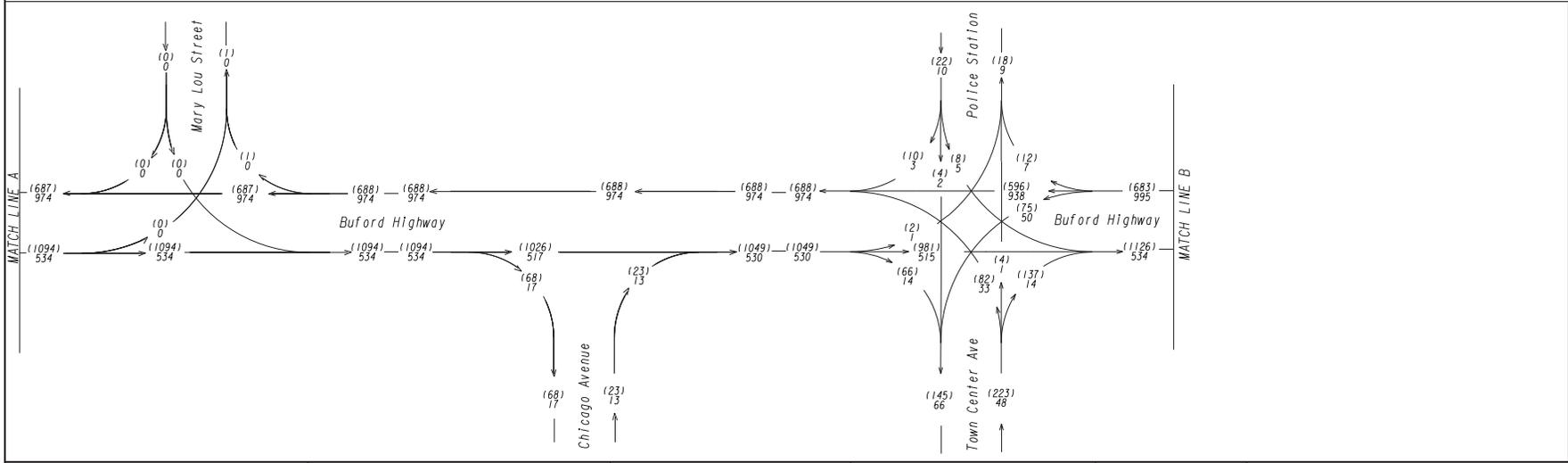
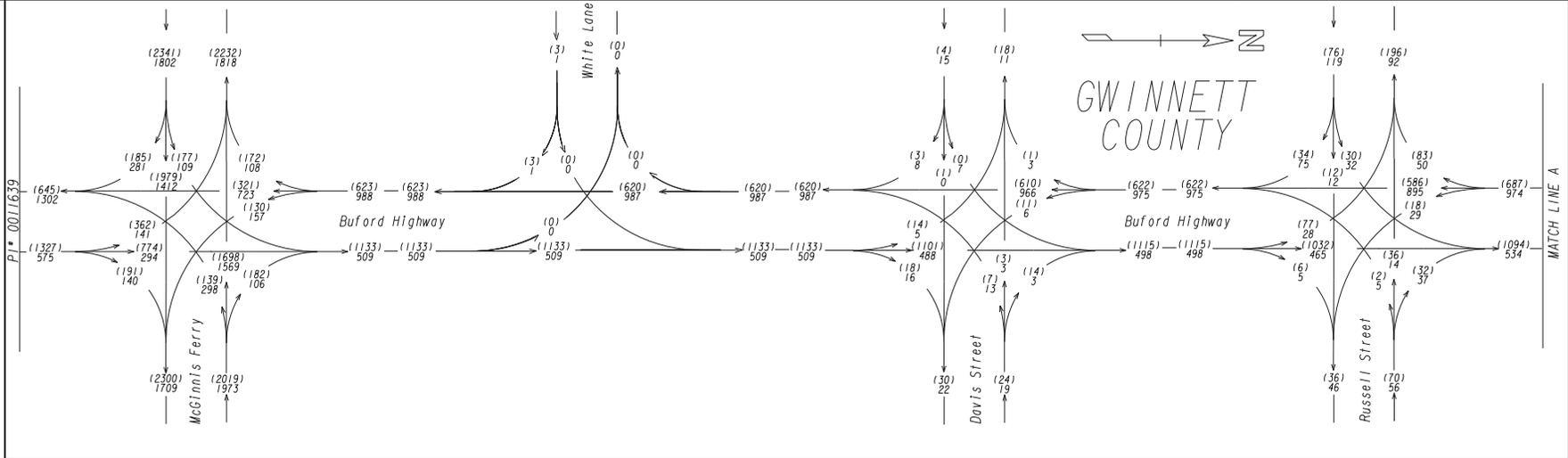
24 HOUR T = 8.9%
 SU = 7.1%
 COMB = 1.8%

T = 8.3%
 SU = 6.7%
 COMB = 1.7%

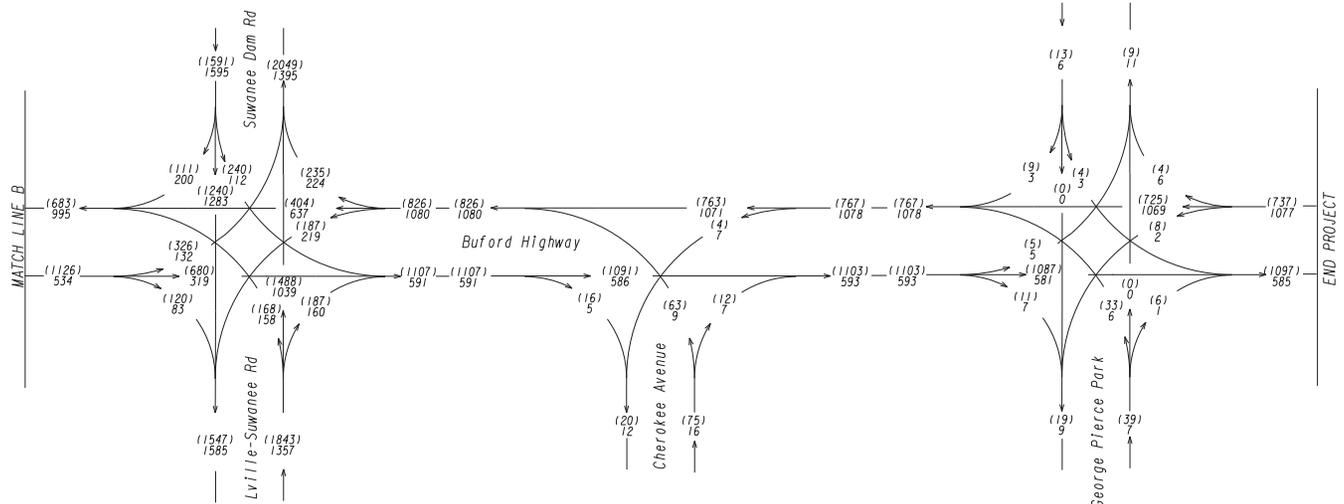
REVISION DATES

STATE OF GEORGIA
 DEPARTMENT OF TRANSPORTATION
 OFFICE: PLANNING
TRAFFIC DIAGRAM

DRAWING No.
 10-008



PJ* 0011639 GWINNETT COUNTY SR 13 (US 19) FM MCGINNIS FERRY ROAD TO GEORGE PIERCE PARK	2038 PM DHV = (000) 2038 AM DHV = 000 BUILD/NO BUILD	24 HOUR T = 8.9% SU = 7.1% COMB = 1.8%	T = 8.3% SU = 6.7% COMB = 1.7%	REVISION DATES	STATE OF GEORGIA
					DEPARTMENT OF TRANSPORTATION
				OFFICE:	PLANNING
					TRAFFIC DIAGRAM
					DRAWING No. 10-009



→ N
 GWINNETT COUNTY

PJ# 0011639
 GWINNETT COUNTY
 SR 13 (US 19) FM MCGINNIS FERRY
 ROAD TO GEORGE PIERCE PARK

2038 PM DHV = (000)
 2038 AM DHV = 000
 BUILD/NO BUILD

24 HOUR T = 8.9%
 SU = 7.1%
 COMB = 1.8%

T = 8.3%
 SU = 6.7%
 COMB = 1.7%

REVISION DATES

STATE OF GEORGIA
 DEPARTMENT OF TRANSPORTATION
 OFFICE: PLANNING
TRAFFIC DIAGRAM

DRAWING No.
 10-010

Attachment #5

BUFORD HIGHWAY IMPROVEMENTS TRAFFIC STUDY



May 2014



URS

BUFORD HIGHWAY IMPROVEMENTS TRAFFIC STUDY

May 2014

Prepared for:

City of Suwanee

330 Town Center Avenue

Suwanee, GA 30024

Prepared by:



URS Corporation

400 Northpark Town Center

1000 Abernathy Road, NE

Suite 900

Atlanta, GA 30328

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www.urs.com

Project #: 15281448

I

INTRODUCTION

Buford Highway (US 23/SR 13) in the City of Suwanee is currently a two lane roadway between McGinnis Ferry Road and George Pierce Park. The traffic analysis in this report documents existing and anticipated conditions along the roadway.

The study was conducted in three major phases:

1. An analysis of existing conditions
2. Traffic projections
3. An analysis of anticipated future conditions in the years 2018 and 2038

To establish existing conditions for the year 2014, URS completed three components:

- Data Collection
- Crash Analysis
- Capacity Analysis

DATA COLLECTION

Existing traffic count data was collected by in February 2014. The data collection effort included weekday peak hour turning movement counts, 48 hour tube counts, and 48 hour classification counts. **Table 1** lists the major study area intersection locations where peak hour turning movement counts were collected. **Table 2** lists the locations where 48 hour tube counts were conducted. **Table 3** lists the locations where 48 hour classification counts were conducted. The raw data is provided in **Appendix A** and the volumes are shown in **Figure 1**.

Table 1 – Intersection Locations

Location	Intersection
1	Buford Highway @ George Pierce Park
2	Buford Highway @ Cherokee Avenue
3	Buford Highway @ Suwanee Dam Road
4	Buford Highway @ Town Center Avenue
5	Buford Highway @ Chicago Avenue
6	Buford Highway @ Mary Lou Street
7	Buford Highway @ Russell Street
8	Buford Highway @ Davis Street
9	Buford Highway @ White Lane
10	Buford Highway @ McGinnis Ferry Road

Table 2 – 48 Hour Tube Locations

Location	Segment
1	Buford Highway, North of George Pierce Park
2	George Pierce Park Entrance
3	Buford Highway, South of George Pierce Park
4	Suwanee Dam Road, West of Buford Highway
5	Lawrenceville-Suwanee Road, East of Buford Highway
6	Buford Highway, South of Suwanee Dam Road
7	Town Center Avenue, East of Buford Highway
8	Chicago Avenue, East of Buford Highway
9	Buford Highway, South of Chicago Avenue
10	Russell Street, West of Buford Highway
11	Russell Street, East of Buford Highway
12	Buford Highway, South of Russell Street
13	Davis Street, East of Buford Highway
14	Buford Highway, North of McGinnis Ferry Road
15	McGinnis Ferry Road, West of Buford Highway
16	McGinnis Ferry Road, East of Buford Highway
17	Buford Highway, South of McGinnis Ferry Road

II

EXISTING CONDITIONS

Table 3 – 48 Hour Classification Locations

Location	Segment
1	Buford Highway, North of Suwanee Dam Road
2	Buford Highway, South of Davis Street

CRASH ANALYSIS

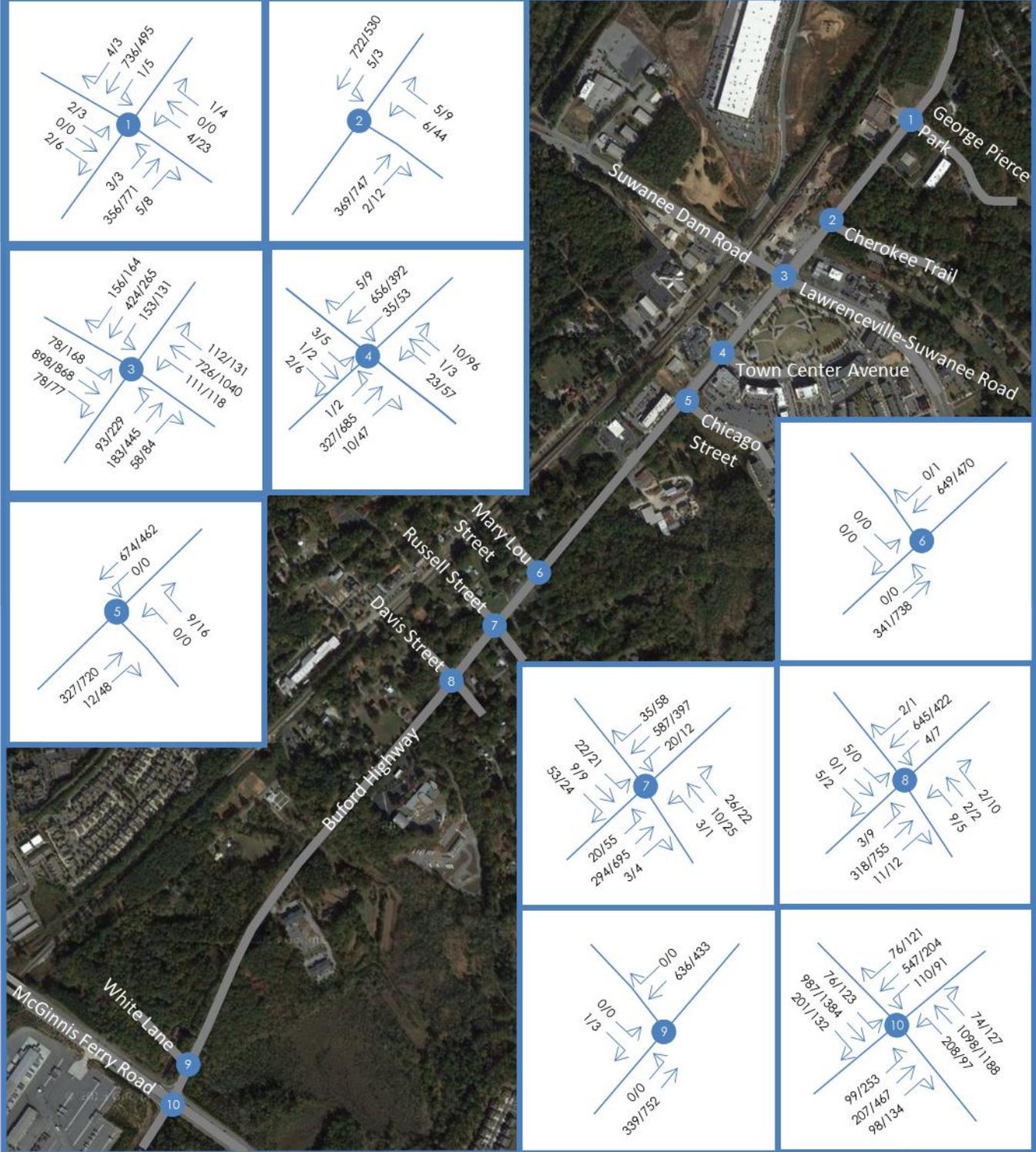
A review of crash data along the corridor was conducted and observed 199 crashes between January 2011 and April 2014, of which none resulted in fatal injuries and 29 resulted in injuries to vehicle passengers. The crash rate over the three years was 473.7 crashes per million vehicle miles (compared to 305.39 average statewide), 104.1 injury crashes per million vehicle miles (compared to a 76.92 average statewide), and 0.00 fatal crashes per million vehicle miles (compared to 0.88 average statewide). **Table 4** lists all of the crashes between January 2011 and April 2014.

Table 4 – Crash Incidents (2011-2014)

Location	Intersection	Crash Type						Other Crash Statistics		
		Angle	Head On	Rear End	Sideswipe (same direction)	Sideswipe (opposite direction)	Not a collision with a moving vehicle	Total # of Crashes	Injuries	Fatalities
1	Buford Highway @ George Pierce Park	1	0	2	0	0	0	3	4	0
2	Buford Highway @ Cherokee Avenue	0	0	1	0	0	0	1	0	0
3	Buford Highway @ Suwanee Dam Road	9	0	30	3	1	1	44	7	0
4	Buford Highway @ Town Center Avenue	4	0	7	0	0	0	11	2	0
5	Buford Highway @ Chicago Avenue	0	0	2	0	0	1	3	2	0
6	Buford Highway @ Mary Lou Street	0	1	3	0	0	2	6	4	0
7	Buford Highway @ Russell Street	6	0	9	0	0	1	16	10	0
8	Buford Highway @ Davis Street	0	1	4	0	0	2	7	4	0
9	Buford Highway @ White Lane	0	0	15	1	0	0	16	8	0
10	Buford Highway @ McGinnis Ferry Road	2	0	35	1	0	3	41	12	0
Total Number of Crashes		22	2	108	5	1	10	148	53	0

FIGURE 1

2014 EXISTING AM/PM VOLUMES



II

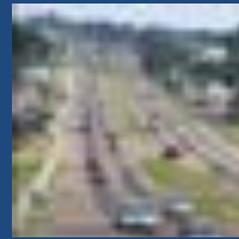
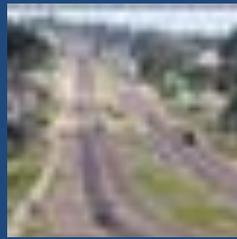
EXISTING CONDITIONS

TRAFFIC ANALYSIS

An evaluation of the existing (2014) AM and PM peak hour traffic operations was conducted including intersection Level of Service (LOS) analysis.

For signalized intersections, LOS is defined in terms of average control delay per vehicle, which is composed of initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. **Table 5** presents the LOS criteria for signalized intersections as they are defined by average control delay. LOS A indicates operations with very low control delay, while LOS F describes operations with extremely high average control delay. For unsignalized intersections and roundabouts, Level of Service (LOS) is defined by

average control delay per vehicle which includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. Several factors affect the controlled delay for unsignalized intersections and roundabouts, such as availability and distribution of gaps in the conflicting traffic stream, critical gaps, and follow-up time for a vehicle in the queue. **Table 6** presents LOS criteria for unsignalized intersections and roundabouts. Detailed reports of this analysis, which also include queue lengths, are provided in **Appendix B**.



Level of Service
A - B

Level of Service
C - D

Level of Service
E - F

Source: FDOT Quality Level of Service Manual

Table 5 - Level of Service Criteria for Signalized Intersections

Level of Service	Average Control Delay (sec/veh)
A	≤10.0
B	>10.0 and ≤20.0
C	>20.0 and ≤35.0
D	>35.0 and ≤55.0
E	>55.0 and ≤80.0
F	>80.0

Source: 2010 Highway Capacity Manual

Table 6 - Level of Service Criteria for Unsignalized Intersections and Roundabouts

Level of Service	Average Control Delay (sec/veh)
A	≤10.0
B	>10.0 and ≤15.0
C	>15.0 and ≤25.0
D	>25.0 and ≤35.0
E	>35.0 and ≤50.0
F	>50.0

Source: 2010 Highway Capacity Manual

II

EXISTING CONDITIONS

The existing Level of Service and Control Delay results are shown in **Tables 7 and 8**.

Table 7 – 2014 Existing Level of Service

Location	Intersection	Operational Control	2014 Existing	
			AM	PM
1	Buford Highway @ George Pierce Park	Signal	A	B
2	Buford Highway @ Cherokee Avenue	WB Stop Approach	C	F
3	Buford Highway @ Suwanee Dam Road	Signal	D	D
4	Buford Highway @ Town Center Avenue	EB Stop Approach	C	E
		WB Stop Approach	D	F
5	Buford Highway @ Chicago Avenue	WB Stop Approach	B	B
6	Buford Highway @ Mary Lou Street	EB Stop Approach	A	A
7	Buford Highway @ Russell Street	EB Stop Approach	E	F
		WB Stop Approach	C	E
8	Buford Highway @ Davis Street	EB Stop Approach	C	C
		WB Stop Approach	D	D
9	Buford Highway @ White Lane	EB Stop Approach	C	B
10	Buford Highway @ McGinnis Ferry Road	Signal	E	F

Table 8 – 2014 Existing Control Delay (sec/veh)

Location	Intersection	Operational Control	2014 Existing	
			AM	PM
1	Buford Highway @ George Pierce Park	Signal	9.3	15.0
2	Buford Highway @ Cherokee Avenue	WB Stop Approach	23.3	104.7
3	Buford Highway @ Suwanee Dam Road	Signal	38.8	50.6
4	Buford Highway @ Town Center Avenue	EB Stop Approach	21.9	38.9
		WB Stop Approach	28.4	53.6
5	Buford Highway @ Chicago Avenue	WB Stop Approach	11.7	14.1
6	Buford Highway @ Mary Lou Street	EB Stop Approach	0.0	0.0
7	Buford Highway @ Russell Street	EB Stop Approach	39.6	91.3
		WB Stop Approach	21.1	45.6
8	Buford Highway @ Davis Street	EB Stop Approach	20.4	18.1
		WB Stop Approach	25.7	31.0
9	Buford Highway @ White Lane	EB Stop Approach	18.2	11.3
10	Buford Highway @ McGinnis Ferry Road	Signal	61.0	99.5

III

TRAFFIC PROJECTIONS

Based on discussions with GDOT, the project growth rate is approximately 1.4% applied exponentially to develop opening and design year no-build and build forecasts.

