ORIGINAL TO GENERAL FILES

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

OFFICE OF DESIGN POLICY & SUPPORT
INTERDEPARTMENTAL CORRESPONDENCE

FILE P.I. # 631310-
STP00-0021-01(025)
Carroll County
GDOT District 6 - Cartersville
SR 166 New Location & Widening: from east of Big Indian Creek to CR 828

OFFICE Design Policy & Support

DATE 11/6/2014

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
Paul Tanner, Asst. State Transportation Data Administrator
Attn: Systems & Classification Branch
Richard Cobb, Statewide Location Bureau
DeWayne Comer, District Engineer
Mike Haithcock, District Preconstruction Engineer
Kerry Bonner, District Utilities Engineer
Roxanne Harris, Project Manager
BOARD MEMBER - 3rd Congressional District

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
PROJECT CONCEPT REPORT

North Bowdon Bypass and SR 166 Widening and Reconstruction

Project Number: STP00-0021-01(025)

Project Type:	New Roadway and Reconstruction	**P.I. Number:**	631310
GDOT District:	6	**County:**	Carroll County
Federal Route Number:		**State Route Number:**	SR 166

New location, two lane roadway bypassing north of the City of Bowdon and the widening of SR 166, from West Jonesville Road (CR 124) to Farmers High Road (CR 828) from two to four/five lanes.

Submitted for approval: *(email to "Concept Reports"; delete any inapplicable signature lines)*

AECOM Consultant Designer & Firm or GDOT Concept/Design Phase Office Head &	3/5/2014 DATE
Albert Shelby Office Head *(GDOT Project Manager's Office)*	3/26/2014 DATE
Chandrin L. Bynum GDOT Project Manager	3/25/2014 DATE

Recommendation for approval:

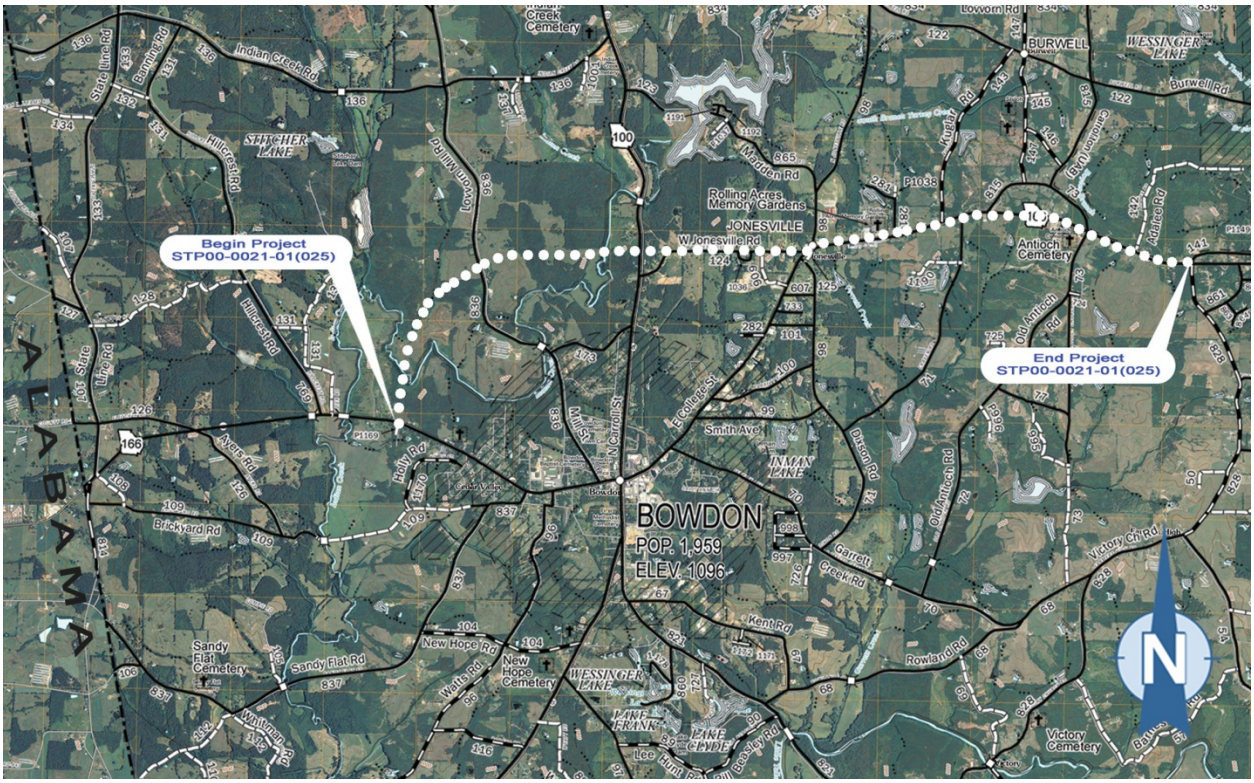
Program Control Administrator	DATE
HIRAL PATEL*/EKP State Environmental Administrator *(recommendation required)*	3/31/2014 DATE
State Traffic Engineer *(recommendation required for roundabout projects)*	DATE
LISA MYERS*/EKP Project Review Engineer	4/1/2014 DATE
JON BIRNKAMMER*/EKP State Utilities Engineer	4/1/2014 DATE
DEWAYNE COMER*/EKP District Engineer *(projects not originating in District Office)*	3/31/2014 DATE
BEN ROBLIN*/EKP State Bridge Design Engineer *(if applicable)*	4/17/2014 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).

State Transportation Planning Administrator *(recommendation required)*	DATE

* - RECOMMENDATION ON FILE

PROJECT LOCATION MAP



Project Number	STP00-0021-01(025)
PI Number	631310
County	Carroll
Description	New location, two lane roadway bypassing north of the City of Bowdon and the widening of SR 166, from West Jonesville Road (CR 124) to Farmers High Road (CR 828) from two to four/five lanes.

PLANNING & BACKGROUND DATA

Project Justification Statement:

According to local officials, the Bowdon Bypass (PI 631310) and the State Route (SR) 166 widening (PI 631300) are projects that were originally identified over 25 years ago. In 1985, the addition of the widening of SR 166 from two to four lanes between SR 100 in Bowdon and Maple Street/SR 166 Carrollton Bypass was included in the Construction Work Program as recommended by the Director of Planning and Programming. The original concept for this project was developed in the early 1990's and is consistent with local plans and objectives of improving mobility and reducing the crashes between Bowdon and Carrollton. In 1995, the concept was modified to include a new location bypass south of Bowdon to remove heavy truck traffic from downtown Bowdon. Based on public involvement efforts against the southern Bowdon bypass in 2007, a northern Bowdon bypass is being considered as an alternate.

Along SR 166 between Bowdon and Carrollton, there is a need to improve capacity; reduce crash, injury, and fatality rates; and remove heavy truck traffic from the downtown area of Bowdon, especially at the intersection of SR 166 and SR 100. Crash, injury, and fatality rates in this area are generally greater than the statewide rates for rural minor arterial in the years 2007-2009. The intersection with the highest number of crashes during the years 2007-2009 was at SR 166/SR 100, representing 12.2 percent of the crashes for PI 631310.

Based on design-level "no-build" traffic approved by the Office of Planning, current year (2011) volumes on the corridor of PI 631310 range from 4,395 Average Daily Traffic (ADT) to 10,285 ADT and are projected to range between 8,910 ADT and 18,625 ADT by the design year (2043). The SR 166 corridor is currently operating at an acceptable Level of Service (LOS) "A" and "B" and is projected to decline to LOS "C" and "F" by year 2043 if no improvements are made. The 24-hour truck percentage along the corridor is 11%, while the AM and PM truck percentages are 13% and 9%, respectively. The improvements to the SR 166 corridor and the construction of a bypass could potentially remove some of these trucks from downtown Bowdon, which supports the need and purpose and local objectives.

The project limits comprising PIs 631310 and 631300 have a western terminus located just west of Bowdon near Big Indian Creek, where traffic volumes along SR 166 are approximately 51 percent (2011) less as compared to SR 166 on the east side of Bowdon. West of the western terminus traffic along SR 166 continues to drop incrementally toward the Georgia/Alabama state line. The corridor's eastern terminus ties in to an existing four-lane section on the SR 166 Carrollton Bypass just west of County Road (CR) 11/Hays Mill Road. Based on the traffic data collected along the SR 166 Carrollton Bypass the level of service (LOS) in 2011 for the two-lane undivided facility is LOS "C" while the four-lane divided facility is LOS "B." In 2043, the two-lane undivided facility would be LOS "F" and the four-lane divided facility would be LOS "C." These data show a need to widen the SR 166 two-lane facility due to deteriorating LOS conditions. These data also demonstrate there is no need to provide additional capacity beyond the four-lane section at the project's proposed eastern terminus since there are acceptable LOS at that point. The SR 166 Carrollton Bypass continues eastward around the City of Carrollton.

As part of this project, at the existing SR 166/SR 100 intersection, a right turn lane from northbound SR 100 to eastbound SR 166 would be included to improve operations and levels of service at the intersection.

The SR 166 project corridor is not located on a designated statewide bicycle route (per GDOT Statewide Bicycle Map, 2010); however, Carroll County has designated the 3.6-mile segment of SR 166 between CR 70/Tarpley Avenue in Bowdon and CR 73/Antioch Church Road as a recreational bike route (Carroll County Comprehensive Plan Update 2008-2028).

Based on this information, the proposed limits accommodate the need and purpose of this project, which is to relieve congestion and improve conditions for traffic flow between Bowdon and Carrollton to reduce crash, injury, and fatality rates along the corridor. The need for the SR 166 Bypass around Bowdon is supported with the high crash rate at the intersection of SR 166 and SR 100 and the deteriorating LOS along the SR 166 corridor through Downtown Bowdon projected for 2043. The GDOT Office of Planning approved the Project Justification on 10/12/11.

Existing conditions:

Existing SR 166 is a 2 and 3-lane roadway within the project limits and serves as a major east-west corridor through Carroll County extending from the Georgia/Alabama state line through Carrollton, Georgia, and continues eastward terminating just south of Atlanta. The project location begins just west of the city limits of Bowdon. SR 166 is primarily a two-lane facility through the town of Bowdon with traffic signals located at the intersections of SR 100 and Pine Avenue. Sidewalks are also present within the city limits. Outside the city limits the SR 166 corridor is primarily a two-lane rural facility with occasional passing lanes. An existing traffic signal is present at North Jonesville Road which is in close proximity to Bowdon Middle School. Sidewalk is present along North Jonesville Road. This project terminates at CR 828 / Farmers High Road.

Other projects in the area:

- No additional roadway projects are located within the project vicinity.
- A Carroll County funded greenway trail is being coordinated with the team along the north side of SR 166 Bypass in Carrollton.

Other:
Since neither of these two projects (PI 631300 and PI 631310) alone has independent utility and the LOS deteriorates sooner on PI 631300, it is recommended that these projects be let close together, with PI 631300 letting to construction first.

MPO: ☒ N/A ☐ MPO -
MPO Project TIP #

Regional Commission: ☐ N/A ☒ RC – Three Rivers RC

Congressional District(s): 3

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

Projected Traffic: ADT

SR 166 Bypass just west of SR 100 (2-lane):
Current Year (2011): N/A Open Year (2023): 4,450 Design Year (2043): 6,280

SR 166 Bypass just west of SR 166 on West Jonesville Road (2-lane):
Current Year (2011): 750 Open Year (2023): 6,715 Design Year (2043): 9,460

SR 166 5-lane just east of North Jonesville Road:
Current Year (2011): 8,775 Open Year (2023): 12,450 Design Year (2043): 17,010

SR 166 4-lane just west of Farmers High Road:
Current Year (2011): 9,105 Open Year (2023): 13,010 Design Year (2043): 17,750

Traffic Projections Performed by: Jacobs Engineering Group, Inc.

Functional Classification (Mainline): Rural Minor Arterial

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

Warrants met: ☐ None ☒ Bicycle ☒ Pedestrian ☐ Transit

Bicycle Warrant met because the project is on a designated local bicycle route.

Pedestrian Warrant met because project is within close proximity to pedestrian generators such as Bowdon Middle School and The University of West Georgia.

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

A Preliminary Pavement Evaluation Summary was completed by The Office of Materials and Testing on November, 21, 2013. The existing pavement on SR 166 is in good visual condition with a COPACES score of 91. No pavement recommendations were made.

A Pavement Type Selection was completed by The Office of Materials and Testing on November, 21, 2013 for the 2.4 miles of new location roadway. HMA and PCC were considered with HMA being the recommended alternative.

A copy of both reports is included in the attachments.

DESIGN AND STRUCTURAL DATA

Description of the proposed project:

The project limits of PI 631310 would begin just east of Big Indian Creek, which is located 0.7 mile west of the western most city limits of Bowdon. The SR 166 Bypass would construct a new two-lane facility north and then east of Bowdon extending about 1.0 mile from the city limits. The SR 166 Bypass would intersect at a new intersection with SR 100 and continue along West Jonesville Road to the existing intersection of SR 166 east of Bowdon. A dual lane roundabout is proposed at the intersection of West Jonesville Road and SR 166. The project would continue easterly along SR 166, widening the existing facility to a five-lane section between the commercially developed section between North Jonesville Road and Kuglar Road. From Kuglar Road to the project terminus at CR 828 / Farmer's High Road (see Project Location Map) the roadway will consist of a four-lane section with a 32-foot depressed median. Bikes will be accommodated between West Jonesville Road and Tarpley Avenue to incorporate the Carroll County Bike Plan. The new location roadway would extend 2.4 miles, the improvements to West Jonesville Road would include 0.9 miles, and the widening of SR 166 would include 2.9 miles, for a total project length of approximately 6.2 miles. The eastern terminus of this project coincides with the western terminus of PI 631300, which would provide for the improvements of SR 166 from Bowdon to Carrollton at the SR 166 Carrollton Bypass.

In order to improve the LOS along the existing SR166 corridor, a northbound right turn lane is required at the downtown Bowdon intersection of SR166 and SR100. Since this intersection is within a historic district improvements would need to be completed within the existing right-of-way. This can be done by removing some of the on street parking.

Major Structures:

Structure	Existing	Proposed
Bridge No. 1 (SR 166 Bypass over Big Indian Creek)	N/A	The proposed bridge structure will be 320' long and will carry 2-12' lanes. The inside and outside shoulder widths will be 8'.
Bridge No. 2 (SR 166 Bypass over Big Indian Creek)	N/A	The proposed bridge structure will be 320' long and will carry 2-12' lanes. The inside and outside shoulder widths will be 8'.
Culvert No. 1 (SR 166 Bypass over unnamed tributary to Big Indian Creek)	N/A	Proposed 10'x6' Box Culvert

Mainline Design Features:

SR 166 North Bypass from existing SR 166 to SR 100 intersection (2-lane section)

Feature	Existing	Standard*	Proposed
Typical Section			
- **Number of Lanes**	**N/A**		**2**
- **Lane Width(s)**	**N/A**	**11'-12'**	**12'**
- **Median Width & Type**	**N/A**	**N/A**	**N/A**
- **Outside Shoulder Width & Type**	**N/A**	**10' (4' or 6.5' Paved)**	**10' (4' Paved)**
- **Outside Shoulder Slope**	**N/A**	**6%**	**6%**
- **Inside Shoulder Width & Type**	**N/A**	**N/A**	**N/A**
- **Sidewalks**	**N/A**		**No**
- **Auxiliary Lanes**	**N/A**		**Yes**
- **Bike Lanes**	**N/A**		**No**
Posted Speed	**N/A**		**55 mph**
Design Speed	**N/A**	**45-55 mph**	**55 mph**
Min Horizontal Curve Radius	**N/A**	**1,060'**	**2,500'**
Max Superelevation Rate	**N/A**	**6%**	**6%**
Maximum Grade	**N/A**	**5%**	**5%**
Access Control	**N/A**	**Varies**	**Partial Control**
Design Vehicle	**N/A**	**WB-67**	**WB-67**
Pavement Type	**N/A**	**HMA or PCC**	**HMA**

*According to current GDOT design policy if applicable

SR 166 North Bypass from SR 100 to existing SR 166 along West Jonesville Rd (2-lane section)

Feature	Existing	Standard*	Proposed
Typical Section			
- **Number of Lanes**	**2**		**2**
- **Lane Width(s)**	**12'**	**11'-12'**	**12'**
- **Median Width & Type**	**N/A**		**N/A**
- **Outside Shoulder Width & Type**	**None**	**10' (4' or 6.5' Paved)**	**Curb and Gutter**
- **Outside Shoulder Slope**	**None**	**6%**	**2%**
- **Inside Shoulder Width & Type**	**N/A**	**N/A**	**N/A**
- **Sidewalks**	**No**		**Yes**
- **Auxiliary Lanes**	**No**		**No**
- **Bike Lanes**	**No**		**No**
Posted Speed	**40 mph**		**45 mph**
Design Speed		**45 mph**	**45 mph**
Min Horizontal Curve Radius	**545' @ stop condition**	**710.5'**	**430' @ stop condition**
Maximum Superelevation Rate		**4%**	**4%**
Max Grade	**5%**	**5%**	**5%**
Access Control	**Permitted**		**Permitted**
Design Vehicle		**WB-67**	**WB-67**
Pavement Type	**HMA**	**HMA or PCC**	**HMA**

*According to current GDOT design policy if applicable

SR 166 (5-lane section) from West Jonesville Road to Kuglar Road

Feature	Existing	Standard*	Proposed
Typical Section			
- **Number of Lanes**	**2-3**	**4**	**4**
- **Lane Width(s)**	**12'**	**11'-12'**	**11'**
- **Median Width & Type**	**n/a**	**14' Paved**	**14' Paved**
- **Outside Shoulder Width & Type**	**< 4' paved**	**10' (6.5' Paved)**	**Curb and Gutter**
- **Outside Shoulder Slope**		**6%**	**6%**
- **Inside Shoulder Width & Type**	**N/A**	**N/A**	**N/A**
- **Sidewalks**	**Partial**		**Yes**
- **Auxiliary Lanes**	**No**		**No**
- **Bike Lanes**	**No**		**Yes - 4'**
Posted Speed	**45 mph**		**45 mph**
Design Speed		**45 mph**	**45 mph**
Min Horizontal Curve Radius	**890'**	**643'**	**1230'**
Maximum Superelevation Rate		**6%**	**6%**
Max Grade		**5%**	**5%**
Access Control	**Permitted**		**Permitted**
Design Vehicle		**WB-67**	**WB-67**
Pavement Type			

*According to current GDOT design policy if applicable

SR 166 (4-lane section) from Kuglar Road to Farmers High Road

Feature	Existing	Standard*	Proposed
Typical Section			
- **Number of Lanes**	**2-3**		**4**
- **Lane Width(s)**	**12'**	**11'-12'**	**11' Inner Lane, 12' Outer Lane**
- **Median Width & Type**	**N/A**	**32'-44' Depressed**	**32' Depressed**
- **Outside Shoulder Width & Type**		**10' (4' or 6.5' Paved)**	**10' (6.5' Paved for bike lane; 4' paved)**
- **Outside Shoulder Slope**	**< 4' paved**	**6%**	**6%**
- **Inside Shoulder Width & Type**		**6' (2' Paved)**	**6' (2' Paved)**
- **Sidewalks**	**None**		**None**
- **Auxiliary Lanes**	**Yes**		**None**
- **Bike Lanes**	**No**		**Yes (partial - to Antioch Church Road)**
Posted Speed	**55 mph**		**55 mph**
Design Speed	**55 mph**	**55-65 mph**	**55 mph**
Min Horizontal Curve Radius	**1180'**	**1060'**	**1060'**
Maximum Superelevation Rate		**6%**	**6%**
Max Grade		**5%**	**5%**
Access Control	**Permitted**		**Permitted**
Design Vehicle		**WB-67**	**WB-67**
Pavement Type			

*According to current GDOT design policy if applicable

Major Interchanges/Intersections:
SR 166 Bypass (west terminus of bypass) at SR 166 – This is a T-intersection at the beginning of the new location bypass. A left turn lane in the eastbound direction on SR 166 will be added. No turn lanes required on the bypass
SR 166 Bypass at SR 100 – This is a proposed signalized intersection. Left turn lanes will be included along the SR 166 Bypass.
SR 166 at SR 100 (downtown Bowdon) – A northbound right turn lane from SR 100 onto eastbound SR 166 is required at this existing signalized intersection. Improvements must be kept within existing pavement as the entire area is located within a historic district, thus S-Bus-40 will be design vehicle.
SR 166 Bypass (east terminus) at SR 166 – This is the existing intersection of West Jonesville Road and SR 166. This location is proposed to be a dual lane roundabout.
SR 166 at N. Jonesville Rd. – This existing intersection is signalized. Minor widening will occur to accommodate the five lane typical section along SR 166. The alignment of North Jonesville Road will remain the same and the signal will remain.

Lighting required: ☐ No ☒ Yes, at proposed roundabout

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

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

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

TMP Components Anticipated: ☒ TTC ☐ TO ☐ PI

Traffic Control will be handled by GDOT Shelf Special Provision 150.

Design Exceptions to FHWA/AASHTO controlling criteria anticipated:

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

Design Variances to GDOT Standard Criteria anticipated:

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

VE Study anticipated: ☐ No ☐ Yes ☒ Completed
Meeting Date: 4/29/2013

Implementation Letter dated 6/27/13.

Six VE Study recommendations will be implemented for a project savings of $938,000.

UTILITY AND PROPERTY

Temporary State Route needed: ☐ No ☒ Yes ☐ Undetermined

A new permanent State Route designation will be needed for the new location portion of the SR 166 Bypass. Coordination with the Locals will be required to determine the future designation of the existing SR 166 in downtown Bowdon depending upon how they want to handle truck traffic. Based upon communication with the Office of Transportation Data, this will begin after the approval of the concept report.

Railroad Involvement: None

Utility Involvements:

- Gas: Atlanta Gas Light
- Water: Carroll County Water Authority, City of Bowdon
- Sanitary Sewer: Carroll County Water Authority, City of Bowdon
- Telephone: AT&T, Sync Global Telecom
- Electric: Georgia Power, Carroll EMC
- CATV: Charter Communications, Comcast Telecommunications

SUE Required: ☐ No ☒ Yes ☐ Undetermined

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

Right-of-Way (ROW): Existing width: 80-150 ft Proposed width: 100-150 ft

Required Right-of-Way anticipated: ☐ None ☒ Yes ☐ Undetermined

Easements anticipated: ☐ None ☒ Temporary ☒ Permanent ☐ Utility ☐ Other

Anticipated total number of impacted parcels:		114
Displacements anticipated:	Businesses:	3
	Residences:	12
	Other:	-
	Total Displacements:	15

Location and Design approval: ☐ Not Required ☒ Required

ROUNDABOUTS

Roundabout feasibility studies have been conducted at:

SR 100 – not recommended
West Jonesville Road - recommended
North Jonesville Road – not recommended

Lighting agreement/commitment letter received: ☐ No ☒ Yes

Feasibility Study:

SR 100 at SR 166 Bypass on new location

Three alternatives were considered at this new intersection just north of the town of Bowdon: an unsignalized intersection (Alternate 1) a signalized intersection (Alternate 2) and a multi-lane roundabout (Alternate 3).

The unsignalized intersection would be failing in the design year and hence Alternate 1 was deemed not feasible. Alternate 2, the signal option, would accommodate the opening year (2023) and design year (2043) traffic by providing an overall LOS of B or better. Alternate 3, if built as a single lane roundabout would start to fail around 2033. Additional lanes would be required on the westbound and southbound approaches and the roundabout would need to be widened to a dual lane roundabout.

Safety could become an issue with the introduction of a new intersection. Roundabouts are historically safer and have less severe crashes when they happen. However, the existing SR 100 and proposed SR 166 grades are a concern for the roundabout option as vehicles often don't adequately slow to acceptable approach speeds on downgrades greater than 4% (NCHRP 672 – 6.8.7.5). This is exacerbated by the anticipated heavy truck traffic.

Alternate 2 has the lowest construction cost. Based upon these reasons, Alternate 2 (signalized intersection) is recommended as the preferred alternate.

SR 166 at North and West Jonesville Roads

Three alternatives were considered: dual signalized intersections (Alternate 1), a new roundabout at West Jonesville Road (Alternate 2), and dual roundabouts (Alternate 3).

Alternate 2 was selected as the preferred alternate. This alternate provides an acceptable level of service in both the design and future year. Alternative 2 is significantly less expensive to construct and has minimal impact to right-of-way.

Peer Review required: ☐ No ☒ Yes ☐ Completed – Date:

CONTEXT SENSITIVE SOLUTIONS

Issues of Concern: The first area of concern is along existing West Jonesville Road between SR 100 and SR 166. Extending the bypass along this route will increase traffic from the current volumes.

The second area of concern is along SR 166 between West Jonesville Road and Kuglar Road. This length of the existing SR 166 is more urban in nature than the rest of the corridor. It is densely populated and contains a high percentage of businesses and driveway access points.

Context Sensitive Solutions: To address the concern about increasing traffic along West Jonesville Road, curb and gutter, and sidewalk have been included in the typical section to provide a more residential appearance and limit ROW impacts. These attributes would benefit the community. A roundabout is proposed at SR 166 and West Jonesville Road which will provide a gateway between the proposed bypass and the downtown route.

To help improve the West Jonesville Road to Kuglar Road area, a five-lane roadway section is proposed. This allows for access to all driveways (e.g., businesses, residences, and church) as there is no median to block access. Curb and gutter and sidewalk will be constructed. The benefit of this proposed typical section is to limit ROW impacts and provide the local area with infrastructure to enhance the community.

ENVIRONMENTAL & PERMITS

Anticipated Environmental Document:

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

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

Environmental Permits/Variances/Commitments/Coordination anticipated:

Permit/ Variance/ Commitment/ Coordination Anticipated	YES	NO	Remarks
1. U.S. Coast Guard Permit	☐	☒	
2. Forest Service/Corps Land	☐	☒	
3. CWA Section 404 Permit	☒	☐	Anticipate an Individual Permit
4. Tennessee Valley Authority Permit	☐	☒	
5. Buffer Variance	☒	☐	The proposed alignment would impact buffered waters of the State.
6. Coastal Zone Management Coordination	☐	☒	
7. NPDES	☒	☐	Area of disturbance will exceed 1.0 acre.
8. FEMA	☒	☐	Coordination for floodplain impacts will be conducted with FEMA.
9. Cemetery Permit	☐	☒	None anticipated at this time.
10. Other Permits	☐	☒	
11. Other Commitments	☐	☒	See item 12.
12. Other Coordination	☒	☐	Section 7 consultation; Project contains potential habitat for Indiana Bat and Northern Long-eared bat (proposed listing) and protected aquatic species. Special provisions are anticipated for protected species.

Is a PAR required? ☐ No ☐ Yes ☒ Completed – Dates: 9/11/2013 and 11/13/13. PAR documentation included in Attachment 12**.**

Due to the potential for exceeding the stream impacts thresholds allowed by Nationwide Permit 14, an Individual Permit is anticipated. Therefore, a PAR has been held for this project and PI 631300 jointly. Avoidance and minimization measures have been incorporated and will continue to be conducted to minimize stream/wetlands impacts.

Environmental Comments and Information:

NEPA/GEPA: EA/FONSI; Minimal risk of full 4(f) evaluation as preliminary design accommodating avoidance/minimization of 4(f) resources.
There is potential for a *de minimis* Section 4(f) due to historic resources. No known waterfowl or wildlife refuges or public parks are located along the corridor to consider for Section 4(f). An EA/FONSI (for both PIs 631310/631300) is anticipated in 2016.

Ecology: Potential habitat for one federally protected terrestrial species (Indiana bat and Northern Long-eared bat [proposed listing]), one federally protected aquatic species (finelined pocketbook), and five state protected aquatic species (Tallapoosa darter, muscadine darter, lined chub, stippled studfish, and Tallapoosa crayfish) was identified along the project corridor. A total of 6 perennial/intermittent streams, 3 wetlands, and 0 open waters (waters of the US and State jurisdictional features) were identified. A Section 404 Individual Permit is anticipated for impacts to these features. If the project impacts the buffers of state waters outside of the exempted criteria, a stream buffer variance from the GA Department of Natural Resources- Environmental Protection Division (EPD) would be required. Specific impacts to state buffers and waters of the US will be determined further as the project design advances.

An Ecology Resource Survey Report was approved by GDOT on 5/21/13. Aquatic surveys have been conducted. Surveys for protected bats will be required per early coordination with USFWS and are anticipated for the 2014 survey season. Due to potential habitats for protected species and potential migratory bird habitat, SP 107.23G will be in place.

History: A total of 2 National Register of Historic Places (NRHP)-listed resources and 9 NRHP-eligible resources (concurred with by the SHPO in 5/1/13) are located within the project Area of Potential Effect (APE) for the proposed alternative along West Jonesville Road. The preliminary design is taking into consideration these resources to minimize effects to these resources to the extent practicable. It is not anticipated that the project would result in any physical impacts to these resources.

Archaeology: A screening has identified the potential for archaeological features. A desktop review of known archeological resources within the project APE identified 3 previously identified resources within PI 631310, all of which were determined to be ineligible. The archeological field survey for this project has not been conducted. Archaeology field work is anticipated to begin after the Concept Team Meeting. One cemetery at Antioch Church Road is located adjacent to SR 166, and will not be disturbed.

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

If an intersection has >10,000 vpd and LOS D or worse, it will be evaluated for CO hotspot analysis.

The proposed project is in the Statewide Transportation Improvement Program (STIP) FY 2013-2016, but not in the draft 2014-2017 STIP. Carroll County is located in the 8-hour ozone non-attainment area and 20+ County PM 2.5 non-attainment areas. Although Carroll County is located outside the Atlanta Regional Commission (ARC) 18-

county Metropolitan Planning Organization boundary, the ARC has conducted the conformity determination for the entire eight-hour ozone and PM 2.5 non-attainment area, in which Carroll County is located. The ARC model is in conformity. (http://documents.atlantaregional.com/plan2040/docs/tp_PLAN2040CDR_072711.pdf).

Noise Effect: As a project with proposed new location, this project will require a Noise Impact Assessment with noise modeling (TNM).

Public Involvement: GDOT held a Public Information Open House (PIOH) for this project in 2007. The design shown to the public involved a bypass to the south of Bowdon. Due to public concerns regarding this proposed alignment, GDOT revised the bypass to pass to the north of Bowdon. A Public Involvement Plan has been approved by FHWA (2012). A second PIOH was held in Feb. 2012 showing a bypass to the north of Bowdon. General public support was given for a bypass to the north; and there remains concern by local Bowdon businesses that the town may experience negative effects of a bypass. A meeting with the city of Bowdon public officials was held in 2011 to provide an overview of the proposed new location bypass. The local public officials supported this effort during local City of Bowdon council meetings.

The Public Involvement for the 2012 PIOH included the distribution of PIOH notification flyers in English and Spanish to a wide range of locations along the corridor and within Bowdon and Carrollton, a Spanish advertisement in Mundo Hispánico, English ad in the county legal organ, and directional signs to the PIOH. Proposed additional public outreach includes: a project information flyer for low-income communities, a bilingual Public Hearing Open House (PHOH) information flyer, English/Spanish PHOH advertisements, and an education flyer on the economic effects of bypasses.

Community Impacts: The proposed intersection improvement to address LOS deficiencies in the Design year at SR 166 and SR 100 would result in the elimination of 18 parking spaces. The design of the intersection would accommodate large trucks. By re-designating SR 166 through Bowdon as a local road there could be change in design that would reduce in the number of parking spaces to be eliminated. The potential re-designation of SR 166 through Bowdon would be further evaluated during the NEPA process.

Major stakeholders: City of Bowdon, Carroll County, Three Rivers Regional Commission, local downtown Bowdon businesses, traveling public.

CONSTRUCTION

Issues potentially affecting constructability/construction schedule: none

Early Completion Incentives recommended for consideration: ☒ No ☐ Yes

COORDINATION, ACTIVITIES, RESPONSIBILITIES, AND COSTS

Initial Concept Meeting: 03-09-2007 The initial concept meeting described a southern bypass as approved in the original concept report dated 06-01-1995. There was concern regarding the number of potential historic properties. The first PIOH was discussed and emphasis was placed on the location of utilities. Meeting minutes are found in Attachment 10.

Concept Meeting: 02-21-2014 The Concept Team Meeting presented the preferred alternative as the northern alignment utilizing existing West Jonesville Road. The major concern was the spacing of the roundabout at West Jonesville Road and the signal at North Jonesville Road. In response, the 95th % queue length was estimated to be 150-ft. while the provided storage is 250-ft. Meeting minutes are found in Attachment 10.

Environmental coordination to date:

1) Project Justification – GDOT Office of Planning approval on 10/10/2011
2) Ecology Resource Survey Report – GDOT Office of Environmental Services approval on 5/21/2013
3) Protected Aquatic Species Survey Report – GDOT Office of Environmental Services approval on 5/21/2013
4) Historic Resources Survey Report – SHPO concurrence on 5/1/2013
5) Project Need, Effectiveness, and Logical Termini Form – FHWA conditional approval on 7/9/2012 (at the time of the conditional approval, the project was not in the STIP; the form will need to be resubmitted to FHWA for final approval upon adoption in the STIP)
6) Public Involvement Plan – 11/30/12
7) PAR – Presentation to USACE and Interagency Review Team (USEPA, USFWS, FHWA, and GADNR) on 9/11/2013 and 11/13/2013
8) Federal protected bats – Survey to be conducted in summer 2014

Other coordination to date:

1) 08/30/2006 Kickoff Meeting with Carroll County and City of Bowdon
2) 03/09/2007 Initial Concept Team Meeting
3) 04/17/2007 FHWA Coordination meeting
4) 04/24/2007 PIOH Synopsis
5) 05/16/2007 Meeting with Mayor of Bowdon
6) 06/26/2007 PIOH Response Letter
7) 11/30/2007 Discussion regarding Bypass location
8) 08/05/2011 City of Bowdon Public Officials Meeting
9) 12/01/2011 FHWA Coordination Meeting
10) 01/11/2012 Stakeholder Meeting
11) 02/28/2012 PIOH Synopsis
12) 03/15/2012 PIOH Response Letter
13) 04/05/2012 FHWA Co-ordination Meeting
14) 09/11/2013 Corps of Engineers PAR Meeting
15) 10/09/2013 FHWA Coordination Meeting

16) 10/21/2013 Carroll County Commissioners Meeting (Lighting Commitment)
17) 11/13/2013 Corps of Engineers follow-up PAR Meeting

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

Project Cost Estimate and Funding Responsibilities:

	Breakdown of PE	ROW	Utility	CST*	Environmental Mitigation**	Total Cost
By Whom	GDOT	GDOT	GDOT	GDOT	GDOT	
$ Amount	$6,159,595	$12,113,000	$2,125,849	$21,235,251	$227,917	$41,861,612
Date of Estimate	11/9/2012	10/28/2013	12/6/2013	9/16/2014	8/12/2014	

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

** Environmental Mitigation: To be completed jointly with PI 631300

ALTERNATIVES DISCUSSION

Alternative selection:

The proposed project alignments were developed as a part of the location investigation prior to laying out a proposed alignment. Basic data pertaining to the corridor were gathered and studied. Data for this project included, at a minimum, aerial photography, topographic maps, traffic volumes (existing and projected), previous studies, wetland inventory maps and waters of the U.S./State Waters field studies, potential protected species habitat identification, and report documentation; soil survey maps; floodplain maps; and GDNR historic resource survey maps, project-specific field studies, and coordination with the SHPO.

Wetland and hydric soil boundaries, floodplains, parks and recreational facilities, known or suspected historical and archaeological sites, existing ROW, possible USTs/landfills/hazardous waste sites, and areas of possible endangered species habitat were delineated on the aerial photography prior to laying out an alignment. Also identified on the aerial photography were other "controls," such as churches, cemeteries, schools, hospitals, and any other noise-sensitive areas. Only at this point was the proposed alignment developed with every attempt made to minimize harm to such

resources. The proposed alignment, once laid out on aerial photography, was field checked and additional refinements were made to further minimize harm to both the natural and built environments. Desktop impact analysis was completed using digital data from the following resources through GIS dataset layers: US Geologic Survey (USGS) topography, National Wetlands Inventory (NWI), US Department of Agriculture (USDA) – Natural Resource Conservation Service (NRCS) soil survey, and USGS National Hydrography Dataset (NHD). In addition to the afore-mentioned data collection, prior to establishing alternatives, these issues were also taken into consideration:

1- Project Need and Purpose (e.g., reduce congestion, reduce crashes, and remove heavy trucks from downtown Bowdon)
2- Traffic Need
3- Crash data
4- Public comments
5- Typical section alternatives
6- Avoidance and minimization of impacts

A suite of 11 alternatives (described in the attached PAR) has been evaluated for moving traffic around the City of Bowdon, which includes: (1) Northern-most New Location Bypass, (2) Northern Bypass-West Jonesville Road, (3) Partial Northern Bypass-West Jonesville Road, (4) Northern New Location Bypass, (5) In-town Northern Bypass 1, (6) In-town Northern Bypass 2, (7) In-town Northern Bypass 3, (8) Downtown Bowdon Widening Alternative, (9) Southern Bowdon Bypass Alternative, (10) Operational Alternative, and (11) No Build Alternative. Similarities among alternatives are described in the bullets, while distinctions among the alternatives are the focus of the alternative-specific descriptions below. The pros and cons of each alternative are summarized and a recommendation on the advancement of the alternative is provided.

- The main distinction among alternatives is the manner in which traffic travels from the west side of Bowdon to the east side of Bowdon at West Jonesville Road. East of the SR 166/West Jonesville Road intersection, all alternatives are along the same alignment through the remainder of PI 631310 and throughout PI 631300.
- Each of the new location bypass alternatives would meet the project's Need and Purpose by removing truck traffic from downtown Bowdon, reducing congestion in Bowdon, and addressing safety especially at the SR 100/SR 166 intersection, which is the intersection with the third highest number of crashes along SR 166 for PI Nos. 631310/631300.
- For each of the alternatives, the distances are measured from the point they tie to existing SR 166 west of Bowdon to the intersection of SR 166 and West Jonesville Road. All impacts are described within this area for consistency.
- The only difference in these alternatives is how the alternative addresses traffic in and around Bowdon extending to West Jonesville Road. At West Jonesville Road each alternative would consist of widening SR 166 along the existing alignment to avoid and minimize impacts.
- All northern new location alternatives would be limited access, 2-lanes, would include bridges over Big Indian Creek, could be designated as a truck route to remove heavy truck traffic from Bowdon, and would have three access points at Lovvorn Mill Road, SR 100, and SR 166.
- None of the northern bypass alternatives would service the existing almost built-out industrial park located on the south side of town, but each northern bypass alternative would have closer access to a potential future industrial park to be sited on the north side of town.

- All northern new location bypass alternatives would be shorter than the southern bypass alternative.
- The traffic operations indicate the northern new location alternatives would draw twice the traffic in comparison to the southern alternatives.

Preferred Alternative:

Alternative 2 (Best Fit Alternative, Northern New Location Bypass -West Jonesville Road):

Alternative 2 would consist of a 2-lane limited access bypass that would begin west of Bowdon, would extend on new location to the north, would cross SR 100, and would be co-located along West Jonesville Road until the intersection with existing SR 166. At this point, SR 166 would be widened along the existing alignment to the north and south, minimizing impacts to historic resources, wetlands/streams, and displacements, and terminate at CR 828/Farmer's High Road. Along SR 166 east of North Jonesville Road, Alternative 2 would introduce an urban typical section for approximately 570 feet to reduce community impacts in this area.

Estimated Property Impacts:	**114**	**Estimated Total Cost*:**	**~~$35,816,812~~ #41,861,612 (EHP)**
Estimated Right-of-Way Cost:	**$12,113,000**	**Estimated construction Time:**	**36 months**

Rationale: Alternative 2 would provide additional capacity through the incorporation of a 2-lane bypass to the north of Bowdon; would address the public's concerns about a southern bypass around Bowdon that received public opposition in 2007; and would remove heavy truck traffic from downtown Bowdon to reduce the vehicles per day at the existing SR 100/SR 166 intersection to improve conditions to reduce crash/injury/fatality rates. The environmental impacts along the new location bypass would be minimized through construction of a 2-lane bypass which meets the capacity needs on the smallest possible footprint. The bypass would utilize existing pavement/corridor along West Jonesville Road to reduce new location impacts to an area with limited development.

The majority of the study corridor is comprised of rural agricultural and rural residential land use. Remaining natural areas are comprised of, in order of relative dominance, mixed pine/hardwood forest, old field with herbaceous and early successional woody vegetation, hardwood forest, pine forest, forested wetlands, open waters, maintained ROW, and emergent wetlands. Three streams within one-mile of the project study area, Little Tallapoosa River, Buffalo Creek, and Indian Creek, are listed as "non-supporting" biota impaired on the Georgia Environmental Protection Division (GA EPD) 2012 Integrated 305(b)/303(d) List of Waters. No additional environmentally sensitive areas were identified within the project corridor. No terrestrial federal or state listed flora or fauna were identified within the project survey area during field reconnaissance. Potential habitat for the federally listed Indiana bat was identified. Since the northern long-eared bat is proposed to be federally listed during the course of this project's development, and the Indiana bat habitat is similar to northern long-eared bat habitat, surveys for Indiana bat and the proposed federally endangered northern long-eared bat summer roosting occurrences are expected to occur in 2014. Two streams within the project survey area contain suitable habitat for federal and state listed aquatic species and during field surveys, occurrences of state listed fish species were identified. Four streams within the project survey area contain suitable habitat for state listed aquatic species, but during field surveys no occurrences of these species were found.

Total impacts for Alternative 2, according to the May 2013 project plans, include: 1.48 acre of wetland, 3,140 linear feet of stream (2,650 linear feet of direct fill impacts and 490 linear feet of shading impacts, based on ecology field survey); lower risk for archeological resource impacts compared to Alternative 4 (based on the archaeological screening analysis); no historic property impacts (anticipate "no adverse" and/or "de minimis" effects, based on history field survey); and 31 residential and/or commercial displacements (based on rooftop counts from aerial photography).

Alternative 4 (Northern New Location Bypass):

Alternative 4 would utilize the western portion of Alternative 2, would diverge from Alternate 2, just west of SR 100, and would tie into SR 166 at a point just south of West Jonesville Road. At this point, SR 166 would be widened along the existing alignment to the north and south, minimizing impacts to historic resources, wetlands/streams, and displacements, and would terminate at CR 828/Farmer's High Road. Along SR 166 east of North Jonesville Road, Alternative 2 would introduce an urban typical section for approximately 570 feet to reduce community impacts in this area.

Estimated Property Impacts:	**97**	**Estimated Total Cost*:**	**$38,468,253**
Estimated Right-of-Way Cost:	**$13,334,400**	**Estimated Construction Time:**	**36 months**

Rationale: This alternative represents a bypass option based on the Best Fit Alternative which would follow Alternative 2 on new location beginning west of Bowdon, would diverge from Alternative 2 just west of SR 100, where it would extend south and easterly and would tie into SR 166 on the east side of Bowdon just south of West Jonesville Road. However, along existing SR 166 just south of West Jonesville Road, there are historic resources and higher potential for Section 4(f) impacts. Due to the historic resources along SR 166, there is a more limited footprint with which to design a widening of SR 166 to 4 lanes while avoiding Section 4(f) resources and displacements.

Compared to Alternative 2, Alternative 4 has a greater potential for historic resource impacts and archaeological resource impacts. Ecological impacts determined by calculating impacts based on the design plans for Alternative 4 include approximately 1.48 acre of wetland and 3,020 linear feet of stream (2,615 linear feet of fill impacts and 405 linear feet of shading impacts, based on ecology field survey); higher risk for archeological resource impacts compared to Alternative 4 (based on the archaeological screening analysis); potential for historic property physical impacts with the potential for Section 4(f) impacts, based on history field survey); and 31 residential and/or commercial displacements (based on rooftop counts from aerial photography).

Alternative 11 (No-Build):

This alternative represents one in which no bypass or widening would occur.

Estimated Property Impacts:	**0**	**Estimated Total Cost*:**	**$0**
Estimated Right-of-Way Cost:	**$0**	**Estimated Construction Time:**	**N/A**

Rationale: *The No Build Alternative would not address the need and purpose. Although no impacts would occur, the capacity and crash concerns would not be addressed.*

****Estimated Total Cost** includes Utilities, Right of Way, and Construction*

Attachments:

1. Concept Layout
    a. Alternative Layout Map
    b. SR166 at SR100 Downtown Bowdon map
    c. Preferred Alternative Layout
2. Typical Sections
3. Detailed Cost Estimates:
    a. Construction including Engineering and Inspection
    b. Completed Fuel & Asphalt Price Adjustment forms
    c. Right-of-Way
    d. Utilities
    e. Environmental Mitigation
4. Crash Summaries
5. Traffic Diagrams
6. Capacity Analysis Summary
7. Summary Signal Warrant Analysis
8. Roundabout Data
    a. Roundabout feasibility study
    b. Lighting agreement or commitment letter
9. Pavement Studies
    a. Preliminary Pavement Evaluation Summary
    b. Pavement Type Selection and Pavement Design Recommendation
10. Minutes of Concept meetings
    a. 2006-08-30 Kickoff Meeting
    b. 2007-03-09 Initial Concept Team Meeting
    c. 2014-02-24 Concept Team Meeting
11. Minutes of any meetings that shows support or objection to the concept
    a. 2007-04-17 FHWA Coordination meeting
    b. 2007-04-24 PIOH Synopsis
    c. 2007-05-16 Meeting with Mayor of Bowdon
    d. 2007-06-26 PIOH Response Letter
    e. 2007-11-30 Discussion regarding Bypass location
    f. 2011-08-04 City of Bowdon Public Officials Meeting
    g. 2011-12-01 FHWA Coordination Meeting
    h. 2012-01-11 Stakeholder Meeting
    i. 2012-03-01 PIOH Synopsis
    j. 2012-03-15 PIOH Response Letter
    k. 2012-04-05 FHWA Coordination Meeting
    l. 2013-09-11 Corps of Engineers PAR Meeting
    m. 2013-10-09 FHWA Coordination Meeting
    n. 2013-10-21 Carroll County Commissioners Meeting (Lighting Commitment)
    o. 2013-11-13 Corps of Engineers follow-up PAR Meeting
12. Practical Alternatives Report (PAR)

APPROVALS

Concur: _____
Director of Engineering

Approve: _____ 11/3/14
Chief Engineer Date

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

PROJECT CONCEPT REPORT

North Bowdon Bypass and SR 166 Widening and Reconstruction
Project Number: STP00-0021-01(025)

PI 631310

Carroll County

Attachment 1

Concept Layout

PRELIMINARY CONCEPT
BOWDON BYPASS ALTERNATE CONSIDERATIONS

LEGEND

- EXIST. PAVEMENT
- PROPOSED PAVEMENT
- PROP. GRASS SHOULDER/MEDIAN
- PROPOSED BRIDGE
- REQUIRED RIGHT-OF-WAY
- EXIST. PROPERTY/ROW
- ALTERNATIVES NO LONGER CONSIDERED
- EXIST. TRAFFIC SIGNAL
- POTENTIAL TRAFFIC SIGNAL

ENVIRONMENTAL FEATURES

- WETLAND SITE
- STREAM SITE
- POTENTIAL RESOURCE
- POTENTIAL HISTORIC PROPERTY (H)

ALTERNATE 1

ALTERNATE 2

POINT OF DIVERGENCE ALTERNATES 2 & 4

ALTERNATE 4

ALTERNATES 2&4

ALTERNATES 2 & 3

ALTERNATES 4 & 5

ALTERNATE 5

ALTERNATE 6

ALTERNATE 7

ALTERNATES 7, 8 & 9

ALTERNATE 10
OPERATIONAL ALTERNATIVE

ALTERNATE 11
NO BUILD ALTERNATIVE

ALTERNATES 1, 2, & 4

ALTERNATES 5 & 6

ALTERNATE 8

ALTERNATE 9

HISTORIC DISTRICT

PUBLIC INFORMATION OPEN HOUSE

NORTH BOWDON BYPASS AND SR 166 IMPROVEMENTS
FROM SR 166 NEAR INDIAN CREEK TO CR 828/FARMERS HIGH RD
CARROLL COUNTY
PROJECT NO. STP-021-0(25)
P.I. NO. 631310

FEBRUARY 28, 2012
REV SEPTEMBER 20, 2013
REV OCTOBER 1, 2013

MAP A

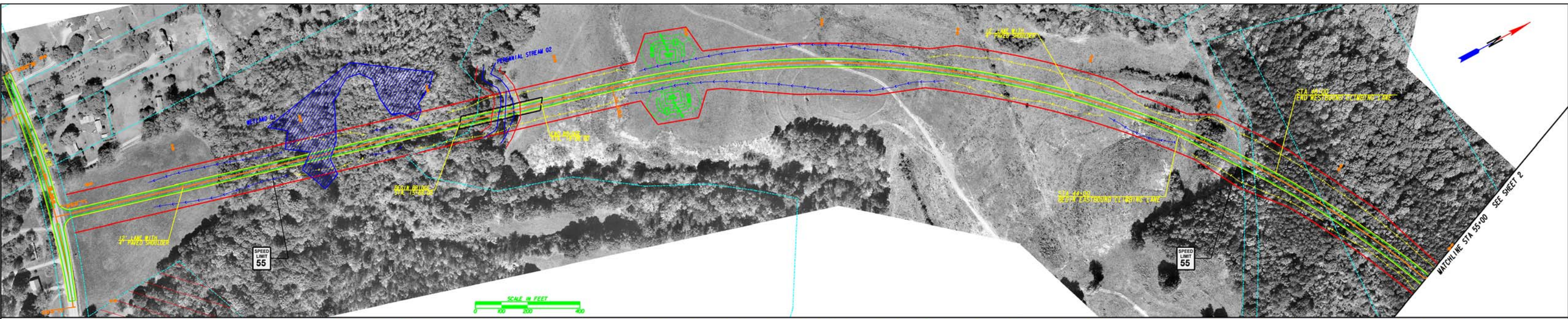
N

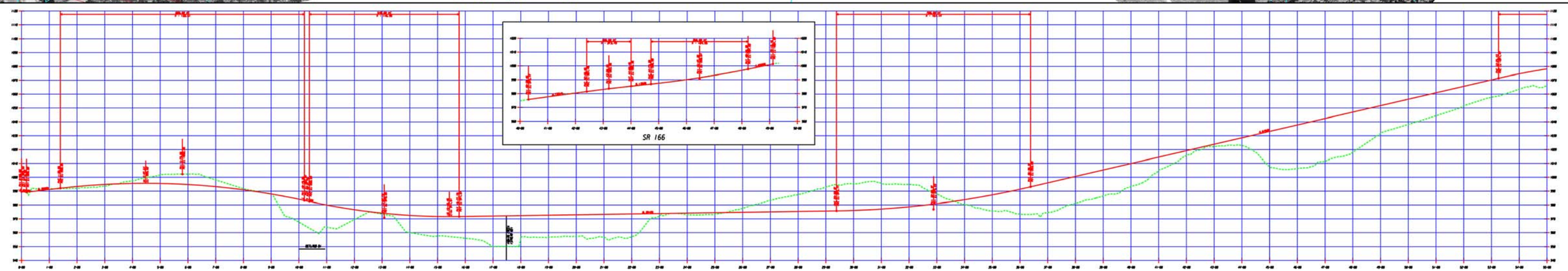
PREPARED FOR: GEORGIA DEPARTMENT OF TRANSPORTATION

PREPARED BY: AECOM

SCALE:

SCALE IN FEET
0 500 1000 2000





SCALE: 1"=100' HORIZ.
1"=20' VERT.

SR 166 NORTH BOWDON BYPASS

AECOM

GEORGIA
DEPARTMENT OF TRANSPORTATION

NORTH BOWDON BYPASS AND
SR166 IMPROVEMENTS
PROJECT NO. STP-021-01(251) PI NO. 631310

CONCEPTUAL CONSTRUCTION LAYOUT
SHEET 1 OF 6

MATCHLINE STA 55+00
SEE SHEET 1

SPEED LIMIT 55

SPEED LIMIT 55

N

MATCH LINE STA 113+00
SEE SHEET 3

LOVVORN MILL RD

SCALE: 1"=100' HORIZ.
1"=20' VERT.

SR 166 NORTH BOWDON BYPASS

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

AECOM

GEORGIA
DEPARTMENT OF TRANSPORTATION

NORTH BOWDON BYPASS AND
SR166 IMPROVEMENTS
PROJECT NO. STP-021-01(251) PI NO. 631310

CONCEPTUAL CONSTRUCTION LAYOUT
SHEET 2 OF 6

MATCH LINE STA 113+00 SEE SHEET 2

MATCH LINE STA 170+00 SEE SHEET 4

SPEED LIMIT 45

SPEED LIMIT 45

SPEED LIMIT 45

N

SR 100

W. JONESVILLE RD

SR 166 NORTH BOWDON BYPASS

SCALE: 1"=100' HORIZ.
1"=20' VERT.

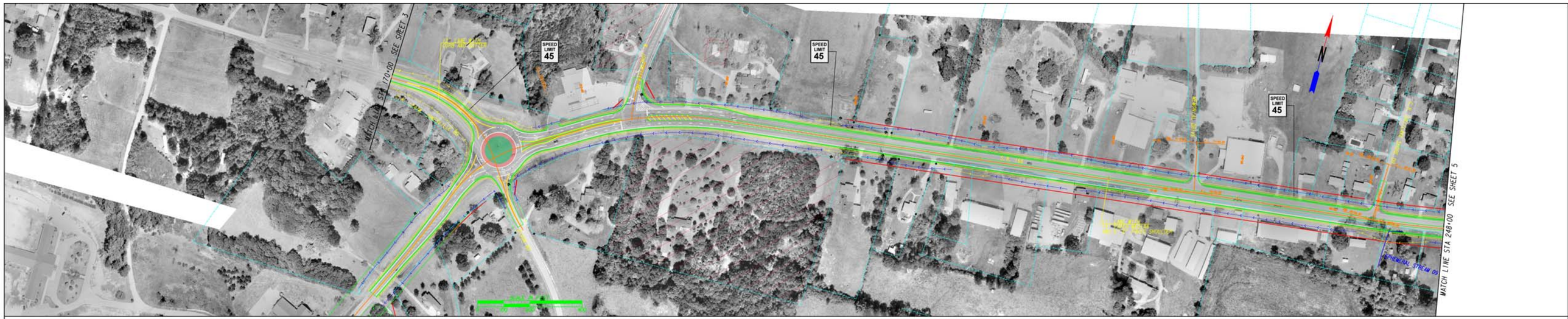
PROPERTY AND EXISTING R/W LINE
REQUIRED R/W LINE
CONSTRUCTION LIMITS
EASEMENT FOR CONCRETE & DRIVEWAYS OF SLOPES
EASEMENT FOR CONCRETE OF SLOPES
EASEMENT FOR CONCRETE OF DRIVES

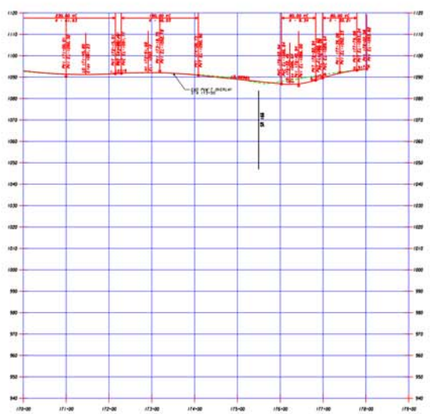
AECOM

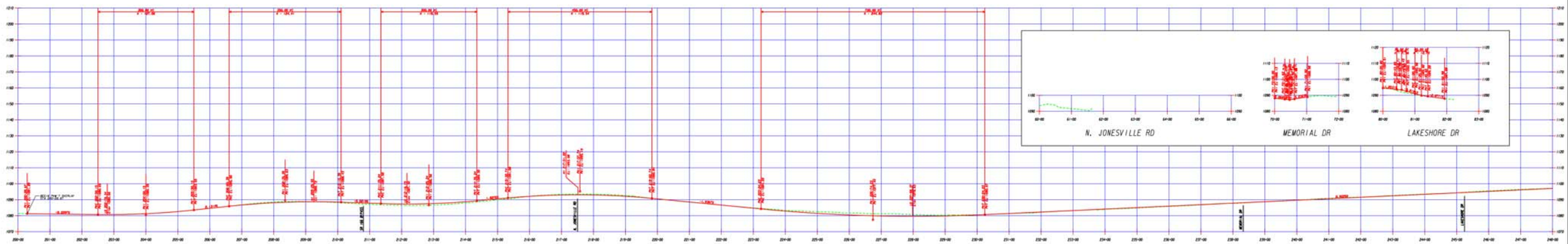
GEORGIA
DEPARTMENT OF TRANSPORTATION

NORTH BOWDON BYPASS AND SR166 IMPROVEMENTS
PROJECT NO. STP-021-01251 PI NO. 631510

CONCEPTUAL CONSTRUCTION LAYOUT
SHEET 3 OF 6







SR 166

SCALE: 1"=100' HORIZ.
1"=20' VERT.

SR 166 NORTH BOWDON BYPASS

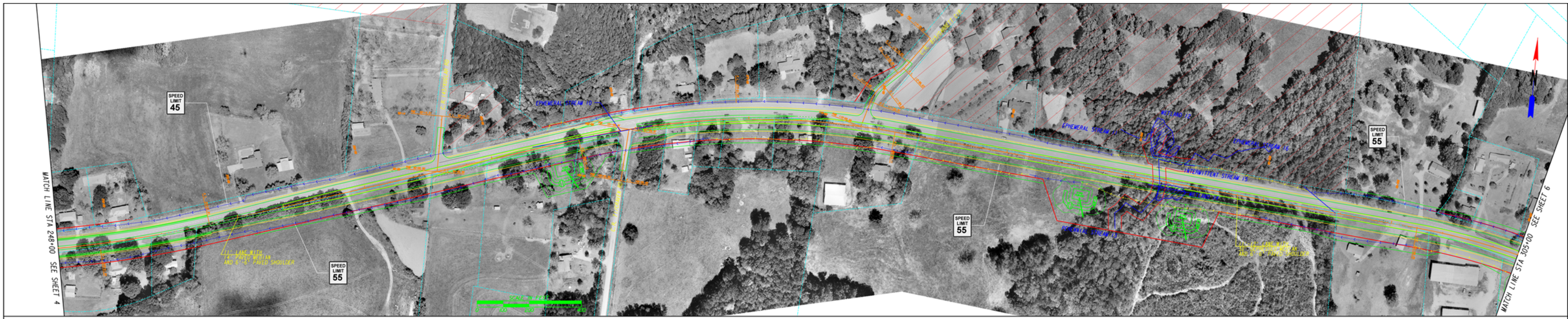
PROPERTY AND EXISTING R/W LINE
REQUIRED R/W LINE
CONSTRUCTION LIMITS
EASEMENT FOR CONCRETE & RIPRAP/GRASSING OF SLOPES
EASEMENT FOR CONCRETE OF SLOPES
EASEMENT FOR CONCRETE OF DRIVES

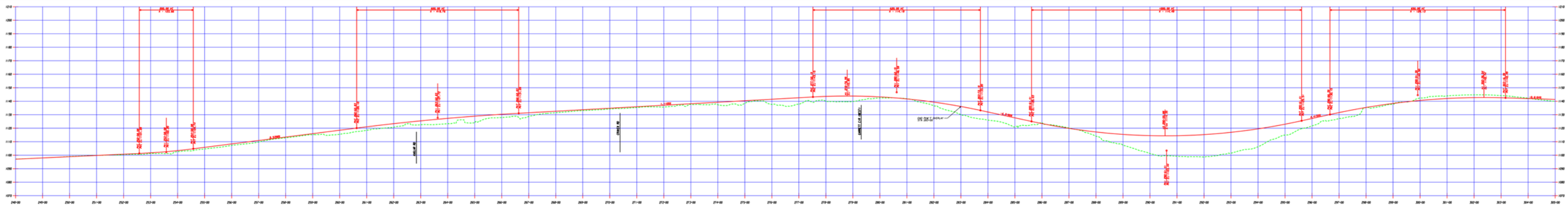
AECOM

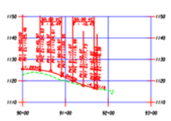
GEORGIA
DEPARTMENT OF TRANSPORTATION

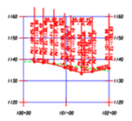
NORTH BOWDON BYPASS AND SR166 IMPROVEMENTS
PROJECT NO. STP-021-01(251) P.I NO. 631310

CONCEPTUAL CONSTRUCTION LAYOUT
SHEET 4 OF 6






KUGLAR RD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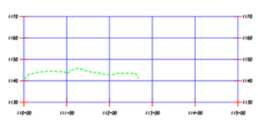

GARRETT CIR (WEST)

SCALE: 1"=100' HORIZ.
1"=20' VERT.

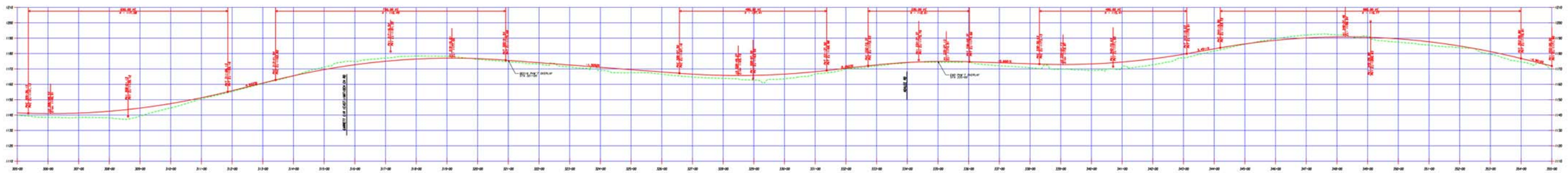
PROPERTY AND EXISTING R/W LINE
REQUIRED R/W LINE
CONSTRUCTION LIMITS
EASEMENT FOR CONSTR. & MAINTENANCE OF SLOPES
EASEMENT FOR CONSTR OF SLOPES
EASEMENT FOR CONSTR OF DRIVES

AECOM

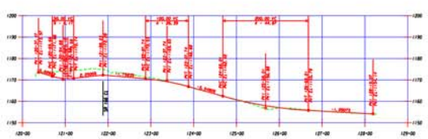
GEORGIA
DEPARTMENT OF TRANSPORTATION

NORTH BOWDON BYPASS AND SR166 IMPROVEMENTS
PROJECT NO. STP-021-01(251) PI NO. 631310

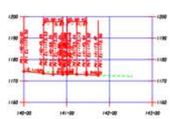
CONCEPTUAL CONSTRUCTION LAYOUT
SHEET 5 OF 6



SR 166



ANTIOCH CHURCH RD/GARRETT CIR (EAST)



ADALEE RD

SCALE: 1"=100' HORIZ.
1"=20' VERT.

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

AECOM

GEORGIA
DEPARTMENT OF TRANSPORTATION

NORTH BOWDON BYPASS AND SR166 IMPROVEMENTS
PROJECT NO. STP-021-01(251) PI NO. 631310

CONCEPTUAL CONSTRUCTION LAYOUT
SHEET 6 OF 6

POSSIBLE IMPROVEMENT
SR 166 AT SR 100, DOWNTOWN BOWDON

INCLUDES
ADDITION OF NORTHBOUND RIGHT TURN LANE
REMOVAL OF 18 PARKING SPOTS

DESIGN VEHICLE: S-BUS-40

PUBLIC INFORMATION OPEN HOUSE
NORTH BOWDON BYPASS AND SR 166 IMPROVEMENTS
FROM SR 166 NEAR BIG INDIAN CREEK TO CR 828/FARMERS HIGH RD

CARROLL COUNTY
PROJECT NO. STP-021-0(25)
PI NO. 631310

FEBRUARY 28, 2012

MAP B

PREPARED FOR: GEORGIA DEPARTMENT OF TRANSPORTATION

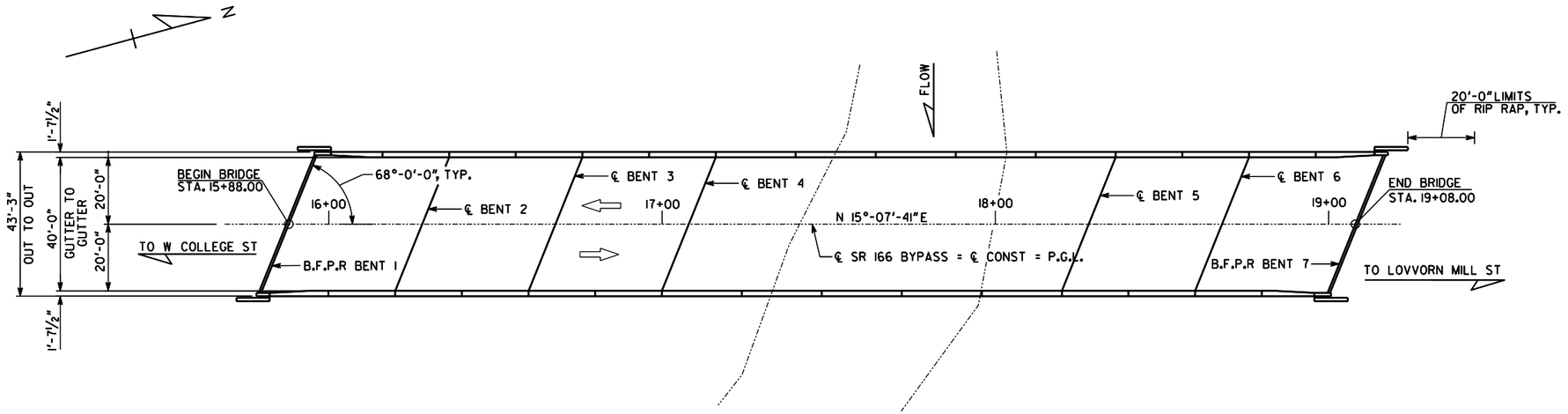
PREPARED BY: AECOM

SCALE

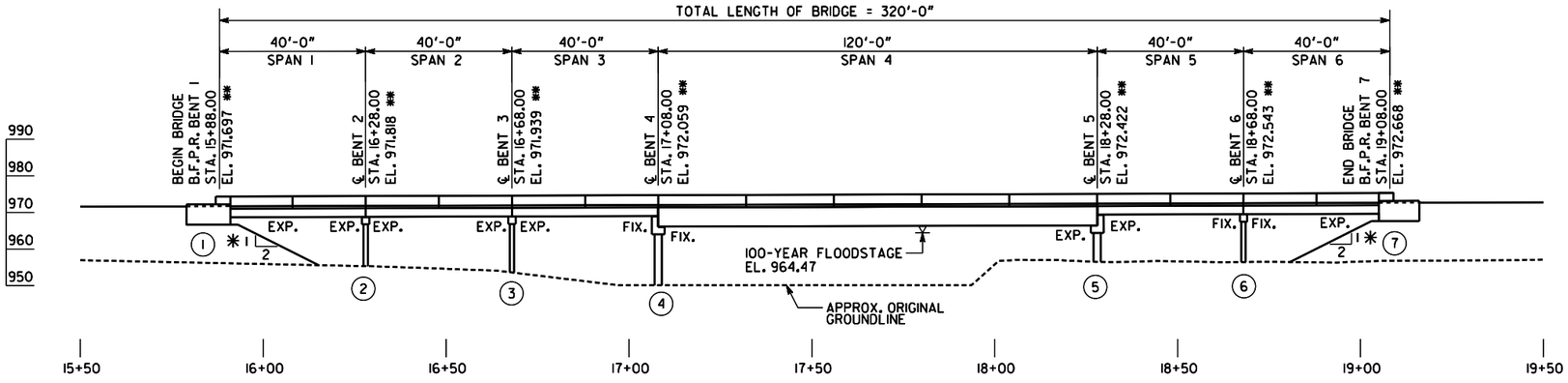
SCALE IN FEET

0 30 60 120

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.	STP-021-0(25)		

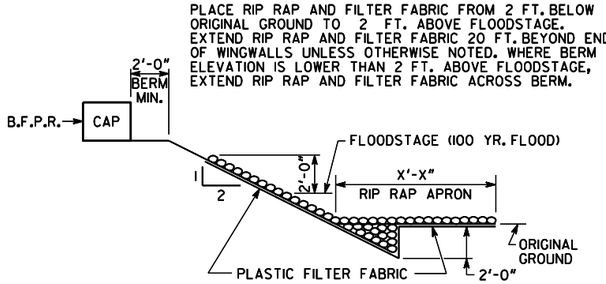


PLAN

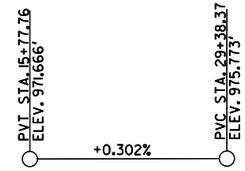


ELEVATION

PLACE RIP RAP AND FILTER FABRIC FROM 2 FT. BELOW ORIGINAL GROUND TO 2 FT. ABOVE FLOODSTAGE. EXTEND RIP RAP AND FILTER FABRIC 20 FT. BEYOND END OF WINGWALLS UNLESS OTHERWISE NOTED. WHERE BERM ELEVATION IS LOWER THAN 2 FT. ABOVE FLOODSTAGE, EXTEND RIP RAP AND FILTER FABRIC ACROSS BERM.



RIP RAP DETAIL



S.R. 166 BYPASS
VERTICAL CURVE DATA

NOTES:

1. END BENT PILES NOT SHOWN.
2. * - SLOPE NORMAL TO END BENT.
3. ** - STATIONS ARE ALONG ℄ CONST. AT THE INTERSECTION OF ℄ OF CONST. AND B.F.P.R. OR ℄ BENT. ELEVATIONS ARE ALONG PROFILE GRADE LINE.
4. ALL BENTS ARE PARALLEL.

BRIDGE CONSISTS OF

5 - 40'-0" 0" TYPE I MOD PSC BEAM SPANS ---------- SPECIAL DESIGN
1 - 120'-0" 63" BULB TEE SPAN ---------- SPECIAL DESIGN
2 - PILE END BENTS ---------- SPECIAL DESIGN
2 - CONCRETE INTERMEDIATE BENTS ---------- SPECIAL DESIGN
3 - PILE INTERMEDIATE BENTS ---------- SPECIAL DESIGN

DESIGN DATA

SPECIFICATIONS ---------- AASHTO LRFD 6TH EDITION, 2012
DESIGNED FOR: SEISMIC ZONE 1
IMPORTANCE CATEGORY: OTHER
ACCELERATION COEFFICIENT: 0.06G
TYPICAL HL-93 ---------- DYNAMIC LOAD ALLOWANCE
FUTURE PAVING ALLOWANCE ---------- 30 LBS PER SQ FT

TRAFFIC DATA

TRAFFIC ---------- ADT = 7,000 (2015)
ADT = 14,490 (2035)
DIRECTIONAL DIST ---------- 56% / 44%
TRUCKS ---------- 11%
SPEED DESIGN ---------- 55 MPH

EXISTING UTILITIES

NONE

DRAINAGE DATA

DRAINAGE AREA ---------- 54.3 SQ MI

BENCHMARK DATA

PROJECT P.I. NO. 0631300
BRIDGE NO. 1

AECOM

GEORGIA
DEPARTMENT OF TRANSPORTATION
PRECONSTRUCTION DIVISION-OFFICE OF BRIDGE DESIGN

CONCEPTUAL LAYOUT
SR 166 BYPASS OVER BIG INDIAN CREEK

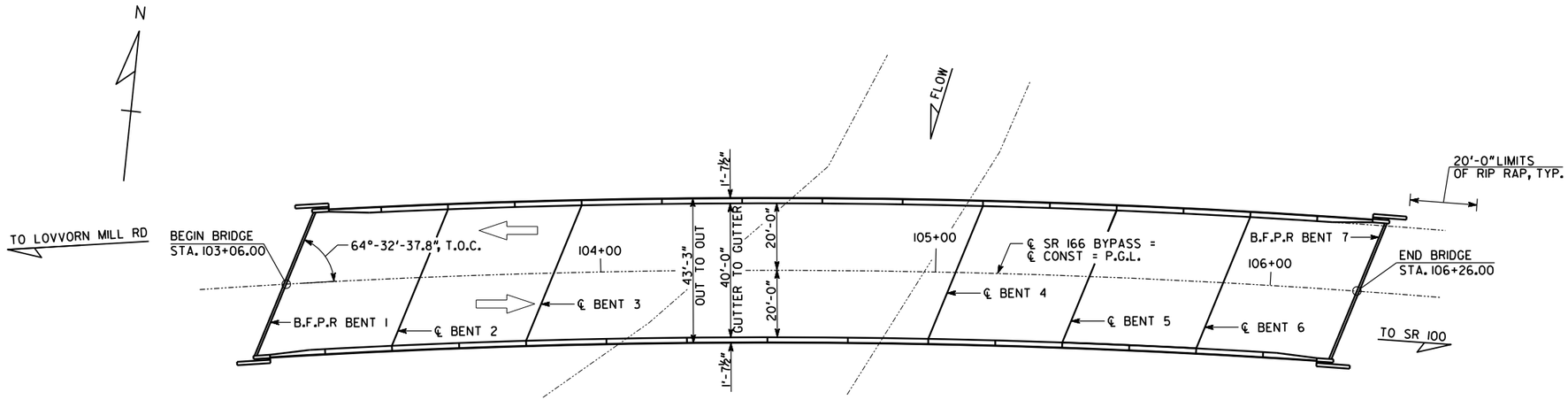
CARROLL COUNTY STP-021-0(25)

SCALE: 1" = 20' APRIL 2013

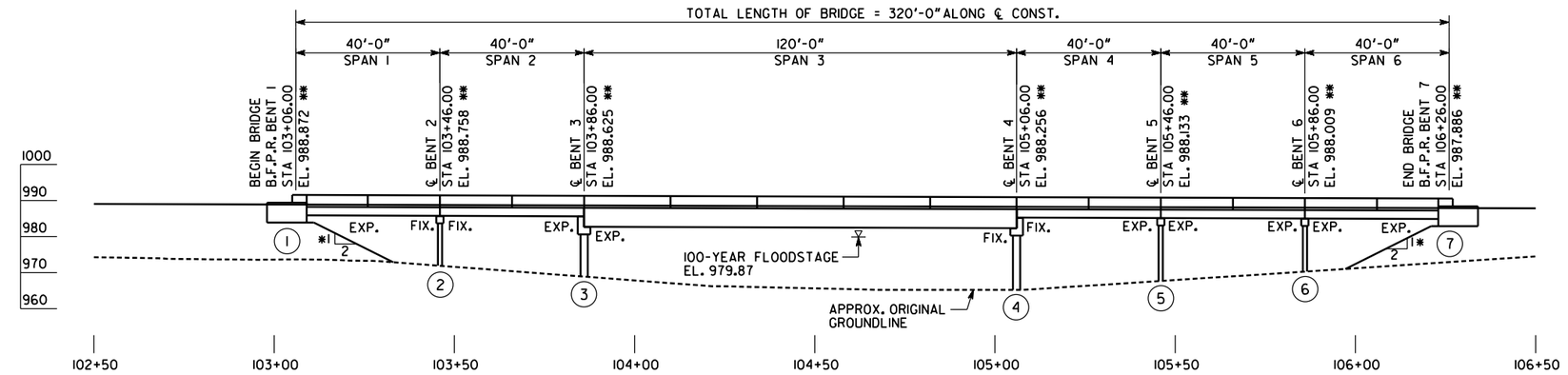
DRAWING NO.	REVISIONS	DATE	BY
35-			
BRIDGE SHEET 1 OF 1			

DESIGNED	JCM	CHECKED	GLE	REVIEWED	WMD
DRAWN	JFP	DESIGN GROUP	JCM	APPROVED	BFR

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.	STP-021-0(25)		

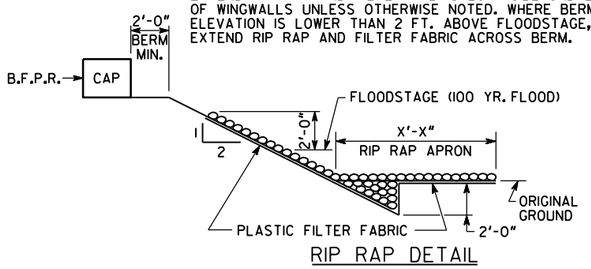


PLAN

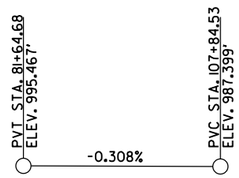


ELEVATION

PLACE RIP RAP AND FILTER FABRIC FROM 2 FT. BELOW ORIGINAL GROUND TO 2 FT. ABOVE FLOODSTAGE. EXTEND RIP RAP AND FILTER FABRIC 20 FT. BEYOND END OF WINGWALLS UNLESS OTHERWISE NOTED. WHERE BERM ELEVATION IS LOWER THAN 2 FT. ABOVE FLOODSTAGE, EXTEND RIP RAP AND FILTER FABRIC ACROSS BERM.



RIP RAP DETAIL



S.R. 166 BYPASS
VERTICAL CURVE DATA

P.I. STA. 103+83.53
N = 1296941.475'
E = 1964831.811'
Δ = 20°-46'-57.7"RT
D = 2°-17'-30.6"
R = 2500'
L = 906.816'
T = 458.445'
E = 41.003'

S.R. 166 BYPASS
HORIZONTAL CURVE DATA

NOTES:

1. END BENT PILES NOT SHOWN.
2. * - SLOPE NORMAL TO BENT.
3. ** - STATIONS ARE ALONG ℄ CONST. AT THE INTERSECTION OF ℄ CONST. AND B.F.P.R. OR ℄ BENT. ELEVATIONS ARE ALONG PROFILE GRADE LINE.
4. ALL BENTS ARE PARALLEL.

BRIDGE CONSISTS OF

5 - 40'-0" 0" TYPE I MOD PSC BEAM SPANS ---------- SPECIAL DESIGN
1 - 120'-0" 63" BULB TEE SPAN ---------- SPECIAL DESIGN
2 - PILE END BENTS ---------- SPECIAL DESIGN
2 - CONCRETE INTERMEDIATE BENTS ---------- SPECIAL DESIGN
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DESIGNED FOR: SEISMIC ZONE 1
IMPORTANCE CATEGORY: OTHER
ACCELERATION COEFFICIENT: 0.06G
TYPICAL HL-93 ---------- DYNAMIC LOAD ALLOWANCE
FUTURE PAVING ALLOWANCE ---------- 30 LBS PER SQ FT

TRAFFIC DATA

TRAFFIC ---------- ADT = 7,000 (2015)
ADT = 14,490 (2035)
DIRECTIONAL DIST ---------- 56% / 44%
TRUCKS ---------- 11%
SPEED DESIGN ---------- 55 MPH

EXISTING UTILITIES

NONE

DRAINAGE DATA

DRAINAGE AREA ---------- 51.4 SQ MI

BENCHMARK DATA

PROJECT P.I.NO. 0631300
BRIDGE NO. 2

AECOM

GEORGIA
DEPARTMENT OF TRANSPORTATION
PRECONSTRUCTION DIVISION-OFFICE OF BRIDGE DESIGN

CONCEPTUAL LAYOUT
SR 166 BYPASS OVER BIG INDIAN CREEK

CARROLL COUNTY STP-021-0(25)

SCALE: 1" = 20' APRIL 2013

DRAWING NO.	REVISIONS	DATE
35-		
BRIDGE SHEET 1 OF 1	BY	

DESIGNED JCM	CHECKED GLE	REVIEWED WMD
DRAWN JFP	DESIGN GROUP JCM	APPROVED BFR

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

PROJECT CONCEPT REPORT

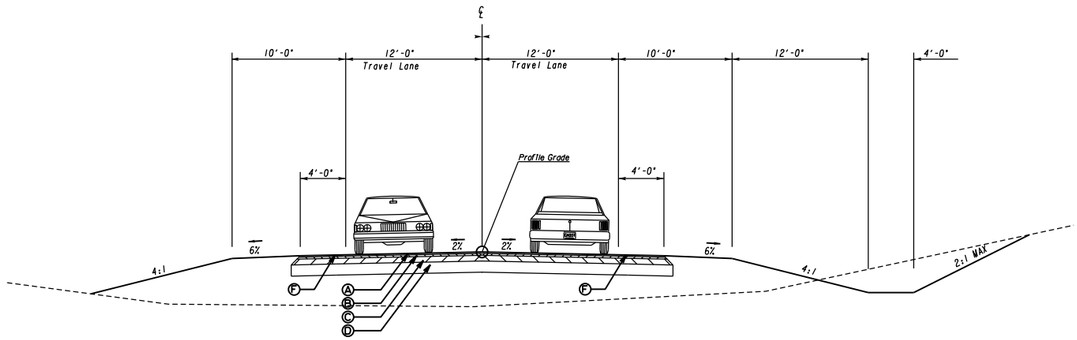
North Bowdon Bypass and SR 166 Widening and Reconstruction
Project Number: STP00-0021-01(025)

PI 631310

Carroll County

Attachment 2

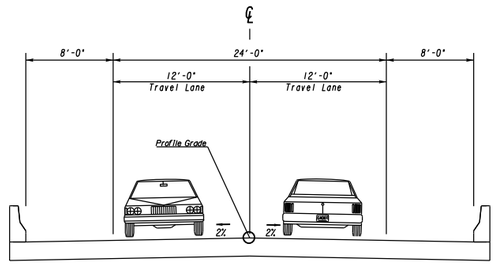
Typical Sections



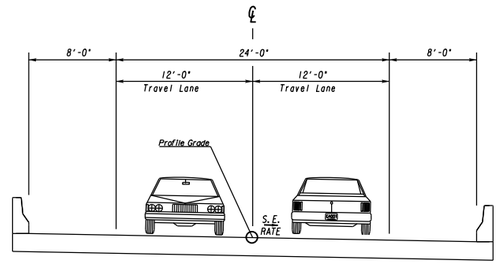
STA 0+00 TO STA 15+88
STA 19+08 TO STA 103+06
STA 106+26 TO STA 118+00
(FROM SR 166 NEAR BIG INDIAN CREEK TO SR 100)

PAVEMENT MATERIAL SCHEDULE	
(A)	RECYCLED ASPH CONC 12.5 MM SUPERPAVE, GP2 ONLY, INCL BITUM MATL & H LIME (165LB/SY)
(B)	RECYCLED ASPH CONC 19MM SUPERPAVE, GP1 OR GP2, INCL BITM MATL & H LIME (220LB/SY)
(C)	RECYCLED ASPH CONC 25MM SUPERPAVE, GP1 OR GP2, INCL BITM MATL & H LIME (660LB/SY)
(D)	14" GRADED AGGREGATE BASE
(E)	8"X30" CONC. CURB & GUTTER GDOT STD 9032B, TP2
(F)	RUMBLE STRIPS (SKIP)
(G)	ASPHALTIC CONCRETE LEVELING, AS REQUIRED

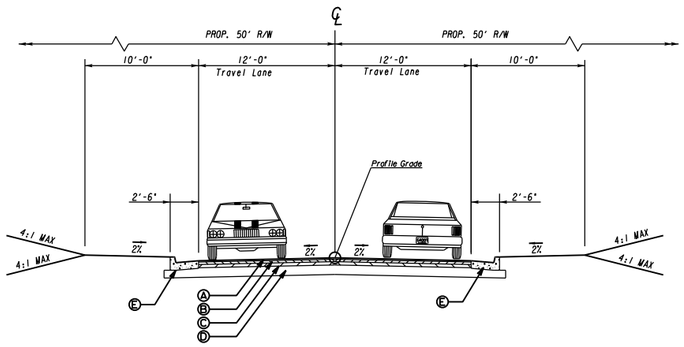
S.E. RATE	shoulder slope
2.0% OR 3.0%	4.0%
4.0% OR 5.0%	2.0%
6.0% OR 7.0%	1.0%
8.0 % +	0.0%



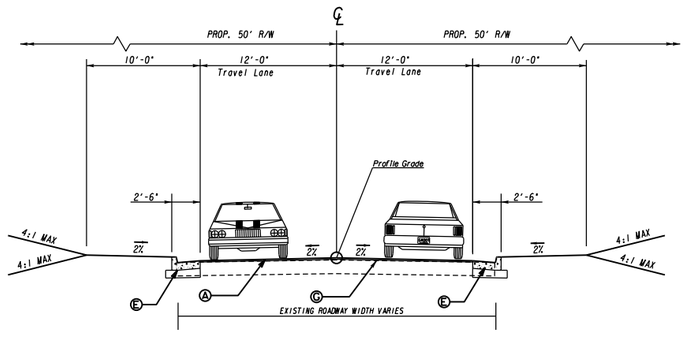
STA 15+88 TO STA 19+08
BRIDGE 1



STA 103+06 TO STA 106+26
BRIDGE 2



STA 118+00 TO STA 130+00
(FROM SR 100 TO INTERSECTION OF SR 166/W. JONESVILLE RD)
FULL DEPTH SECTION



STA 130+00 TO STA 175+50
(FROM SR 100 TO INTERSECTION OF SR 166/W. JONESVILLE RD)
OVERLAY SECTION

REVISION DATES		

AECOM

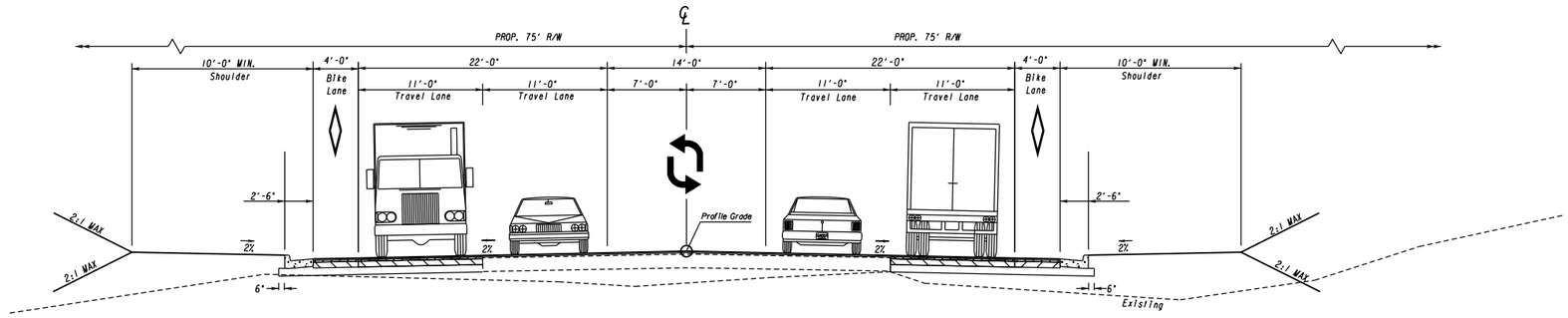
STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: PROGRAM DELIVERY

TYPICAL SECTIONS

SR 166 BYPASS NORTH OF BOWDON
WIDENING AND RECONSTRUCTION TO CR828
PI NO: 0631310

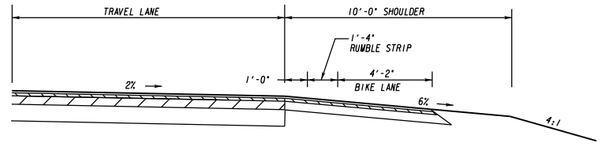
DRAWING No.
5-01

DATE$$$	TIME$$$	PRF	DGN	COUNTY	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
$USER$		$$PENTABLE$$		CARROLL	STP00-0021-01(025)		

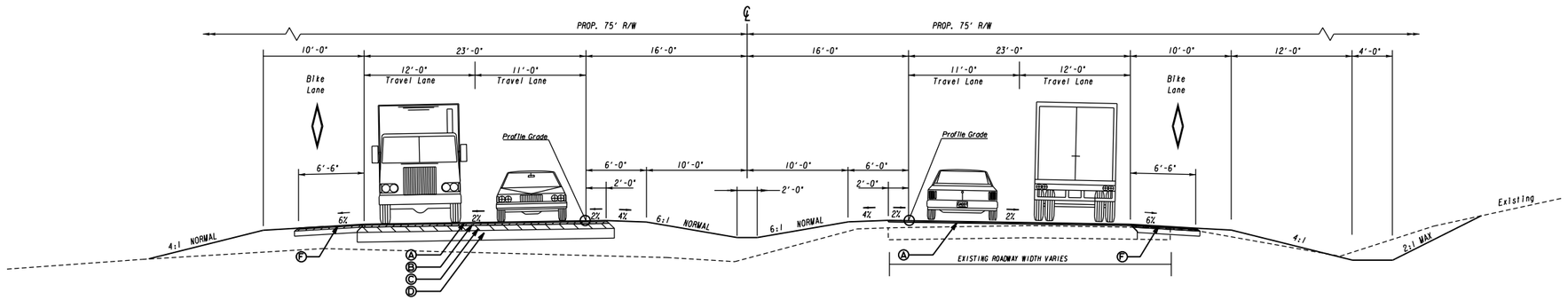


STA 211+00 TO STA 255+00
(FROM W. JONESVILLE RD TO WEST OF KUGLAR ROAD)
4'-0" BIKE LANE WITH CURB AND GUTTER
FOR INCORPORATION OF CARROLL COUNTY BIKE LANE

PAVEMENT MATERIAL SCHEDULE
(A) RECYCLED ASPH CONC 12.5 MM SUPERPAVE, GP2 ONLY, INCL BITUM MATL & H LIME (165LB/SY)
(B) RECYCLED ASPH CONC 19MM SUPERPAVE, GP1 OR GP2, INCL BITM MATL & H LIME (220LB/SY)
(C) RECYCLED ASPH CONC 25MM SUPERPAVE, GP1 OR GP2, INCL BITM MATL & H LIME (660LB/SY)
(D) 14" GRADED AGGREGATE BASE
(E) 8"X30" CONC. CURB & GUTTER GDOT STD 9032B, TP2
(F) RUMBLE STRIPS (SKIP)
(G) ASPHALTIC CONCRETE LEVELING, AS REQUIRED



RURAL TANGENT SECTION WITH BIKE LANE



STA 255+00 TO STA 315+50
(FROM WEST OF KUGLAR ROAD TO ANTIOCH CHURCH ROAD
6'-6" SHOULDER FOR INCORPORATION OF CARROLL COUNTY BIKE PLAN

REVISION DATES		

AECOM

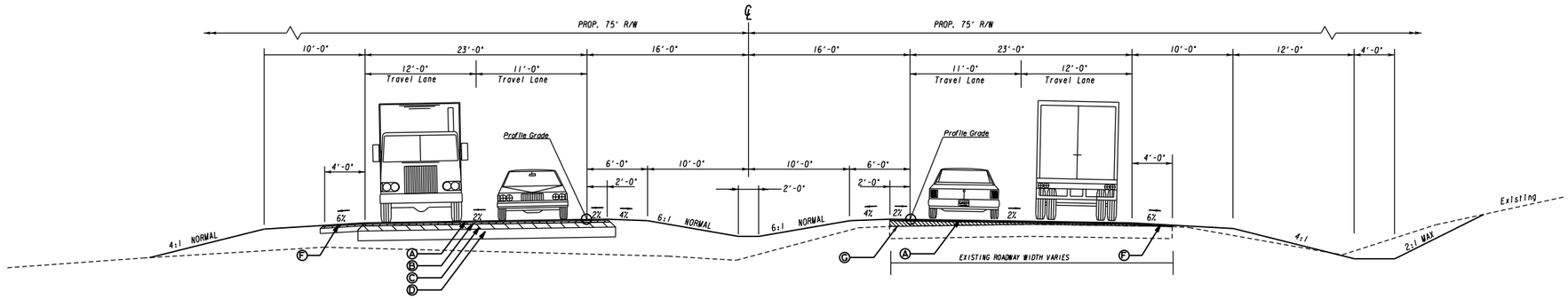
STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION

OFFICE: PROGRAM DELIVERY

TYPICAL SECTIONS

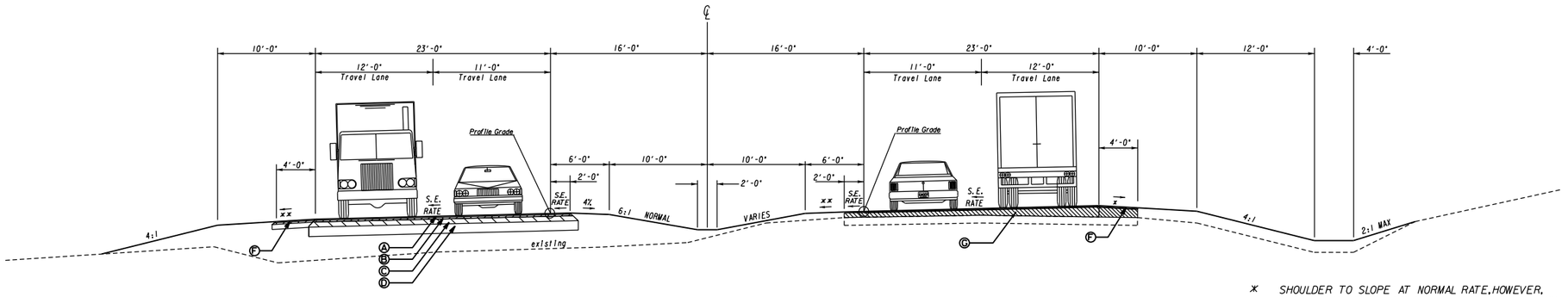
SR 166 BYPASS NORTH OF BOWDON
WIDENING AND RECONSTRUCTION TO CR828
PI NO: 0631310

DRAWING No.
5-02



STA 315+50 TO STA 355+00
(FROM ANTIOCH CHURCH RD TO FARMERS HIGH RD)
TANGENT SECTION

PAVEMENT MATERIAL SCHEDULE	
Ⓐ	RECYCLED ASPH CONC 12.5 MM SUPERPAVE, GP2 ONLY, INCL BITUM MATL & H LIME (165LB/SY)
Ⓑ	RECYCLED ASPH CONC 19MM SUPERPAVE, GP1 OR GP2, INCL BITM MATL & H LIME (220LB/SY)
Ⓒ	RECYCLED ASPH CONC 25MM SUPERPAVE, GP1 OR GP2, INCL BITM MATL & H LIME (660LB/SY)
Ⓓ	14" GRADED AGGREGATE BASE
Ⓔ	8"X30" CONC. CURB & GUTTER GDOT STD 9032B, TP2
Ⓕ	RUMBLE STRIPS (SKIP)
Ⓖ	ASPHALTIC CONCRETE LEVELING, AS REQUIRED



* SHOULDER TO SLOPE AT NORMAL RATE,HOWEVER, THE ALGEBRAIC DIFFERENCE IN PAVING SLOPE AND SHOULDER SLOPE SHALL NOT EXCEED 8%. MINIMUM SHOULDER SLOPE TO BE 2%.

** SHOULDER TO SLOPE AT NORMAL RATE OR SUPERELEVATION RATE,WHICHEVER IS GREATER.

STA 315+50 TO STA 355+00
(FROM W. JONESVILLE RD TO FARMERS HIGH RD)
SUPER ELEVATED SECTION

AECOM

REVISION DATES		

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION

OFFICE: PROGRAM DELIVERY

TYPICAL SECTIONS

SR 166 BYPASS NORTH OF BOWDON
WIDENING AND RECONSTRUCTION TO CR828
PI NO: 0631310

DRAWING No. 5-03

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

PROJECT CONCEPT REPORT

North Bowdon Bypass and SR 166 Widening and Reconstruction
Project Number: STP00-0021-01(025)

PI 631310

Carroll County

Attachment 3

Detailed Cost Estimate

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE P.I. No. **631310** **OFFICE** Program Delivery

PROJECT DESCRIPTION

New location, two lane roadway bypassing north of the City of Bowdon and the widening of SR 166, from West Jonesville Road (CR 124) to Farmers High Road (CR 828) from two to four/five lanes.

DATE September 16, 2014

From: Scott Gero, Project Manager, AECOM

To: Lisa L. Myers, State Project Review Engineer

Subject: REVISIONS TO PROGRAMMED COSTS

PROJECT MANAGER Roxanne Harris

MGMT LET DATE 2020

MGMT ROW DATE 5/9/2016

PROGRAMMED COSTS (TPro W/OUT INFLATION) **LAST ESTIMATE UPDATE**

CONSTRUCTION	$	21,276,878.35	DATE	1/17/2014
RIGHT OF WAY	$	12,113,000.00	DATE	1/17/2014
UTILITIES	$	2,125,849.00	DATE	1/17/2014

REVISED COST ESTIMATES

CONSTRUCTION*	$	21,235,250.95
RIGHT OF WAY	$	12,113,000.00
UTILITIES	$	2,125,849.00

*Cost Contains **15** % Contingency

REASONS FOR COST INCREASE AND CONTINGENCY JUSTIFICATION:

Updated cost estimate to include CES based estimate per concept report comments (dated 8/8/14).

CONTINGENCY SUMMARY

A.	**CONSTRUCTION COST ESTIMATE:**	$ 16,600,931.89	Base Estimate From CES		
B.	**ENGINEERING AND INSPECTION (E & I):**	$ 830,046.59	Base Estimate (A) x	**5**	%
C.	**CONTINGENCY:**	$ 2,614,646.77	Base Estimate (A) + E & I (B) x	**15**	%
			See % Table in "Risk Based Cost Estimation" Memo		
D.	**TOTAL LIQUID AC ADJUSTMENT:**	$ 1,189,625.69	Total From Liquid AC Spreadsheet		
E.	**CONSTRUCTION TOTAL:**	$ **21,235,250.95**	(A + B + C + D = E)		

REIMBURSABLE UTILTY COSTS

UTILITY OWNER	REIMBURSABLE COST
AT&T - Georgia	$ 724,500.00
Georgia Power Company - Dist.	$ 575,000.00
Georgia Power Company - Trans.	$ 322,000.00
Carroll EMC	$ 504,349.00
TOTAL	**$ 2,125,849.00**

ATTACHMENTS:

- Detailed Cost Estimate from CES
- Liquid AC Adjustment Spreadsheet
- Updated Utility Cost Estimate
- Risk Based Cost Estimate Memo
- Preliminary ROW Cost Estimate
- Environmental Mitigation Cost Estimate

STATE HIGHWAY AGENCY

DATE : 09/16/2014
PAGE : 1

JOB ESTIMATE REPORT

JOB NUMBER : 631310 SPEC YEAR: 01
DESCRIPTION: SR 166 FM E OF BIG INDIAN CK NEW LOC TO E CL THEN TO CR 828

ITEMS FOR JOB 631310

LINE	ITEM	ALT	UNITS	DESCRIPTION	QUANTITY	PRICE	AMOUNT
0005	150-1000		LS	TRAFFIC CONTROL - ALL	1.000	271000.00	271000.00
0010	150-5010		EA	TRAF CTRL,PORTABLE IMPACT ATTN	12.000	8914.07	106968.85
0015	153-1300		EA	FIELD ENGINEERS OFFICE TP 3	1.000	53934.40	53934.41
0020	201-1500		LS	CLEARING & GRUBBING - ALL	1.000	2753900.90	2753900.90
0025	205-0001		CY	UNCLASS EXCAV	414118.000	3.53	1461836.54
0030	206-0002		CY	BORROW EXCAV, INCL MATL	178106.000	3.17	564596.02
0035	207-0203		CY	FOUND BKFILL MATL, TP II	1000.000	29.96	29961.49
0040	310-1101		TN	GR AGGR BASE CRS, INCL MATL	130654.000	10.77	1407634.84
0045	402-1812		TN	RECYL AC LEVELING,INC BM&HL	4312.000	61.51	265241.73
0050	402-3121		TN	RECYL AC 25MM SP,GP1/2,BM&HL	26392.000	51.93	1370762.21
0055	402-3130		TN	RECYL AC 12.5MM SP,GP2,BM&HL	15443.000	57.65	890335.28
0060	402-3190		TN	RECYL AC 19 MM SP,GP 1 OR 2 ,INC BM&HL	17595.000	57.01	1003112.24
0065	413-1000		GL	BITUM TACK COAT	26057.000	1.99	52092.89
0070	433-1000		SY	REINF CONC APPROACH SLAB	427.000	143.85	61426.73
0075	441-0104		SY	CONC SIDEWALK, 4 IN	9300.000	21.25	197667.22
0080	441-0204		SY	PLAIN CONC DITCH PAVING, 4 IN	2000.000	25.13	50270.36
0085	441-0303		EA	CONC SPILLWAY, TP 3	8.000	1664.84	13318.74
0090	441-6222		LF	CONC CURB & GUTTER/ 8"X30"TP2	17650.000	10.95	193316.39
0095	446-1100		LF	PVMT REF FAB STRIPS, TP2,18 INCH WIDTH	4000.000	3.61	14460.92
0100	456-2015		GLM	INDENT. RUMB. STRIPS - GRND-IN-PL (SKIP)	12.400	558.60	6926.71
0105	500-3101		CY	CLASS A CONCRETE	835.000	451.10	376672.61
0110	500-9999		CY	CL B CONC,BASE OR PVMT WIDEN	111.000	135.72	15065.36
0115	511-1000		LB	BAR REINF STEEL	119700.000	0.58	69595.97
0120	550-1180		LF	STM DR PIPE 18",H 1-10	11000.000	23.70	260756.32
0125	550-1240		LF	STM DR PIPE 24",H 1-10	1200.000	32.66	39203.06
0130	550-1360		LF	STM DR PIPE 36",H 1-10	600.000	61.62	36977.52
0135	550-2180		LF	SIDE DR PIPE 18",H 1-10	3192.000	23.12	73815.64
0140	550-3318		EA	SAFETY END SECTION 18",STD,4:1	50.000	528.72	26436.00
0145	550-4118		EA	FLARED END SECT 18 IN, SIDE DR	120.000	275.86	33103.33
0150	576-1012		LF	SLOPE DRAIN PIPE, 12 IN	400.000	36.30	14520.00
0155	643-0010		LF	FIELD FENCE WOVEN WIRE	681.000	5.04	3434.24
0160	620-0100		LF	TEMP BARRIER, METHOD NO. 1	6000.000	21.14	126881.46
0165	632-0003		EA	CHANGEABLE MESS SIGN,PORT,TP 3	6.000	1793.09	10758.55
0170	634-1200		EA	RIGHT OF WAY MARKERS	300.000	106.75	32026.44
0175	641-1100		LF	GUARDRAIL, TP T	600.000	32.86	19721.60
0180	641-1200		LF	GUARDRAIL, TP W	6000.000	13.82	82946.64
0185	641-5001		EA	GUARDRAIL ANCHORAGE, TP 1	28.000	601.94	16854.43
0190	641-5012		EA	GUARDRAIL ANCHORAGE, TP 12	28.000	1658.98	46451.70
0195	668-2100		EA	DROP INLET, GP 1	10.000	1702.67	17026.77
0200	603-2018		SY	STN DUMPED RIP RAP, TP 1, 18"	1000.000	49.93	49930.00
0205	603-2181		SY	STN DUMPED RIP RAP, TP 3, 18"	800.000	24.86	19893.05

JOB ESTIMATE REPORT

0210	603-7000	SY	PLASTIC FILTER FABRIC	1800.000	3.33	5998.30
0215	700-6910	AC	PERMANENT GRASSING	200.000	329.42	65885.61
0220	700-7000	TN	AGRICULTURAL LIME	396.000	7.27	2879.15
0225	700-8000	TN	FERTILIZER MIXED GRADE	60.000	407.46	24447.99
0230	700-8100	LB	FERTILIZER NITROGEN CONTENT	9900.000	2.10	20807.52
0235	716-2000	SY	EROSION CONTROL MATS, SLOPES	180000.000	0.93	167473.80
0240	163-0232	AC	TEMPORARY GRASSING	123.000	0.79	98.18
0245	163-0240	TN	MULCH	1344.000	183.54	246678.46
0250	163-0300	EA	CONSTRUCTION EXIT	20.000	1013.51	20270.23
0255	163-0503	EA	CONSTR AND REMOVE SILT CONTROL GATE,TP 3	39.000	273.20	10655.08
0260	163-0520	LF	CONSTR AND REMOVE TEMP PIPE SLOPE DRAIN	1500.000	13.89	20835.29
0265	163-0527	EA	CNST/REM RIP RAP CKDM,STN P RIPRAP/SN BG	98.000	187.93	18417.18
0270	163-0528	LF	CONSTR AND REM FAB CK DAM -TP C SLT FN	9810.000	3.15	30945.06
0275	163-0531	EA	CONSTR & REM SEDIMENT BASIN,TP 1,STA NO- ALL	6.000	8275.86	49655.18
0280	163-0550	EA	CONS & REM INLET SEDIMENT TRAP	109.000	97.75	10655.66
0285	165-0010	LF	MAINT OF TEMP SILT FENCE, TP A	36036.000	0.34	12350.26
0290	165-0030	LF	MAINT OF TEMP SILT FENCE, TP C	12012.000	0.78	9453.56
0295	165-0041	LF	MAINT OF CHECK DAMS - ALL TYPES	12750.000	0.38	4969.44
0300	165-0087	EA	MAINT OF SILT CONTROL GATE, TP 3	39.000	74.74	2915.15
0305	165-0060	EA	MAINT OF TEMP SEDIMENT BASIN,STA NO -	6.000	994.63	5967.79
0310	165-0101	EA	MAINT OF CONST EXIT	20.000	465.13	9302.77
0315	165-0105	EA	MAINT OF INLET SEDIMENT TRAP	109.000	43.80	4775.25
0320	167-1000	EA	WATER QUALITY MONITORING AND SAMPLING	10.000	382.56	3825.63
0325	167-1500	MO	WATER QUALITY INSPECTIONS	36.000	593.83	21377.99
0330	171-0010	LF	TEMPORARY SILT FENCE, TYPE A	72072.000	1.57	113669.08
0335	171-0030	LF	TEMPORARY SILT FENCE, TYPE C	24024.000	2.89	69472.84
0340	636-1020	SF	HWY SGN,TP1MAT,REFL SH TP3	1000.000	13.01	13016.26
0345	636-1033	SF	HWY SIGNS, TP1MAT,REFL SH TP 9	2500.000	16.82	42071.55
0350	636-2070	LF	GALV STEEL POSTS, TP 7	5000.000	6.30	31519.45
0355	653-0120	EA	THERM PVMT MARK, ARROW, TP 2	120.000	70.73	8487.65
0360	653-0140	EA	THERM PVMT MARK, ARROW, TP 4	20.000	431.41	8628.21
0365	653-0210	EA	THERM PVMT MARK, WORD , TP 1	40.000	101.00	4040.29
0370	653-1501	LF	THERMO SOLID TRAF ST 5 IN, WHI	64416.000	0.27	17990.10
0375	653-1502	LF	THERMO SOLID TRAF ST, 5 IN YEL	64416.000	0.32	20831.49
0380	653-1704	LF	THERM SOLID TRAF STRIPE,24",WH	600.000	3.49	2099.26
0385	653-1804	LF	THERM SOLID TRAF STRIPE, 8",WH	4000.000	1.67	6680.60
0390	653-1810	LF	THER SLD TRAF STRIPE, 10 IN, W	500.000	2.36	1182.84
0395	653-3501	GLF	THERMO SKIP TRAF ST, 5 IN, WHI	31046.000	0.34	10648.16
0400	653-6004	SY	THERM TRAF STRIPING, WHITE	30310.000	2.35	71499.77
0405	657-1085	LF	PRF PL SD PVT MKG,8",B/W,TP PB	2000.000	5.29	10588.96
0410	657-6085	LF	PRF PL SD PVMT MKG,8",B/Y,TPPB	2000.000	5.40	10812.16
0415	654-1003	EA	RAISED PVMT MARKERS TP 3	5000.000	2.80	14004.30
0420	615-1200	LF	DIRECTIONAL BORE - ALL	600.000	8.40	5043.23
0425	647-1000	LS	TRAF SIGNAL INSTALLATION NO - #1 - SR 100	1.000	80000.00	80000.00
0430	647-1000	LS	TRAF SIGNAL INSTALLATION NO - #2 - WEST JONESVILLE RD	1.000	100000.00	100000.00

STATE HIGHWAY AGENCY

0435	682-6233	LF	CONDUIT, NONMETL, TP 3, 2 IN	600.000	3.95	2370.00
0440	543-9000	LS	CONSTR OF BRIDGE COMPLETE - BRIDGE 1	1.000	1522400.00	1522400.00
0445	543-9000	LS	CONSTR OF BRIDGE COMPLETE - BRIDGE 2	1.000	1522400.00	1522400.00

ITEM TOTAL	16600931.89
INFLATED ITEM TOTAL	16600931.89

TOTALS FOR JOB 631310

ESTIMATED COST:	16600931.89
CONTINGENCY PERCENT (10.0):	1660093.19
ESTIMATED TOTAL:	18261025.08

PROJ. NO.	STP00-0021-01(025)	CALL NO.	9/29/2009
P.I. NO.	631310		
DATE	9/16/2014		

INDEX (TYPE)	DATE	INDEX
REG. UNLEADED	Sep-14	$ 3.335
DIESEL		$ 3.765
LIQUID AC		$ 601.00

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)			**1149268.26**	**$**	**1,149,268.26**
Monthly Asphalt Cement Price month placed (APM)	Max. Cap	60%	$ 961.60		
Monthly Asphalt Cement Price month project let (APL)			$ 601.00		
Total Monthly Tonnage of asphalt cement (TMT)			3187.1		

ASPHALT	Tons	%AC	AC ton
Leveling	4312	5.0%	215.6
12.5 OGFC		5.0%	0
12.5 mm	15443	5.0%	772.15
9.5 mm SP		5.0%	0
25 mm SP	26392	5.0%	1319.6
19 mm SP	17595	5.0%	879.75
	63742		**3187.1**

BITUMINOUS TACK COAT

Price Adjustment (PA)			**$ 40,357.43**	**$**	**40,357.43**
Monthly Asphalt Cement Price month placed (APM)	Max. Cap	60%	$ 961.60		
Monthly Asphalt Cement Price month project let (APL)			$ 601.00		
Total Monthly Tonnage of asphalt cement (TMT)			111.9174447		

Bitum Tack Gals	gals/ton	tons
26057	232.8234	111.917445

BITUMINOUS TACK COAT (surface treatment)

Price Adjustment (PA)			**0**	**$**	**-**
Monthly Asphalt Cement Price month placed (APM)	Max. Cap	60%	$ 961.60		
Monthly Asphalt Cement Price month project let (APL)			$ 601.00		
Total Monthly Tonnage of asphalt cement (TMT)			0		

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

TOTAL LIQUID AC ADJUSTMENT	**$**	**1,189,625.69**

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE: STP00-0828-00(019), Carroll Co.
P.I. No. 631310-
SR 166 from East of Big India Creek
TO CR 828

OFFICE: Cartersville

FROM: Kerry D. Bonner, District Utilities Engineer

DATE: December 6, 2013

TO: Genetha Rice-Singleton, Office of Program Delivery
ATTN: Chandria Brown, P.E., Project Manager

SUBJECT: UPDATED UTILITY COST ESTIMATE

We are furnishing you with an Updated Utility Cost estimate for each utility with facilities potentially located within the project limits.

FACILITY OWNER	NON REIMBURSABLE	REIMBURSABLE
Atlanta Gas Light Company	$ 1,616,923.00	
Carroll County Water Auth*	$ 292,215.00	
City of Bowdon*	$ 805,000.00	
AT&T – Georgia	$ 402,500.00	$ 724,500.00
Georgia Power Company – Dist.		$ 575,000.00
Georgia Power Company – Trans.		$ 322,000.00
Carroll EMC		$ 504,349.00
Charter Communications	$ 132,633.00	
Totals	$ 3,249,271.00	$2,125,849.00

Total cost for the above project is $5,375,120.00.

*The reimbursable amount could increase to $3,223,064.00 if the City of Bowdon and Carroll County Water Authority were to apply for utility assistance for the relocation of their facilities.

If you have any questions, please contact Jennifer Deems at 678-721-5323.

KDB/jd

C: Mike Bolden, State Utilities Engineer;
File/Estimating Book

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTER-DEPARTMENT CORRESPONDENCE

DATE: April 30, 2014

FROM: Russell R. McMurry, P.E.

TO: Distribution

SUBJECT: Risk Based Cost Estimation

Accurate and dependable cost estimates are crucial to the development of fiscally balanced programs as well as communication to our internal and external stakeholders. Cost estimates are prepared minimally at the milestone points of Concept Report, PFPR and FFPR. At each of these milestones, the level of unknowns or risk to the project is reduced, resulting in a more assured cost estimate. In order to compensate for these varying levels of risk, the contingencies below will be added to the construction cost estimate of each project type listed at the identified milestones as well as the annual updates occurring between each milestone.

Contingencies have been identified by project type with the most complex or highest risk projects having the highest contingency and the least complex or lowest risk projects having the least contingency. The effectiveness of these contingencies will be monitored and reviewed at the completion of FY 2016 to identify where and if adjustments are needed.

This memo is effective June 1, 2014 and supersedes all other guidance as updates to policies 3A-9 are performed. Questions regarding this memo should be forwarded to myself or Andrew Heath.

Project Type	Risk	Contingency		
		Concept	PFPR	FFPR
Enhancement/Bicycle/Pedestrian Facility/Safety	Low	5% to 10%	0% to 5%	0% to 5%
Reconstruction/Rehabilitation No Added Capacity	Low	5% to 10%	0% to 5%	0% to 5%
Maintenance-Restoration and Rehabilitation	Medium	5% to 15%	0% to 7%	0% to 5%
Bridge New/Replacement	Medium/High	10% to 15%	0% to 7%	0% to 5%
New Construction	High	10% to 20%	5% to 10%	0% to 5%
Reconstruction/Rehabilitation Added Capacity	High	10% to 20%	5% to 10%	0% to 5%

RRM:ata

GEORGIA DEPARTMENT OF TRANSPORTATION
PRELIMINARY ROW COST ESTIMATE SUMMARY

Date: 10/28/2013 Project: STP-021-1(25)
Revised: County: Carroll
PI: 631310
Description: SR 166 from Farmers High Rd. to SR 166 By Pass
Project Termini: SR 166 from Farmers High Rd. to SR 166 By Pass
Existing ROW: Varies
Parcels: 114 Required ROW: Varies

Land and Improvements		$8,805,000.00
Proximity Damage	*$250,000.00*	
Consequential Damage	*$0.00*	
Cost to Cures	*$75,000.00*	
Trade Fixtures	*$50,000.00*	
Improvements	*$1,150,000.00*	
Valuation Services		$383,750.00
Legal Services		$751,950.00
Relocation		$813,000.00
Demolition		$353,000.00
Administrative		$1,005,500.00
TOTAL ESTIMATED COSTS		$12,112,200.00
TOTAL ESTIMATED COSTS (ROUNDED)		***$12,113,000.00***

Preparation Credits	Hours	Signature

Prepared By: Cheryl H Brewer CG#: 6418 (DATE) 10/28/13
Approved By: Dathrone Alexander CG#: 286999 11/01/2013

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

AECOM
1360 Peachtree Street NE,
One Midtown Plaza, Suite 500
Atlanta, GA 30309
www.aecom.com

404 965 9600 tel
404 965 9605 fax

Environmental Cost Estimate

8/12/2014

Project No. STP00-0021-01(025) - PI 631310
SR166 from East of Big Indian Creek on New Location to East of City Limits to CR828

Feature	Mitigation Credits (streams)	Mitigation Credits (wetlands)
WL 1		2.6244
PS 2	418.50	
PS 3	664.95	
PS 5	527.00	
IS 6	1100.00	
PS 13	823.05	
WL 14		0.8588
Total	3533.50	3.4832

PI 631310
Credit/Fee Conversion

	# credits	$ per credit	Total $:
stream credits	3,533.50	30	106,005
wetland credits	3.48	35000	121,912

GRAND TOTAL PI 631310 $: 227,917

Background Documentation for Mitigation Fees

8/12/2014

See below for Stream and Wetland Credit pricing. These are all within the Middle Chattahoochee-Lake Harding watershed since no banks had credits available in the Upper Tallapoosa watershed. Wetland credits were only available from Greg Smith. He was unsure at the time how many wetland credits he held but can get an accurate number when the purchase is imminent.

Mitigation Bank Pricing

Bank	Contact Information	Stream Credits ($/credit)	Available Stream Credits	Wetland Credits ($/credit)	Available Wetland Credits
Carollton Mills Mitigation Bank	Greg Smith 7706829731	32-40	29,075.92	30,000-40,000	He asked to call again upon purchase for a final number.
Hogansville Mitigation Bank	Matt Peevy 4043764698	25	48,918.07	None available at this time	None available at this time
Barnett Farms Mitigation Bank	Matt Peevy 4043764698	25	54,457.69	None available at this time	None available at this time

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

PROJECT CONCEPT REPORT

North Bowdon Bypass and SR 166 Widening and Reconstruction
Project Number: STP00-0021-01(025)

PI 631310

Carroll County

Attachment 4

Crash Summaries

COLLISION HISTORY

Corridor crash history analysis has been conducted for the most current three years of available data. Table 1 shows the historical number of reported crashes along SR 166 between Farmers High Road and the Alabama State Line. The functional classification of the SR 166 segment corridor in Carroll County is rural minor arterial.

Although the roadway classification for SR 166 is the same for both segments shown in Table 1, the segment east of SR 100 is more developed than the western segment, which may be evident in the increased number of crashes for the eastern segment.

Table 1
Historical Crash Data (Mile Log 0.00 to 8.53)

Segment	Number of Crashes		
	2006	2007	2008
SR 166 (Between Alabama State Line and SR 100)	30	21	33
SR 166 (Between SR 100 and Farmers High Road)	61	53	63

These crashes were used to calculate standard corridor crash rates per one hundred million vehicle-miles (100 MVM) traveled. The statewide average crash rates per 100 MVM for each classification of roadway are included in Table 2.

Table 2
Historical Crash Rates

Segment	Crashes per 100 MVM		
	2006	2007	2008
SR 166 (Between Alabama State Line and SR 100)	147	125	197
Statewide Average – Rural Minor Arterial	***197***	***194***	***186***
SR 166 (Between SR 100 and Farmers High Road)	456	373	443
Statewide Average – Rural Minor Arterial	***197***	***194***	***186***

Comparing the statewide average to the Carroll County rates shows that SR 166 had an below average crash rate for the corridor between the Alabama State Line and SR 100 with the exception of 2008. The SR 166 corridor between SR 100 and Farmers High Road had an above average crash rate during all three (2006, 2007, and 2008) study years.

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

PROJECT CONCEPT REPORT

North Bowdon Bypass and SR 166 Widening and Reconstruction
Project Number: STP00-0021-01(025)

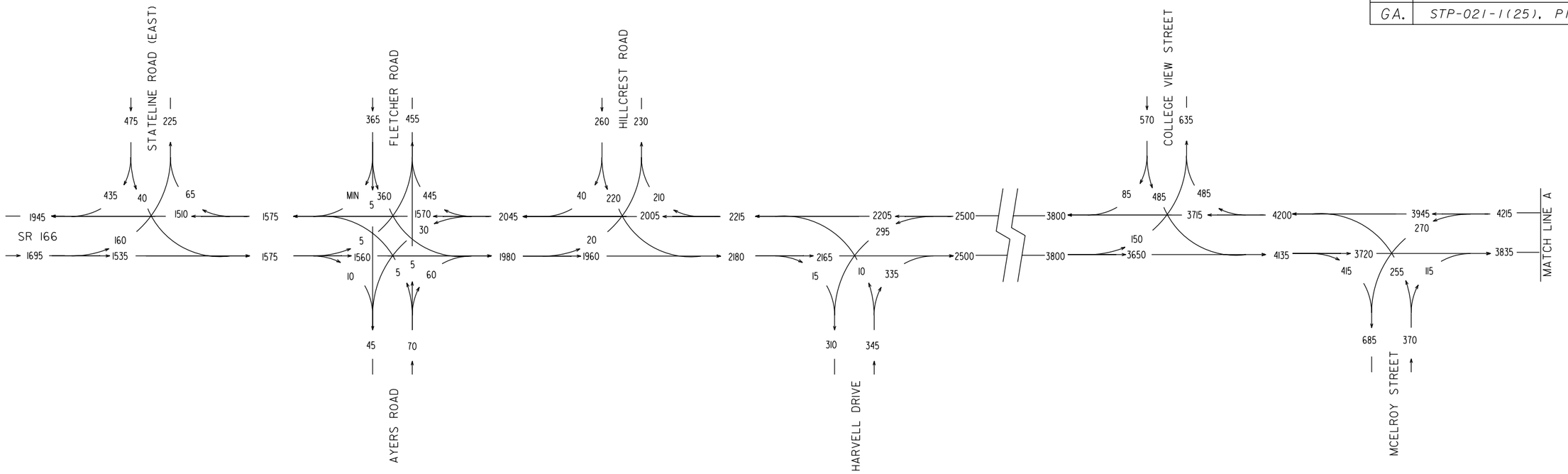
PI 631310

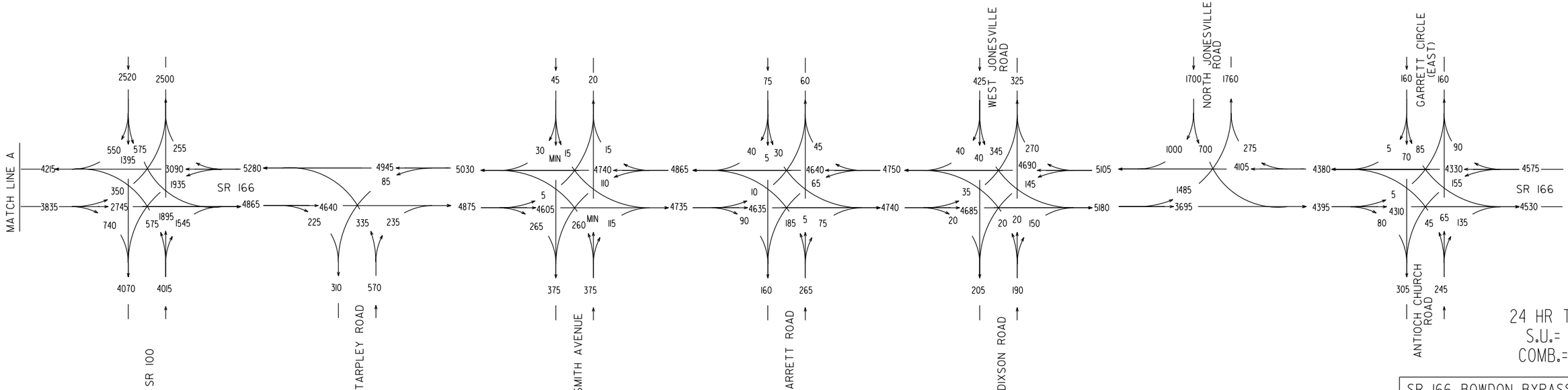
Carroll County

Attachment 5

Traffic Diagrams

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.	STP-021-1(25), PI No.: 631310	1	14





24 HR T= 11%
S.U.= 8%
COMB.= 3%

SR 166 BOWDON BYPASS TRAFFIC STUDY
ADT
CARROLL COUNTY

2011 EXISTING ADT = 000

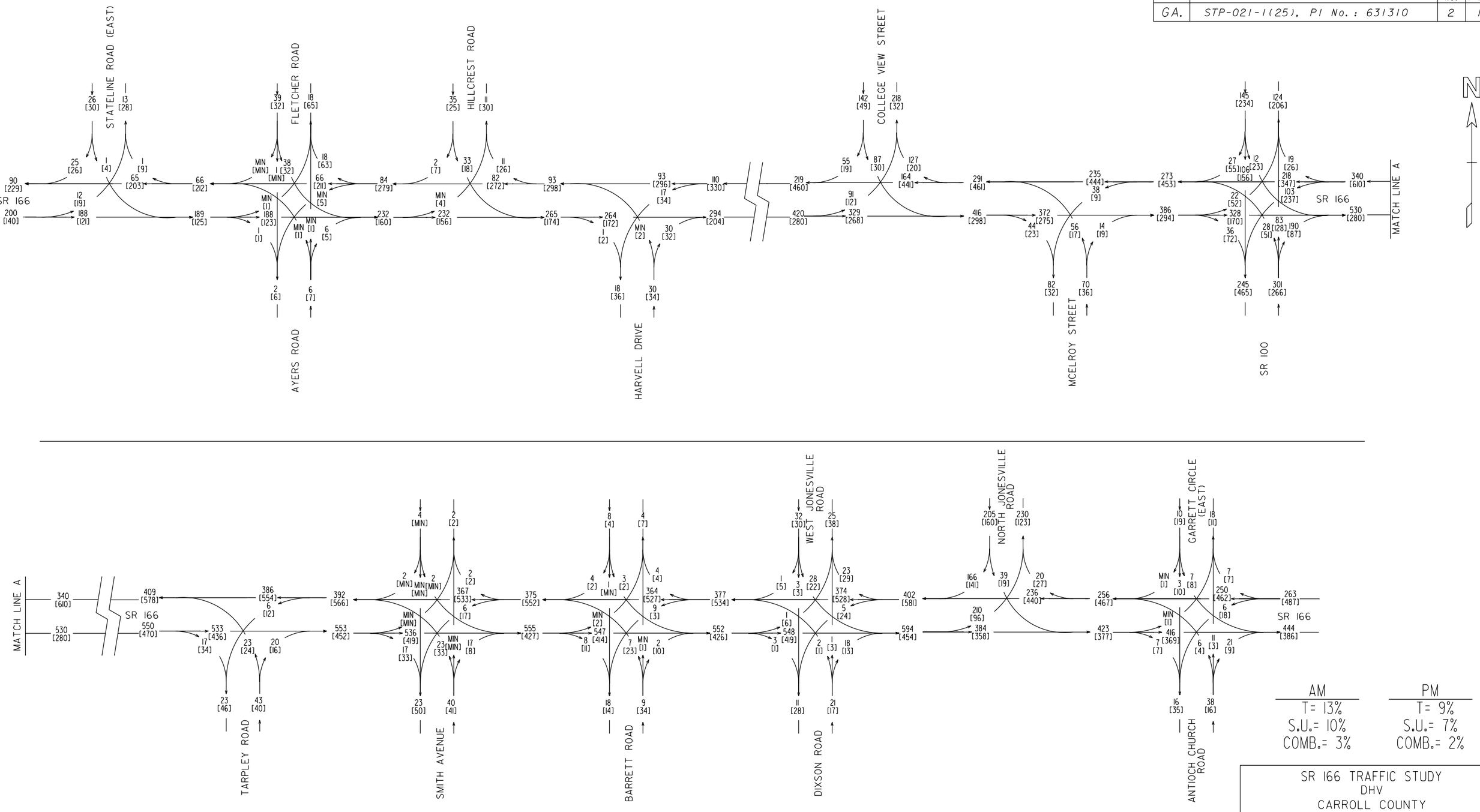
JACOBS

FIGURE 1

SCALE: N.T.S.

AUGUST 2011

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.	STP-021-1(25), PI No.: 631310	2	14



AM	PM
T= 13%	T= 9%
S.U.= 10%	S.U.= 7%
COMB.= 3%	COMB.= 2%

SR 166 TRAFFIC STUDY
DHV
CARROLL COUNTY

2011 EXISTING AM = 000
2011 EXISTING AM = [000]

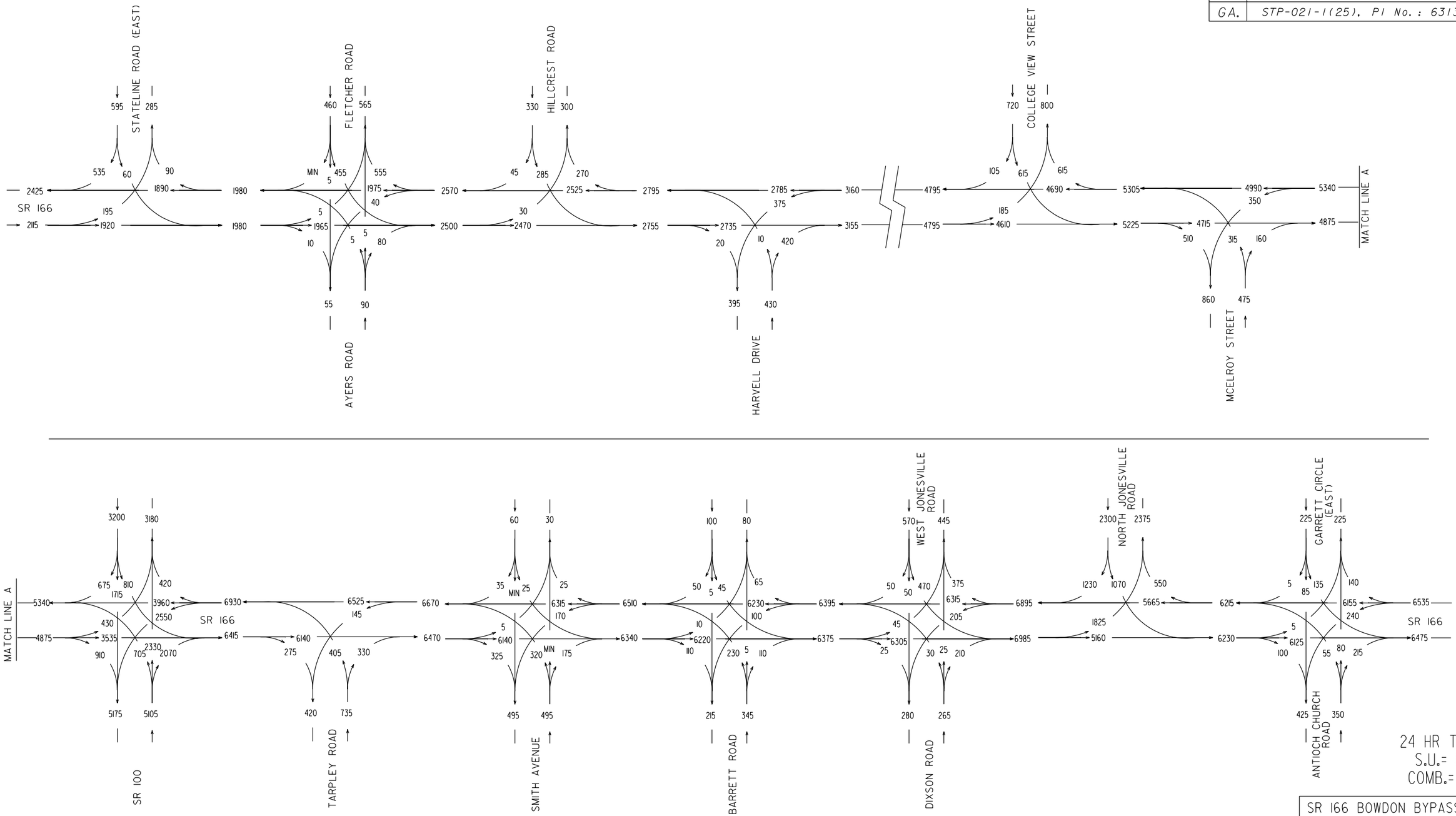
JACOBS

FIGURE 2

SCALE: N.T.S.

AUGUST 2011

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.	STP-021-1(25), PI No.: 631310	3	14



24 HR T= 11%
S.U.= 8%
COMB.= 3%

SR 166 BOWDON BYPASS TRAFFIC STUDY
ADT
CARROLL COUNTY

2023 ADT = 000
NO BUILD

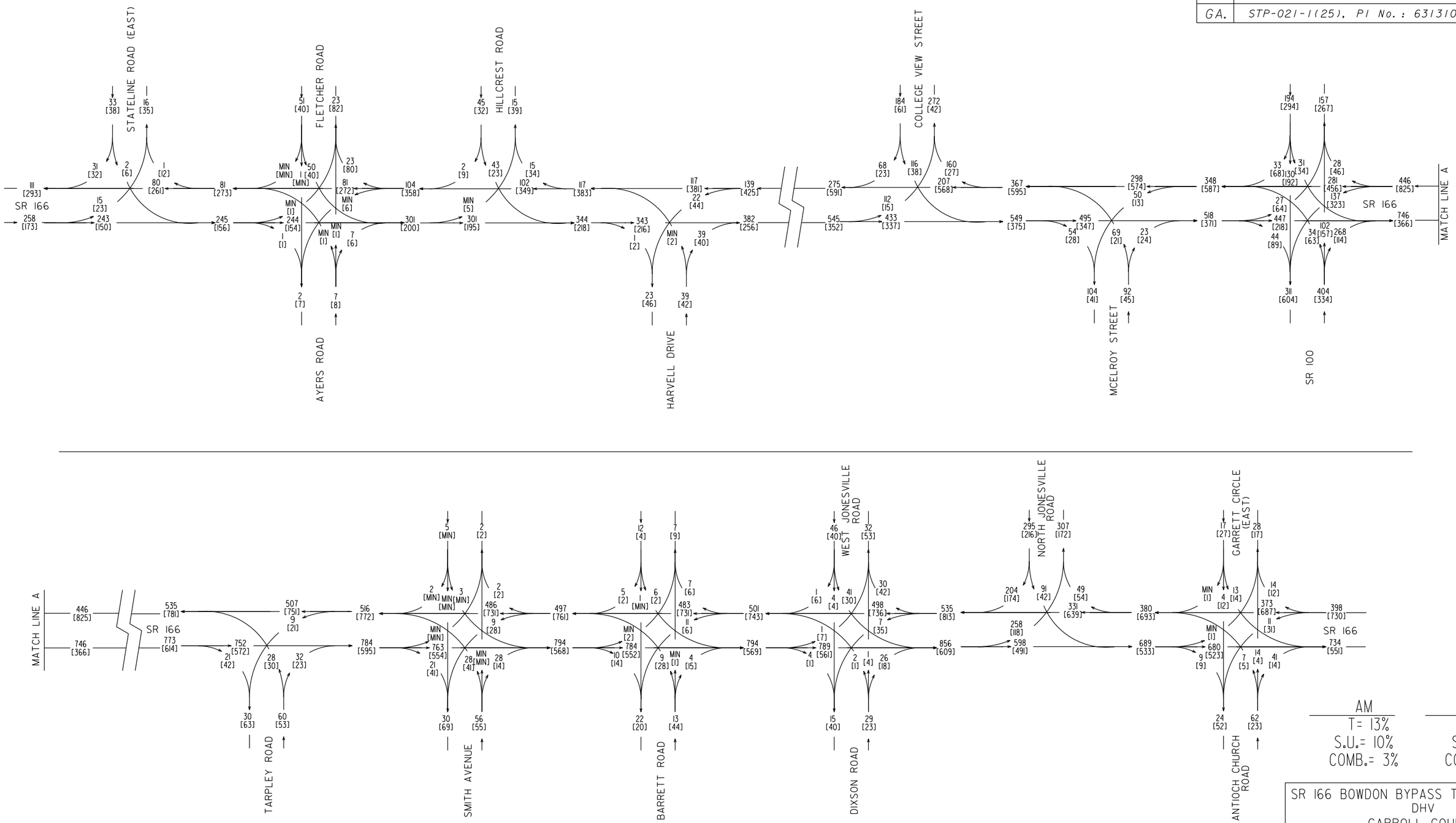
JACOBS

FIGURE 3

SCALE: N.T.S.

AUGUST 2011

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.	STP-021-1(25), PI No.: 631310	4	14



AM	PM
T= 13%	T= 9%
S.U.= 10%	S.U.= 7%
COMB.= 3%	COMB.= 2%

SR 166 BOWDON BYPASS TRAFFIC STUDY
DHV
CARROLL COUNTY
2023 AM = 000
2023 PM = [000]
NO BUILD

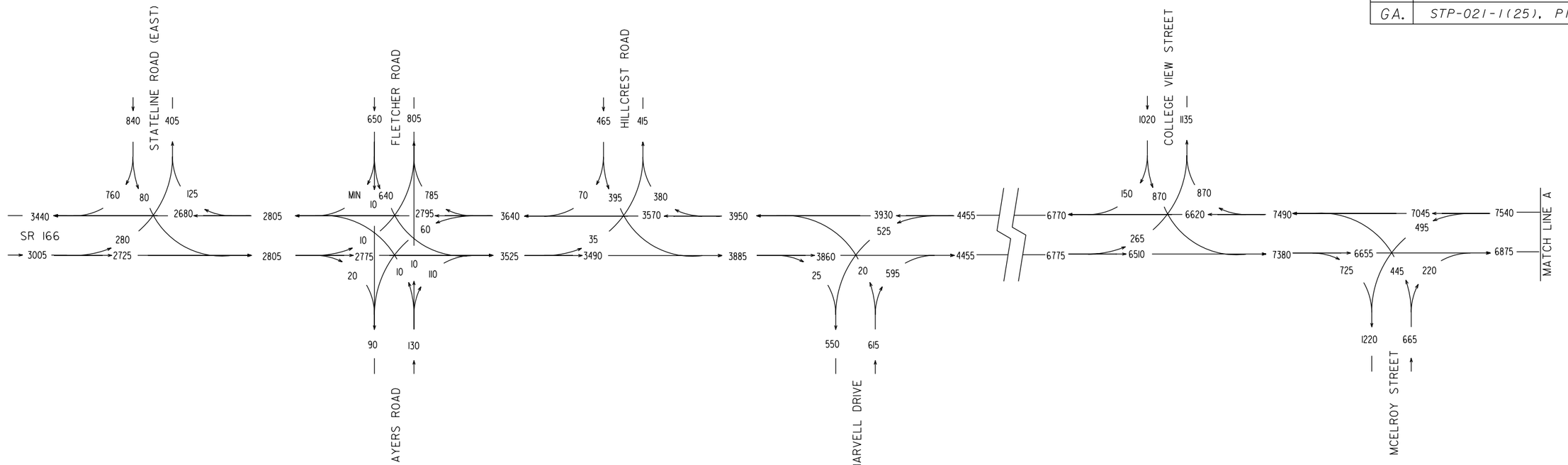
JACOBS

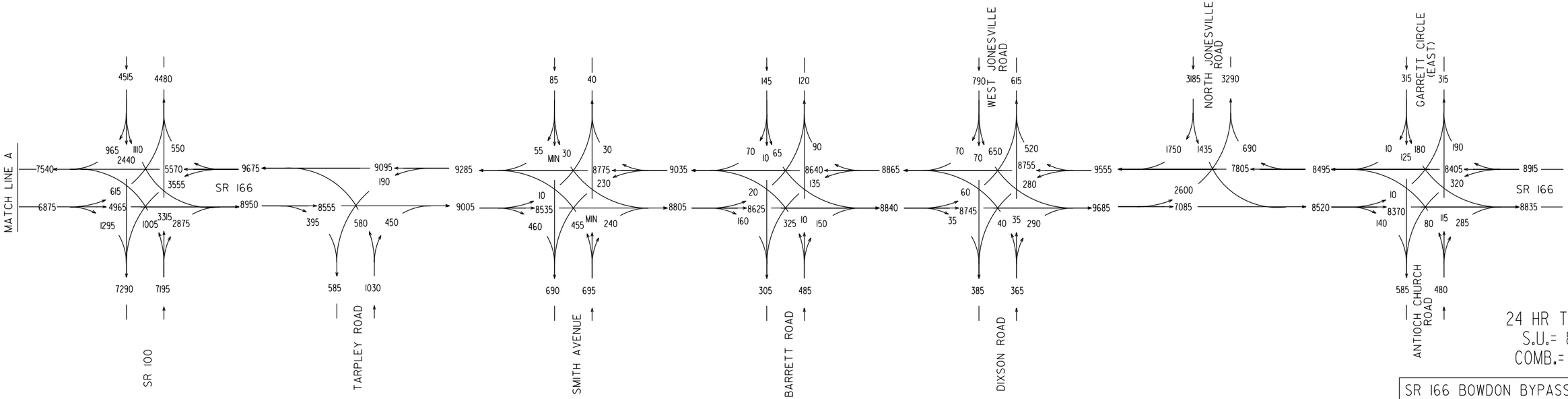
FIGURE 4

SCALE: N.T.S.