The final projected volumes for the years 2018 and 2038 are provided in **Figures 2** and **3**. In addition, Average Daily Traffic (ADT) volumes for segments along the corridor are shown in **Table 9**.

Table 9 – ADT Volumes

Segment	ADT	
	2018	2038
George Pierce Park to Lawrenceville-Suwanee Road	16,040	21,400
Lawrenceville-Suwanee Road to McGinnis Ferry Road	14,690	19,590

FIGURE 2

2018 AM/PM VOLUMES

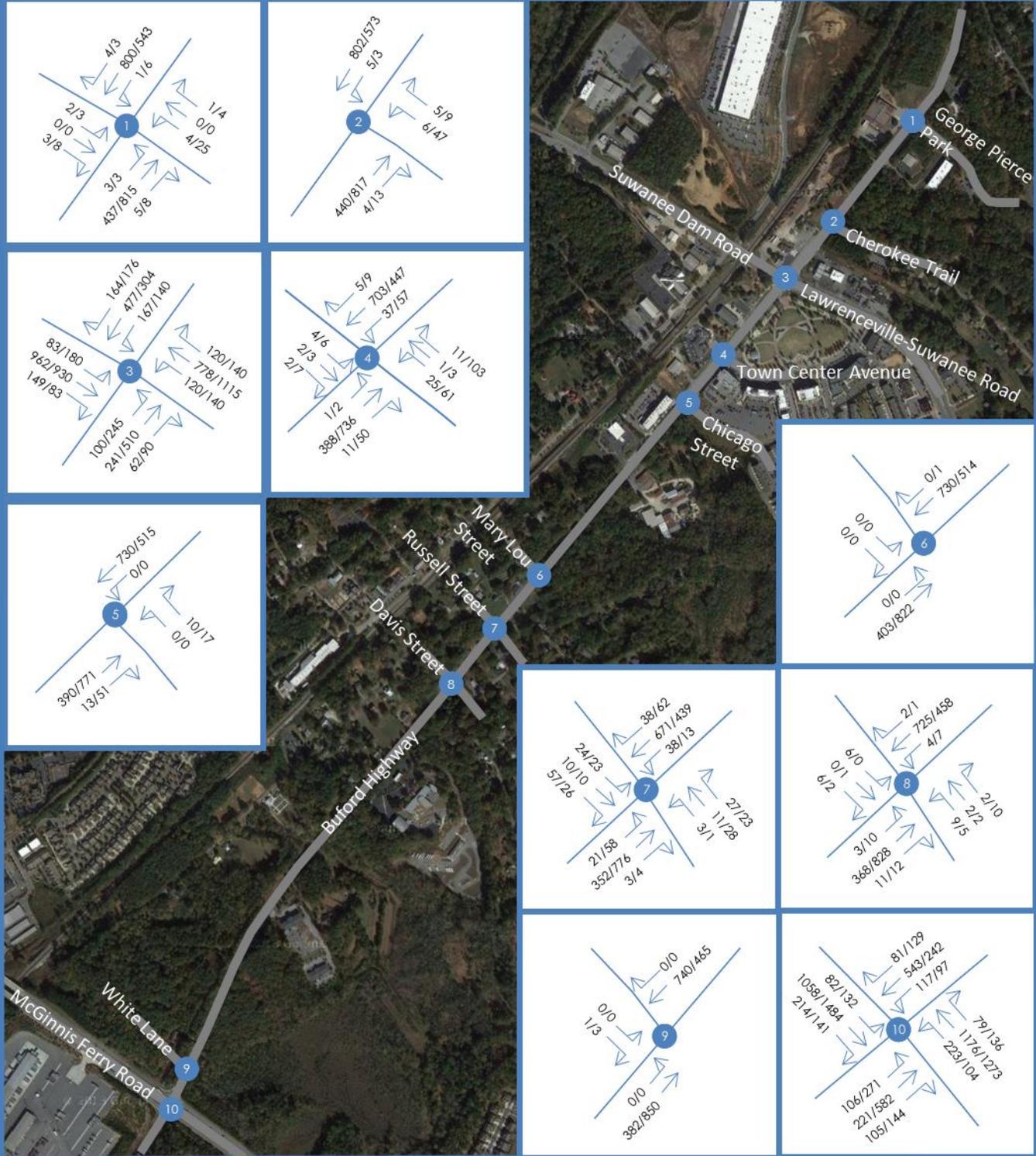
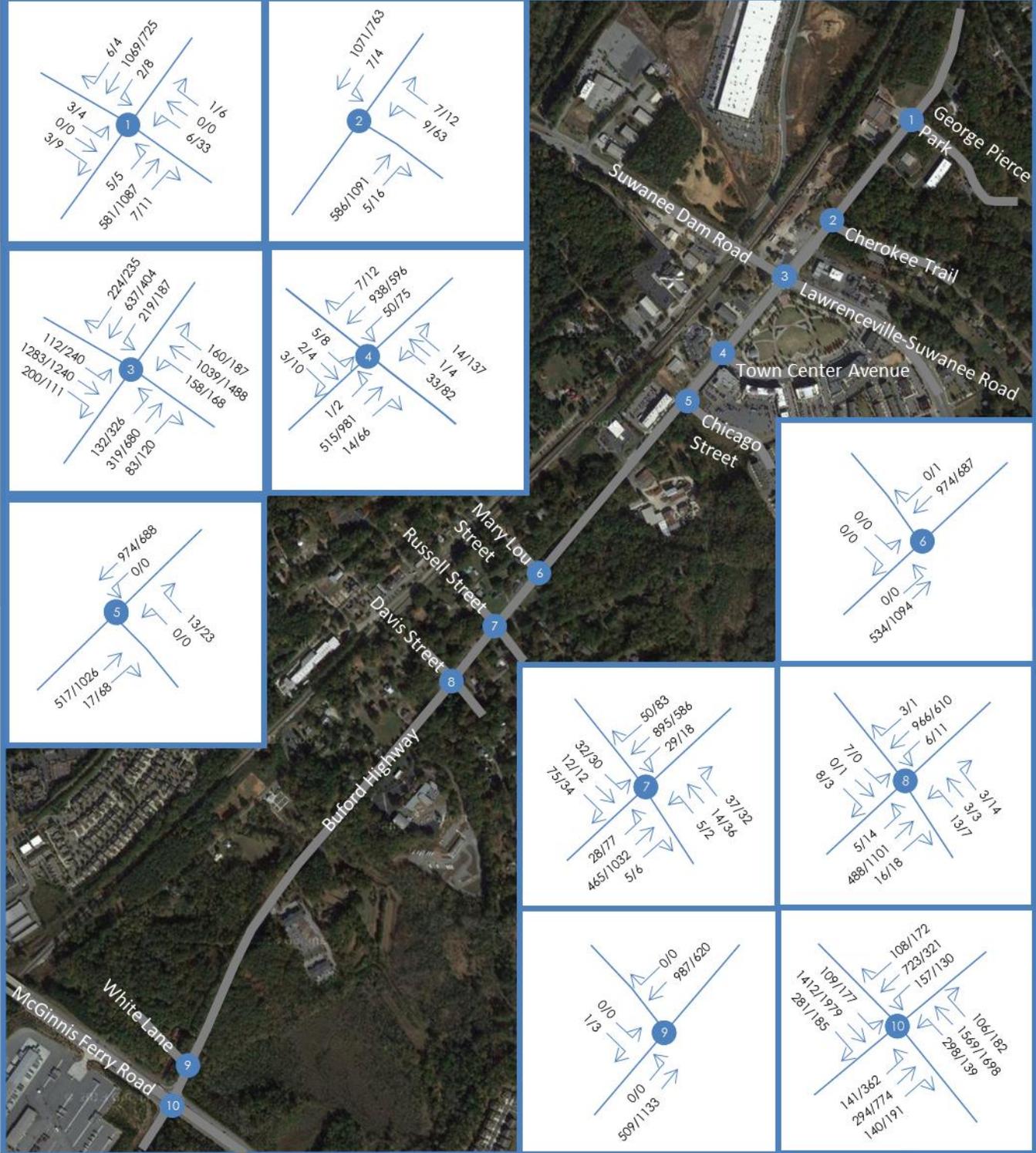


FIGURE 3

2038 AM/PM VOLUMES



The future anticipated Level of Service and Control Delay results are shown in **Tables 10** and **11**. Based on the results, there are several anticipated instances of LOS E or F conditions in the year 2038. However, the results of several of these locations are due likely to limitations in the analysis in which adequate gaps in traffic are not assumed for vehicles turning onto Buford Highway. As a result, the average delay for these movements (and the LOS) may be overstated. Additionally, as shown in **Table 12**, overall capacity along Buford Highway does not indicate any LOS failures.

IV

ANTICIPATED FUTURE CONDITIONS

Table 10 – 2018 & 2038 Level of Service

Location	Intersection	Operational Control	2014 Existing		2018		2038	
			AM	PM	AM	PM	AM	PM
No-Build								
1	Buford Highway @ George Pierce Park	Signal	A	B	A	B	B	C
2	Buford Highway @ Cherokee Avenue	WB Stop Approach	C	F	D	F	F	F
3	Buford Highway @ Suwanee Dam Road	Signal	D	D	D	E	F	F
4	Buford Highway @ Town Center Avenue	EB Stop Approach	C	E	D	F	F	F
		WB Stop Approach	D	F	D	F	F	F
5	Buford Highway @ Chicago Avenue	WB Stop Approach	B	B	B	B	B	C
6	Buford Highway @ Mary Lou Street	EB Stop Approach	A	A	A	A	A	A
7	Buford Highway @ Russell Street	EB Stop Approach	E	F	F	F	F	F
		WB Stop Approach	C	E	C	F	F	F
8	Buford Highway @ Davis Street	EB Stop Approach	C	C	C	C	E	D
		WB Stop Approach	D	D	D	E	F	F
9	Buford Highway @ White Lane	EB Stop Approach	C	B	C	B	D	B
10	Buford Highway @ McGinnis Ferry Road	Signal	E	F	F	F	F	F
Alternative 1: Build								
1	Buford Highway @ George Pierce Park	Signal	n/a		A	B	B	C
2	Buford Highway @ Cherokee Avenue	WB Stop Approach			D	F	F	F
3	Buford Highway @ Suwanee Dam Road	Signal			D	E	F	F
4	Buford Highway @ Town Center Avenue	EB Stop Approach			D	F	F	F
		WB Stop Approach			D	F	F	F
5	Buford Highway @ Chicago Avenue	WB Stop Approach			B	B	B	C
6	Buford Highway @ Mary Lou Street	EB Stop Approach			A	A	A	A
7	Buford Highway @ Russell Street	EB Stop Approach			F	F	F	F
		WB Stop Approach			C	F	F	F
8	Buford Highway @ Davis Street	EB Stop Approach			C	C	E	D
		WB Stop Approach	D	E	F	F		
9	Buford Highway @ White Lane	EB Stop Approach	C	B	D	B		
10	Buford Highway @ McGinnis Ferry Road	Signal	F	F	F	F		
Alternative 2: Build with Roundabout at Russell Street								
1	Buford Highway @ George Pierce Park	Signal	n/a		A	B	B	C
2	Buford Highway @ Cherokee Avenue	WB Stop Approach			D	F	F	F
3	Buford Highway @ Suwanee Dam Road	Signal			D	E	F	F
4	Buford Highway @ Town Center Avenue	EB Stop Approach			D	F	F	F
		WB Stop Approach			D	F	F	F
5	Buford Highway @ Chicago Avenue	WB Stop Approach			B	B	B	C
6	Buford Highway @ Mary Lou Street	EB Stop Approach			A	A	A	A
7	Buford Highway @ Russell Street	Roundabout			B	C	E	F
8	Buford Highway @ Davis Street	EB Stop Approach			C	C	E	D
		WB Stop Approach			D	E	F	F
9	Buford Highway @ White Lane	EB Stop Approach	C	B	D	B		
10	Buford Highway @ McGinnis Ferry Road	Signal	F	F	F	F		

IV

ANTICIPATED FUTURE CONDITIONS

Table 11 – 2018 & 2038 Average Delay (sec/veh)

Location	Intersection	Operational Control	2014 Existing		2018		2038	
			AM	PM	AM	PM	AM	PM
No-Build								
1	Buford Highway @ George Pierce Park	Signal	9.3	15.0	9.4	16.0	19.0	29.8
2	Buford Highway @ Cherokee Avenue	WB Stop Approach	23.3	104.7	26.3	170.9	60.9	1140.6
3	Buford Highway @ Suwanee Dam Road	Signal	38.8	50.6	45.1	66.8	125.3	179.9
4	Buford Highway @ Town Center Avenue	EB Stop Approach	21.9	38.9	27.3	52.0	52.4	613.4
		WB Stop Approach	28.4	53.6	33.9	85.1	112.3	536.1
5	Buford Highway @ Chicago Avenue	WB Stop Approach	11.7	14.1	12.0	14.9	13.9	19.8
6	Buford Highway @ Mary Lou Street	EB Stop Approach	0.0	0.0	0.0	0.0	0.0	0.0
7	Buford Highway @ Russell Street	EB Stop Approach	39.6	91.3	57.1	188.8	585.1	
		WB Stop Approach	21.1	45.6	24.4	64.4	128.1	812.5
8	Buford Highway @ Davis Street	EB Stop Approach	20.4	18.1	22.6	19.6	41.3	29.1
		WB Stop Approach	25.7	31.0	28.8	36.2	69.8	133.7
9	Buford Highway @ White Lane	EB Stop Approach	18.2	11.3	19.4	11.6	27.2	13.4
10	Buford Highway @ McGinnis Ferry Road	Signal	61.0	99.5	81.0	132.2	225.8	303.2
Alternative 1: Build								
1	Buford Highway @ George Pierce Park	Signal			9.4	16.0	19.0	29.8
2	Buford Highway @ Cherokee Avenue	WB Stop Approach			26.3	170.9	60.9	1140.6
3	Buford Highway @ Suwanee Dam Road	Signal			45.1	66.8	125.3	179.9
4	Buford Highway @ Town Center Avenue	EB Stop Approach			27.3	52.0	52.4	613.4
		WB Stop Approach			33.9	85.1	112.3	536.1
5	Buford Highway @ Chicago Avenue	WB Stop Approach			12.0	14.9	13.9	19.8
6	Buford Highway @ Mary Lou Street	EB Stop Approach		n/a	0.0	0.0	0.0	0.0
7	Buford Highway @ Russell Street	EB Stop Approach			57.1	188.8	585.1	
		WB Stop Approach			24.4	64.4	128.1	812.5
8	Buford Highway @ Davis Street	EB Stop Approach			22.6	19.6	41.3	29.1
		WB Stop Approach			28.8	36.2	69.8	133.7
9	Buford Highway @ White Lane	EB Stop Approach			19.4	11.6	27.2	13.4
10	Buford Highway @ McGinnis Ferry Road	Signal			81.0	132.2	225.8	303.2
Alternative 2: Build with Roundabout at Russell Street								
1	Buford Highway @ George Pierce Park	Signal			9.4	16.0	19.0	29.8
2	Buford Highway @ Cherokee Avenue	WB Stop Approach			26.3	170.9	60.9	1140.6
3	Buford Highway @ Suwanee Dam Road	Signal			45.1	66.8	125.3	179.9
4	Buford Highway @ Town Center Avenue	EB Stop Approach			27.3	52.0	52.4	613.4
		WB Stop Approach			33.9	85.1	112.3	536.1
5	Buford Highway @ Chicago Avenue	WB Stop Approach			12.0	14.9	13.9	19.8
6	Buford Highway @ Mary Lou Street	EB Stop Approach		n/a	0.0	0.0	0.0	0.0
7	Buford Highway @ Russell Street	Roundabout			13.6	21.3	36.8	79.4
8	Buford Highway @ Davis Street	EB Stop Approach			22.6	19.6	41.3	29.1
		WB Stop Approach			28.8	36.2	69.8	133.7
9	Buford Highway @ White Lane	EB Stop Approach			19.4	11.6	27.2	13.4
10	Buford Highway @ McGinnis Ferry Road	Signal			81.0	132.2	225.8	303.2

Table 12 – Buford Highway Segment Level of Service

Segment	2014 Existing		2018		2038	
	AM	PM	AM	PM	AM	PM
No-Build						
Northbound						
McGinnis Ferry Road to Lawrenceville-Suwanee Road	B	B	B	B	B	D
Lawrenceville-Suwanee Road to George Pierce Park	B	C	B	C	C	D
Southbound						
George Pierce Park to Lawrenceville-Suwanee Road	F	E	F	E	F	F
Lawrenceville-Suwanee Road to McGinnis Ferry Road	C	B	C	B	E	D
Alternative 1: Build						
Northbound						
McGinnis Ferry Road to Lawrenceville-Suwanee Road	n/a		B	B	B	D
Lawrenceville-Suwanee Road to George Pierce Park			B	C	C	D
Southbound						
George Pierce Park to Lawrenceville-Suwanee Road	n/a		F	E	F	F
Lawrenceville-Suwanee Road to McGinnis Ferry Road			C	B	E	D
Alternative 2: Build with Roundabout at Russell Street						
Northbound						
McGinnis Ferry Road to Lawrenceville-Suwanee Road	n/a		C	D	C	F
Lawrenceville-Suwanee Road to George Pierce Park			B	C	C	D
Southbound						
George Pierce Park to Lawrenceville-Suwanee Road	n/a		F	E	F	F
Lawrenceville-Suwanee Road to McGinnis Ferry Road			E	D	F	E

The queue analysis for the signalized intersections is shown in **Table 13**. The queues are the 95th percentile lengths in feet. The queues are taken from the design year Build alternative Synchro analysis.

Table 13 - 95th Percentile Queues (ft)

Segment	Approach	AM	PM
George Pierce Park	EBT	0	0
	WBT	7	22
	WBR	0	0
	NBT	434	1372
	NBR	0	0
	SBL	2	6
	SBT	1029	410
Lawrenceville-Suwanee Road	EBL	102	377
	EBT	823	805
	EBR	120	39
	WBL	235	268
	WBT	740	1176
	WBR	83	117
	NBL	168	515
	NBT	313	947
	NBR	13	45
	SBL	248	317
	SBT	853	449
	SBR	100	122
McGinnis Ferry Road	EBL	144	324
	EBT	1241	1945
	EBR	198	104
	WBL	618	233
	WBT	1452	1553
	WBR	19	91
	NBL	277	693
	NBT	690	2068
	SBL	168	205
SBT	1625	884	

Attachment #6

GDOT ROUNDABOUT DESIGN CHECKLIST - CONCEPT DEVELOPMENT

Notes:

- 1) This checklist is specifically written for a standalone intersection project. Some minor adjustments may be needed for a consultant designed roundabout with respect to roles. For linear or interchange reconstruction projects much of the concept development effort can be accomplished during the preliminary design. Additional items should be added as necessary to define/document the design. The preparation of a roundabout design may be terminated at any time during the process, if a decision is made to eliminate a roundabout from further consideration. In this case, documentation should be organized and retained to support this decision.
- 2) This checklist includes work items which are specific to the roundabout project and does not include many items which would be common to all conventional intersection projects. The level of detail and timing of some tasks will vary with the complexities of the roundabout and site constraints.
- 3) The checklist is meant to combine certain categories of information and is not meant to reflect a precise sequence of performance. Any items which do not apply to a specific project can be marked as "N/A" (i.e. not applicable).