AUGUST 2011

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.	STP-021-1(25), PI No.: 631310	5	14





SR 166 BOWDON BYPASS TRAFFIC STUDY
ADT
CARROLL COUNTY

2043 ADT = 000
NO BUILD

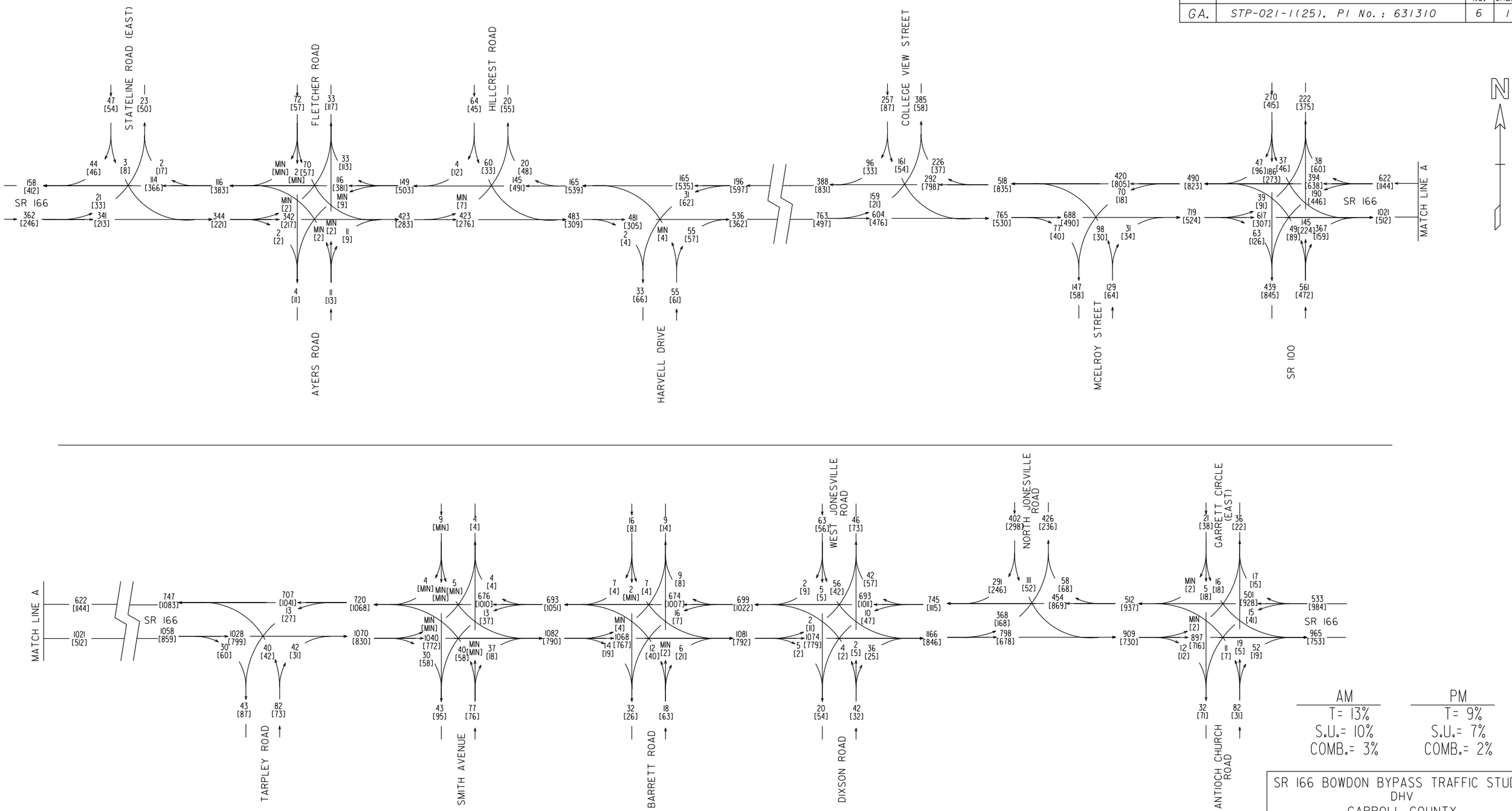
JACOBS

FIGURE 5

SCALE: N.T.S.

AUGUST 2011

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.	STP-021-1(25), PI No.: 631310	6	14



AM	PM
T= 13%	T= 9%
S.U.= 10%	S.U.= 7%
COMB.= 3%	COMB.= 2%

SR 166 BOWDON BYPASS TRAFFIC STUDY
DHV
CARROLL COUNTY
2043 AM = 000
2043 PM = [000]
NO BUILD

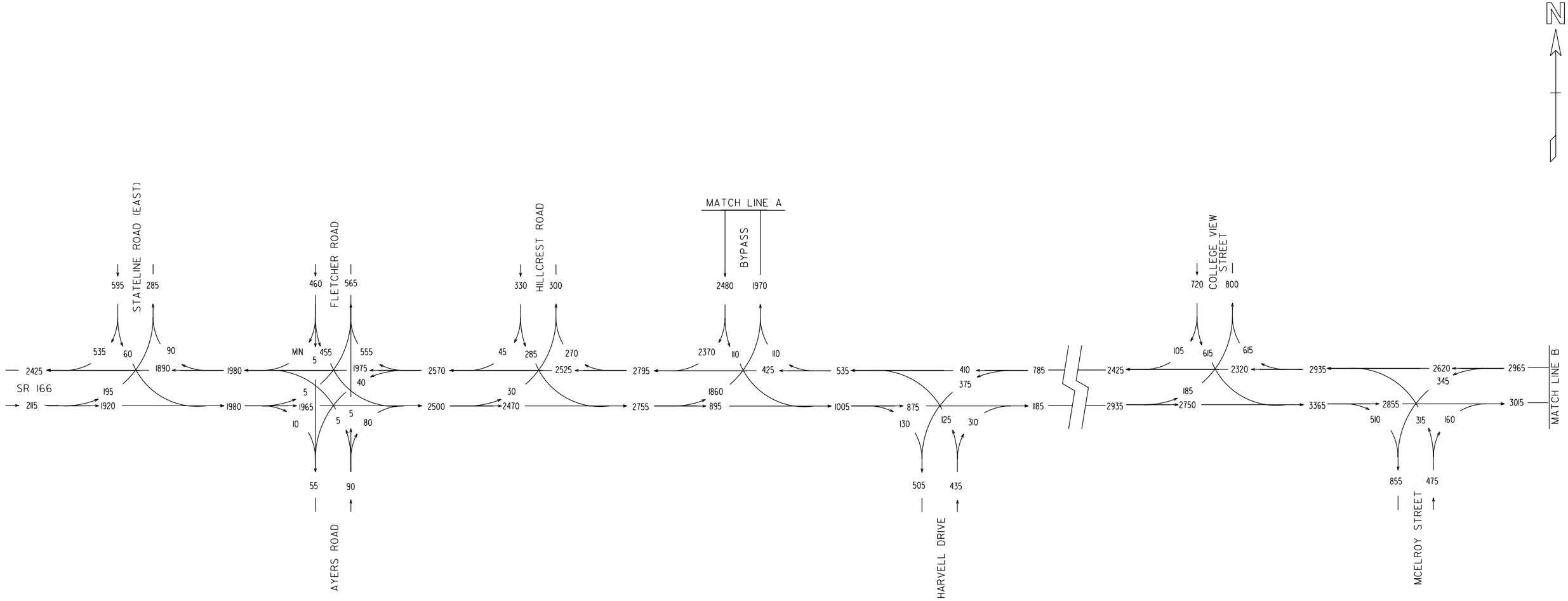
JACOBS

FIGURE 6

SCALE: N.T.S.

AUGUST 2011

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.	STP-021-1(25), PI No.: 631310	7	14



24 HR T= 11%
S.U.= 8%
COMB.= 3%

SR 166 BOWDON BYPASS TRAFFIC STUDY
ADT
CARROLL COUNTY

2023 ADT = 000
BUILD CONDITION

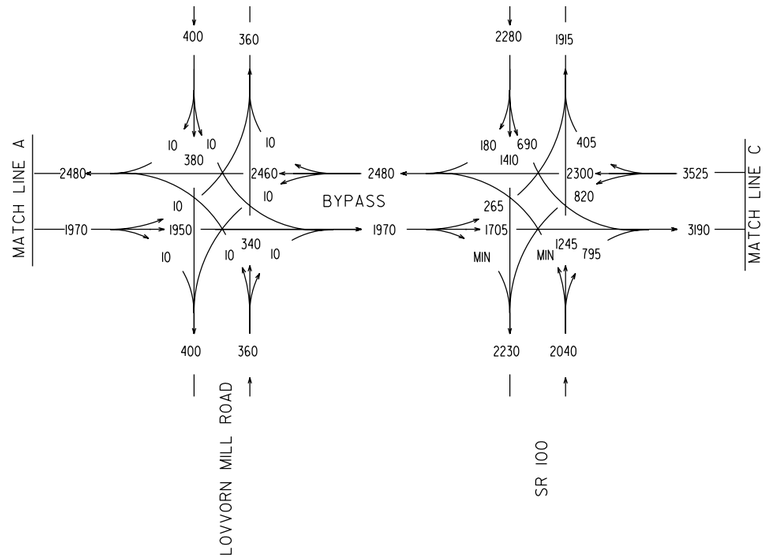
JACOBS

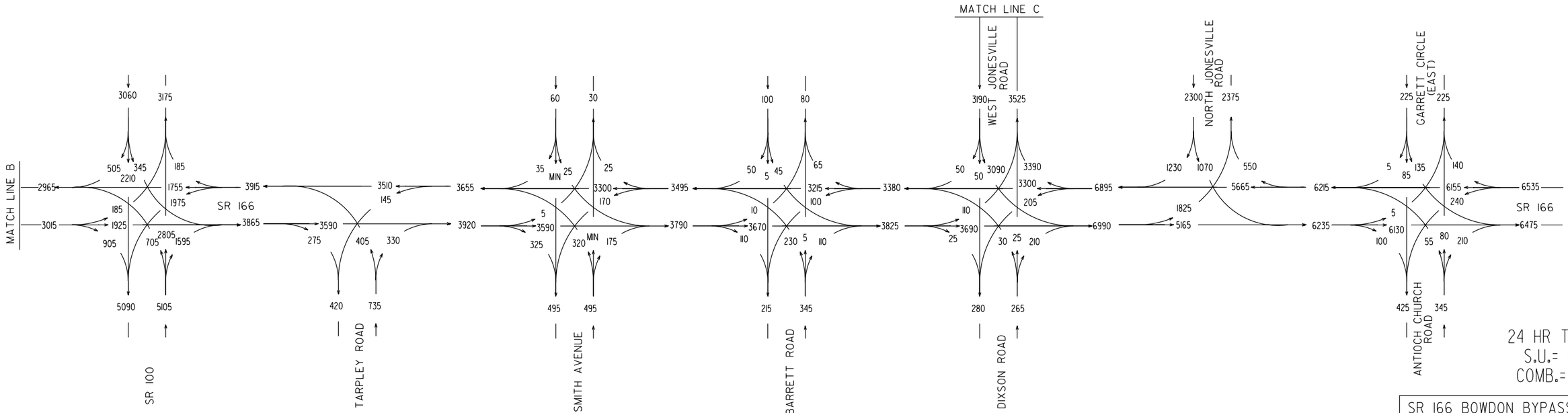
FIGURE 7

SCALE: N.T.S.

AUGUST 2011

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.	STP-021-1(25), PI No.: 631310	8	14





24 HR T= 11%
S.U.= 8%
COMB.= 3%

SR 166 BOWDON BYPASS TRAFFIC STUDY
ADT
CARROLL COUNTY

2023 ADT = 000
BUILD CONDITION

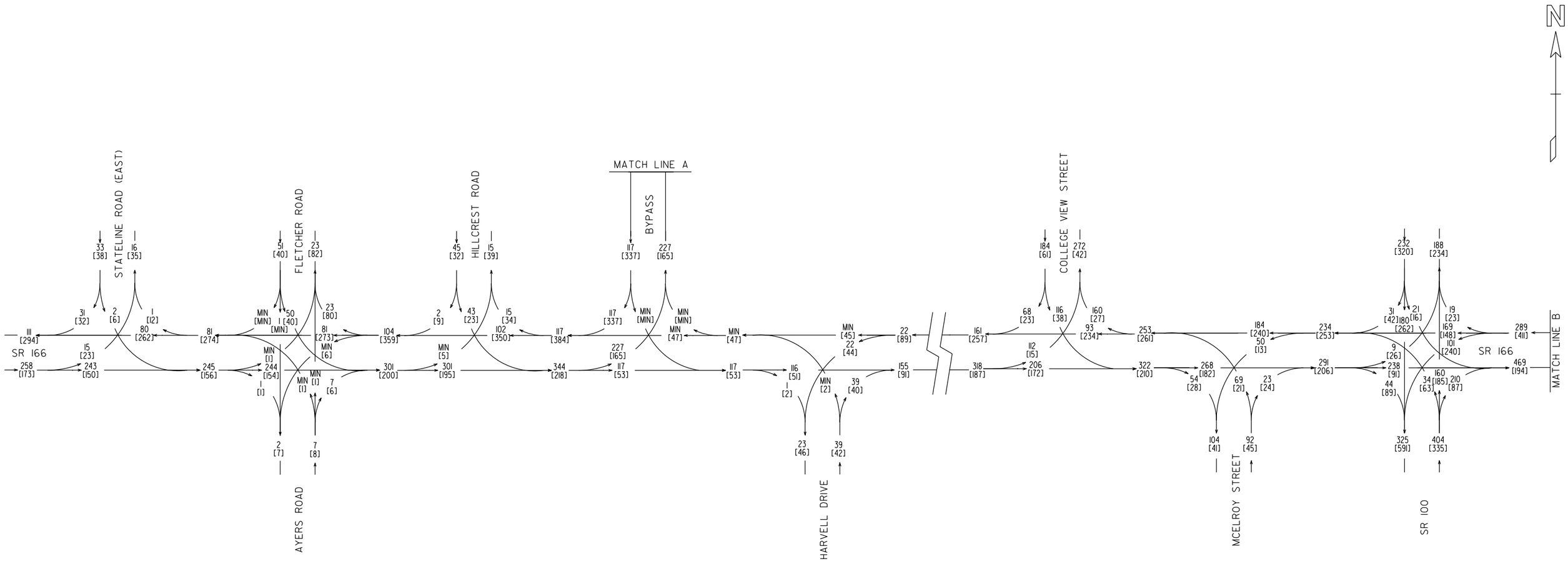
JACOBS

FIGURE 8

SCALE: N.T.S.

AUGUST 2011

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.	STP-021-1(25), PI No.: 631310	9	14



AM	PM
T= 13%	T= 9%
S.U.= 10%	S.U.= 7%
COMB.= 3%	COMB.= 2%

SR 166 BOWDON BYPASS TRAFFIC STUDY
DHV
CARROLL COUNTY
2023 AM = 000
2023 PM = [000]
BUILD

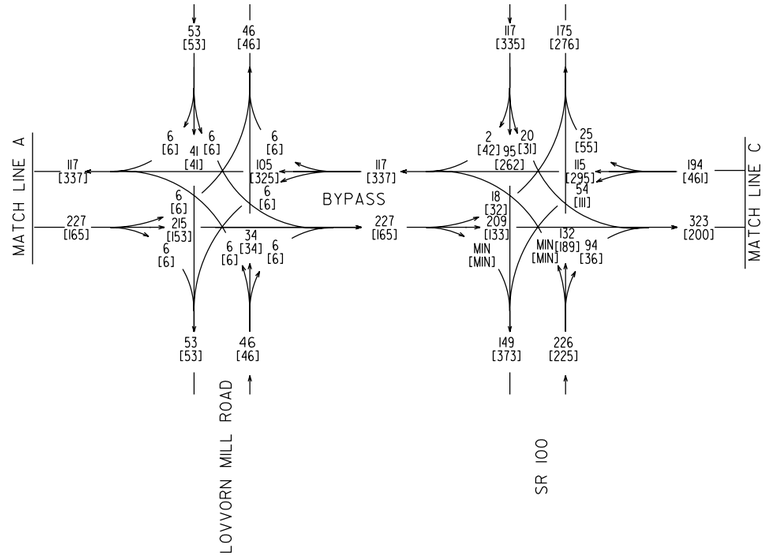
JACOBS

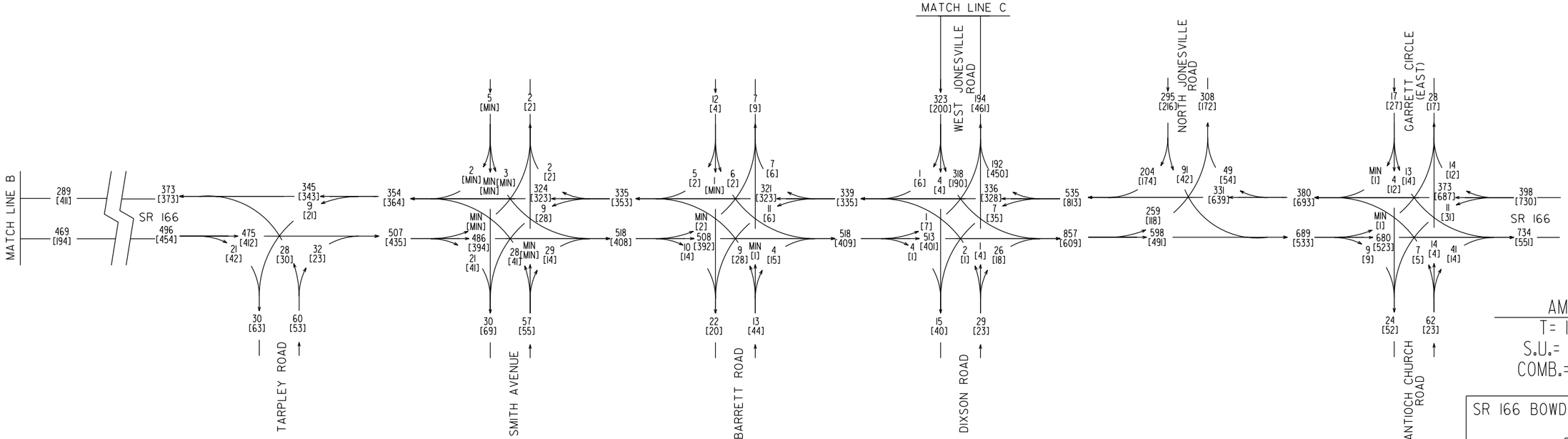
FIGURE 9

SCALE: N.T.S.

AUGUST 2011

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.	STP-021-1(25), PI No.: 631310	10	14





AM	PM
T= 13%	T= 9%
S.U.= 10%	S.U.= 7%
COMB.= 3%	COMB.= 2%

SR 166 BOWDON BYPASS TRAFFIC STUDY
DHV
CARROLL COUNTY
2023 AM = 000
2023 PM = [000]
BUILD

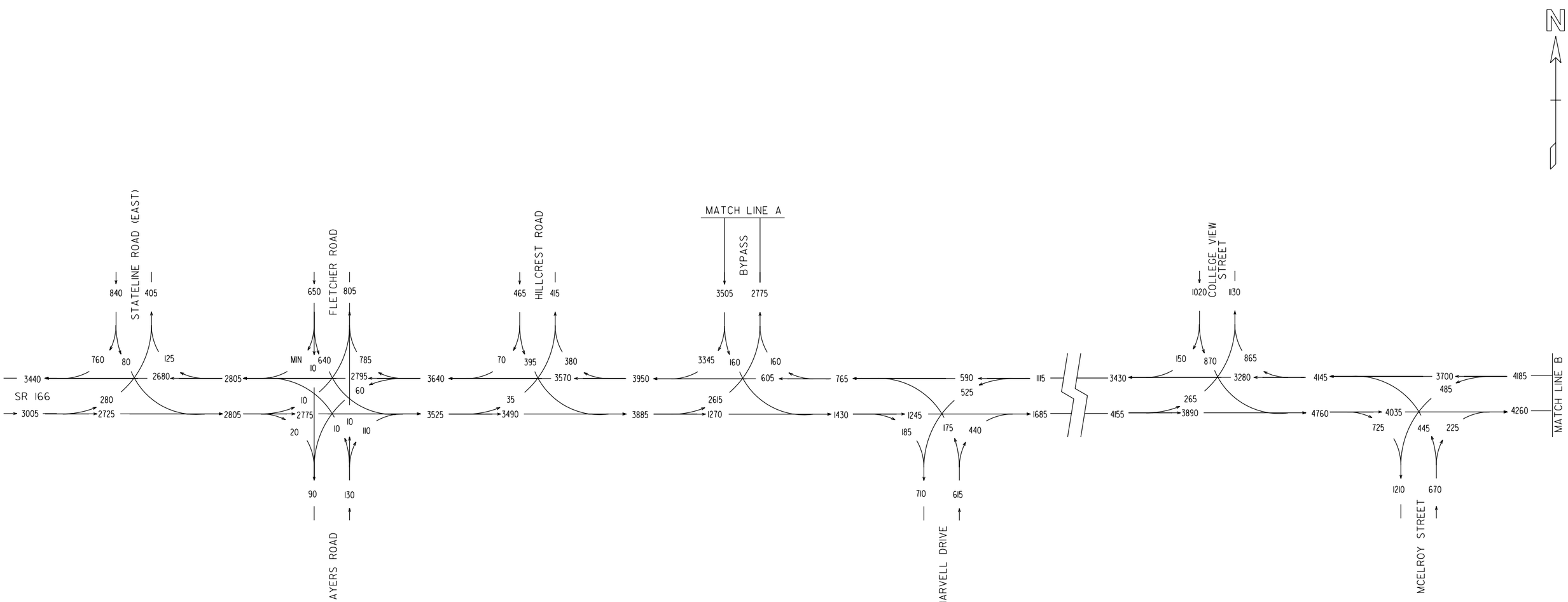
JACOBS

FIGURE 10

SCALE: N.T.S.

AUGUST 2011

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.	STP-021-1(25), PI No.: 631310	11	14



24 HR T= 11%
S.U.= 8%
COMB.= 3%

SR 166 BOWDON BYPASS TRAFFIC STUDY
ADT
CARROLL COUNTY

2043 ADT = 000
BUILD CONDITION

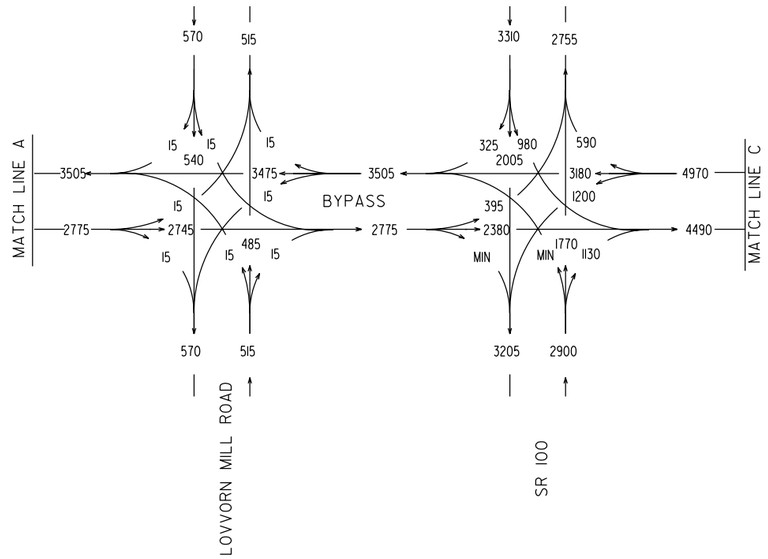
JACOBS

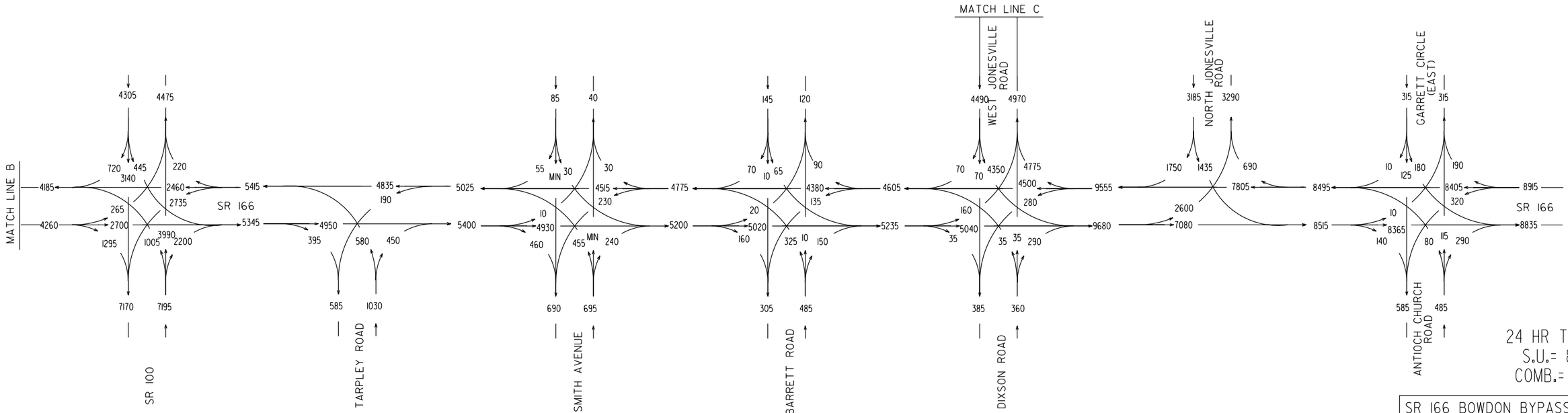
FIGURE 11

SCALE: N.T.S.

AUGUST 2011

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.	STP-021-1(25), PI No.: 631310	12	14





24 HR T= 11%
S.U.= 8%
COMB.= 3%

SR 166 BOWDON BYPASS TRAFFIC STUDY
ADT
CARROLL COUNTY

2043 ADT = 000
BUILD CONDITION

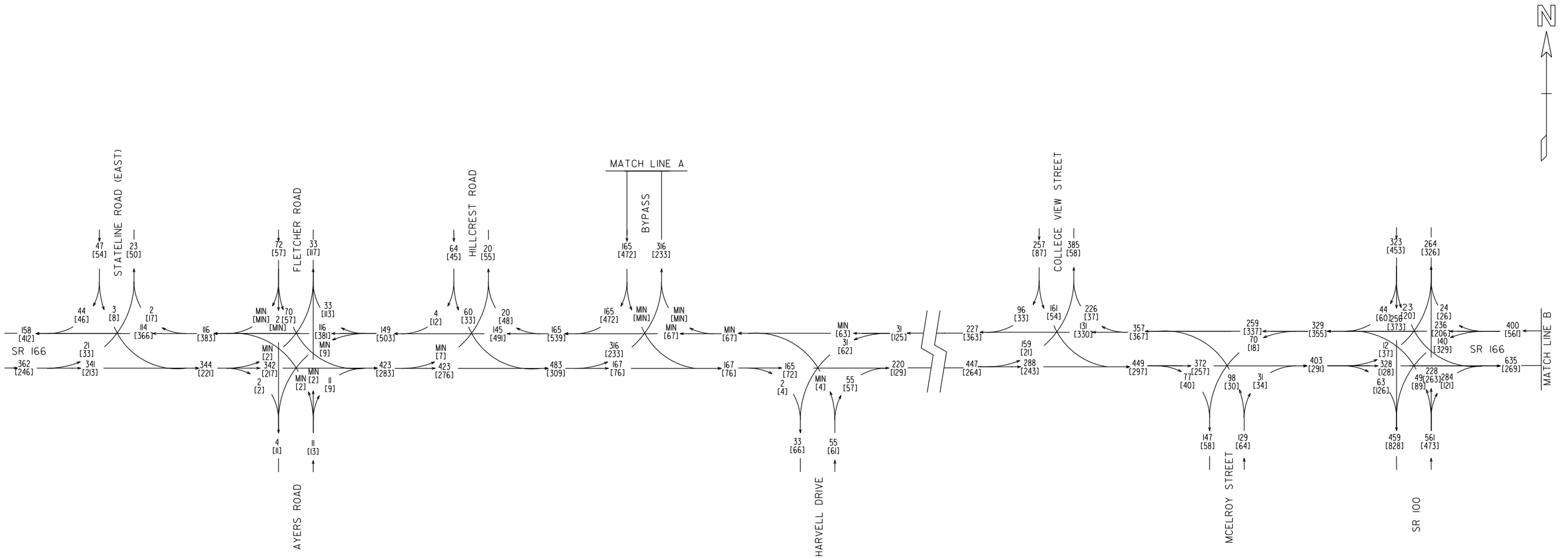
JACOBS

FIGURE 12

SCALE: N.T.S.

AUGUST 2011

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.	STP-021-1(25), PI No.: 631310	13	14



AM	PM
T= 13%	T= 9%
S.U.= 10%	S.U.= 7%
COMB.= 3%	COMB.= 2%

SR 166 BOWDON BYPASS TRAFFIC STUDY
DHV
CARROLL COUNTY
2043 AM = 000
2043 PM = [000]
BUILD

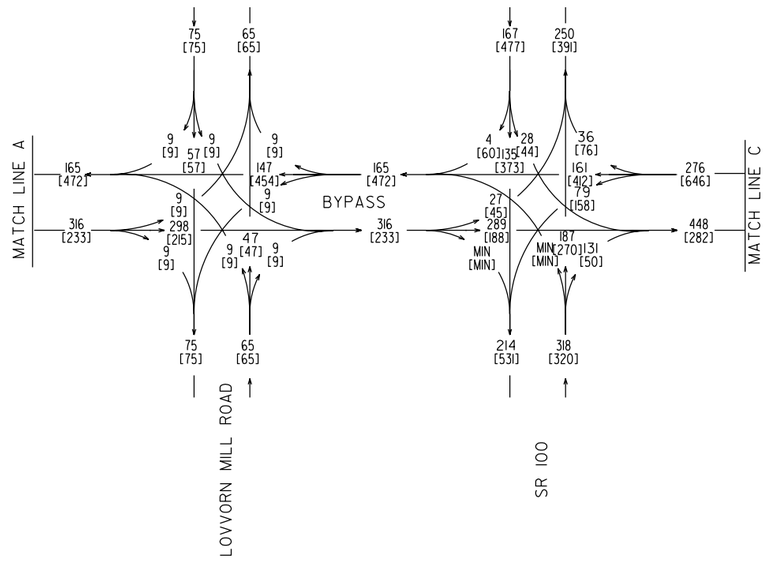
JACOBS

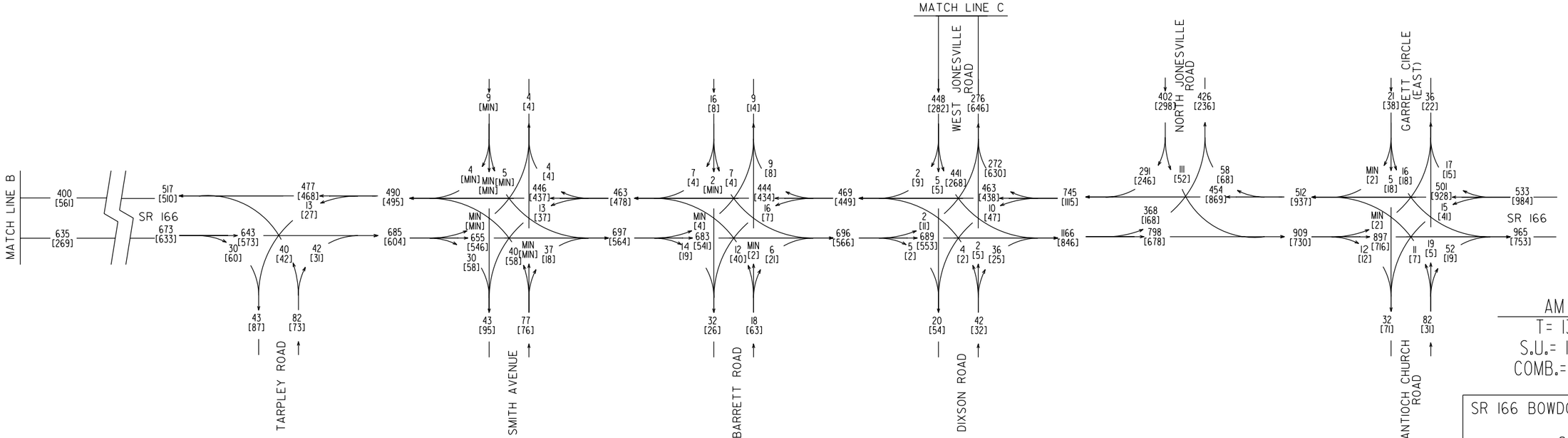
FIGURE 13

SCALE: N.T.S.

AUGUST 2011

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.	STP-021-1(25), PI No.: 631310	14	14





AM	PM
T= 13%	T= 9%
S.U.= 10%	S.U.= 7%
COMB.= 3%	COMB.= 2%

SR 166 BOWDON BYPASS TRAFFIC STUDY
DHV
CARROLL COUNTY
2043 AM = 000
2043 PM = [000]
BUILD

JACOBS

FIGURE 14

SCALE: N.T.S.

AUGUST 2011

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

PROJECT CONCEPT REPORT

North Bowdon Bypass and SR 166 Widening and Reconstruction
Project Number: STP00-0021-01(025)

PI 631310

Carroll County

Attachment 6

Capacity Analysis Summary

NO-BUILD CAPACITY ANALYSIS

Capacity analysis was performed along SR 166 for the no-build existing, 2023 opening year and 2043 design year traffic volumes. Future traffic volumes were projected to determine the impact future traffic demand would have along the SR 166 corridor. A growth factor of 1.21 was applied to existing 2011 traffic count data to reflect 2023 opening year conditions, and a growth factor of 1.37 was applied to 2023 opening year projected volumes to reflect 2043 design year conditions. No-build analysis results reflected existing and future traffic conditions with no improvements to the SR 166 corridor and intersections.

No-Build Arterial Capacity Analysis

Arterial analysis was performed for the SR 166 study corridor using the 2010 edition of the *Highway Capacity Manual* (HCM), by the Transportation Research Board (TRB). The analysis methodology uses roadway geometry, traffic volumes, and other variables to determine the Level of Service (LOS) for the roadway segment. The arterial analysis included HCM two-lane, multi-lane, and arterial segment analysis along the SR 166 corridor. The arterial capacity analysis results are summarized in Table 8. Refer to Appendix B for detailed capacity analysis results.

Table 8
SR 166 Bowdon Bypass
No-Build HCM Arterial Segment Analysis

No-Build Condition		2011 LOS		2023 LOS		2043 LOS	
Segment	**Direction**	**AM**	**PM**	**AM**	**PM**	**AM**	**PM**
Stateline Rd to Bypass	EB	B	B	C	B	C	C
Bypass to Stateline Rd	WB	A	B	B	B	B	B
Bypass to East of 1st St	EB	C	C	C	C	C	C
East of 1st St to Bypass	WB	B	C	C	C	C	D
East of 1st St to SR 100[1]	EB	D	-	D	-	F	-
Smith Ave to SR 100[1]	WB	-	D	-	D	-	F
Smith Ave to W Jonesville Rd/Bypass	EB	C	C	C	C	D	D
W Jonesville/Bypass to Smith Ave	WB	C	C	C	C	D	D
N Jonesville Rd to Farmers High Rd	EB	B	B	C	C	C	C
Farmers High Rd to N Jonesville Rd	WB	B	B	C	C	C	D
SR 100 North of SR 166	NB	B	C	B	C	C	C
SR 100 North of SR 166	SB	B	C	C	C	C	C

[1]ARTPLAN Two-Lane (TWLT Analysis)

It should be noted that the HCM does not currently have the capability to perform capacity analysis for a roadway section with a center two way left turn lane (CTWLT). Therefore, ARTPLAN was used to analyze the three-lane CTWLT segment. ARTPLAN is part of the HCS package and provides planning level arterial analysis LOS results based on HCM methodologies, which analyzes directional peak hour LOS.

As shown in Table 8, none of the arterial segments operates below LOS C with the exception of the SR 166 segments just to the east and west of SR 100, which operate at LOS D during the existing and 2023 scenarios. The 2043 capacity analysis indicates those segments will experience LOS F. Furthermore, several additional locations operate at LOS D during the 2043 listed below:

- Smith Avenue to West Jonesville Road during the AM and PM peak periods
- Westbound Farmers High Road to N. Jonesville Road during the PM peak period
- Westbound just east of 1st Street to the proposed Bowdon Bypass location during the PM peak period

No-Build Intersection Capacity Analysis

The AM and PM peak hour intersection traffic operations on SR 166 were analyzed for the existing, 2023 opening year, and 2043 design year no-build conditions. LOS analysis was based on the methodologies contained in the *Highway Capacity Manual*, Special Report 209, published by the Transportation Research Board, 2000. LOS, vehicle delay, and queuing along the corridor were analyzed using Synchro 7.0 traffic analysis software. Signal timings were optimized at signalized intersections to achieve the best level of service attainable. Balanced AM and PM peak hour traffic volumes and existing intersection lane configurations were used in the no-build analysis. The no-build analysis provides a baseline comparison of the intersection operations for the future build condition. Refer to Appendix B for capacity analysis results.

2011 Existing Year

The capacity analysis for the 2011 peak hours indicates that West Jonesville Road currently operates at LOS E during the AM peak hour and LOS F during the PM peak hour. Smith Avenue also operates at LOS D and E in the AM and PM peak hours, respectively. All other study intersections operate at LOS C or better. Figures 8 and 9 show the 2011 capacity analysis results for the AM and PM peak periods.

2023 Opening Year

The capacity analysis for the 2023 AM and PM peak hours indicates the signalized intersections operate at acceptable LOS (LOS C or above). During the AM and PM peak hours the vast majority of the stop controlled minor approaches to the SR 166 intersections at Antioch Church Road, West Jonesville Road, Barrett Road, and Smith Avenue operated at LOS D or below. Figures 10 and 11 illustrate the 2023 capacity analysis results for the AM and PM peak periods, respectively.

2043 Design Year

The capacity analysis for the 2043 AM and PM peak hours indicates the signalized intersection of SR 166 at SR 100 will operate at LOS F during the AM and PM peak hours. Five unsignalized intersections will experience minor approaches operating at LOS F during the AM and PM peak hours with several additional intersections at LOD D or below. Figures 12 and 13 illustrate the 2043 capacity analysis results for the AM and PM peak periods, respectively.

Build Arterial Capacity Analysis

Arterial analysis was performed for the SR 166 study corridor to evaluate the LOS of SR 166 with the construction of a new northern bypass and widening of SR 166 east of West Jonesville Road. The results of the capacity analysis indicate that all segments will operate with acceptable LOS through 2043 opening year. The results of the build arterial analysis are summarized in Table 9. Refer to Appendix B for detailed capacity analysis results.

Table 17
SR 166 Bowdon Bypass
Build HCM Arterial Segment Analysis

Build Condition (Bypass)		2023 LOS		2043 LOS	
Segment	**Direction**	**AM**	**PM**	**AM**	**PM**
Stateline Rd to Bypass	EB	C	B	C	C
Bypass to Stateline Rd	WB	B	B	B	B
Bypass to East of 1st St	EB	B	B	B	B
East of 1st St to Bypass	WB	B	B	B	B
East of 1st St to SR 100	EB	C	-	C	-
Smith Ave to SR 100	WB	-	C	-	C
Smith Ave to W Jonesville Rd/Bypass	EB	C	C	C	C
W Jonesville/Bypass to Smith Ave	WB	C	C	C	C
N Jonesville Rd to Farmers High Rd	EB	A	A	B	A
Farmers High Rd to N Jonesville Rd	WB	A	A	A	A
SR 100 North of SR 166	NB	C	C	C	C
SR 100 North of SR 166	SB	C	C	C	C
[Bypass] West of SR 100	EB	B	B	B	B
[Bypass] West of SR 100	WB	B	B	B	C
[Bypass] East of SR 100	EB	B	B	C	C
[Bypass] East of SR 100	WB	B	C	B	C

Build Intersection Capacity Analysis

Intersection capacity analysis was performed for the SR 166 study corridor to evaluate the LOS of SR 166 with the construction of a new northern bypass and widening of SR 166 east of West Jonesville Road. The AM and PM peak hour intersection traffic operations on SR 166 were analyzed for the 2023 opening year and 2043 design year build Bowdon Bypass build scenarios. The following is a discussion of the results of the analysis.

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

PROJECT CONCEPT REPORT

North Bowdon Bypass and SR 166 Widening and Reconstruction
Project Number: STP00-0021-01(025)

PI 631310

Carroll County

Attachment 7

Signal Warrant Analysis

RECOMMENDED IMPROVEMENTS

The build condition examines the future traffic operations with the construction of the northern SR 166 Bowdon Bypass circumventing downtown Bowdon. Additionally, widening of SR 166 to four-lanes from Farmers High Road to West Jonesville Road (proposed eastern Bowdon Bypass terminus), where one eastbound lane would be dropped and one westbound lane would be added to SR 166, is recommended to provide LOS C or better along SR 166 during the future peak hour operations. The SR 166 widening would tie into the proposed four-lane section being recommended from Farmers High Road east to the SR 166 Carrollton Bypass as part of the adjacent GDOT Project #: STP-021-1(24), P.I. No. 631300 traffic study. The proposed SR 166 Bowdon Bypass would be a two-lane urban roadway extending from West Jonesville Road tying back into SR 166 just east of Big Indian Creek. Signalized traffic control would be provided at the intersections of SR 166 and West Jonesville Road (SR 166 Bowdon Bypass) and SR 100 at SR 166 Bowdon Bypass. Signalized intersection improvements were provided which resulted in LOS C or better for the overall intersection and minor approaches. A complete list of recommended roadway improvements is listed below:

- Widen SR 166 between Farmers High Road and West Jonesville Road to a four lanes divided roadway with left-turn lanes at the median openings
- Construct a two-lane urban SR 166 Bowdon Bypass north of downtown Bowdon
- Install traffic signals along SR 166 Bowdon Bypass at SR 166 (eastern terminus) and SR 100
- Install dual eastbound SR 166 Bowdon Bypass left-turn lanes at SR 166
- Install northbound SR 100 right-turn lane at the intersection of SR 100 at SR 166
- Install eastbound and westbound SR 166 Bypass left-turn lanes at the intersection of SR 100

Signal warrant analysis at intersections with SR 166 (Antioch Church Road, SR 166 Bowdon Bypass/West Jonesville Road and Smith Avenue), and the intersection of SR 166 Bypass and SR 100 where the capacity analysis indicated higher delay was performed for the build condition. The SR 166 Bowdon Bypass at SR 166 and SR 100 both met the MUTCD signal warrant volume criteria needed for signalization under build conditions. The results of the SR 166 Bowdon Bypass signal warrant analyses are presented in the following section of this report.

Signal Warrant Analysis

The SR 166 and SR 100 intersections with SR 166 Bowdon Bypass/West Jonesville Road's traffic volumes were compared to signal warrant criteria to determine if the intersections were candidates for future signalization. Projected 2023 opening year traffic volumes did meet signal warrant criteria based on criteria provided in the Manual on Uniform Traffic Control Devices (MUTCD) published by the Federal Highway Administration (FHWA), 2009.

According to the MUTCD, the investigation of the need for traffic signal control shall include an analysis of the applicable factors contained in the following traffic signal warrants and other factors related to existing operation and safety at the study location:

- Warrant 1 – Eight-Hour Peak Volume
- Warrant 2 – Four-Hour Vehicular Volume
- Warrant 3 – Peak Hour
- Warrant 4 – Pedestrian Volume
- Warrant 5 – School Crossing
- Warrant 6 – Coordinated Signal System
- Warrant 7 – Crash Experience
- Warrant 8 – Roadway Network

Projected 2023 opening year traffic volumes met signal warrant criteria. The results of the MUTCD signal warrant analysis are summarized in Tables 9 and 10. As Tables 9 and 10 shows, three and four of the MUTCD signal warrants were satisfied, respectively. The 70 % volume factor was used as a result of the major-street speed exceeding 40 mph or location in an isolated community with a population of less than 10,000. The results are further summarized in Appendix C.

Table 9
2023 Signal Warrant Analysis Results
70% Column
(SR 166 and SR 166 Bowdon Bypass)

Warrant	Criteria Met	Hrs. Met / Required
1A	**Met**	**15/8**
1B	Not Met	6/8
1C	Not Met	N/A
2	**Met**	**11/4**
3A	Not Met	N/A
3B	**Met**	**1/1**
4	N/A	N/A
5	N/A	N/A
6	N/A	N/A
7	Not Met	N/A

Table 10
2023 Signal Warrant Analysis Results
70% Column
(SR 100 and SR 166 Bowdon Bypass)

Warrant	Criteria Met	Hrs. Met / Required
1A	**Met**	**16/8**
1B	**Met**	8/8
1C	Not Met	N/A
2	**Met**	**14/4**
3A	Not Met	N/A
3B	**Met**	**9/1**
4	N/A	N/A
5	N/A	N/A
6	N/A	N/A
7	Not Met	N/A

Projected 2028 and 2023 year traffic volumes also met three signal warrant criteria based on the 100% column of the traffic volume criteria, generally used by GDOT District 6. This negates the 70% adjustment for high speed and high population density. The results of the MUTCD signal warrant analysis are summarized in Tables 11 and 12. The results are further summarized in Appendix C.

Table 11
2028 Signal Warrant Analysis Results
100% Column
(SR 166 and SR 166 Bowdon Bypass)

Warrant	Criteria Met	Hrs. Met / Required
1A	**Met**	**9/8**
1B	Not Met	1/8
1C	Not Met	N/A
2	**Met**	**4/4**
3A	Not Met	N/A
3B	**Met**	**1/1**
4	N/A	N/A
5	N/A	N/A
6	N/A	N/A
7	Not Met	N/A

Table 12
2023 Signal Warrant Analysis Results
100% Column
(SR 100 and SR 166 Bowdon Bypass)

Warrant	Criteria Met	Hrs. Met / Required
1A	**Met**	**9/8**
1B	Not Met	2/8
1C	Not Met	N/A
2	**Met**	**6/4**
3A	Not Met	N/A
3B	**Met**	**2/1**
4	N/A	N/A
5	N/A	N/A
6	N/A	N/A
7	Not Met	N/A

Additionally, signal warrant analysis was performed for several other intersections with high minor approach delay and volume to determine if any other intersections may warrant signalization. Those locations were along SR 166 at Antioch Church Road, SR 166 Bowdon Bypass/West Jonesville Road and Smith Avenue. None of the additional intersection locations met the criteria for design year 2043 traffic volumes.

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

PROJECT CONCEPT REPORT

North Bowdon Bypass and SR 166 Widening and Reconstruction
Project Number: STP00-0021-01(025)

PI 631310

Carroll County

Attachment 8

Roundabout Data

ROUNDABOUT FEASIBILITY REPORT

SR166 Bypass at West Jonesville Road
&
SR166 Bypass at North Jonesville Road

Project No. STP00-0021-01(025)

P.I. No. 631310

Carroll County

Prepared For

Georgia Department of Transportation

Prepared By

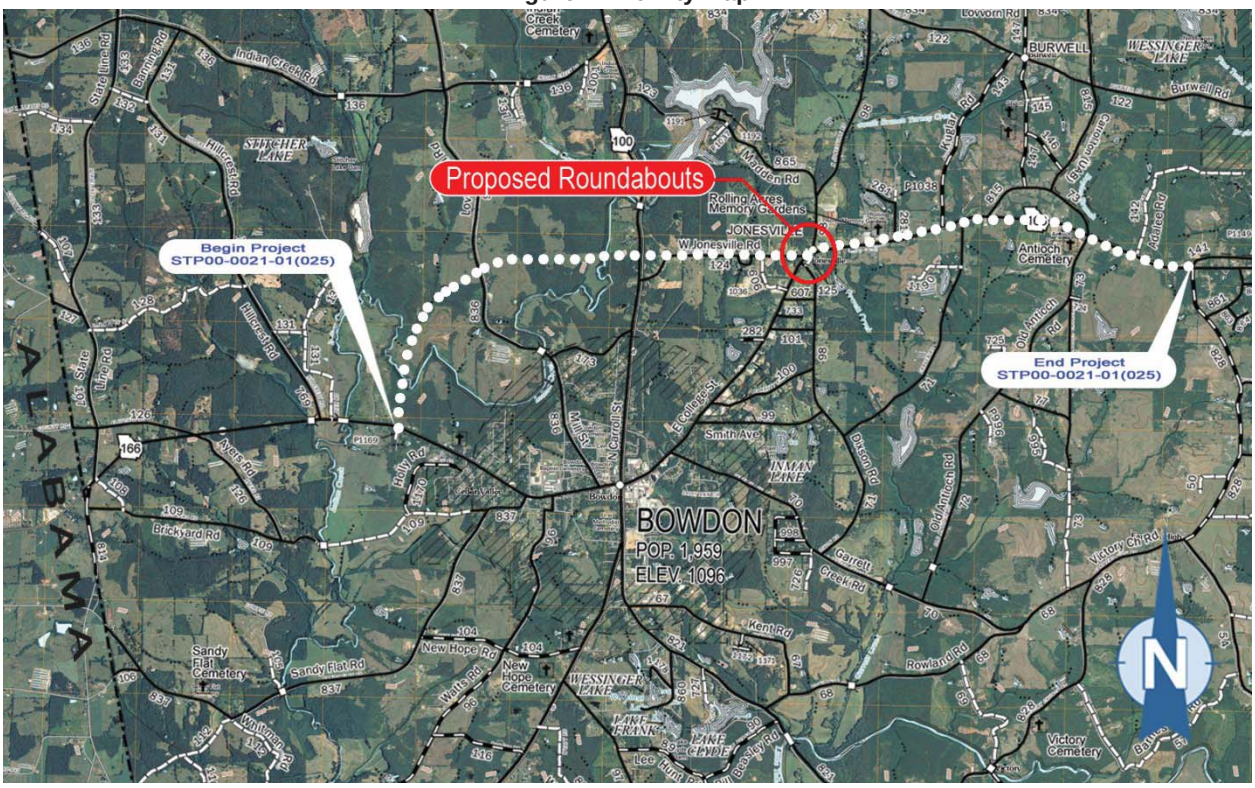
AECOM

Submitted: August 2013

SECTION 1
Project Background & Site Conditions

Project STP00-0021-01(025) in Carroll County consists of a two lane roadway on new location starting west of the City of Bowdon, heading north and then east towards existing West Jonesville Road for a distance of approximately 2.4 miles. The project continues along West Jonesville Road for approximately 0.8 miles. Starting at the intersection of West Jonesville Road, existing SR166 will be widened to a five lane roadway section for approximately 0.9 miles. From this point, just west of Kuglar Road, SR166 will be widened to a four lane divided roadway section until the project termini at Farmers High Road, for a distance of 1.9 miles. The total project length is 6.0 miles.

Figure 1: Vicinity Map



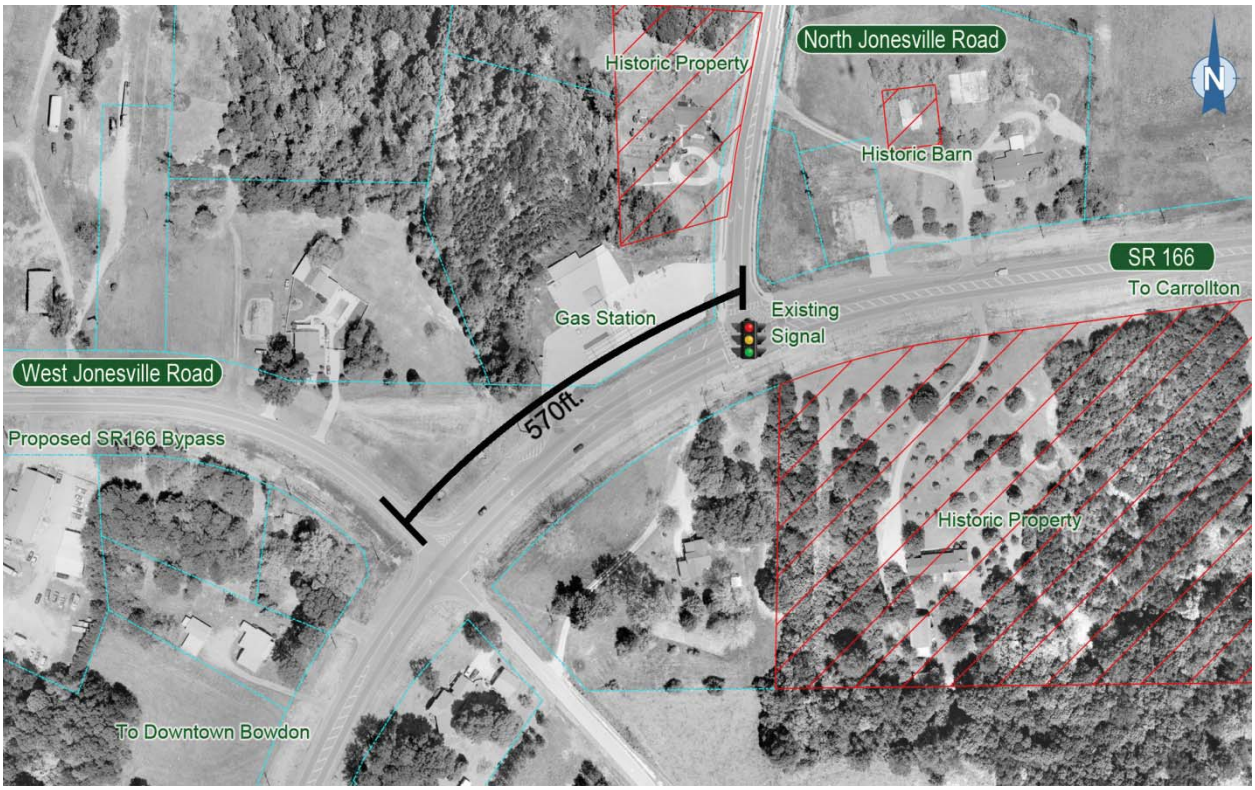
This Roundabout Feasibility Report examines the potential for roundabouts at the intersections of West Jonesville Road and SR166 and at North Jonesville Road and SR166. As can be seen in Figure 2, the existing spacing between these two side roads is 570 feet. North Jonesville is currently signalized and is bounded by historic properties on the west, east, and south.

West Jonesville Road is the proposed location of the SR166 Bypass around the city of Bowdon. After meeting with the local officials and after holding two Open House meetings, it has been determined that the preference of the community is to keep mainline SR166 heading into downtown Bowdon from Carrollton.

After a review of the traffic volumes it was determined that the West Jonesville Road intersection would require a signal. This intersection meets traffic signal warrants 1A, 2, and 3B for the opening year (2023). Based upon the traffic study, dual left turn lanes are required for the eastbound movement onto SR166. This led to the development of Alternative 1 which would install a traffic signal at the intersection of West Jonesville Road and SR166.

GDOT has adopted 1,000-ft. as the preferred minimum spacing between signals in urban areas. The proposed SR166 mainline typical section through this section is a five lane roadway. Since the spacing between these intersections is only 570 feet, two additional roundabout alternatives have been analyzed to eliminate the need for one or both signals.

Figure 2: Aerial photo of existing intersection



SECTION 2
Safety Assessment

Historical crash data was obtained from Georgia Department of Transportation, Office of Traffic Safety and Design for the available most recent five years (2005-2009) for the intersections of SR 166 at West Jonesville Road and North Jonesville Road, located at milepost 5.86 and 5.91 along SR 166, respectively. Crash data was collected just north and south of the intersections to include crashes that may have occurred approaching the intersections.

Tables 1 and 2 provide the crash data summary for the SR 166 intersections at West Jonesville Road and North Jonesville Road. Thirteen collisions occurred between 2005 and 2009 at the intersection of SR 166 at West Jonesville Road. Two were angled collisions considered correctable by signalization or roundabout. Three crashes were collisions that did not involve another motor vehicle. The other eight sideswipe and rear-end collisions at the intersection are not the type typically considered correctable by the installation of a traffic signal or roundabout. Twenty-two collisions occurred between 2005 and 2009 at the intersection of SR 166 at North Jonesville Road. Six were angled and head-on collisions considered correctable by signalization or roundabout. The other sixteen sideswipe and rear-end collisions at the intersection are not the type typically considered correctable by the installation of a traffic signal or roundabout. Because of the geometry of the roundabout, head-on and angle intersecting crashes are the types of collisions that are particularly impacted as a result of the reduced number of conflict points.

Table 1
Crash History - SR 166

SR 166 Carroll County Milelogs 5.86-5.91						
Year	W. Jonesville Road (Milelog 5.86)			N. Jonesville Road (Milelog 5.91)		
	Crashes	Injuries	Fatalities	Crashes	Injuries	Fatalities
2005	4	5	0	3	0	0
2006	2	1	0	6	1	0
2007	3	0	0	4	3	0
2008	4	1	0	7	4	0
2009	0	0	0	2	0	0

Table 2
Crash Type History - SR 166

Crash Type	SR 166 Carroll County Milelogs 5.86-5.91			
	W. Jonesville Road (Milelog 5.86)		N. Jonesville Road (Milelog 5.91)	
	Count	Percent	Count	Percent
Not A Collision With A Motor Vehicle	4	29%	0	0%
Angle	2	14%	5	23%
Head On	0	0%	1	5%
Rear End	6	43%	14	64%
Sideswipe – Same Direction	0	0%	1	5%
Sideswipe – Opposite Direction	2	14%	1	5%

Crash rates were calculated for the two study intersections along SR 166 using the following equation.

$$R=\frac{1{,}000{,}000 \times C}{365 \times N \times V}$$

R=Crash Rate - million entering vehicles (MEV)

C=Total number of intersection related crashes in the study period (5yrs)

N=Number of years of data

V=Daily entering traffic volumes

The crash rate calculations resulted in a rate of 0.68 MEV and 1.07 MEV at SR 166 and West Jonesville Road and North Jonesville Road, respectively. In late 2009 an intersection improvement project was constructed at these two intersections. West Jonesville Road was realigned (currently depicted location) to the west. A signal and turn lanes was added at the intersection of North Jonesville Road. Since this improvement occurred at the end of the available crash data, it should be noted that geometric factors that may have contributed to crashes at the intersection may have already been mitigated.

SECTION 3
Alternative Sketches

Figure 3: Alternate 1 – Closely spaced signalized intersections

Figure 4: Alternate 2 – Single roundabout at W. Jonesville and existing signal at N. Jonesville

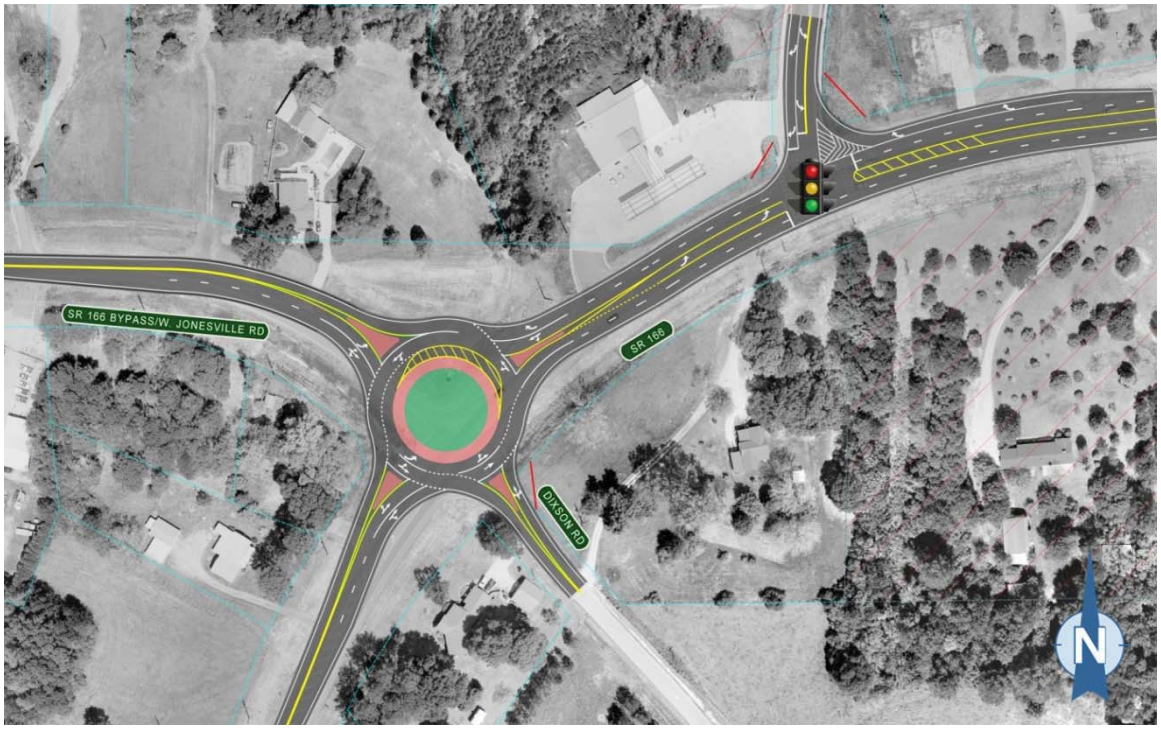
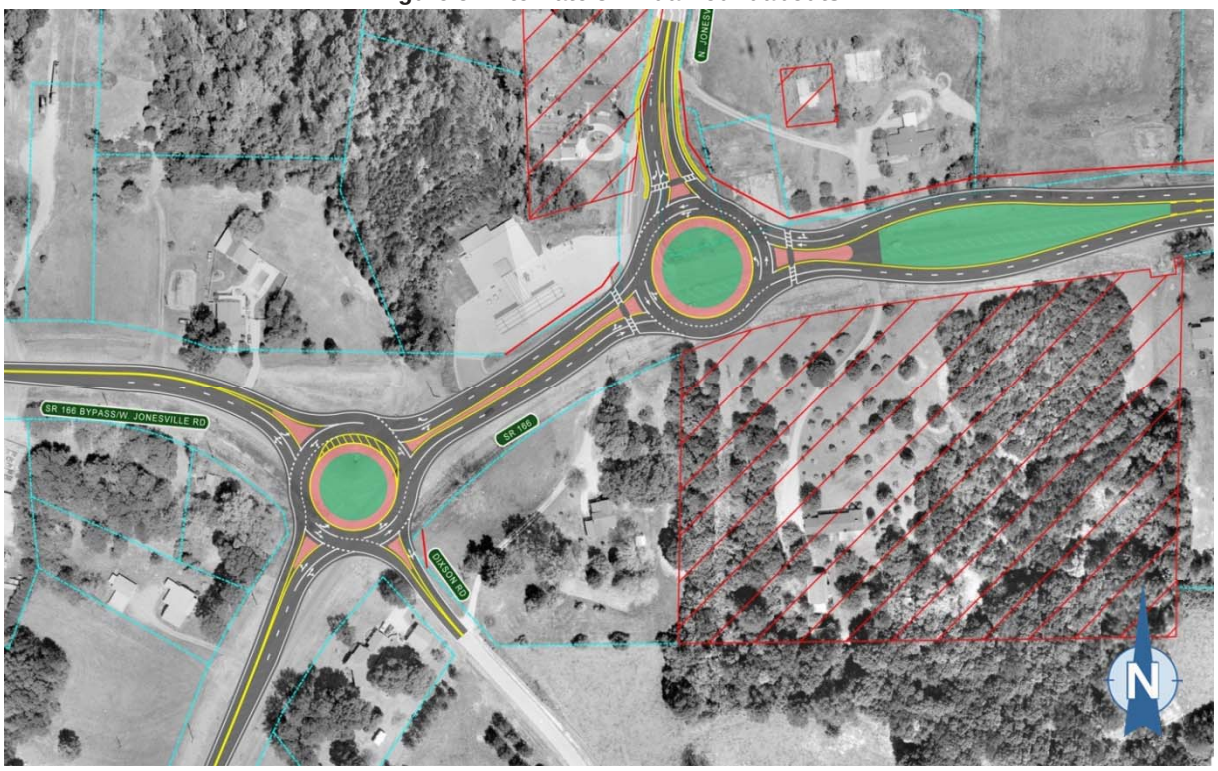


Figure 5: Alternate 3 – Dual roundabouts



It has been noted that the splitter island east of the North Jonesville Road intersection is excessive. It is agreed that the eastbound travel lanes do not require such a wide taper. Since this project is in the concept phase and additional comments are anticipated, the modification to the design was not incorporated into this report but will be done so prior to preliminary engineering.

SECTION 4
Operational Analysis

Intersection capacity analysis was performed for three intersection alternatives along SR 166 at West Jonesville Road and North Jonesville Road utilizing the 2023 opening year and 2043 design year peak hour traffic volumes. Alternative 1 included the installation of a traffic signal at the West Jonesville Road intersection to operate in close proximity to the existing North Jonesville Road signalized intersection. Alternative 2 included the installation of a roundabout at West Jonesville Road while maintaining the existing signal at North Jonesville Road. Alternative 3 included the installation of a roundabout at both the West Jonesville Road and North Jonesville Road intersections with SR 166. The following sections describe the analysis results for the three alternatives as well as geometric improvements needed to operate at acceptable levels.

To evaluate the operational performance of the roundabouts, both VISSIM software and the "SIDRA Standard" method using the software package SIDRA Intersection have been used. For the operational analysis of traditional signalized intersections at West Jonesville Road and North Jonesville Road, SYNCHRO 7.0 software was used. The resulting level of service (LOS) is included in the tables below and detailed reports from VISSIM, SIDRA and SYNCHRO analyses are attached at the end of this document.

Intersection capacity analysis was performed for alternative one, signalized controlled intersection. The results of the capacity analysis are presented in Table 3. The results indicate that both of the intersections experienced LOS C or better during the 2023 and 2043 analysis period.

Table 3
Alternative 1 - Synchro Analysis Results

Alternative 1 - Signalized Intersections														
Analysis Tool	Approach Name	Lane Group	2023 Build						2043 Build					
			AM Peak			PM Peak			AM Peak			PM Peak		
			Delay	LOS	Queue	Delay	LOS	Queue	Delay	LOS	Queue	Delay	LOS	Queue
SR 166 at West Jonesville Road (Signal)														
Synchro	SR 166	EB	13	B	135	8.7	A	82	16.1	B	177	12.8	B	122
	SR 166	WB	8.3	A	241	4.2	A	48	27.9	C	357	8.8	A	88
	Dixon Rd	NB	14.2	B	21	17.2	B	17	13.6	B	27	17.8	B	20
	W. Jonesville Rd	SB	31.8	C	108	27.2	C	66	34.0	C	144	28.2	C	86
	Average Int. Delay		**15.5**	**B**		**9.0**	**A**		**24.9**	**C**		**12.9**	**B**	
SR 166 at North Jonesville Road (Signal)														
Synchro	SR 166	EB	14.1	B	111	4.9	A	47	11.5	B	97	11.4	B	84
	SR 166	WB	20.3	C	98	12.7	B	165	23.6	C	121	21.3	C	262
	N. Jonesville Rd	SB	14.8	B	66	12.9	B	31	13.8	B	72	22.9	C	34
	Average Int. Delay		**16.0**	**B**		**9.4**	**A**		**15.2**	**B**		**17.3**	**B**	

Roundabout analysis was performed for Alternative 2 and 3 along SR 166 at the West Jonesville Road and North Jonesville Road intersections utilizing SIDRA software. A default environmental factor of 1.2 was used in the roundabout evaluation. SIDRA software is suggested by GDOT to be used to analyze isolated roundabouts such as the roundabout proposed in Alternative 2. However, SIDRA may not precisely model the effects of having two closely spaced roundabouts that are proposed in Alternative 3. The analysis results will however provide an additional analysis methodology, which will identify a range of expected capacity results and will be representative of the single proposed roundabout at West Jonesville Road as part of Alternative 2.

The SIDRA capacity analysis results indicated that the single eastbound SR 166 approach lane at the West Jonesville Road roundabout provided LOS F during the 2023 AM peak period. It

should be noted that the westbound SR 166 approach to the West Jonesville Road intersection was initially analyzed as a single approach lane as a sensitivity examination. SR 166 is proposed to be maintained as a four-lane facility between the two intersections. Proposed roadway improvements as part of the overall capacity improvements for SR 166 would continue the widening of SR 166 to a four-lane facility east to Carrollton. The roundabout at the West Jonesville Road intersection was reanalyzed utilizing 2023 AM and PM peak hour traffic conditions with multi-lane eastbound and westbound SR 166 approaches. One of the westbound SR 166 approach lanes is proposed to be a drop-lane onto West Jonesville Road and the eastbound SR 166 approach would be widen to two lanes prior to the intersection. The other approaches to the intersection were analyzed as single-lane approaches. The analysis results indicated acceptable LOS during the 2023 and 2043, AM and PM peak hours. The results of the SIDRA analysis are provided in Table 4.

SR 166 is proposed to be a four-lane facility at the North Jonesville Road intersection and SIDRA analysis indicates that multi-lane approaches along SR 166 and a single lane approach on North Jonesville Road would provide adequate LOS prior to the 2043 design year as shown in Table 4. Single-lane approach analysis for North Jonesville Road resulted in LOS E during the 2043 PM peak period. Resulting for the poor approach LOS the southbound North Jonesville Road approach was reanalyzed as a multi-lane approach to provide acceptable LOS. The southbound approach was analyzed as a left and right approach lane. North Jonesville Road is located adjacent to a Bowdon Middle School approximately 1000-feet north of SR 166. It is recommended that the North Jonesville Road multi-lane approach be provided during the opening year to accommodate the future unanticipated school drop-off and pick traffic volumes.

Table 4
2023 & 2043 SIDRA Analysis Results

SIDRA Roundabout Intersection Analysis														
Analysis Tool	Approach Name	Lane Group	2023 Build						2043 Build					
			AM Peak			PM Peak			AM Peak			PM Peak		
			Delay	LOS	Queue	Delay	LOS	Queue	Delay	LOS	Queue	Delay	LOS	Queue
SR 166 at West Jonesville Road (Roundabout) - Single Approach Lanes														
SIDRA	SR 166	EB	82.4	F	1152	9.7	A	95	251.5	F	2915	110.5	F	1601
	SR 166	WB	6.8	A	108	7.9	A	123	9.9	A	220	45.0	F	4515
	Dixon Rd	NB	14.9	B	19	5.9	A	5	16.8	B	26	17.0	B	26
	W. Jonesville Rd	SB	12.4	B	147	6.5	A	44	25.9	C	492	30.4	C	251
	Average Int. Delay		**37.8**	**D**		**8.2**	**A**		**98.1**	**F**		**62.3**	**E**	
SR 166 at West Jonesville Road (Roundabout) - Multi Approach Lanes SR 166														
SIDRA	SR 166	EB (2LN)	10.6	B	101	6.3	A	60	17.5	B	191	11.2	B	118
	SR 166	WB (2LN)	4.4	A	46	4.7	A	45	5.4	A	74	7.7	A	131
	Dixon Rd	NB	10.4	B	9	6.2	A	4	15.6	B	21	11.2	B	14
	W. Jonesville Rd	SB	12.3	B	146	6.5	A	44	24.8	C	486	15.0	B	191
	Average Int. Delay		**8.8**	**A**		**5.5**	**A**		**14.4**	**B**		**9.9**	**A**	
SR 166 at North Jonesville Road (Roundabout) - Multi Approach Lanes SR 166														
SIDRA	SR 166	EB (2LN)	7.1	A	93	6.1	A	75	12	B	164	8.7	A	115
	SR 166	WB (2LN)	6.4	A	47	6.8	A	65	11.3	B	87	10.5	B	103
	N. Jonesville Rd	SB	10.5	B	85	22.7	C	188	26.1	C	172	59.2	E	354
	Average Int. Delay		**7.6**	**A**		**9.4**	**A**		**14.4**	**B**		**18.7**	**B**	
SR 166 at North Jonesville Road (Roundabout) - Multi Approach Lanes SR 166 & North Jonesville Road														
SIDRA	SR 166	EB (2LN)	8.0	A	84	6.8	A	65	11.8	B	155	8.6	A	107
	SR 166	WB (2LN)	7.3	A	43	7.7	A	61	11.2	B	86	10.5	B	102
	N. Jonesville Rd	SB (2LN)	6.8	A	32	10.1	B	51	10	A	63	14.9	B	102
	Average Int. Delay		**7.6**	**A**		**7.8**	**A**		**11.3**	**B**		**10.5**	**B**	

VISSIM modeling software was used to analyze Alternatives 2 and 3 per GDOT's Design Policy Manual guidelines as a result of the close proximity of the two intersections. The results of the Alternative 2 VISSIM analyses is provided in Table 5.

The results of the Alternative 2 VISSIM analyses indicated that the existing signal at North Jonesville Road and the proposed roundabout at West Jonesville Road would operate at acceptable levels during the 2023 and 2043, AM and PM peak hours. The analysis was performed using the existing lane configuration at the North Jonesville Road intersection with SR 166 and multi-lane SR 166 approaches at the West Jonesville Road intersection.

Table 5
Alternative 5 - VISSIM Analysis Results

Alt 2 - SR 166 Roundabout at SR 166 Bypass with West Jonesville Road and Signalized intersection at North Jonesville Road										
2023 SR 166 VISSIM Results										
Analysis Tool	Approach Name	Lane Group	AM Peak				PM Peak			
			Volume	Average Control Delay	LOS	95% Queue Length (Feet)	Volume	Average Control Delay	LOS	95% Queue Length (Feet)
SR 166 Bypass at W.Jonesville Rd - Roundabout										
VISSIM	SR 166	Eastbound	516	2.8	A	0.00	401	2.1	A	0.00
	W Jonesville Rd	Southbound	311	2.5	A	0.00	186	1.6	A	0.00
	SR 166	Westbound	525	0.6	A	0.00	805	1.6	A	0.00
	Dixon Rd	Northbound	27	0.1	A	0.00	21	0.0	A	0.00
	Weighted Average Delay			**1.8**	**A**			**1.7**	**A**	
SR 166 Bypass at N.Jonesville Rd- Signalized										
VISSIM	N Jonesvillle Road	Left	86	32.0	C	67.99	38	27.5	C	30.60
		Right	194			105.54	163			82.78
	SR 166	Left	252	9.2	A	53.69	110	10.1	B	24.86
		Through	582			55.49	473			55.27
	SR 166	Right	46	21.6	C	28.57	50	23.4	C	28.13
		Through	331			77.32	643			133.92
				16.6	**B**			**18.7**	**B**	
2043 SR 166 VISSIM Results										
Analysis Tool	Approach Name	Lane Group	AM Peak				PM Peak			
			Volume	Average Control Delay	LOS	95% Queue Length (Feet)	Volume	Average Control Delay	LOS	95% Queue Length (Feet)
SR 166 Bypass at W.Jonesville Rd - Roundabout										
VISSIM	SR 166	Eastbound	691	9.3	A	72.75	564	3.3	A	0.00
	W Jonesville Rd	Southbound	441	4.0	A	0.00	269	3.8	A	0.00
	SR 166	Westbound	830	0.9	A	0.00	1094	2.8	A	0.00
	Dixon Rd	Northbound	39	0.4	A	0.00	30	0.2	A	0.00
	Weighted Average Delay			**4.5**	**A**			**3.0**	**A**	
SR 166 Bypass at N.Jonesville Rd- Signalized										
VISSIM	N Jonesvillle Road	Left	105	35.0	C	85.34	50	29.2	C	40.41
		Right	279			162.1	234			119.8
	SR 166	Left	360	10.3	B	80.06	162	11.3	B	47.58
		Through	783			63.4	665			69.73
	SR 166	Right	54	23.3	C	31.71	63	26.2	C	34.3
		Through	459			109.8	863			178.02
				18.2	**B**			**20.6**	**C**	

The results of the Alternative 3 VISSIM analyses, provided in Table 6, indicated that the proposed roundabouts at both the North Jonesville Road and West Jonesville Road intersections with SR 166 would operate at acceptable levels during the 2023 and 2043, AM and PM peak periods. The analysis was performed using multi-lane SR 166 approaches at the West Jonesville Road and North Jonesville Road intersections. Additionally, single lane approaches were analyzed for West Jonesville Road and Dixon Road and multi-lane approach on North Jonesville Road.

Table 6
Alternative 6 – VISSIM Analysis Results

Alt 3 - Dual SR 166 Roundabouts West Jonesville Road and North Jonesville Rd										
2023 SR 166 VISSIM Results										
Analysis Tool	Approach Name	Lane Group	AM Peak				PM Peak			
			Volume	Average Control Delay	LOS	95% Queue Length (Feet)	Volume	Average Control Delay	LOS	95% Queue Length (Feet)
SR 166 Bypass at W.Jonesville Rd - Roundabout										
VISSIM	SR 166	Eastbound	516	3.0	A	0.00	401	1.8	A	0.00
	W Jonesville Rd	Southbound	311	1.6	A	0.00	186	1.2	A	0.00
	SR 166	Westbound	528	0.5	A	0.00	807	0.6	A	0.00
	Dixon Rd	Northbound	27	0.3	A	0.00	21	0.0	A	0.00
	Weighted Average Delay			**1.7**	**A**			**1.0**	**A**	
SR 166 Bypass at N.Jonesville Rd - Roundabout										
VISSIM	N Jonesvillle Road	Southbound	287	2.1	A	0.00	205	2.1	A	0.00
	SR 166	Eastbound	837	1.6	A	0.00	583	1.5	A	0.00
	SR 166	Westbound	378	0.8	A	0.00	693	0.8	A	0.00
	Weighted Average Delay			**1.5**	**A**			**1.3**	**A**	
2043 SR 166 VISSIM Results										
Analysis Tool	Approach Name	Lane Group	AM Peak				PM Peak			
			Volume	Average Control Delay	LOS	95% Queue Length (Feet)	Volume	Average Control Delay	LOS	95% Queue Length (Feet)
SR 166 Bypass at W.Jonesville Rd - Roundabout										
VISSIM	SR 166	Eastbound	692	5.4	A	0.00	564	2.8	A	0.00
	W Jonesville Rd	Southbound	442	3.9	A	0.00	270	2.0	A	0.00
	SR 166	Westbound	741	0.8	A	0.00	1099	1.7	A	0.00
	Dixon Rd	Northbound	39	0.3	A	0.00	30	0.0	A	0.00
	Weighted Average Delay			**3.2**	**A**			**2.0**	**A**	
SR 166 Bypass at N.Jonesville Rd - Roundabout										
VISSIM	N Jonesvillle Road	Southbound	392	2.3	A	0.00	289	3.2	A	0.00
	SR 166	Eastbound	1147	2.4	A	0.00	828	2.3	A	0.00
	SR 166	Westbound	513	1.1	A	0.00	928	1.3	A	0.00
	Weighted Average Delay			**2.1**	**A**			**2.0**	**A**	

SECTION 5
Cost Comparison

The cost comparison for the three alternates is summarized in Table 7. The costs have been summarized into seven categories. They are as follows:

- Roadway
- Drainage
- Erosion Control
- Traffic Signal
- Landscape
- Lighting, Striping, Signs, and Traffic Control
- Right of Way

Table 7: Alternative Construction Cost Estimates

Items	Alternate 1	Alternate 2	Alternate 3
Roadway	$414,535	$443,803	$678,913
Drainage	$19,154	$26,115	$32,309
Erosion Control	$25,275	$23,112	$37,971
Traffic Signal	$206,662	$50,829	$0
Landscape	$15,000	$30,000	$50,000
Lighting, Striping, Signs, & Traffic Control	$87,994	$112,352	$132,078
ROW Cost	$6,000	$8,400	$63,000
TOTAL	**$774,620**	**$694,610**	**$994,271**

Alternate 1 would require the installation of a new signal at West Jonesville Road and the modification of the existing signal at North Jonesville Road. This alternate has the least amount of roadway and right-of-way impacts which keep the construction costs low. The signals are a significant percentage of the overall cost.

Alternate 2 would require the installation of a dual lane roundabout at West Jonesville Road and modifications to the signal at North Jonesville Road. The pavement area is similar to what would be required for Alternate 1 which helps to keep the cost low. In addition, there would only be the requirement to modify the existing signal at North Jonesville Road. These two facts combined with the small amount of right-of-way required add up to make this alternative the most cost effective.

Alternate 3 would require the installation of two dual lane roundabouts. This alternative has the most pavement area and requires the largest amount of right-of-way. In addition to these two items that make this the most expensive alternative, the North Jonesville Road intersection will require more detailed staging requirements.

SECTION 6
Alternate Selection

- Location: North Jonesville Road and West Jonesville Road intersect on SR166 just 570 feet apart. PI 631310 proposed to make West Jonesville Road the bypass around the city of Bowdon while an existing traffic signal exists on North Jonesville Road. The traffic projections indicate that a signal will be warranted at West Jonesville Road, but due to the proximity to the signal at North Jonesville Road this is less than desirable.

- Operations: Both Alternate 2, (West Jonesville Road roundabout and North Jonesville Road signal) and Alternate 3 (dual roundabouts) would accommodate the design year traffic and operate at acceptable level of service. Alternative 2 provides higher delay at

both the West Jonesville Road and North Jonesville Road intersections when compared to Alternative 3. Signalized intersections will typically have higher delay at lower volumes when compared to roundabouts. The delay is also attributed to the westbound North Jonesville Road vehicles arriving at the proposed West Jonesville Road roundabout in a platoon, which produces a slightly higher delay compared to the random arrival with a proposed North Jonesville Road roundabout.

- Design: Topographic grades and sight distances should not cause issues at either intersection.

- Safety: As noted in the FHWA publication, Roundabouts: An Informational Guide, roundabouts may improve the safety of intersections by eliminating or altering conflict types, by reducing speed differentials, and by forcing drivers to decrease speeds. It also states that safety is better at smaller roundabouts as compared to multi- lane roundabouts. Since traffic accidents significantly decreased in 2009, the year improvements were made it is not a clear argument either way as to the safety benefits of the multi-lane roundabouts as proposed in Alternatives 2 and 3. As such, it is not clear how much of a safety improvement the roundabouts would be. More emphasis will be placed upon cost and operations.

- Right-of-Way: Alternatives 1 and 2 would require the least amount of right-of-way at 0.10 and 0.14 acres respectively. Alternative 3 would require approximately 1.05 acres. Most of this area is due the necessity to slow westbound approach speeds by bowing the alignment out and adding reverse curves.

- Cost:
    - Alternative 1 at $774,620 is neither the most or least expensive alternative.
    - Alternative 2 is the least expensive alternative at $694,610. This alternative is 10% cheaper than Alternative 1.
    - Alternative 3 is the most expensive alternative at $994,271.

SECTION 7
Conceptual Roundabout Design at West Jonesville Road

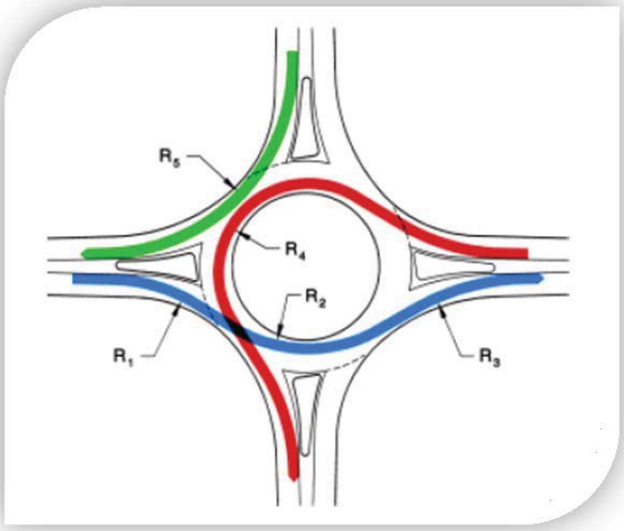
Roundabout Dimensions

Conceptual design for the roundabout at West Jonesville road includes an inscribed diameter of 200 feet with a circulatory roadway width of 32 feet. The inside travel way consists of a 14 foot wide inside lane and 18 foot wide outside lane. A 15 foot truck apron is required to accommodate the design vehicle, which is a WB-67. The central island diameter is 106 feet.

Fastest path

The fastest path for the five primary curves was analyzed for each approach. R1 represents the entry speed into the roundabout. R2 is the fastest path through the roundabout and R3 represents the exit radius. R4 is the circulatory radius for vehicles making left turns. R5 is for a simple right turn movement.

	Curve	Radius (ft)	Speed (mph)
NORTHBOUND	R1	208.5	26
	R2	283.0	31
	R3	208.1	26
	R4	73.0	18
	R5	213.1	28
WESTBOUND	R1	97.7	20
	R2	122.4	22
	R3	173.3	25
	R4	73.0	18
	R5	114.5	22
SOUTHBOUND	R1	344.6	31
	R2	73.0	18
	R3	399.0	32
	R4	92.8	20
	R5	155.5	25
EASTBOUND	R1	225.9	27
	R2	92.8	20
	R3	391.1	32
	R4	73.0	18
	R5	115.0	22



Figures 6 thru 9 depict the fastest path for all directions.

Figure 6 – Fastest Path for the Northbound Movement

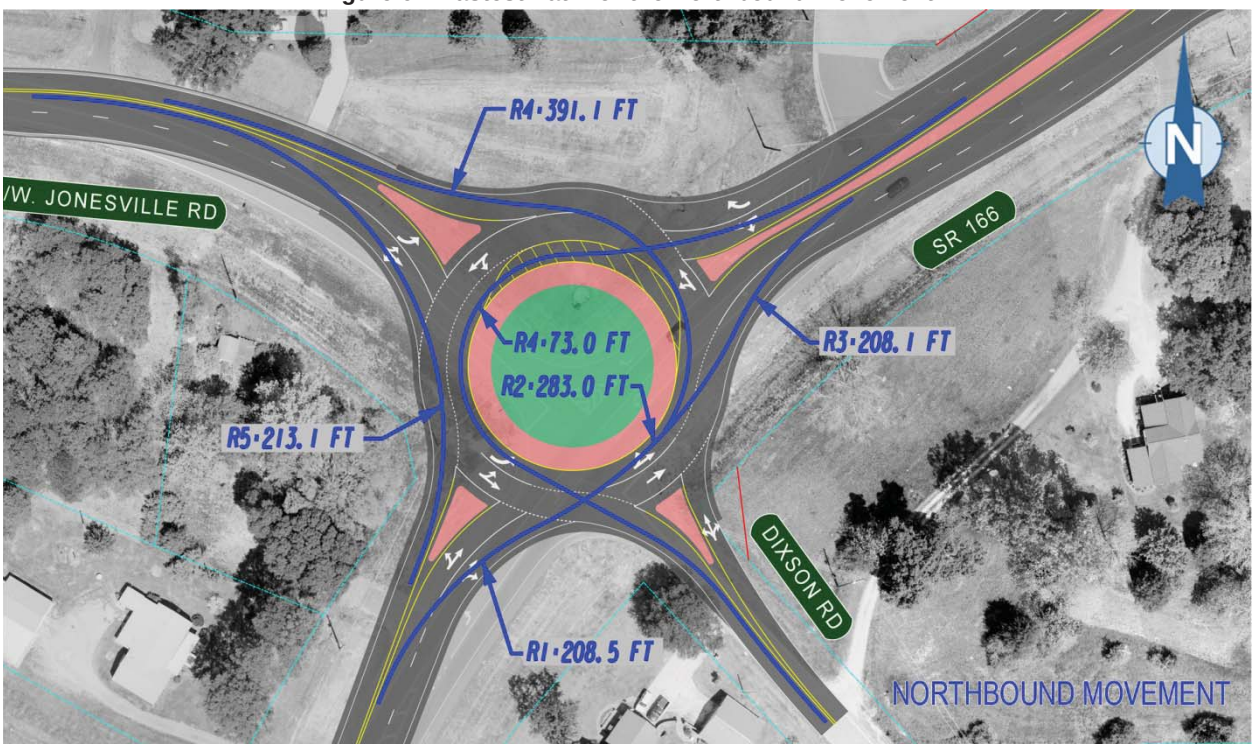


Figure 7 – Fastest Path for the Westbound Movement

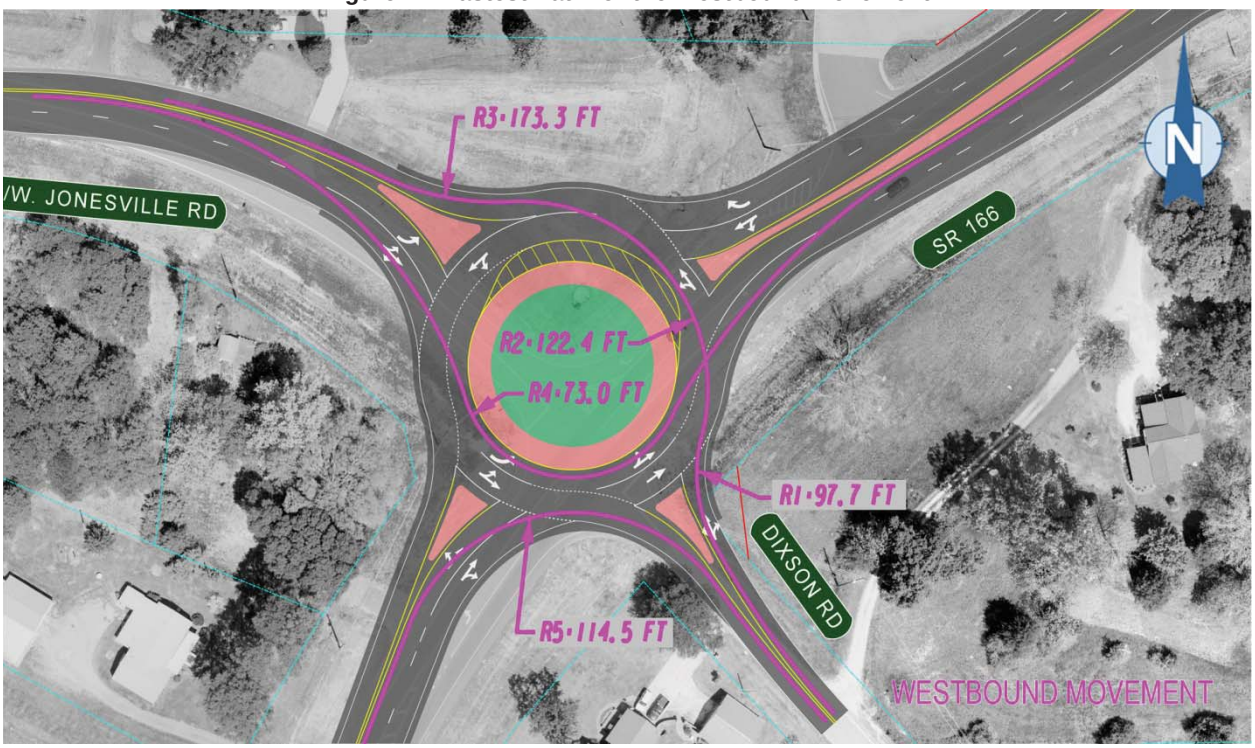


Figure 8 – Fastest Path for the Southbound Movement

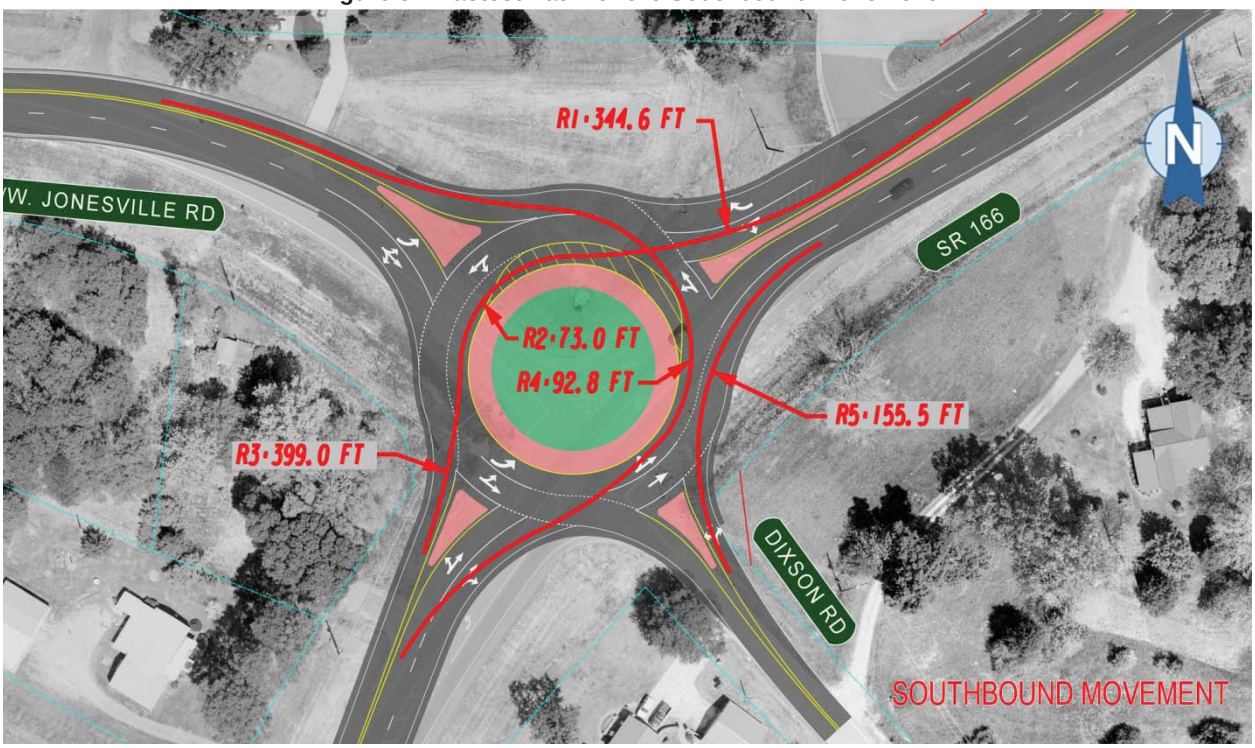
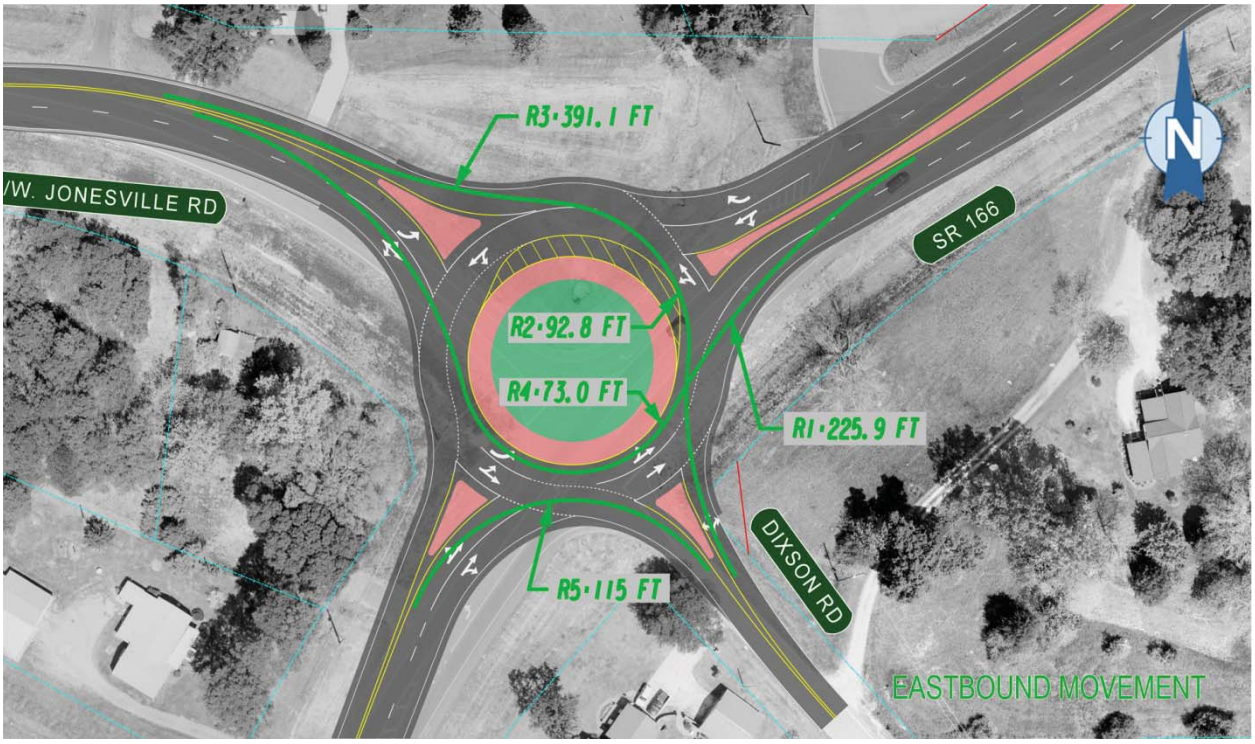


Figure 9 – Fastest Path for the Eastbound Movement



Design Vehicle Swept Path

A WB-67 was considered as the standard design vehicle for the proposed improvements. Turning path diagrams are attached as Figures 10,11, and 12.

Figure 10 – WB 67 Truck Turning Swept Path for Right-Turn Movements

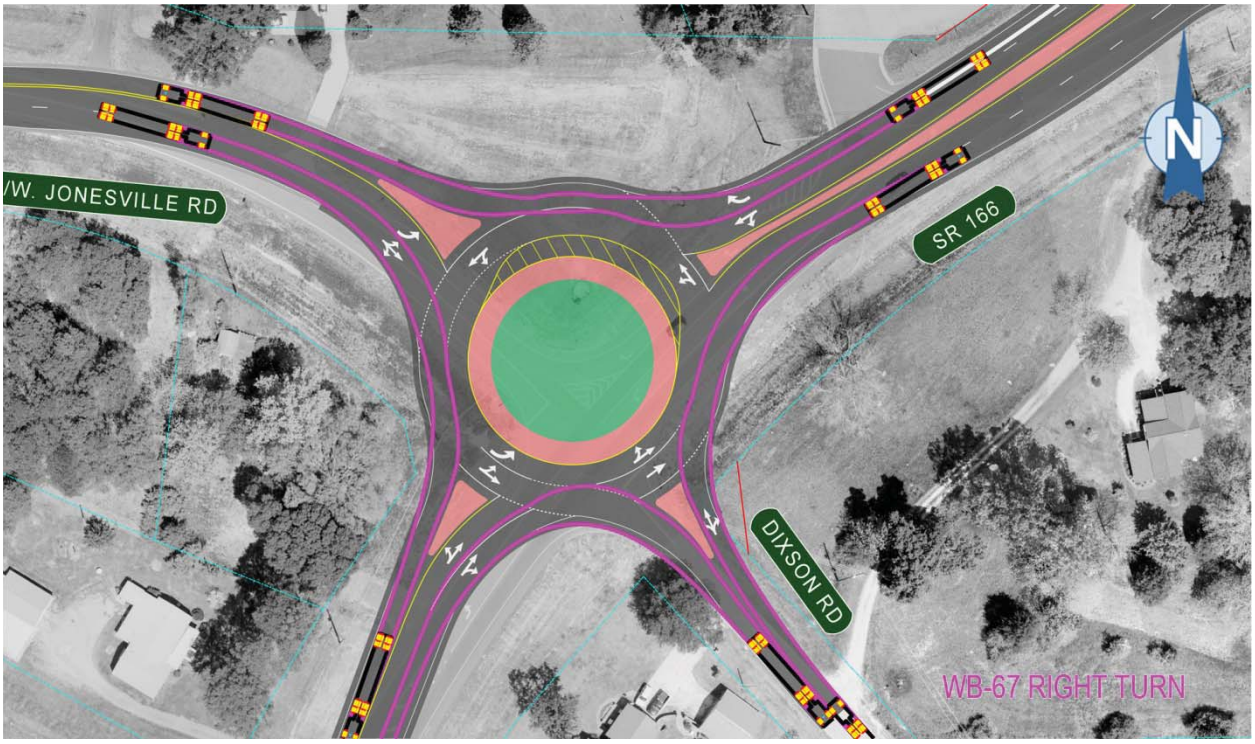


Figure 11 – WB 67 Truck Turning Swept Path for the Thru Movement

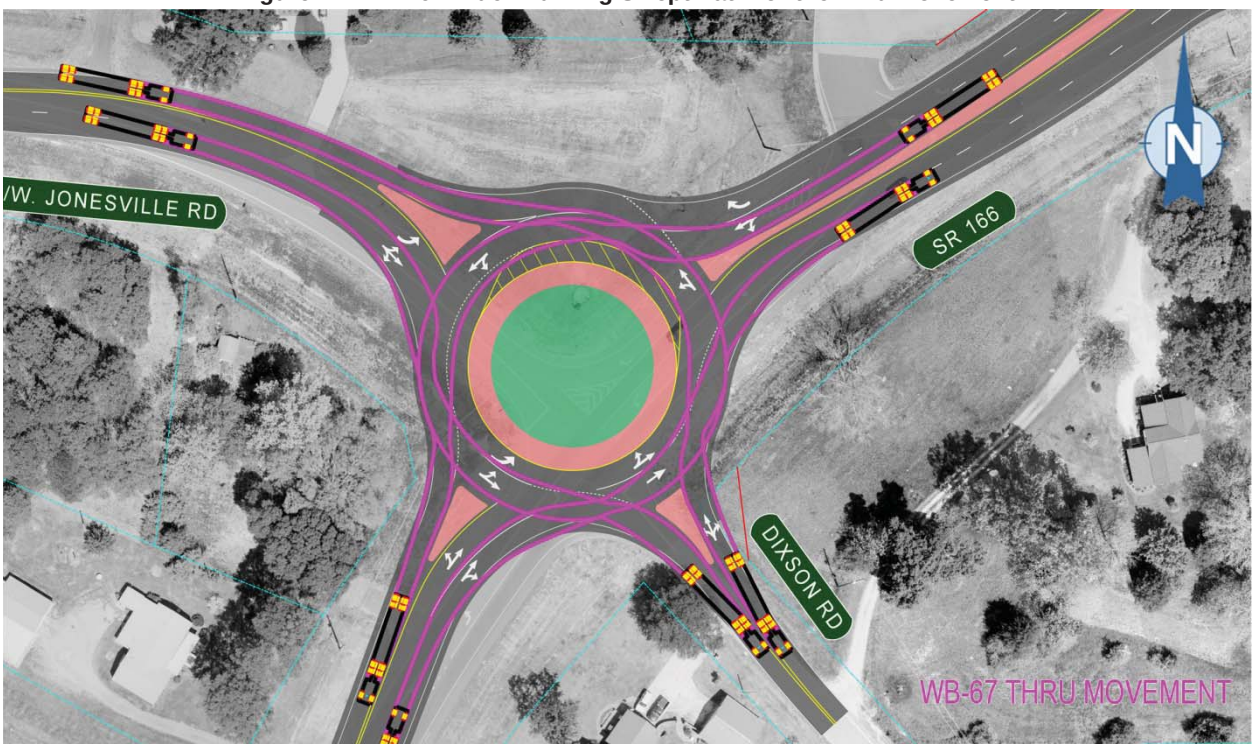
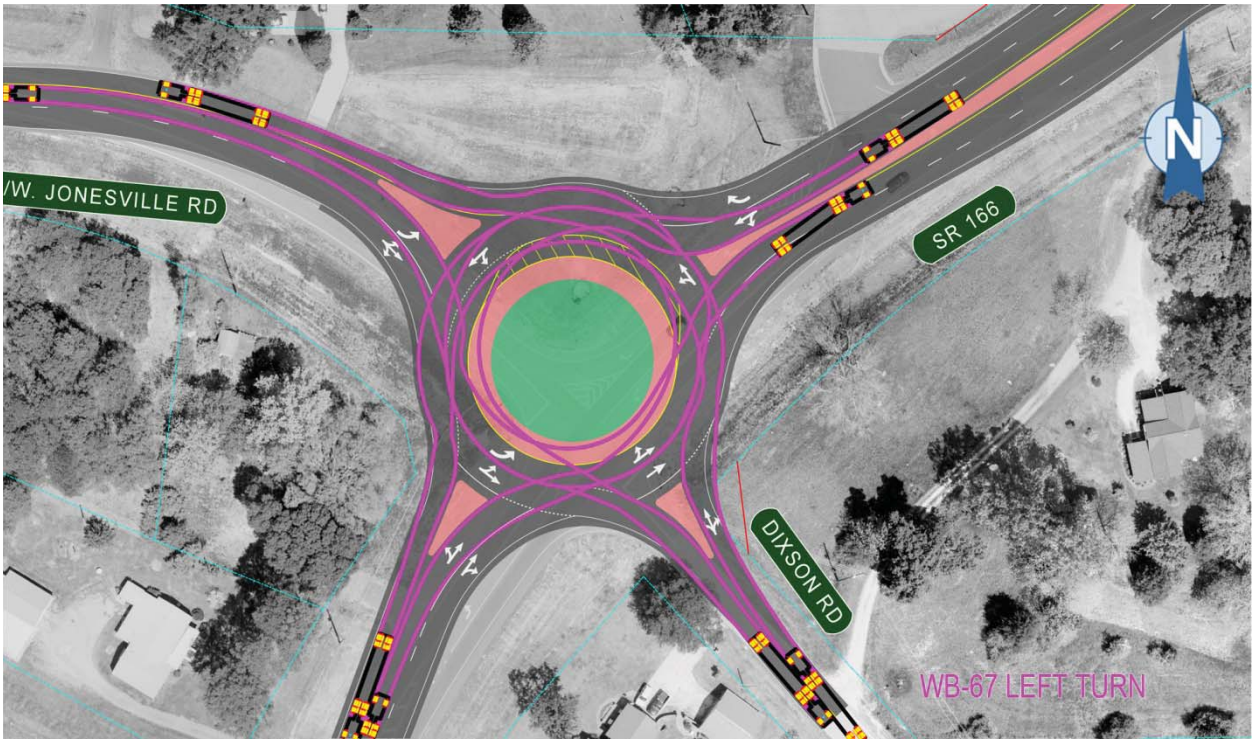


Figure 12 – WB 67 Truck Turning Swept Path for Left Turn Movements



Conceptual Roundabout Design at North Jonesville Road

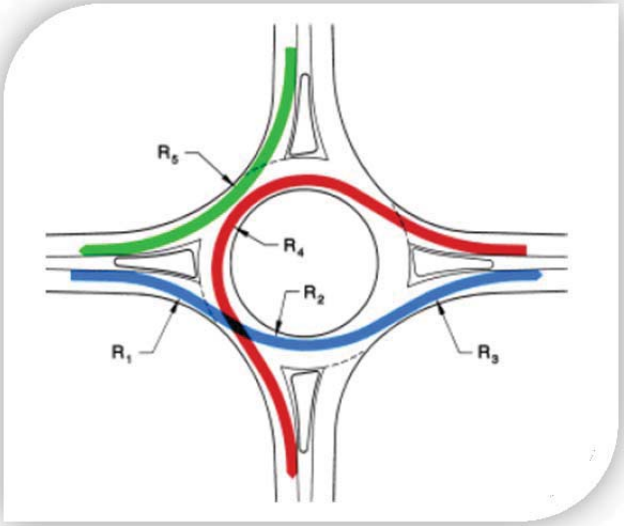
Roundabout Dimensions

Conceptual design for the roundabout at North Jonesville road includes an inscribed diameter of 220 feet with a circulatory roadway width of 32 feet. The inside travel way consists of a 14 foot wide inside lane and 18 foot wide outside lane. An 18 foot truck apron is required to accommodate the design vehicle, which is a WB-67. The central island diameter is 126 feet.

Fastest path

The fastest path for the five primary curves was analyzed for each approach. R1 represents the entry speed into the roundabout. R2 is the fastest path through the roundabout and R3 represents the exit radius. R4 is the circulatory radius for vehicles making left turns. R5 is for a simple right turn movement.

	Curve	Radius (ft)	Speed (mph)
NORTHBOUND	R1	210.4	26
	R2	349.4	33
	R3	258.7	28
	R4	83.8	19
	R5	365.9	34
WESTBOUND	R1	366.0	31
	R2	83.8	19
	R3	878.9	43
	R4	83.8	19
	R5	N/A	
SOUTHBOUND	R1	287.1	29
	R2	83.8	19
	R3	380.9	32
	R4	83.8	19
	R5	265.3	30



Figures 13 thru 15 depict the fastest path for all directions.

Figure 13 – Fastest Path for the Northbound Movement

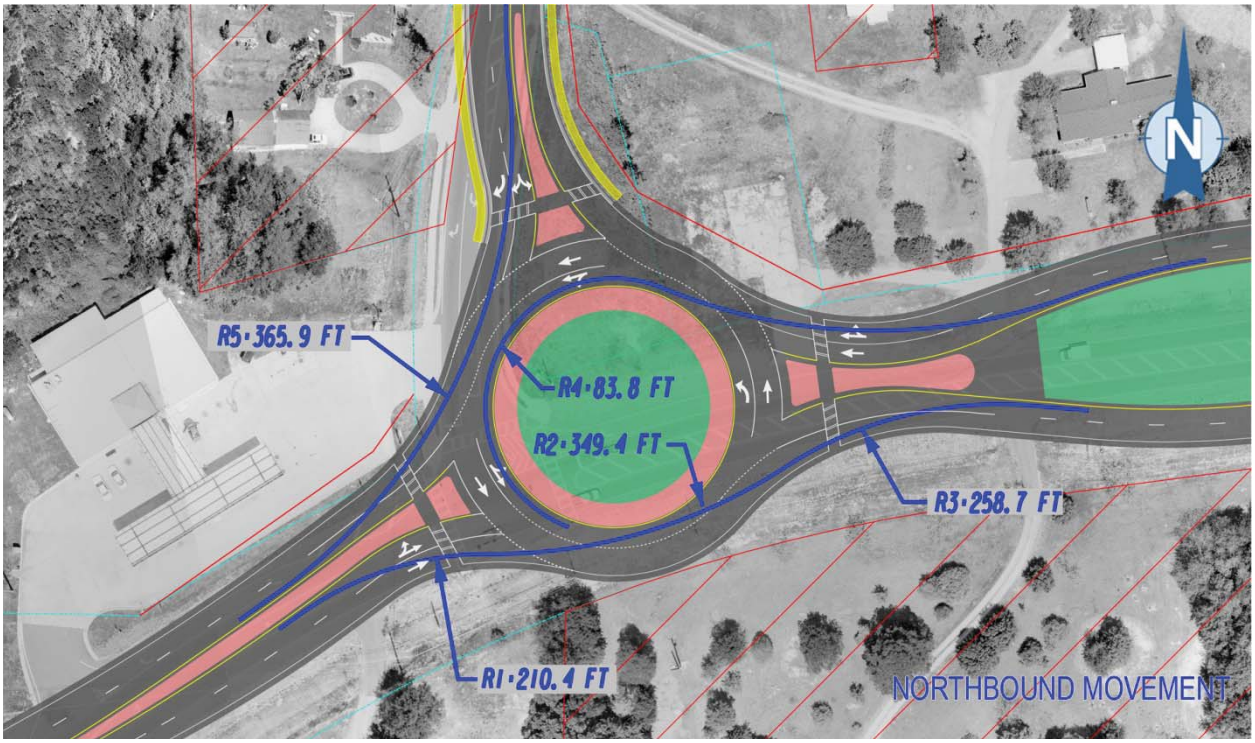


Figure 14 – Fastest Path for the Westbound Movement

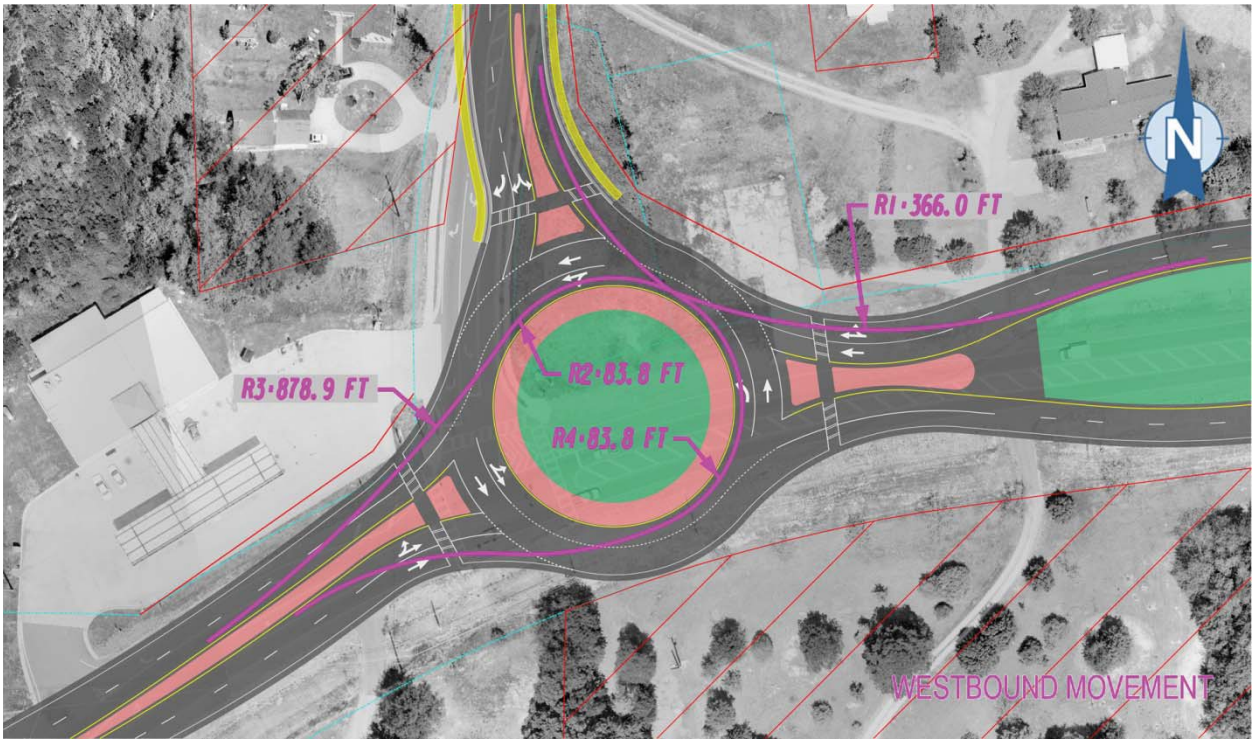
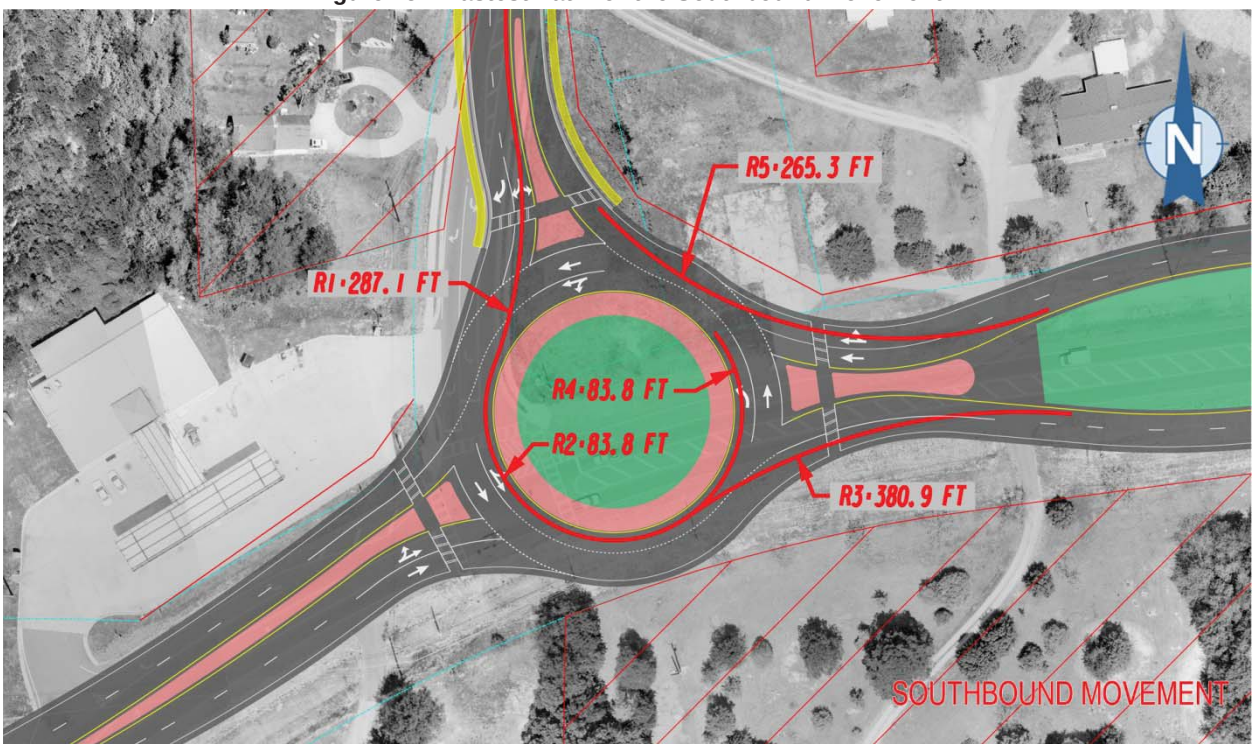


Figure 15 – Fastest Path for the Southbound Movement



Design Vehicle Swept Path

A WB-67 was considered as the standard design vehicle for the proposed improvements. Turning path diagrams are attached as Figures 16 and 17.

Figure 16 – WB 67 Truck Turning Swept Path for Right-Turn Movements

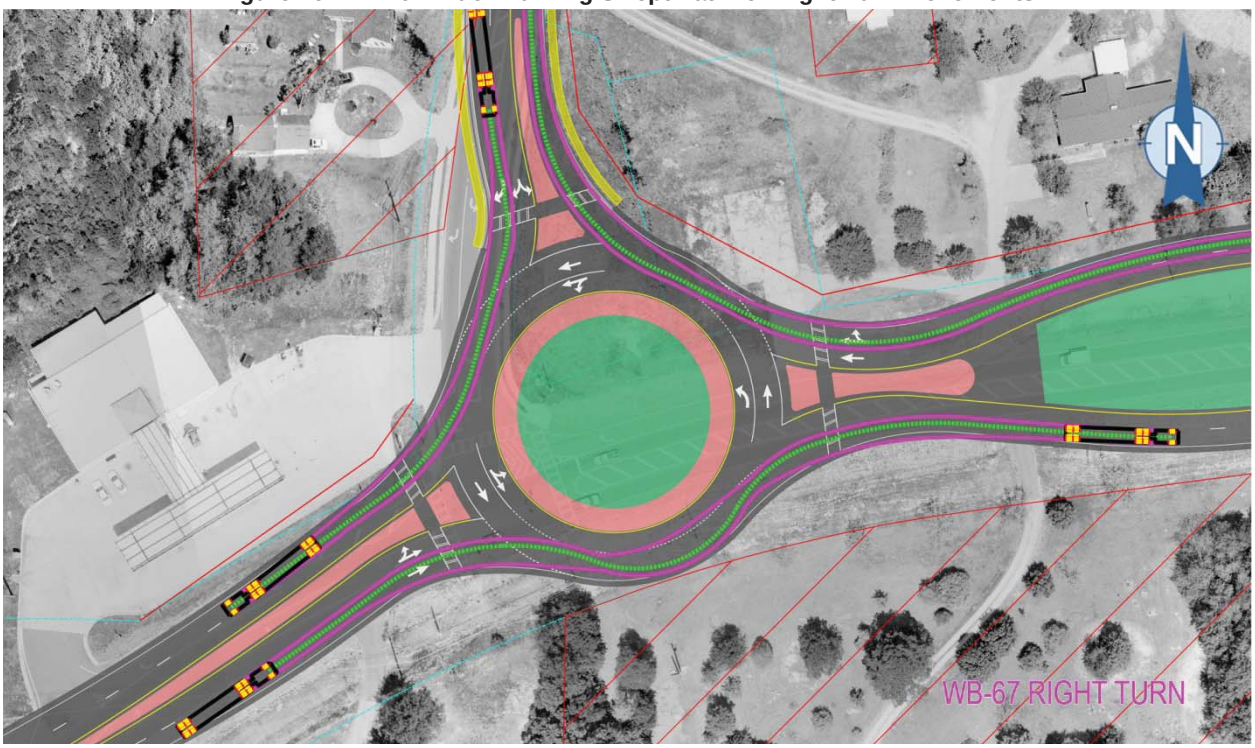
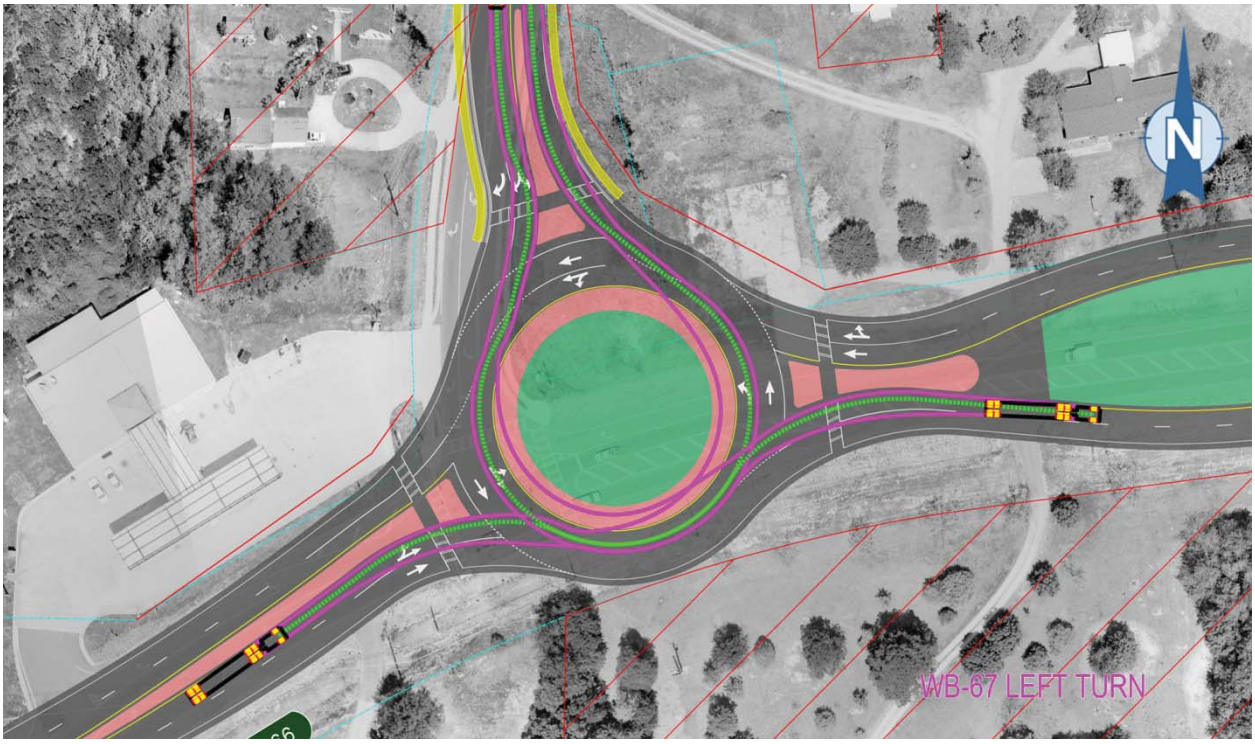


Figure 17 – WB 67 Truck Turning Swept Path for Left Turn Movements



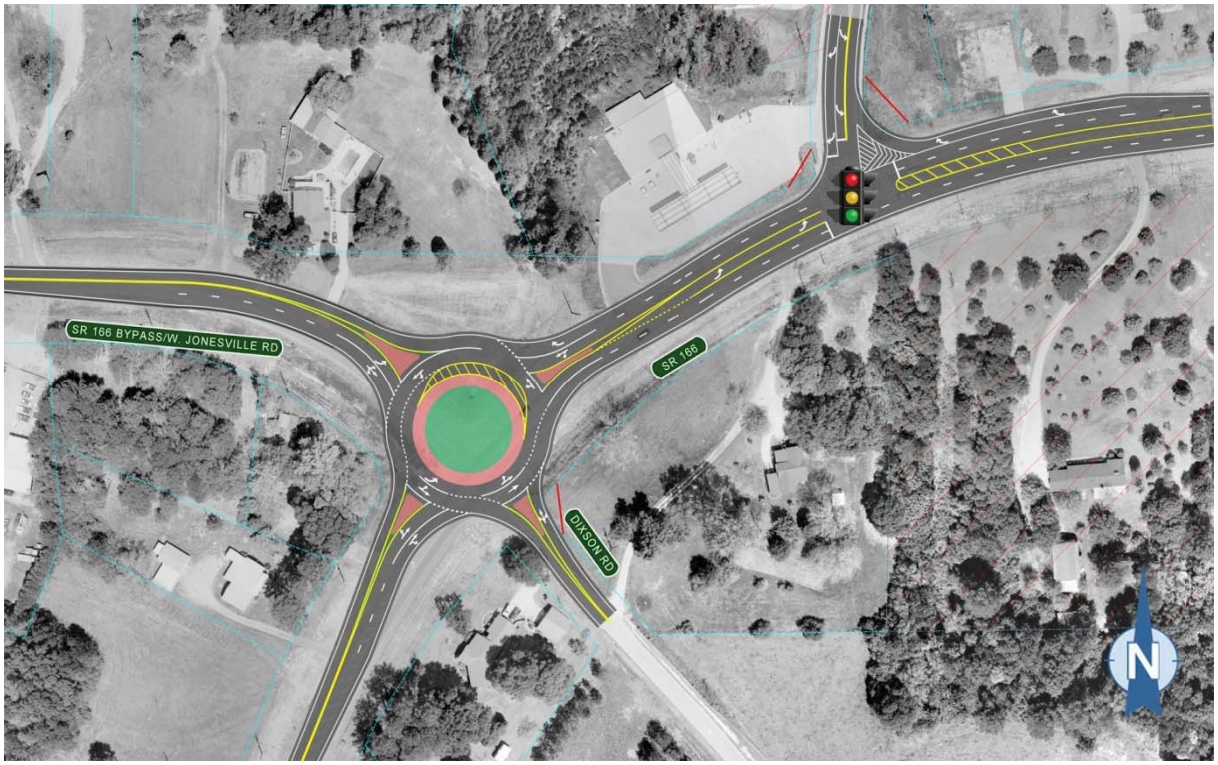
SECTION 8
Recommendations

Based on the analysis the following recommendations were formulated for the intersections of West Jonesville Road and North Jonesville Road on existing SR166 in Carroll County GA.

Three alternatives were considered: dual signalized intersections (Alternate 1), a new roundabout at West Jonesville Road (Alternate 2), and dual roundabouts (Alternate 3).

Alternate 2 was selected as the preferred alternate. This alternate provides an acceptable level of service in both the design and future year. Alternative 2 is significantly less expensive to construct and has minimal impact to right-of-way.

Alternate 2 – Preferred Alternative



ROUNDABOUT FEASIBILITY REPORT

SR166 Bypass at SR100 Intersection

Project No. STP00-0021-01(025)

P.I. No. 631310

Carroll County

Prepared For

Georgia Department of Transportation

Prepared By

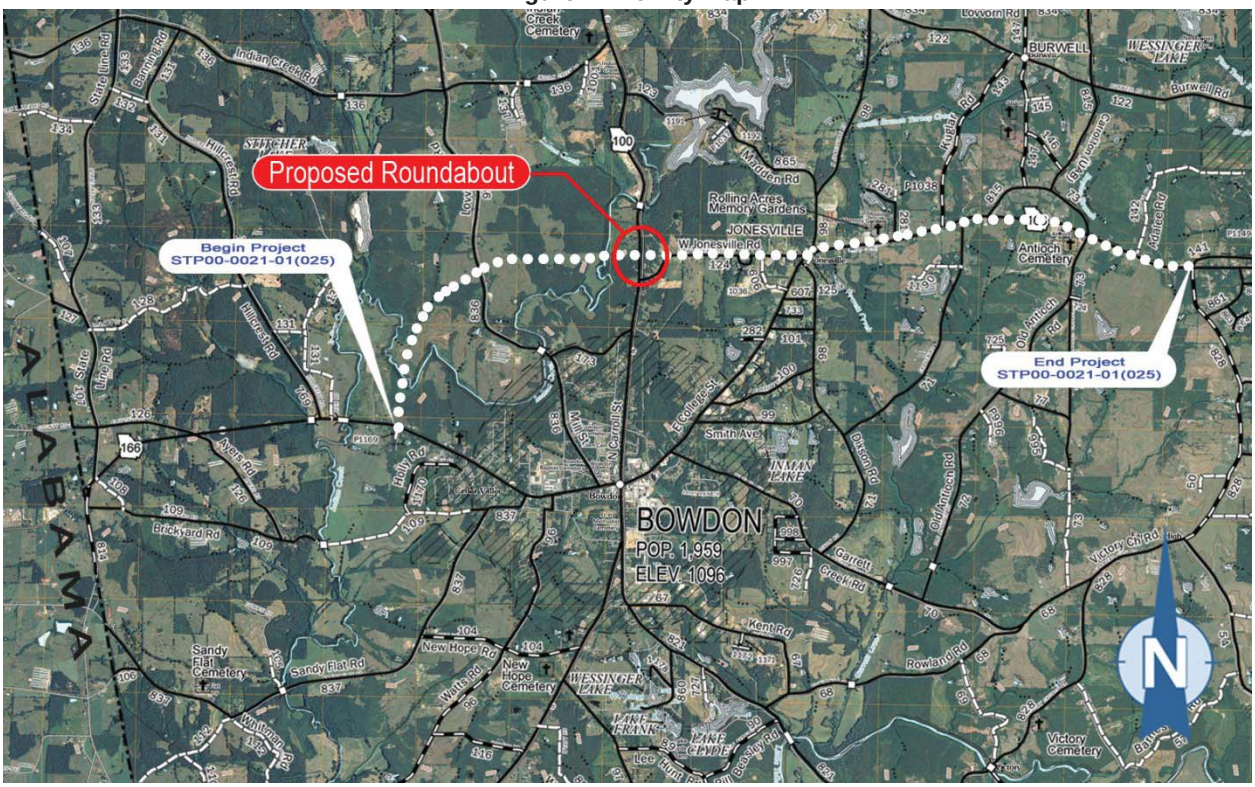
AECOM

Submitted: August 2013

SECTION 1
Project Background & Site Conditions

Project STP00-0021-01(025) in Carroll County consists of a two lane roadway on new location starting west of the City of Bowdon, heading north and then east towards existing West Jonesville Road for a distance of approximately 2.4 miles. The project continues along West Jonesville Road for approximately 0.8 miles. Starting at the intersection of West Jonesville Road, existing SR166 will be widened to a five lane roadway section for approximately 0.9 miles. From this point, just west of Kuglar Road, SR166 will be widened to a four lane divided roadway section until the project termini at Farmers High Road, for a distance of 1.9 miles. The total project length is 6.0 miles.

Figure 1: Vicinity Map



As part of this project, a new intersection will be created at the intersection of the SR166 Bypass and SR100/North Carroll Street. SR100 is currently a two lane roadway with a posted speed limit of 45 mph. It runs in a north-south direction and carries traffic from the city of Bowdon and points further south northward to Interstate 20, which is approximately 10 miles away. SR100 at this location is on the GDOT Oversize Truck Route Network. Accordingly a truck larger than a WB-67 may need to be accommodated.

The orange line in Figure 2 shows the approximate location at which the new location SR166 Bypass will intersect with existing SR100. This alignment continues eastward to match the alignment of West Jonesville Road.

This alignment crosses an environmentally identified intermittent stream. There are no other environmental impacts.

Figure 2: Aerial photo of proposed intersection

SECTION 2
Safety Assessment

Historical crash data was obtained from Georgia Department of Transportation, Office of Traffic Safety and Design for the available most recent five years (2005-2009) for the intersection of SR 100 at West Jonesville Road, located at milepost 10.35 along SR 100. Crash data was collected between mileposts 10.2 and 10.5 to capture crash data just north and south of the proposed intersection.

Tables 1 and 2 provide the crash data summary for the unsignalized intersection SR 100 at West Jonesville Road and the adjacent SR 100 segments north and south of the intersection. Three collisions occurred between 2005 and 2009, one during 2005 and two during 2007. The 2005 crash resulted in a fatality. The three collisions did not involve another motor vehicle. The collisions at the intersection are not the type typically considered correctable by the installation of a traffic signal or roundabout.

Table 1: Crash History - SR 100

SR 100 Carroll County Milepost 10.2-10.5	
Year	No. of Accidents
2005	1
2006	0
2007	2
2008	0
2009	0

Table 2: Crash Type History - SR 100

Crash Type	SR 100 Carroll County Milepost 10.2-10.5	
	Count	Percent
Not A Collision With A Motor Vehicle	3	100%

Crash rates were calculated for the study intersection of SR 166 at SR 100 using the following equation.

$$R=\frac{1{,}000{,}000 \times C}{365 \times N \times V}$$

R=Crash Rate - million entering vehicles (MEV)

C=Total number of intersection related crashes in the study period (5yrs)

N=Number of years of data

V=Daily entering traffic volumes

The crash rate calculation resulted in a rate of 0.41 MEV at SR 100 and West Jonesville Road. There are no statewide intersection average crash rates calculated by GDOT because of the absence of sufficient traffic data needed in the calculation.

SECTION 3
Alternative Sketches

Three design alternatives were considered at the new intersection of SR100 and the SR166 Bypass. The first and second alternatives are traditional four-way intersections with unsignalized and signalized conditions, respectively. The third alternative is a single lane roundabout with a future outside build-out. Traffic projections indicate that a dual lane roundabout would be required sometime between 10 to 20 years from the construction date.

Figure 3: Alternate 1: Unsignalized four-leg intersection

Figure 4: Alternate 2: Signalized four-leg intersection

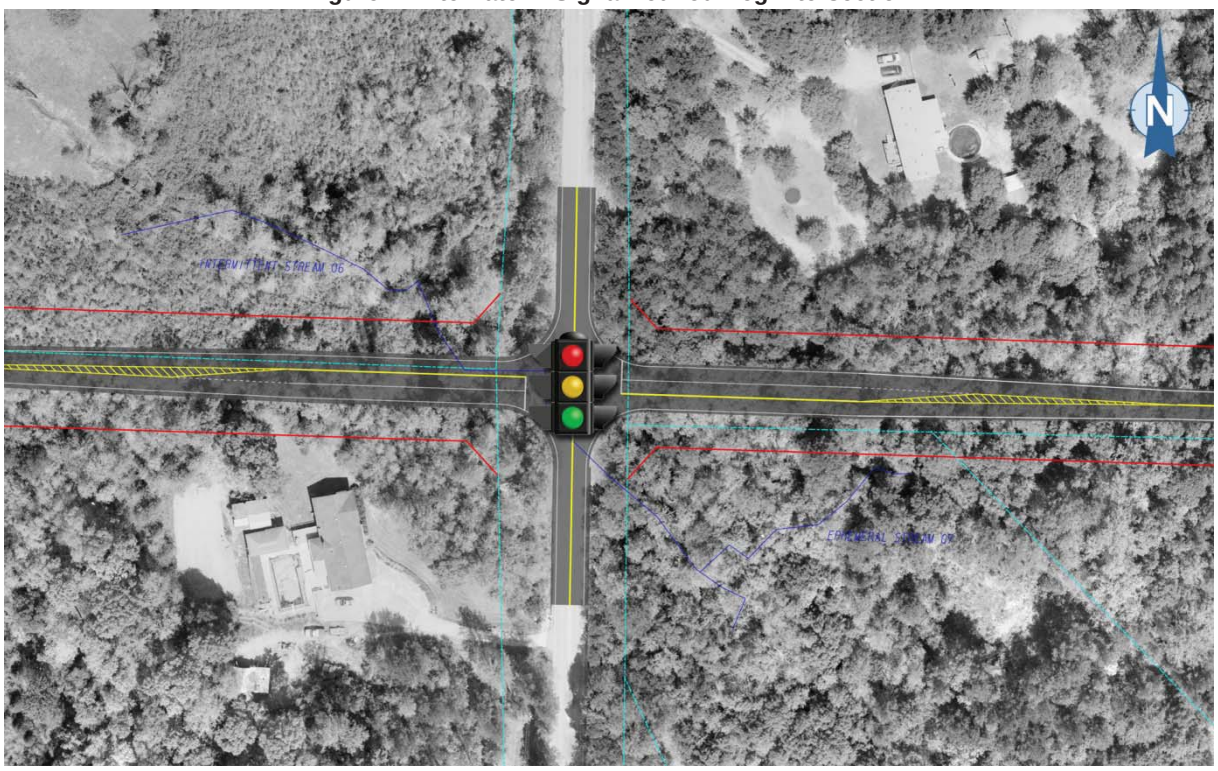


Figure 5: Alternate 3: Initial Single Lane Roundabout

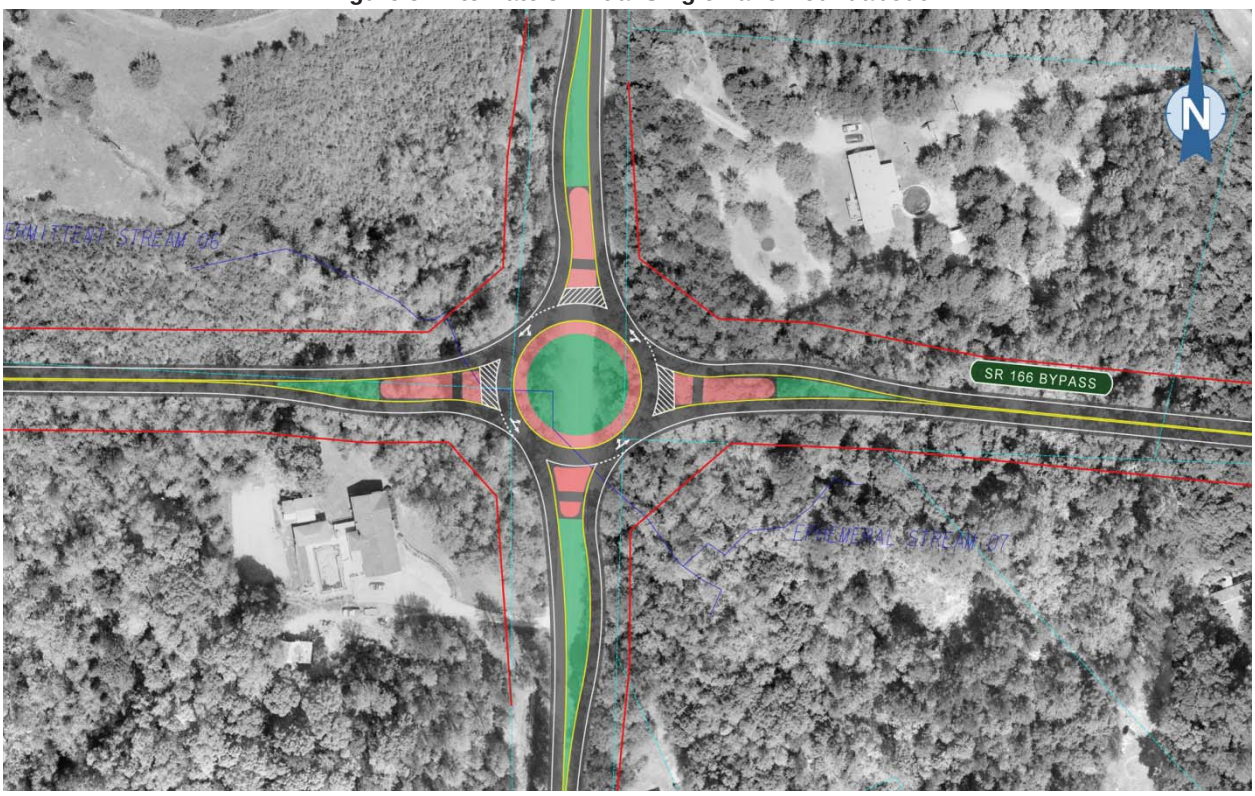
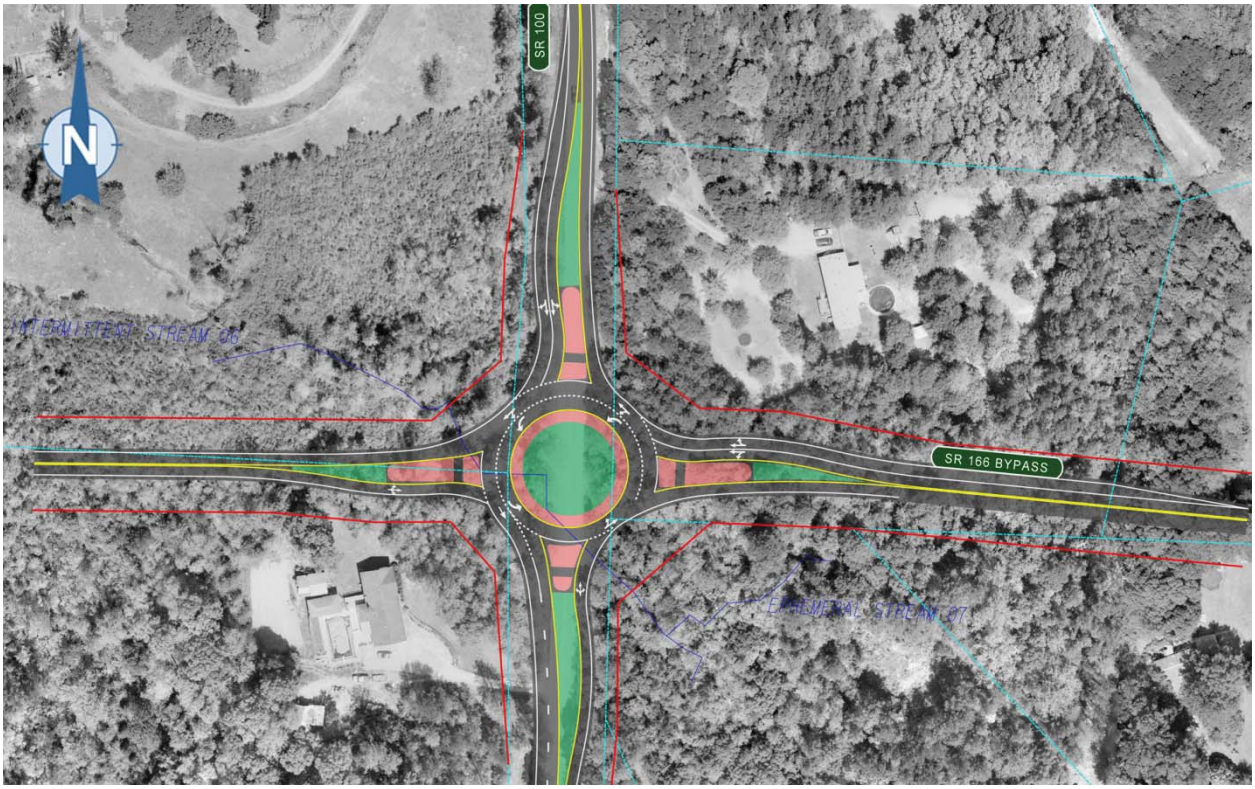


Figure 6: Alternate 3 with Outside build-out to accommodate future traffic



SECTION 4
Operational Analysis

Operational intersection capacity analysis was performed for three intersection alternatives at the proposed intersection of SR 166 Bypass and SR 100 for the 2023 opening year and 2043 design year traffic volumes. The following sections describe the analysis results for the no-build and build conditions as well as geometric improvements needed to operate at acceptable levels.