PI Number: 0011639	County: Gwinnett
Design Phase Leader: _____	Design Office: _____
Description: SR 13 (Buford Highway) at Russell Street	

No.	Completed	Action By	Item	Commentary <small>(Can modify text to replace with project specific info, will show in bold letters)</small>
1. Operations - Planning Level Assessment - See DPM section 8.2.1				
1	X	JMT	Vicinity Map	<i>Aerial map obtained from Google Earth Pro that illustrates the study area within a mile in each direction.</i>
2	X	JMT	Intersection Layout	<i>Aerial Photo and survey of the intersection area obtained from the surveyor, Columbia Engineering.</i>
3	X	JMT	Letter of support from local government	<i>N/A. City of Suwanee issued RFP and is managing the project.</i>
4			Crash history	<i>Send request to Norm Cressman of GDOT Crash Reporting Unit.</i>
5	X	JMT	Pedestrian and bike activity	<i>Low pedestrian and bike activity. No existing sidewalks in the area of the project. No bike facilities in the intersection vicinity. Future multi-use path planned through intersection.</i>
6	X	JMT	Estimate current traffic volumes	<i>Existing AADT - 410 Russell Street(east leg), 810 Russell Street (west leg), 7,130 Buford Highway(south leg), 6,000 Buford Highway(north leg). Total entering volume ~14,350 ADT.</i>
7	X	JMT	Estimate design year traffic volumes	<i>2038 ~ 20,480 ADT</i>
8	X	JMT	Percent traffic on major roads	<i>91% on Buford Highway / 9% on Russell Street</i>
9	X	JMT	Number of circulatory lanes	<i>1-lane roundabout for design year.</i>
10	X	JMT	Favorable conditions	<i>This roundabout will promote the aesthetics of Buford Highway by providing a gateway for Suwanee town center.</i>
11	X	JMT	Unfavorable conditions	<i>Highly directional traffic and vertical constraints</i>
12	X	JMT	Purpose of roundabout	<i>The purpose of the roundabout is to slow down traffic moving from a high-speed rural area to a low-speed urban area. It also provides a gateway for Suwanee town center.</i>
13	X	JMT	Roundabout sketch	<i>See Roundabout Feasibility Evaluation. Several options for placement developed at a sketch level.</i>

PI Number: 0011639	County: Gwinnett
Design Phase Leader: _____	Design Office: _____
Description: SR 13 (Buford Highway) at Russell Street	

No.	Completed	Action By	Item	Commentary <small>(Can modify text to replace with project specific info, will show in bold letters)</small>
2. Design - Gather information for Concept - for existing intersection and for base & design years				

1	<input checked="checked" type="checkbox"/>	JMT	Vicinity Map	Aerial map obtained from Google Earth Pro that illustrates the study area within a mile in each direction.
2	<input checked="checked" type="checkbox"/>	JMT	Approach Speeds	Roundabout is designed for Buford Highway becoming a 35 mph roadway in this area. Russell Street has a speed limit of 35 mph.
3	<input checked="checked" type="checkbox"/>	JMT	Grades	Buford Highway has an existing grade of approximately 3.5%. Russell Street has a low point at Buford Highway, with a grade of approximately 5-6% west of the existing intersection and 6-7% east of the existing intersection.
4	<input checked="checked" type="checkbox"/>	JMT	Functional Classification	Buford Highway is classified as an urban minor arterial. Russell Street is classified as a local street.
5	<input checked="checked" type="checkbox"/>	JMT	Current year traffic volumes	Existing 2011 traffic counts collected by All Traffic Data Service, Inc. All raw data provided in appendix of the Traffic Study Report.
6	<input checked="checked" type="checkbox"/>	JMT	Base year traffic projections	Base year 2015 and Design Year 2035 traffic projections reviewed and approved by GDOT. 1.79% annual growth rate assumed for developing the future year volumes.
7	<input checked="checked" type="checkbox"/>	JMT	Design year traffic projections	Base year 2015 and Design Year 2035 traffic projections reviewed and approved by GDOT. 1.79% annual growth rate assumed for developing the future year volumes.
8	<input checked="checked" type="checkbox"/>	JMT	Future projects	A widening project is planned along Buford Highway, and is currently in long range funding.
9	<input checked="checked" type="checkbox"/>	JMT	Desirable LOS	Refer to DPM Section 6.14, Summary of Design Criteria for Cross Section Elements. For Urban conditions an LOS C or D is desired.

3. Design - Roundabout Feasibility Study, Part 1 - Alternate comparison and selection				
--	--	--	--	--

1	<input checked="checked" type="checkbox"/>	JMT	Intersection base map	Aerial Photo obtained from Columbia Engineering
2	<input checked="checked" type="checkbox"/>	JMT	Signal Warrant Study	A signal is not a feasible alternative.
3	<input checked="checked" type="checkbox"/>	JMT	Identify/sketch alternative intersection forms	Several sketch level roundabout configurations were developed that illustrated alternatives with different roundabout locations. See feasibility study memorandum for illustrations.
4	<input checked="checked" type="checkbox"/>	JMT	Safety assessment	See Traffic Study Report for details. Estimated reduction of total crashes by 23% and injury crashes by 66% with conversion from existing signal to a roundabout.
5	<input checked="checked" type="checkbox"/>	JMT	Number of entry lanes for each approach leg	Single lane entry and exit lanes are all that is required for each leg.
6	<input checked="checked" type="checkbox"/>	JMT	Operational analyses	See Roundabout feasibility Evaluation. Analysis was performed using SIDRA Intersection and HCM 2010 methodologies.
7	<input type="checkbox"/>	<input type="checkbox"/>	Cost comparison	See DPM Section 8.2.2 - bullet for Section 5. Not required if roundabout is to address severe crash history.
8	<input checked="checked" type="checkbox"/>	JMT	Select most favorable alternative	The preferred roundabout location was identified in the Roundabout Feasibility Evaluation.

PI Number: 0011639	County: Gwinnett
Design Phase Leader: _____	Design Office: _____
Description: SR 13 (Buford Highway) at Russell Street	

No.	Completed	Action By	Item	Commentary <small>(Can modify text to replace with project specific info, will show in bold letters)</small>
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4. Design - Roundabout Feasibility Study, Part 2 - Roundabout layout (as required to define footprint)				
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1	<input checked="" type="checkbox"/>	JMT	Design alternate roundabout layouts	The preferred roundabout location alternative was further developed in Microstation. See Roundabout Feasibility Evaluation for additional information.
2	<input type="checkbox"/>	<input type="checkbox"/>	Identify likely impacts	Identify potential conflicts with underground utilities and likely property and environmental resource impacts, etc.
3	<input checked="" type="checkbox"/>	JMT	Fastest paths	See roundabout Feasibility Evaluation for figures illustrating fastest paths.
4	<input checked="" type="checkbox"/>	JMT	Design vehicle	A WB-67 design vehicle was utilized for the through movements along Buford Highway. A WB-50 design vehicle was identified to/from Russell Street due to truck restrictions that would preclude travel by large trucks..
5	<input checked="" type="checkbox"/>	JMT	Design vehicle swept path	See Roundabout Feasibility Evaluation for figures of design vehicle swept paths.
6	<input checked="" type="checkbox"/>	JMT	Stopping sight distance	Based upon 25 mph posted speeds, a SSD of approximately 155 feet is required. Each of the approaches is estimated to provide stopping sight distance in excess of this value.
7	<input checked="" type="checkbox"/>	JMT	Staging improvements	A single lane roundabout is all that is required for the design year, so an interim design is not possible.
8	<input checked="" type="checkbox"/>	JMT	Finalize concept layout	Prepare a concept layout of the proposed roundabout. May be CAD or hand drawn, but should be to scale. Should show central island, splitter islands, sidewalks, crosswalks and truck apron. Note or list dimensions for ICD, circulatory roadway width, truck apron widths, angles between approach centerlines. Will be helpful to include preliminary striping for multilane roundabouts. Show scale and North arrow.

5. Design - Other information - required for Concept Report				
--	--	--	--	--

1	<input checked="" type="checkbox"/>	JMT	Typical section	Typical Sections for this project have been conceptually completed
2	<input checked="" type="checkbox"/>	JMT	Construction sequencing	An off site detour is anticipated for construction of the roundabout
3	<input checked="" type="checkbox"/>	JMT	Lighting	Roadway lighting is required for the roundabout.
4	<input checked="" type="checkbox"/>	JMT	Landscaping requirements	Landscaping will be utilized near the roundabout to help improve visibility of the roundabout.
5	<input checked="" type="checkbox"/>	JMT	Pavement Type	Asphalt roundabout with a concrete truck apron

6. Design - Implement program of local government coordination and public involvement				
--	--	--	--	--

1	<input type="checkbox"/>	<input type="checkbox"/>	Presentation layouts	Prepare exhibits for meetings.
2	<input type="checkbox"/>	<input type="checkbox"/>	Meeting with local officials	An initial meeting with local government officials (and their support of the roundabout) will be helpful in gaining support at a PIOH.
3	<input type="checkbox"/>	<input type="checkbox"/>	Public outreach	Required in most cases, often in the form of a PIOH. See DPM Section 8.2.5 Public Involvement for helpful advice regarding visual aids. This should occur after the feasibility study is complete.

PI Number: 0011639	County: Gwinnett
Design Phase Leader: _____	Design Office: _____
Description: SR 13 (Buford Highway) at Russell Street	

No.	Completed	Action By	Item	Commentary <small>(Can modify text to replace with project specific info, will show in bold letters)</small>
7. Complete quality assurance reviews - occurs at previous points in the process				
1	<input checked="" type="checkbox"/>	JMT	QA review by design process	<i>Roundabout Feasibility Study completed.</i>
2	<input type="checkbox"/>	<input type="checkbox"/>	Informal review by GDOT roundabout SME	<i>Upon request, a GDOT SME will, (prior to peer review), perform an informal review of a feasibility study or any in-progress work products. Contact either Scott Zehngraff (szehngraff@dot.ga.gov) of the Office of Traffic Operations or Daniel Pass (dpass@dot.ga.gov) of the Office of Design Policy and Support.</i>
3	<input checked="" type="checkbox"/>	JMT	Peer review by Consultant peer reviewer	<i>Roundabout has been peer reviewed by Kittleson.</i>

Notes:

- 1)** Key objectives during concept development includes identifying the best solution that addresses the project need and defining a layout which best considers geometric, operational and other project-specific constraints. Defining an "accurate" footprint is particularly important for projects with significant site constraints and for roundabouts of greater complexity (complex roundabouts). Complex roundabouts include multilane roundabouts and single land roundabouts which addresses difficult conditions such as bad skewers or significant geometric or operational constraints.
- 2)** It should be recognized that unlike conventional intersection forms (e.g., signalization, stop control, etc.) the configuration and layout of a roundabout can be dramatically affected by the results of capacity, fastest path, and truck turning template studies and thus often requires higher level of engineering during the concept phase.
- 3)** Include a completed checklist with the submittal package to the peer reviewer and with submission of the concept report for review and approval. Any peer review recommended changes not implemented must be coordinated with the peer reviewer and/or the Office of Design Policy and Support. The peer review report should also be included in the concept report if any recommended changes are to be made after concept development. At minimum, make all changes which affect impacts, cost, required R/W, basic operation of the roundabout leg, elimination of a bypass lane, etc. prior to submitting the concept report for review and approval.

List of Acronyms

- SME - Subject Matter Expert
- DPM - Design Policy Manual
- ICD - Inscribed Diameter
- TPAS - Traffic polling and Analysis System

ROUNDBOUT FEASIBILITY EVALUATION
SR13 BUFORD HIGHWAY AT RUSSELL STREET

GDOT PI # 0011639

May 2014

INTRODUCTION AND EXECUTIVE SUMMARY

URS evaluated the operational and geometric feasibility of a roundabout at the intersection of SR 13 (Buford Highway) with Russell Road in Suwanee, Georgia. This memorandum documents the development of the conceptual roundabout design for the study intersection, including options for roundabout size and placement that were considered. For the roundabout alternative, URS developed several design options at a sketch level to identify the anticipated footprint, potential impacts, and potential constructability associated with each option. One option was selected to be further refined and advanced as the final roundabout concept design. Operational analyses are documented under a separate Transportation Analysis report.

The feasibility evaluation and conceptual design development included each of the components outlined in the Georgia DOT's Roundabout Design Checklist (Concept Development). The information documented in this memorandum is intended to satisfy Parts 3 and 4 of the checklist pertaining to roundabout feasibility.

EXISTING SITE CONDITIONS AND CONSTRAINTS

SR 13 (Buford Highway) is a north-south state road with a two-lane undivided cross-section and a posted speed of 45 mph. Buford Highway serves as a truck route through the area for vehicles longer than 30 feet. It currently carries an Annual Average Daily Traffic (AADT) of approximately 13,000 vehicles. No pedestrian or bike facilities are provided along Buford Highway in the vicinity of the study intersection. **Russell Street** is an east-west two-lane undivided roadway with a speed limit of 35 mph. Russell carries an existing AADT of 1680 vehicles to the west of SR 13 and 750 vehicles to the east. No pedestrian facilities are provided along Russell Street in the vicinity of the study intersection. Existing bike facilities do exist along Russell Street, as there are share the road signs. URS conducted field observations of the project site. The following bullet points highlight a brief summary of key site conditions and constraints observed during the field visits. An aerial of the existing intersection is provided in Figure 1.

- Railroad - There is an existing at grade railroad crossing on Russell Street approximately 600 feet west of the existing intersection.
- Vertical Road Geometry – The intersection is located at the bottom of a sag vertical curve along Russell Street. The north leg of the intersection (Buford Highway) also slopes down to the intersection. The existing intersection sits on a relatively steep grade along Buford highway and tying the roundabout into Buford Highway will be difficult.
- Drainage – Open drainage systems approach the intersection both sides of the north leg, on the north side of the east leg, and on the north side of the west leg. Crossdrains cross under the west and east legs of the intersection. The closed drainage system crossing under the west leg continues on the west side of Buford Highway for approximately 200 feet before conveying water to an open drainage system on the east side of Buford Highway. The crossdrain under the east leg of the intersection daylights into an open drainage system after crossing the road.
- Adjacent Properties – Commercial properties are located in the northwest and northeast quadrants. The structures on these parcels are set back from the roadway and are not expected to be impacted; however, portions of the properties could be impacted depending upon the size or position of the roundabout. A residential property is located in the southeast quadrant. An abandoned tire store is located in the southwest quadrant.
- Multimodal Facilities – Russell Street is a bike route, with share the road signs along it. No bike accommodations are present along Buford highway presently. No existing sidewalk is present in the site vicinity connecting to the intersection. Under existing conditions, no pedestrians were observed during each of the field visits or when intersection turning movement count data was collected. However, increased pedestrian activity is anticipated in the future to correspond with improved multimodal facilities, as well as planned and zoned development around the Buford Highway Corridor.
- Truck Traffic – Based upon traffic count data, the measured volume of trucks along Buford Highway is approximately nine-percent of the total daily volume and eight-percent of the volume during the a.m. and p.m. peak-hours of the day. These percentages include the combination of single-unit trucks, buses, and tractor-trailer trucks. Based upon traffic count data, tractor-trailer trucks are estimated to account for approximately 1.7% of the volume along Buford Highway during the peak traffic hours.
- Utilities – Wooden utility poles are located on the west side of SR 13 (Buford Highway) and on the south side of Russell Street that carry above ground telephone and electricity. Other underground utilities in the intersection vicinity include water, gas and sewer.

Figure 1 – Vicinity Map



ROUNABOUT LANE CONFIGURATIONS AND OPERATIONAL PERFORMANCE

Based upon URS’s evaluation, a roundabout is a feasible alternative for improving the operational performance of the SR 13 (Buford Highway) at Russell Road intersection. A single lane roundabout is anticipated at or above capacity for 2038.

A roundabout at the study intersection requires acquisition of right-of-way within the immediate intersection vicinity and will have impacts on the parking of the business northeast of the intersection. Positioning the center of the roundabout towards the center of the existing intersection is the preferred alternative to minimize impacts to adjacent residences, businesses, and historic properties.

URS evaluated the proposed roundabout to identify the necessary number of lanes and lane configurations to accommodate the design year 2038 traffic volumes. Analysis of the 2038 traffic conditions was initially performed to identify the ultimate lane configuration for the roundabout.

URS evaluated the proposed roundabout build alternative using two methodologies to provide a range of expected performance. The capacity models utilized include the Highway Capacity Manual (HCM) 2010 procedures and SIDRA Intersection (an Australian Software package). The use of the two models is intended to provide some perspective on the potential range of long-term performance of the roundabouts. These models are not intended to imply any correlation between Suwanee drivers and those in Australia. The following is a summary of the recommended performance during the design years. More detailed information is provided in a separate Traffic report for the project. All analysis outputs, turning movement volumes, and other documentation are also provided in the separate Transportation Analysis report.

Table 1 Design Year Roundabout Analysis

Analysis Methodology	Sidra Intersection			HCM 2010		
	Volume to Capacity Ratio	Approach Delay (sec/veh)	95th Percentile Queue (veh)	Volume to Capacity Ratio	Approach Delay (sec/veh)	95th Percentile Queue (veh)
AM Peak Hour						
Eastbound	0.283	12.3	2.0	0.344	16.2	1.2
Westbound	0.076	5.3	0.4	0.108	7.7	0.3
Northbound	0.405	6.5	3.1	0.564	11.3	3.4
Southbound	0.726	12.3	9.4	1.072	69.9	89.0
PM Peak Hour						
Eastbound	0.130	7.2	0.7	0.171	9.9	0.5
Westbound	0.519	31.4	4.7	0.369	17.9	1.3
Northbound	0.851	19.0	17.2	0.854	27.1	11.2
Southbound	0.632	11.3	6.0	1.245	135.5	134.7

SAFETY ANALYSIS

A total of 16 crashes were reported during the years 2011 to 2014. Of these crashes, 6 were property damage only and 10 resulted in injury. No fatal crashes were reported between years 2011 to 2014.

Crash prediction models published in NCHRP Report 572 were applied to estimate the difference in crash frequency and severity that could be expected with conversion of the existing two way stop control to a single lane roundabout. Table 4 summarizes the

results. More detailed information related to historical crash trends is provided in the separate Transportation Analysis report for the project.

Table 2 Relative Change in Crashes Predicted with Conversion to a Roundabout from a Two Way Stop Condition

	Relative Change in Crash Frequency (number of crashes per year)	Percentage Change in Crash Frequency
Total	12	25
Fatal and Injury	7.5	25
Property Damage Only (PDO)	4.5	25

CONCEPTUAL GEOMETRIC DESIGN

URS developed conceptual roundabout designs for the study intersection. Concepts were developed initially in a sketch format over scaled aerial photography and then the preferred option was further refined. The concepts have been developed in accordance with the design principles outlined in the NCHRP Report 672 Roundabouts: An Informational Guide – 2nd Edition.

The concepts presented in this section represent one set of possible options for the roundabout horizontal geometry. Roundabout design is based upon a set of fundamental principles which guide the design process. These principles include: (1) achieving speed control at entry, (2) providing the appropriate number of lanes and lane arrangements, (3) appropriately aligning the natural path of vehicles, (4) accommodating the design vehicle, (5) accommodating non-motorized users, and (6) providing adequate sight distance and visibility. Alternative sizes, shapes, placement, and approach alignments may also be acceptable provided that they result in a design that meets these fundamental principles.

Figures 2, 3, and 4 present three alternatives for roundabout size and location. Each illustrates the impacts that the various alternatives have on adjacent land uses, environmental features, and ROW.

- Alternative 1 – Center of roundabout centered on the existing intersection. 146 foot diameter.
- Alternative 2 – Center of roundabout offset to the south of the existing intersection. 145 foot diameter.
- Alternative 3 – Center of roundabout offset to the southwest of the existing intersection. 145 foot diameter.

The following sections summarize the key considerations in the development of the design. The features shown in the concept designs were developed based upon an iterative process to balance vehicle “fastest path” speeds, vehicle alignment, and design vehicle requirements. Concept designs were prepared using a combination of survey data and aerial photography.

Figure 2 - Alternative 1



Figure 3 – Alternative 2



Figure 4 – Alternative 3



Design Context

The study intersection is located in an exurban area. The project purpose is focused on providing pedestrian and bicyclist accommodations along Buford Highway. The roundabout will help to slow traffic down, making it safer for pedestrians and bicyclists. No existing pedestrian or bicyclist activity was observed over the course of multiple site visits. However, improved pedestrian and bicyclist facilities are expected to increase activity by non-auto modes.

Design Vehicle Considerations

The design concepts were developed to accommodate a WB-67 size tractor-trailer truck on Buford Highway and a WB-50 size tractor-trailer truck on Russell Street. Design Vehicle Swept Paths are provided in Attachment A.

Speed Control

Speed control at entry is one of the fundamental design criteria for roundabouts. The designs were developed based upon the fastest path criteria from NCHRP Report 672. Consistent with new guidance, the procedure estimates the fastest path that would be achieved by a vehicle ignoring all lane lines approaching and traveling through the roundabout. The designs were developed to maintain fastest path speeds entering the roundabout of less than 25 mph for single-lane approaches. Fastest path speed checks reflect an aggressive driver in an off-peak (low volume) condition that is trying to go as fast as possible. Fastest path vehicle speed design checks are provided in Attachment B.

Non-Motorized Users

For the exurban environment, the design assumes the presence of pedestrians. While the existing pedestrian activity is minimal, sidewalks will be constructed up and down Buford Highway, increasing multimodal connectivity. Splitter island lengths and widths were designed to allow sufficient space for the incorporation of pedestrian crossings and pedestrian refuges. The pedestrian crossings utilize a “Z” configuration where the marked crossing on the entrance lanes of the approach are closer to the circulatory roadway than across the exiting lanes. This allows for additional vehicle queuing storage on the exit while otherwise minimizing out-of-direction pedestrian travel to the extent practical. It also reinforces the message to pedestrians to cross the roadway in two stages. A two-stage crossing allows pedestrians to deal with each direction of automobile traffic independently, with the splitter island providing sufficient space for pedestrians to wait prior to complete the crossing movement.