To evaluate the operational performance of the roundabouts, both the GDOT Roundabout analysis Tool and the "SIDRA Standard" method using the software package SIDRA Intersection have been used. For the operational analysis of traditional four-leg intersection, SYNCHRO 7.0 software was used. Detailed reports from both GDOT Roundabout analyses, SIDRA analyses and SYNCHRO analyses are attached at the end of this document.

Intersection capacity analysis was performed for Alternative 1, 2-way unsignalized stop controlled intersection. The results of the capacity analysis are presented in Table 3. The results indicate that the eastbound and westbound approaches of the intersection experience level of service (LOS) F during the 2023 PM peak period. As a result of the failing intersection and approach LOS, MUTCD signal warrant analysis was performed as part of the May 2012 *Traffic Operations Analysis for SR 166* concept report. The warrant analysis met MUTCD warrant 1, 2, and 3B criteria for signalization. Alternative 2, signalized intersection, capacity analysis performed resulted in acceptable intersection LOS B or better during the 2023 and 2043 analysis period, as shown in Table 3. Single lane approaches with left-turn bays were included for each approach to the intersection.

Table 3

2023 & 2043 Capacity Analysis Results

SR 166 Bypass at SR 100

Analysis Tool	Lane Group		2023 Build				2043 Build			
			AM Peak		PM Peak		AM Peak		PM Peak	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Alternative 1 - Unsignalized-Two Way Stop										
HCM	Eastbound		18.7	C	70.4	F	52.4	F	*	F
	Westbound		18.4	C	223	F	111	F	*	F
	Northbound		0.0	A	0.0	A	0.0	A	0.0	A
	Southbound		1.5	A	1.0	A	1.6	A	1.2	A
	Average Intersection Delay		10.4	A	96.7	D	44.1	C	*	F
Alternative 2 - Signalized Intersection										
Synchro	Eastbound		9.4	A	9.9	A	13.1	B	13.7	B
	Westbound		8.2	A	13.5	B	10.8	B	20.8	C
	Northbound		11.2	B	13.1	B	15.5	B	17.6	B
	Southbound		9.5	A	15.7	B	10.9	B	22.5	C
	Average Intersection Delay		9.6	A	13.5	B	12.9	B	19.7	B
Alternative 3 - Single Lane Roundabout										
			HCM 2010 Model (Build)				Calibrated Model (Future)			
GDOT Tool	Eastbound		8	A	10	A	9	A	11	B
	Westbound		7	A	17	C	8	A	35	E
	Northbound		9	A	8	A	10	B	9	A
	Southbound		6	A	17	C	6	A	35	D
Alternative 3 - Single Lane Roundabout										
SIDRA	Eastbound		7.1	A	9.4	A	9.6	A	15.3	B
	Westbound		6.5	A	13.3	B	8.6	A	45.5	D
	Northbound		8.2	A	7.6	A	12.4	B	11.3	B
	Southbound		5.6	A	16.6	B	6.9	A	119.2	F
	Average Intersection Delay		7.0	A	12.6	B	9.8	A	55.7	E
Alternative 3 - Multi-Lane Roundabout										
			HCM 2010 Model (Build)				Calibrated Model (Future)			
GDOT Tool	Eastbound	Left-Thru-Right	4.8	A	5.8	A	6.2	A	8.6	A
	Westbound	Left	3.4	A	4.2	A	3.9	A	5.3	A
		Right-Thru	4.0	A	6.4	A	4.8	A	9.8	A
	Northbound	Left-Thru-Right	5.3	A	4.9	A	7.3	A	6.6	A
	Southbound	Left	3.5	A	6.0	A	3.6	A	5.7	A
		Right-Thru	3.4	A	6.0	A	4.4	A	14.7	B
Alternative 3 - Multi-Lane Roundabout										
SIDRA	Eastbound	Left-Thru-Right	11.5	B	18.4	B	11.5	B	18.4	B
	Westbound	Left	5.9	A	9.8	A	5.9	A	9.8	A
		Right-Thru	5.5	A	12.3	B	5.5	A	12.3	B
	Northbound	Left-Thru-Right	12.3	B	11.4	B	12.3	B	11.4	B
	Southbound	Left	8.2	A	14.3	B	8.2	A	14.3	B
		Right-Thru	5.9	A	25.6	C	5.9	A	25.6	C
	Average Intersection Delay		9.4	A	16.2	B	9.4	A	16.2	B

* Indicates capacity analysis results exceed capacity.

Alternative 3 is the installation of a roundabout at the study location. GDOT's roundabout analysis tool was initially utilized to determine if the projected traffic volumes at the proposed intersection of SR 166 Bypass at SR 100 is expected to operate acceptably with the installation of a roundabout. The results of the analysis are presented in Table 3. The results indicate that a single lane would operate acceptably during the 2023 opening year traffic conditions but would not operate acceptably during the 2043 PM peak period. Additional analysis was

performed at the intersection utilizing a multilane roundabout, which resulted in acceptable LOS during the PM peak.

Finally, SIDRA analysis was performed at the intersection to provide validation to the initial GDOT's roundabout tool analysis results. A default environmental factor of 1.2 was used in the roundabout evaluation. Similar to the GDOT roundabout tool analysis results, SIDRA analysis results indicate that a single-lane roundabout will operate at acceptable levels during the 2023 and 2043 analysis periods with the exception of the 2043 PM peak period. The westbound and southbound approaches fall below LOS D indicating the need to modify the roundabout for those legs from signal-lane to multi-lane approaches to increase the capacity of the roundabout. The multi-lane approach analysis included a westbound left, through-right approach lanes and a southbound left, through-right approach lanes. The multi-lane roundabout capacity analysis resulted in acceptable LOS for all approaches. Alternative 3, roundabout capacity analysis performed resulted in acceptable intersection LOS B or better during the 2023 and 2043 analysis period, as shown in Table 3.

Additional analysis was also performed to determine the needed roundabout geometry needed during the 2033 interim period to provide adequate LOS. Single lane roundabout analysis indicated the southbound approach operated at LOS D during the PM peak period. The intersection was analyzed with southbound left, right-through lanes and signal lanes on all other approaches resulting in approach LOS C or better. The results of the analysis are presented in Table 4.

Table 4

Interim 2033 Capacity Analysis Results
SR 166 Bypass at SR 100

Analysis Tool	Approach		2033 Build			
			AM Peak		PM Peak	
			Delay	LOS	Delay	LOS
Single Lane Roundabout						
SIDRA	Eastbound		8.4	A	12.8	B
	Westbound		7.6	A	21.6	C
	Northbound		10.2	B	9.3	A
	Southbound		6.3	A	36.7	D
	Average Intersection Delay		8.4	A	22.3	C
Multi-Lane Roundabout						
SIDRA	Eastbound		9.9	A	13.8	B
	Westbound		7.6	A	21.6	C
	Northbound		10.2	B	9.2	A
	Southbound	Left	6.3	A	10.6	B
		Right-Thru	4.7	A	15.1	B
	Average Intersection Delay		8.6	A	16.2	B

SECTION 5
Cost Comparision

The cost comparison for the three alternates is summarized in Table 5. The costs have been summarized into seven categories. They are as follows:

- Roadway
- Drainage
- Erosion Control
- Traffic Signal
- Landscape
- Lighting, Striping, Signs, and Traffic Control
- Right of Way

Table 5: Alternative Construction Cost Estimates

Items	Alternate 1	Alternate 2	Alternate 3*
Roadway		$482,150	$699,983
Drainage		$12,098	$19,379
Erosion Control		$14,426	$16,992
Traffic Signal		$136,158	$0
Landscape		$60,000	$90,000
Lighting, Striping, Signs, & Traffic Control		$48,351	$56,505
ROW Cost		$135,600	$172,200
TOTAL	**Not Viable**	**$888,784**	**$1,055,059**

***Full build out alternative**

A cost estimate was not shown for Alternate 1 as this alternate is not viable due to an unacceptable LOS.

Alternative 1 and Alternative 2 have the same footprint and thus all of the construction and right of way costs are the same. The only difference is the addition of the traffic signal to Alternative 2 which is estimate to add $136,000 to the project.

The cost estimate shown for the roundabout alternative, Alternate 3, is for the full build out alternative. This includes a dual lane roundabout as shown in Figure 6. Additional approaches are required along the westbound SR 166 Bypass and SR100 southbound. This adds additional pavement and right of way costs when compared to Alternatives 1 and 2.

SECTION 6
Alternate Selection

- Location: The new SR166 Bypass location is approximately 1,000 feet north of the existing intersection of West Jonesville Road and SR 100. There are no other intersections in proximity to this location.

- Operations: Alternate 1 (the unsignalized intersection) capacity analysis indicated the LOS would be failing during the PM peak hour by the opening year. Both Alternate 2 (the signalized intersection) and Alternate 3 (the multi-lane roundabout) would accommodate the design year traffic and operate at desirable level of service. Although, average intersection delays for each of the 2023 and 2043 peak periods is comparable, delay at the intersection is slightly reduced under Alternate 3 for the 2043 design year scenarios.

- Design: The existing grade along SR 100 at the proposed intersection is approximately 4%. The proposed grade of SR 166 Bypass is 5%. These grades are within the design parameters; however they are not favorable for the location of a roundabout. Vehicles traveling on steep downgrades tend not to slow sufficiently prior to entering the roundabout. The grades may have been less of an issue if the intersection didn't meet signal warrants or there was a significant accident history.

- Right-of-Way: Alternative 1 and Alternative 2 would require approximately 2.3 acres of right of way to construct. Alternative 3 would require approximately 2.9 acres.

- Cost: Alternative 1 would have the lowest cost; however, the intersection would be failing without a traffic signal. Alternative 2 would cost $166,276 less than Alternative 3 but much of that savings would be lost in life cycle costs involved throughout the signal operation. Alternative 3 is the most expensive option due to the increase right-of-way and additional travel lanes required to construct a dual lane roundabout.

In summary, Alternative 1 is deemed not feasible due to its failing operations and performance in the design year. Alternative 2 is the least expensive viable option. Alternative 3 is the most expensive alternative and is not an appropriate location for a roundabout due to the steep profile grades.

SECTION 7
Conceptual Roundabout Design

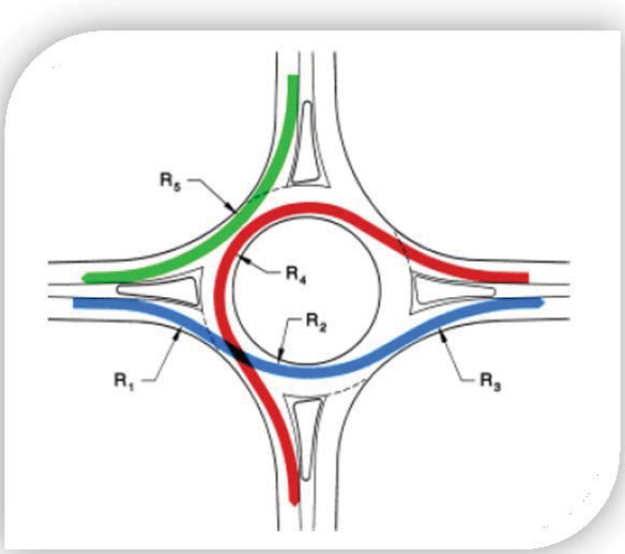
Roundabout Dimensions

The conceptual design for the roundabout at SR166 and SR100 was relatively straight forward. The approaches to the roundabout are rural in nature with twelve foot lanes and four foot paved shoulders in each direction. The approaches all meet at close to 90 degrees. The inscribed diameter is 160 feet with a circulatory roadway width of 18 feet. A 12 foot truck apron is required to accommodate the design vehicle, which is a WB-67. Entry and exit widths are all 17 foot wide.

Fastest path

The fastest path for the five primary curves was analyzed for each approach. R1 represents the entry speed into the roundabout. R2 is the fastest path through the roundabout and R3 represents the exit radius. R4 is the circulatory radius for vehicles making left turns. R5 is for a simple right turn movement.

	Curve	Radius (ft)	Speed (mph)
NORTHBOUND	R1	108.8	20
	R2	103.9	21
	R3	241.6	28
	R4	67.0	18
	R5	138.7	24
WESTBOUND	R1	130.3	22
	R2	99.5	21
	R3	180.3	24
	R4	67.0	18
	R5	126.7	22
SOUTHBOUND	R1	136.3	22
	R2	103.5	21
	R3	177.5	24
	R4	67.0	18
	R5	129.2	23
EASTBOUND	R1	160.1	23
	R2	109.4	22
	R3	183.5	24
	R4	67.0	18
	R5	138.4	23



Figures 7 thru 10 depict the fastest path for all directions.

Figure 7: Fastest Path for the Northbound Movement

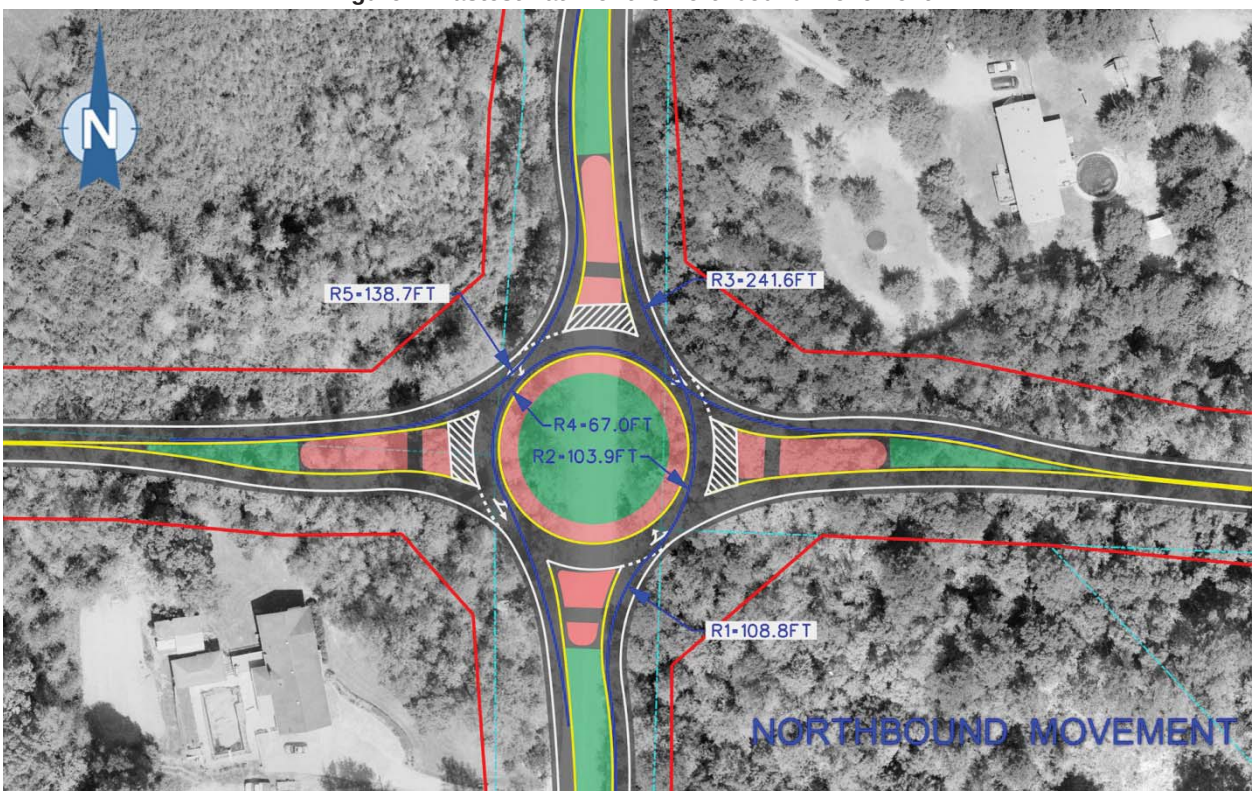


Figure 8: Fastest Path for the Westbound Movement

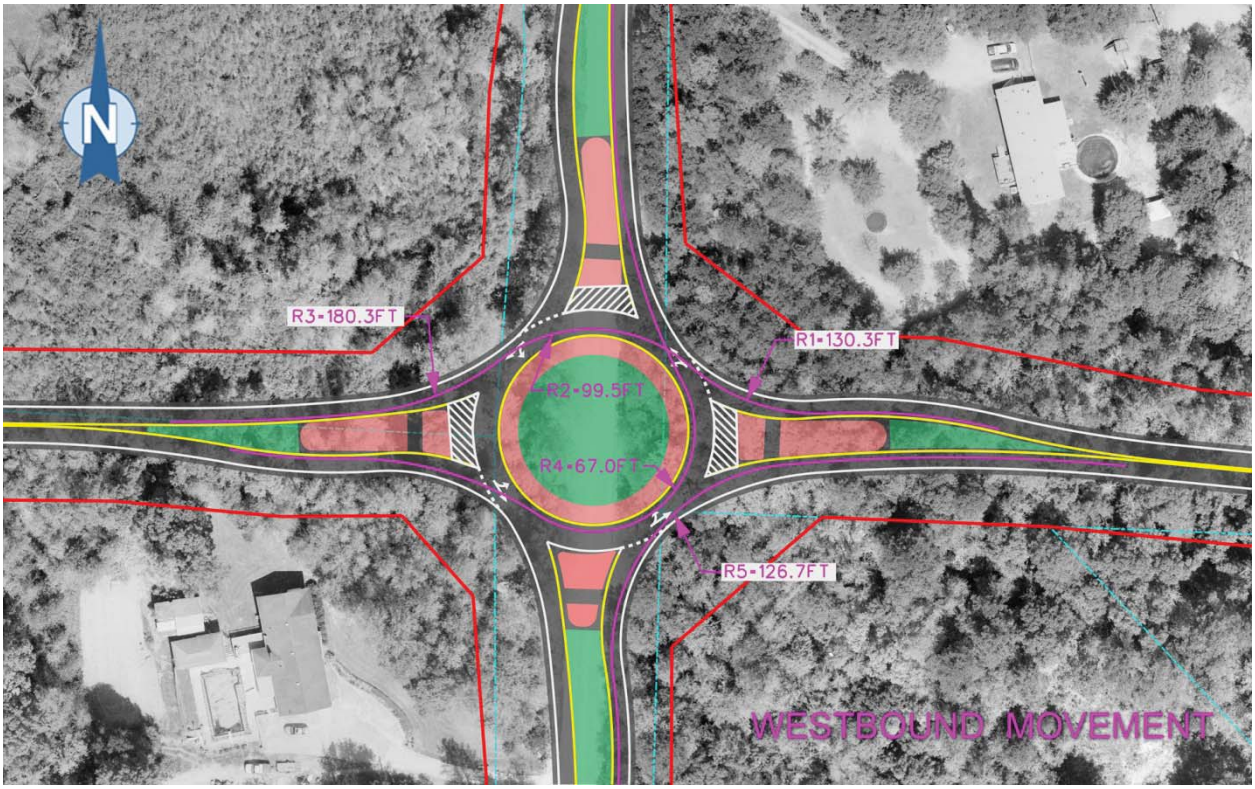


Figure 9: Fastest Path for the Southbound Movement

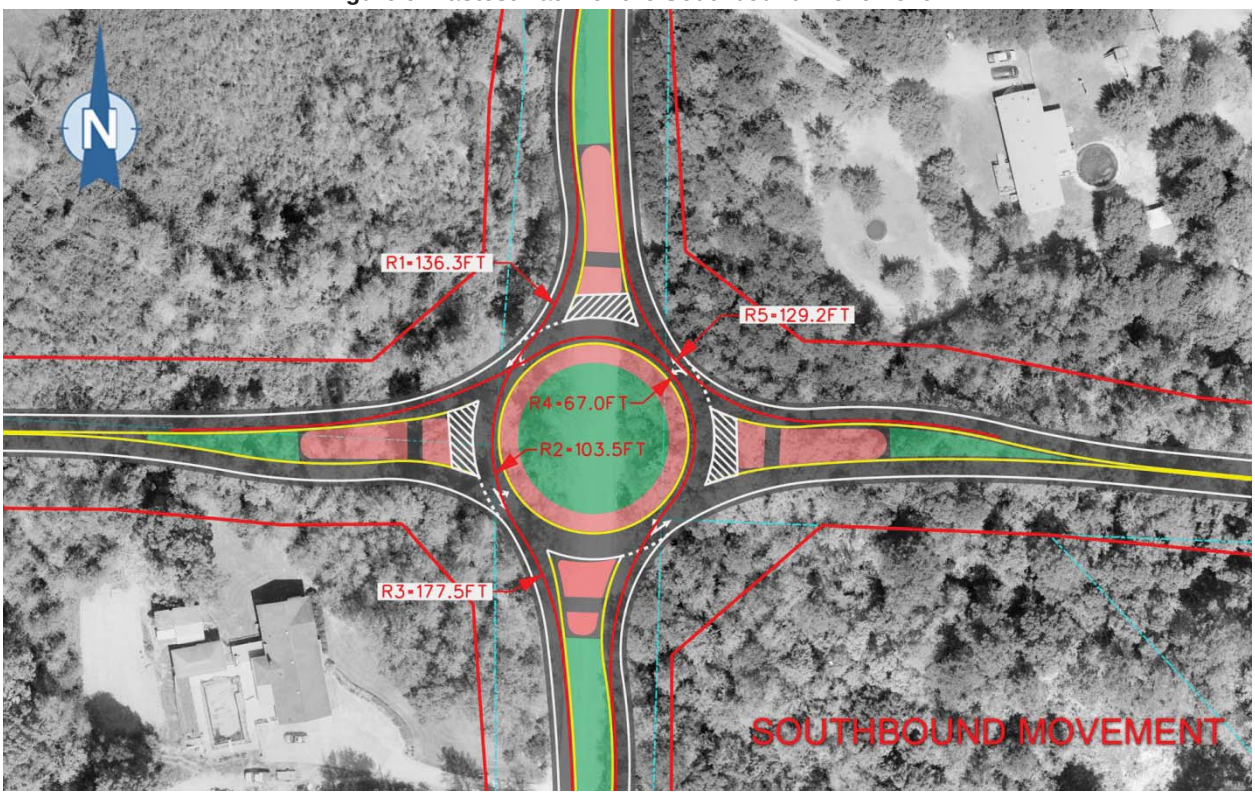
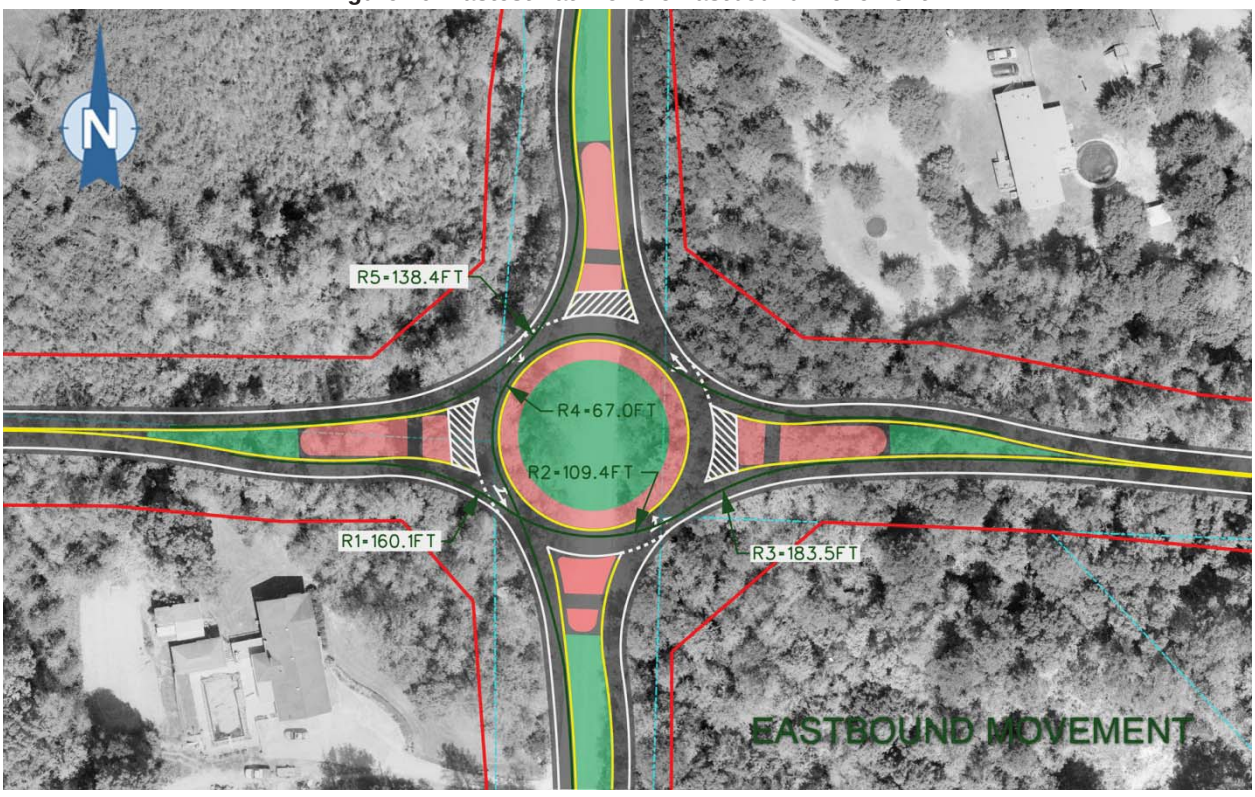


Figure 10: Fastest Path for the Eastbound Movement



Design Vehicle Swept Path

A WB-67 was considered as the standard design vehicle for the proposed improvements. Turning path diagrams are attached as Figures 11, 12, and 13.

Figure 11: WB 67 Truck Turning Swept Path for Right-Turn Movements

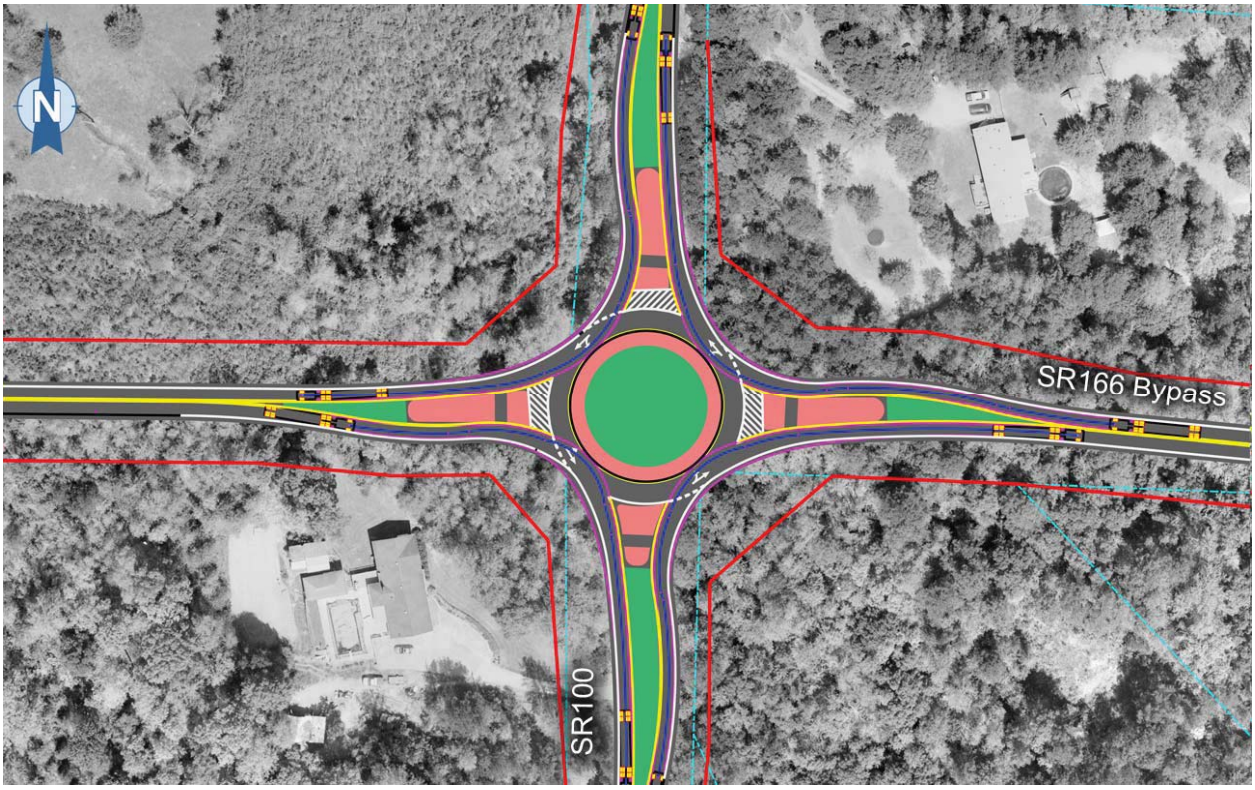


Figure 12: WB 67 Truck Turning Swept Path for the Through Movement

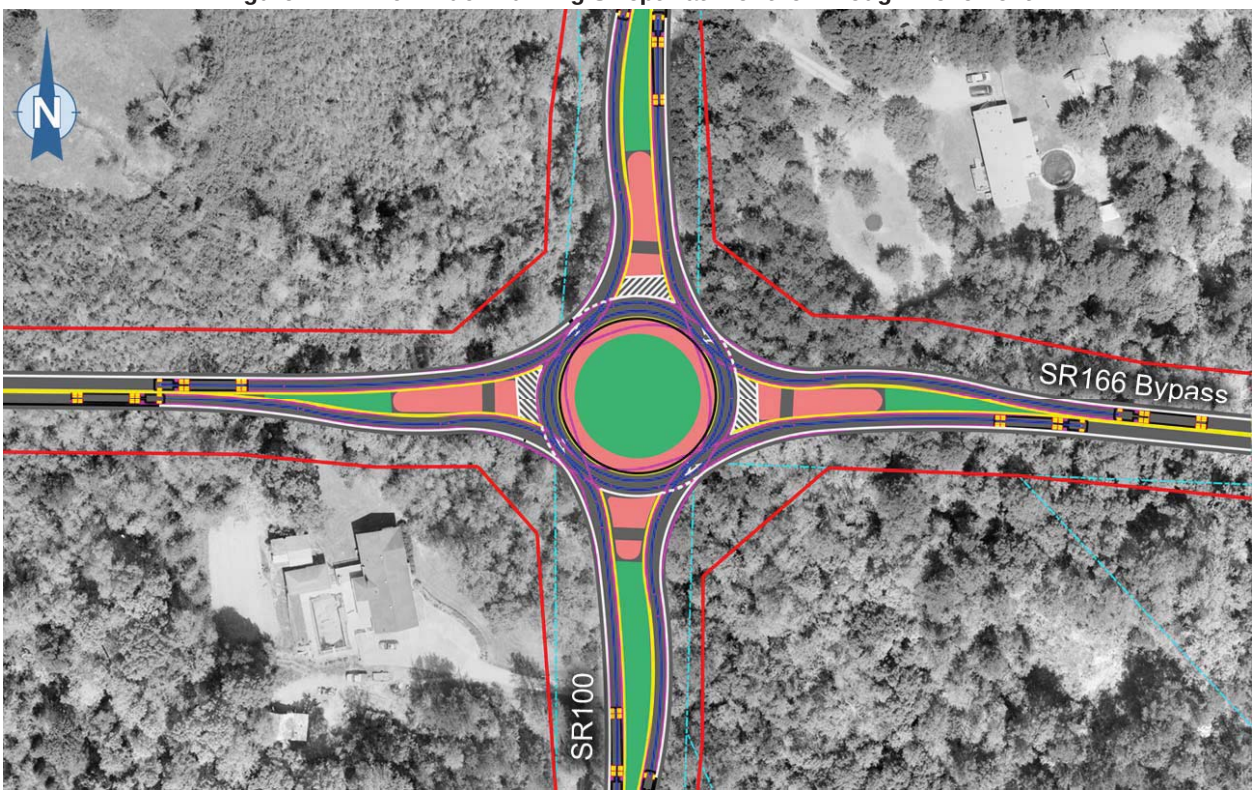
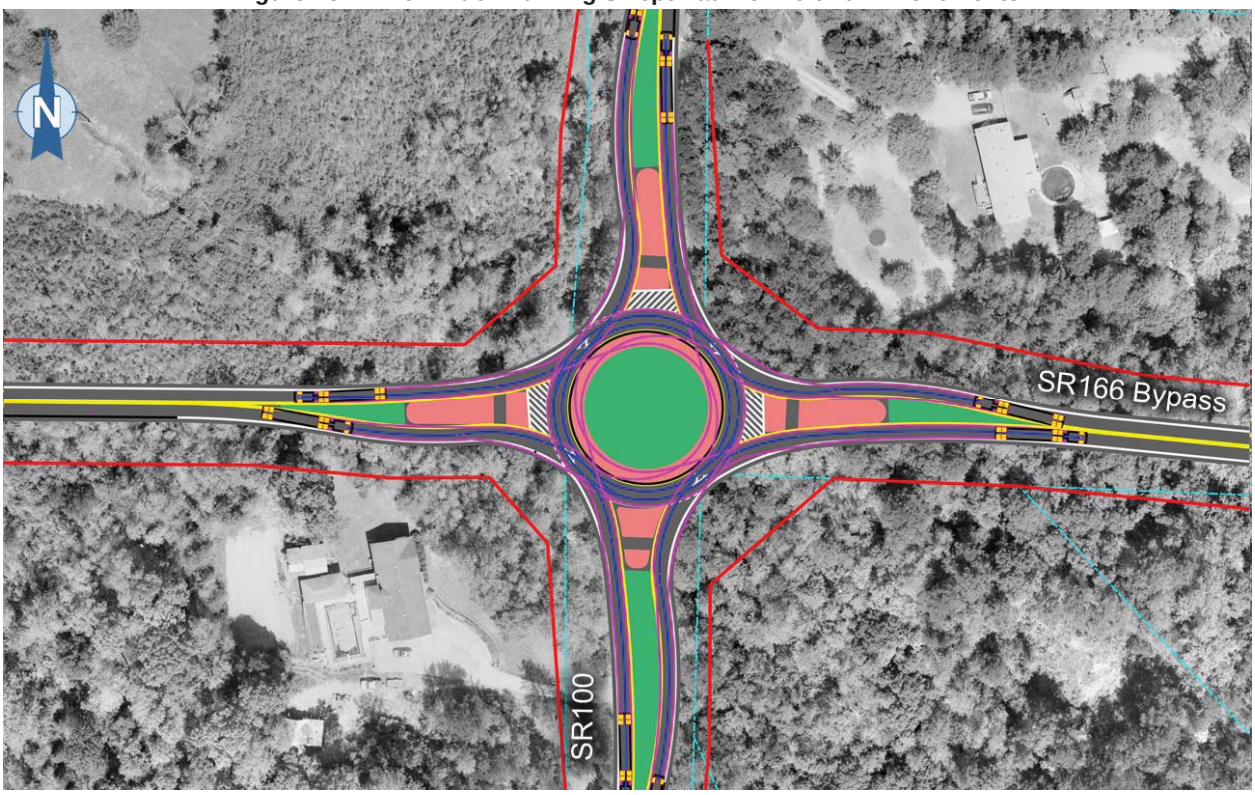


Figure 13: WB 67 Truck Turning Swept Path for Left Turn Movements



SECTION 8
Recommendations

Based on analysis the following recommendations were formulated for the intersection of existing SR 100 and the proposed SR 166 Bypass in Carroll County, Georgia.

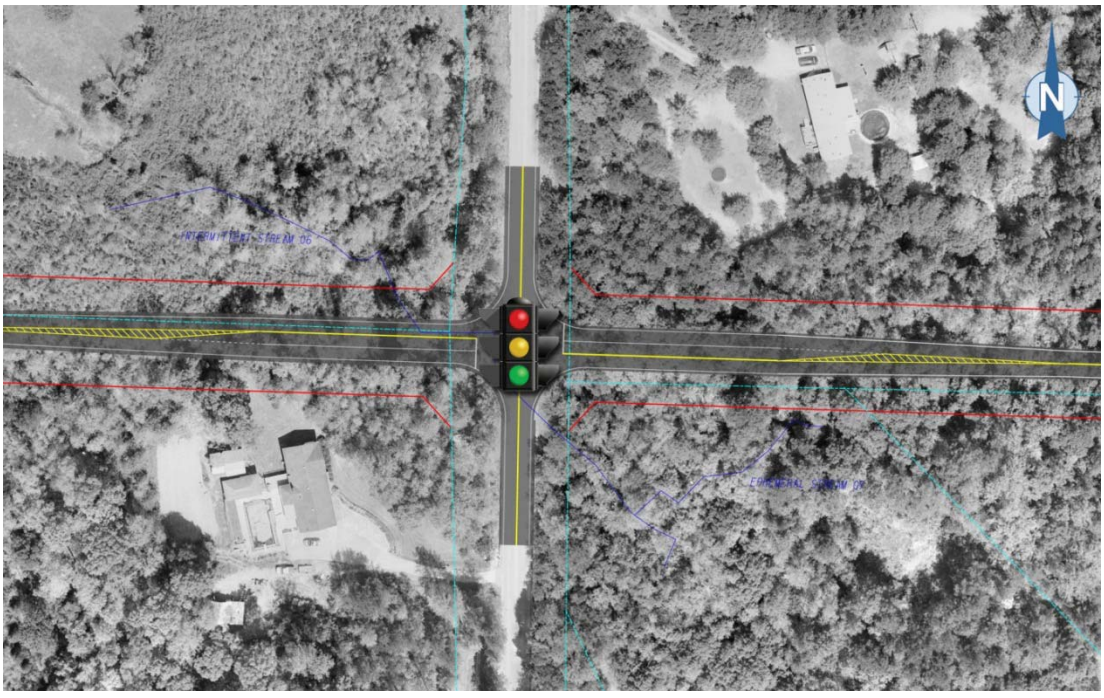
Three alternatives were considered at this new intersection just north of the town of Bowdon: an unsignalized intersection (Alternate 1) a signalized intersection (Alternate 2) and a multi-lane roundabout (Alternate 3).

The unsignalized intersection would be failing in the design year and hence Alternate 1 was deemed not feasible. Alternate 2, the signal option, would accommodate the opening year (2023) and design year (2043) traffic by providing an overall level of service of B or better. Alternate 3, if built as a single lane roundabout would start to fail around 2033. Additional lanes would be required on the westbound and southbound approaches and the roundabout would need to be widened to a dual lane roundabout.

Safety could become an issue with the introduction of a new intersection. Roundabouts are historically safer and have less severe crashes when they happen. However, the existing SR100 and proposed SR166 grades are a concern for the roundabout option as vehicles often don't adequately slow to acceptable approach speeds on downgrades greater than 4% (NCHRP 672 – 6.8.7.5). This is exacerbated by the anticipated heavy truck traffic.

Alternate 2 has the lowest construction cost. Based upon these reasons, Alternate 2 (signalized intersection) is recommended as the preferred alternate.

Alternate 2 – Preferred Alternate



DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INDICATION OF LIGHTING SUPPORT

STREETSCAPE/EHNANCEMENT PROJECT

Georgia Department of Transportation
ATTN: Brent Story, P.E., State Design Policy Engineer
Office of Design Policy & Support, 26th Floor
600 West Peachtree Street, NW
Atlanta, GA 30308

Location

Carroll County supports the consideration of roundabout/roadway lighting.

Description: *SR 166 fm Big Indian Creek to CR 828 (8.8 mile project)*

State/County Route Numbers: (see project cover sheet)

Project: STP00-0021-01(025) Carroll County P.I. No. 631310-

Associated Conditions

The undersigned agrees to participate in the following maintenance of installed streetscape/enhancement lighting:

- The full and entire cost to energize the lighting system installed and provide for the maintenance/operation thereof;

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

This is the 21 day of October, 2013

Attest: Susan A. Maley
Clerk

By: Mark W. Smith

Title: Chairman

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

PROJECT CONCEPT REPORT

North Bowdon Bypass and SR 166 Widening and Reconstruction
Project Number: STP00-0021-01(025)

PI 631310

Carroll County

Attachment 9

Pavement Studies

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENTAL CORRESPONDENCE

FILE STP00-0021-01(024) & (025) Carroll County
PI No. 631300 & 631310
SR 166 from CR 828 to 4-Ln/Carrollton
SR 166 from E of Big Indian Creek to CR 828

OFFICE Materials & Testing
Forest Park, Georgia
DATE November 21, 2013

D. E. H. for

FROM Charles A. Hasty, P.E., State Materials Engineer

TO Genetha Rice-Singleton, Office of Program Delivery
Attention: Chandria Brown, Project Manager

SUBJECT **Preliminary Pavement Evaluation Summary**
SR 166 widening from CR 828 to existing 4-Lane on the Carrollton Bypass
SR 166 widening from East of Big Indian Creek to CR 828 including Bowdon Bypass

As requested, a Preliminary Pavement Evaluation Summary has been performed on the aforementioned project. The results of this work are attached.

If additional information is needed, please contact Eugene Utsalo of the Geotechnical Environmental Pavement Bureau at 404-608-4775.

CAH: EUU
Attachments
Project Location Map

Copy: DeWayne Comer, P.E., District Engineer, Cartersville
Bill Dungan, Area Engineer, Buchanan

File

PRELIMINARY PAVEMENT EVALUATION SUMMARY
For
STP00-0021-01(024) & (025) Carroll County
PI No. 631300 & 631310

1. *LOCATION / DESCRIPTION*

These projects are the proposed bypass, widening and reconstruction of SR 166 in western Carroll County. The total improvements are comprised of 2 projects. The first project is the North Bowdon Bypass, STP00-0021-01(025), from just east of Big Indian Creek, about 0.7 miles west of the western city limits of Bowdon, bypassing the city on new location to the north and tie into the existing West Jonesville Road, continuing along SR 166 to the intersection of CR 828/Farmers High Road. The second project is the widening and reconstruction of SR 166, STP00-0021-01(024) from the limit of the previous project, CR 828/Farmers High Road intersection to the existing 4-lane section just west of CR 11/Hays Mill Road. The combined lengths of the projects including the new bypass is approximately 13.3± miles between the cities of Bowdon and Carrollton in Carroll County.

2. *PAVEMENT CONDITION SUMMARY*

SR 166
The existing pavement on SR 166 within the limits of these projects is in good visual condition. During the field investigation of this project on October 30, 2013, very few sections of localized distresses were observed. Please see Section 5: *Pavement Distresses* for more information.

3. *PAVEMENT RECOMMENDATION SUMMARY*

No pavement recommendations are available at this time. Pavement recommendations will be provided when full-scale field works are completed and the existing pavement thickness is known.

4. *FULL-DEPTH SECTION*

No full-depth recommendations are available at this time. Full-depth sections and recommendations will be provided when a complete pavement evaluation summary is completed for these projects.

5. *OVERLAY SECTIONS*

No overlay recommendations are available at this time. Overlay and/or mill and inlay sections and recommendations will be provided when a complete pavement evaluation summary is completed for these projects.

6. *PAVEMENT DISTRESSES*

Except for the following, no other distresses were encountered during the field investigation of this project:

Load Cracking Level 1 load cracks were observed on a few areas within the project limits of PI No. 631310. Levels 1 & 2 load cracks, which appeared to have been crack-sealed, were observed between Maple Street and Hays Mill Road within the project limits of PI No. 631300.

Block/ Transverse Cracking Level 1 block cracks were observed on a few areas within the project limits of PI No. 631310. Levels 1 & 2 block cracks, which appeared to have been crack-sealed, were observed between Maple Street and Hays Mill Road within the project limits of PI No. 631300.

7. *CORES*

Cores were have not been recovered on these projects. Therefore, no core information is available at this time.

8. *COPACES*

COPACES ratings are based on a visual survey of surface distresses of the pavement. The latest 2012 rating for SR 166 from MP 2 to MP 9 and MP 9 to 15 in Carroll County were 91 and 80 within the project limits of PI No. 631310 and . No 631300 respectively.

9. *OTHER INFORMATION*

- This is a preliminary pavement evaluation request. No core samples were recovered during the field work of these projects.
- The Soil Survey Summaries have not been completed for these projects.
- No pavement designs have been completed for these projects at this time. Pavement designs and recommendations will be provided when the complete pavement evaluation works are completed for these projects.

Reported By: **Eugene Utsalo, E.I.T.**

Reviewed By: _____

A. J. Jubran, P. E.
State Pavement Engineer

LOCATION MAP

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENTAL CORRESPONDENCE

FILE STP00-0021-01(025), Carroll County
PI No. 631310
SR 166 from E of Big Indian Creek to CR 828

OFFICE Materials & Testing
Forest Park, Georgia
DATE November 21, 2013

FROM Charles A. Hasty, P.E., State Materials Engineer

TO Genetha Rice-Singleton, Office of Program Delivery
Attention: Chandria Brown

SUBJECT **Pavement Type Selection and Pavement Design Recommendation**
SR 166 from East of Big Indian Creek to CR 828 - North Bowdon Bypass

The Office of Materials and Testing (OMAT) has completed a Pavement Type Selection (PTS) and a pavement design recommendation for the above referenced project.

Project Description and Location

This project is for the proposed widening of State Route 166 from just east of Big Indian Creek to CR 828/Farmers High Road. This PTS is for the North Bowdon Bypass with begins about 0.7 miles west of the western city limits of Bowdon on new location to the north and ties into the existing West Jonesville Road. The total length of the bypass is 2.2 miles. The bypass will be located north of the City limits of Bowdon in Carroll County.

Pavement Design Alternatives Considered

The LCCA analyzed the costs of the project by comparing two alternative pavement types. Alternative A uses full-depth Hot Mix Asphalt (HMA) pavement, while Alternative B uses full-depth Portland Cement Concrete (PCC) pavement.

Pavement Type Recommendation

The LCCA analysis concludes that there is no definite selection for pavement type. However, considering that the existing roads are Hot Mix Asphalt, Alternative A – full-depth Hot Mix Asphalt pavement is the recommended alternative. This selection also considered the economics of construction costs, mobilization costs, long term pavement performance, maintenance costs and other factors over the analysis period. The alternatives are listed in Table 1.

Table 1: Pavement Design Alternatives

Design Alternates	Profile	Surface	Intermediate (Binder)	Base	Sub-base
Alternate A, (Full-Depth HMA)	Mainline	12.5 mm Superpave (1.50")	19 mm Superpave (2.00")	25 mm Superpave (4.00")	Graded Aggregate Base (14.00")
Alternate B, (Full-Depth PCC)	Mainline	PCC (9.00")	19 mm Superpave (0.00)	---	Graded Aggregate Base (10.00")

LCCA Factors

The LCCA is based on the following:

- The deterministic approach to LCCA based on the guidelines in the following document:
    - Federal Highway Administration Publication No. FHWA-SA-98-079, "Life-Cycle Cost Analysis in Pavement Design."
- The analysis periods were 40 years and 50 years. Recommendations were based on the 40-year analysis.
- Staging costs and durations for staging were *not* considered.
- A discount Rate of 4 %.
- The service life prior to first major maintenance activities were as follows:
    - 10 years for Asphaltic Concrete Pavements (AC)
    - 20 years for Portland Cement Concrete Pavements (PCC)
- Average Plant Production rates determined from historical project information within the Georgia Department of Transportation as follows:
    - Asphalt Concrete plant production rate of 200 tons per hour.
    - Ready Mix Concrete plant production rate of 6000 square yards per day in addition to the following:
        - A 4000 linear feet of paving for a 12-foot wide lane
        - A 2500 linear feet of paving for a 24-foot wide lane

Table 2 summarizes the total Agency Costs:

Table 2: Agency Costs

Design Alternates	Agency Costs		Total Costs
	Initial Agency Costs (A)	Future Maintenance Costs (B)	(A)+ (B)
Alternate A, Full-Depth HMA	$2,042,642	$1,269,841	$3,312,483
Alternate B, Full-Depth PCC	$2,718,454	$826,958	$3,545,412

Table 3 summarizes the total User Costs:

Table 3: User Costs

Design Alternates	User Costs		Total Costs
	Initial User Costs (A)	Future User Costs (B)	(A) + (B)
Alternate A, Full-Depth HMA	$0	$3,216	$3,216
Alternate B, Full-Depth PCC	$0	$2,133	$2,133

Table 4 summarizes the Total Scores and Ranking from the Decision Matrix. The scores were determined from the LCCA using a 40-year Analysis Period.

Table 4: Total Score

Design Alternates	Rank	Total Score
Alternate A, Full-Depth HMA	1	85.0
Alternate B, Full-Depth PCC	2	84.1

Copies of the project report summary can be obtained upon request from the Geotechnical Environmental Pavement Bureau.

If additional information is needed, please contact Eugene Utsalo of the Geotechnical Environmental Pavement Bureau at 404-608-4775.

CAH: EUU
Attachments
Full Depth Flexible Design
Full Depth Rigid Design
Decision Matrix

cc: DeWayne Comer, P.E., District Engineer, Cartersville
Bill Dungan, Area Engineer, Buchanan

File

Flexible Pavement Design Analysis

PI Number	631310-	**County(s)**	Carroll
Project Number	STP00-0021-01(025)	**Design Name**	North Bowdon Bypass
Project Description	SR 166 from East of Big Indian Creek to CR 828/Farmers High Road		

Traffic Data (AADTs are one-way)						**Miscellaneous Data**	
Initial Design Year	2023	**Initial AADT, VPD**	3,525	**24 Hour Truck %**	11.00	**Lanes in one direction**	1
Final Design Year	2043	**Final AADT, VPD**	4,970	**SU Truck %**	8.00	**Curb & Gutter/Barrier**	Yes
		Mean AADT, VPD	4,248	**MU Truck %**	3.00		

Design Data					
Lane Distribution Factor (%)	100.00	**Soil Support Value**	2.50	**Single Unit ESAL**	0.40
Terminal Serviceability Index	2.50	**Regional Factor**	1.80	**Multiple Unit ESAL**	1.50
		User Defined 18-KIP ESAL	0.00	**Calculated 18-KIP ESAL**	0.70
Non-Standard Value Comment					

Design Loading (Calculated 18-KIP ESAL)					
Mean AADT, VPD	**LDF (%)**	**Vehicle Type**	**Volume (%)**	**ESAL Factor**	**Daily ESAL**
4,248	100.00	Single Unit Truck	8.00	0.40	136
		Multi Unit Truck	3.00	1.50	192
				Total Daily ESALs	328
				Total Design Period ESALs	2,394,400

Proposed Flexible Full Depth Pavement Structure				
Course	**Material**	**Thickness (inches)**	**Structural Coefficient**	**Structural Value**
Course 1	12.5 mm Superpave	1.50	0.4400	0.66
Course 2	19 mm Superpave	2.00	0.4400	0.88
Course 3	25 mm Superpave	1.00	0.4400	0.44
		3.00	0.3000	0.90
Course 4	Graded Aggregate Base	14.00	0.1600	2.24

Required SN 5.24 **Proposed pavement is 2.27% Underdesigned** **Proposed SN** 5.12

Design Remarks	AC Alternate

Prepared By Eugene Utsalo 11/4/2013 4:20 PM
Eugene Utsalo **Date**

Recommended By
State Roadway Design Engineer **Date**

Approved By
State Pavement Engineer **Date**

Filename: C:\Users\eutsalo\Desktop\631310PTS.xlsm
GDOT Pavement Design Tool - Version 2.0

Rigid Pavement Design Analysis

PI Number	631310-	**County(s)**	Carroll		
Project Number	STP00-0021-01(025)	**Design Name**	North Bowdon BYP		
Project Description	SR 166 from East of Big Indian Creek to CR 828/Farmers High Road				
Section Location	New Location FM E of Big Indian Ck to W Jonesville Rd			**Type Section**	JPCP
Begin Section Station	00+00	**End Section Station**	130+00	**Section Length**	2.2 miles

Traffic Data (AADTs are one-way)						**Miscellaneous Data**	
Initial Design Year	2023	**Initial AADT, VPD**	3,525	**24 Hour Truck %**	11.00	**Lanes in one direction**	1
Final Design Year	2043	**Final AADT, VPD**	4,970	**SU Truck %**	8.00	**Curb & Gutter/Barrier**	Yes
		Mean AADT, VPD	4,248	**MU Truck %**	3.00	**Interstate**	No

Design Loading (Calculated 18-KIP ESAL)

Mean AADT, VPD	LDF (%)	Vehicle Type	Volume (%)	ESAL Factor	Daily ESAL
4,248	100	Other Vehicles	89.00	0.004	16
		Single Unit Truck	8.00	0.500	170
		Multi Unit Truck	3.00	2.680	342
				Total Daily ESALs	528
				Total Design Period ESALs	3,854,400

Design Data

Terminal Serviceability Index (P_t)	2.50	**Working Stress (psi)**	450	**Modulus of Elasticity (psi)**	3,200,000		
Soil Support Value	2.50	**Subgrade Modulus (k)**	130	**Subbase Modulus (k_1)**	195	**Subbase Modulus (k_{eff})**	195
Trial Depth of PCC Pavement (inches)	9.00			**Calculated Stress from Equation (psi)**			421.97
% Understressed	6.23	**% Overdesigned**	6.64	**Balanced Thickness (inches)**	8.67		
Non-Standard Value Comment							

Proposed Rigid Pavement Structure	
Material	**Thickness (inches)**
JPCP - Jointed Portland Cement Concrete Pavement	9.00
19 mm Superpave Asphaltic Concrete Interlayer	0.00
Graded Aggregate Base	10.00

JPCP - Dowel Bar Size and Spacing
Refer to GDOT Standard 5046H: Joint Details for Portland Cement Concrete Paving

Design Remarks	PCC Alternate

Prepared By Eugene Utsalo — 11/4/2013 4:33 PM

Eugene Utsalo — Date

Recommended By

State Roadway Design Engineer — Date

Approved By

State Pavement Engineer — Date

Filename: C:\Users\eutsalo\Desktop\631310PTS.xlsm

GDOT Pavement Design Tool - Version 2.0

DECISION MATRIX

	DECISION FACTOR										Total Score	Rank
	Initial Construction Agency Costs	**Maintenance Costs** (nominal / discounted)	**Annualized Agency Costs** (LCC)	**Annualized User Costs** (LCC)	**Salvage Value**	**Expected Life** (Rehabilitation Frequency)	**Construction** (production rate - initial days)	**Ease of Repairing / Maintaining** (production rate - rehab days)	**Constructibility / Traffic Control** (Lifts)	**Proven Design in Agency**		
Relative Importance	50%	25%	5%	5%	2%	2%	2%	2%	2%	5%		
ALTERNATIVE A-HMA Full Depth Mainline	1.00 50.0	0.64 15.9	1.00 5.0	0.66 3.3	0.00 0.0	0.50 1.0	1.00 2.0	0.67 1.3	0.75 1.5	1.00 5.0	**85.0**	**1**
ALTERNATIVE B-PCC Full Depth Mainline	0.75 37.6	1.00 25.0	0.92 4.6	1.00 5.0	0.00 0.0	1.00 2.0	0.50 1.0	1.00 2.0	1.00 2.0	1.00 5.0	**84.1**	**2**

DECISION MATRIX

	Initial Construction	**Maintenance Costs** (nominal / discounted)	**Annualized Agency Costs** (Life Cycle Costs)	**Annualized User Costs** (Life Cycle Costs)	**Salvage Value**	**Expected Life** (Rehabilitation Frequency)	**Construction** (production rate - initial days)	**Ease of Repairing / Maintaining** (production rate - rehab days)	**Construction / Traffic Control** (Lifts)	**Proven Design in Agency**
ALTERNATIVE A Asphalt Full Depth	$928,474	$486,222	$71,475	$62	$0	10	6	3	4.0	1.0
ALTERNATIVE B Concrete Full Depth	$1,235,661	$309,836	$78,084	$40	$0	20	12	2	3.0	1.0
										1.0
										1.0
										1.0
										1.0
										1.0
										1.0
										1.0
										1.0
Minimum	$928,473.69	$309,836.07	$71,475.35	$40.38	$0.00	10.00	6.00	2.00	3.00	1.00
Maximum	$1,235,660.80	$486,221.85	$78,083.89	$61.55	$0.00	20.00	12.00	3.00	4.00	1.00

ALTERNATIVE A

Mainline Pavement Type HMA
Mainline Pavement Method Full Depth
More Description

ROADWAY PAVEMENT

TRAVEL LANES : New Construction for Widening	Pay Item No	inches	Quantity (per mi per direction)	Quantity (per mi)	Unit Measure	Unit Cost	ITEM COST (per mi)	ITEM COST (total)
12.5 mm Superpave	402-3130	1.50	580.80	580.80	TN	$75.92	$ 88,188.67	$ 194,015.08
19 mm Superpave	402-3190	2.00	774.40	774.40	TN	$64.86	$ 100,455.17	$ 221,001.37
25 mm Superpave	402-3121	4.00	1,548.80	3,097.60	TN	$64.10	$ 198,556.16	$ 436,823.55
Graded Aggregate Base	310-5140	14.00	7,040.00	14,080.00	TN	$21.50	$ 302,720.00	$ 665,984.00
							$ 689,920.00	$ 1,517,824.00

TRAVEL LANES : New Construction for Exceptions	Pay Item No	inches	Quantity (per mi per direction)	Quantity (per mi)	Unit Measure	Unit Cost	ITEM COST (per mi)	ITEM COST (total)

TRAVEL LANES : Overlay Construction	Pay Item No	inches	Quantity (per mi per direction)	Quantity (per mi)	Unit Measure	Unit Cost	ITEM COST (per mi)	ITEM COST (total)

INSIDE SHOULDER -	Pay Item No	inches	Quantity (per mi per direction)	Quantity (per mi)	Unit Measure	Unit Cost	ITEM COST (per mi)	ITEM COST (total)
Graded Aggregate Base	#N/A							

OUTSIDE SHOULDER - Full Depth Asphalt	Pay Item No	inches	Quantity (per mi per direction)	Quantity (per mi)	Unit Measure	Unit Cost	ITEM COST (per mi)	ITEM COST (total)
12.5 mm Superpave	402-3130	1.50	193.60	387.20	TN	$75.92	$ 29,396.22	$ 64,671.69
19 mm Superpave	402-3190	2.00	258.13	516.27	TN	$64.86	$ 33,485.06	$ 73,667.12
25 mm Superpave	402-3121	4.00	516.27	1,032.53	TN	$64.10	$ 66,185.39	$ 145,607.85
Graded Aggregate Base	310-5140	14.00	2,346.67	4,693.33	TN	$21.50	$ 100,906.67	$ 221,994.67
							$ 229,973.33	$ 505,941.33

OTHER & PREPARATORY WORK

		Include (y/n)	Quantity (per direction)	Quantity	Unit Measure	Unit Cost	ITEM COST (per mi)	ITEM COST (total)
Traffic Control	150-1010	y		2.20				
Staging								
Roadway Bridges								
Raise Bridge								
Roadwork with Raise Bridge								
New Ramp Construction								
Grading	210-0200							
Waterproofing Joints & Cracks	445-0500							
Remove Roadway Slab	609-1000							
Remove Roadway Slab (Exceptions)	609-1000							
Remove Existing Concrete prior to Overlay	609-1000							
Full Depth Slab Replacement prior to Overlay	452-1000							
Mill Asphalt			22,293.33	44,586.67				
Mill Asphalt (Exceptions)								
Joint Reinforcement Fabric								
Bitum Tack Coat (new pavement)	413-1000	y	1,548.80	3,097.60	GL	$2.77	$ 8,580.35	$ 18,876.77
Bitum Tack Coat (exceptions)	413-1000	y						
Bitum Tack Coat (overlay section)	413-1000	y						
Vegetation Removal								
Barrier Wall								
Striping / Signage								
White Markings-Not Included								
Longitudinal Drainage								
Misc: (Guardrail, Soundwalls, EC, etc)								
							$ 8,580.35	$ 18,876.77
						INITIAL COSTS (Roadway, Other & Preparatoy Work)	$ 928,473.69	$ 2,042,642.11

ALTERNATIVE A

REHABILITATION YEAR 10

TRAVEL LANES			Quantity (per lane per mi per direction)	Quantity	Unit Measure	Unit Cost	ITEM COST (per mi)	ITEM COST (total)
Mill Asphalt	432-0206	1 1/2	7,040.00	14,080.00	SY	$3.08	$ 43,366.40	$ 95,406.08
							$ 43,366.40	$ 95,406.08
Overlay Design								
12.5 mm Superpave	402-3130	1.50	580.80	1,161.60	TN	$75.92	$ 88,188.67	$ 194,015.08
19 mm Superpave	402-3190				TN	$64.86		
							$ 88,188.67	$ 194,015.08
Full Depth Asphalt Patching								
					CY	$595.40		
12.5 mm Superpave	402-3130	1.50	29.04	58.08	TN	$75.92	$ 4,409.43	$ 9,700.75
19 mm Superpave	402-3190	2.00	38.72	77.44	TN	$64.86	$ 5,022.76	$ 11,050.07
25 mm Superpave	402-3121	4.00	77.44	154.88	TN	$64.10	$ 9,927.81	$ 21,841.18
	Percentage	5%						
							$ 19,360.00	$ 42,592.00
INSIDE SHOULDER---								
Grind Concrete	431-1000	1 1/2			SY	$2.25		
Full Depth Slab Replacement								
	452-1000				CY	$595.40		
	Percentage	5%						
OUTSIDE SHOULDER---Asphalt								
Mill Asphalt	432-0206	1 1/2	2,346.67	4,693.33	SY	$3.08	$ 14,455.47	$ 31,802.03
							$ 14,455.47	$ 31,802.03
Overlay Design								
12.5 mm Superpave	402-3130	1.50	193.60	387.20	TN	$75.92	$ 29,396.22	$ 64,671.69
19 mm Superpave	402-3190				TN	$64.86		
							$ 29,396.22	$ 64,671.69
Full Depth Asphalt Patching								
					CY	$595.40		
12.5 mm Superpave	402-3130	1.50	9.68	19.36	TN	$75.92	$ 1,469.81	$ 3,233.58
19 mm Superpave	402-3190	2.00	12.91	25.81	TN	$64.86	$ 1,674.25	$ 3,683.36
25 mm Superpave	402-3121	4.00	25.81	51.63	TN	$64.10	$ 3,309.27	$ 7,280.39
	Percentage	5%						
							$ 6,453.33	$ 14,197.33

OTHER REHABILITATION COSTS

		Quantity (per lane per mi per direction)	Quantity	Unit Measure	Unit Cost	ITEM COST (per mi)	ITEM COST (total)
Traffic Control	y		1.00	DAY	$300,000.00	$ 136,363.64	$ 300,000.00
Pavement Markings							
						$ 136,363.64	$ 300,000.00
					REHABILITATION #1 COSTS	$ 337,583.73	$ 742,684.21

ALTERNATIVE A

REHABILITATION YEAR 20

TRAVEL LANES			Quantity (per lane per mi per direction)	Quantity	Unit Measure	Unit Cost	ITEM COST (per mi)	ITEM COST (total)
Mill Asphalt	432-0206	1 1/2	7,040.00	14,080.00	SY	$3.08	$ 43,366.40	$ 95,406.08
							$ 43,366.40	$ 95,406.08
Overlay Design								
12.5 mm Superpave	402-3130	1.50	580.80	1,161.60	TN	$75.92	$ 88,188.67	$ 194,015.08
19 mm Superpave	402-3190				TN	$64.86		
							$ 88,188.67	$ 194,015.08
Full Depth Asphalt Patching								
					CY	$595.40		
12.5 mm Superpave	402-3130	1.50	29.04	58.08	TN	$75.92	$ 4,409.43	$ 9,700.75
19 mm Superpave	402-3190	2.00	38.72	77.44	TN	$64.86	$ 5,022.76	$ 11,050.07
25 mm Superpave	402-3121	4.00	77.44	154.88	TN	$64.10	$ 9,927.81	$ 21,841.18
	Percentage 5%							
							$ 19,360.00	$ 42,592.00
INSIDE SHOULDER---								
Grind Concrete	431-1000	1 1/2			SY	$2.25		
Full Depth Slab Replacement								
	452-1000				CY	$595.40		
	Percentage 5%							
OUTSIDE SHOULDER---Asphalt								
Mill Asphalt	432-0206	1 1/2	2,346.67	4,693.33	SY	$3.08	$ 14,455.47	$ 31,802.03
							$ 14,455.47	$ 31,802.03
Overlay Design								
12.5 mm Superpave	402-3130	1.50	193.60	387.20	TN	$75.92	$ 29,396.22	$ 64,671.69
19 mm Superpave	402-3190				TN	$64.86		
							$ 29,396.22	$ 64,671.69
Full Depth Asphalt Patching								
					CY	$595.40		
12.5 mm Superpave	402-3130	1.50	9.68	19.36	TN	$75.92	$ 1,469.81	$ 3,233.58
19 mm Superpave	402-3190	2.00	12.91	25.81	TN	$64.86	$ 1,674.25	$ 3,683.36
25 mm Superpave	402-3121	4.00	25.81	51.63	TN	$64.10	$ 3,309.27	$ 7,280.39
	Percentage 5%							
							$ 6,453.33	$ 14,197.33

OTHER REHABILITATION COSTS

		Quantity (per lane per mi per direction)	Quantity	Unit Measure	Unit Cost	ITEM COST (per mi)	ITEM COST (total)
Traffic Control	y		1.00	DAY	$300,000.00	$ 136,363.64	$ 300,000.00
Pavement Markings							
						$ 136,363.64	$ 300,000.00
					REHABILITATION #2 COSTS	$ 337,583.73	$ 742,684.21

ALTERNATIVE A

REHABILITATION YEAR 30

TRAVEL LANES			Quantity (per lane per mi per direction)	Quantity	Unit Measure	Unit Cost	ITEM COST (per mi)	ITEM COST (total)
Mill Asphalt	432-0206	1 1/2	7,040.00	14,080.00	SY	$3.08	$ 43,366.40	$ 95,406.08
							$ 43,366.40	$ 95,406.08
Overlay Design								
12.5 mm Superpave	402-3130	1.50	580.80	1,161.60	TN	$75.92	$ 88,188.67	$ 194,015.08
19 mm Superpave	402-3190				TN	$64.86		
							$ 88,188.67	$ 194,015.08
Full Depth Asphalt Patching								
					CY	$595.40		
12.5 mm Superpave	402-3130	1.50	29.04	58.08	TN	$75.92	$ 4,409.43	$ 9,700.75
19 mm Superpave	402-3190	2.00	38.72	77.44	TN	$64.86	$ 5,022.76	$ 11,050.07
25 mm Superpave	402-3121	4.00	77.44	154.88	TN	$64.10	$ 9,927.81	$ 21,841.18
	Percentage 5%							
							$ 19,360.00	$ 42,592.00
INSIDE SHOULDER---								
Grind Concrete	431-1000	1 1/2			SY	$2.25		
Full Depth Slab Replacement								
	452-1000				CY	$595.40		
	Percentage 5%							
OUTSIDE SHOULDER---Asphalt								
Mill Asphalt	432-0206	1 1/2	2,346.67	4,693.33	SY	$3.08	$ 14,455.47	$ 31,802.03
							$ 14,455.47	$ 31,802.03
Overlay Design								
12.5 mm Superpave	402-3130	1.50	193.60	387.20	TN	$75.92	$ 29,396.22	$ 64,671.69
19 mm Superpave	402-3190				TN	$64.86		
							$ 29,396.22	$ 64,671.69
Full Depth Asphalt Patching								
					CY	$595.40		
12.5 mm Superpave	402-3130	1.50	9.68	19.36	TN	$75.92	$ 1,469.81	$ 3,233.58
19 mm Superpave	402-3190	2.00	12.91	25.81	TN	$64.86	$ 1,674.25	$ 3,683.36
25 mm Superpave	402-3121	4.00	25.81	51.63	TN	$64.10	$ 3,309.27	$ 7,280.39
	Percentage 5%							
							$ 6,453.33	$ 14,197.33

OTHER REHABILITATION COSTS

		Quantity (per lane per mi per direction)	Quantity	Unit Measure	Unit Cost	ITEM COST (per mi)	ITEM COST (total)
Traffic Control	y		1.00	DAY	$300,000.00	$ 136,363.64	$ 300,000.00
Pavement Markings							
						$ 136,363.64	$ 300,000.00
					REHABILITATION #3 COSTS	$ 337,583.73	$ 742,684.21

ALTERNATIVE B

Mainline Pavement Type PCC
Mainline Pavement Method Full Depth
More Description

ROADWAY PAVEMENT

TRAVEL LANES : New Construction for Widening	Pay Item No	inches	Quantity (per mi per direction)	Quantity (per mi)	Unit Measure	Unit Cost	ITEM COST (per mi)	ITEM COST (total)
PCC	430-0190	9.00	7,040.00	14,080.00	SY	$40.00	$ 563,200.00	$ 1,239,040.00
19 mm Superpave	402-3190				TN	$64.86		
Graded Aggregate Base	310-5100	10.00	7,040.00	14,080.00	SY	$25.82	$ 363,545.60	$ 799,800.32
							$ 926,745.60	$ 2,038,840.32

TRAVEL LANES : New Construction for Exceptions	Pay Item No	inches	Quantity (per mi per direction)	Quantity (per mi)	Unit Measure	Unit Cost	ITEM COST (per mi)	ITEM COST (total)

TRAVEL LANES : Overlay Construction	Pay Item No	inches	Quantity (per mi per direction)	Quantity (per mi)	Unit Measure	Unit Cost	ITEM COST (per mi)	ITEM COST (total)

INSIDE SHOULDER -	Pay Item No	inches	Quantity (per mi per direction)	Quantity (per mi)	Unit Measure	Unit Cost	ITEM COST (per mi)	ITEM COST (total)
Graded Aggregate Base	#N/A							

OUTSIDE SHOULDER - Full Depth PCC	Pay Item No	inches	Quantity (per mi per direction)	Quantity (per mi)	Unit Measure	Unit Cost	ITEM COST (per mi)	ITEM COST (total)
PCC	430-0190	9.00	2,346.67	4,693.33	SY	$40.00	$ 187,733.33	$ 413,013.33
19 mm Superpave	402-3190							
Graded Aggregate Base	310-5100	10.00	2,346.67	4,693.33	SY	$25.82	$ 121,181.87	$ 266,600.11
							$ 308,915.20	$ 679,613.44

OTHER & PREPARATORY WORK

		Include (y/n)	Quantity (per direction)	Quantity	Unit Measure	Unit Cost	ITEM COST (per mi)	ITEM COST (total)
Traffic Control	150-1010	y		2.20				
Staging								
Roadway Bridges								
Raise Bridge								
Roadwork with Raise Bridge								
New Ramp Construction								
Grading	210-0200							
Waterproofing Joints & Cracks	445-0500							
Remove Roadway Slab	609-1000							
Remove Roadway Slab (Exceptions)	609-1000							
Remove Existing Concrete prior to Overlay	609-1000							
Full Depth Slab Replacement prior to Overlay	452-1000							
Mill Asphalt			22,293.33	44,586.67				
Mill Asphalt (Exceptions)								
Joint Reinforcement Fabric								
Vegetation Removal								
Barrier Wall								
Striping / Signage								
White Markings-Not Included								
Longitudinal Drainage								
Misc: (Guardrail, Soundwalls, EC, etc)								
INITIAL COSTS (Roadway, Other & Preparatoy Work)							**$ 1,235,660.80**	**$ 2,718,453.76**

ALTERNATIVE B

REHABILITATION YEAR 20

TRAVEL LANES			Quantity (per lane per mi per direction)	Quantity	Unit Measure	Unit Cost	ITEM COST (per mi)	ITEM COST (total)
Grind Concrete	431-1000		7,040.00	14,080.00	SY	$2.25	$ 31,680.00	$ 69,696.00
							$ 31,680.00	$ 69,696.00
Resealing Roadway Joints & Cracks	461-1000		7,392.00	14,784.00	LF	$8.38	$ 123,889.92	$ 272,557.82
							$ 123,889.92	$ 272,557.82
Full Depth Slab Replacement PCC	452-1000	9.00	88.00	176.00	CY	$595.40	$ 104,790.40	$ 230,538.88
	Percentage	5%						
							$ 104,790.40	$ 230,538.88
INSIDE SHOULDER---								
Grind Concrete	431-1000				SY	$2.25		
							$ -	$ -
							$ -	$ -
Full Depth Slab Replacement	452-1000				CY	$595.40		
	Percentage	5%						
							$ -	$ -
OUTSIDE SHOULDER---PCC								
Grind Concrete	431-1000		2,346.67	4,693.33	SY	$2.25	$ 10,560.00	$ 23,232.00
							$ 10,560.00	$ 23,232.00
Resealing Roadway Joints & Cracks	461-1000		5,984.00	11,968.00	LF	$8.38	$ 100,291.84	$ 220,642.05
							$ 100,291.84	$ 220,642.05
Full Depth Slab Replacement PCC	452-1000	9.00	29.33	58.67	CY	$595.40	$ 34,930.13	$ 76,846.29
	Percentage	5%						
							$ 34,930.13	$ 76,846.29

OTHER REHABILITATION COSTS

		Quantity (per lane per mi per direction)	Quantity	Unit Measure	Unit Cost	ITEM COST (per mi)	ITEM COST (total)
Traffic Control	y		2.00	DAY	$300,000.00	$ 272,727.27	$ 600,000.00
Pavement Markings							
						$ 272,727.27	$ 600,000.00
					REHABILITATION #1 COSTS	$ 678,869.57	$ 1,493,513.05

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

PROJECT CONCEPT REPORT

North Bowdon Bypass and SR 166 Widening and Reconstruction
Project Number: STP00-0021-01(025)

PI 631310

Carroll County

Attachment 10

Minutes of Concept Meetings

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MEETING MINUTES

Subject:	SR-166 **NH-017-1(22), STP-021-1(24), and STP-021-1(25),** **P.I. No. 621990, 631300, and 631310, Carroll County**
Meeting Date:	Aug 30, 2006 10:30am
Location:	Bowdon City Hall
Transcription Date:	November 4, 2013

Attendees:	Mr. Robert Reid	GDOT Consultant Design	404-463-3831	robert.reid@dot.state.ga.us
	Mr. Mohsen Tehrani	GDOT Consultant Design	404-463-2988	tehrani.mohsen@dot.state.ga.us
	Mr. Joe Shaw	Carroll County P.W.	404-463-1289	
	Mr. Don Toms	City of Bowdon	404-258-8980	
	Mr. Charles Pope	Carroll County P.W.	770-830-5800	
	Mr. Robert Barr	Carroll County	770-980-6364	
	Mr. Mark Brock	City of Bowdon P.D.	770-980-6047	
	Mr. Mike Cates	DMJM HARRIS	770-980-6362	mike.cates@dmjmharris.com
	Mr. Cdi Nyakwela	DMJM HARRIS	770-980-6045	cdi.nyakwela@dmjmharris.com
	Mr. James McNabb	DMJM HARRIS	770-980-6258	james.mcnabb@dmjmharris.com
Copies:	Ms. Laura Rish	GDOT OEL	404-699-4439	laura.rish@dot.state.ga.us

Purpose: **SR 166 Projects Kickoff Meeting**

All attendees introduced themselves and whom they represented. GDOT project managers (GDOT PM), Robert Reid and Mohsen Tehrani, were identified as the primary contacts for the projects. Mike Cates of DMJM HARRIS was identified as the Consultant Project Manager that would be assisting the GDOT PM's.

Robert Reid opened the meeting by stating the meeting's purpose was to gather the local input for this project.

The meeting began by looking at the aerials from the previous concept. The first point made by Mark Brock and Robert Barr were the concerns of the truck traffic coming into downtown Bowdon and making right hand turns onto SR 100. Mark Brock talked about a recent incident where a tractor trailer had gotten stuck on the light pole at the intersection because of such a tight turning radius. Both said that trucks have a tough time turning in that intersection.

After looking at the previous concept aerials, Robert Barr and Don Toms both questioned the feasibility of running the bypass strictly to the south. In their opinion, it would seem more reasonable to run the bypass from SR 166 North and South to intersect with SR 100. The concern was that they would like to see the truck traffic avoid coming through downtown and making turning movements on SR 100 while linking the bypass to the industrial park just south of Bowdon.

Don Toms talked about the industrial park and said that the municipal improvements are in place for the industrial park. He talked about how the bypass would further strengthen their efforts to attract growth to the industrial park.

There was general discussion that most of Bowdon's growth is on the east and north side of the city, and there was very little growth on the south and west sides.

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MEETING MINUTES

Robert Barr talked about intersection improvements that GDOT is working on at SR 166 and Jonesville Road. There is a new school just to the east of this intersection, at N. Jonesville Rd., that has generated a high number of turning movements onto SR 166. Robert felt that this school traffic should be addressed in any improvements. He suggested finding a way to link the school traffic into the intersection improvements.

Robert Reid stated that the plan and objective for this project was to improve the SR 166 corridor. He said that he appreciated all the input and concerns about connecting the bypass to SR 100, but also made it clear that this was not the objective of this project. He continued by saying that the concept validation phase of this project would take all the available information and determine the best way to create a bypass for the City of Bowdon.

Robert Reid also asked how the local public felt about the project. The general consensus was the the public knows, in general, about the project but doesn't understand what are the details.

It was also discussed that there is a Kia plant to the south and and Honda plant on the north of Bowdon, and that both of these plants would benefit from the bypass.

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MEETING MINUTES

Subject:	SR-166 **NH-017-1(22), STP-021-1(24), and STP-021-1(25),** **P.I. No. 621990, 631300, and 631310, Carroll County**
Meeting Date:	March 9, 2007 10:00 am
Location:	GDOT – Downtown RM444
Transcription Date:	March 12, 2007

Attendees: See Attached Sign In Sheet

Purpose: **Initial Concept Team Meeting**

Mohsen Tehrani opened the meeting.

All attendees introduced themselves and the firm or discipline they represented.

Mike Cates gave a presentation that reviewed the draft concept reports for all of the projects. During this presentation, existing conditions, areas of concerns, proposed and alternate designs were discussed.

During the environmental portion of the presentation, it was noted that there 158 properties are 50= years old and initial field work for the necessary permits has been completed.

The public hearing (PIOH) is scheduled for April 24th at the Jonesville Middle School from 4pm to 7pm.

Mr. Stanley Hill opened the floor to comments after Mike Cates' presentation. The following comments were made.

- **Rob Hambree (AGL):** There is an 8" 300lb steel main on the outside of the westernmost bridge at interchange US27. They would prefer any design does not require that main to be moved. His initial estimate shows that the cost to relocate the gas lines is approximately $2,000,000. Relocation of all utilities could add 1.5 years to the construction schedule. He also asked DMJM Harris to consider existing utilities when designing SR166 bypass.

- **GDOT Utilities Representative:** DMJM Harris needs to contact the Office of Utilities for an estimate. The water and sewer are owned by the Carroll County Water Authority, City of Carrollton, and City of Bowdon.

- **Melanie Nables (GDOT/OEL):** Q. Will there be an individual permit for the ecology?
  Angela Malta (DMJM): A. We think so. We are awaiting response from SHIPO.

- **Melanie Nables (GDOT/OEL):** Q. Will there be adverse impacts?
  Angela Malta (DMJM): A. Possibly.

- **Melanie Nables (GDOT/OEL):** Q. Are there any historic bridges?
  Angela Malta (DMJM): A. We do not think so.

The meeting was adjourned by Stanley Hill at 10:50 am.

SIGN IN SHEET – March 9, 2007

PROJECT P.I. No. 631310,631300,62990, Carroll County

NAME	ORGANIZATION	EMAIL ADDRESS	PHONE NO.
Stanley Hill	GDOT/OCD	Stanley.Hill@dot.state.ga.us	(404) 656-6109
Mohsen Tehrani	GDOT/OCD	Tehrani.Mohsen@dot.state.ga.us	(404) 463-2988
KEN WERHO	GDOT TSED	KEN.WERHO@DOT.STATE.GA.US	4)6358144
Rob Hembree	AGL	rhembree@aglr-sources.com	4) 584-3363
WAYNE JACAS	AGL	wjacas@aglresources.com	(4)584-4318
Melanie Nable	GDOT/OEL	melanie.nable@dot.state.ga.us	(4)699.4432
ANTHONY HUGHES	GS&P	anthony_hughes@gspnet.com	(205) 298-9200
Derrick P. Vincent	DMJM Harris	derrick.vincent@dmjmharris.com	(770)980-6368
Leslie Brown	Edwards-Pitman	lbrown@edwards-pitman.com	(7)3339484
JIONG LIN	DMJM HARRIS	jiong.lin@dmjmharris.com	(770) 980-6009
Mike Bolden	GDOT/Utilities	Mike.Bolden@dot.state.ga.us	(404)635-8011
MIKE CATES	DMJM HARRIS	MIKE.CATES@dmjmharris.com	(770) 980. 6362
K. BANNER	DIST. UTILITIES	Kerry.banner@dot.state.ga.us	(770)3873614
Bill Dungan	GDOT D-6 A-S	bill.dungan@dot.state.ga.us	(770)646-5522
Vince Wilson	GDOT-Bridge Design	Vince.wilson@dot.state.ga.us	(404)656-5302
Lynn Pietalk	Edwards-Pitman	lpietalk@edwards-pitman.com	(7)3339484
Angie Malta	DMJM	angela.malta@dmjmharris.com	( )
			( )
			( )

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MEETING MINUTES

Subject: Concept Team Meeting,
Projects STP00-021-01(24)(25), Carroll County, P.I. Nos. 631310 and 631300

Meeting Date: February 21, 2014 9:00am

Location: GDOT, 4th Floor

Attendees:

Chandria Brown	GDOT/OPD	chbrown@dot.ga.gov	404-631-1580
Derrick Cameron	GDOT/OPD	dcameron@dot.ga.gov	404-631-1223
Walter Taylor	GDOT Design Policy	wtaylor@dot.ga.gov	404-631-1922
Matt Sanders	GDOT/Eng Ser	msanders@dot.ga.gov	404-631-1752
Victor Dang	FHWA	victor.dang@dot.gov	404-562-3654
Jimmy Meigs	City of Bowdon	citymanager@bowdon.net	770-258-8980
Dan Bodycomb	AECOM	dan.bodycomb@aecom.com	404-965-9629
Scott Gero	AECOM	scott.gero@aecom.com	404-965-9726
James McNabb	AECOM	james.mcnabb@aecom.com	770-769-6342
Laura Dawood	AECOM	laura.dawood@aecom.com	404-965-7074
David Kasbo	Jacobs	david.kasbo@jacobs.com	404-978-7543
Phyllis Houston	CHB Acquisition	phouston@vestavow.net	864-760-7358
Cheryl Brewer	CHB Acquisition	cherylbrewer@bellsouth.net	706-832-1412
Lynn Pietak	Edwards-Pitman	lpietak@edwards-pitman.com	770-333-9484
Martha Teall	Edwards-Pitman	mteall@edwards-pitman.com	770-333-9484

District 6 was included via teleconference

Kathy Hall	GDOT D6 Contracts	khall@dot.ga.gov
Stanley McCarley	GDOT D6 Utilities	smccarley@dot.ga.gov
Curtis Powell	GDOT D6 Traffic	cpowell@dot.ga.gov
Adrian Harris	GDOT D6 Construction	adharris@dot.ga.gob
Bill Dungan	GDOT D6 AE	bdungan@dot.ga.gov
Michael Haithcock	GDOT D6 ADE	mhaithcock@dot.ga.gov
David Ray	GDOT D6 DDE	dray@dot.ga.gov
Cherie Marsh	GDOT D6 DPPE	cmarsh@dot.ga.gov
Derrick Lankford	GDOT D6 AAE	jlankford@dot.ga.gov
Jennifer Deems	GDOT D6 Utilities	jdeems@dot.ga.gov
Matt Jones	Carroll EMC	m.jones@x-lineinc.com

SUMMARY

Chandria Brown introduced the meeting as the Concept Team Meeting for projects PI 631310 and 631300 in Carroll County. Each attendee was then asked to introduce themselves.

Chandria indicated that these projects are not listed in the current State Transportation Improvement Program (STIP). Chandria is currently working with GDOT Planning to have them added as there will soon be environmental reviews that will need to be completed and rely on the project being listed in the STIP.

Chandria mentioned that the Draft Concept Reports were distributed on February 3, 2014. Displays were also sent. She stated that meeting minutes would be sent by email to allow attendees to comments. Chandria then turned the meeting over to Dan Bodycomb.

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MEETING MINUTES

Dan presented from a Power Point presentation. Dan reiterated that this was the concept team meeting for two projects, PI 631310 and PI 631300, which consists of a new location bypass and widening of SR 166 between Bowdon and Carrollton in Carroll County. These two projects share a common terminus at Farmers High Road/CR 828. The project location is primarily rural in nature with rolling terrain and a two lane facility with occasional passing lanes.

The current schedule is about a year behind the current baseline schedule. We have been waiting for a major milestone, being today's meeting, prior to updating the baseline. The reasons for the delay are threefold. First, the VE Study was completed as part of the concept phase instead of early in preliminary, as was originally scheduled. The second reason for the delay was the fact that detailed roundabout analysis was completed at three locations. Finally, the PAR process has been completed; consisting of two Interagency Review Team (IRT) meetings with the US Army Corps of Engineers, FHWA, and others. The Draft EA is projected to be completed in January 2016 and the EA/FONSI later that year in December. Right of Way acquisition if projected in FY17 and construction in FY20.

The project is located in Carroll County, close to the Alabama state line. The project is just south of I-20. The Bypass project (PI 631310) consists of four distinct typical sections. The first section is a proposed new location rural two-lane facility that runs north and then east around the town of Bowdon. At the intersection with SR 100, the typical section changes to curb and gutter and sidewalk, but remains a two-lane facility. At the intersection of West Jonesville Road, the typical section changes to a five-lane section with curb and gutter and sidewalk. Bowdon Middle School is located on North Jonesville Road, just north of SR 166. The final typical section is a four-lane, 32-foot depressed median that runs to Farmers High Road/CR 828. Improvements are also proposed at the downtown Bowdon intersection of SR 166 and SR 100.

The Widening project (PI 636300) picks up where the Bypass project ends at Farmers High Road/CR 828. It continues the same typical section (four-lane, 32-foot depressed median) into the Carrollton area. At Tyus-Carrollton Road, the typical section widens to an existing 60-foot depressed median with curb and gutter. The Widening project then continues along the SR 166 South Carrollton Bypass until it ties into the existing four-lane section, just west of Hays Mill Road.

The project justification includes improving capacity, reducing crash, injury, and fatality rates, and removing heavy truck traffic from the downtown Bowdon area. The project has a long history dating back over 25 years. The original concepts were approved in the mid-1990s. AECOM started this project in 2006 with the task of validating the concept reports. A PIOH meeting was held in 2007, but met with heavy opposition, especially with respect to the southern Bowdon bypass, which was proposed at that time. Efforts switched to analyzing different northern bypass alternatives. In 2012 a second PIOH was held with more favorable results. A portion of the Bypass project is located on the Carroll County bike plan.

The existing SR 166 conditions consist of a two- and three-lane roadway. The area is mostly rural with pockets of urbanization at North Jonesville Road (near the Bowdon Middle School) and Maple Street (near the University of West Georgia).

There are two other projects in the area. The first is PI 0005827, which is an intersection improvement project at Hays Mill Road which is just east of the Widening project's eastern terminus. The other project is a Carroll County funded greenway trail that will run inside existing right of way along the north side of the South Carrollton Bypass.

The two SR 166 projects (PIs 631310/631300) are listed in the Three Rivers Regional Commission. The project is in congressional district 3. The project has full FHWA oversight.

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The latest traffic counts were taken in 2011. The opening year traffic was projected to 2023 with a design year of 2043. As a general trend, the traffic numbers along SR 166 continue to increase from Bowdon to Carrollton. The traffic numbers have been provided based upon the different typical sections along each project. Dan pointed out that along the West Jonesville Road section the 2011 traffic numbers show 750 vehicles per day (VPD), while in 2023 traffic increases to 6,715 VPD.

The majority of SR 166 is currently classified as Rural Minor Arterial. The new location section will also be proposed as Rural Minor Arterial. At Simonton Mill Road the classification changes to Urban Principal Arterial. The projects met warrants for both bicycle and pedestrian facilities. Neither project is listed on the GDOT statewide bicycle route. However, a portion of the Bypass project (PI 631310) is listed on the Carroll County Bike Plan. The Carroll County Bike Plan calls for a bike lane along SR 166 from Tarpley Avenue to Antioch Church Road. The proposed bike lanes will start on SR 166 at West Jonesville Road and continue to Antioch Church Road. There are several pedestrian generators. The first is at Bowdon Middle School on North Jonesville Road. The others are near Maple Street and the South Carrollton Bypass, which is the location of retail shops and The University of West Georgia. There is no transit in the area.

GDOT performed a preliminary pavement evaluation. The current pavement is in good visual condition and the COPACES scores are 91 for the Bypass (PI 631310) and 80 for the Widening (PI 631300) projects. A preliminary pavement type selection was completed for the new location portion of roadway. HMA and PCA were considered and hot mix asphalt was recommended. A detailed pavement evaluation will be performed during preliminary design along areas where the project is proposed to retain existing pavement.

PI 631310 begins west of the town of Bowdon. It proposes a 2.4-mile section of new location roadway that runs north and then east to the intersection at SR 100. The alignment continues along existing West Jonesville Road for 0.9 mile with curb and gutter and sidewalk. A five-lane section is proposed along SR 166 between West Jonesville Road and Kuglar Road. A four-lane 32-foot, depressed median is proposed from Kuglar Road to Farmers High Road/CR 828.

At Farmers High Road/CR 828, PI 631300 continues the same typical section as the Bypass project. This four–lane, 32-foot depressed median section continues to Tyus-Carrollton Road. The typical section widens to match the existing 60-foot, depressed median and adds curb and gutter and sidewalk. The typical section returns to the four-lane, 32-foot, depressed median along the South Carrollton Bypass where it ties into the existing four lane section, just west of Hays Mill Road.

There are two new bridge structures on PI 631310. Both of these bridges will cross Big Indian Creek and are currently estimated to be 320 feet long. A new 10x6 box culvert is also proposed along the new location alignment.

The first structure on PI 631300 is the existing triple 10x10 box culvert at Garrett Creek. Extending this culvert was not the best design alternative due to the existing skew of Garrett Creek. The new structure will be a skewed triple 10x12 box culvert. There is an existing bridge over the Little Tallapoosa River. The project proposes to construct a new parallel structure to handle the additional lanes and would leave the existing bridge in its current location. Two small walls are anticipated at Anderson Lake and at the Little Tallapoosa River.

The next few slides cover the design criteria. The first section is the new two-lane rural facility. It is proposed to have 12-foot lanes and a 10-foot shoulder of which 4 feet is paved. The design speed is 55 mph with a maximum grade of 5%. The next section is along existing West Jonesville Road. The design speed is reduced to 45 mph and curb and gutter and sidewalk replaces the paved shoulders. The third typical section consists of a five-lane section along SR 166 from West Jonesville Road to Kuglar Road, which continues the 45 mph and curb and gutter and sidewalk. The travel lanes are proposed to be 11 feet wide with a 14 foot center turn lane. This section incorporates the Carroll County Bike Plan with an addition of a 4-foot wide bike lane in each

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MEETING MINUTES

direction. The final section of PI 631310 is a four-lane section with a 32-foot, depressed grassed median. Inside lanes are proposed at 11 feet and outside lanes at 12 feet. The design speed is increased to 55 mph. The bike lane is incorporated in the 6.5-foot paved shoulder. East of Antioch Church Road, which is the eastern terminus of the bike lanes according to the Carroll County Bike Plan, the paved shoulder is reduced to 4-foot wide.

The four-lane, 32-foot depressed median typical section continues eastward along SR 166 throughout the majority of PI 631300 except for the section between Tyus-Carrollton Road and Maple Street/South Carrollton Bypass. Between Tyus-Carrolton Road and Maple Street/South Carrollton Bypass, the speed design is reduced to 45 mph, the median is 60-feet, and curb and gutter and sidewalk are added.

The major intersections along the project corridor include: a new stop-controlled intersection at the SR 166/SR 166 Bowdon Bypass intersection, the western terminus of PI 631310; a new signalized intersection at the proposed intersection of SR 166 Bowdon Bypass and SR 100; a roundabout at the intersection of West Jonesville Road and SR 166; the existing signal at SR 166 and North Jonesville Road; and upgrades to the existing signal at SR 100 and SR 166. For PI 631300, the existing signals at SR 166/Tyus-Carrollton Road and the SR 166/SR 166 South Carrollton Bypass will be maintained.

Lighting will be required at the West Jonesville Roundabout. An initial lighting agreement has been signed by Carroll County. No offsite detours are proposed and a separate Transportation Management Plan will not be prepared. Traffic control will be handled under the current GDOT shelf special provision 150.

No design exceptions or design variances are anticipated.

Based upon the results of the VE Study, PI 631310 will see a project savings of $938,000 based upon the implementation of 6 of the 12 VE Study recommendations. PI 631300 will see a project savings of $2,657,000 based upon the implementation of 3 of the 8 VE Study recommendations.

The standard list of utilities is found along the project corridor. They include gas, water, sewer, telephone, electric, and TV. The list is a result of SUE level D research. Higher quality levels of SUE survey will be completed as part of preliminary design.

A conservative approach was taken in regards to calculating the total amount of right of way impacts. During preliminary design we are hopeful that we can reduce some of the impacts. The total number of parcels for PI 631310 is 114 with 15 displacements. The total number of parcels for PI 613100 is 158 with 16 displacements

All of the side roads were analyzed using the GDOT roundabout tool. From this analysis four potential locations were identified. After meeting with GDOT Traffic Operations, it was decided to move forward with the analysis of three intersections.

The first location was at the new intersection at SR 100/SR 166 Bowdon Bypass. A signal is proposed at this location due to several factors. SR 100 is located along the oversized truck route and thus a larger truck was required for design. Based upon the traffic analysis, the roundabout would need to be widened to a two-lane roundabout within 20 years. Based upon GDOT policy, this requires a build-in or build-out approach where the full footprint is utilized. As a result, this increased the right of way area and costs associated with this site. Also, the grades along both SR 100 and SR 166 are relatively steep and there was a concern regarding a loss of safety at the intersection due to higher entrance and exit speeds.

The other two roundabouts were analyzed together. The proximity of the intersections of West Jonesville and North Jonesville Roads at SR 166 required that they be analyzed together. The scenarios analyzed included two signals, either one or the other location as a roundabout, and dual roundabouts. These two intersections are less than 600 feet apart. This does not meet GDOT minimum spacing requirements. The roundabout works well

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at West Jonesville Road. There is ample right of way and the terrain is flat. The issue at North Jonesville Road was the location of three historic properties. A roundabout at West Jonesville and signal modifications at North Jonesville Road were recommended.

Two areas were looked at in regard to Context Sensitive Solutions. The first location is along West Jonesville Road and consisted of identifying a means to mitigate the increase in traffic. The project proposes a reduced design speed and curb and gutter and sidewalk to account for the residential nature of the corridor and minimizing right of way impacts. The second area is along section of SR 166 between West Jonesville Road and Kuglar Road. This area of SR 166 has a higher density of commercial properties relative to other segments of the project corridor. Several alternatives were looked along this section. The first was a standard 32-foot depressed median, which resulted in significant right of way and displacements. Additionally, other raised median options were considered. The best alternative consists of a flush median to minimize right of way impacts and allow open access.

The presentation was turned over to the AECOM NEPA lead, Laura Dawood. While this project is two PI numbers, it is being incorporated into one environmental document, the Environmental Assessment/Finding of No Significant Impact (EA/FONSI). The project is not located in an MS4 area. The expected permits include an Individual Section 404 permit from the US Army Corps of Engineers, Stream Buffer Variance application from GA Environmental Protection Division; NPDES compliance due to exceedences of 1 acre of land disturbance; FEMA coordination due to floodplain impacts; and Section 7 coordination with the US Fish and Wildlife Service due to the potential for bats (Indiana bat and the proposed to be listed northern-long eared bat) and potential habitat for federal protected fine-lined pocketbook species, Additionally, there is potential habitat for the Tallapoosa darter, muscadine darter, lined chub, stippled studfish, and Tallapoosa crayfish.

A Practical Alternatives Review (PAR) has been conducted with Interagency Review Team meetings held 9/11/13 and 11/13/13. The PAR process has been completed and the design incorporates avoidance and minimization measures for wetlands/stream impacts.

In PI 631310 there were 12 potentially eligible historic resources and 2 listed resources identified in the State Historic Preservation Office's (SHPO) approved Historic Resources Survey Report (May 2013); and in PI 631300, there were 3 potentially eligible historic resources. Alignments avoid physical impacts to these resources, and no Section 4f is anticipated. An archaeological screening was conducted, and resulted in 19 archaeological previously identified resources in or within 1-kilometer of the area of potential effect (APE). A field survey will be conducted after the concept is approved.

Carroll County is located outside the 20-county Atlanta Regional Commission's MPO, but within the non-attainment areas for PM 2.5 and Ozone. Additionally, the proposed projects were identified in the FY 2013-2016 STIP, but not in the 2014-2017 STIP. Chandria is working with GDOT Planning to get this project into the current STIP. A noise study will be conducted for this project.

A PIOH was held in 2007 and there was extensive opposition to the project, especially for the southern bypass aspect. Meetings with local public officials were held in 2011 and 2013. A second PIOH was held in 2012, and the majority of concerns were regarding the potential impact of a bypass on Bowdon business. A Public Involvement Plan was approved by FHWA in 2012. The primary outcomes of this plan were to reach out more to environmental justice communities, provide PHOH notification flyers, and provide an educational handout for the public about the economic effects of bypasses.

Major stakeholders for this project include: Carroll County, City of Bowdon, City of Carrollton, Three Rivers Regional Commission, local downtown Bowdon businesses, and the traveling public.

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This concluded the environmental section of the presentation and Dan Bodycomb finished the presentation. No issues affecting construction are anticipated and as such no incentives for early competition are recommended.

Considerable coordination has taken place during the concept phase of this project. The initial concept team meeting was held in March of 2007. At that time the focus was on the southern bypass. Since that time coordination has involved FHWA, USFWS, the Corps of Engineers, as well as local officials, stakeholders, and the public.

AECOM will be responsible for the design with GDOT being responsible for right of way acquisition, letting to contract, and construction supervision. AECOM will work with GDOT to ensure that the environmental document is approved and the necessary permits are obtained.

Project costs were modified from what was originally included in the draft Concept Report. For PI 631310, the total cost is now $35,816,812 and for PI 631300 the total cost is now $30,512,974.

Dan reviewed the alternatives that have been considered. For PI 631310 there are a total of 11 different alternatives.

After the presentation, Chandria opened the floor for questions.

The first question came from Victor Dang who asked about the traffic queue from the signal at North Jonesville Road and whether it would spill back into the roundabout at West Jonesville Road. Both the District and the City of Bowdon had concerns over the peak period, especially during the times that the school starts and ends and the commuting public.

Jacobs Response: *The preferred alternative, with the roundabout at W. Jonesville Road and a signal at N. Jonesville Road, was analyzed using VISSIM and Synchro software. VISSIM analysis resulted in a queue length of approximately 80-ft. during the AM peak. Synchro analysis resulted in a 95th% queue length of just over 150-ft. during the AM and PM peak. The proposed design provides 250-ft. of storage. Neither analysis tool indicated the queue length would exceed the provided storage during the 2043 peak hours.*

Victor asked how conservative the right of way costs were. Cheryl Brewer responded by saying that the costs were very conservative. She said that she follows the GDOT procedure and there are built in costs that include contingencies.

Mike Haithcock asked about right of way costs associated with making the new location bypass limited access. He stated that there are some large parcels along that section and that if access is removed then the State will have to acquire the entire parcel. Laura responded by saying that initially we recommended limited access so as to limit the amount of new businesses that could be developed along the Bypass to help alleviate the concern of the citizens and the economic impact of the Bypass. Cheryl said that if large parcels are damaged for loss of access that we would look at providing access to mitigate but that this would occur later in the process. Cheryl also mentioned that some of these parcels may have access via side roads and a parcel by parcel evaluation would be needed. Mike suggested that we allow access by permit.

Chandria asked if there were any local representatives. City of Bowdon and Carroll EMC were represented. The City of Bowdon was interested in utilities, which is discussed below. Chandria then directed each office to provide comments on the Concepts.

Planning Office- Cherie Marsh at the District did not have any comments at this time.

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Bridge Office- Lyn Clements indicated that the bridge on PI 631300 over the Little Tallapoosa River was built in the 1970s. She asked that AECOM check on the load rating and that it may not be advisable to widen this bridge. Dan responded by saying that a new parallel structure would be constructed and that the project wouldn't modify the existing bridge. James McNabb added that AECOM will coordinate with GDOT Bridge Maintenance to see if any upgrades or improvements are needed. There is a small chance that the improvements may be so significant that it would be more beneficial to replace the existing structure.
Lyn Clements mentioned that since the bridge on PI 631300 was built in 1971 a hydraulic report was not completed, since they were not required at that time. She has some concern that the bridge may not be long enough. James responded by saying that a full hydraulics report will be completed during preliminary design. This will indicate whether the hydraulic opening is sufficient or the requested repairs by bridge maintenance would require a complete replacement.

Construction Office- Bill Dungan agreed the confirmation of the Bridge Maintenance to ensure no work would be needed for this bridge over the Little Tallapoosa River.

Victor asked if alternatives had been evaluated for the culvert at Anderson Lake. It was stated that the culvert skew was evaluated as the best alternative in this area during the VE study.

Right of Way- Victor asked where on the project the median widened to 60 feet. Dan pulled up the plot of the area and displayed the area near Tyus-Carrollton Road and the South Carrollton Bypass. Dan explained that we weren't widening in this area but that the existing median was already this wide. Jimmy Meigs indicated that the gas station on the north side of SR 166 at this location has been removed.

Environmental- No representatives were present. Chandria will reach out via email to offices for additional comments.

Utilities- Matt Jones of Carroll County EMC did not have any questions. He indicated that their utility runs the entire length of the corridor and that there would be considerable relocation but with typical impacts.

Stanley McCarley asked if consideration could be made at the bridges to accommodate utilities. He said that they are running into issues with large cranes being used for construction and that there isn't enough right of way for the relocation.

Chandria read an email that she had received from Southern Company. It stated that there were potential conflicts on the west end of PI 631310, but there were no facilities on PI 631300.

Jimmy Meigs indicated that the City picks up Water and Sewer just west of Farmers High Road in the Garrett Circle/Adelee Road vicinity. He indicated that a valve had been covered during the relocation of West Jonesville Road which needs to be uncovered. He also stated that there is a water line under 1 lane of traffic along West Jonesville Road. Chandria stated that reimbursables for local utilities should be reviewed or the utilities could ask for state aid.

Stanley McCarley asked if consideration could be made to include enough right of way for the relocation of utilities, especially in some of the tight areas where special attention is given to reducing the right of way widths. He said that there is no typical amount but that they need 10 feet of spacing between gas/sewer/water lines.

Victor asked a question about the SUE process and Scott Gero responded by explaining the difference between the different Quality Level of Service. Chandria said that we have all the way up to quality level A in this contract.

Traffic Operations- There were no comments at this time.

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Design Policy- Walter Taylor asked if the lighting was just at the roundabout. Dan said that was true. Walter also stated that the office had no concerns regarding the concept report format.

Materials Office- No representatives were present.

Engineering Services- Matt Sanders stated that this office had no comments to report and that the concept report looked good.

Mike Haithcock asked if a multi-use trail had been considered instead of the bike lanes. Dan responded that it had not, but that we would look into it. Mike mentioned that in some projects in Rome, multi-use trails were more popular than a dedicated lane.

AECOM Response: *The proposed bike lane extends along the project corridor for 2.2 miles. Within this segment, the project proposes two different typical sections. The first section extends 1.0 mile (between just south of West Jonesville Road and Kuglar Road) and accommodates the bike lane by including an additional four-foot wide bike lane between the edge of travel way and the curb and gutter. Since this typical section also includes a sidewalk, there would be minor additional impacts if the bike lane was removed and the sidewalk was widened to ten feet to accommodate a multi-use trail. However, the second section extends 1.2 miles (between Kuglar Road and Antioch Church Road) and accommodates the bike lane with bicycle-friendly pavement, consisting of a 6.5-foot paved shoulder on a rural typical section. This second typical section would require the multi-use trail to be placed outside the clear zone and would increase the right-of-way impacts and additional displacements. It is recommended that the multi-use trail alternative be eliminated from further consideration for these reasons: 1) it is anticipated that the majority of SR 166 bike lane users will be bicycle enthusiasts that prefer to be on the roadway and not on multi-use trails, especially given the rural and sparsely populated nature of the corridor, 2) although Bowdon Middle School is located within this segment, due to the limited development patterns within this 2.2 mile section of SR 166, there are few origins and destinations that would serve a multi-use trail user, 3) there are no public parks/recreation areas/multi-use trails in this vicinity, that would provide connectivity to existing infrastructure, and 4) a sidewalk proposed within the more developed area of this section (e.g., between West Jonesville Road and Kuglar Road) could serve casual users that might also benefit from a multi-use trail; therefore, potential would-be multi-use trail users would still be accommodated by the typical section.*

Chandria requested additional information on PI M004870, a resurfacing project in the area along SR 100. The District was unaware of any resurfacing projects in the next two years.

Victor asked if Traffic Ops review the VE Study recommendation to reduce the length of the truck passing lanes on the new location Bypass. Matt Sanders answered that it was reviewed during the VE Study.

Chandria requested that attendees review the meeting minutes and comment within a week of receipt.

There being no further discussion, meeting was adjourned.

Action Items

Item	Responsibility	Status
1. Check on queue lengths at North Jonesville Road	Jacobs	Complete
2. Check on multi-use trail in lieu of bike lanes	AECOM	Complete

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MEETING MINUTES

cc: Attendees

Concept Report Comments Received and Responses:

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*From **Erik Rohde** of Office of Roadway Design (2/21/14 at 8:37am)*

Comment: Page 3 has 2043 ADT of 18625 for SR 166 but the highest 2043 ADT for SR 166 on Page 5 is 17750.
Response: For PI 631310, the 2043 "no-build" ADT ranges from 8,910 to 18,625. This range of traffic values includes the entire existing SR166 corridor from west of Bowdon to Farmers High Road. The value in question of 18,625 is from the segment between SR 100 and Tarpley Avenue, as shown on Figure 5 of the traffic diagrams. This location is in downtown Bowdon. The traffic values shown on page five represent the different typical section segments along the proposed corridor. The highest value of 17,750 is located just west of Farmers High Road at the termini of PI 631310. The comparison is not to the same segments. Figure 12 of the traffic diagrams indicates that the segment between SR 100 and Tarpley Avenue would be reduced to 10,760 under the build scenario.

Comment: The pavement layers for the bypass section do not match those proposed for the bypass section in the Pavement Type Selection Report in the Typical Sections.
Response: The typical sections have been updated to match the Pavement Type Selection Report. A detailed pavement analysis will be completed as part of preliminary design at which time the pavement section will be finalized.

Comment: All typical sections specify a Polymer Modified 12.5 mm Superpave surface course. The ADTs in the Concept Report do not warrant the use of Polymer Modified 12.5 mm Superpave per the GDOT Guidelines for Superpave and Other Mix Types Selection.
Response: The typical sections have been updated to remove the reference to Polymer Modified pavement. A detailed pavement analysis will be completed as part of preliminary design at which time the pavement section will be finalized.

Comment: All typical sections specify a 19 mm Superpave layer with a spread rate of 330 LB/SY (3.0-inch layer). The GDOT Guidelines for Superpave and Other Mix Types Selection directs that a 2-inch layer (spread rate = 220 LB/SY) is the optimum thickness for smoothness.
Response: The typical sections have been updated to reflect a spread rate of 220 LB/SY. A detailed pavement analysis will be completed as part of preliminary design at which time the pavement section will be finalized.

Comment: The typical sections with the 6.5-feet paved outside shoulders do not have the thickness of the GAB layer labeled.
Response: At this time, it is assumed that the GAB under the pave shoulders is the same thickness, 14 inches, as the travel lanes. A detailed pavement analysis will be completed as part of preliminary design at which time the pavement section will be finalized.

Comment: The Construction Cost Estimate with Pay Item Nos. has items with zero quantity.
Response: The pay items with a zero quantity have been removed.

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Comment: The Construction Cost Estimate with Pay Item Nos. has item and quantity for the two proposed bridges but does not have item and quantity for the other major structure identified on Page 6 as Culvert No. 1.
Response: The culvert quantities are included in 500-3101 Class A Conc and 511-1000 Bar Reinf Steel.

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*From **Keith Posey** of Office of Design Policy and Support (2/21/14 at 11:57am)*

Comment: Has GDOT Planning reviewed the attached projected (design) traffic?
Response: The traffic projections were review and approved by GDOT Planning on September 12, 2011.

Comment: For these projects TMP (Traffic Manage Plan) should be checked yes and TTC (Temporary Traffic Control) is likely and should probably be checked as well. The Special Provision 150 comment is fine.
Response: These revisions have been made to both concept reports.

Comment: VE Study Anticipated – this info appears to be incomplete on PI# 631300
Response: A comment has been added to the concept report referencing the VE Implementation Letter and the project savings.

Comment: PAR required – mentioned as attachment 11 here for both reports, but not attached or listed in the attachments section at the end of the reports. Recommend attaching at a minimum the PAR report without attachments or the PAR report summary/conclusions. Lengthy appendices should be omitted. The complete PAR reports can be placed in the project folder on the Archives Store for reference.
Response: The PAR meeting minutes were attached as part of Attachment 11, "Minutes of any meetings that shows support or objection to the concept". For clarification purposes, a sub list has been created under Attachment 11 to identify all of the meeting minutes that are attached to the concept report. The PAR report will be attached.

Comment: Recommend concept level Bridge Typical Sections be attached for proposed bridges.
Response: The preliminary bridge layouts that were developed for the VE Study will be attached as part of Attachment 1: Concept Layouts.

Comment: Cost Estimates should be in CES.
Response: A detailed cost estimate was completed using costs from recently bid projects of similar size. The cost groups were rolled up and added to CES.

Comment: Utility Cost Estimate for PI# 631300- is over 12 months old.
Response: Updated utility costs were received on 12/6/2013 and will be attached to the concept reports.

Comment: Environmental Costs should have dates and should have an Office(Env Services) or Company Letterhead or similar.
Response: The environmental costs have been updated to include a company letterhead and a date of creation.

Comment: For PI# 631310-, recommend attaching the Roundabout Feasibility Reports only and omitting the Roundabout Feasibility Report attachments. The complete feasibility studies can be placed in the project folder on the Archives Store for reference.

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Response: The attachments to the Roundabout Feasibility Reports have been removed from the concept reports.

Comment: VE Implementation Letter attachments can be omitted.
Response: The VE Implementation Letter will be omitted.

Comment: Who's the GDOT Project Manager? CTM Invite says Chandria, Project Preconstruction Status Reports say Derrick.
Response: The GDOT Project Manager is Derrick Cameron.

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

PROJECT CONCEPT REPORT

North Bowdon Bypass and SR 166 Widening and Reconstruction
Project Number: STP00-0021-01(025)

PI 631310

Carroll County

Attachment 11

Meeting of Minutes that show support or objection to the concept

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MEETING MINUTES

Subject:	**NH-017-1(22), STP-021-1(24), and STP-021-1(25), P.I. No. 621990, 631300, and 631310, Carroll County, Georgia** Widening and Reconstruction of SR 166 and proposed construction of a southern bypass around the town of Bowdon and widening of twin bridges over US 27 over SR 166
Meeting Date:	April 5, 2007 10:15 am
Location:	GDOT OEL Office
Transcription Date:	April 17, 2007

Purpose: **FHWA Monthly meeting**

Stanley Hill opened the meeting.

All attendees introduced themselves and the firm or discipline they represented.

Mike Cates gave an overview of the layout for each project. During this overview, existing conditions, areas of concerns, proposed and alternate designs were discussed.

Katy L. Allen, P.E., Environmental Coodinator (FHWA Representative) made several recommendations during the meeting. They are:

- Compile a list of properties potentially eligible in the next 5-10 years to avoid delays during construction.
- Strengthen the Need and Purpose Statement by mentioning connectivity with the region, horizontal and vertical alignment changes, safety, and facilitation of development.
- Arrange for another meeting to be held with Melanie Nable, GDOT OEL and DMJM Harris to discuss potential ICI (Indirect Cumulative Analysis) impacts. Meeting to be arrange by Melanie Nable, GDOT after the end of comments period for the project PIOH meeting (after May 8, 2007)
- Address Environmental Justice issues in the Need & Purpose Statement.
- Research the Land Use plan for Bowdon.

In later correspondence between David Adair (Edwards-Pittman) and Rowe Bowen (GDOT), it was determined that a memo would be prepared for all properties 45 -49 years old. This memo will include location information, ages of resources, and photographs for identification purposes only and will stay in the project files for internal planning and not go to Georgia State Historical Preservation Officer.

The meeting was adjourned by Stanley Hill at 10:50 am.

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE: P. I. Nos. 631300, 631310 AND 621990 OFFICE: Environmental/Location

DATE: April 26, 2007

HDK/jc

FROM Harvey D. Keepler, State Environmental/Location Engineer

TO Distribution Below

SUBJECT PUBLIC INFORMATION OPEN HOUSE SYNOPSIS

PROJECT No. & COUNTY: GDOT PROJECTS STP-021-1(24)(25) AND NH-017-1(22), Carroll County

PROJECT DESCRIPTION: Widening and reconstruction of SR 166 and proposed construction of a southern bypass around the town of Bowdon and the widening of the twin bridges over US 27 over SR 166 in Carrollton, GA

DATE: April 24, 2007

NUMBER IN ATTENDANCE: 535

FOR: 16

CONDITIONAL: 9

UNCOMMITTED: 8

AGAINST: 116

OFFICIALS IN ATTENDANCE:

Bart Cater, Carroll County - Board of Education
Charles Pope, Carroll County - Board of Education
Chris Cole, Carroll County - Planner
Betty Jane Landis, City of Bowdon - City Council
Bret Hart, City of Bowdon - City Council
Randy Saxson, City of Bowdon - City Council
Donald Toms, City of Bowdon - City Manager
Becky Payne, City of Bowdon

GENERAL COMMENTS RECEIVED:

- Support the bypass
- Need traffic lights
- Dangerous Intersections need improvements
- Noise barriers need to be considered
- Project is not necessary
- Project will impact my property adversely
- Bypass should be north of town
- Traffic doesn't warrant the bypass

PREPARED BY:	Angie Malta, DMJM Harris/AECOM for Melanie Nable – OEL/NEPA
TELEPHONE No.:	(404) 699-4432 – Melanie Nable

cc: David E. Studstill, Jr., P.E.
Kent Sager
Jonathan Cox
Keisha Jackson
Stanley Hill
Steve Adewale
David Moore
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MEETING MINUTES

Subject:	**STP-021-1(24), and STP-021-1(25), P.I. No. 631300, and 631310, Carroll County, Georgia** Widening and Reconstruction of SR 166
Meeting Date:	May 16, 2007 11:00 am
Location:	GDOT OCD Conference Room
Transcription Date:	May 17, 2007
Attendees:	Jimmy Agan, Mayor City of Bowdon Betty Jane Landers – City Councilwoman Babs Abubakari, GDOT OCD Stanley Hill, GDOT OCD Steve Adewale, GDOT OCD Jennifer Hibbert, GDOT Planning Dan Bodycomb, DMJM Harris Greg Hood, GDOT District 6 (phone) Dewayne Coleman, GDOT District 6 (phone)

Purpose: **To Answer Questions Raised by the Mayor and City Council**

Stanley Hill opened the meeting.

All attendees introduced themselves and the firm they represented.

Mayor Agan began by saying that he had wanted to meet with GDOT in order to answer some of his and the City's questions. He said that the City Council will be meeting on Monday May 21, 2007 and that he was trying to keep the SR-166 bypass off of the agenda. He was hoping to be able to further educate the City Council before they rushed into a vote.

Mayor Agan stated that the City of Bowdon is growing and so are the City Limits. Some of the Bypass falls inside the City Limits. Mayor Agan is the only Council Member who was active back when this project first started in the early 1990s. He is well aware of the reasons that the Bypass was chosen to go to the south of the City. He is in support of this project.

Mayor Agan asked what would happen if the project didn't include the new location portion of the Bypass and how would it impact the rest of the project.

- It was explained that the project requires logical termini and that without the new location around the City of Bowdon there wouldn't be a western logical terminus.

- The Bypass (Unit 25) and the Widening (Unit 24) projects have been combined into one environmental document in order to meet logical termini requirements.

- Without the new location portion of the Bypass there isn't a logical terminus on the western end of the project. In order to get environmental clearance, the project cannot bring a four lane roadway to the City Limits and force the traffic back to two lanes.

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- The eastern terminus of Unit 24 is on SR166 near Hays Mill Road and is a logical terminus because it carries the new four lane roadway into an existing four lane roadway.

- The common terminus between Unit 24 and Unit 25 is at Farmers High and it does not have a significant traffic drop to show a logical termini.

- In summary, without the new location portion of the Bypass project then most likely both the Bypass (Unit 25) and the Widening (Unit 24) would not be a feasible project.

Mayor Agan asked what will happen if the City Council votes against the Bypass.

- Babs Abubakari answered him by saying that it doesn't stop the project but that it makes it more difficult to proceed.

- The priority for completing the project will be lowered and resources could potentially be pulled off of the project.

Mayor Agan stated that the Bypass option to the south is a viable option but not a popular one. The citizens are concerned that the stores and restaurants will suffer because traffic will be diverted around the City.

Babs stated that the State is charged with alleviating the congestion through the City of Bowdon. He said that this is a concern that they often hear in regards to bypasses. He said that typically those that are looking to shop or eat go into town while those that aren't will go around. But, he said, every City is different. Babs mentioned that often times the Bypass will bring in extra growth and economic development.

Babs also mentioned that an option to widen SR166 through the City would probably do more damage to the businesses than the Bypass. A four lane road through the City would have property impacts, displacements, and might not be feasible due to historic properties. DMJM Harris will put together a brief summary of the potential impacts of widening SR166 through the City.

Mayor Agan spoke about the current growth in the City of Bowdon. The City currently does not have a Comprehensive Plan that addresses transportation related issues. He said that the east side of the City was growing because of its proximity to Carrolton. He said that the north side was growing because of its proximity to I-20. He said that a Southern Bypass would help growth to the south of the City. He also mentioned that there currently isn't an easy route for emergency vehicles to get from the south to the east of the City if there is congestion downtown.

The Mayor and City Councilwoman, Ms. Landers spoke about the problems that trucks have at the intersection of SR100 and SR166. This intersection doesn't provide enough turning radius for the trucks and they are constantly hitting the power pole or having to wait for cars to back out of their way. There is a vacant building on one corner and might provide a way to improve this intersection. **Babs and Stanley suggested that the meeting minutes reflect the intersection problems at SR166 and SR100 and that District 6 should look into this as a potential safety improvement project.**

Babs asked whether there were a lot of logging trucks traveling through the City. The Mayor answered that there was a small plant just north of the City and there were trucks going through the City. It was asked what percentage of the traffic was from trucks. The traffic numbers have been submitted to GDOT but haven't been approved.

Mayor Agan also mentioned that there has been a recent increase in truck traffic that is coming from Alabama, going through the City, and north on SR100 back to I-20. The thought is that the trucks are

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trying to avoid the scales on I-20 at the State line. It was suggested to the Mayor that they contact the Georgia Department of Transportation Enforcement office to report the problem.

Mayor Agan asked that once the bypass was built, would it be possible to keep the trucks out of the City.

- Babs said that the downtown area would be signed as a Business District and that trucks would be restricted from traveling through the City.

Mayor Agan asked that if the City Council voted against the Bypass, were they obligated to report it to the DOT.

- Babs said that a letter needs to be sent to Commissioner Linnenkohl.

Babs suggested that Mayor and City Councilwoman Ms. Landers go back to the City Council and let them know that the State is charged with improving the congestion problem in the City of Bowdon. Whichever alternative is chosen will have impacts. Widening through downtown will most likely have significant environmental impacts and displacements. The City Council needs to consider the impacts and make their decision. The DOT is willing to continue to educate the City Council and address any comments or concerns that they may have.

The meeting was adjourned by Stanley Hill at 12:15 pm.

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June 26, 2007

CAROLYN & ABREY CRAWFORD
118 LILY VALLEY ROAD
BOWDON, GA 30108

RE: Public Information Open House
GDOT Project Numbers Project STP-021-1(24), (25) and NH-017-1(22),
Carroll County, P.I. Nos. 631300, 631310, and 621990
Widening and Bowdon Bypass of SR 166, Interchange at US27

Dear Concerned Citizen:

Thank you for your input regarding the public information open house for the proposed project. Your interest in this meeting and your comments are appreciated. Your comments will be made part of the official record of the project.

A total of 535 people attended the public information open house held on April 24, 2007. From those attending 149 comment forms and 11 verbal statements were received at the open house. During the comment period following the meeting 2 letters and 44 additional comments were received by mail or through the GDOT website. A petition entitled 'Help Stop the Bypass' was received that had 536 signatories. The signatories on this petition were included in the total number of comments; however, 41 of the 536 signatories on the petition had also submitted comments of opposition. Some people chose to comment more than once or use several methods (comment card, verbal statement, petition signature, etc), so each person was counted as one comment regardless of how many times they had commented. Therefore, there were a total of 692 individual comments received from the public information open house.

There were 24 comments in support, 22 comments expressing conditional support, 641 comments against, and 5 were uncommitted.

The attendees of the open house and those persons sending in comments afterwards raised the following questions and concerns. The GDOT has prepared one response to all comments so that everyone can be aware of the concerns raised and the responses given. Please find the comments, concerns, and questions listed below along with the Department's response (in italics).

Planning

Comment-
Concern that a northern bypass makes more sense

Response: The purpose of the widening and bypass project is to alleviate the growing congestion along SR166. The traffic projections for this corridor have been projected out to the year 2035. Building a bypass around half of the City of Bowdon may allow the City to prohibit trucks from driving through downtown.

If the SR-166 downtown Bowdon segment between the SR-166 Bypass were limited to truck traffic to local businesses, preliminary analysis indicates that potentially 50 percent of the truck traffic movements would use either a northern or a southern bypass. A SR-166 bypass could limit truck traffic on SR-100 to primarily to northbound-southbound (left and right turning movement on SR-100 prohibited).

A southern bypass would help facilitate growth to the existing industrial park. The southern bypass would also provide a shorter and faster route for emergency vehicles that are south of the City of Bowdon that are trying to get to Carrollton.

Comment-
Concern that the main problem is the intersection of SR-100 and SR-166

Response: Observations indicate that although the SR-100 at SR-166 intersection experiences some congestion during the peak periods, preliminary capacity analysis results in Level of Service (LOS) C for both peak hours for existing conditions. LOS is based upon an A thru F rating.

During field observations, truck traffic originated from all approaches of the intersection with the southbound SR-100 approach having the higher percentage of the truck traffic. Buildings are located at the back of sidewalk which limits sight distance. Turning radius for large truck appears to be insufficient. Observations indicated that truck traffic turning right from the southbound SR-100 approach would cross into the eastbound SR-166 left turn lane.

The Georgia Department of Transportation District office has been made aware of this problem. They are reviewing the project as a potential safety and operational improvement project.

Comment-
Request to add a turn lane and/or signal at SR-166 and Burwell Road

Response: Traffic control devices such as traffic signals are proposed on the guidelines set forth by the American Association of State Highway Transportation Officials (AASHTO) and the Federal Highway Administration (FHWA). Per these guidelines, the appropriate traffic control device is determined based upon existing traffic volumes, pedestrian volumes, accident experience, and roadway type.

Although signal warrant analysis has not yet been performed, a preliminary analysis of the side street volume does not appear to be sufficient to meet the volume warrants at this location.

Comment-
Concern that the bypass is a waste of tax payer's money

Response: The construction of a bypass may spur growth outside the city limits. Growth would bring economic development and would increase business potential in the area. Also, prohibiting truck traffic along SR-166 would contribute to a safer, quieter, and more enjoyable downtown experience.

Comment-
Concern that it is more important to repave the existing roads

Response: Comment will be made part of the official record of the project.

Comment-
Concern that the bypass will bring unwanted growth

Response: Comment will be made part of the official record of the project.

Environmental
Comment-
Concern that the project will have negative impact to wetlands and the environment

Response: Every effort will be made to avoid and/or minimize impacts to environmental and cultural resources within the project corridor. These include but are not limited to the following: wetlands threatened and endangered species, floodplains, etc. as well as cultural resources such as historic and archaeological sites.

Comment-
Concern that there will be a loss of privacy and an increase in noise / request for noise abatement measures

Response: Noise considerations are part of the planning, location, and design of all federal aid transportation project. The following represents GDOT's written statewide noise policy and procedures.

Two methods are used for identifying a noise impact. First a comparison of predicted noise levels with the Federal Highway Administration's (FHWA) noise abatement criteria (an exterior 67 decibels [dBA] criterion has been established for schools, libraries, residences, churches, playgrounds, and recreational areas and a 72 dBA criterion has been established for commercial activities). Any predicated noise level that approaches (within one decibel) or exceeds these levels is considered an impact. Second is a comparison of predicated traffic noise levels with existing noise levels. Where a substantial increase (10 dBA or more over existing levels) when associated with a Build noise level of 60 dBA or higher is identified and impact is noted.

Noise barriers can only be constructed where reasonable and feasible. Georgia Department of Transportation (GDOT) does not consider it reasonable to construct barriers at locations where site characteristics would require a wall height greater than 30 feet or prevent obtaining at least a 5 dBA reduction at impacted sites. GDOT uses a maximum cost of %50,000 per impacted household while requiring at least a 5 dBA reduction in noise levels to determine if the construction of a noise barrier is reasonable and feasible. The current material cost used by GDOT is $15 per square foot of noise wall needed. A noise barrier is considered reasonable according to the following formula:

$$\text{Reasonable Cost} = (\#\text{ of impacted sites having a 5 dBA reduction} \times \$50{,}000) + (\#\text{ of additional benefited sites having a 5 dBA reduction} \times \$25{,}000) \geq \text{Estimated Cost of Barrier}$$

Where the barrier cost is more than the Reasonable Cost calculated above, a noise barrier is not considered cost effective. Property owners may be offered the option to provide the balance of the cost of abatement, through local governments or other sources, where it exceeds the Reasonable Cost.

Noise studies for the proposed project will be completed as part of the environmental analysis once the preferred alternative is selected by the Department to determine whether noise barriers would be reasonable and feasible along the project alignment.

Traffic

Comment-
Concern that the bypass will take revenue away from Downtown Bowdon

Response: There isn't a reliable way to determine whether or not a bypass will take revenue away from downtown. Creating more access to the City will bring more growth to the area. How the City of Bowdon allows this growth to occur will have the greatest impact on economic development. Because SR-166 through downtown is a shorter route then the bypass it can be expected that much of the non truck traffic will continue to use this route. Unless there are options closer to the bypass then residents will continue to use the downtown area to shop and eat.

Comment-
Concern that there isn't enough traffic to warrant the project

Response: The design of this roadway project analyzes not only the current situation but also future year conditions. As mentioned above, the existing LOS for the SR-166 and SR-100 intersection is LOS C. Given the existing lane configuration at the intersection and optimizing the signal timing the preliminary analysis indicates the intersection would operate at LOS F (156 sec average delay) during the 2035 AM peak and LOS D (45 sec average delay) during the 2035 PM peak.

Because most of the downtown area is considered a historic district, widening the existing SR-166 to alleviate congestion is not a viable option.

Right-of-Way

Comment-
Concerns about negative impacts to property / reduced property values

Response: Comment will be made part of the official record of the project.

GDOT appreciates your comments regarding the proposed project. Suggestions, comments, and concerns made as a result of the recent public information open house factor into project decision making, and they have been entered into the official public record.

Should you have nay further question concerning this project, please call P. Paul Alimia of my staff at (404) 699-4448.

Sincerely,

Harvey D. Keepler/jem

Harvey D. Keepler
State Environment/Location Engineer

HDK/PPA/db

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MEETING MINUTES

Subject:	**STP-021-1(25), P.I. No. 631310** Bowdon Bypass of SR 166 Carroll County, Georgia
Meeting Date:	November 30, 2007
Location:	GDOT OCD Conference Room
Transcription Date:	December 3, 2007
Attendees:	Steve Adewale, GDOT OCD Stanley Hill, GDOT, OCD Katherine Russett, GDOT OEL Philip Alimia, GDOT OEL Dan Bodycomb, DMJM Harris Angela Malta, DMJM Harris

Purpose: **Discussion regarding the comparison of the Northern and Downtown Bypass with the Southern Bypass**

- Welcome and Introductions (GDOT – Steve Adewale)

- Dan handed out the DRAFT: Northern Alternate Selection Technical Memo to everyone present. He then summarized this document.
    - Approved concept report from April 1995.
    - Southern Bypass around Bowdon was the preferred Alternate at that time.
    - DMJM Harris made revisions to the southern alternate to avoid environmental impacts.
    - A Public Information Open House (PIOH) was held on April 24, 2007.
    - Overwhelming negative response to the southern bypass.
    - Became necessary to re-evaluate all potential alternatives.

- Dan then explained how the three northern alternates were created.
    - Alternate 1 was created based upon the suggestion of Mayor Agan of the City of Bowdon. This alternate used the existing West Jonesville Road as a portion of the E-W route. It then intersected at SR 100. Alternate 1 continues in a westerly direction and then heads south to tie into SR 166 near Hillcrest Road. This alternate crosses Big Indian Creek twice.
    - Alternate 2 was created by continuing past West Jonesville Road by about a quarter mile along SR 166. The alignment bisects two large properties, one of which is a school for troubled minors, Kids Peace National Center of Georgia. Stanley mentioned that we

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should stay off of the school property if possible. This alternate continues west towards the intersection of SR 100. It then continues around the city limits to tie back into SR 166 near Hillcrest Road.

- Alternate 3 continues further down SR 166 past West Jonesville Road and past the Alternate 2 intersection with SR 166. This alternate primarily follows the existing city limits. About half of Alternate 3 is along the same alignment as Alternate 2 and both alternates cross Indian Creek twice.

- Dan then explained that the areas of evaluation included Traffic Operations, Construction Impacts, Right-of-Way costs, Geotechnical, and Environmental impacts.
  - Traffic Operations
    - Alternate 2 fared the best because it was the shortest route.
    - It was assumed that all 3 alternates had the same LOS and traffic generation.
    - The number of intersections were counted and compared.
  - Construction Impacts
    - The earthwork for Alternate 1 fared the worst because of the more rolling terrain further away from the city limits.
    - Major Structures refers to the number of bridges. Stanley said to make this clear on the matrix.
    - The cost estimates were done by taking the major costs such as the structures and pavement quantities and then applying a per mile cost based upon the cost of the southern alternate in which the cost estimate was done in more detail.
  - Right-of-Way
    - The costs were used based upon the approved cost estimate for the southern alternate.
    - The potential displacements were also compared.
    - Stanley mentioned that there is a chicken restaurant near the terminus of Northern Alternate 2. This should be located and added to the aerial map.
  - Environmental
    - Katherine asked what the stream impacts referred to. Angie said that Edwards-Pitman had calculated them based upon the most recent USGS maps and that they covered all stream sizes and weren't just large stream crossing.
    - The floodplain impacts were talked about for the three alternates. Stanley said that this should be added to the matrix.

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        - All other environmental impacts were relatively similar. The area to the north is much less developed and is mainly open farm land.
- Dan then explained that Alternate 2 was chosen as the preferred Alternate because it was the shortest length, it had the least amount of intersections, it was the easiest to construct, and had the least amount of historic properties, wetland and stream impacts.
- Dan then handed out the DRAFT: Bowdon Bypass Alternate Selection Technical Memo. This memo compared the preferred northern alternate with the downtown and southern alternates using the same methodology was used in the selection of the Northern Alternate.
    - Traffic Operations
        - The Northern Alternate is approx 3 miles shorter in length then the Southern Bypass and has fewer intersections. This leads to a quicker trip time and as the traffic numbers reflect, allows the Northern Alternate to draw more traffic. The traffic summary shows that approx 7,000 vehicles/day would use the NE portion of a bypass. In comparison, 4,200 vehicles/day would use the SE portion of a bypass. The numbers increase to 7,600 vehicles/day on the NW portion.
    - Construction Impacts
        - The Northern Alternate, although shorter, has two major bridges which increases the construction costs. Stanley requested that we add the word "approximate" to the costs shown on the matrix.
    - Right-of-Way
        - The northern alternate is shorter and goes through more rural farm lands and thus the right-of-way costs are considerably lower. There are also fewer displacements.
    - Environmental
        - The Northern Alternate has less environmental impacts then the southern alternate.
        - The Downtown Alternate would impact a considerable amount of the downtown historic district.
- Dan concluded that this analysis shows that a Northern Alternate is a viable and cost-effective alternate and should be considered as a potential bypass around the city of Bowdon.
- Dan then asked Steve what the next steps would be:
    - We need to schedule a meeting with the Mayor and City Council Woman at the DOT to discuss the Northern Alternate. Educated them about the potential benefits of a bypass and have them bring up the subject at the next City Council Meeting.

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- The layouts need to be redrawn to show the major traffic movement being from SR 166 onto the bypass. The preferred Northern Alternate needs to be darker and the other two northern alternates should remain on the drawing but made much lighter so that the preferred alternate stands out. If possible the downtown and southern alternates should be shown all on one drawing. The scale of the drawings is good for our next meeting.
- Summarize the information that is currently in the Draft Technical Memos and present it to the Mayor. This will include a brief summary, a location map, and the evaluation matrix.
- There is certain information that was made clear during the first PIOH. These items are:
  - Traveling on the bypass will be an option for vehicles and mandatory for trucks.
  - The widening project (PI 631300) will not happen without the bypass because of one environmental document and logical termini.
  - The bypass is only a two-lane roadway, not a four-lane.
- Once a new information package is put together, it will be sent to Steve for approval and then he will setup a meeting with the Mayor and City Council.

- Action Items:
  - DMJM - Redraw the aerial maps to shade all but the preferred Northern Alternate.
  - DMJM - Redraw the intersections at SR 166 and the bypass to show a continuous movement.
  - DMJM – Check on the truck traffic generation of the Northern Alternate.
  - DMJM - Create an informational packet for the Mayor and City Council that summarizes the technical memos.
  - GDOT -Setup a meeting with Mayor and City Council Woman at the GDOT General Office.

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Attendance Sign-In Sheet

Subject PI 631310 Bowdon Bypass

Date Nov. 30, 2007

NAME	COMPANY	PHONE NUMBER	EMAIL ADDRESS
Don Boodycomb	DMJM	7980 6364	
Steve Adewale	GDOT, OCD	(4) 463-0291	
Stanley Hill	GDOT/OCD	4-656-6109	
Katherine Russell	GDOT/OEL	4-699-6882	
Cinqie Malta	DMJM Harris	6/234-1837	
Phillip Alimia	GDOT-OEL	4)699-4448	

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MEETING MINUTES

Subject:	**STP-021-1(24), and STP-021-1(25), P.I. Nos. 631300 and 631310,** Widening and Reconstruction of SR 166 Carroll County, Georgia
Meeting Date:	August 4, 2011 (11:00)
Location:	Bowdon City Hall
Purpose:	**Public Officials Meeting**
Transcription Date:	August 5, 2011
Attendees:	Mayor Watts – City of Bowdon – 770-258-8980 Jimmy Meigs – Manager - City of Bowdon – 770-258-8980 – citymanager@bowdon.net Scott Gero- AECOM- 404.965.9726 – scott.gero@aecom.com Dan Bodycomb- AECOM - 404.965.9629 – dan.bodycomb@aecom.com Laura Dawood- AECOM – 404.965.7074 – laura.dawood@aecom.com

Summary

After a round of introductions, Dan started the meeting with a discussion about its purpose. He said that we want to be able to present an alignment that is favorable to the public. He mentioned the previous Public Information Open House meeting (PIOH) and the amount of opposition to the southern bypass. Dan stated that part of the opposition was because of misconceptions about the type of roadway. He said that we want to make sure that the public is aware that a northern bypass would be two lanes (one in each direction) and that it would be designated as a truck route. The Mayor said that he has been describing it a truck route.

Dan said that another reason for the meeting was to gather information from a local perspective. He stressed that the data shown on the aerial map was only from data that was available from a desktop. Dan said that very little field work has been done and he is hoping that the discussion today can reduce the limits of the field work that will be required. Dan also stressed that the plans were very preliminary and used an analogy that they are drawn with crayon and very much conceptual in nature.

Dan continued the discussion by talking about the two projects. He said there is one project that is commonly referred to as the bypass and one that is called the widening. He described the bypass as Unit 25, or PI 631310 that starts from just west of the Bowdon city limits and would bypass around the city and tie to SR 166. It would then widen up to Farmers High Road. Dan described the widening as Unit 24, or PI 631300, and said that it would pick up the widening at Farmers High Road and continue towards Carrollton and end at the existing four lane section.

Dan said that these two projects were split by GDOT into more manageable construction lengths and that GDOT may elect to construct one project before the other. Dan also mentioned that AECOM must first get the environmental document approved by FHWA. He said that due to logical termini that these two projects are tied together.

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Dan then gave a brief history by stating that GDOT provided AECOM with concept reports that were approved in the mid 1990s. The mayor mentioned that the history of the project even goes back into the 1970s. Dan mentioned that AECOM started work in August of 2006 and they refined the southern alignment and took it to a PIOH in April of 2007. The mayor said that was when AECOM was blindsided with the opposition to the southern alignment. Dan said that after the PIOH, AECOM looked at potential northern alignments and presented them to the mayor.

Dan then unrolled the aerial plot and described the alignments. He started by describing the yellow and the light blue alignments which begin the furthest west of the city and run north then east around Bowdon. These alignments have good perpendicular crossings at the intersections and are in close proximity to a small trucking facility located along Lovvorn Mill Road. They also utilize much of existing West Jonesville Road.

Dan then described the orange, the dark blue and green alignments. These alignments are closer to the existing city limits but cut right across Indian Creek Farm.

The mayor was asked for his opinion on the alignments. He started by saying that he preferred the northern most alignments. He said that the city and county were in discussions about constructing an industrial park north of town, perhaps along West Jonesville Road or west of SR 100 in this area. He mentioned that the county had been waiting for the location of the bypass to be set, prior to selecting a location. He said that the city was trying to increase the city limits by three miles. The Mayor stated that the process of extending the city limits had been ongoing for some time. This would increase the population from 2,000 to 8,000 and would provide them with more opportunity for grants. He said that it would also attract more retail to the area. The city recognizes that sewer infrastructure would need to extend out this way in the event of any future development. In addition, the Mayor said that having a bypass would be better from a safety perspective to make sure various areas of the city will have access in case of emergency, even on the regional level in the event an emergency occurred on I-20. The newly upgraded intersection of W. Jonesville Road and SR 166 was completed by the GDOT District within the last couple years.

Discussion took place about the general feeling of the need for a light at N. Jonesville Road and SR 166. The Mayor stated that it didn't seem like the traffic really justified the need for a light at this intersection. All agreed that the tie in of the bypass at this location would require additional evaluation.

The mayor was asked about the potential impact to the Indian Creek Farm. He said that he has had conversations with the owner who has expressed that he doesn't want the bypass on his property. It was later discussed that the Indian Creek Farm outparcels along Big Indian Creek are also owned by the same owner, where one house is occupied by one of his children. The mayor stated that there is an old unused pump station southwest of the Big Indian Creek/Lovvorn Mill Road.

The mayor was asked what his preference would be as to the type of intersection that the bypass has with SR166. He stated that he would like for vehicles to have to turn to utilize the bypass alignment and thus a T-intersection was his preference, and that this type of intersection might be more favored by the citizens. A T-intersection would make the main movement along existing SR 166 through Bowdon, and that the trucks would be required to turn off. The benefit of this intersection alignment would be to facilitate through-traffic to continue in town and go to local Bowdon stores. The terrain near the termini of the western portion of the bypass was also discussed. The mayor said that there would be good sight distance near the existing bridge over Big Indian Creek, just west of the proposed western bypass tie-in to existing SR166. The mayor mentioned the existing eligible historical property in this area. The location of it was pointed out on the aerial image, which is located just east of the proposed westernmost bypass tie-in to existing SR 166.

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Scott asked if there would be any traffic issues on SR100 between SR 166 and the intersection with the proposed bypass by making the bypass a truck route. The mayor and Jimmy didn't seem to think that it would change much. They stated that many trucks already use SR 100. In fact, the Mayor and Mr. Meigs stated that one of project they'd like to see is the widening of SR 100 to four lanes from Bowdon to I-20. There is a logging company north of Bowdon that is a destination of a lot of trucks. Additional industries that bring traffic through Bowdon: chicken/feed farms, a chicken hatchery in the Industrial Park, and visitors to Lake Wedowee.

Scott asked if the mayor thought that SR 166 needed to be widened to four lanes. The mayor and Jimmy agreed that there was a significant need for four lanes. They talked about the amount of time that they spend trying to turn onto SR166 from either side streets during peak hours. They also mentioned that it would keep people from getting stuck behind slow vehicles, tractors, or trucks. They said that currently there weren't enough passing lanes.

The Mayor and Mr. Meigs stated that in Bowdon traffic from SR 166 and SR 100 merges. People are commuting to Carrollton and into Atlanta. People from up to 30 miles into Alabama are commuting through Bowdon to work.

Laura asked what the general feeling in the area was about the bypass and asked specifically because of the PIOH comments that were against the southern bypass. The mayor said that it was a mix of people that were against the idea of a southern bypass and would probably support a northern bypass and those that were opposed to a bypass in general, regardless of location.