PREFERRED ALTERNATIVE SELECTION

The URS sketch options were evaluated with the project team, the City of Suwanee, and Georgia DOT staff. Each of the options presented slightly different levels of impact, particularly in terms of impacts to adjacent properties. However, in each option, there were common impacts to the southeast quadrant where any roundabout alternative would impact the water vaults within that area. Each of the alternatives also impacts the abandoned tire store in the southwest quadrant. After further review of the impacts, options where the roundabout was centered away from existing intersection were discarded, since they tie in to the existing roads farther away, increasing the construction and right of way costs.

Geometric Characteristics

The following discussion identifies the geometric characteristics of the alternatives considered:

- Inscribed Circle Diameter: The concept designs utilized inscribed circle diameters of 146 feet. This was chosen because smaller ones had difficulty accommodating a WB 67 while also controlling speeds through the roundabout.

The typical range of inscribed circle diameter for a single lane roundabout accommodating a WB-67 is approximately 130 to 180 feet according to NCHRP 672.

- Approach alignment – The alignments of each approach were offset to the left of the center of the roundabout. The offset-left alignment emphasizes the entry path deflection to maintain adequate speed control with the use of a smaller inscribed circle diameter. The offset-left alignment also improves the channelization of vehicles on the approach.
- Entry Curves – An entry radius of approximately 100 to 125 feet was used for each approach. Entry radii typically range from approximately 60 to 100 feet, but larger radii may be used as long as care is taken to ensure that entry speeds do not become excessive. The entry speeds range from approximately 19 to 23 mph, which are below the 25 mph stand design speed maximum used for single lane roundabouts. The larger radii were used so the roundabout could accommodate WB-67's and WB-50's.
- Exit Curves – For the exit curves, large radii of approximately 120 to 140 feet were used for all approaches. For exits with larger radii, the potential speed of vehicles through the exit is limited by the acceleration characteristics of the vehicles. In this case, speed control is emphasized upon the entry to the roundabout.
- Lane Widths – The concept design utilizes a circulatory roadway width of 18 feet for this single-lane roundabout. For the single-lane entries and exists, lane widths are approximately 18 feet or less at the yield line.
- Splitter Islands – The splitter islands are designed to provide sufficient length and width to be visible to drivers, providing adequate pedestrian refuge, vehicle channelization, and vehicle speed control. Splitter island lengths range from approximately 50 to 150 feet. 50 feet is the minimum length, with 100 feet or more desirable. Splitter islands are designed based upon the guidance in NCHRP Report 672 to provide appropriate nose radii and offsetting of curb lines at the approach ends.



October 17, 2014

Mr. Brent Story, P.E.
Georgia Department of Transportation
One Georgia Center
600 West Peachtree Street, NW
Atlanta, GA 30308

Subject: Lighting and Maintenance for PI 0011639: SR 13/Buford Highway at Russell Street (PI 0011639)

Dear Brent:

The City of Suwanee is aware of the IESNA and AASHTO lighting guidelines for a roundabout. Our consultant, URS, has a sub-consultant to design the lighting for the roundabout. The project also proposes to build pedestrian lighting between Davis Street and Lawrenceville-Suwanee Road.

The City of Suwanee will commit to funding the Energy, Operations and Maintenance costs of the installed lighting systems. 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.

The City of Suwanee intends to enter into a maintenance agreement for on street parking areas built by this project.

If you need any additional information, please contact Sean Pharr, URS PM, (678-808-8839) or myself (770-904-3371).

Sincerely,

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

Matthew Dickison
Planning Division Director, City of Suwanee



KITTELSON & ASSOCIATES, INC.

TRANSPORTATION ENGINEERING / PLANNING

225 E Robinson Street, Suite 450, Orlando, FL 32801 P 407.540.0555 F 407.540.0550

MEMORANDUM

Date: July 17, 2014

Project #:
18006

To: Matthew Dickison, AICP
City of Suwanee
330 Town Center Avenue
Suwanee, Georgia 30024

From: Justin Bansen, PE; Alek Pochowski

Project: SR 13 (Buford Highway)/Russell Street Roundabout Peer Review

Pursuant to a request from the City of Suwanee, Georgia, Kittelson & Associates, Inc. (KAI) peer-reviewed the proposed roundabout design for the existing intersection of SR 13 (Buford Highway)/Russell Street. KAI performed the roundabout peer review consistent with the Georgia Department of Transportation (GDOT) roundabout peer review process. The single-lane roundabout design was developed by URS and is dated June 2014. The roundabout was recommended in the report *Roundabout Feasibility Evaluation – SR 13 Buford Highway at Russell Street* (Reference 1) prepared by URS, and the *Buford Highway Improvements Traffic Study* (Reference 2) also prepared by URS. The proposed SR 13 (Buford Highway)/Russell Street roundabout is shown in Figure 1. The roundabout is expected to open in 2018, with a design year of 2038.

KAI reviewed the proposed roundabout in accordance with the guidance provided in *NCHRP Report 672, Roundabouts: An Informational Guide, Second Edition* (Reference 3). Key KAI findings include:

- A single-lane roundabout may be reasonable for the 2038 design year.
- The roundabout provides appropriate speed control and design vehicle accommodations. Minor comments regarding further refinement of the concept are contained in this memo.
- As designed, the roundabout has a “z” crosswalk design on all entries. A straight crossing alignment would be sufficient for this simple single-lane roundabout configuration.
- Minor comments regarding refinement of the roundabout pavement markings are provided in this memo.

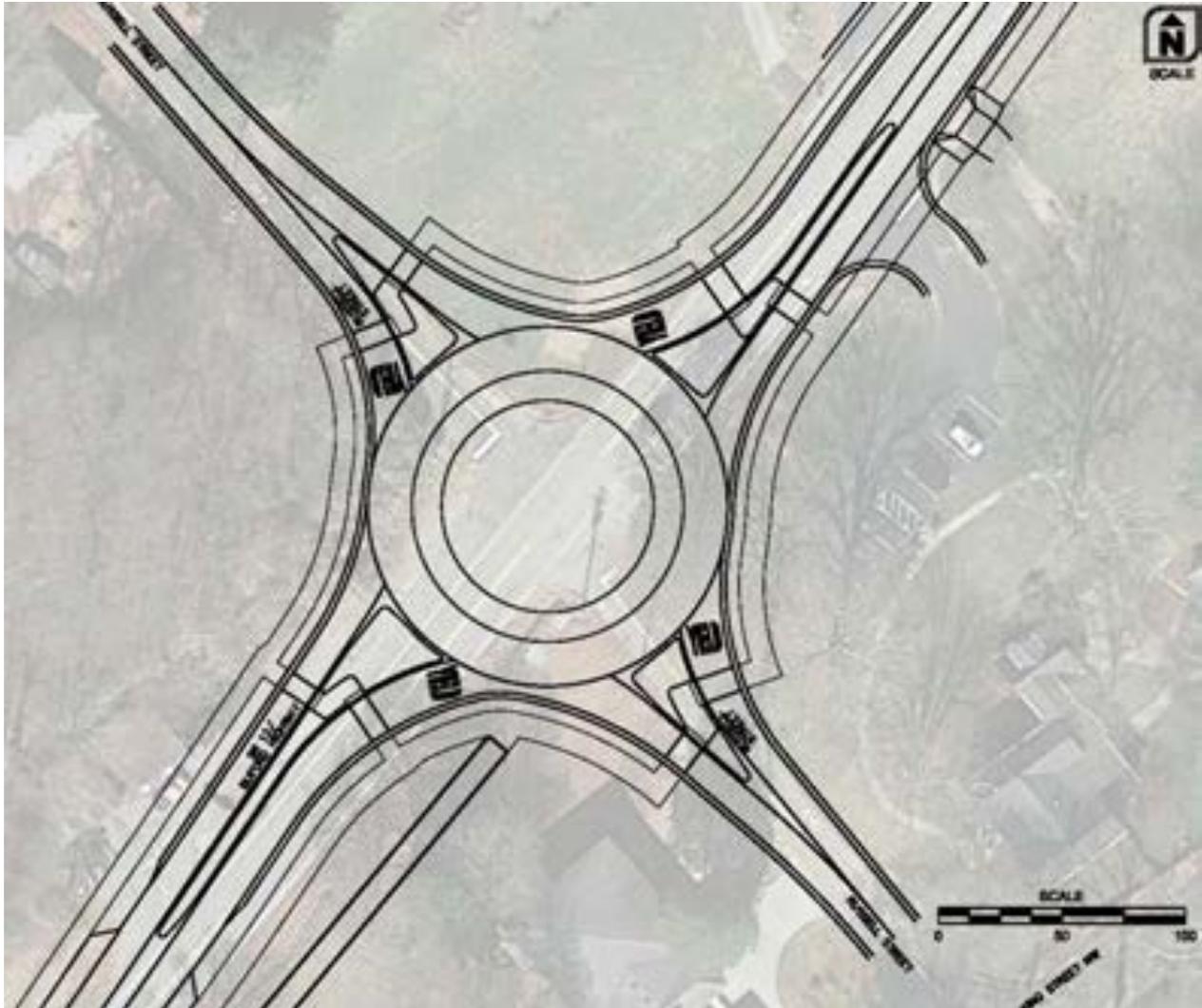


Figure 1. Proposed SR 13 (Buford Highway)/Russell Street Roundabout

TRAFFIC OPERATIONS ANALYSIS

KAI independently reviewed the projected traffic operations under 2038 design-year traffic conditions using the 2038 Build Peak Hour Traffic Volumes shown in the *Roundabout Feasibility Evaluation* (Reference 1), and volume factors from the *Buford Highway Improvements Traffic Study* (Reference 2). KAI applied several alternative capacity models to evaluate the potential range of design-year operations, including:

1. The *2010 Highway Capacity Manual* (HCM 2010) (Reference 4) as applied by the SIDRA Intersection 6 software. The following calibration scenarios were evaluated
 - Base HCM 2010 model, without adjustments.
 - Calibration factors from the City of Bend Oregon, which reflect higher roundabout capacities, and are also applied by GDOT in their Roundabout Analysis Tool for consideration under design-year conditions.

2. The Sidra Standard model, as applied by the SIDRA Intersection 6 software. Two different environment factor scenarios were applied:
 - Environment Factors of 1.2 (consistent with manufacturer recommendations)
 - Environment Factor of 1.1 (consistent with GDOT Design Policy Manual)
3. The draft capacity models for single-lane roundabouts from FHWA's ongoing TOPR 34 study. The TOPR 34 model is an unpublished model that reflects the largest and most recent roundabout operations data collection effort in the United States to date. While we expect the draft TOPR 34 model to be the basis for the roundabout operations model to be included in the upcoming 2015 update of the HCM 2010, we stress that the model is still in draft form, and has not been finalized.

Based upon domestic and international experience, NCHRP Report 672 suggests a maximum volume to-capacity (v/c) ratio in the range of 0.85 to 0.90 for providing satisfactory operations. While a 0.85 v/c ratio is not an absolute threshold, the operations of the approach become more sensitive to small increases in volume as the v/c approaches 1.0 and may result in dramatic impacts to delay or queues. In some cases a higher v/c ratio, may be acceptable (for example, a high v/c ratio during the peak hours may be a better trade-off in some situations compared to increased physical or environmental impacts). However, acceptance of high v/c ratios must be made on a case-by-case basis and should consider the broader system impacts from vehicle queuing impacting upstream intersections.

The URS *Roundabout Feasibility Evaluation* (Reference 1) used the Sidra Intersection and HCM 2010 capacity models for the evaluation of the roundabout, but did not specify which, if any, calibration factors or environment factors were used in the analysis. The design year roundabout analysis results found in the URS *Roundabout Feasibility Evaluation* projects the roundabout to operate with a critical movement v/c ratio of 0.73 and 1.07 on the southbound approach in the a.m. peak hour with the Sidra and HCM models, respectively. During the p.m. peak hour, the URS analysis identified that the roundabout is expected to operate with a critical movement v/c ratio of 0.85 and 1.25¹ on the northbound approach with the Sidra and HCM models, respectively.

KAI performed an independent analysis to confirm the results reported by URS. Table 1 displays the critical movement v/c ratios for a variety of roundabout capacity models.

¹ The results shown in Table 1 of the URS *Roundabout Feasibility Evaluation* inverted the northbound and southbound HCM 2010 results for the PM peak hour.

Table 1. Design Year 2038 Critical Movement Volume-to-Capacity Ratios - KAI Analysis

Peak Period	Critical Movement	HCM 2010 – Base Model	HCM 2010 – Bend Calibrated Model	Draft TOPR 34 Model	Sidra Standard – Environment Factor of 1.2	Sidra Standard – Environment Factor of 1.1
AM Peak Hour	Southbound Left/Through/Right	1.00	0.84	0.82	0.90	0.82
PM Peak Hour	Northbound Left/Through/Right	1.18	0.99	0.97	1.06	0.96

As shown in Table 1, the base HCM 2010 models and the SIDRA Standard Model with an environment factor of 1.2 both indicate the potential for over-capacity operations in the design year PM peak hour (v/c ratios of 1.18 and 1.06, respectively). The HCM 2010 is typically recommended by GDOT for use in evaluating near-term conditions, with the calibrated model (applying the Bend, Oregon calibration) being used for future year conditions. The GDOT Design Policy Manual also recommends the use of a 1.1 environment factor for design year analysis to reflect a possible increase in capacity over time. The calibrated HCM 2010 model and the Sidra Standard Model with an environment factor of 1.1 both indicate operations below a v/c ratio of 1.0 in the design year. However, during the 2038 PM Peak hour, both models have v/c ratios greater than the desirable maximum range of 0.85 to 0.9. As a point of comparison, the most recent US roundabout capacity data being incorporated in the draft TOPR 34 models provides similar results to those from the Bend Calibrated model and from Sidra Standard with the environment factor of 1.1. These results suggest that the single-lane roundabout may operate acceptably in the design year. However, there is also the potential for over-capacity operations on the northbound approach in the PM peak hour for a single-lane configuration.

The results from the KAI analysis differ from the URS results for the following reasons:

- KAI used intersection peak-hour factors for the analysis, rather than different peak-hour factors for each individual movement.
- KAI used the HCM 2010 model as applied by Sidra Intersection, rather than with Synchro 8
- The Sidra output sheets were not provided to KAI, and therefore were not reviewed. However, for the Sidra analysis, we suspect that Sidra Intersection 5.0 with the default geometry was used for the analysis. Through our previous use of Sidra Intersection 5.0, we have noted that the use of the default geometry typically provides better operational results, which is likely the source of the 0.73 and 0.85 v/c ratios under the a.m. and p.m. peak hours, respectively, identified by URS in their analysis. As seen in Table 1, KAI’s analysis using the design geometry in Sidra Intersection 6.0 identified v/c ratios of 0.82 and 0.96 under the a.m. and p.m. peak hours, respectively, with the 1.1 environment factor.

Given that the expected v/c ratios are estimated to be above the desired range of 0.85 to 0.90, KAI took a closer look at the expected roundabout operations with the two models typically used by GDOT for design year analysis, plus the draft TOPR 34 model. Table 2 shows the results of the analysis, including the expected v/c ratios, average delays and queue lengths.

Table 2. Design Year 2038 Roundabout Operations - KAI Analysis

Peak Period	Movement	HCM 2010 – Bend Calibration			Draft TOPR 34 Calibration			Sidra Standard – Environment Factor of 1.1		
		V/C Ratio	Average Delay	Queue Length*	V/C Ratio	Average Delay	Queue Length*	V/C Ratio	Average Delay	Queue Length*
AM Peak Hour	Northbound Left/Through/Right	0.47	8.1	75	0.46	7.9	100	0.46	4.3	75
	Southbound Left/Through/Right	0.84	20.0	325	0.82	18.3	375	0.82	4.4	275
	Eastbound Left/Through/Right	0.23	9.5	25	0.28	12.2	50	0.23	12.0	50
	Westbound Left/Through/Right	0.08	5.3	25	0.09	5.9	25	0.07	6.5	25
PM Peak Hour	Northbound Left/Through/Right	0.99	40.9	1,100	0.97	36.2	975	0.96	6.5	850
	Southbound Left/Through/Right	0.64	11.6	125	0.64	11.4	150	0.63	4.5	150
	Eastbound Left/Through/Right	0.11	5.8	25	0.12	6.6	25	0.10	8.7	25
	Westbound Left/Through/Right	0.16	9.7	25	0.20	13.0	25	0.27	17.0	75

*Length in feet, rounded up to the nearest 25 feet

As shown in Table 2, the northbound approach during the weekday p.m. peak hour is expected to operate with average vehicle delays ranging from 6.5 seconds with the Sidra Standard model and an environment factor of 1.1 to 40.9 seconds with the HCM 2010 model and the Bend calibration factors. Further, the expected northbound queue lengths range from 850 feet to 1,100 feet. Queues of this length would block the SR 13 (Buford Highway)/Academy Street NW/Davis Street intersection, which is located approximately 450 feet south of the SR 13 (Buford Highway)/Russell Street intersection.

KAI also noted that a peak-hour factor of 0.91 was used for the design year analysis of the weekday p.m. peak hour operations. With the growth of traffic volumes and increase in level of congestion, there is oftentimes a corresponding increase in the peak hour factor. To evaluate the sensitivity of a possible increase in the peak-hour factor, the roundabout operations were evaluated with a 0.96 peak-hour factor (approximately the halfway point between 0.91 and 1.00) using the TOPR 34 model. With the adjusted peak-hour factor, the roundabout is expected to operate with a v/c ratio of 0.91, which is closer to the desired v/c range of 0.85 to 0.90.

Based upon the available information, KAI agrees that a single-lane roundabout may be reasonable for the design year. However given that analysis is showing operations for the northbound approach to be near-capacity and over the desired v/c range, we suggest that the URS team review the possible implications of the identified queue lengths on the northbound approach to verify that they will not create adverse network conditions. Additional review by URS of the peak-hour-factor assumptions used in their design year 2038 analysis may also be prudent along with verification of growth rate assumptions.

Appendix 1 contains the roundabout operations worksheets.

GEOMETRIC DESIGN REVIEW

FASTEST PATH SPEEDS

KAI performed an independent check of the fastest speeds for all intersection movements to determine if the design meets performance objectives for speed control. For a single-lane approach, a maximum fastest path entering speed of 25 miles per hour (mph), equating to an entry radius of approximately 175 feet, is recommended in NCHRP Report 672. As seen in Figure 2, the theoretical fastest-path checks show appropriate speed control is provided for all roundabout entries.

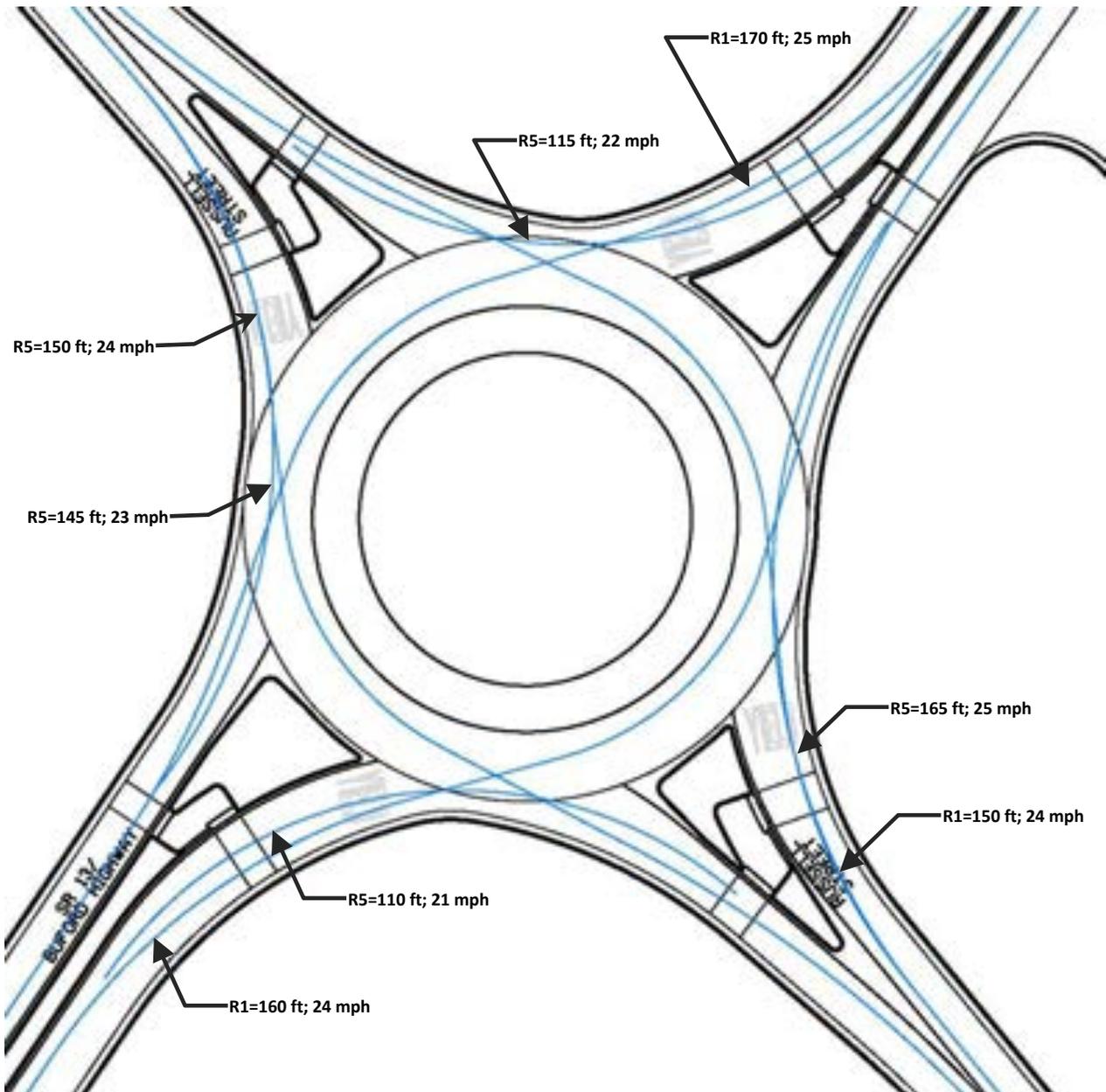


Figure 2. Theoretical Fastest Path Radii and Speeds

DESIGN VEHICLE ACCOMMODATIONS

KAI spot-checked the accommodation of heavy vehicles using the AutoTURN software tool. The design vehicle checks prepared by URS used a WB-50 design vehicle for all movements to and from Russell Street, and a WB-67 for through movements on SR 13 (Buford Highway). A review of the URS design vehicle checks showed adequate accommodation of the design vehicle, including a one to two foot buffer between the edge of the vehicle path and curbs. However, the WB-67 through movement checks on SR 13 (Buford Highway) appeared to have a kink in the vehicle path through the roundabout. KAI rechecked the WB-67 movements on SR 13 (Buford Highway), which are displayed in Figure 3. As shown, the roundabout adequately accommodates the WB-67 through movements.