Dan asked what other stakeholders should be included in further discussions. The mayor and Jimmy responded with the following:

George Chambers – County Commissioner
Bill Chapman – Chairman of the Board of Commissioners
Matt Windham – Carroll County Water Authority
Scott Cowart – School Superintendent
Bart Cater– School Board
Randy Nix – State Representative
Merchants Association Guild

Laura asked about the local newspapers

Bowdon has a paper that is published weekly called the Bowdon Intelligence (a copy of which was provided to AECOM)

Carrollton has a paper called the Times Georgian that is published six times a week. This is the county's legal organ.

Laura asked about local bicycles. The mayor replied that there are some bicyclists in the area, but not a lot. They would prefer a shoulder configuration that accommodates bicycles. There is a dedicated Carroll County bike group that also participates in the Bike Ride Across Georgia (BRAG). There are designated red/white/blue routes in the county that designate the distance of the routes.

There was a discussion regarding the connectivity of the bypass. The mayor stated that the northern most alternatives would tie nicely into SR166 at Dixon Road. One of the City's biggest concerns is the lack of connectivity and alternate routes to the southeast part of the city. The mayor said that a few years back they had an emergency that blocked the SR100 and SR166 intersection. He said that there isn't an easy way to get from south of the city to SR166 towards Carrollton.

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The mayor talked about projects that they had submitted as part of the upcoming T-SPLOST program. One of the projects was a new location extension of Dixon Road that would tie into Kent Road. This project would extend Dixon Road about a half mile to connect to the elementary school and the industrial park on the south side of town. This would provide the connectivity in the southeast that is desperately needed. The Mayor stated they would like to see the high and elementary schools have connectivity, and also take buses out of downtown Bowdon. The bypass would facilitate the bus routes for the schools. Another project they submitted for the T-SPLOST was the four laning of SR 100 to I-20, which crosses a commissioner district.

Additionally, Mr. Meigs said that he had just heard there will be a community meeting about the bypass on Aug. 14th, and asked if AECOM knew about it. This was new information for all attendees.

Laura asked about the conservation lands on the northeast side of Bowdon City Limits. Mayor Watts stated that the conservation land description is a county level designation.

Action Items

Cc: Greg Hood, GDOT District 6 Planning/Programming Engineer
Chandria Brown, GDOT Office of Program Delivery
Jonathan Cox, GDOT OES

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MEETING MINUTES

Subject: **STP-021-1(25), P.I. No. 631310**
SR166 from E of Big Indian Crk New Loc to E City Limits to CR 828
STP-021-1(24), P.I. No. 631300
SR 166 from CR 828 to 4-Lane/Carrollton - Incl. Bridges
Carroll County, Georgia

Meeting Date: December 1, 2011

Location: GDOT OES

Purpose: **SR 166 Bowdon Bypass and Widening Pre FHWA Meeting**

Attendees:				
	Chandria Brown	GDOT/OPD	chbrown@dot.ga.gov	404.631.1580
	Mike Murdoch	GDOT/OES	mmurdoch@dot.ga.gov	404.631.1178
	Stanley Hill	GDOT/OPD	sthill@dot.ga.gov	404.631.1560
	Chetna Dixon	FHWA	Chetna.Dixon@dot.gov	404.562.3655
	Dan Bodycomb	AECOM	dan.bodycomb@aecom.com	404.965.9629
	Laura Dawood	AECOM	laura.dawood@aecom.com	404.965.7074

SUMMARY

The meeting began with a round of introductions from the attendees.

The meeting opened with an introduction of the proposed project and schedule by Dan Bodycomb, AECOM Project Manager. Dan provided a project history of the bypass and widening project, discussed the first PIOH held in 2007 and the public opposition to the bypass to the south of Bowdon. Dan explained the numerous alternative new location bypass options to the south and north of Bowdon that had been evaluated.

Laura Dawood, AECOM NEPA specialist, discussed the project justification and environmental constraints. The project justifications for both PIs were submitted and approved by GDOT Planning the Fall 2011. PI 631310, which includes the new location bypass around Bowdon and widening along existing SR 166 until CR 828/Farmer's High Road has the need to improve level of service through Bowdon in the design year, reduce crash/injury/fatality rates along the corridor, reduce trucks from downtown Bowdon, and improve operations in Bowdon. PI 631300 has the need to improve level of service and reduce crash/injury/fatality rates along the corridor. Laura also explained the status of the Environmental process that history screening and field work had been complete and the Historic Resources Survey Report was underway. Laura also stated that the field work for ecology was awaiting input from the PIOH to ensure the alternatives remained viable. Given the cultural resources along the corridor, there is still the potential for Section 4f, but we are looking at avoiding/minimization measures. The Environmental Approval is scheduled for September 2015, with construction let in December 2018.

Laura outlined the public involvement approach to this project. She stated that based on our schedule we are anticipating a PIOH to be held in February 2012 at the same location as the 2007 PIOH, at the Bowdon Middle School at North Jonesville Road, due to the ability of this facility to house a large number of people. Approximately 500 people attended the PIOH in 2007. This location is located closer to the western side of the approximately 11-mile project corridor. At the last PIOH attendees came from throughout the corridor. Mike and Laura asked Chetna if having the meeting at that location would be satisfactory. Chetna asked about the potential for environmental justice concerns along the corridor. Laura said that the initial screening for low income, minority, Hispanic, and limited English proficient communities showed there may be a slight concentration closer to the eastern terminus. Chetna asked if there were smaller facilities with the potential to

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MEETING MINUTES

do additional outreach toward the eastern side of the project. Laura stated that there were numerous churches and that was certainly an option. Chetna said that she had been working with Keisha Jackson at OES on a kiosk that could possibly be used for this project. The GDOT Team said they'd work with Keisha to determine the approach for supplemental public outreach.

The western terminus located just west of Bowdon, the intermediate terminus at West Jonesville/existing SR 166, and the eastern terminus at the existing 4-lane section just west of Hays Mill Road along the SR 166 Carrollton Bypass were described. Chetna said that FHWA will use the Logical Termini form process to engage the project in questions about the termini. The GDOT Team said that we anticipated submitting the LT form to FHWA at the beginning of the new year. Laura asked Chetna what level of service would be considered acceptable to FHWA in this area. Chetna suggested getting in touch with GDOT Planning to see if they have a policy for this area.

A discussion of the existing SR 166/Maple Street intersection included a description of the LOS F in the design year (2043) under both the Build and No Build condition. Chetna asked if there were additional measures that could be used to evaluate how much worse of an F would occur under each condition as a comparison. What would it take to improve the Maple Street segment east of the SR 166 intersection? How far up does that LOS F remain? Mike suggested that given the proposed project wouldn't worsen the condition on a local road, then it could be argued that it is the local's responsibility to make the improvement along Maple. Chetna suggested that a detailed analysis be provided in the LT form and FHWA would provide comment at that time.

The meeting was then adjourned.

Action Items

Item	Responsibility	Status
1. Touch base with GDOT Planning regarding policy for LOS in this area.	AECOM	**Complete** *(per subsequent email correspondence with GDOT Planning, LOS C or better would be considered acceptable in this corridor)*
2. Work with Keisha Jackson to determine supplemental public outreach that may apply to this project and to determine if a kiosk would be an option.	AECOM/GDOT	**Complete** (draft public involvement approach coordination ongoing)
3. Determine additional metrics to assess the LOS F at SR 166/Maple under both the Build/No Build conditions in 2043. What would it take to improve the Maple Street segment east of the SR 166 intersection?	AECOM/Jacobs	Pending

Cc: Attendees

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MEETING MINUTES

Subject: **STP-021-1(25), P.I. No. 631310**
SR 166 from E of Big Indian Crk New Loc to E City Limits to CR 828/Farmers High Road
STP-021-1(24), P.I. No. 631300
SR 166 from CR 828/Farmers High Rd. to 4-Lane/Carrollton - Incl. Bridges Carroll County, Georgia
Local Government Coordination Meeting

Meeting Date: January 11, 2012 from 2-3:30pm

Location: GDOT General Office Room 408

Purpose: **SR 166 Bowdon Bypass and Widening Carroll County Stakeholder Meeting**

Attendees:

Chandria Brown	GDOT/OPD	chbrown@dot.ga.gov	404.631.1580
Mike Murdoch	GDOT/OES	mmurdoch@dot.ga.gov	404.631.1178
Stanley Hill	GDOT/OPD	sthill@dot.ga.gov	404.631.1560
Bobby Dollar	GDOT/OES	rdollar@dot.ga.gov	404.631.1920
Carla Benton-Hooks	GDOT/OES	cbenton-hooks@dot.ga.gov	404.631.1415
Bill Chappell	Carroll County	wmjchappell@gmail.com	770.830.5800
Keith Crawford	Bowdon Mayor	bowdonmayor@gmail.com	678.850.0950
Bart Cater	Carroll B. of Ed	bmcater@bellsouth.net	770.280.5956
Matt Windam	Carroll County Water Authority	mwindam@ccwageorgia.com	
Charles Pope	Carroll County	cpope@carrollcountyga.com	770.830.5901
John Wilson	Carroll County BOC	johnwilson@carrollcountyga.com	404.473.2844
Geary Swanger	Carroll County		
David Goldberg	Carroll County Schools	david.goldberg@carrollcountyschools.com	404.585.0360
Thomas Farmer	Carroll County		770.830.5861
Bryan Partin	Carroll County	bpartin@carrollcountyga.com	770.830.5861
Scott Gero	AECOM	scott.gero@aecom.com	404.965.9726
Dan Bodycomb	AECOM	dan.bodycomb@aecom.com	404.965.9629
Laura Dawood	AECOM	laura.dawood@aecom.com	404.965.7074

SUMMARY

Chandria Brown, GDOT Project Manager, introduced the project and opened the meeting with a round of introductions from the attendees. The purpose of this meeting is to coordinate with the local government, obtain feedback and identify any issues associated with the project, and discuss schedule.

Dan Bodycomb, AECOM Project Manager, provided a project history of the bypass and widening project, the original concept report from the 1990s, discussed the first PIOH held in 2007 that had over 500 attendees, and the public opposition to the bypass to the south of Bowdon. Dan explained the numerous alternative new location bypass options to the south and north of Bowdon that had been evaluated, which were represented on the layouts provided at the meeting. Laura Dawood presented an overview of the need and purpose and logical termini for the project.

Mr. Chappell, Chairman of the Carroll County Board of Commissioners, shared that he hasn't heard from anyone about this project, but the interest in the project is there. He stated that he didn't anticipate any problems with widening along the existing SR 166, and that he thought a northern bypass around Bowdon was more logical as compared to a southern

bypass. He mentioned that there may be federal lands along the southern bypass route which would make it more complicated to build a southern bypass. Mr. Chappell and Mr. Cater expressed an interest in potentially extending the bypass around to the southwest side of Bowdon to SR 100 to enable access to their industrial park. Mr. Chappell shared that this extension may be a future local county project, and wouldn't want an interest in this to delay the progress of the proposed SR 166 bypass and widening project.

Keith Crawford, City of Bowdon Mayor, stated that most of the traffic goes to the north side of Bowdon, so that by constructing a northern bypass a majority of the traffic would avoid the SR 166/SR 100 intersection. He stated that the majority of the traffic travels east/west along SR 166, and most traffic is heading towards Carrollton or headed north of Bowdon. He said that the industrial park is almost built out and that the City of Bowdon has interest in the future in developing areas to the north of Bowdon, so a northern bypass alternative would fit nicely with their local planning efforts. Mr. Crawford felt that the northern bypass would be received positively. Mr. Crawford stated that he didn't have a concern about the town drying up with the construction of a northern bypass.

Matt Windam, Carroll County Water Authority, stated that there is a future reservoir project in their planning stages which will be located approximately 5 miles north of the proposed Bowdon northern bypass. Mr. Windam also stated that there is a pump station on Big Indian Creek just north of SR 166 on the west side of the stream bank, but appears to be outside the alignment. He also asked if these projects would be let at the same time. Chandria Brown and Stanley Hill both responded by stating these projects are set up to be let at the same time. Mr. Windam also asked whether utility relocation would be part of this project. The team responded by stating that utility relocation would be included. He also stated that there is bad sight distance at the existing Antioch Church Road/SR 166 intersection.

Mr. Chappell stated that those living along W. Jonesville Road might have a universal concern about the bypass location. Mr. Hill stated that there are different typical section options to result in minimal impacts. Mr. Chappell stated that the county and city of Bowdon would need to ensure that zoning along the bypass route would need to be residential and commercial so as to facilitate retail in Bowdon and keeping people going into town.

Mr. Pope had a question regarding the right-of-way (ROW) along W. Jonesville Road and Matt Windam asked about ROW on the widening. The team responded by stating that along W. Jonesville Road, the ROW requirements would be minimal, and along the widening portion the ROW would be approximately 200 feet. The team also stated that context sensitive design is part of this project and that perhaps a 3-lane section to accommodate existing driveways along W. Jonesville Road would be an option. Mr. Pope stated that there were fatalities at the existing Farmers High Road/SR 166 intersection. There was concern due to poor sight distance at Farmers High Road and at Antioch Church Road.

The representatives from Carroll County asked how these projects fit into the T-SPLOST. Mr. Hill spoke to the discussion of the TIA SPLOST may be set up under different criteria, but at this time the specifics were not known. The project team stated that these projects were federally funded and to their knowledge were identified as being on the Constrained T-SPLOST list (*per follow-up after the meeting, the T-SPLOST list for the Three Rivers Regional Commission was consulted and both PI 631310 and 631300 are identified on the final list*.) He said that federal funding compared to T-SPLOST funding has the potential to affect the county's perspective on their support for the T-SPLOST. Mr. Chappell also mentioned that if the SR 166 project is federally funded then the county can use their T-SPLOST allocation for a different project.

Dan asked the group their opinion of redesignating SR 166 as the bypass and removing the SR designation from downtown Bowdon. Mr. Chappell replied that he liked the idea of taking the SR designation off SR 166 in Bowdon and thought it would improve by taking the trucks out of the city. Mr. Crawford agreed and was in support of taking the SR designation out of Bowdon.

Bart Cater stated that the trucks would miss two weigh stations along I-20 if they took SR 166 from Alabama to US 27/SR 1.

Mr. Bodycomb asked the group for their suggestions as to how to keep the facts about this project straight. Mr. Windam remembered that at the 2007 public meeting, there were a lot of citizens who broke off into groups to discuss the project. He made the recommendation that perhaps a more formal format might help keep the facts organized. Mr. Hill stated that the public information open house meeting format has been standardized over the past 20 years or so, and is the FHWA accepted method of conducting outreach. He mentioned that the informal public meetings prevent attendees from having the opportunity to grandstand.

Mr. Chappell suggested that the team look at the objections to the project that surfaced after the 2007 meeting, and make sure these are addressed, which would help keep the facts straight. Mr. Hill stated that these problems were addressed. The biggest issue raised was the bypass alternative to the south, and it has been addressed by changing the bypass to the north side of Bowdon.

Mr. Crawford asked how the mayor/city council can be proactive to support this project. Mr. Hill stated that one way would be to vocally support the project. Mr. Chappell stated that the county would openly and publicly support the project. Mr. Pope said that the residents should be ok with the project, and that any opposition might come from the businesses. Mr. Cater and Mr. Chappell both expressed the opinion that if only the trucks are diverted, that the businesses shouldn't be negatively affected. Mr. Crawford stated that he felt the city/council of Bowdon would support this. This project is a large influx of capital improvement to Bowdon that they need. Mr. Chappell thought that the project would spur future growth.

Mr. Wilson stated that the neighborhoods of Sunset Hills and off beyond Bonner Rd. toward the eastern termini might consider noise as a part of the impact of this project. Ms. Dawood and Mr. Hill stated that there are standards for measuring noise, and if noise abatement measures, such as a noise wall, were warranted then the project would do that.

Mr. Gero suggested that one way to support the project would be to take the message back to their communities that GDOT is listening and that there will be a general public meeting in February.

Attendees expressed interest in obtaining a copy of the project layouts to show the council and constituents. It was decided that GDOT would send hard copies to Mr. Chappell and Mr. Crawford to put in the Carroll County Public Works Dept. and the Bowdon City Hall. Mr. Hill said that if anyone had any concerns that they should be directed to contact GDOT. Mr. Hill made the commitment that GDOT was to design a project based on AASHTO criteria that fits the needs of the community. GDOT PM & AECOM will work with the GDOT Environmental Office regarding a Public Outreach website posting of the layouts.

Mr. Dollar said that it would be useful to note the major changes to the project that have occurred since the 2007 public information open house.

Mr. Chappell asked how hard it would be to get a new access point on the Bowdon bypass. This issue was raised a few times. Mr. Hill said that the bypass would be limited access, and if there was an interest, then there would need to be a petition to GDOT to permit a new access point.

The city of Bowdon requested to add directional signs at SR 100/SR 166 to I-20. GDOT PM will forward this request to the District 6 Engineer.

There was interest in the US27/SR1 @ SR 166 Interchange Improvement Project. The answer given was that this project is currently on the Shelf and waiting on construction funding.

The meeting was then adjourned.

Action Items

Item	Responsibility	Status
1. Submit hard copies of the layouts to Mr. Chappell and Mr. Crawford for use in the Carroll County Public Works Dept., and Bowdon City Hall.	AECOM/GDOT	**Complete**
2. Inquiry regarding I-20 directional signs	GDOT	**Complete.** GDOT PM spoke with Harry Maddox, District 6 Traffic Engineer about this issue on 1/12/12. The Local Officials will need to contact Harry Maddox via e-mail to initiate the process for obtaining approval for the signs.< hmaddox@dot.ga.gov>

Cc: Attendees

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Attendance Sign-In Sheet **Subject: SR166 Public Officials Meeting** **Date: 1/11/2012**

NAME	COMPANY	PHONE NUMBER	EMAIL ADDRESS
Dan Bodycomb	AECOM	404 965 9629	dan.bodycomb@aecom.com
Geary Swanger	Carroll County		
Charles Pope	Carroll County	770-830-5901	CPope@CarrollCountyGa.com
Bill CHAPPELL	CARROLL COUNTY	770.830.5800	wmjCHAPPELL@gmail.com
Scott Gero	AECOM	404-965-9726	scott.gero@aecom.com
Carla Benton-Hooks	GDot - OES	404.631.1415	CBenton-Hooks@dot.state.ga
Mike Murdoch	GDOT - OES	4-631-1878	mmurdoch@dot.state.ga
Laura Dawood	AECOM	4.965.7074	Laura.dawood@aecom.com
David Goldberg	Carroll County Schools	4 585 0360	david.goldbergCcarrollcountyschools.com
John Wilson	Carroll Count BOC	4-473-2444	johnWilson@carroll County Ga.com
Keith Crawford	City of Bowdon Mayor	678-850-0950	BowdonMayor@gmail.com
Thomas Farmer	carroll county	770-830-5861	
Bryan Partin	Carroll County	770-830-5861	bpartin@carrollcountyga.com
Bobby Dollar	GDOT - OES	404-631-1920	rdollar@dot.ga.gov
Chandria L. Brown	GDoT - OPD		chbrowne dot.ga.gov
Matt Windom	CCWA		mwindom@ccwageorgia.com
BART CATER	CARROLL BD OF ED	770-280-5956	bmcater@bellsouth.net
Stanley Hill	GDOT - OPD	404-631-1560	sthill@dot.ga.gov.

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE: P. I. Nos. 631310/631300 OFFICE: Environmental Services
DATE: March 1, 2012

FROM Glenn Bowman, P.E., State Environmental Administrator

TO Distribution Below

SUBJECT PUBLIC INFORMATION OPEN HOUSE SYNOPSIS

PROJECT Nos. & COUNTY: STP00-0021-01(24) and (25), Carroll

PROJECT DESCRIPTION: The proposed State Route (SR) 166 widening and reconstruction project would begin just east of Big Indian Creek, located west of Bowdon, and end at the 4-lane section along the SR 166 South Carrollton Bypass just west of County Road (CR) 11/Hays Mill Road. The project consists of 2 lanes for the new location bypass north of Bowdon extending until it reaches existing SR 166 and would continue widening as 4-lanes along existing SR 166 until reaching the eastern end of the project. Both PIs 631310 and 631300 would improve east/west connectivity along SR 166 between Bowdon and Carrollton.

The proposed PI 631310 project would begin just east of Big Indian Creek, go on a new location bypass north of Bowdon. Alternative 1 would extend along existing West Jonesville until reaching existing SR 166 at the West Jonesville Road intersection. Alternative 2 would begin just west of SR 100, where it would head in a southeasterly direction and reach existing SR 166 at Elaine Drive. At the point where the bypass reaches SR 166 under Alternative 1 or 2, SR 166 would begin to be widened from two to four lanes along the existing roadway, continue eastward and end at CR 828/Farmer's High Road. Currently, the SR 166/SR 100 intersection improvement is being considered as part of this project. Under consideration is the inclusion of a northbound right turn lane on SR 100.

The proposed PI 631300 project would widen the existing SR 166 roadway from two to four lanes beginning at CR 828/Farmer's High Road until reaching the SR 166 South Carrollton Bypass/Maple Street/Commons Drive intersection. The alignment would then continue widening along the SR 166 South Carrollton Bypass and end at the existing four-lane section just west of CR 11/Hays Mill Road.

The improvements of both these SR 166 projects between Bowdon and Carrollton would span the approximately 11.4-

	mile distance of PI 631310 (approximately 6.2 miles) and PI 631300 (5.2 miles), which together comprise the full project limits for purposes of the environmental documentation. The exact distance for PI# 631310, the new location bypass, would be determined when alternative selection is finalized. The approximate right-of-way required would be 200 feet along the existing 2-lane section of SR 166 and 140 feet on the 2-lane new location bypass section.
DATE:	February 28, 2012
NUMBER IN ATTENDANCE:	221
FOR:	25
CONDITIONAL:	17
UNCOMMITTED:	6
AGAINST:	28
OTHER (NO RESPONSE):	6
OFFICIALS IN ATTENDANCE:	Mr. Jimmy Meigs, City Manager, City of Bowdon Mr. Bud Benefield, Carroll County Fire Mr. Bart Cater, Carroll County Board of Education Mr. Mark Broch, Chief, Bowdon Police Department Ms. Kelley Hall, Bowdon Police Department
ADDITIONAL COMMENTS:	Traffic was identified as a big concern along the corridor regardless of the level of support respondents have for the project. The bypass and the potential effect on the Bowdon economy is another major concern.
PREPARED BY:	Carla Benton-Hooks, OES
TELEPHONE No.:	(404) 631-1415

cc: Gerald M. Ross, P.E.
Russell McMurry, P.E.
Bobby Hilliard, P.E.
Kent Sager
David Ray, P.E.
Stanley Hill, P.E.
Chandria Brown, P.E.
Greg Hood
Mohamed Arafa

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE: P. I. Nos. 631310/631300 **OFFICE:** Environmental Services
DATE: March 15, 2012

FROM: Glenn Bowman, P.E., State Environmental Administrator
TO: Distribution Below

SUBJECT: Project STP00-0021-01(24) and (25), Carroll County, Summary of Comments Received During the Public Comment Period – (2/29/12-3/9/12)

COMMENT TOTALS:

A total of 221 people attended the public information open house held for the subject project on February 28, 2012.

From those attending, 74 comment forms, eight letters and five verbal statements were received. An additional 9 comment cards, two web-based comments, and one telephone call were received during the ten-day comment period following the public information open house, for a total of 99 comments. Four respondents commented in two different ways; therefore a total of 95 commenters responded. They are summarized as follows:

No. Opposed	No. In Support	Uncommitted	Conditional
33	28	14	20

MAJOR CONCERNS:

A total of 24 comments expressed opposition to the Bowdon Bypass. The major concern with the bypass was the potential negative impact that it could have on downtown Bowdon businesses. Other comments expressed concern about traffic and safety issues, and right-of-way impacts and changes in access to property owners.

OFFICIALS:

Officials attending included the following:
Mr. Jimmy Meigs, City Manager, City of Bowdon
Mr. Bud Benefield, Carroll County Fire Department
Mr. Bart Cater, Carroll County Board of Education

Mr. Mark Broch, Chief, Bowdon Police Department
Ms. Kelley Hall, Bowdon Police Department

MEDIA:

None

DISPOSITION OF COMMENTS:

AECOM will respond to all comments on behalf of the Department of Transportation.

The GDOT offices below are asked to review the responses provided by the consultant for the comments in their section. The project manager will review all responses.

REVIEWING OFFICE	COMMENT #	NATURE OF COMMENT	PROPOSED RESPONSE
Design	8	Observation that Simonton Road and SR 166 is a dangerous corner.	The existing skew angle of Simonton Road and SR 166 will be improved as part of this project. Horizontal and vertical sight distance will be reviewed during the design process.
	8	On parcel at corner of 166 and Simonton Road- would like a drive done to join the house there instead of entering off of 166 (approximately STA 226+00 RT)	The proposed projects are currently in the Conceptual Design Phase. This comment has been entered into the design record and will be addressed during preliminary design.
	24	STN 260+00 RT, the church will own the land this year and would like a deceleration lane and median opening for church entrance included with this project.	A median opening at the intersection of SR 166 and Old Camp Church Road will be included as part of the project. Traffic volumes and right-of-way limits will be evaluated to determine if a deceleration lane is warranted.
	27a, b *(same commenter)*	Concern that Southern Trail does not appear to have an exit with the proposed design.	Southern Trail will either tie to Old Bowdon Road or will have direct access to SR 166.
	18	Observation that there is no median opening at SR 166 and Old Camp Church Road intersection.	Median openings are located at traffic generating areas such as sideroads and must meet GDOT requirements for spacing. A median opening at the intersection of SR166 and Old Camp Church Road will be included as part of the project.
	31	House does not show up on the map because it is hidden by a large oak tree (at 4083 W. Hwy 166, Carrollton, GA 30117)	As part of the continuation of the Conceptual Design and Preliminary Design additional survey of the corridor will be conducted and will capture ground features such as houses and driveways to be incorporated into the design.
	35	East of Garrett Circle and Antioch Church Road for about 200 yards the grade needs to be cut down to improve sight distance.	The vertical alignment will be reviewed for the entire corridor during the design phase and adequate sight distances will be provided.

REVIEWING OFFICE	COMMENT #	NATURE OF COMMENT	PROPOSED RESPONSE
Design- contd.	35	There needs to be an east bound acceleration lane beginning at Tyus-Carrollton Road. The deceleration lane at Bonner Road to just east of Tyus-Carrollton is not sufficient.	With the construction of double north bound right turn lanes from Tyus-Carrollton Road onto east bound SR 166, an acceleration lane would not be provided due to the weaving that would result between the short distance between Bonner Lane and the SR 166 South Carrollton Bypass. These double north bound right turn lanes would accommodate the intersection and the traffic sufficiently to attain an acceptable level of service. Under the proposed design, the Bonner Road east bound deceleration lane would be approximately 200 feet in contrast to the existing condition where the deceleration lane extends almost from Tyus-Carrollton and Bonner Lane. Under the existing condition there is a deceleration lane for Bonner Road and a contiguous deceleration lane for a defunct development that contributes to the length of the existing east bound deceleration lane between Tyus-Carrollton Road and Bonner Lane. The deceleration lane for the defunct development is not necessary under the proposed alignment since the parcel is vacant; however, there is room within the right of way to accommodate a deceleration lane for this development if it is necessary in the future.
	35	Suggests grade separated bridge to accommodate west bound SR 166 traffic at the SR 166/Maple St/Commons Drive intersection.	The proposed addition of a second northbound left turn lane on SR 166 South Carrollton Bypass onto SR 166 westbound would improve the capacity and traffic flow at this intersection. The cost of a grade separated bridge is not warranted for this project.
	37, 71b, 85	Speed limits. Would like to request a change in the town speed limit from where it currently is 45 mph to 35 mph. Enforcement of speed limit is requested.	The GDOT District Traffic Engineer has reviewed the data and made a recommendation not to change the speed limits if existing SR 166 through Bowdon remains a state route. However, if a change in the state route designation through downtown Bowdon occurs as a result of this project, the speeds limits would need to be evaluated under the appropriate jurisdiction. Speed limits are enforced by state and local law enforcement agencies.
	34, 39	Water drainage issues along the corridor	The roadway's drainage design will be brought to current standards as part of the overall design process.

REVIEWING OFFICE	COMMENT #	NATURE OF COMMENT	PROPOSED RESPONSE
Design- contd.	11, 89, 91	Concern about eliminating parking in downtown Bowdon at SR 166/100 intersection since these spaces are valuable to merchants.	GDOT understands the concern about eliminating parking in the downtown Bowdon business district and takes the welfare of these businesses seriously. The parking spaces must be eliminated in order to accommodate the traffic at this important intersection, which will not have acceptable levels of service in the future without upgrading the facility. Without any improvements to this intersection, the morning commute delay time at this intersection would increase from 18 seconds in 2011 to 140 seconds in 2043. The way to improve traffic congestion through Bowdon, which is one of the stated goals of this project, is by incorporating additional through lanes in the form of the 2-lane bypass, as well as making upgrades to this intersection to improve traffic flow. East bound SR 166 would be shifted to the north to accommodate right turn movements for large vehicles, such as trucks. 19 parking spaces would be eliminated at this intersection in order to provide appropriate vehicular accommodations. These 19 spaces would consist of 13 along SR 100 (8 on the east side and 3 on the west side south of SR 166, and 2 on the west side north of SR 166); and 6 along SR 166 (5 on the north side and 1 on the south side of SR 166 west of SR 100). Parking spots on north bound SR 100 would be eliminated due to the addition of the right turn lane. The design would eliminate the north side SR 166 on-street parking due to the insufficient width of the roadway.

REVIEWING OFFICE	COMMENT #	NATURE OF COMMENT	PROPOSED RESPONSE
Design- contd.	47, 51	Request for median opening at C&K Land/Auto Supply Co. business. Request for consideration of widening the road to the north due to the steepness of the driveway, potential drainage issue, and visibility issues at this location.	Median openings are located at traffic generating areas such as sideroads and must meet minimum requirements for spacing. Based on these spacing requirements, it may be possible to install an additional median break at this location, but median openings are not typically installed or permitted to serve a particular development. However, when it can be demonstrated that such an installation will benefit the overall safety, traffic flow, and efficiency of the roadway, then consideration will be given. As the project continues through the design process, the potential for a median opening in the area of this business will be further reviewed. Driveway designs, drainage designs, and clear zones will meet current state-of-the-practice engineering criteria. As the project continues through the design process, alternatives to minimize impacts, such as shifting to the north or reducing the typical section in the area of this business, will be evaluated further.
	68	Question regarding maintenance of traffic during construction.	Maintenance of Traffic for the widening of SR 166 from two lanes to four lanes will typically occur as follows: Construct median and new two-lane section while maintaining traffic on existing roadway, then shift traffic to new two-lane section and reconstruct the remaining sections of roadway. Detours will not be required.
Right-of-Way	33	Alternative 2 would separate cattle from the water source. During construction a fence keeping cattle would be impacted; what plans would there be to keep cattle in place without the fence?	Alternative 2 is one of the two potential bypass alternatives under consideration. When the preferred alternative is finalized and as the design and construction plans are further developed, the potential impacts to the cattle and fencing will be addressed at the time and discussed during the right of way process.
	47, 51	Concern over how much of the C&K Land/Auto Supply Co. business parking lot would be impacted, and its access at 1339 E. Hwy 166, Bowdon GA 30108. Comment that there are county requirements for business licenses with regard to parking areas and greenspace.	Under the design presented at the PIOH, there are several parking spaces located adjacent to SR 166 which would be impacted. However, since the project currently is in the Concept Phase, shifts are possible, and therefore, it is likely that impacts to this parcel and its parking will change. Specific details about the impacts of this parcel will be discussed with the parcel owners during the right-of-way process. The access to this parcel is addressed above under the design question requesting a median opening at this location.

REVIEWING OFFICE	COMMENT #	NATURE OF COMMENT	PROPOSED RESPONSE
Right-of-Way- cont'd	1, 22, 26, 61, 73	Property values will go down; the bypass is too close to residences; and the concern that ROW purchases while property values are depressed isn't optimal for residents.	Land acquisition for transportation purposes is strictly governed by numerous state and federal laws and regulations. Since it is not appropriate to discuss individual impacts and compensation in this format, the GDOT Right-of-Way Office will send out letters under separate cover to those property owners who would be affected by land acquisition for the proposed project. For additional information, please contact Michelle Brock, Assistant State Acquisition Manager, at 770-718-5013.
Traffic Operations	41	Concern that the 4-laning of SR 166 would attract more truck traffic that wants to avoid the weigh station on I-20.	Upgrading SR 166 could attract other users and that will be evaluated as part of the environmental process.
	44	Statement that this project does nothing for SR 100 north/south traffic that still will go through downtown.	The primary need for the project is to address traffic delay and crashes along the east/west route of SR 166. However, the SR 166 Bypass is also expected to reduce traffic volumes along SR 100 between the SR 166 Bypass and Downtown Bowdon by approximately 2.3%, which would further relieve congestion in the downtown area including the intersection of SR 100 and SR 166.
	49	Suggestion that a 4-lane bypass would be better than the 2-lane bypass.	A four- lane bypass would provide increased capacity along the corridor when compared to a two-lane facility; however, the proposal of a 4-lane facility cannot be justified at this time. The capacity analysis indicates the 2-lane SR 166 facility would operate adequately for at least the next 20 years.
	50, 72	Suggestion that traffic signals are needed at major intersections.	Traffic signal warrant analysis has been performed over the entire project corridor at locations where volumes and delay were high. Along with the existing signals, new signals are proposed at the intersection of SR 166 Bypass and SR 100 and the intersection of SR 166 Bypass and W. Jonesville Road.
	62	Suggestion that the traffic signals between North Jonesville Road and Alt 1 would be too close.	The traffic signals have been modeled and our analysis predicts that they will operate adequately. The alternative of installing roundabouts at these intersections is being evaluated as well.
	63, 79	Could restriping at the SR 166/SR 100 intersection and lengthening the traffic signal improve operations? If the old golf store was split and the power pole moved back, then that would add more space.	Restriping could improve traffic operations at this intersection to some degree but capacity analysis indicates that the addition of a right turn lane at the intersection coupled with the rerouting of through traffic from the downtown area onto the bypass are both necessary for the intersection to function adequately for at least the next 20 years.

REVIEWING OFFICE	COMMENT #	NATURE OF COMMENT	PROPOSED RESPONSE
Traffic Operations-cont'd	46, 54, 57	Suggestion that construction of the Bowdon bypass between SR 166 and SR 100 would meet the traffic demands and the western half of bypass would not need to be built.	Although the construction of a partial bypass would reduce the turning movement volumes for several movements at the SR 100 and SR 166 intersection, it would not fully address the need and purpose of this project because it would not improve capacity and substantially remove heavy truck traffic through Bowdon. The construction of a partial bypass would remove approximately 20% of westbound and no eastbound traffic from the existing SR 166/SR 100 intersection as compared to the construction of a full bypass which would remove approximately 40% of eastbound and 40% of westbound traffic from this intersection. The construction of the full bypass is expected to remove 512 more trucks per day than the partial bypass at the SR 166/SR 100 intersection.
	28, 53, 54, 56, 60, 81, 92, 95a/b (traffic is not an issue along the corridor); 1, 2, 4, 5, 7, 8, 9, 10, 13, 14, 15, 16, 18, 22, 23, 25, 26, 28, 29, 32, 33, 35, 41, 43, 44, 49, 50, 56, 59, 62, 66, 67, 71a, 72, 74, 71b, 95a/b (traffic is an issue or major issue)	Traffic: Eight respondents stated that traffic is not an issue; 37 respondents stated that traffic, including truck traffic, is a major issue along the corridor and also in Bowdon.	A 2012 Traffic Study shows that without the proposed bypass congestion in downtown Bowdon will be a significant problem within the next 20 years. Projections show that between 80 to 90 percent of downtown intersections will experience long to excessively long delays in the morning and afternoon peak hours. In addition, truck traffic in the downtown area will become an increasing concern. Without the bypass, truck traffic approaching the SR 100/SR 166 intersection, which is currently 1,722 trucks per day, is expected to reach 3,109 trucks per day by 2043. The proposed bypass would provide an alternate route for through traffic, thus removing 7,085 vehicles per day, including 779 trucks, from the SR 100/SR 166 intersection.
	5, 38, 59, 62	Traffic in Bowdon will be relieved through having a bypass.	Under the build condition, westbound SR 166 traffic would split such that 50 percent would travel along the proposed new location SR 166 Bowdon Bypass and 47 percent would continue along existing SR 166 through Bowdon. Under the build condition, the eastbound SR 166 traffic would split such that 67 percent of vehicles would travel along the SR 166 new location bypass and 33 percent would continue along existing SR 166 through Bowdon.

REVIEWING OFFICE	COMMENT #	NATURE OF COMMENT	PROPOSED RESPONSE
Traffic Operations-contd.	28, 56, 89, 95b	Comment that the intersection improvement alone at SR 166/SR 100 would fix the traffic problem in Bowdon.	Traffic analysis indicated that neither intersection improvements alone nor the bypass alone would provide acceptable trafffic operations at this intersection. The two must be pursued in conjunction.
Planning	3, 13, 19, 24, 25, 47, 50, 51	Comments in support of there being a need for improvements along this corridor.	Thank you.
	5, 35, 47, 51, 72, 95b	Safety is a concern along the corridor.	The high crash, injury, and fatality rates are identified needs in the area, and we believe the proposed project would significantly improve the safety of the travelling public.
	5	Alternate routes needed in case of emergency	The bypass would provide an alternative or detour route for vehicles through Bowdon in a situation where existing SR 166 is blocked.
	6, 7, 9, 54, 56, 58b, 81, 89, 92, 95a/b	Concern about tax dollars being spent on a bypass project that is not necessary and/or that there is more of a need for other area improvements	Currently, the estimate for completing this project, including utility relocations, right-of-way acquisition, and construction, is approximately $32,500,000 for the bypass (STP00-0021-01(025)) and $38,770,000 for the widening (STP00-0021-01(024)). Traffic studies show that without the bypass congestion in downtown Bowdon will steadily worsen. Because widening SR 166 through Bowdon would have substantial impacts, we believe that building a bypass to remove through traffic from the downtown area is the most reasonable alternative. While there may be other transportation needs in the area, the support shown for this project by locally elected officials suggests it is a high priority.
	6, 11, 48, 49, 53, 64, 66, 70, 75	Support 4-lane improvement between Bowdon and Carrollton only	Since this project includes Federal Funding from the Federal Highway Administration, there are specific criteria regarding the beginning and end points of a project, called Logical Termini which are described in 23 CFR 771.111(f). In order for this project to have Logical Termini, both the bypass and widening portions of the project would be required. Additional information about Logical Termini can be found at: http://environment.fhwa.dot.gov/projdev/tdmtermini.asp .

REVIEWING OFFICE	COMMENT #	NATURE OF COMMENT	PROPOSED RESPONSE
Environment	1, 32, 67, 74	**Noise:** Two commenters identified noise as an issue, one commenter questioned how noise will affect the residents along the corridor, and one commenter noted concern that there will be noise all the time.	Considerations for mitigating impacts from highway traffic generated noise are part of the planning, location, and design of this project, as for all Federal-aid transportation projects of this type. As part of this project, a Noise Impact Assessment Study will be conducted to determine the acoustic impact of the proposed project and the need for abatement measures. The determination of noise impacts and abatement measures will be in compliance with Title 23, Code of Federal Regulation (CFR), Part 772, and the Department's policies for highway noise barrier construction. More information regarding the Department's noise barrier policy can be found in Chapter V- Environmental Studies, Section 6.0 Physical Environment of the Department's Environmental Procedures Manual, available online at: http://www.dot.state.ga.us/doingbusiness/PoliciesManuals/roads/Environmental/GDOT-EPM-Chap05_6.pdf. Additional information concerning the Federal Highway Administration's guidelines is available at http://www.fhwa.dot.gov/environment/noise/mem_nois.htm.

REVIEWING OFFICE	COMMENT #	NATURE OF COMMENT	PROPOSED RESPONSE
Environment- cont'd	6, 7, 12, 17, 21, 28, 30, 48, 53, 54, 55, 60, 63, 64, 65, 71a/b, 73, 76, 77, 78, 79, 58b, 84, 86 (project causes economic concern); 29, 45, 65 (project causes economic opportunity)	**Economic Concern**: Potential for bypass to negatively affect downtown Bowdon economy and take away business. Suggestion that economic impact study be completed for Bowdon. **Economic Opportunity**: Project is opportunity for economic development in Bowdon	GDOT recognizes that there are concerns about the bypass taking traffic away from downtown Bowdon businesses. It should be noted, however, that there are others who think the project would assist in improving the Bowdon economy. A wide range of studies have been conducted that analyze the economic impacts of highway bypasses on small towns. The conclusions drawn in these studies are generally consistent and indicate that highway bypasses typically have a minor effect on small town economies and rarely are the cause of either great devastation or improvement of business districts. The redistribution of traffic from busy business districts to bypass areas can cause some existing businesses to close or relocate; however, the net economic impacts on the town as a whole are typically relatively small (positive or negative). In order to mitigate the potential effects of the bypass redirecting traffic away from downtown Bowdon, the project currently proposes the following: 1) Make the SR 166 Bypass a turning movement, and maintain the through-movement for travelers heading into Bowdon. 2) Designation of the bypass to encourage truck travel. Additionally, Carroll County and City of Bowdon officials have stated support in maintaining zoning that is consistent with keeping the business district in downtown Bowdon.
	76, 77, 58b	Specific concern that the construction of a bypass would negatively affect business in Bowdon, just when the town is beginning to see an economic upswing in the past couple years.	According to US Census data (via *On The Map* tool [2007-2010]), total primary jobs held by Bowdon residents ranged from 961 to 1,062 annually; total primary jobs available in Bowdon ranged from 1,333 to 1,422 annually; and there has been an average of 9.7% of Bowdon residents who also work in Bowdon ranging from a high of 9.9% (2007) to a low of 9.6% (2010). These data demonstrate a relative stability in the workforce and jobs available in Bowdon and does not appear to indicate an economic upswing in Bowdon. As part of the National Environmental Policy Act (NEPA) process, an evaluation of the existing economic conditions in the project area is being developed using economic indicator data from the state, county, and city levels.

REVIEWING OFFICE	COMMENT #	NATURE OF COMMENT	PROPOSED RESPONSE
Environment- cont'd	33, 55, 86, 92	**Agriculture**: 1) concern that there will be destruction of agricultural lands; and/or 2) Much of land along West Jonesville Road is in the Soil Conservation Program and owners are prohibited from selling it for use other than for agriculture purposes.	Considerations to mitigate agricultural impacts are part of the planning, location, and design of this project, as for all Federal-aid transportation projects of this type. Coordination with the Natural Resources Conservation Service regarding farmland impacts will be conducted as part of the development of this project. More information regarding the Department's farmland policy can be found in the Environmental Procedures Manual, Chapter V-Environmental Studies, Section 5, Additional Natural Resources, available online at: http://www.dot.state.ga.us/doingbusiness/PoliciesManuals/roads/Environmental/GDOT-EPM-Chap05_5.pdf . According to the Carroll County tax maps, eight of 23 parcels in the vicinity of the proposed Bowdon bypass have conservation or agricultural designations. According to the Carroll County website, there are two general types of specialized assessment programs for owners of certain types of property, one for agricultural and one for conservation use for 10-year covenants and these designations pertain to the amount of taxes owed on the property.
	13, 16, 20, 27, 94, 95a	Concern over people having to relocate and how project would affect communities	The design consists of a balance of avoiding and minimizing impacts to the natural, social, and cultural environment combined with engineering standards. Considerations to mitigate community impacts are part of the planning, location, and design of this project, as for all Federal-aid transportation projects of this type. If there are particular communities of concern, we would welcome your input, especially for the low-income and minority populations afforded protections under Executive Order 12898 for Environmental Justice.

Attached is a complete transcript of the comments received during the comment period and a copy of the public information open house handout for review. **Your input on the proposed responses is required by** 3/27/12. Please direct your comments via email to Carla Benton-Hooks (cbenton-hooks@dot.ga.gov) and copy Chandria Brown (chbrown@dot.ga.gov), of this office.

If you have any questions about the comments, please either email or call Carla Benton-Hooks at (404) 631-1415.

GB/CBH/LD

Attachments

DISTRIBUTION:
Gerald M. Ross, P.E.
Russell R. McMurry
Bobby Hilliard, P.E.
District 6 Attn: Kent Sager, w/attachments
Todd Long, w/attachments
David Ray, P.E.
Stanley Hill, P.E.
Chandria Brown, P.E., w/attachments
Greg Hood
Mohamed Arafa
Cindy Van Dyke w/attachments
Phil Copeland w/attachments
Kathy Zahul w/attachments

Keith Golden, P.E., Commissioner

GEORGIA DEPARTMENT OF TRANSPORTATION

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

June 18, 2012

«AddressBlock»

Re: Projects STP00-0021-01(24) and (25), Carroll County, P.I. Nos. 631310/631300,
SR 166 Widening and New Location Bypass from Bowdon to Carrollton –
Responses to Open House Comments

«GreetingLine»

Thank you for your comments concerning the proposed project referenced above. We appreciate your participation and all of the input that was received as a result of the February 28, 2012 Public Information Open House (PIOH). Every written comment received and verbal comment given to the court reporter at the PIOH will be made part of the official record of the project. On behalf of the Georgia Department of Transportation (GDOT), please accept our apologies for the delay in sending this response.

A total of 221 people attended the PIOH. Of the 95 respondents who formally commented, 28 were in support of the project, 33 were opposed, 14 were uncommitted, and 20 expressed conditional support.

The attendees of the PIOH and those persons sending in comments afterwards raised the following questions and concerns. The GDOT has prepared this one response letter that addresses all comments received so that everyone can be aware of the concerns raised and the responses given. Please find the comments summarized below (*in italics*) followed by our response.

- *"Observation that Simonton Road and SR 166 is a dangerous corner."*

The existing skew angle of Simonton Road and SR 166 will be improved as part of this project. Horizontal and vertical sight distance will be reviewed during the design process.

- *"On parcel at corner of 166 and Simonton Road- would like a drive done to join the house there instead of entering off of 166 (approximately STA 226+00 RT)."*

The proposed projects are currently in the Conceptual Design Phase. This comment has been entered into the design record and will be addressed during preliminary design.

- *"STN 260+00 RT, the church will own the land this year and would like a deceleration lane and median opening for church entrance included with this project."*

A median opening at the intersection of SR 166 and Old Camp Church Road will be included as part of the project. Traffic volumes and right-of-way limits will be evaluated to determine if a deceleration lane is warranted.

- *"Concern that Southern Trail does not appear to have an exit with the proposed design."*

Southern Trail will either tie to Old Bowdon Road or will have direct access to SR 166.

- *"Observation that there is no median opening at SR 166 and Old Camp Church Road intersection."*

Median openings are located at traffic generating areas such as side roads and must meet GDOT requirements for spacing. A median opening at the intersection of SR166 and Old Camp Church Road will be included as part of the project.

- *"House does not show up on the map because it is hidden by a large oak tree (at 4083 W. Hwy 166, Carrollton, GA 30117)."*

As part of the continuation of the Conceptual Design and Preliminary Design additional survey of the corridor will be conducted and will capture ground features such as houses and driveways to be incorporated into the design.

- *"East of Garrett Circle and Antioch Church Road for about 200 yards the grade needs to be cut down to improve sight distance."*

The vertical alignment will be reviewed for the entire corridor during the design phase and adequate sight distances will be provided.

- *"There needs to be an east bound acceleration lane beginning at Tyus-Carrollton Road. The deceleration lane at Bonner Road to just east of Tyus-Carrollton is not sufficient."*

With the construction of double north bound right turn lanes from Tyus-Carrollton Road onto east bound SR 166, an acceleration lane would not be provided due to the weaving that would result between the short distance between Bonner Lane and the SR 166 South Carrollton Bypass. These double north bound right turn lanes would accommodate the intersection and the traffic sufficiently to attain an acceptable level of service. Under the proposed design, the Bonner Road east bound deceleration lane would be approximately 200 feet in contrast to the existing condition where the deceleration lane extends almost from Tyus-Carrollton and Bonner Lane. Under the existing condition there is a deceleration lane for Bonner Road and a contiguous deceleration lane for a defunct development that contributes to the length of the existing east bound deceleration lane between Tyus-Carrollton Road and Bonner Lane. The deceleration lane for the defunct development is not necessary under the proposed alignment since the parcel is vacant; however, there is room within the right of way to accommodate a deceleration lane for this development if it is necessary in the future.

- *"Suggests grade-separated bridge to accommodate west bound SR 166 traffic at the SR 166/Maple St/Commons Drive intersection."*

The proposed addition of a second northbound left turn lane on SR 166 South Carrollton Bypass onto SR 166 west bound would improve the capacity and traffic flow at this intersection. The cost of a grade-separated bridge is not warranted for this project.

- *"Speed limits. Would like to request a change in the town speed limit from where it currently is 45 mph to 35 mph. Enforcement of speed limit is requested."*

The GDOT District Traffic Engineer has reviewed the data and made a recommendation not to change the speed limits if existing SR 166 through Bowdon remains a state route. However, if a change in the state route designation through downtown Bowdon occurs as a result of this project, the speeds limits would need to be evaluated under the appropriate jurisdiction. Speed limits are enforced by state and local law enforcement agencies.

- *"Water drainage issues along the corridor."*

The roadway's drainage design will be brought to current standards as part of the overall design process.

- *"Concern about eliminating parking in downtown Bowdon at SR 166/100 intersection since these spaces are valuable to merchants."*

GDOT understands the concern about eliminating parking in the downtown Bowdon business district and takes the welfare of these businesses seriously. The parking spaces must be eliminated in order to accommodate the traffic at this important intersection, which will not have acceptable levels of service in the future without upgrading the facility. Without any improvements to this intersection, the morning commute delay time at this intersection would increase from 18 seconds in 2011 to 140 seconds in 2043. The way to improve traffic congestion through Bowdon, which is one of the stated goals of this project, is by incorporating additional through lanes in the form of the 2-lane bypass, as well as making upgrades to this intersection to improve traffic flow.

Eastbound SR 166 would be shifted to the north to accommodate right turn movements for large vehicles, such as trucks. 19 parking spaces would be eliminated at this intersection in order to provide appropriate vehicular accommodations. These 19 spaces would consist of 13 along SR 100 (8 on the east side and 3 on the west side south of SR 166, and 2 on the west side north of SR 166); and 6 along SR 166 (5 on the north side and 1 on the south side of SR 166 west of SR 100). Parking spots on north bound SR 100 would be eliminated due to the addition of the right turn lane. The design would eliminate the north side SR 166 on-street parking due to the insufficient width of the roadway.

- *"Request for median opening at C&K Land/Auto Supply Co. business. Request for consideration of widening the road to the north due to the steepness of the driveway, potential drainage issue, and visibility issues at this location."*

Median openings are located at traffic generating areas such as sideroads and must meet minimum requirements for spacing. Based on these spacing requirements, it may be possible to install an additional median break at this location, but median openings are not typically installed or permitted to serve a particular development. However, when it can be demonstrated that such an installation will benefit the overall safety, traffic flow, and efficiency of the roadway, then consideration will be given. As the project continues through the design process, the potential for a median opening in the area of this business will be further reviewed.

Driveway designs, drainage designs, and clear zones will meet current state-of-the-practice engineering criteria. As the project continues through the design process, alternatives to minimize impacts, such as shifting to the north or reducing the typical section in the area of this business, will be evaluated further.

- *"Question regarding maintenance of traffic during construction."*

Maintenance of traffic for the widening of SR 166 from two lanes to four lanes will typically occur as follows: Construct median and new two-lane section while maintaining traffic on existing roadway, then shift traffic to new two-lane section and reconstruct the remaining sections of roadway. Detours will not be required.

- *"Bowdon Bypass Alternative 2 would separate cattle from the water source. During construction a fence keeping cattle would be impacted; what plans would there be to keep cattle in place without the fence?"*

Alternative 2 is one of the two potential bypass alternatives under consideration. When the preferred alternative is finalized and as the design and construction plans are further developed, the potential impacts to the cattle and fencing will be addressed at the time and discussed during the right of way process.

- *"Concern over how much of the C&K Land/Auto Supply Co. business parking lot would be impacted, and its access at 1339 E. Hwy 166, Bowdon GA 30108. Comment that there are county requirements for business licenses with regard to parking areas and greenspace."*

Under the design presented at the PIOH, there are several parking spaces located adjacent to SR 166 which would be impacted. However, since the project currently is in the Concept Phase, shifts are possible, and therefore, it is likely that

impacts to this parcel and its parking will change. Specific details about the impacts of this parcel will be discussed with the parcel owners during the right-of-way process. The access to this parcel is addressed above under the design question requesting a median opening at this location.

- *"Property values will go down; the bypass is too close to residences; and the concern that ROW purchases while property values are depressed isn't optimal for residents."*

Land acquisition for transportation purposes is strictly governed by numerous state and federal laws and regulations. Since it is not appropriate to discuss individual impacts and compensation in this format, the GDOT Right-of-Way Office will send out letters under separate cover to those property owners who would be affected by land acquisition for the proposed project. For additional information, please contact Michelle Brock, Assistant State Acquisition Manager, at 770-718-5013.

- *"Concern that the 4-laning of SR 166 would attract more truck traffic that wants to avoid the weigh station on I-20."*

Upgrading SR 166 could attract other users and that will be evaluated as part of the environmental process.

- *"Statement that this project does nothing for SR 100 north/south traffic that still will go through downtown."*

The primary need for the project is to address traffic delay and crashes along the east/west route of SR 166. However, the SR 166 Bypass is also expected to reduce traffic volumes along SR 100 between the SR 166 Bypass and Downtown Bowdon by approximately 2.3%, which would further relieve congestion in the downtown area including the intersection of SR 100 and SR 166.

- *"Suggestion that a 4-lane bypass would be better than the 2-lane bypass."*

A four- lane bypass would provide increased capacity along the corridor when compared to a two-lane facility; however, the proposal of a 4-lane facility cannot be justified at this time. The capacity analysis indicates the 2-lane SR 166 facility would operate adequately for at least the next 20 years.

- *"Suggestion that traffic signals are needed at major intersections."*

Traffic signal warrant analysis has been performed over the entire project corridor at locations where volumes and delay were high. Along with the existing signals, new signals are proposed at the intersection of SR 166 Bypass and SR 100 and the intersection of SR 166 Bypass and W. Jonesville Road.

- *"Suggestion that the traffic signals between North Jonesville Road and Alt 1 would be too close."*

The traffic signals have been modeled and our analysis predicts that they will operate adequately. The alternative of installing roundabouts at these intersections is being evaluated as well.

- *"Could restriping at the SR 166/SR 100 intersection and lengthening the traffic signal improve operations? If the old golf store was split and the power pole moved back, then that would add more space."*

Restriping could improve traffic operations at this intersection to some degree but capacity analysis indicates that the addition of a right turn lane at the intersection coupled with the rerouting of through traffic from the downtown area onto the bypass are both necessary for the intersection to function adequately for at least the next 20 years.

- *"Suggestion that construction of the Bowdon bypass between SR 166 and SR 100 would meet the traffic demands and the western half of bypass would not need to be built."*

Although the construction of a partial bypass would reduce the turning movement volumes for several movements at the SR 100 and SR 166 intersection, it would not fully address the need and purpose of this project because it would not improve capacity and remove heavy truck traffic through Bowdon substantially. The construction of a partial bypass would remove approximately 20% of westbound and no eastbound traffic from the existing SR 166/SR 100 intersection as compared to the construction of a full bypass which would remove approximately 40% of eastbound and 40% of westbound traffic from this intersection. The construction of the full bypass is expected to remove 512 more trucks per day than the partial bypass at the SR 166/SR 100 intersection.

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A 2012 Traffic Study shows that without the proposed bypass congestion in downtown Bowdon will be a significant problem within the next 20 years. Projections show that between 80 to 90 percent of downtown intersections will experience long to excessively long delays in the morning and afternoon peak hours. In addition, truck traffic in the downtown area will become an increasing concern. Without the bypass, truck traffic approaching the SR 100/SR 166 intersection, which is currently 1,722 trucks per day, is expected to reach 3,109 trucks per day by 2043. The proposed bypass would provide an alternate route for through traffic, thus removing 7,085 vehicles per day, including 779 trucks, from the SR 100/SR 166 intersection.

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Under the build condition, westbound SR 166 traffic would split such that 50 percent would travel along the proposed new location SR 166 Bowdon Bypass and 47 percent would continue along existing SR 166 through Bowdon. Under the build condition, the eastbound SR 166 traffic would split such that 67 percent of vehicles would travel along the SR 166 new location bypass and 33 percent would continue along existing SR 166 through Bowdon.

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Traffic analysis indicated that neither intersection improvements alone nor the bypass alone would provide acceptable trafffic operations at this intersection. The two must be pursued in conjunction.

- *"Comments in support of there being a need for improvements along this corridor."*

Thank you.

- *"Safety is a concern along the corridor."*

The high crash, injury, and fatality rates are identified needs in the area, and we believe the proposed project would significantly improve the safety of the travelling public.

- *"Alternate routes needed in case of emergency."*

The bypass would provide an alternative or detour route for vehicles through Bowdon in a situation where existing SR 166 is blocked.

- *"Concern about tax dollars being spent on a bypass project that is not necessary and/or that there is more of a need for other area improvements."*

Currently, the estimate for completing this project, including utility relocations, right-of-way acquisition, and construction, is approximately $32,500,000 for the bypass (STP00-0021-01(025)) and $38,770,000 for the widening (STP00-0021-01(024)). Traffic studies show that without the bypass congestion in downtown Bowdon will steadily

worsen. Because widening SR 166 through Bowdon would have substantial impacts, we believe that building a bypass to remove through traffic from the downtown area is the most reasonable alternative. While there may be other transportation needs in the area, the support shown for this project by locally elected officials suggests it is a high priority.

- *"Support 4-lane improvement between Bowdon and Carrollton only"*

Since this project includes Federal Funding from the Federal Highway Administration, there are specific criteria regarding the beginning and end points of a project, called Logical Termini which are described in 23 CFR 771.111(f). In order for this project to have Logical Termini, both the bypass and widening portions of the project would be required. Additional information about Logical Termini can be found at: http://environment.fhwa.dot.gov/projdev/tdmtermini.asp .

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- *"**Economic Concern**: Potential for bypass to negatively affect downtown Bowdon economy and take away business. Suggestion that economic impact study be completed for Bowdon. **Economic Opportunity**: Project is opportunity for economic development in Bowdon."*

GDOT recognizes that there are concerns about the bypass taking traffic away from downtown Bowdon businesses. It should be noted, however, that there are others who think the project would assist in improving the Bowdon economy. A wide range of studies have been conducted that analyze the economic impacts of highway bypasses on small towns. The conclusions drawn in these studies are generally consistent and indicate that highway bypasses typically have a minor effect on small town economies and rarely are the cause of either great devastation or improvement of business districts. The redistribution of traffic from busy business districts to bypass areas can cause some existing businesses to close or relocate; however, the net economic impacts on the town as a whole are typically relatively small (positive or negative).

In order to mitigate the potential effects of the bypass redirecting traffic away from downtown Bowdon, the project currently proposes the following:

1) Make the SR 166 Bypass a turning movement, and maintain the through-movement for travelers heading into Bowdon.
2) Designation of the bypass to encourage truck travel.

Additionally, Carroll County and City of Bowdon officials have stated support in maintaining zoning that is consistent with keeping the business district in downtown Bowdon.

- *"Specific concern that the construction of a bypass would negatively affect business in Bowdon, just when the town is beginning to see an economic upswing in the past couple years."*

According to US Census data (via *On The Map* tool [2007-2010]), total primary jobs held by Bowdon residents ranged from 961 to 1,062 annually; total primary jobs available in Bowdon ranged from 1,333 to 1,422 annually; and there has been an average of 9.7% of Bowdon residents who also work in Bowdon ranging from a high of 9.9% (2007) to a low of 9.6% (2010). These data demonstrate a relative stability in the workforce and jobs available in Bowdon and does not appear to indicate an economic upswing in Bowdon. As part of the National Environmental Policy Act (NEPA) process, an evaluation of the existing economic conditions in the project area is being developed using economic indicator data from the state, county, and city levels.

- *"**Agriculture**: 1) concern that there will be destruction of agricultural lands; and/or 2) Much of land along West Jonesville Road is in the Soil Conservation Program and owners are prohibited from selling it for use other than for agriculture purposes."*

Considerations to mitigate agricultural impacts are part of the planning, location, and design of this project, as for all Federal-aid transportation projects of this type. Coordination with the Natural Resources Conservation Service regarding farmland impacts will be conducted as part of the development of this project. More information regarding the Department's farmland policy can be found in the Environmental Procedures Manual, Chapter V-Environmental Studies, Section 5, Additional Natural Resources, available online at: http://www.dot.state.ga.us/doingbusiness/PoliciesManuals/roads/Environmental/GDOT-EPM-Chap05_5.pdf . According to the Carroll County tax maps, eight of 23 parcels in the vicinity of the proposed Bowdon bypass have conservation or agricultural designations. According to the Carroll County website, there are two general types of specialized assessment programs for owners of certain types of property, one for agricultural and one for conservation use for 10-year covenants and these designations pertain to the amount of taxes owed on the property.

- *"Concern over people having to relocate and how project would affect communities"*

The design consists of a balance of avoiding and minimizing impacts to the natural, social, and cultural environment combined with engineering standards. Considerations to mitigate community impacts are part of the planning, location, and design of this project, as for all Federal-aid transportation projects of this type. If there are particular communities of concern, we would welcome your input, especially for the low-income and minority populations afforded protections under Executive Order 12898 for Environmental Justice.

Again, thank you for your comments concerning this project. Should you have any further questions, comments, or concerns, please call the GDOT project manager, Chandria Brown, at (404) 631-1580 or the GDOT environmental analyst, Carla Benton-Hooks, at (404) 631-1415.

Sincerely,

Glenn Bowman, P.E.
State Environmental Administrator

GB/mm/cbh/ld

cc: Chandria Brown, GDOT Project Manager
Dan Bodycomb, AECOM

QC/QA Document Review Comment/Revision Sheet

Environmental Section/Discipline: NEPA

To be completed by the Consultant

Project Name	SR 166 Widening and Reconstruction from Bowdon to Carrollton					**ROW date**	2018
Proj. No.	STP00-0021-01-(024)(025)	**P.I. No.**	631310/631300	**County**	Carroll	**LET date**	2020

Lead NEPA for Project (consultant)	AECOM
Baseline Delivery Date	2015
Project is on schedule for baseline delivery (yes/no)	Yes

Document title	PIOH Comment/Response Letter			**Consultant Firm**	AECOM
Version #	3	**# of Copies**	1	**Consultant Preparer Phone/Email**	Laura Dawood 404.965.7074 / laura.dawood@aecom.com

	Name	Signature	Date
Consultant preparer	Laura Dawood	Laura Dawood	6/13/12
Consultant reviewer	MATTHEW MADDEN	Matt Madden	6/13/12

To be completed by Environmental Services

GDOT NEPA analyst		Received on:	
Specialist		Transmitted on:	
Action requested	☐ For Review and Approval ☐ For Distribution ☐ As Requested	Required by:	
FHWA Reviewer		# of Copies	

Environmental Services Review and Evaluation

Staff Review	Name		***Comments attached?*** Y / N	Date	
Comments for quality assessment					

Manager Review	Name		***Comments attached?*** Y / N	Date	
Comments for quality assessment					

Section Chief Review	Name		***Comments attached?*** Y / N	Date	
Comments for quality assessment					

Approval/Transmittal/Return

☐ I returned this document to the consultant with requested revisions. ○ I provided a deadline of _____ to have a revised draft submitted.	Staff Reviewer Initials	_____
☐ This document was approved. ○ _____ additional copies were requested. ○ I transmitted this report to _____ on _____.	Staff Reviewer Initials	_____

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MEETING MINUTES

Subject: **STP-021-1(25), P.I. No. 631310**
SR166 from E of Big Indian Crk New Loc to E City Limits to CR 828
STP-021-1(24), P.I. No. 631300
SR 166 from CR 828 to 4-Lane/Carrollton - Incl. Bridges
Carroll County, Georgia

Meeting Date: April 5, 2012

Location: GDOT OES – 16th Floor conference room

Purpose: **SR 166 Bowdon Bypass and Widening**

Attendees:

Chandria Brown	GDOT/OPD	chbrown@dot.ga.gov	404.631.1580
Mike Murdoch	GDOT/OES	mmurdoch@dot.ga.gov	404.631.1178
Stanley Hill	GDOT/OPD	sthill@dot.ga.gov	404.631.1560
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Christy Poon-Atkins	FHWA	Christy.poon-atkins@dot.gov	404.562.3630
Dan Bodycomb	AECOM	dan.bodycomb@aecom.com	404.965.9629
Laura Dawood	AECOM	laura.dawood@aecom.com	404.965.7074
Scott Gero	AECOM	scott.gero@aecom.com	404.965.9726

SUMMARY

After a round of introductions, Mike provided a brief overview of the project status, including that the Public Information Open House (PIOH) was held in February and the Logical Termini Justification Form (LTJF) was submitted in mid-March.

Laura provided an overview of the PIOH responses in 2007 and 2012. Chetna requested a full copy of the PIOH comments be provided. The Dot map showed an even distribution of PIOH attendees from across the corridor, which supports that the PIOH location and time was accessible to all residents. Laura and Mike mentioned it appeared that the PIOH flier distribution efforts helped to raise awareness of the meeting and encourage participation. In light of the PIOH attendance across the 11-mile corridor, Laura recommended that the project consider revisiting whether there continues to be a need to hold kiosk events to ensure that users corridor-wide are aware of the project, as was originally described in the PI Plan. This question opened up a discussion of whether environmental justice communities were in attendance at the PIOH. Laura stated that at the PIOH, attendees from traditionally underserved groups included two readily identifiable minorities: one African-American woman and an eastern Indian gentleman who owned the BP at Burwell. She stated that it was not readily apparent if attendees from low-income neighborhoods attended. In addition, Laura mentioned the efforts to reach out to the Hispanic community, although no limited English proficient, or Spanish-only speakers were observed at the PIOH. Chetna asked if fliers were distributed in EJ communities. Laura described several locations where fliers were placed and where was potential for traditionally underserved communities to access them. FHWA requested that the PI Plan include documentation that these EJ communities were reached. AECOM/GDOT committed to revising the PI Plan and making recommendations to this effect in the next version. Laura will create a summary of the PI efforts to date, and make recommendations on next steps.

Chetna mentioned that one of the comments on the LTJF was regarding the previous public opposition to the project and if the locals were still in support of the project. Mike and Laura indicated that the local government was in support of the project based on the following: the Bowdon City Manager and Mayor attended the PIOH; local officials all supported this project at the Jan. 2012 local government meeting; the City of Bowdon City

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Council passed a motion that supported the proposed project; and after the PIOH was held, Laura was in touch with the City Manager who provided letters that the City had received and he did not indicate any change in the city's support of the project. Laura described the minutes from the Bowdon City Council meeting on 2/13/12, where it is apparent that the project still has opposition based on comments from business owners, property owners, and even a truck driver, but the council still voted in favor of the project. Chetna asked that this information be provided in the LTJF response and additional documentation to the effect that the City maintains support for the project in light of the local opposition. AECOM and GDOT committed to sending the revised LTJF form to FHWA before May.

A discussion took place regarding the economic concern of bypassing Bowdon and the opposition from the local businesses. AECOM described the current proposed mitigation options including: developing the bypass alignment to require making a turn onto the bypass and keeping existing SR 166 as the through movement, re-designation of signage for the bypass, and zoning along the bypass be made to encourage a downtown Bowdon business district. The designation of the truck route may have certain implications so inquiry with Planning and Traffic Ops will need to take place.

Based on the PIOH responses, there was not an obvious choice for a preferred bypass alternative, but because of the environmental and engineering constraints along Alt 2 which makes Alt 1 the preferred choice, and the mixed response to Alt 1 by the local residents at that site, it was decided to advance Alt 1 as the preferred alternative.

The bridge layouts will need to be prepared before the VE.

The 404 permitting, PAR, and ecology field survey were discussed. A PAR will not be necessary if a 404 Nationwide Permit is required instead of an Individual Permit from the Corps. Laura mentioned that changes to the Nationwide permits became effective in March 2012. AECOM will do preliminary research to see if a Nationwide Permit might be an option for the project, which would have the benefit of being less of an overall project schedule constraint since no PAR would be needed prior to Concept Report Approval.

Traffic is going to check on the concern for failing side road LOS and the response will be addressed in the LTJF. Chandria and Mike are going to work with AECOM on responding to comments 4b and 6a from FHWA on the LTJF.

The meeting was adjourned.

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MEETING MINUTES

Action Items

Item	Responsibility	Status
1. PIOH comments to FHWA	AECOM/GDOT	COMPLETE- AECOM submitted the comments to GDOT on 4/9/12
2. The potential need for a Nationwide vs. Individual Permit will be evaluated	AECOM	COMPLETE- AECOM submitted recommendation to GDOT on 4/13/12
3. Public Involvement Approach update	AECOM	COMPLETE
4. Implications of truck route designation along the bypass	AECOM/GDOT	INCOMPLETE

Cc: Attendees

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MEETING MINUTES

Subject: PAR MEETING – GDOT State Route 166 Widening and Bypass, Projects STP00-021-01(24)(25), Carroll County, P.I. Nos. 631310 and 631300

Meeting Date: September 11, 2013 – 10 AM to 11 AM

Location: US Army Corps of Engineers, Savannah District, Morrow Office

Attendees:

Ed Johnson	USACE	Edward.b.johnson@usace.army.mil	678-422-2722
Katie Freas (phone)	USACE	Katherine.m.freas@usace.army.mil	678.804.5226
Joe Rivera	USACE	joseph.n.rivera@usace.army.mil	678.422.6571
Allyse Keel	USACE	allyse.m.keel@usace.army.mil	404-562-5123
Connie Tallman	USEPA	tallman.constance@epa.gov	404.562.9230
Catherine Samay	GDNR/EPD	Catherine.samay@dnr.state.ga.us	404.675.1625
Katy Allen (phone)	FHWA	katy.allen@fhwa.dot.gov	404-562-3657
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Will Pruitt	GDOT/OES	wpruitt@dot.ga.gov	404.631.1185
Sharilyn Meyers	GDOT/OES	smeyers@dot.ga.gov	404.631.1594
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Caitlan Bell	AECOM	caitlan.bell@aecom.com	404.965.9620

SUMMARY

The meeting began with a round of introductions from the Interagency Review Team (IRT) participants and meeting attendees. Katie Freas participated in the meeting via teleconference. Katy Allen joined via teleconference during the progression of the meeting.