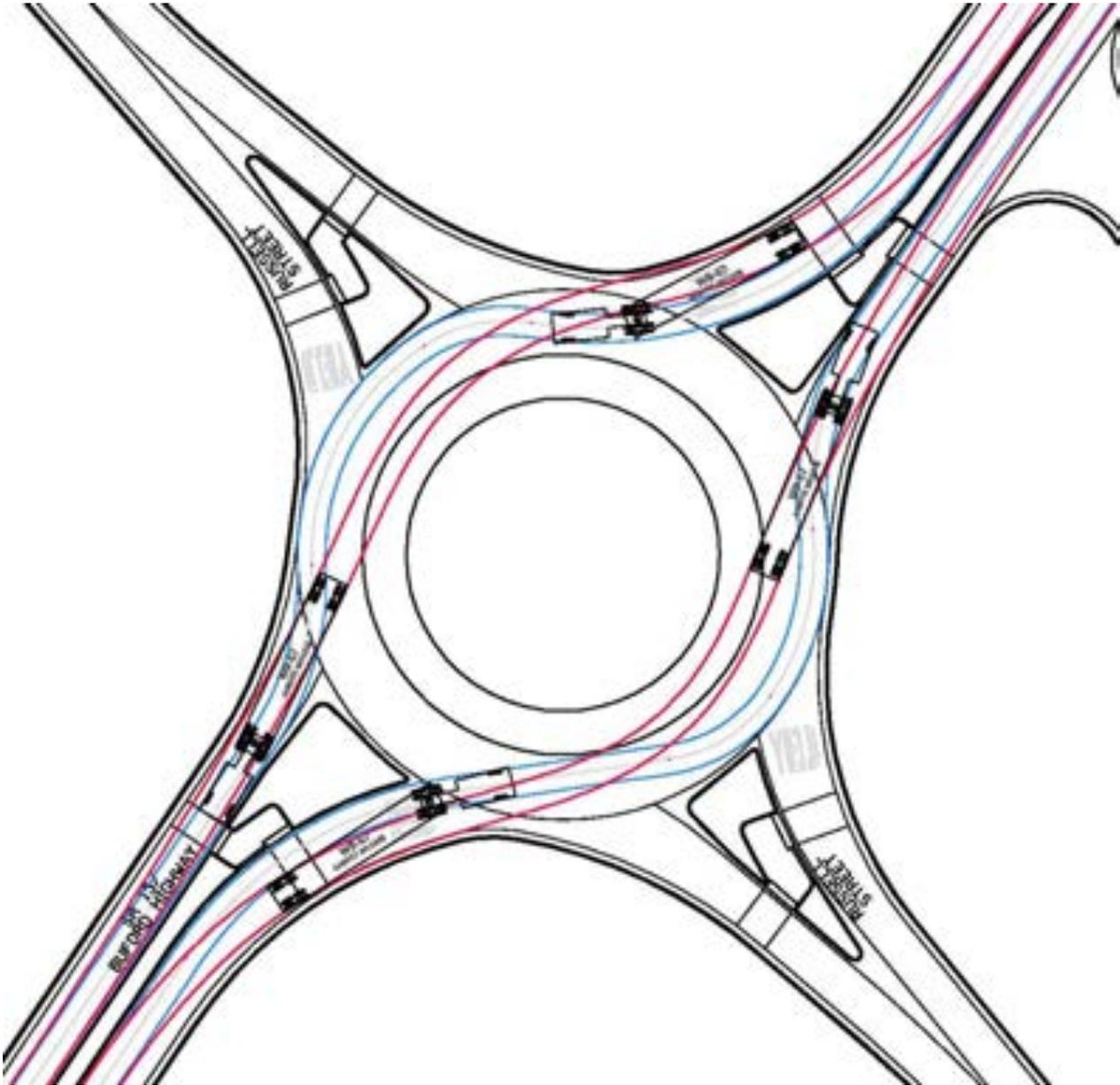


Figure 3. WB-67 Design-Vehicle Checks

PEDESTRIAN AND BICYCLE ACCOMMODATION

As designed, the roundabout has a “z” crosswalk design on all approaches. The “z” crossing design is sometimes used at multilane pedestrian crossings or in conjunction with a right-turn bypass lane in order to facilitate signalization of the crossing and promote two-stage crossing by the pedestrian. However, the location of the exit crossing further downstream creates additional out of the way travel for pedestrians, who may choose to cross further upstream rather than walk downstream to cross. Given the relatively simple single-lane configuration, KAI recommends that a more traditional crossing design be applied with a straight alignment across (or use of an angle-point if there is sufficient width in the splitter island for the change in direction to be detected by a visually impaired pedestrian). The crossing location should be set one vehicle length (approximately 20 feet) from the circulatory roadway on the entry and exit.

OTHER DESIGN NOTES

1. As shown in Figure 4, the design includes a short reverse curve in the outside curbline between both Russell Street entry approaches and the adjoining downstream SR 13 (Buford Highway) approaches. The reverse curve is created due to the slight skew angle of the approaches. Past experience has shown that this type of short reverse curve unnecessarily complicates construction of the roundabout and tends to accumulate debris due to the area being unused by vehicles. KAI recommends removing this reverse curve by either adjusting the radii on the adjacent entry and exits or use a short tangent to replace the reverse curve.
2. As shown in Figure 4, KAI recommends the striping across the roundabout exit lanes be removed.
3. If the YIELD word pavement marking is proposed to be used at the roundabout entry, the corresponding “shark’s teeth” YIELD line could also be considered.
4. The use of optional pavement marking arrows within the circulatory roadway could be considered to emphasize the correct direction of travel around the central island.
5. Consider the use of ladder-style crosswalk markings.

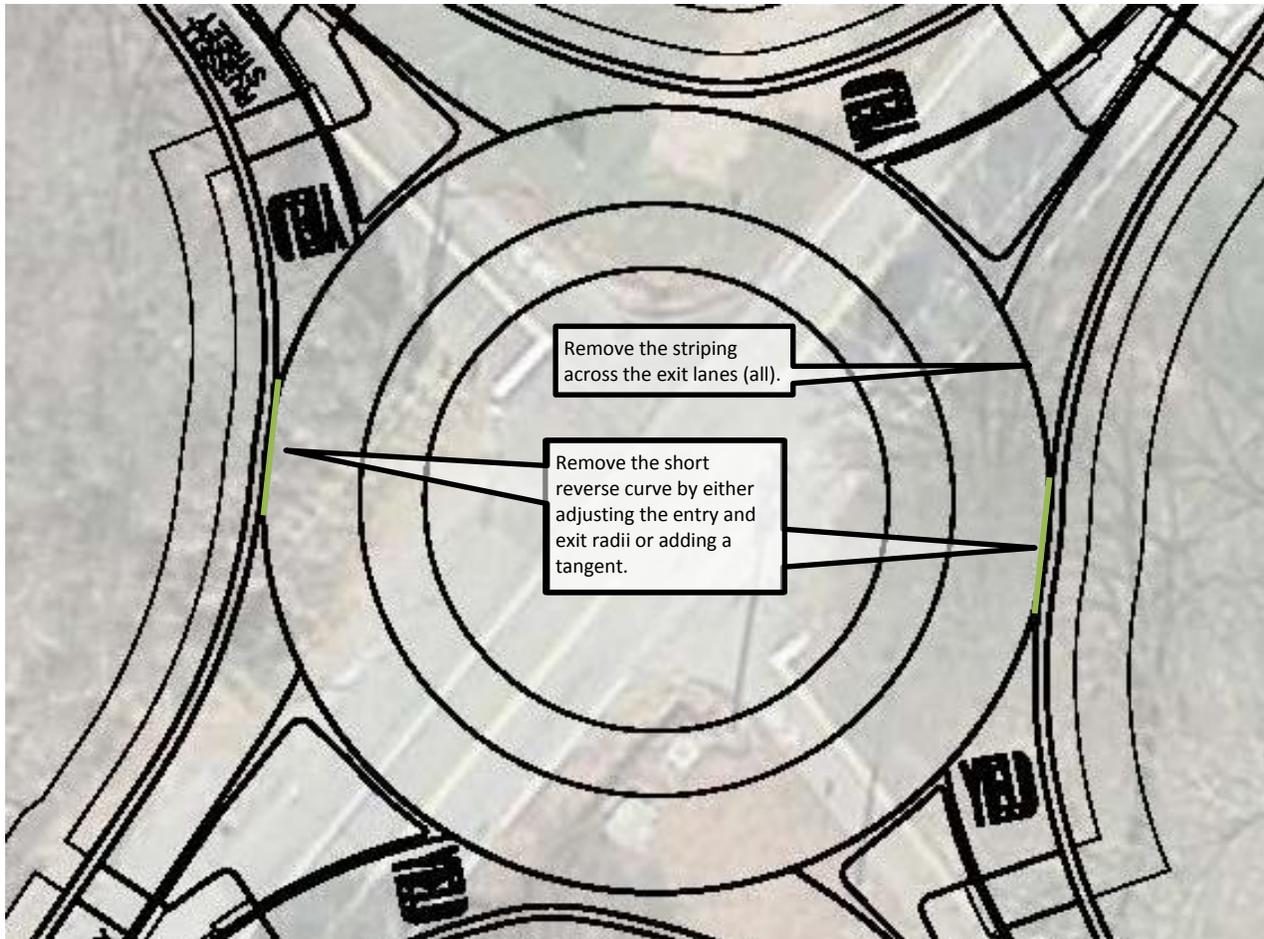


Figure 4. Proposed SR 13 (Buford Highway)/Russell Street Roundabout

VERTICAL DESIGN

Specific vertical design information was not provided to KAI, and was not reviewed as part of this peer review. The following vertical design guidance is general in nature, but these details are important for assisting the contractor with the construction of the roundabout, and determining drainage needs:

- Label the entry and exit profiles for all approaches, and label the location of the circulatory roadway, central island, and approach roadway on the profile sheets.
- Develop a central island profile, with profile exhibits showing the vertical grade of the circulatory roadway around the central island. The profile around the central island should resemble a sine curve. Please look at NCHRP Report 672 Exhibit 6-75 for an example.
 - The tie-in location of the intersection approaches should be noted to prevent kinks in the design, and to minimize the potential of kinks created during construction.

- Provide spot elevations of the grading plan consistent with the central island profile. The spot elevations should be provided along the outside edge line and adjacent to the central island. This also assists in determining drainage needs.

REFERENCES

1. URS. *Roundabout Feasibility Evaluation – SR 13 Buford Highway at Russell Street*. June 2014
2. URS. *Buford Highway Improvements Traffic Study*. May 2014
3. Transportation Research Board. *NCHRP Report 672: Roundabouts, an Informational Guide, Second Edition*. 2010
4. Transportation Research Board. *Highway Capacity Manual 2010*. 2010
5. Transportation Research Board. *NCHRP Report 572: Roundabouts in the United States*. 2007

Attachment #7



POST-CONSTRUCTION STORMWATER REPORT

PI Number: 0011639
Project Name: SR 13/Buford Highway
City/County: Suwanee/Gwinnett
Let Date: 4/15/2017

Date: 7/16/2014
Consultant: URS
Designer: SP/JT
Contact Info: Sean.Pharr@URS.com
678-808-8800

Milestone Submittal: Concept PFPR FFPR

General Project Information:

Is there a Project Level Exclusion that applies to this project: Yes No

If yes, please indicate which of the following exclusions apply:

- Roadway not owned or operated by GDOT
- Project not located within an MS4 area
- Maintenance or safety project (multiple unconnected sites disturbing < 1 acre)
- Project with environmental documents approved or R/W plans submitted on or before June 30th, 2012
- Road project disturbing < 1 acre or site development project adding < 5,000 ft² of impervious area

Disturbed Area of Site: 11.81 acres

Impervious Area Added: 2.76 acres

Length of Project: 1.65 miles 8700 feet

Existing Cross-Section: 2 lane rural section

Proposed Cross-Section:

McGinnis Ferry Road to Academy Street: retain 2 lane rural section, widen shoulder on east side of road, a swale, then a 10-ft multiuse path and 2:1 slopes.
Academy Street to Russell Street: 2 lane urban section with on street parking, 8-ft sidewalk on the west side of the road, and a 10-ft multiuse path on the east side of the road.
Russell Street to Chicago Street: 2 lane urban section with a 14-ft wide flush median, bike lanes, on street parking, and 8-ft wide sidewalks.

Chicago Street to Lawrenceville Suwanee Road: 2 lane urban section with an 18-ft median, bike lanes, an 8-ft wide sidewalk on the west side of the road, and an existing sidewalk on the east side of the road.

Lawrenceville Suwanee Road to George Pierce Park: 2 lane urban section with bike lanes, and an 8-ft wide sidewalk on the east side of the road.

For Basins 1-4, 7, and 8 enhanced swales, infiltration trenches, and level spreaders will be used to meet post construction stormwater requirements. This is based on conceptual calculations and is subject to change as the design is fully developed.

ADT: Design Year (2038): 21,400

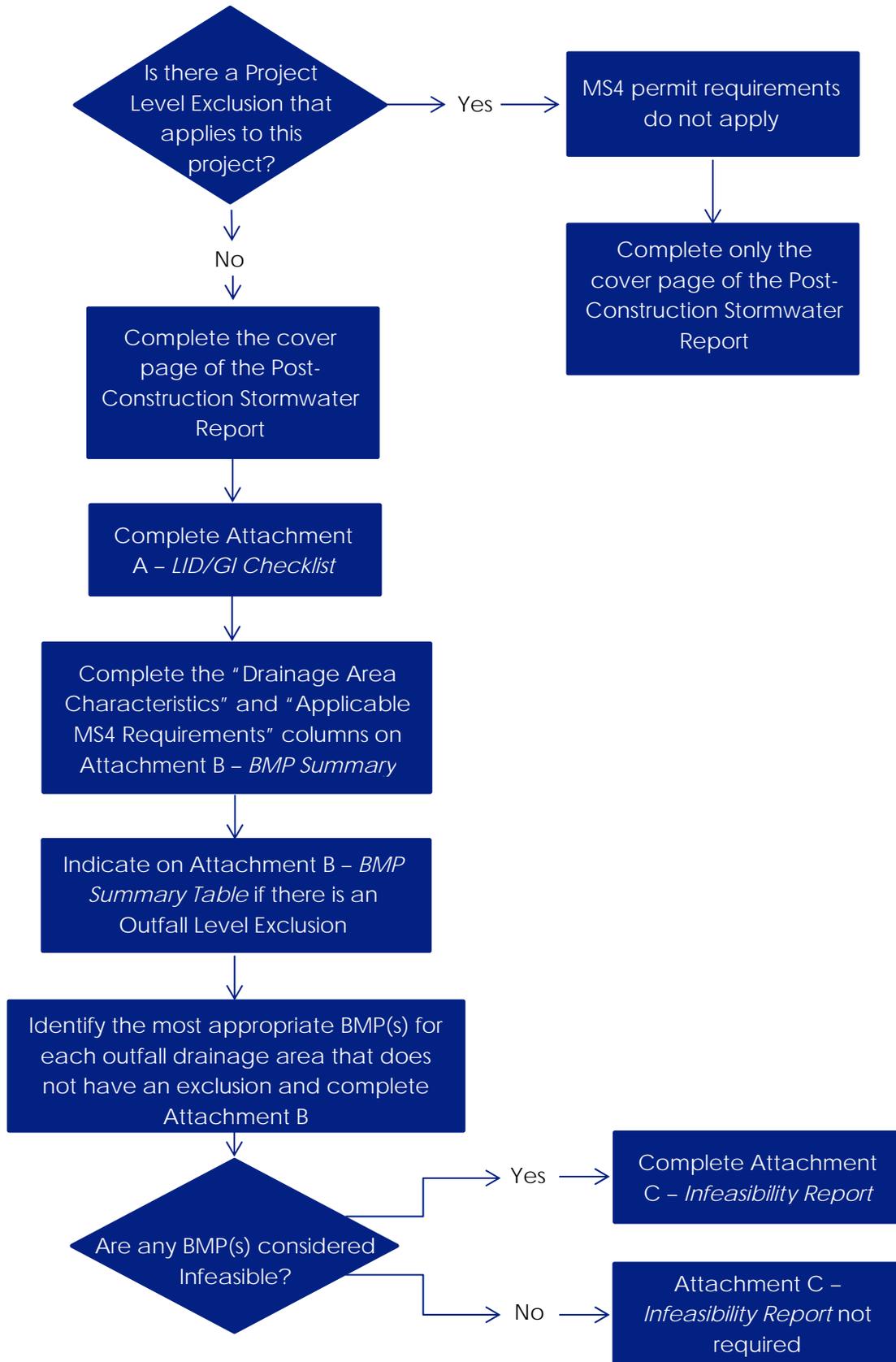
Submittal Requirements:

Yes / No

- GDOT LID / GI Checklist (Attachment A)
- GDOT Post-Construction BMP Summary (Attachment B)
- MS4 Infeasibility Report (Attachment C)
- Milestone Plan Submittal Checklist (Attachment D)

Comments: _____According to Attachment D, the GDOT LID/GI Checklist, the GDOT Post-Construction BMP Summary, and the MS4 Infeasibility Report do not need to be completed yet. We are including them showing that we are taking early steps to plan, design, and budget for post construction stormwater requirements._____

POST-CONSTRUCTION STORMWATER DECISION TREE



SUMMARY OF LID/GI PRACTICES

Included as part of post-construction stormwater design, *Low Impact Development* and *Green Infrastructure* practices are required to be considered by the designer during the stormwater planning process for each GDOT project within an MS4 area.

Practices of LID include the following:

- Avoiding environmentally sensitive areas
- Reducing the project footprint
- Minimizing site impacts
- Adjusting the design with the natural terrain
- Incorporating water quality early in planning
- Recycled materials
- Green infrastructure practices

Practices of GI include the following:

- Infiltration
- Evapotranspiration
- Porous Pavements
- Reuse

As part of GDOT's policy on how to consider LID and GI practices, the designer must always attempt to utilize LID/GI practices when it is both feasible and within an MS4 area. During the planning process, it is important for the designer to consider the site constraints and limitations for the LID/GI practices being considered. The designer is required to complete the LID/GI Checklist to document which specific elements have been used and the reasoning for each case. Refer to Attachment A for this checklist. For additional information, see Chapter 10 of the GDOT Drainage Manual.

GDOT POST-CONSTRUCTION BMP SUMMARY

Attachment B is the GDOT Post-Construction BMP Summary. Starting for projects with PFRs after March 31, 2014, this form must be completed by the designer and submitted with all stormwater reports at milestone reviews. The purpose of the documentation is to assist GDOT in inventorying new post-construction stormwater BMPs and also assist with the plan review process. Partially completed BMP summaries are acceptable at concept review.

FEASIBILITY & EXCLUSION OF POST-CONSTRUCTION BMPs

If the post-construction stormwater BMPs, LID practices, and/or GI practices are determined to be infeasible by any of the criteria listed in Chapter 10 of the GDOT Drainage Manual, an MS4 Infeasibility Report must be completed and submitted to GDOT as part of the design plan submittal. Attachment C is the GDOT Infeasibility Report Template that must be used by the designer in cases where infeasibility is claimed. All supporting information (cost estimates, figures, and other backup data) must be included with the Infeasibility Report.

To use the infeasibility report template, text has been included in "red" that gives the user instructions on how to complete the corresponding section. This text should be removed and replaced with the information relevant to the project.

Separate from infeasibility criteria, there are exclusions (or certain instances) where GDOT does not require post-construction stormwater BMPs. That list of exclusions includes both "Project Level" and "Outfall Level" exclusions. The Project Level Exclusions will eliminate the need for the design or construction of post-construction BMPs for the entire project area, whereas the Outfall Level Exclusions can only be claimed on a per outfall drainage area basis within the overall project area. Project Level Exclusions include the following:

1. Roadways that are not owned or operated (maintained) by the Department may not require post-construction BMPs. Coordination with the local government is necessary for determination.
2. The project is not within an MS4 area.

3. Maintenance projects and safety projects whereby the sites are not connected and the individual site disturbs less than one acre (see page 19 of the Permit for more details).
4. Projects that have their environmental documents approved or R/W plans submitted for approval on or before June 30th, 2012.
5. Road projects that disturb less than 1 acre or for site development projects that add less than 5000 ft² of impervious area.

Outfall Level Exclusions include the following:

1. Cases where the project would require an existing roadway alignment change solely to allow for BMPs. This exclusion applies only to existing roadway alignment changes that would create a safety concern. A written explanation of the safety concern(s) must be included with the post-construction stormwater report for all uses of this exclusion.
2. Instances where the installation of post-construction BMPs would require the re-alignment and/or piping of a stream.
3. When a project would impact existing vegetated stream buffers or wetlands solely for the purposes of installing BMPs. See state requirements for additional information on stream buffers.
4. Where stormwater discharges from the project site are designed to exit the right-of-way as sheet flow (non-point source discharges). Sheet flow should be designed in a manner to ensure that the flow will not cause instability, erosion, or flooding. The designer should determine if this is possible by visiting the site prior to design, and providing a written explanation with supporting evidence for this drainage area.
5. As stated in section 4.2.5.1(a) of the GDOT MS4 permit, "Stormwater runoff that must be treated does not apply to flows that originate outside of GDOT's right-of-way or diverted flows from undisturbed areas." If feasible, direct all offsite stormwater around the project site to the cross drain or stream such that it does not combine with stormwater from the project's impervious surfaces or conveyance systems. This redirection allows the BMPs to only treat or detain the stormwater that originates from GDOT's site, and stormwater that originates off-site to pass through the right of way unimpeded.
6. As stated in section 4.2.5.1(a) of the GDOT MS4 permit, for outfalls along linear roadway projects whereby the net impervious surface area within that outfall's drainage area has been reduced or remains the same as pre-developed conditions, post-construction stormwater requirements will not apply. Special consideration from the Department may be given to those projects with a minimal increase in impervious area. In such cases, the designer will be required to provide supporting calculations showing that the increase in stormwater runoff and/or volume required to be treated for water quality is negligible with respect to the drainage area in question. Exclusions should be noted on Attachment A within the "Applicable MS4 Requirements" section. For simplicity, record the number from the list above corresponding to the exclusion being claimed.

MILESTONE SUBMITTALS

GDOT has developed the Milestone Plan Submittal Checklist to be used by designers as a guide to the stormwater documentation that is required for major milestone submittals (PFPR and FFPR). Refer to Attachment D. This checklist is required by GDOT, and is expected that all information be included with the plan submittal at the time of review.

Attachment A

GDOT Low Impact Development (LID) / Green Infrastructure (GI) Checklist

Design Considerations

- The following site considerations were considered, where applicable, and incorporated into an LID/GI approach: safety, ease of maintenance, available right-of-way, soils, terrain slope, pollutants of concern, existing utilities and other infrastructure details
- Where applicable, the following site-specific environmental components have been clearly identified on the project site: wetlands, impaired waters, environmentally sensitive areas, applicable buffers

Design Documentation

List any site-specific limitations or constraints that will have an effect on the utilization of feasible post-construction stormwater LID and/or GI practices. _____

- The following LID/GI practices were used. For those that were not used, explain why it was infeasible for this project.

Yes No

Avoidance (Planning around environmentally sensitive areas): Boardwalks that are used between McGinnis Ferry Road and Academy street minimize impacts to environmental features.

Minimization: _____

Footprint reduction: Boardwalks that are used between McGinnis Ferry Road and Academy street minimize impacts to environmental features. Walls are also used throughout the project to reduce the disturbed area throughout the project.

Incorporating WQ early in planning process by: evaluating multiple BMP's and finding structural BMP's that fit the project.

Rural road section in place of urban

Landscaping areas outside of clear-zone w/ trees: This is not used because the trees are then placed far from the road. Landscaping will be placed within the clear zone.

Adjusting the design to natural terrain

Porous Pavements (OGFC): This is not used due to construction and maintenance costs.

Post-construction BMPs that allow for: infiltration, evapotranspiration, and stormwater reuse

Using recycled materials such as asphalt and concrete: _____

- The LID/GI practices shown on the plans address all GDOT and MS4 permit requirements
- A cost estimate has been provided to GDOT at the milestone review (preliminary estimate for PFPR and a detailed estimate for FFPR)

Inspection and Maintenance Responsibility (select one)

- Dedicated to City or County (indicate which) of: _____
- Private Entity Responsibility: name responsible entity here: _____
- GDOT Responsibility

It is currently unknown as to who will be responsible for inspection and maintenance.

**Attachment B
GDOT Post-Construction BMP Summary**

Drainage Area Characteristics					Applicable MS4 Requirements (See Note 2)				Planning Considerations			Location and Identification (See Note 3)		
Outfall Area (Drainage Basin)	Receiving Water	Impaired (Yes/No)	Impairment	Is there a TMDL approved?	WQv	CPv	Qp25	Qf	BMP	LID or GI?	Infeasible (Yes/No) (See Note 1)	Station (Begin - End)	Offset (Left/ Right)	Plan Sheet
1	Suwanee Creek	Yes	Fecal Coliform	Yes	✓	✓	✓	✓	Enhanced Dry Swales	Yes	No			
2	Suwanee Creek	Yes	Fecal Coliform	Yes	✓	✓	✓	✓	Enhanced Dry Swales	Yes	No			
3	Suwanee Creek	Yes	Fecal Coliform	Yes	✓	✓	✓	✓	Enhanced Dry Swales	Yes	No			
4	Suwanee Creek	Yes	Fecal Coliform	Yes	✓	✓	✓	✓	Enhanced Dry Swales	Yes	No			
5	Suwanee Creek	Yes	Fecal Coliform	Yes	✓	✓	✓	✓	Enhanced Dry Swales & Infiltration Trenches	Yes	Yes			
6	Unnamed Tributary flowing to Suwanee Creek	Yes	Fecal Coliform	Yes	✓	✓	✓	✓	Infiltration Trenches	Yes	Yes			
7	Unnamed Tributary flowing to Suwanee Creek	Yes	Fecal Coliform	Yes	✓	✓	✓	✓	Infiltration Trenches	Yes	No			
8	Unnamed Tributary flowing to Suwanee Creek	Yes	Fecal Coliform	Yes	✓	✓	✓	✓	Infiltration Trenches	Yes	No			

Note 1: If a BMP is identified as infeasible, a completed infeasibility report must be submitted at or before PFPR.

Note 2: Indicate which MS4 requirements are applicable by a *check mark*, or all Outfall Level Exclusions claimed (as listed in the *Post-Construction Stormwater Guidance* document).

Note 3: Columns within the *Location and Identification* section are not required to be complete at Concept Review.

ATTACHMENT C
MS4 Infeasibility Report Template

Georgia Department of Transportation
MS4 Infeasibility Report for
SR 13 From CR 1962/McGinnis Ferry Road
To George Pierce Park

PI No. 0011639

Gwinnett County

7/16/2014

Prepared By:

URS Corporation
400 Northpark Town Center
1000 Abernathy Road, NE Suite 900
Atlanta, Georgia 30328
678-808-8800

Sean Pharr, P.E.
Project Manager

<Include Stamp Here>

NOTE:

Report should be submitted to GDOT in PDF format in lieu of hard copy.

In general, GDOT is looking for concise information that tells the reader which BMPs were infeasible, why the BMPs were selected, and then supports the infeasibility determination with calculations and or drawings. Please refer to the remainder of this template for additional guidance.

Executive Summary

A thorough investigation by qualified engineers designing post-construction BMPs in compliance with GDOT's GAR041000 was completed on the above referenced project. Each of the following design criteria was examined:

1. Stormwater Runoff Quality/Reduction
2. Stream Channel Aquatic Resource Protection
3. Overbank Flood Protection
4. Extreme Flood Protection

It was determined that the placement of structural BMPs to provide overbank flood protection and extreme flood protection is infeasible for basins 5 and 6. The best feasible alternative is to use enhanced dry swales and infiltration trenches that fit within the proposed cross section of the road, minimizing required right of way costs.

Infeasibility Summary Table

Drainage Area ID	Infeasible BMP	Applicable Standard Design Criteria	Applicable Infeasibility Criteria or Policy
5	Dry Detention Basin	Overbank Flood Protection, Extreme Flood Protection	Cost greater than 10% of roadway costs.
6	Dry Detention Basin	Overbank Flood Protection, Extreme Flood Protection	Cost greater than 10% of roadway costs.

Design Methodology

The basic criterion for evaluating structural BMPs include the level of stormwater treatment it can provide, the drainage area requirements, the space required as a percentage of the impervious area, the max site slope, the minimum head requirements, the depth to water table, the construction cost, and the maintenance burden. Different BMP's are capable of different levels of stormwater treatment. The main levels of stormwater treatment are water quality stormwater treatment, channel protection stormwater treatment, overbank flood protection stormwater treatment, and extreme flood protection stormwater treatment. The goal of the water quality stormwater treatment is to protect streams by reducing TSS by 80% and place BMP's addressing pollutants of concern. The goal of channel protection, overbank flood protection, and extreme flood protection stormwater treatments are to mitigate against stream erosion and flooding by detaining water on site so that outflows from the project site are similar after construction of the project as they were before construction.

BMPs able to treat for fecal coliform are preferred because of Suwanee Creek's current impairment due to fecal coliform. Infiltration trenches, bioslopes, sand filters, bioretention, wet detention ponds, and stormwater wetlands are able to treat water for fecal coliform. Roads are not considered a major source of fecal coliform, though.

See table 10.3-2 of the drainage manual for details regarding the practicality of different BMPs.

Stormwater Runoff Quality and Reduction

The methodology provided in the GSMM was used to compute the required water quality volumes. See below for the formulas used to calculate stormwater runoff quality volumes.

$\% \text{ Impervious Cover} = \text{Total Area (acres)} / \text{Post-development Impervious Cover (acres)}$

$\text{Runoff Coefficient, } R_v = .05 + .009 * \% \text{ Impervious Cover}$

$\text{Water Quality Volume (ac-ft)} = 1.2 * R_v * \text{Total Area (acres)} / 12$

$\text{Water Quality Volume (cf)} = \text{Water Quality Volume (ac-ft)} * 43560$

See appendix B for water quality volumes as well as values plugged into formulas.

The practical BMPs for achieving water quality are filter strips, grassed channels, enhanced dry swales, enhanced wet swales, infiltration trenches, bioslopes, sand filters, bioretention, dry detention basins, wet detention ponds, stormwater wetlands, and OGFC. Though some of these do not on their own achieve 80% TSS removal and would require a treatment train approach.

Stream Channel Protection

The methodology provided in the GSMM was used to compute the required channel protection volumes. See below for the formulas used to calculate channel protection volumes.

$\text{Potential max soil retention, or } S \text{ (in)} = 1000 / \text{Post-development CN} - 10$

IA value for CN (in) = $S * 0.2$

Accumulated runoff, Q (in) = $(1 \text{ year storm event (in)} - 0.2 * S)^2 / (1 \text{ year storm event (in)} + 0.8 * S)$

Unit peak discharge, or q_u = Hydrograph peak, 1 year storm (cfs) / ((total area (acres) / 640) * Q * pond and swamp factor)

24 hr. peak outflow/inflow = $10.85464 * q_u^{-0.9171715}$

Storage volume / runoff volume = $0.682 - 1.43 * 24 \text{ hr. peak outflow/inflow} + 1.64 * (24 \text{ hr. peak outflow/inflow})^2 - 0.804 * (24 \text{ hr. peak outflow/inflow})^3$

Channel Protection Volume (acre-ft) = storage volume / runoff volume * total area (acres)/12

Channel Protection Volume (cf) = Channel Protection Volume (acre-ft) * 43560

See appendix C for stream channel protection volumes as well as values plugged into formulas.

The practical BMPs for achieving water quality are enhanced dry swales, enhanced wet swales, infiltration trenches, sand filters, bioretention, dry detention basins, wet detention ponds, and stormwater wetlands. Though some of these do not on their own achieve 80% TSS removal and would require a treatment train approach to achieve the required water quality volumes as well. See table 10.3-2 of the drainage manual for details regarding max site slopes,

Overbank Flood Protection

The estimated required flood control storage volumes for the 25-year and 100-year, 24-hour storm events were computed using Intelisolve's Hydraflow Hydrographs 2007, Ver. 9.02, which uses HEC-22 computation methods. The required flood control storage volumes were computed based upon the assumption that selected flood control BMPs will be capable of attenuating post-construction peak discharges to be equal to or less than the pre-construction peak discharges for the flood control storm events. See appendix D for supporting calculations.

Only dry detention basins, wet detention ponds, and stormwater wetlands are practical for addressing overbank flood protection stormwater treatment.

Extreme Flood Protection

The estimated required flood control storage volumes for the 25-year and 100-year, 24-hour storm events were computed using Intelisolve's Hydraflow Hydrographs 2007, Ver. 9.02, which uses HEC-22 computation methods. The required flood control storage volumes were computed based upon the assumption that selected flood control BMPs will be capable of attenuating post-construction peak discharges to be equal to or less than the pre-construction peak discharges for the flood control storm events. The 100 year storm event must also be safely conveyed with no adverse impacts. See appendix D for supporting calculations.

Only dry detention basins, wet detention ponds, and stormwater wetlands are practical for addressing extreme flood protection stormwater treatment.

Results/Conclusions

It was determined that the placement of structural BMPs to provide overbank protection and extreme flood protection is infeasible for basins 5 and 6. See below infeasibility results table for details pertaining to each basin.

Infeasibility Results Table

Drainage Area ID	Drainage Area (acres)	Infeasible BMP	Contributing Stormwater Outlets/Drainage System ID	Standard Design Criteria Deemed Infeasible	Applicable Infeasibility Criteria or Policy ¹									
5	3.2	Dry Detention Basin	N/A	Overbank Flood Protection, Extreme Flood Protection	Costs more than 10% of roadway costs.									
Summary	<p>System leading to MS4 outfall is closed in pipes.</p> <p>Wet detention ponds and stormwater wetlands are the only other structural BMP's capable of providing overbank flood protection and extreme flood protection. Wet detention ponds require a minimum drainage area of at least 10 acres in order to keep the permanent pool and so they were discounted as an alternative. Stormwater wetlands require a minimum drainage area of at least 5 acres and so they were discounted as an alternative. For these reasons wet detention ponds and stormwater wetlands were not evaluated.</p> <p>A dry detention basin was evaluated and sized to provide the overbank flood protection. It was deemed infeasible based on cost. By finding it infeasible to provide overbank flood protection, it can be reasonably found that extreme flood protection would cost more and therefore be infeasible as well. See Appendix A for footprint of BMP in relation to the ROW and construction limits.</p> <p>Pond Size:15'x35', 6' deep, 1' additional freeboard, 10' berm, 4:1 side slopes, and 17,262 cf of storage volume.</p> <p>See below cost estimate based on the basin.</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Item</th> <th style="text-align: right;">Roadway Cost</th> <th style="text-align: right;">Dry Detention Basin Cost</th> </tr> </thead> <tbody> <tr> <td>Total</td> <td style="text-align: right;">\$ 1,251,893.51</td> <td style="text-align: right;">\$ 135,569.10</td> </tr> <tr> <td>Percent of Pond to Total</td> <td colspan="2" style="text-align: right;">11%</td> </tr> </tbody> </table> <p>The complete cost estimate is in Appendix E.</p>					Item	Roadway Cost	Dry Detention Basin Cost	Total	\$ 1,251,893.51	\$ 135,569.10	Percent of Pond to Total	11%	
Item	Roadway Cost	Dry Detention Basin Cost												
Total	\$ 1,251,893.51	\$ 135,569.10												
Percent of Pond to Total	11%													
6	4.05	Dry Detention Basin	N/A	Overbank Flood Protection, Extreme Flood Protection	Costs more than 10% of roadway costs.									
Summary	<p>System leading to MS4 outfall is closed in pipes.</p> <p>Wet detention ponds and stormwater wetlands are the only other structural BMP's capable of providing overbank flood protection and extreme flood protection. Wet detention ponds require a minimum drainage area of at least 10 acres in order to keep the permanent pool and so they were discounted as an alternative. Stormwater wetlands require a minimum drainage area of at least 5 acres and so they were discounted as an alternative. For these reasons wet detention ponds and stormwater wetlands were not evaluated.</p> <p>A dry detention basin was evaluated and sized to provide the overbank flood protection. It was deemed infeasible based on cost. By finding it infeasible to provide overbank flood protection, it can be reasonably found that extreme flood protection would cost more and therefore be infeasible as well. See Appendix A for footprint of BMP in relation to the ROW and construction limits.</p> <p>Pond Size:30'x60', 6' deep, 1' additional freeboard, 10' berm, 4:1 side slopes, and 30,672 cf of storage volume.</p> <p>See below summary cost estimate based on the basin.</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Item</th> <th style="text-align: right;">Roadway Cost</th> <th style="text-align: right;">Dry Detention Basin Cost</th> </tr> </thead> <tbody> <tr> <td>Total</td> <td style="text-align: right;">\$ 1,041,834.52</td> <td style="text-align: right;">\$ 216,015.80</td> </tr> <tr> <td>Percent of Pond to Total</td> <td colspan="2" style="text-align: right;">21%</td> </tr> </tbody> </table> <p>The complete cost estimate is in Appendix E.</p>					Item	Roadway Cost	Dry Detention Basin Cost	Total	\$ 1,041,834.52	\$ 216,015.80	Percent of Pond to Total	21%	
Item	Roadway Cost	Dry Detention Basin Cost												
Total	\$ 1,041,834.52	\$ 216,015.80												
Percent of Pond to Total	21%													

Feasible Structural BMPs

It is anticipated that enhanced swales and infiltration trenches will be used for this project. This is based on conceptual calculations and is subject to change as the design is fully developed. Basins 5 and 6, and are planned to have infiltration trenches and enhanced dry swales. They will be able to provide channel protection and water quality treatment of concentrated flows leaving the site for this basin. Diversion swales and pipes will be used to minimize the flow of water coming from off the site, which would require larger and more expensive structural BMPs.

The enhanced swales and infiltration trenches will achieve 80% TSS removal. Additional ROW is not anticipated to be required. See table below for required BMP's and their water quality and storage volumes.

Basin ID	Length of enhanced dry swales (ft)	Depth of water (ft)	Width of enhanced dry swale (ft)	Left side slope (X:1)	Right side slope (X:1)	Water Quality Volume and Quantity Volume Provided by Dry Swales(cy)
5	410	2	8	2	2	3550
6	N/A					

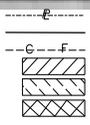
Basin ID	Area of infiltration trenches	Trench Depth (ft)	Water Quality Volume and Quantity Volume Provided infiltration trenches (cy)	Total Water Quality Volume and Quantity Volume Provided (cy)
5	1,636	8	4,344	7,894
6	4,648	8	12,340	12,340

As you can see above, enhanced swales and infiltration trenches will be used on this project for basins 5 and 6 to meet post construction stormwater requirements. Using this approach, the design will meet the required 80% TSS removal performance goal. Both infiltration trenches and enhanced swales provide 80% TSS removal, and so a treatment train is not required, but may be provided. Treatment trains will be evaluated in preliminary design as drainage design starts.

Appendix A - Drainage Area and Footprint Figures for Infeasible BMPs



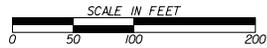
PROPERTY AND EXISTING R/W LINE
 REQUIRED R/W LINE
 CONSTRUCTION LIMITS
 EASEMENT FOR CONSTR
 & MAINTENANCE OF SLOPES
 EASEMENT FOR CONSTR OF SLOPES
 EASEMENT FOR CONSTR OF DRIVES



BEGIN LIMIT OF ACCESS.....BLA
 END LIMIT OF ACCESS.....ELA
 LIMIT OF ACCESS
 REQ'D R/W & LIMIT OF ACCESS

GEORGIA
 DEPARTMENT
 OF
 TRANSPORTATION

URS
 400 NORTH PARK TOWN CENTER
 1000 ABERNATHY ROAD, N.E., SUITE 900
 ATLANTA, GEORGIA 30328
 TEL: (678) 808-8800 FAX: (678) 808-8400



REVISION DATES	

STATE OF GEORGIA
 DEPARTMENT OF TRANSPORTATION
 OFFICE: PROGRAM DELIVERY
INFEASIBLE POND LOCATION LAYOUTS
 SR 13 FROM MCGINNIS FERRY ROAD
 TO GEORGE PIERCE PARK
 DRAWING No. 5

Appendix B - Water Quality Calculations

Basin ID	Total Drainage Area (AC)	Pre-Dev Impervious Area (AC)	Pre-Dev % Impervious	Post-Dev Impervious Area (AC)	Post-Dev % Impervious	WQv (ft ³)
1	1.61	0.67	42%	0.92	57%	3,957
2	1.71	0.76	44%	0.94	55%	4,058
3	1.01	0.24	24%	0.42	42%	1,867
4	0.45	0.12	27%	0.20	44%	882
5	3.20	1.32	41%	1.82	57%	7,832
6	4.05	1.39	34%	2.84	70%	12,016
7	3.41	2.43	71%	2.66	78%	11,171
8	2.99	2.14	72%	2.17	73%	9,158

Notes:

- 1.) WQv is equal to volume of runoff resulting from the first 1.2 inches of rainfall of any given storm event. WQv volume was computed using the methodology provided in Section 2.1.7 of the Georgia Stormwater Management Manual (Blue Book).

Appendix C - Channel Protection Calculations

Precipitation (P) design storm events (from TR55)	
1 year storm event (inches)	3.36
25 year storm event (inches)	6.48
100 year storm event (inches)	7.92

Basin ID	Total Drainage Area (AC)	Hydrograph Peak (cfs)	Pre-Dev Swamp Factor2	Pre-Dev CN	Pre-Dev Time of Concentration (min)	Post-Dev Swamp Factor22	Post-Dev CN	Post-Dev Time of Concentration (min)	CPv (ft ³)
1	1.61	3.46	1.00	73	10	1.00	81	15	3,806
2	1.71	4.19	1.00	75	10	1.00	80	10	4,070
3	1.01	1.94	1.00	67	10	1.00	75	10	2,403
4	0.45	0.91	1.00	68	10	1.00	76	10	1,071
5	3.20	8.19	1.00	74	15	1.00	81	10	7,617
6	4.05	12.74	1.00	72	15	1.00	86	10	9,638
7	3.41	11.93	1.00	86	10	1.00	89	10	8,110
8	2.99	9.75	1.00	87	10	1.00	85	10	7,134

Appendix D - Hydrologic Model Output

Basin ID	Total Drainage Area (AC)	Pre-Dev Imperious Area (AC)	Pre-Dev % Imperious	Pre-Dev CN	Pre-Dev Time of Concentration (min)	Post-Dev Imperious Area (AC)	Post-Dev % Imperious	Post-Dev CN	Post-Dev Time of Concentration (min)	Overbank Flood Protection Volume (ft ³)	Extreme Flood Protection Volume (ft ³)
1	1.61	0.67	42%	73	10	0.92	57%	81	15	1,030	0
2	1.71	0.76	44%	75	10	0.94	55%	80	10	4,027	3,967
3	1.01	0.24	24%	67	10	0.42	42%	75	10	3,418	4,029
4	0.45	0.12	27%	68	10	0.20	44%	76	10	1,537	1,649
5	3.20	1.32	41%	74	15	1.82	57%	81	10	16,437	19,009
6	4.05	1.39	34%	72	15	2.84	70%	86	10	30,118	34,012
7	3.41	2.43	71%	86	10	2.66	78%	89	10	5,063	3,971
8	2.99	2.14	72%	87	10	2.17	73%	85	10	1,909	2,224

Appendix E – Infeasible Dry Detention Basins Cost Estimates

	Quantities		Per Unit Cost	Costs	
	BASIN 5	BASIN 6		BASIN 5	BASIN 6
Roadway Construction Costs					
Catch Basins (each)	13	15	\$2,038.52	\$26,500.76	\$30,577.80
24" Pipe (lf)	625	725	\$42.55	\$26,593.75	\$30,848.75
18" Pipe (lf)	1875	2175	\$33.00	\$61,875.00	\$71,775.00
Tall Concrete Curb in Median (lf)		317	\$20.00	\$0.00	\$6,340.00
8"X30" C&G (lf)	1152	243	\$20.25	\$23,328.00	\$4,920.75
Header Curb Type 2 (lf)	1323	2422	\$9.53	\$12,608.19	\$23,081.66
Header Curb Type 9 (lf)	346		\$15.00	\$5,190.00	\$0.00
Concrete Sidewalk (sy)	1658	3478	\$23.67	\$39,244.86	\$82,324.26
Boardwalk (sf)	6797		\$50.00	\$339,850.00	\$0.00
Concrete Median (sy)	7		\$56.00	\$392.00	\$0.00
Graded Aggregate Base (ton)	3553	2851	\$18.92	\$67,222.76	\$53,940.92
Class B Concrete Widening (cy)	21	46	\$161.73	\$3,396.33	\$7,439.58
25 MM Asphalt (ton)	1137	1030	\$73.06	\$83,069.22	\$75,251.80
19 MM Asphalt (ton)	455	412	\$82.12	\$37,364.60	\$33,833.44
12.5 MM Asphalt (ton)	378	336	\$97.96	\$37,028.88	\$32,914.56
10" Truck Apron (sy)	415		\$120.00	\$49,800.00	\$0.00
Tack Coat (gallon)	579	525	\$4.04	\$2,339.16	\$2,121.00
Unclassified excavation (cy)	4230	6855	\$3.00	\$12,690.00	\$20,565.00
Borrow (cy)	0	8450	\$5.00	\$0.00	\$42,250.00
Erosion Control (lump sum)	40000	50000		\$40,000.00	\$50,000.00
Clearing and Grubbing (acre)	4.48	4.93	\$5,000.00	\$22,400.00	\$24,650.00
Landscaping (lump sum)	40000	30000		\$40,000.00	\$30,000.00
Total Roadway Construction Costs				\$930,893.51	\$622,834.52

	Quantities		Per Unit Cost	Costs	
	BASIN 5	BASIN 6		BASIN 5	BASIN 6
Roadway Right of Way Costs					
Residential Right of Way (sf)	15080		\$4.55	\$68,614.00	\$0.00
Residential Permanent Easement (sf)	34342	41140	\$4.10	\$140,802.20	\$168,674.00
Residential Temporary Easement (sf)			\$0.00	\$0.00	\$0.00
Commercial Right of Way (sf)	5682		\$10.00	\$56,820.00	\$0.00
Commercial Permanent Easement (sf)	6081	27778	\$9.00	\$54,729.00	\$250,002.00
Commercial Temporary Easement (sf)		1428	\$0.00	\$0.00	\$0.00
Total Right of Way Costs				\$321,000.00	\$419,000.00
Total Roadway Costs				\$1,251,893.51	\$1,041,834.52
Dry Detention Basin Costs					
Outlet Structure Cost (each)	1	1	\$5,000.00	\$5,000.00	\$5,000.00
24" Pipe Cost (lf)	150	175	\$42.55	\$6,382.50	\$7,446.25
24" Flared End Section (each)	2	2	\$600.00	\$1,200.00	\$1,200.00
Unclassified Excavation (cy)	4700	3350	\$3.00	\$14,100.00	\$10,050.00
Borrow Excavation (cy)	0	4450	\$5.00	\$0.00	\$22,250.00
Clearing and Grubbing (acre)	0.44	0.54	\$5,000.00	\$2,200.00	\$2,700.00
Erosion Control	10000	15000	Lump	\$10,000.00	\$15,000.00
Landscaping (ls)	10000	15000	Lump	\$10,000.00	\$15,000.00
Residential Right of Way (sf)	19052	18101	\$4.55	\$86,686.60	\$82,359.55
Commercial Right of Way (sf)		5501	\$10.00	\$0.00	\$55,010.00
			Total Dry Detention Basin	\$135,569.10	\$216,015.80
				1	
			Total Roadway Costs	\$1,251,893.51	\$1,041,834.52
			Total Dry Detention Basin	\$135,569.10	\$216,015.80
			Percentage	0.11	0.21

Attachment D Milestone Plan Submittal Checklist

Concept Milestone

Yes / No

- Has the preliminary hydrology study for stormwater quality and quantity been prepared?
 - The details of the preliminary study are sufficient for estimating right-of-way needs
 - The details of the preliminary study are sufficient for completing an initial cost estimate

Preliminary Field Plan Review (PFPR) Milestone

Yes / No

- Has the preliminary hydrology study (submitted in concept) been altered?
 - A detailed study has been provided including the design of detention and water quality structures
 - The detail design includes all of the following:

<input checked="" type="checkbox"/> Percent impervious	<input type="checkbox"/> Stage/Storage/Discharge Table
<input checked="" type="checkbox"/> Drainage area	<input type="checkbox"/> Outlet structure details
<input checked="" type="checkbox"/> Runoff (C) or (CN) values	<input type="checkbox"/> (For infiltration) Hydraulic Conductivity "K"
<input checked="" type="checkbox"/> Average slope of site	<input type="checkbox"/> Grading necessary for any BMPs
<input checked="" type="checkbox"/> Soil conditions	<input checked="" type="checkbox"/> Time of concentration

Yes / No

- The Post-Construction BMP Summary Tables have been completed.
- The Low Impact Development (LID) / Green Infrastructure (GI) Checklist been completed.
- The Infeasibility Report has been completed. (Note – this is required if the two above items have not been completed.)

Final Field Plan Review (FFPR), Final Plans, and Use-on-Construction Milestone

Yes / No

- Has the detailed hydrology study (submitted in PFPR) been altered?
 - There have been changes that warrant a revision to the previous study
 - There have been changes that warrant a revision to the post-construction BMP details

Attachment #8

SUMMARY OF MEETING MINUTES
Concept Team Meeting

MEETING DATE: July 18, 2014
9:00 AM at District 1

PARTICIPANTS:

Brandon Kirby, GDOT	bkirby@dot.ga.gov
Kathe Ahmed, GDOT	kahmed@dot.ga.gov
Brent Cook, GDOT	bcook@dot.ga.gov
Ken Werho, GDOT	kwerho@dot.ga.gov
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Kevin York, GDOT	keyork@dot.ga.gov
Kim Coley, GDOT	kcoley@dot.ga.gov
Richard Crowe, GDOT	rcrowe@dot.ga.gov
John Gay, Georgia Power	jcgay@southernco.com
Matt Dickison, City of Suwanee	mdickison@suwanee.com
Daniel Robinson, City of Suwanee	drobinson@suwanee.com
Sean Pharr, URS	sean.pharr@urs.com
Patrick Smith, URS	patrick.n.smith@urs.com
John Hightower, URS	john.hightower02@urs.com
Joe Tiernan, URS	joe.tiernan@urs.com
Joe Ussery, Columbia Engineering	jussery@columbia-engineering.com
Paul Cook, Columbia Engineering	pcook@columbia-engineering.com

**DISCUSSION: GDOT PI 0011639, City of Suwanee, Buford Highway
Bike/Ped**

A concept team meeting with the above listed participants was held on July 18, 2014 at the District 1 office. The meeting was held to discuss the project concept prior to submission of the concept report and any concerns with it. Sean Pharr opened the meeting providing a brief explanation of the agenda and introductions of the participants were held.

Sean Pharr introduced the project, stating that this project was identified in an LCI study, and more refined in a detailed transportation study, and subsequently an approved ARC scoping study.

Sean Pharr described the preferred alternative, starting at McGinnis Ferry Road, stating that a multiuse trail is proposed on the east side of the road from McGinnis Ferry Road to Davis Street, where a roundabout is proposed at Buford Highway and Russell Street. From this point a 3 lane section from Russell to Chicago, with a 14-ft flush median, bike lanes, on

street parking, and wide buffered sidewalks are proposed. North of Chicago Street a raised median replaces the 14-ft flush median to Lawrenceville Suwanee Road. North of Lawrenceville Suwanee Road bike lanes are proposed to the signal at George Pierce Park. In summary, bicyclists going to the entrance of George Pierce Park from McGinnis Ferry Road would ride on the multiuse path to the roundabout at Russell Street, and then ride in the bike lanes until getting to George Pierce Park.

Sean Pharr, provided an overview of the roundabout peer review (by Kittleson) stating that a single lane roundabout may be reasonable for the 2038 design year. Removing the z crossings through the islands in the roundabout, as well as adjust some striping, and a few minor alignment changes. The peer review also stated that using the HCM model, the roundabout would be over capacity by 2038, but when analyzed using the HCM calibrated model, the roundabout would be just under capacity in 2038, but still above the 0.85 to 0.90 max v/c ratio desired for roundabouts.

Sean Pharr noted that the primary function of the roundabout is to change the character of the road from a high speed rural highway to a lower speed urban roadway. Lower speeds will help to meet Suwanee's needs by enhancing the pedestrian and cycling environment within the project corridor.

Joe Tiernan stated that this project is in an MS4 area, and the project will need to have structural post construction stormwater BMPs. There are 4 different criteria for providing post construction stormwater needs. The criteria are water quality, channel protection, overbank flood protection, and extreme flood protection. The only 3 structural BMPs capable of providing overbank flood protection and extreme flood protection are stormwater wetland, wet detention ponds, and dry detention basins. Stormwater wetlands and wet detention ponds are not a good fit because the contributing basins for each basin on this project is less than the 5 acre and 10 acre minimums required for stormwater wetlands and wet detention ponds. We conceptually placed dry detention ponds in areas so as to minimize environmental impacts, right of way, and grading costs. Construction and right of way costs for the roadway and structural stormwater BMPs (dry detention ponds) were found for each basin, and it was found that for each basin, the cost of the dry detention ponds would be greater than 10% of the roadway costs, making them infeasible. After looking at different alternatives for providing water quality and channel protection requirements, URS found that enhanced dry swales and infiltration trenches will be an effective way of providing for post construction stormwater while still fitting within the proposed typical section of the road and minimizing right of way costs.

Sean Pharr discussed Utility Coordination and Georgia Power.

John Gay with Georgia Power, stated he is mostly concerned about the impact the project will have on the existing right of way, and noted that the road will be very congested at Lawrenceville Suwanee and Buford Highway. John is also concerned about what right of way will be left behind the back edge of the sidewalk or if Georgia Power would be pushed off of right of way and need to get easements.

Joe Ussery stated that Columbia had coordinated with all the utility companies and digitally relayed them onto the concept utility plans. He stated that it will take time to move the existing utility lines and that the next step is to get a 1st utility submission sent for verification to utility owners. Joe stated that there is a water interconnect and AT&T vaults at Russell Street that will need to be rebuilt because of the construction of the roundabout there. Joe stated that Charter has a line going along Buford Highway that carries traffic between 8 states, and as a result of this the cost to move the line will cost about 700k.

Neil Kantner asked if the cost to bury the utilities was being used or not.

Joe Ussery stated that costs to keep overhead lines are being used for now, and that the costs to bury would be evaluated later because the costs are more identifiable to keep the utilities overhead. He also stated the city is interested in costs to extend sewer along Buford Highway, and Columbia is evaluating that it would be best to do concurrently with the road work rather than after the project is completed.

Neil Kantner stated that an approved concept report is needed before moving too much further on utility coordination.

Joe Ussery stated that the schedule is the main reason for pushing early utility coordination and costs to relocate each utility will need to be evaluated along with costs to bury overhead lines.

John Gay stated early conversation is necessary so Georgia Power work can be completed before the roadway work comes. John stated relocation off of right of way will be require easements which will require talking to landowners in advance.

Joe Ussery stated that he had talked to a few landowners as he had walked the project and that most are happy about the project. John Gay stated that he would be happy to walk the project with Joe. John Gay and Joe Ussery then worked out a rough schedule to meet and walk the project.

Patrick Smith stated that this project is anticipated to be a level CE document. Patrick stated that there are some historic resources, including a historic district and a cemetery. There are also some waters, and we are trying to avoid a 4F evaluation. We may need to look at alternatives to reduce/minimize 4F impacts as the project progresses. We anticipate that any takes from parks will be minor and will be consistent with current park use; therefore, de minimis 4(f) should apply.

Sean Pharr stated that robust public involvement and participation has previously been held during the various LCI plans and Transportation Study. Sean stated that ARC is supportive of the project and has approved the scoping report. There is a maintenance project currently going through the project site that will overlay the existing road, and asked if there are any other projects in the area that would affect this project. Ken Werho stated that there are some pedestrian improvement upgrades occurring along Buford Highway south of McGinnis Ferry.

Ken Werho stated that the 13' wide sidewalk should be reduced to 8' through the use of benches or planters to reduce bicycle use on the sidewalk. Ken stated that he prefers the cycle track alternative.

Sean Pharr stated that there are many challenges with the cycle track, including additional costs and chicanes that would be required for speed control on the cycle track. Sean stated that the chicanes would push the shoulder out. The cycle track would also make it preferable to shift the road to the west to minimize right of way costs, and this would require shifting the crown of the existing road, adding paving costs. Sean stated that the lane widths would need to be wider, especially where medians are provided to accommodate emergency vehicles. All this means that the total footprint of the road with a cycle track will be larger than the footprint of the road with bike lanes.

Ken Werho inquired about putting the cycle track in the road.

Sean Pharr stated that a buffer between cyclists and vehicles would be required with a cycle track. Sean stated that a peer review suggested a cycle track and it was evaluated with pros and cons.

Ken Werho stated that the chicanes for the cycle track could be placed by taking out the parking where chicanes are needed, if the footprint of the road were the concern.

Sean Pharr stated that the cycle tract alternative will be added to the alternative section of the concept report.

Ken Werho stated that with the roundabout, he prefers the Z-crossings because they allow additional space for cyclists to sit.

Sean Pharr asked the group if we should keep the Z-crossings. Ken Werho replied yes.

Sean Pharr stated that Russell Street has sharrows and that the city has a bike network to the west of this project along Main Street, and plans to connect to the greenway. This project will increase cyclist network connectivity.

Ken Werho stated that GDOT just hired a new Bike/Ped Coordinator, Kaitlin DiGioia, and we should coordinate with her on this project. Sean Pharr stated that he would be sure to coordinate with GDOT's bike/ped coordinator.

Ken Werho stated that under the sidewalk on the west side of the road may make a good place to put utilities if they need to be buried.

Sean Pharr briefly described the alternatives considered for south of Davis Street. Multiple alternatives were evaluated including adding sidewalk to both sides of the road and an urban section. Sean stated that doing work on both sides of the road was more costly, and to reduce

costs a multiuse path will be built on the east side of the road, and a future project could come later to build a sidewalk or multiuse path on the west side of the road.

Ken Werho asked how the roundabout will be constructed. Sean Pharr stated that design wants a detour to build the roundabout.

Ken Werho stated that the biggest problem with building a roundabout is the truck apron because it takes 30 days for the concrete to cure. Ken stated that a detour could be avoided by doing an on-site detour on a temporary road to the west of the proposed roundabout. Ken asked where an off-site detour would be, if a detour were used.

Sean Pharr stated that McGinnis Ferry Road, Peachtree Industrial Boulevard, and Suwanee Dam Road/Lawrenceville Suwanee Road could be used as a detour

Neil Kantner stated that for the next public meeting, utility owners should be invited.

Ken Werho asked when the PIOH would be. Kathe Ahmed stated that, according to the schedule, the PIOH would be in December 2014. Sean Pharr asked if the PIOH could be moved up to October or November? Kathe Ahmed replied yes.

Sean Pharr asked if there were any additional questions.

Sean Pharr thanked everyone for their attendance and stated that the meeting minutes for the concept team meeting along with the adjusted concept report would be sent out within the next two weeks.

SHP/JMT

Attachment #9

DRAFT - SUMMARY OF MEETING MINUTES
Coordination Meeting with District 1 Staff

MEETING DATE: June 11, 2014
10:00 AM at District 1

PARTICIPANTS: Brandon Kirby, GDOT
Kathe Ahmed, GDOT
David Olson, GDOT
Nathaniel O'Kelly, GDOT
Neil Kantner, GDOT
William Hunter, GDOT
Jason Dykes, GDOT
Josh Campbell, City of Suwanee
Matt Dickison, City of Suwanee
Sean Pharr, URS
Jeff Wood, URS
Joe Tiernan, URS

DISCUSSION: **GDOT PI 0011639, City of Suwanee**

A District coordination meeting of the above listed participants was held on June 11, 2014 at the District 1 office. The meeting was held to discuss the project and any concerns with it. Sean Pharr opened the meeting providing a brief explanation of the agenda and introductions of the participants were held.

Nathaniel O'Kelly asked if Russell Street is a major traffic generator and how it was chosen for locating a roundabout there

Sean Pharr replied that the roundabout does provide some traffic, operational and risk reduction benefits to the intersection, but will also help to slow down traffic entering Suwanee, where the current average speed of drivers is over 45 mph. The project proposes to build in street bike lanes and on street parking and lower speeds will benefit multi-modal operations.

Brandon Kirby asked where the proposed bike lanes will start.

Sean Pharr pointed out the area on the layout where the multiuse paths end, and the bike lanes end, just north of the roundabout at Russell Street.

Brandon Kirby asked what the bike lanes connect to.

Matt Dickison answered that it connects to McGinnis Ferry Road that can take you to the greenway system and to George Pierce Park.

Nathaniel O'Kelly asked if this project was in an MS4 area?

Joe Tiernan replied that yes this project is in an MS4 area, and outlined the plan to meet MS4 requirements for the project including infiltration trenches and enhanced swales.

Nathaniel O'Kelly asked what the plan was for utility coordination and SUE for the project.

Sean Pharr replied that a sub, Columbia Engineering is 90% complete with utility and right of way estimates.

Brandon Kirby asked what the overall cost estimate number was.

Sean Pharr replied that the construction, right of way, and utility costs were still in development.

Nathaniel O'Kelly asked who the power company was, and if anybody was coordinating with them.

Matt Dickison replied that the power company is GA Power and that the City has been in contact with them. It was noted the consultant utility coordinator, Columbia Engineering, is actively coordinating with them.

Brandon Kirby inquired about the trail material

Sean Pharr replied that it is currently concrete, though we are exploring the benefits of porous concrete, and the cost benefit of asphalt.

Joe Tiernan added that MS4 requires you to treat the difference between pre and post construction flows. Adding impervious areas makes your flows get higher, requiring you to provide more storage in the MS4 structures. By using porous concrete, you can make your added impervious areas negligible so the difference between pre and post construction flows becomes negligible as long as you don't change the time of concentration of the flows in the basin. Then the only MS4 requirement is water quality volume, which the enhanced swales should be able to provide for the basins south of Davis Street.

Brandon Kirby then asked if there was a history of bike traffic along the corridor.

Sean Pharr replied that there are no bike counts available, but it's currently a high speed corridor with average vehicle speeds over 45 mph and the existing roadway is generally unfavorable for bike traffic.

Josh Campbell added that there are sharrows along Russell Street and that the trail along McGinnis Ferry Road gets a lot of bicycle traffic.

Nathaniel O'Kelly asked if there had been any outreach to the bicycle community in the area and that often they can make suggestions that wouldn't be thought of otherwise.

Josh Campbell replied that there is a bike shop near the corner of Lawrenceville Suwanee Road and SR 13/Buford Highway that can be reached out to.

Sean Pharr agreed that we should reach out to the bike community in the area.

David Olson noted that the traffic split at the roundabout is nearly 10%-90% and asked about capacity on a state highway and if the roundabout would provide any operational benefits. He also asked if left turns along the corridor would be able to handle traffic.

Jeff Wood replied that the roundabout does not provide much benefit to the traffic moving along Buford road, and answered that left turn lanes will be designed to handle 95% queues at the signalized intersections, where possible.

William Hunter asked if the project would be required to do any upgrades to the corridor traffic wise.

David Olson noted that the layout contained turn lanes at the major intersections.

Sean Pharr closed the meeting asking if anyone had any additional questions.



Buford Highway Transportation Study

Public Meeting Workshop

Thursday, February 25, 2010
City of Suwanee Crossroads Center

Meeting Notes

A public meeting workshop for the Buford Highway Transportation Study was conducted Thursday, February 25 at the Crossroads Center. Thirty persons signed in as attending the meeting, but a head count showed that the total attendance was closer to 40 persons. The meeting presented the study's purpose, process, and draft recommendations for community review and input. The meeting format included a presentation followed by an interactive workshop. Participants were divided into two groups to review more closely the project recommendations, ask questions, and complete a detailed comment form. Twenty-three completed comment forms were received.

The comment form provided an opportunity for attendees to offer feedback on the preferred design alternative for Buford Highway (between George Pierce Park and McGinnis Ferry Road) and short and long-term safety and operations project recommendations. The responses indicated that the preferred design alternative for Buford Highway—retaining the two-lane cross section and basing the design of the corridor on a transect from rural to historic to town center—provides vehicular (60 percent), pedestrian (91 percent) and bicyclist (86 percent) safety while retaining the unique character of the City of Suwanee (95 percent). Of note, 100 percent of the respondents stated that the preferred design alternative is visually and aesthetically pleasing.

The element of the preferred design alternative that was least liked by respondents was the reduction or limitation of traffic flow (due to retaining the current two-lane cross section). However, tree cover, pedestrian access (sidewalks) and bicycle lanes were all listed as elements liked the most by respondents. When asked what features of the proposed Rural, Historic, and Town Center transect cross sections were liked the most, tree cover, the roundabout treatment (at Russell and Buford Highway intersection) and pedestrian safety were listed by a majority of the respondents. Limited traffic capacity was listed as the element liked least in the three proposed transect cross sections. A majority of respondents (77 percent) indicated that the locations/ lengths of the proposed Rural, Historic and Town Center transect cross sections are appropriate along Buford Highway.

Attached for reference include:

- Meeting Agenda
- Project Fact Sheet
- Presentation
- Sign-in Sheets
- Comment Form
- Detailed Summary of Comments Received



Buford Highway Transportation Study

Public Meeting Open House

Thursday, March 18, 2010

City of Suwanee Crossroads Center

Meeting Notes

A public meeting open house was conducted Thursday evening, March 18, 2010 at Suwanee City Hall for the Buford Highway Transportation Study. Fourteen persons signed in as attending the meeting. The meeting format was an open house and included two stations where attendees could review plan recommendations on display boards. Participants were asked to complete a short comment form. Three completed comment forms were received.

Many of the meeting attendees either work at a business on Buford Highway or own property along the corridor. A number of informal comments were provided about the recommended Buford Highway design cross sections. Concerns were expressed about the addition of medians in the Town Center section and whether it would affect property access and close existing driveways. Some attendees commented that they did not think the recommended design would adequately handle the growth in traffic demands over time and traffic will have to take alternate routes. Others cited a reduced speed limit as a concern in that it would reduce traffic volumes on Buford Highway. Some attendees indicated that they were concerned about being able to safely enter and exit their property located on Buford Highway. Some attendees favored the concept in that it would not likely need additional right of way beyond what is existing. Several attendees indicated general support for the Transect concept for Buford Highway. One attendee wanted to explore the possibility of making Suwanee Dam Road pass under the Norfolk Southern rail line.

Regarding other project recommendations, a number of attendees supported the roundabout concept at Buford Highway and Russell Street. This project could serve as a good gateway and keep traffic moving, albeit at a slower speed.

Attached for reference include:

- Executive Summary Handout
- Sign-in Sheets
- Comment Form
- Comment Form Summary

Attachment #10



October 22, 2013

Mr. Jimmy Burnette, Mayor
City of Suwanee
330 Town Center Avenue
Suwanee, GA 30024

Dear Mr. Burnette:

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

Gwinnett County, PI# 0011639

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 Ryan Fernandez at (404) 631-1162.

Sincerely,

A handwritten signature in black ink that reads "Angela Robinson".

Angela Robinson,
Financial Management Administrator

AR:kp

Enclosure

c: Bob Rogers
Bayne Smith - District 1 Engineer
Kim Coley - District 1 Planning & Programming Engineer
Neil Kantner - District 1 Utilities Engineer
Mike Bolden - State Utilities Engineer

AGREEMENT
BETWEEN
DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
AND
CITY OF SUWANEE
FOR
TRANSPORTATION FACILITY IMPROVEMENTS

This Framework Agreement is made and entered into this 11th day of October, 2013, by and between the DEPARTMENT OF TRANSPORTATION, an agency of the State of Georgia, hereinafter called the "DEPARTMENT", and the City of Suwanee, 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

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

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

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

WHEREAS, the Constitution authorizes intergovernmental agreements whereby state and local entities may contract with one another "for joint services, for the provision of services, or for the joint or separate use of facilities or equipment; but such contracts must deal with activities, services or facilities which the parties are authorized by law to undertake or provide." Ga. Constitution Article IX, §11, ¶1(a).

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

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

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

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

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

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

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

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

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

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

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

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

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

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

a. Prepare the PROJECT Concept Report and Design Data Book in accordance with the format used by the DEPARTMENT. The concept for the PROJECT shall be developed to accommodate the future traffic volumes as generated by the LOCAL GOVERNMENT as provided for in paragraph 8b and approved by the DEPARTMENT. The concept report shall be approved by the DEPARTMENT prior to the LOCAL GOVERNMENT beginning further development of the PROJECT plans. It is recognized by the parties that the approved concept may be updated or modified by the LOCAL GOVERNMENT as required by the

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

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

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

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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

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

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

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

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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 V8i and InRoads software respectively using the DEPARTMENT's Electronic Data Guidelines. The LOCAL GOVERNMENT shall further be responsible for making all revisions to the final right of way plans and construction plans, as deemed necessary by the DEPARTMENT, for whatever reason, as needed to acquire the right of way and construct the PROJECT.

j. Prepare PROJECT cost estimates for construction, Right of Way and Utility/railroad relocation 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 shall also be updated annually if the noted

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

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

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

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

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

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

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

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

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

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

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

14. The LOCAL GOVERNMENT shall be responsible for acquiring a Value Engineering Consultant for the DEPARTMENT to conduct a Value Engineering Study if the total estimated PROJECT cost is \$50 million or more. The Value Engineering Study cost is considered a PE cost. The LOCAL GOVERNMENT shall provide project related design data and plans to be evaluated in the study along with appropriate staff to present and answer questions about the PROJECT to the study team. The LOCAL GOVERNMENT shall provide responses to the study recommendations indicating whether they will be implemented or not. If not, a valid response for not implementing shall be provided. Total project costs include PE, right of way, and construction, reimbursable utility/railroad costs.

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

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

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

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

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

by employing a Consultant firm prequalified in Area Class 8.01 to perform construction oversight. The LOCAL GOVERNMENT shall be responsible for employing a GDOT prequalified consultant in area classes 6.04a and 6.04b for all materials testing on the PROJECT, with the exception of field concrete testing. All materials testing, including field concrete testing shall be performed by GDOT certified technicians who are certified for the specific testing they are performing on the PROJECT. The testing firm(s) and the individual technicians must be submitted for approval prior to Construction.

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

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

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

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

20. The DEPARTMENT shall be furnished with a copy of all contracts and agreements between the LOCAL GOVERNMENT and any other agency or contractor associated with construction activities. The DEPARTMENT's Project Manager shall be the primary point of contact unless otherwise specified.

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

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

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

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

DEPARTMENT OF
TRANSPORTATION

BY: *Ruth Bell*
Commissioner

LOCAL GOVERNMENT NAME

ATTEST: *Angela Whitfield*
Treasurer

BY: *James M Burnette*
Jimmy Burnette
Mayor



Signed, sealed and delivered this 27th
day of August, 2013, in the
presence of:

A. K. [Signature]
Witness

Elvira D. Rogers
Notary Public



This Agreement approved by Local
Government, the 27th day of
August, 2013.

Revised: 12/2011

Attest

Elvira Rogers, City Clerk
Name and Title

FEIN: 58 095 0007

Engineering Phase I		Preliminary Engineering - Phase I ¹				GDOT Oversight for PE (Phase II) ²			Preliminary Engineering Grand Total (Phase I)		
Percentage	PE Amount	Maximum PE Participation Amount (\$)	Participant	PE Activity Sponsor	Percentage	Amount	Participant	Percentage	Amount		
80%	\$300,000.00	\$300,000.00	Federal	Local Government	RDIV/01	\$0.00	Federal	80%	\$300,000.00		
0%	\$0.00	\$0.00	State		RDIV/04	\$0.00	State	0%	\$0.00		
20%	\$75,000.00	N/A	Local		RDIV/03	\$0.00	Local	20%	\$75,000.00		
0%	\$0.00	\$0.00	Other		RDIV/05	\$0.00	Other	0%	\$0.00		
Total	\$375,000.00				RDIV/01	\$0.00		100%	\$375,000.00		

Right of Way Phase II		Right of Way - Phase II ³				Acquisition Fund By:	
Percentage	ROW Amount	Minimum ROW Participation Amount (\$)	Participant	Acquisition By:	Utility Relocation - Phase IV	Utility Funding By:	Amount
RDIV/01	\$0.00	\$0.00	Federal	Local Government	Local Government	Local Government	
RDIV/03	\$0.00	\$0.00	State				
RDIV/04	\$0.00	N/A	Local				
RDIV/05	\$0.00	\$0.00	Other				
Total	\$0.00						

Construction Phase III		Construction - Phase III ⁴				Construction Oversight	
Percentage	CST Amount	Maximum CST Participation Amount (\$)	Participant	Latency By:	GDOT Oversight for CST (Phase III) ⁵	Testing (Phase V) Funding By:	Amount
80%	\$2,296,230.40	\$2,296,230.40	Federal	GDOT	GDOT	GDOT	
0%	\$0.00	\$0.00	State				
20%	\$749,057.60	\$749,057.60	Local				
0%	\$0.00	\$0.00	Other				
Total	\$3,045,288.00				100%	100%	100%

Summary of Phases I		Grand Total - All Phases I through III			
Percentage	TOTAL Amount	Maximum Participation Amount(\$)	Participant	Latency By:	
80%	\$3,296,230.40	\$3,296,230.40	Federal	GDOT	
0%	\$0.00	\$0.00	State		
20%	\$824,057.60	N/A	Local		
0%	\$0.00	\$0.00	Other		
Total	\$4,120,288.00				

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

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

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

³Right-of-Way and Construction amounts shown are for budget planning purposes only.

⁴NOTE: Separate GDOT PFA's will be established for each funding phase.

ATTACHMENT "B" Project Timeline
PI # 0011639 – Gwinnett County/City of Suwanee

Proposed Project Timeline

Environmental Phase	[Timeline bar]			Month/Year (Approve Env. Document)	Month/Year (Authorize Right of Way funds)	Month/Year (Authorize Const. funds)
	[Timeline bar]					
Concept Phase	[Timeline bar]			Month/Year (Approve Concept)	Month/Year (Authorize Right of Way funds)	Month/Year (Authorize Const. funds)
	[Timeline bar]					
Preliminary Plan Phase	[Timeline bar]			Month/Year (Approve Concept)	Month/Year (Authorize Right of Way funds)	Month/Year (Authorize Const. funds)
	[Timeline bar]					
Right of Way Phase	[Timeline bar]			Month/Year (Approve Concept)	Month/Year (Authorize Right of Way funds)	Month/Year (Authorize Const. funds)
	[Timeline bar]					

Deadlines for Execute Agreement **Month/Year** (Approve Concept) **Month/Year** (Approve Env. Document) **Month/Year** (Authorize Right of Way funds) **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
 Revised: 12/2011

be received by the Department no later than the first day of February of every calendar year until all phases have been completed.

ATTACHMENT "C"

D.O.T. 66

3, Gwinnett County/City of Suwanee

DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA

INTERDEPARTMENTAL CORRESPONDENCE

FILE **OFFICE** Planning

DATE September 17, 2010

FROM 
Angela T. Alexander, State Transportation Planning Administrator

TO Todd I. Long, PE, PTOE, Director of Planning
Gerald M. Ross, PE, Chief Engineer/Deputy Commissioner

SUBJECT Preliminary Engineering Oversight for Project Managers/Project Delivery Staff

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

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

GDOT Funds PE Oversight with Federal-Aid:

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

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

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

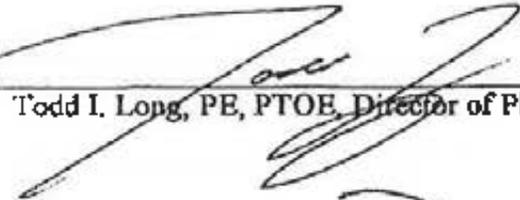
GDOT Requests Local Government/Project Sponsor to Fund PE Oversight:

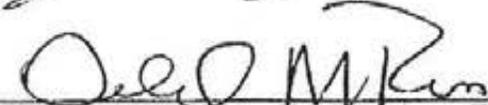
The Department will request that the local government fund PE oversight with 100% local funds under the following conditions:

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

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

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

Approved:  _____ 9/27/10
 Todd I. Long, PE, PTOE, Director of Planning Date

Approved:  _____ 10/7/20
 Gerald M. Ross, PE, Chief Engineer/Deputy Commissioner Date

Attachment "D"

PE Budget Estimate for Local Government Oversight

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

PE Phase	Cost Estimate
Procurement	
Concept Development	
Database	
Preliminary Design	
Environmental	
Final Design	
Total ~	

ATTACHMENT "E"
GEORGIA SECURITY AND IMMIGRATION COMPLIANCE ACT
AFFIDAVIT

Name of Contracting Entity: City of Suwanee

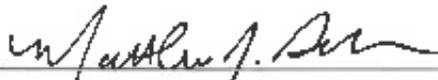
Contract No. and Name: P.I. # 0011639 Buford Highway Pedestrian
Enhancement

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

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

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

69086
E-Verify / Company Identification Number


Signature of Authorized Officer or Agent

11/25/07
Date of Authorization

Matthew J. Dickson
Printed Name of Authorized Officer or Agent

Planning Division Director
Title of Authorized Officer or Agent

8/28/13
Date

SUBSCRIBED AND SWORN

Revised: 12/2011

BEFORE ME ON THIS THE

28th DAY OF August, 2013

[Signature]
Notary Public

My Commission Expires: 3-25-2014



ATTACHMENT "F"

TITLE VI INTRODUCTION

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

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

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

The provisions of Title VI apply to all contractors, subcontractors, consultants and suppliers. And is a condition for receiving federal funds. All sub recipients must sign Title VI assurances that they will not discriminate as stated in Title VI of the Civil Rights Act of 1964.

In the event that the sub recipient distributes federal aid funds to second tier entity, the sub-recipient shall include Title VI language in all written documents and will monitor for compliance. If, these assurances are not signed, the City or County government may be subjected to the loss of federal assistance.

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

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

Revised: 12/2011

ATTACHMENT "F"

TITLE VI ACKNOWLEDGEMENT FORM

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

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

Matthew J. Dickison Planning Division Director
Official Name and Title

8/28/13
Date

Citations:

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

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

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

Attachment #11

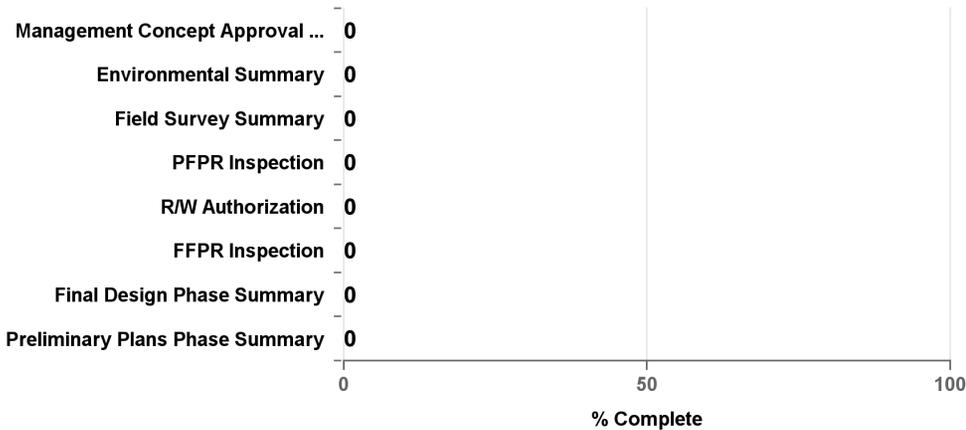
PROJ ID	COUNTY	DESCRIPTION
0011639	Gwinnett	SR 13 FROM CR 1962/MCGINNIS FERRY ROAD TO GEORGE PIERCE PARK
Mgmt Let Date:	4/15/2017	

PROJ NO:
MPO TIP#: GW-380
MPO: Atlanta TMA
PROJ LENGTH (MI): 1.65
TYPE WORK: Bicycle/Ped. Facility
LET RESPONSIBILITY: GDOT Let
BIKE PROVISIONS INCLUDED? N

SPONSOR: Suwanee
PROJ MGR: Ahmed, Kathe
DOT DIST: 1
CONG DIST: 7
TYPE WORK: Bicycle/Ped. Facility
HOUSE DIST: 097,102
SENATE DIST: 045,048

Phase	FY Approved	Approved FY Estimate *	Fund	Phase Status
Engineering	2013	\$375,000.00	M230	AUTHORIZED
Right of Way	NONE	\$20,000.00	LOC	PRECST
Construction	2016	\$3,745,288.00	M230	PRECST

* Inflation Included in Estimate



Activity	Actual Start Date	Actual Finish Date
Management Concept Approval Complete		
Environmental Summary		
Field Survey Summary		
Preliminary Plans Phase Summary		
PFPR Inspection		
R/W Authorization		
Final Design Phase Summary		
FFPR Inspection		

Right of Way Acquisition Information:

Preliminary Parcel Count: 4 Total Parcel Count: Acquired by: N/R