Dan Bodycomb began the presentation by describing the project, the project location, and provided an overview of the project alternatives that had been previously evaluated, some of which that had been presented to the public at Georgia Department of Transportation (GDOT) Public Information Open Houses (PIOH) in 2012. Dan described that the project is comprised of two units, PI 631310 – the new location Bowdon Bypass and PI 631300 – the widening of State Route (SR) 166 from the western terminus of the proposed bypass at West Jonesville Road continuing east to the Carrollton Bypass. In 2007, GDOT presented the project at a PIOH and received strong public opposition to the proposed southern Bowdon Bypass. Katie Freas asked what the major concern was of the southern Bowdon Bypass. Dan said that the southern bypass concept was close to recently built homes, there was the misperception that this would be a 4-lane bypass facility, and that it would remove business from downtown. As a result of the PIOH, and in addition to the presence of a National Register of Historic Places (NRHP)-listed Historic District adjacent to the southern bypass, widening along existing SR 166 through Bowdon was evaluated and due to constraints with that option, a bypass north of Bowdon was evaluated. While a variety of conceptual alternatives were evaluated north of Bowdon, which consisted of avoidance and minimization alternatives to displacements and resources and were opportunities to provide shortened bypass routes, these alternatives were not further evaluated due to potential for considerable impacts to NRHP-listed resources and displacements.

The PAR document compares alternatives that have been field surveyed for ecology and history to the same level of detail. The PAR document describes in detail two build alternatives as well as the no-build alternative. The PAR Best-Fit alternative (PAR Alternative #1), which includes widening along West Jonesville Road between SR 100 and SR 166, and PAR Alternative #3, which proposes new location roadway south of West Jonesville Road between SR 100 and SR 166, were presented at the 2012 PIOH. While the south Bowdon

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MEETING MINUTES

Bypass is included in the PAR report, this alternative was not evaluated as a PAR alternative due to the previously described public opposition to this alternative.

Bruce Hart discussed the field survey efforts that have occurred along the project corridor to date and explained that the protected bat summer roosting habitat survey is anticipated to be completed in summer 2013. Proceeding from the western terminus of the project corridor (PI 631310) and continuing to the eastern terminus of the project (PI 631300), the presentation focused on identifying the proposed impacts to perennial and intermittent streams, wetlands, and open waters identified within the project corridor and describing avoidance and minimization options. Also presented were the findings of the protected aquatic species survey that was completed in summer 2013. While no federal protected aquatic species were observed, potential habitat for the federal threatened finelined pocketbook was observed in several streams within the project area. Additionally, the state protected Tallapoosa darter and muscadine darter were observed as well as potential habitat for the state protected lined chub, stippled studfish, and Tallapoosa crayfish. The project design would include bridges to clear span stream channels and embedded culverts. While efforts have been made to evaluate avoidance and minimization efforts at the concept level design stage, there will be opportunities for additional minimization efforts as the project design continues to develop. Based on the concept level design prepared for the PAR, the Best-Fit alternative (PAR Alternative #1) would impact 11 perennial streams, 7 intermittent streams, no open waters, and 6 wetlands for a total of 3,140 linear feet of stream impact and 1.48 acre of wetland impact. The PAR Alternative #3 would impact 9 perennial streams, 8 intermittent streams, no open waters, and 6 wetlands for a total of 2,742 linear feet of stream impact and 1.48 acre of wetland impact. Laura Dawood added that the Georgia State Historic Preservation Office has concurred with the findings described in the project Historic Resources Survey Report. Laura also indicated that the project area has been surveyed for the federal candidate monkey-face orchid and that no plants or potential habitat were identified.

Katy Allen asked that the total number of impacts be repeated for PAR Alternatives #1 and #3. She noted that the total number of waters of the U.S. impacts for PAR Alternative #1 exceeded those for PAR Alternative #3 and inquired about the basis that PAR Alternative #1 be recommended as the LEDPA (Least Environmentally Damaging Practicable Alternative). AECOM explained that the 'Best Fit Alternative' as described in the PAR document represented an avoidance and minimization alternative of multiple resources, including history, agricultural lands, and new location, while maximizing the use of existing infrastructure, which is all based on currently available information of ecology and history resources. PAR Alternative #3 would consist of additional new location as compared to Alternative #1 (Best Fit), would impact more of the agricultural setting of the area, would bisect at least one active pasture, would impact a historic resource boundary and have the potential to result in an adverse effect to a historic resource (potentially resulting in a Section 4(f) evaluation), and is adjacent to a previously recorded archeological site identified during archaeological screening evaluation, which could also be a potential Section 4(f) consideration.

Laura described the stage of where this project was in the project development process. Currently the objective is to conduct the PAR, coordinate with agencies, and then hold the Concept Team Meeting (CTM). Once the CTM is held, the following studies would be advanced: archaeology, air, noise, conceptual stage study, and underground storage tanks/hazardous materials/Phase 1 environmental site assessment. The IRT asked what the project team's desired outcome is for this PAR meeting. Laura stated that the optimal goal would be to advance the 'Best Fit Alternative', with the approval of the IRT.

Katy Allen asked if the Corps would be able to permit an alternative that had more ecological impacts since the goal would be for the Corps to adopt the FHWA NEPA document as their own. Ed Johnson stated that the assessment of the LEDPA was based on a comprehensive detailed assessment of all the constraints presented.

Katy Allen stated that there is going to be a 404 Workshop for GDOT projects on 9/24-25, and that it should be a class geared toward the timing of decisions.

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Katy Allen suggested that additional information comparing each of the alternatives be provided in order to assist the agencies in the alternatives decision-making process. Catherine Samay asked if there was additional background information that describes why some of the alternatives shown on one of the displays were not presented in detail in the PAR document. Laura explained that several alternatives shown in purple (in the display) had been evaluated but no longer advanced due to the impacts to historic resources. This assessment is how the Alternative #1 and Alternative #3 came to be described in detail. Ed Johnson shared that some of the applications they receive demonstrate a variety of alignments but no discussion and result in essentially one alignment with sub-alternates that are assessed (he mentioned that he was not discussing this presentation, but in general that is something that happens often). Laura explained that Alt #1 and #3 both had been field surveyed for ecology and history. The previously considered alternatives did not advance to the stage of field survey. Laura explained that the alternatives analysis would be presented in the NEPA document and describe the previous alignment alternatives in detail.

The IRT consensus was that a good discussion of each alternative and when it fell out even if it was not field surveyed would be helpful. The document should therefore provide: 1) additional detail to compare the PAR Alternatives #1 and PAR Alternative #3, and 2) additional discussion of other alternatives previously evaluated but no longer under consideration which were not described in detail in the PAR document. Katy Freas stated that this information would be useful in the IP application. It was suggested that the results of these efforts be discussed by conference call or in-person meeting to further evaluate the decision of the preferred alternative.

Laura asked how the GDOT Value Engineering (VE) Study would be considered into the evaluation of alternatives. Dan Bodycomb asked if the project cost differential would be a metric for evaluation of the PAR Best Fit alternative. Katy Allen stated that the GDOT VE recommendations are an action separate from the FHWA NEPA process; therefore, while GDOT may select a VE preferred alternative this is an action GDOT undertakes at risk as the VE preferred alternative may not coincide with the NEPA preferred alternative that FHWA approves. Katie Freas added that the USACE would consider project cost differential if there is a fiscally prohibitive cost differential between the preferred and non-preferred alternatives. She added that the net $400,000 cost differential described in the PAR document between PAR Alternatives #1 and #3 would likely not reach the level of cost differential within the USACE's review of the PAR alternatives to be considered fiscally prohibitive given the overall project cost.

Chandria Brown explained that the project Concept Team Meeting will not be held until the IRT has an opportunity to evaluate the additional detail that will be gathered on the comparison of PAR Alternatives #1 and #3. Chandria asked if there were any other concerns that the agencies have with the PAR document and presentation. Katie Freas indicated that a more rigorous alternatives analysis and stronger justification for supporting the proposed Best Fit- Alternative #1 would be required before the IRT can determine the recommendation of the PAR Best Fit alternative. Ed Johnson also stated that tying the alternatives back to the Need and Purpose would be beneficial for the Corps permit documentation.

Katie Freas reiterated that the IRT should re-convene via teleconference call or by meeting to evaluate the additional information on the alternatives analysis.

There being no further discussion, meeting was adjourned.

Action Items

Item	Responsibility	Status
1. Develop detailed alternatives analysis documentation for agency review/discussion	AECOM	In Preparation
2. Develop detailed comparison of Alternative #1 (Best Fit Alternative) and Alternative #3	AECOM	In Preparation

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cc: Attendees

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MEETING MINUTES

Subject: PAR PRESENTATION TO FHWA – GDOT State Route 166 Widening and Bypass, Projects STP00-021-01(24)(25), Carroll County, P.I. Nos. 631310 and 631300

Meeting Date: October 9, 2013 – 1 PM to 2 PM

Location: Georgia Department of Transportation, 16th Floor

Attendees:

Chetna Dixon	FHWA/GA	chetna.dixon@dot.gov	404.562.3655
Chandria Brown	GDOT/OPD	chbrown@dot.ga.gov	404.631.1580
Sharilyn Meyers	GDOT/OES	smeyers@dot.ga.gov	404.631.1594
Will Pruitt	GDOT/OES	wpruitt@dot.ga.gov	404.631.1185
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Bruce Hart	AECOM	bruce.hart@aecom.com	404.965.7071

SUMMARY

Chandria began the meeting and provided a background of the PAR process to date, stating that the PAR was presented to the IRT on September 11, 2013. The PAR presented during the meeting presents the revisions made in response to the IRT comments. After introductions, Dan Bodycomb provided a historical review of the project development, including a review of the 2012 PIOH during which the South Bowdon Bypass received community opposition, approval of the project's logical termini in July 2012, and approval of the project Public Involvement Plan in December 2012. Based upon desktop survey of the alternatives in conjunction with an evaluation of each alternative relative to the project Need and Purpose resulted in two build alternatives (PAR Alternatives 2 and 4) that were field surveyed for historic and ecological resources.

Chetna stated that the PAR should be further revised to provide clarity for the raw data used to substantiate the evaluation of each alternative as well as provide additional detail in the alternatives analysis portion of the PAR. Laura described the alternatives shown in the revised PAR, including Alternative 1 which was included based on USACE comments. Chetna indicated that the PAR should include additional substantiation of why certain metrics of Alternatives 2 and 4 rate higher or lower than one another. She also explained that the text description of the alternatives no longer under consideration does not provide the raw data to support the use of "more" and "less". For example, the PAR does not include the raw data for the approximate number of displacements associated with the alternatives no longer under consideration. The raw data for all alternatives described in the PAR should be compiled into one table.

Chetna explained that the use of "cost per vehicle" metric was something that FHWA GA Division is not familiar with and indicated that the GDOT cost/benefit ratio should be used instead. Chetna stated that GDOT is currently developing a policy for the cost/benefit ratio. Chandria stated that this is either a GDOT Planning or GDOT Design policy and that she will investigate for clarification.

Chetna stated that the PAR should include additional detail on the documentation referenced for the known archeological site adjacent to Alternative 4. She also inquired if the farmland proposed to be impacted by Alternative 4 is prime or unique farmland (per NRCS). Early coordination with NRCS has not yet been undertaken so a caveat will be added to this metric stating that it is currently not known if this is prime or unique farmland.

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While Section 4(f) requires additional documentation, impacting a Section 4(f) resource is not unfeasible therefore alternatives should not be discounted on the potential of resulting in Section 4(f) impacts (including *de minimis*). Documenting the potential for Section 4(f) impacts is part of the alternative evaluation process; therefore, Chetna stated discussion regarding potential Section 4(f) impacts can be added to the alternatives analysis tables.

Chetna inquired about the future year truck traffic and stated that this should be added to the PAR.

Chetna asked if the comments made by FHWA during the 9/11/13 IRT meeting relative to more closely linking the PAR alternatives with the FHWA EA/FONSI alternatives were raised during the recent GDOT Ecology Workshop. Sharilyn stated that these comments had not been made but that these comments have been raised by FHWA and the agencies during recent PAR presentations. Sharilyn stated that the current standard of practice for PAR evaluations is based on the 1994 version of the Local Coordinating Process between GDOT, FHWA, and USACE.

Chetna inquired about the substantiation of Alternative 2 rating higher than Alternative 4 for consistency with local plans. If this is based upon the proposed Industrial Park north of Bowdon, then this substantiation should not be based upon aspirational goals. If there are not any plans (inclusion in a comprehensive plan, etc) for an Industrial Park(north), then the project team should not assume construction of an Industrial Park (north). Analysis should be based on best available information.

Chandria asked Sharilyn to describe what should happen next with the PAR process. Sharilyn suggested that the revised PAR be transmitted to her for subsequent distribution to the IRT. Sharilyn recommended that GDOT request the initiation of the 30-day agency comment period to begin with the distribution of the PAR to the IRT such that the agencies will have an opportunity to review the revised PAR within the same time frame as the November 13, 2013 IRT to be held in Atlanta. Sharilyn recommended that a request be made to the USACE that if no comments are received from the IRT at the conclusion of the 30-day comment period, that the USACE close-out the PAR process. This would effectively conclude the PAR process and would allow GDOT to proceed with the Concept Team Meeting. Chetna recommended GDOT meet with IRT to discuss the additional information requested at the 9/11 meeting prior to concluding the PAR process. In addition, due to the federal government shutdown, the meeting for November 13, 2013 is viewed as tentative.

After the federal government is reopened, FHWA and GDOT should coordinate with the agencies to determine if November 13, 2013 date is an acceptable date for a meeting.Chandria explained that, in early December, she will request approval to hold the Concept Team Meeting in early 2014.

There being no further discussion, meeting was adjourned.

Action Items

Item	Responsibility	Status (as of 10/22/13)
1. AECOM to revise PAR: a. add table that provides desktop data for all alternatives (including those no longer under consideration), b. replace cost per vehicle metric with cost/benefit ratio data, c. add future (Build Year) truck traffic % and volumes d. provide additional detail on desktop data sources and desktop data limitations	AECOM	Complete – performing final QC

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2. Chandria to determine if cost/benefit ratio analysis is a GDOT Planning or GDOT Design Policy	GDOT/OPD	Complete – AECOM to contact Dan Pass
3. AECOM to transmit revised PAR to OES for distribution to IRT	AECOM	Incomplete
4. Present revised PAR to IRT during November 13, 2013 (tentative due to federal government shutdown) meeting at Atlanta Field Office	GDOT/OES	Incomplete

cc: Attendees

SIGN-IN SHEET – October 9, 2013

SR 166 Bowdon Bypass

PROJECT STP00-0021-01(024) & STP00-0021-01(025), Carroll Co. P.I. No. 631300 & 631310

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MEETING MINUTES

Subject: Indication of Lighting Support Meeting with Carroll County - GDOT State Route 166 Widening and Bypass, Projects STP00-021-01(24)(25), Carroll County, P.I. Nos. 631310 and 631300

Meeting Date: October 21, 2013 – 10:00AM

Location: Carroll County Commissioner's Office

Attendees:

Marty Smith	Carroll Cty	msmith@carrollcountyga.com	770.830-5800
Charles Pope	Carroll Cty	cpope@carrollcountyga.com	770.830.5901
Chandria Brown	GDOT/OPD	chbrown@dot.ga.gov	404.631.1580
Dan Bodycomb	AECOM	dan.bodycomb@aecom.com	404.965.9629

SUMMARY

Chandria began the meeting by stating that the project had been shown at a PIOH in early 2012. The project is currently in the concept phase and this phase is scheduled to be completed early next (2014) calendar year. During the concept phase the traffic analysis has been conducted and a roundabout is being proposed on this project. This has not been presented to the public. As part of the concept report, the County must enter into a preliminary lighting agreement that states that the County will agree to maintainenance of the roundabout by signing a lighting agreement during the preliminary design phase.

Dan talked about the options that were analyzed at the West and North Jonesville intersections. The initial traffic analysis showed that the West Jonesville Road intersection warranted a signal. The concern was regarding the spacing between the two signals as they are less than 500 feet apart. AECOM reviewed a single roundabout at West Jonesville while maintaining the existing signal at North Jonesville Road. AECOM also reviewed the possibility of roundabouts at each intersection. The preferred alternative is a roundabout at West Jonesville Road.

Charles mentioned that this roundabout is similar to the existing roundabout on SR16. This roundabout was opened in 2010. There was a slight learning curve for drivers, but the roundabout has been working very well. Charles thought that the SR16 roundabout was a better solution than a traffic signal.

Dan then described the alternatives that were considered that led to the preferred Alternatives 2 and 4. This included a brief description about the southern bypass and the growth of Bowdon to the south and the public opposition. Dan stated that the two alternatives that had the least impacts were Alts 2 and 4, with Alt 2 as the preferred alternative

Using project layouts that were left with the County, Dan then started a detailed description about the projects. He stated that the two lane section starts west of Bowdon on SR166. It continues north on new location to the intersection of SR100. This intersection was analyzed for a roundabout as it meets the signal warrants. Due to the steep grades, the high travel speeds, and the fact that SR100 is on the oversized truck route, it was decided that a signal was the best option at this location.

Dan stated the difference between Alt 2 and 4, with Alt 2 being on existing West Jonesville Road. He said that there was a good representation from this community at the second PIOH meeting. The consensus was split 50/50 for and against the project. Alt 4 would be entirely on new location and has more impacts to historic properties and potential archaeology locations.

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MEETING MINUTES

Where the alternatives tie to SR166 the roadway would be widened to a 5 lane section that includes curb and gutter and sidewalk. This would extend to just west of Kuglar Road. From this point the project would be widened to four lanes with a 32 foot depressed median. The project is incorporating the Carroll County Bike Plan. PI 631310 extends to Farmers High Road.

Both Marty and Charles mentioned that Farmers High Road is a high accident area. There are sight distance issues that need to be addressed.

Dan explained that PI 631300 continues from Farmers High to the South Carrollton Bypass. The typical widening is to a four lane section with 32 foot depressed median. Dan explained that widening shifts between locations to the north or south of existing SR166 as a means to minimize resource impacts. The attempt is to retain as much of the existing roadway as possible. There are some displacements that are represented with red dots.

Chandria mentioned that the Right of Way is authorized for May 2016 and the project is scheduled for Letting in November 2018. The project schedule has slipped slightly due to the environmental process. Another meeting with the public is scheduled as part of the Public Hearing Open House in April 2015 at which the Roundabout would be presented along with Roundabout educational materials for the public. More engineering will be completed by this date.

There was discussion of the transfer station on Simonton Mill Road. This side road has a high truck traffic percentage. Dan explained that the U-turn movement was removed at this location for traffic in the eastbound direction due to the VE study. A separate structure will be constructed at this location. However, a median opening is still proposed at Simonton Mill Road.

The Indication of Lighting Support was signed by Chairman Smith.

There being no further discussion, meeting was adjourned.

Action Items

Item	Responsibility	Status
1. Chandria to send original signed Lighting Support document to Scott MacLean and a PDF copy to Dan	Chandria – GDOT	Complete

cc: Attendees

SIGN-IN SHEET – October 21, 2013

SR 166 Bowdon Bypass

PROJECT STP00-0021-01(024) & STP00-0021-01(025), Carroll Co. P.I. No. 631300 & 631310

NAME	ORGANIZATION/Office	EMAIL ADDRESS	PHONE NO.
Chandria L. Brown	GDOT	chbrowne dot.ga.gov	(404) 631-1584
Charles Pope	Carroll County	CPope@CarrollCountyga.com	770 830-5901
Dan Bodycomb	AECOM	dan.bodycomb@aecom.com	( )
Marty W. Smith	Carroll County	msmith@carrollcountyga.com	(770) 830-5800
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MEETING MINUTES

Subject: PAR PRESENTATION TO Interagency Review Team (IRT) – GDOT State Route 166 Widening and Bypass, Projects STP00-021-01(24)(25), Carroll County, P.I. Nos. 631310 and 631300

Meeting Date: November 13, 2013 – 9 AM to 9:45 AM

Location: US Army Corps of Engineers, Savannah District, Atlanta Field Office (Morrow, Georgia)

Attendees:

Katie Freas	USACE	katherine.m.freas@usace.army.mil	678.804.5226
Joe Rivera	USACE	joseph.n.rivera@usace.army.mil	678.422.6571
Catherine Samay	GA EPD	Catherine.samay@dnr.state.ga.us	404.675.1425
Sharilyn Meyers	GDOT/OES	smeyers@dot.ga.gov	404.631.1594
Jeff Jackson	GDOT/OES	jejackson@dot.ga.gov	404.631.1185
Dan Bodycomb	AECOM	dan.bodycomb@aecom.com	404.965.9629
Laura Dawood	AECOM	laura.dawood@aecom.com	404.965.7074
Bruce Hart	AECOM	bruce.hart@aecom.com	404.965.7071

SUMMARY

Katie Freas began the meeting with a brief introduction indicating that the purpose of this PAR presentation is to discuss additional information provided in the PAR documentation following the Interagency Review Team (IRT) presentation on September 11, 2013. Following a round of introductions by IRT participants (Catherine Samay participated in the meeting via telephone) and meeting attendees, Katie asked the project team to begin the presentation.

Dan Bodycomb began the presentation with a brief project description noting that the project is composed of two PIs; PI 631310, the Bowdon Bypass, a proposed 2-lane new location roadway to the north of Bowdon, and PI 631300, the proposed widening of State Route (SR) 166 east of Bowdon continuing east to Carrollton (tie into the Carrollton Bypass).

Laura Dawood provided an overview of the comments provided by the IRT during the September 11, 2013 presentation and how the PAR documentation was revised to address these comments. The revised PAR documentation presents all alternatives (10 Build Alternatives and 1 No-Build Alternative) that have been previously considered and includes discussion regarding the basis for not including alternatives in the field survey activities. For reference, additional copies of Tables 3, 6, and 7 were distributed during the meeting. Laura explained that Table 3 is a new table from the September version that had been revised based on discussions with FHWA. Table 3 describes that the preliminary estimates of resource impacts (specifically for historic and archeological resources) are based on GNAHRGIS data and these may not match the resource impacts presented in the detailed text of the alternatives analysis portion of the PAR documentation, which are impacts based on the 2013 Historic Resources Survey Report and the 2011 Archeological Site File Memo.

The revised PAR documentation now presents additional information for PAR Alternative 2 “Best Fit Alignment” (previously described as Alternative 1 in the September 2013 version) and for PAR Alternative 4 (previously described as Alternative 3). In order to compare the impacts associated with Alternatives 2 and 4, the discussion for alternatives is focused only from the point of divergence between the two alternatives to the proposed tie-in on existing SR 166 and West Jonesville Road, northeast of Bowdon. A new table, Table 6, is presented in the revised PAR; this table shows “consumer reports” style open/closed circles to designate metric-related performance for each alternative. The comparison matrix, Table 7, shows additional detail on background for the environmental impacts (e.g., revised impacts presentation specifies direct [fill] impacts and shading impacts). From the point of divergence to the proposed tie-in on existing SR 166 and West Jonesville

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MEETING MINUTES

Road, PAR Alternative 2 would impact 420 linear feet of stream (250 linear feet of direct impact and 179 linear feet of shading impact) and PAR Alternative 4 would impact 300 linear feet of stream (215 linear feet of direct impact and 85 linear feet of shading impact); this represents 35 linear feet differential of direct impact between the two alternatives. The entirety of direct impact associated with PAR Alternative 2 is associated with the proposed culvert placement of a low-quality intermittent stream (IS 6).

Katie Freas stated that the revised PAR documentation addressed the IRT comments from the September 11, 2013 presentation and that the information provided is an improved basis for moving forward with the Section 404 Individual Permit application beyond the PAR process. Katie indicated that she will contact Katy Allen, FHWA, and share her impressions of the presentation and the revised PAR documentation.

There being no further discussion, meeting was adjourned.

Action Items

Item	Responsibility	Status (as of 11/14/13)
1. Katie Freas to discuss with Katy Allen, FHWA, her impressions of the revised PAR and IRT presentation.	USACE	Underway

cc: Attendees

DEPARTMENT OF THE ARMY
SAVANNAH DISTRICT, CORPS OF ENGINEERS
REGULATORY DIVISION, PIEDMONT BRANCH
1590 ADAMSON PARKWAY, SUITE 200
MORROW, GEORGIA 30260-1777
TELEPHONE (678) 422-2721 / FAX (678) 422-2734

ATTENDANCE RECORD

PROJECT NAME: SR166 Widening/Bypass (PI # 631310, 631300)

PROJECT MANAGER: Freas

MEETING DATE: 13 November 2013

NOTE: This meeting is normally held at the applicant's request. The US Army Corps of Engineers is in attendance to provide general guidance only. No projects or concepts are authorized or denied through this meeting. Items of discussion during this meeting are not binding upon the US Army Corps of Engineers, nor do these discussion items constitute the formal position of this office.

NAME	REPRESENTING	TELEPHONE	E-MAIL
Katie Freas	USACE - PM	678-804-5226	Kathrine.m.freas@usace.army.mil
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Catherine Samay	EPD (on phone)	4)675-1425(?)	
Joe Rivera	USACE	678 422 6571	joseph.m.rivera@usace.army.mil

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

PROJECT CONCEPT REPORT

North Bowdon Bypass and SR 166 Widening and Reconstruction
Project Number: STP00-0021-01(025)

PI 631310

Carroll County

Attachment 12

Practical Alternatives Report

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

PRACTICAL ALTERNATIVE REPORT
SR 166 WIDENING AND NEW LOCATION BYPASS
FROM BOWDON TO CARROLLTON
STP00-0021-01(24) and (25)
CARROLL COUNTY
P.I. Nos.: 631300/631310

Date of Report: January 22, 2014

GENERAL PROJECT LOCATION/DESCRIPTION

Within the project limits State Route (SR) 166 is a 2 and 3-lane roadway, which serves as a major east-west corridor through Carroll County, extending from the Georgia/Alabama state line through Carrollton, Georgia, and continues eastward terminating just south of Atlanta. The proposed project would begin just east of Big Indian Creek and end at the 4-lane section along the SR 166 South Carrollton Bypass just west of CR 11/Hays Mill Road. The typical section consists of 2 lanes for the new location bypass north of Bowdon extending until the tie-in at existing SR 166/West Jonesville Road intersection and would continue widening as 4-lanes along existing SR 166 until the eastern terminus.

The proposed PI 631310 project would construct a bypass of Bowdon to the north and east of the downtown district. Beginning just east of Big Indian Creek, the bypass would extend on new location, tie into existing West Jonesville Road just east of SR 100, extend along West Jonesville Road, tie into existing SR 166 at the West Jonesville Road intersection, where at this point SR 166 would begin to be widened from two to four/five lanes along the existing corridor, continue eastward and terminate at County Road (CR) 828/Farmer's High Road (see Figure 1, Project Location Map).[1]

The proposed PI 631300 would widen the existing SR 166 corridor from two to four lanes beginning at CR 828/Farmer's High Road until reaching the SR 166 South Carrollton Bypass/Maple Street/Commons Drive intersection, where it would continue widening along the SR 166 South Carrollton Bypass and terminate at the existing four-lane section just west of CR 11/Hays Mill Road. The Build condition also consists of upgrading intersections to traffic signals and the installation of right/left turn lanes as deemed necessary through traffic analyses. Both PIs 631310 and 631300 would improve east/west connectivity along SR 166 between Bowdon and Carrollton.

The improvements of SR 166 between Bowdon and Carrollton would span the approximately 11.4-mile distance of PI 631310 (approximately 6.2 miles) and PI 631300 (5.2 miles), which together comprise the full corridor limits for purposes of the environmental documentation and PAR. As part of PI 631310, the exact distance of the new location bypass would be dependent on which alternative is selected. The approximate right-of-way required would be 200 feet along the existing 2-lane section of SR 166 and 140 feet on the 2-

[1] An Alternatives Analysis is included below.

lane new location bypass section. The project is located in the Upper Tallapoosa Basin, which is designated by the U.S. Geologic Survey's (USGS) Hydrologic Unit Code (HUC) 03150108.

NEED AND PURPOSE

According to local officials, the Bowdon Bypass and the SR 166 widening are projects that were originally identified over 25 years ago. In 1985, the addition of the widening of SR 166 from two to four lanes between SR 100 in Bowdon and Maple Street/SR 166 Carrollton Bypass was included in the Construction Work Program as recommended by the Director of Planning and Programming. In 1991, the 0.7 mile extension of the widening along the SR 166 Carrollton Bypass between the Maple Street/SR 166 Carrollton Bypass intersection and the existing four lane section was added to the project. The original concept for this project was developed in the early 1990's and is consistent with local plans and objectives of improving mobility and reducing the crashes between Bowdon and Carrollton. In 1995, the concept was modified to include a new location bypass south of Bowdon to remove heavy truck traffic from downtown Bowdon. Based on public involvement efforts against the southern Bowdon bypass in 2007, a northern Bowdon bypass is being considered as an alternate.

The improvements of SR 166 between Bowdon and Carrollton would span the approximately 11.4-mile distance of PI 631310 (approximately 6.2 miles) and PI 631300 (5.2 miles), which together comprise the full corridor limits for purposes of the environmental documentation. The project limits comprising PIs 631310 and 631300 have a western terminus located just west of Bowdon near Big Indian Creek, where traffic volumes along SR 166 are approximately 51 percent (2011) less as compared to SR 166 on the east side of Bowdon. West of the western terminus traffic along SR 166 continues to drop incrementally toward the Georgia/Alabama state line. The corridor's eastern terminus ties in to an existing four-lane section on the SR 166 Carrollton Bypass just west of CR 11/Hays Mill Road. Based on the traffic data collected along the SR 166 Carrollton Bypass the level of service (LOS) in 2011 for the two-lane undivided facility is LOS "C" while the four-lane divided facility is LOS "B." In 2043, the two-lane undivided facility would be LOS "F" and the four-lane divided facility would be LOS "C." These data show a need to widen the SR 166 two-lane facility due to deteriorating LOS conditions. These data also demonstrate there is no need to provide additional capacity beyond the four-lane section at the project's proposed eastern terminus since there are acceptable LOS at that point.

Along SR 166 between Bowdon and Carrollton (PIs 631310 and 631300), there is a need to improve capacity; reduce crash, injury, and fatality rates; and remove heavy truck traffic from the downtown area of Bowdon, especially at the intersection of SR 166 and SR 100. The intersection with the highest number of crashes during the years 2007-2009 was at SR 166/SR 100, representing 12.2 percent of the crashes for PI 631310. Crash, injury, and fatality rates on SR 166 within the limits of PI 631300 are generally greater than the statewide crash and injury rates for both rural minor and rural principal arterials in the years 2007-2009.

Based on design-level "no-build" traffic approved by the Office of Planning, current year (2011) volumes on the corridor of PI 631310 range from 4,395 average daily traffic (ADT) to 10,285 ADT and are projected to range between 8,910 ADT and 18,625 ADT by the design year (2043), where truck volumes would range from 980-3,200 ADT (2043). Based on the design-level "no-build" traffic approved by the Office of Planning for PI 631300, current year (2011) volumes range from 9,355 ADT to 15,925 ADT and are projected to almost double and range between 18,340 ADT and 29,130 ADT by the design year (2043). The SR 166 corridor is currently operating at an acceptable LOS "A" and "B" and is projected to decline to LOS "C" and "F" by year 2043 if no improvements are made. The 24-hour truck percentage along the corridor is 11% (2011 and 2043), while the AM and PM truck percentages are 13% and 9%, respectively. The improvements to the SR 166 corridor and the construction of a bypass could potentially remove some of these trucks from downtown Bowdon, which supports the need and purpose and local objectives. The SR 166 improvements would also

help relieve traffic congestion and accommodate the traffic flow to reduce the crash, injury, and fatality rates along this corridor.

The SR 166 project corridor is not located on a designated statewide bicycle route (per GDOT Statewide Bicycle Map, 2010); however, Carroll County has designated the 3.6-mile segment of SR 166 between CR 70/Tarpley Avenue in Bowdon and CR 73/Antioch Church Road as a recreational bike route (Carroll County Comprehensive Plan Update 2008-2028).

Based on this information, the proposed limits accommodate the need and purpose of this project, which is to relieve congestion and improve conditions for traffic flow between Bowdon and Carrollton to reduce crash, injury, and fatality rates along the corridor. The need for the SR 166 Bypass around Bowdon is supported with the high crash rate at the intersection of SR 166 and SR 100 and the deteriorating LOS along the SR 166 corridor between Bowdon and Carrollton projected for 2043.

Existing Conditions

The following conditions describe the existing roadway.

TABLE 1: EXISTING ROADWAY

SEGMENT	POSTED SPEED (mph)	TYPICAL SECTION	AVERAGE RIGHT-OF-WAY WIDTH (ft)
SR 166 New Location Bypass	N/A	N/A	N/A
SR 166 Widening from West Jonesville Road to Hayes Mill Road	55	Two to three, 12-foot lanes (in locations with third lane, second lane serves as passing lane)	81-102

TABLE 2: EXISTING MAJOR STRUCTURES

FEATURES INTERSECTED/TYPE	LENGTH (ft)	WIDTH (ft)	SUFFICIENCY RATING	STREAM/WETLAND AREA
Structure No. 1: Triple 10-foot by 10-foot box culvert at SR 166 and Garrett Creek	55	30	86.07	Garrett Creek (Stream PS 25)
Structure No. 2: Bridge at SR 166 over Little Tallapoosa River	400	50	80.27	Little Tallapoosa River (Stream PS 33)

Alternatives Analysis

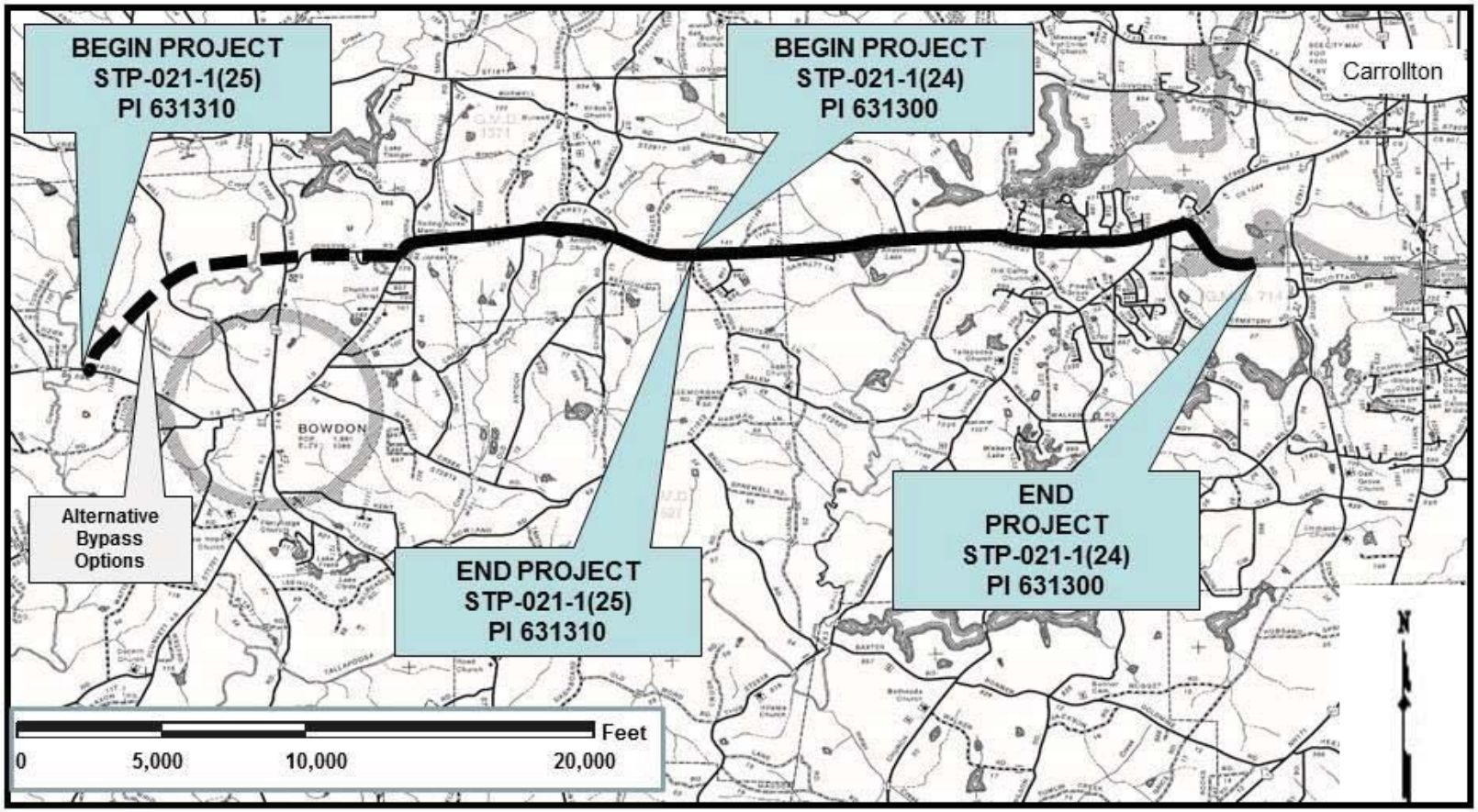
The proposed project alignments were developed by Georgia DOT (GDOT), and, as standard procedure, included environmental parameters as a part of the location investigation prior to laying out a proposed alignment. Basic data pertaining to the corridor were gathered and studied. Data for this project included, at a minimum, aerial photography, topographic maps, traffic volumes (existing and projected), previous studies, wetland inventory maps and waters of the U.S./State Waters field studies, potential protected species habitat identification, and report documentation; soil survey maps; floodplain maps; and Georgia Department of Natural Resources (GDNR) historic resource survey maps, project-specific field studies, and coordination with the State Historic Preservation Office (SHPO).

Wetland and hydric soil boundaries, floodplains, parks and recreational facilities, known or suspected historical and archaeological sites, existing right of way (ROW), possible underground storage tanks (USTs)/landfills/hazardous waste sites, and areas of possible endangered species habitat were delineated on the aerial photography prior to laying out an alignment. Also identified on the aerial photography were other "controls," such as churches, cemeteries, schools, hospitals, and any other noise-sensitive areas. Only at this point was the proposed alignment developed with every attempt made to minimize harm to such resources. The proposed alignment, once laid out on aerial photography, was field checked and additional refinements were made to further minimize harm to both the natural and built environments. Desktop impact analysis was completed using digital data from the following resources through Geographic Information System (GIS) dataset layers: US Geologic Survey (USGS) topography, National Wetlands Inventory (NWI), US Department of Agriculture (USDA) – Natural Resource Conservation Service (NRCS) soil survey, and USGS National Hydrography Dataset (NHD). In addition to the afore-mentioned data collection, prior to establishing alternatives, these issues were also taken into consideration:

1- Project Need and Purpose (e.g., reduce congestion, reduce crashes, and remove heavy trucks from downtown Bowdon)
2- Traffic Need
3- Crash data
4- Public comments
5- Typical section alternatives
6- Avoidance and minimization of impacts

A suite of 11 alternatives (described below) has been evaluated for moving traffic around the City of Bowdon, which includes: (1) Northern-most New Location Bypass, (2) Northern Bypass-West Jonesville Road, (3) Partial Northern Bypass-West Jonesville Road, (4) Northern New Location Bypass, (5) In-town Northern Bypass 1, (6) In-town Northern Bypass 2, (7) In-town Northern Bypass 3, (8) Downtown Bowdon Widening Alternative, (9) Southern Bowdon Bypass Alternative, (10) Operational Alternative, and (11) No Build Alternative. Similarities among alternatives are described in the bullets, while distinctions among the alternatives are the focus of the alternative-specific descriptions below. The pros and cons of each alternative are summarized and a recommendation on the advancement of the alternative is provided. Figure 2, Preliminary Concept Bowdon Bypass Alternate Considerations, shows each alternate alignment and location relative to Bowdon and Table 3 provides a comparison of alternatives based on desktop data.

- The main distinction among alternatives is the manner in which traffic travels from the west side of Bowdon to the east side of Bowdon at West Jonesville Road. East of the SR 166/West Jonesville Road intersection, all alternatives are along the same alignment through the remainder of PI 631310 and throughout PI 631300.



Legend

Represents Multiple New Location SR 166 Bowdon Bypass Alternatives to be Evaluated

Widening along Existing SR 166

GDOT Projects STP-021-1(25) and STP-021-1(24)
P.I. #s 631310 and 631300
Carroll County, GA

Figure 1, Project Location Map

Figure 2 Preliminary Concept Bowdon Bypass Alternate Considerations

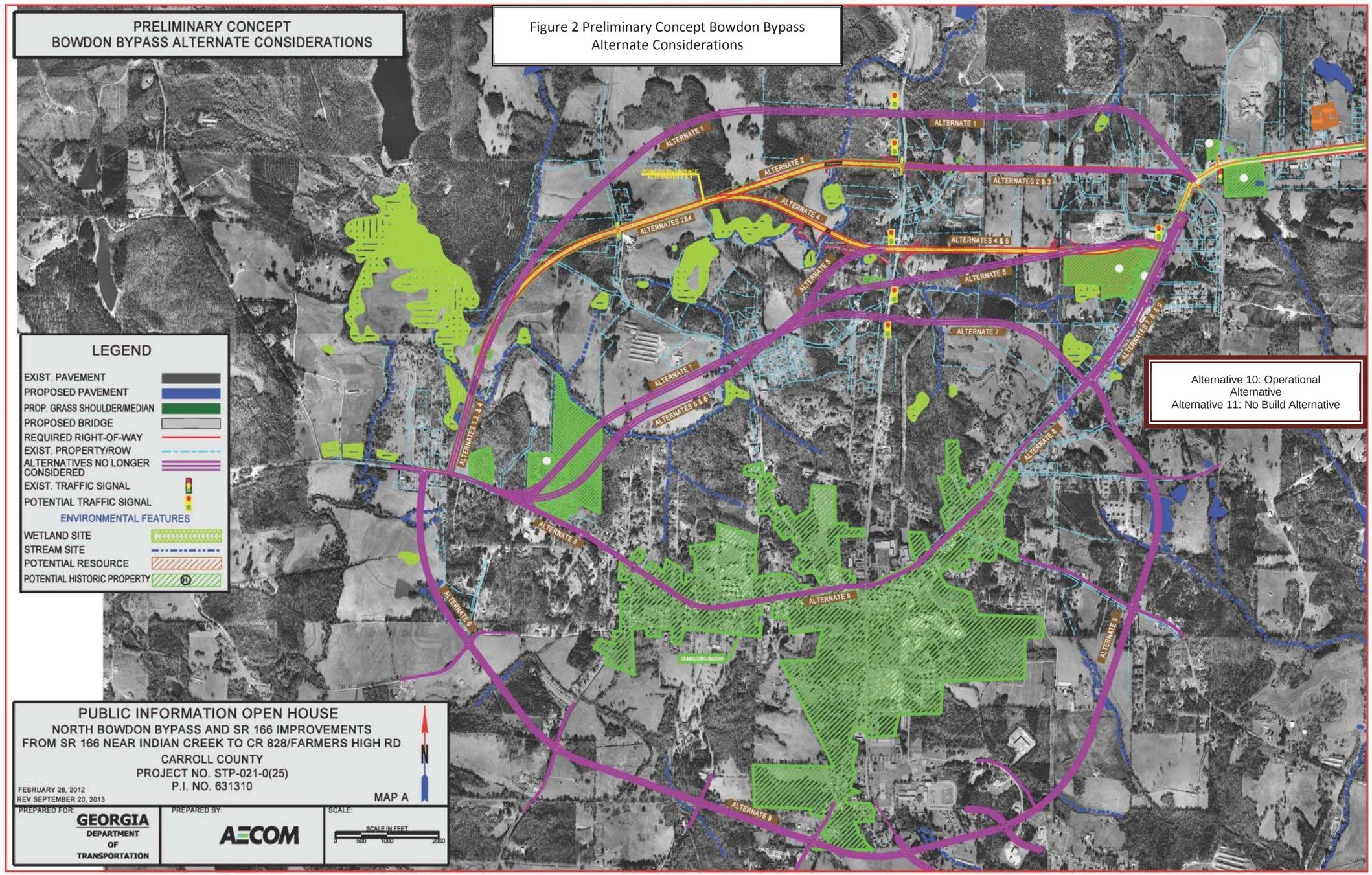


Table 3
Alternatives Desktop Screening Analysis

Variable	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6	Alternative 7	Alternative 8	Alternative 9	Alternative 10	Alternative 11
Length (miles)	3.59	3.32	1.08	3.48	3.07	3.00	3.21	3.62	5.63	0	0
Wetlands[1]	1	1	0	1	2	1	3	1	4	0	0
Streams[2]	4	4	0	4	6	4	5	3	16	0	0
Protected Species Areas[3]	2	2	0	3	2	2	2	0	12	0	0
Displacements[4] (residential/ commercial/ institutional)	1/0/0	0/0/0	0/0/0	0/0/0	0/0/0	1/0/0	5/0/0	14/8/0	11/0/0	0/0/0	0/0/0
Historic Resources[5, *]	0	0	0	1*	2*	3*	2*	4	1	1	0
Archeological Resources[6, *]	1	3	2	2	2	1	1	3	1	1	0
Farmland Parcels[4]	5	5	3	6	3	2	3	0	13	0	0
Public Involvement[7]	N/A (not presented to public; added in fall 2013 to address USACE comment)	The residents along West Jonesville Road were mixed in terms of their overall support for the project and preferred bypass alternative.	No comments received	Comment in 2012 PIOH regarding bisecting an active cattle pasture.	No comments received	No comments received	No comments received	No comments received	Public opposition in 2007 PIOH	No comments received	No comments received

See Endnotes on next page

n National Wetlands Inventory (NWI) Maps
n "blue line" streams shown on USGS Topographic Maps
n potential to cross areas with potential habitat for state and federal protected species (no terrestrial potential habitat; only suitable habitat for pecies)
n Aerial Photography- open fields only
n GA Natural Archaeology History GIS database (NAHRGIS), accessed on 9/13/13.
n GA Natural Archaeology History GIS database (NAHRGIS), accessed on 11/13/13.
n Public Involvement Open House (2007/2012) feedback and local meetings
a preliminary estimate based on NAHRGIS. However, for mapping and text below, reference data sources include National Register of Historic RHP) eligible resources as identified in the 2013 State Historic Preservation Office concurred with Historic Resources Survey Report (HRSR) as well as eological Site File Memo (ASFM, 2011). Specifically, for Alternatives 4, 5, 6, and 7, additional historic resources identified in the HRSR are included in escriptions below to provide comprehensive best available information in these cases.

- Each of the new location bypass alternatives would meet the project's Need and Purpose by removing truck traffic from downtown Bowdon, reducing congestion in Bowdon, and addressing safety especially at the SR 100/SR 166 intersection, which is the intersection with the third highest number of crashes along SR 166 for PI Nos. 631310/631300.
- For each of the alternatives, the distances are measured from the point they tie to existing SR 166 west of Bowdon to the intersection of SR 166 and West Jonesville Road. All impacts are described within this area for consistency.
- The only difference in these alternatives is how the alternative addresses traffic in and around Bowdon extending to West Jonesville Road. At West Jonesville Road each alternative would consist of widening SR 166 along the existing alignment to avoid and minimize impacts.
- All northern new location alternatives would be limited access, 2-lanes, would include bridges over Big Indian Creek, could be designated as a truck route to remove heavy truck traffic from Bowdon, and would have three access points at Lovvorn Mill Road, SR 100, and SR 166.
- None of the northern bypass alternatives would service the existing almost built-out industrial park located on the south side of town, but each northern bypass alternative would have closer access to a potential future industrial park to be sited on the north side of town.
- All northern new location bypass alternatives would be shorter than the southern bypass alternative.
- The traffic operations indicate the northern new location alternatives would draw twice the traffic in comparison to the southern alternatives.

Alternative 1: Northern-most New Location Bypass

Description:

Alternative 1, the Northern-most New Location Bypass alternative, would be the northern-most bypass considered around the city of Bowdon and would be comprised entirely of new location. The alternative would consist of a 2-lane limited-access new location bypass beginning west of Bowdon, extend to the north, cross SR 100 perpendicularly, continue easterly north of West Jonesville Road and tie in to SR 166 at the intersection of West Jonesville Road. This alternative would be approximately 3.59 miles and have potentially 1 displacement. There would be potentially 5 waters of the U.S. impacts for this alternative, based on desktop survey. The alternative represents an avoidance and minimization alternative that would weave among the following resources: public school, multiple crossings of Big Indian Creek in close proximity, multiple open waters, and multiple historic properties.

Pros:

This alternative would avoid impacts to the majority of the West Jonesville Road community.

Cons:

Alternative 1 is the longest northern bypass alternative evaluated and would result in correspondingly greater natural resource and farmland impacts. There is a bypass length at which there are diminishing returns on the driver. This alternative is 0.03 mile longer than widening along existing SR 166 alternative, Alternative 8. A bypass around the north side of town would require the construction of two bridges over Big Indian Creek, which would be additional cost to the project compared to a southern bypass or downtown alternative. This bypass would not service the almost built-out industrial park located on the south side of town.

Recommendation:

Since other shorter bypass options could meet the project Need and Purpose and result in fewer impacts, it is not recommended to advance Alternative 1 for further study.

Alternative 2: Northern Bypass- West Jonesville Road

Description:

Alternative 2, the Northern Bypass – West Jonesville Road alternative, would be a northern bypass around the City of Bowdon utilizing existing West Jonesville Road. The alternative would consist of a 2-lane limited access bypass beginning west of Bowdon, extend north on new location, cross SR 100 perpendicularly, and be co-located along West Jonesville Road until the existing intersection with SR 166. This alternative would be approximately 3.32 miles and have 0 displacements. There would be potentially 5 waters of the U.S. impacts for this alternative.

Pros:

The bypass would utilize existing pavement/corridor along West Jonesville Road to minimize new location impacts. A bypass on the north side of Bowdon would be shorter than a bypass to the south of town and shorter than widening along existing SR 166. This alternative would draw approximately 18% more traffic than Alternative 4 due to the use of existing infrastructure. The traffic operations indicate this alternate would draw twice the traffic in comparison to the southern alternative, Alternative 9.

Cons:

Limited frontage impacts would occur to properties along West Jonesville Road. A bypass around the north side of town would require the construction of two bridges over Big Indian Creek, which would be additional cost to the project compared to a southern bypass or downtown alternative. This bypass would not service the almost built-out industrial park located on the south side of town.

Recommendation:

Since this alternative is shorter than the Alternative 4; uses existing infrastructure thereby reducing potential impacts on the natural environment as caused by new location; avoids physical impacts to historic resources; has no previously recorded archeological sites based on the 2011 Archeology Screening Memo; had ambivalent public support at the Public Information Open House in 2012; and provides infrastructure connectivity by directly tying in to Dixson Road, which serves as a roadway around the east side of Bowdon, Alternative 2 is recommended as the preferred alternative. From the point of divergence with Alternative 4, Alternative 2 impacts PS 5 (with 0 linear feet of direct impact and 170 linear feet of shading impact) and IS 6 (250 linear feet of fill) while Alternative 4 impacts PS A2 (with 0 linear feet of direct impact and 85 linear feet of shading impact), IS A7 (94 linear feet of fill), and IS A8 (121 linear feet of direct impact). On the basis of direct fill impact and shading impact, Alternative 2 would result in 20 linear feet of additional fill compared to Alternative 4 (Alternative 2 direct fill impact [250 linear feet] and shading impact [170 linear feet], Alternative 4 direct fill impact [215 linear feet] and shading impact [85 linear feet]). On the basis of direct fill impact alone, Alternative 2 would result in 35 feet of additional impact compared to Alternative 4. (See Table 7: Detailed ALTERNATIVES ANALYSIS Table for PAR Alternatives 2 and 4.)

Alternative 3: Partial Northern Bypass- West Jonesville Road

Description

Alternative 3, a partial Northern Bypass along West Jonesville Road, would begin at SR 100 just west of West Jonesville Road, extend on new location to connect to West Jonesville Road, and continue eastward along West Jonesville Road to intersect with SR 166. The SR 100/West Jonesville Road intersection is approximately 1.4 miles north of the existing SR 100/SR 166 intersection in downtown Bowdon. The intent of this alternative is: 1) to reduce the amount of new location impact compared

to a full northern bypass around Bowdon, 2) to avoid negatively impacting the downtown Bowdon business community by maintaining traffic through town, and 3) to reduce the number of westbound to northbound/southbound turning movements at SR 166/SR 100 intersection without eliminating downtown parking or impacting the existing SR 166/SR 100 intersection. By improving the north/south traffic flow and reducing turning movements at SR 166/SR 100, traffic congestion in this downtown Bowdon bottleneck would be improved and meet the Need and Purpose. Alternative 3 would be 1.08 miles and 0 displacements.

Pros:
The alternative limits the amount of new location roadway, impact to farmland, avoids construction of 2 new bridges and associated impacts, reduces costs, reduces number of turning movements at existing SR 166/SR 100 intersection, maintains existing infrastructure in downtown Bowdon. This alternative would not be anticipated to negatively impact the Bowdon business community as compared to full bypass alternatives, which would address the public concern.

Cons:
Although the construction of a partial bypass would reduce the turning movement volumes for several movements at the SR 100 and SR 166 intersection, Alternative 3 would not fully address the Need and Purpose of this project because it would not reduce congestion, address safety at the SR 166/SR 100 intersection, and substantially remove heavy truck traffic through Bowdon. The construction of a partial bypass would remove approximately 20% of westbound and no eastbound traffic from the existing SR 166/SR 100 intersection as compared to the construction of a full bypass, which would remove approximately 40% of eastbound and 40% of westbound traffic from this intersection. The construction of the full bypass is expected to remove 512 more trucks per day than the partial bypass at the SR 166/SR 100 intersection. The project Need and Purpose is not to only address the traffic at one intersection in downtown Bowdon, but also to accommodate congestion relief between the logical termini along SR 166 from west of Bowdon to east of Bowdon to Farmer's High Road, where the project ties into PI 631300 to the SR 166/South Carrollton Bypass. This bypass would not service the almost built-out industrial park located on the south side of town.

Recommendation:
Since Alternative 3 would not meet the project's Need and Purpose it is not recommended to advance for further study.

Alternative 4: Northern New Location Bypass

Description:
Alternative 4, the Northern New Location Bypass, would be a northern bypass around the City of Bowdon extending on new location between SR 166 west of Bowdon and SR 166 east of Bowdon and tying into SR 166 approximately 0.3 mile south of West Jonesville Road. Alternative 4 would be approximately 3.48 miles and have 0 displacements. There would be potentially 5 waters of the U.S. impacts for this alternative.

Pros:
The bypass would avoid impacts to the West Jonesville Road community. A bypass on the north side of Bowdon would be shorter than a bypass to the south of town and shorter than widening along existing SR 166. The traffic operations indicate this alternate would draw twice the traffic in comparison to the southern alternative, Alternative 9.

Cons:
There are two historic resources located along SR 166 south of West Jonesville Road, where this alternative would tie in to SR 166. During the archaeology screening a previously recorded site was found along this alignment. There is higher potential for Section 4(f) and a more limited footprint with which to design a widening of SR 166 to 4 lanes while avoiding Section 4(f) resources and displacements. This bypass would not service the almost built-out industrial park located on the south side of town. This alternative would draw approximately 18% less traffic than Alternative 2 due to the facility being sited on new location instead of using existing infrastructure. A bypass around the north side of town would require the construction of two bridges over Big Indian Creek, which would be additional cost to the project compared to a southern bypass or downtown alternative.

Recommendation:
This alignment is similar to Alternative 2. Alternative 4 is longer than Alternative 2; is completely on new location and would bisect more contiguous habitat resulting in additional impacts on the natural environment; would not avoid physical impacts to an historic resource, potentially resulting in adverse physical impact; would result in a Section 4(f) evaluation; and would provide relatively less infrastructure connectivity as compared to Alternative 2 by tying in to Dixson Road through Elaine Drive, Alternative 4 is not recommended as the Best Fit Alternative. However, due to the similarity of the advantages and disadvantages of Alternative 4 as compared to Alternative 2 (Best Fit Alternative), it is recommended that Alternative 4 advance for further detailed study. From the point of divergence with Alternative 2, Alternative 4 impacts PS A2 (with 0 linear feet of direct impact and 85 linear feet of shading impact), IS A7 (94 linear feet of fill), and IS A8 (121 linear feet of direct impact) while Alternative 2 impacts PS 5 (with 0 linear feet of direct impact and 170 linear feet of shading impact) and IS 6 (250 linear feet of fill). On the basis of direct fill impact and shading impact, Alternative 2 would result in 20 linear feet of additional fill compared to Alternative 4 (Alternative 2 direct fill impact [250 linear feet] and shading impact [170 linear feet], Alternative 4 direct fill impact [215 linear feet] and shading impact [85 linear feet]). On the basis of direct fill impact alone, Alternative 4 would result in 35 feet less impact compared to Alternative 2. (See Table 7: Detailed ALTERNATIVES ANALYSIS Table for PAR Alternatives 2 and 4.)

Alternative 5: In-town Northern Bypass 1
Description
Alternative 5, the In-town Northern Bypass 1 Alternative, would roughly follow the existing Bowdon City Limits, beginning approximately 1.4 miles west of the existing SR 166/SR 100 intersection and would extend north onto new location bridging Big Indian Creek two times, tying into Alternative 4 just west of SR 100, perpendicularly crossing SR 100, and continue on new location to tie into existing SR 166 at Elaine Drive. Alternative 5 would extend 3.07 miles and result in 0 displacements.

Pros:
Alternative 5 would avoid widening SR 166 closer into Bowdon and avoids the potential residential, commercial, and church impacts associated with widening existing SR 166 between the Bowdon City limits and West Jonesville Road. The western tie in would be along SR 166 as near to the Bowdon City Limits that avoids established neighborhoods, therefore resulting in a shorter bypass.

Cons:
Alternative 5 would bisect a large NRHP-listed resource west of town, and physically impact an NRHP-eligible resource on the eastern tie in at SR 166. The tie in at SR 166 on the east side of town

would likely result in a visual impact to 2 NRHP eligible resources. During the archaeology screening a previously recorded site was found along this alignment. There would be a Section 4(f) evaluation required for this alternative. This bypass would not service the almost built-out industrial park located on the south side of town.

Recommendation:
Due to the potential physical and visual impacts to Section 4(f) resources, Alternative 5 is not recommended for advancement for further study.

Alternative 6: In-town Northern Bypass 2

Description
Alternative 6, the In-town Northern Bypass 2 alternative, would roughly follow the existing Bowdon City Limits, beginning approximately 1.4 miles west of the existing SR 166/SR 100 intersection and would extend north onto new location bridging Big Indian Creek two times, crossing SR 100 south of Alternatives 4 and 5, extending on new location in a northeasterly direction to tie into Alternatives 4 and 5 just west of SR 166 and then intersecting existing SR 166 at Elaine Drive. Alternative 6 would extend 3.00 miles and result in 1 displacement.

Pros:
Alternative 6 would avoid widening SR 166 closer into Bowdon and avoids the potential residential, commercial, and church impacts associated with widening existing SR 166 between the Bowdon City limits and West Jonesville Road. The western tie in would be along SR 166 as near to the Bowdon City Limits that avoids established neighborhoods, therefore resulting in a shorter bypass.

Cons:
Alternative 6 would bisect a large NRHP-listed resource west of town, and physically impact 2 NRHP-eligible resources, one just west of SR 100 and one at the eastern tie in at SR 166. The tie in at SR 166 on the east side of town would likely result in a visual impact to 2 NRHP eligible resources. During the archaeology screening a previously recorded site was found along this alignment. There would be a Section 4(f) evaluation required for this alternative. This bypass would not service the almost built-out industrial park located on the south side of town.

Recommendation:
Due to the potential physical and visual impacts to Section 4(f) resources, Alternative 6 is not recommended for advancement for further study.

Alternative 7: In-town Northern Bypass 3

Description
Alternative 7, the In-town Northern Bypass 2 alternative, would roughly follow the existing Bowdon City Limits, beginning approximately 1.4 miles west of the existing SR 166/SR 100 intersection and would extend north onto new location bridging Big Indian Creek two times, crossing SR 100 south of Alternatives 4 and 5, and tying into existing SR 166 approximately 0.9 mile south of West Jonesville Road. Alternative 7 would extend 3.21 miles and result in 5 displacements.

Pros:
This alternative is a shorter distance than the other northern bypass alternatives. This alternative represents a balance of developing the shortest in town bypass alternative, closely following the

Bowdon city limits, that could maximize avoidance of as many displacements within the Bowdon city limits.

Cons:
This bisects a large parcel, an NRHP-listed resource, west of town. Given the total number of parcels along SR 166 on the east side of Bowdon, there is higher potential for partial and complete displacements along existing SR 166 between West Jonesville Road and the proposed tie-in. There are 2 NRHP eligible parcels along SR 166 east of Bowdon to be considered when widening SR 166 east of town. This bypass would not service the almost built-out industrial park located on the south side of town.

Recommendation:
Due to the potential physical and visual impacts to Section 4(f) resources, and the potential for displacements, Alternative 7 is not recommended for advancement for further study.

Alternative 8: Downtown Bowdon Widening Alternative
Description:
Alternative 8, the Downtown Bowdon Widening alternative, would widen existing SR 166 from 2 lanes to 4 lanes through the City of Bowdon. The road could be widened to increase the capacity of the road and allow for more traffic. Alternative 8 would extend 3.62 miles and would have potentially over 20 displacements. There would be potentially 3 stream impacts.

Pros:
There would be no need for a new location bypass alternative and reduced natural resource impacts. The alternative would maintain the agricultural and rural setting. There would be no concern about downtown Bowdon businesses “drying up”.

Cons:
With this alternative, heavy trucks continue to pass through the center of Bowdon, which is inconsistent with the Need and Purpose. There would be full Section 4(f) evaluation as a large portion of Bowdon lies within the NRHP-listed Bowdon Historic District. Since residences are located close to the road within the city limits, there would be approximately 22 partial and complete residential displacements. The speed of the rest of SR 166 is reduced in town and with the numerous access points (e.g., streets, driveways, strip malls, etc.), there would be a potential for increased congestion and safety concerns, which is inconsistent with the Need and Purpose. As such, limited access points could be included in a typical section, but it would increase the project footprint, take additional right of way, and not enable context sensitive solutions along SR 166 in this NRHP-listed area of Bowdon. This alternative is not supported by the community.

Recommendation:
Due to the potential physical and visual impacts to Section 4(f) resources, the potential for numerous displacements, and not meeting the Need and Purpose, Alternative 8 is not recommended for advancement for further study.

Alternative 9: Southern Bowdon Bypass Alternative
Description:
Alternative 9, the southern Bowdon Bypass alternative, would be a bypass for SR 166 around the south side of Bowdon, as initially identified in the Concept Report for these projects in the 1990s.

This bypass would begin in the area of the intersection of SR 166 and County Route (CR) 100/Brickyard Road on the west side of Bowdon approximately 1,000 feet west of the city limits of Bowdon. The proposed route would circle the western, southern, and eastern sides of Bowdon going in and out of the city limits. The bypass would tie in to existing SR 166 near the intersection of SR 166 and CR 100/Barrett Road on the northeast side of Bowdon. From this point the proposed project would widen the existing SR 166 from two/three lanes to four lanes. This southern bypass would allow trucks an alternative to bypass Bowdon and remove heavy traffic from downtown Bowdon. This would eliminate truck traffic through the city of Bowdon and generally create a safer traffic situation. A bypass on the south side of Bowdon would give road access to an industrial park. The length of this alternative is 5.63 miles with 11 intersections. This would have potentially 11 displacements. There would be potentially 16 stream impacts.

Pros:
Alternative 9 could provide access to the existing industrial park located on the south side of town. One major structure would be required as compared to 2 for the northern alternatives 1, 2, and 4.

Cons:
The traffic operations of this alternate indicate it would draw half the traffic in comparison to the northern alternate. Alternative 9 received overwhelming public opposition in 2007 due to potential to impact newly developed subdivisions, the public misperception that this would be a 4-lane bypass, and the potential for negatively impacting businesses in downtown Bowdon. More displacements would occur with Alternative 9 as compared to the northern bypass alternatives, which would directly affect more people. A small portion of the NRHP-listed resource would be physically impacted by this alternative, and a Section 4(f) evaluation would be required.

Recommendation:
Due to the potential physical and visual impacts to Section 4(f) resources, the potential for numerous displacements, overwhelming public opposition, Alternative 9 is not recommended for advancement for further study.

Alternative 10: Operational Alternative

Description:
Alternative 10, the Operational Alternative, consisting of a series of intersection improvements in Bowdon was considered as an alternative to the proposed SR 166 bypass.

Pros:
No bypass would need to be constructed and environmental and community impacts would occur on a smaller scale.

Cons:
Since there are three segments in Bowdon under the 2043 No-Build condition, which reach a LOS D or worse, constructing a series of intersection improvements would not alleviate the congestion along the SR 166 mainline and would not take the trucks out of downtown Bowdon to meet the need and purpose of this project. In addition, the majority of the downtown area of Bowdon around the SR 166 corridor is listed on the National Register of Historic Places (NRHP) and there would be a high probability of several Section 4(f) impacts.

Recommendation:
Alternative 10 is not recommended for advancement for further study since it would not meet the Need and Purpose and there are reasonable and feasible alternatives that would meet the Need and Purpose.

Alternative 11: No Build Alternative
Description:
Alternative 11, the No Build alternative, is described as one in which GDOT and FHWA would take no action to construct a bypass around the City of Bowdon, and no effort would be made to widen SR 166 between Bowdon and Carrollton. Alternative 10 would maintain the existing roadways in their current status.

Pros:
There would be no community or environmental resource impacts.

Cons:
No effort would be made to alleviate the traffic congestion between Bowdon and Carrollton and SR 166 would continue to exist in its current two/three lane configuration.

Recommendation:
Alternative 11 is not recommended for advancement for further study since it would not meet the Need and Purpose, and there are reasonable and feasible alternatives that would meet the Need and Purpose.

Alternatives Analysis Summary
In summary, based on the justification for advancing alternatives outlined above, Alternatives 2 and 4 were recommended for further field study and detailed analysis in this PAR document, and Alternative 11 (No Build) would advance as a point of comparison. Alternatives no longer under consideration include 1, 3, 5, 6, 7, 8, 9, and 10. As such, this PAR document evaluates the following alternatives, which have been field surveyed for history and ecology, in detail:

1. ALTERNATIVE 2 (Northern New Location Bypass-West Jonesville Road, e.g. BEST FIT ALTERNATIVE): New Location Bypass north of Bowdon tying in to West Jonesville Road
2. ALTERNATIVE 4 (Northern New Location Bypass): New Location Bypass north of Bowdon, crossing SR 100 south of Alternative 2, and intersecting SR 166 approximately 0.3 mile south of West Jonesville Road.
3. ALTERNATIVE 11 (No Build)

Identification of the Best Fit Alternative:

The main distinction among Alternatives 1-11 is the manner in which traffic travels from the west side of Bowdon to the east side of Bowdon at West Jonesville Road. The specific distinction in the detailed analysis of alternatives 2 and 4 highlights differences between the points of divergence of these alternatives.

Alternatives 2, 4, and 11 were advanced to the impact analysis presented in Table 6: Alternative Analysis, which includes impacts across both PI Nos. 631310 and 631300. Through the extent of PI Nos.

631310/631300, Alternative 2 would result in 3,140 linear feet of stream impact (including 2,650 linear feet of direct impacts and 490 linear feet of shading impacts) to 18 streams (11 perennial and 7 intermittent) and 1.48 acre of wetland impact. Alternative 4 would result in 3,020 linear feet of stream impact (including 2,615 linear feet of direct impacts and 405 linear feet of shading impacts) to 19 streams (11 perennial and 8 intermittent) and 1.48 acre of wetland impact. Due to the relatively small difference in impacts across these alternatives (e.g. 120 linear feet in direct stream impacts and 85 linear feet of shading impacts), additional detail to distinguish between these alternatives was considered. Details include but are not limited to, historic, archeological, ecosystem, and community features, cost and performance variables as presented in Tables 6 and 7. The information in Tables 6 and 7 is focused on the area between the point of divergence between Alternatives 2 and 4 to the proposed tie-in on existing SR 166 and West Jonesville Road, northeast of Bowdon. Table 6 provides an overview summary of how the alternatives rate for each variable and Table 7 provides a detailed explanation of how the Table 6 results were obtained. From the point of divergence, Alternative 2 alone (from the point of divergence of Alternatives 2 and 4) impacts PS 5 (with 0 linear feet of direct impact and 170 linear feet of shading impact) and IS 6 (250 linear feet of fill) while Alternative 4 alone (from the point of divergence of Alternatives 2 and 4) impacts PS A2 (with 0 linear feet of direct impact and 85 linear feet of shading impact), IS A7 (94 linear feet of fill), and IS A8 (121 linear feet of direct impact). On the basis of direct fill impact alone, Alternative 2 would result in 35 feet of additional impact compared to Alternative 4. This difference represents one percent of the overall project stream impact (e.g., 3,140 linear feet) for Alternative 2. Based on the balancing of the variables outlined in Tables 6 and 7, Alternative 2 has been identified as the 'Best Fit Alternative' in spite of the additional 35 linear feet of direct impact as compared to Alternative 4, which is considered minimal.

Due to this minimal ecological difference, it is recommended that the Best Fit Alternative also evaluate the level of other natural, cultural, and human environmental differences as presented in Tables 6 and 7 in an attempt to balance the full range of potential impacts that the project could have. Table 6 data demonstrate support for Alternative 2 as the recommendation for the Best Fit Alternative, which balances the environmental impacts.

Proposed Roadway

TABLE 4: PROPOSED ROADWAY* (Alternative 2, Best Fit Alternative)

Project	**STP00-00-021(25) PI 631310**		**STP00-00-021(24) PI 631300**	
Typical Section ID**	A	B	C	D
Station Range[1]	Begin Project STA 0+00 to 118+00	118+00 to 175+00	204+00 to 257+00	257+00 to 334+00 (end PI 631310) and 503+00 to 628+00
Description	2-lane rural Two, 12-foot lanes with 10-foot outside shoulders (6.5-foot paved)	2-lane urban Two, 12-foot lanes with curb and gutter	5-lane urban Four, 11-foot lanes with a 14-foot paved median and curb and gutter	4-lane rural Four lanes with 11-foot inside lane and 12-foot outside lane with a 32-foot depressed median and 10-foot outside shoulders (4.0-foot paved)[2]
Average Right-of-Way (ft)	80-100	80-100	150	150
Design Speed (mph)	55	45	45	55
Posted Speed (mph)	55 or 45	45	45	55

*Note: VE study completed in April 2013

**Typical Sections identified in Table 9: Resource Avoidance and Minimization

[1] The breaks between Typical Section Stations reflect different stationing between alignments and PIs.

[2] Between West Jonesville Road and Antioch Church Road there would be a 6.5-foot paved shoulder to accommodate bike lane

TABLE 5: PROPOSED MAJOR STRUCTURES (Alternative 2, Best Fit Alternative)

PI	FEATURES INTERSECTED/TYPE	LENGTH (ft)	WIDTH (ft)	STREAM/ WETLAND AREA*
631310	*Structure No. 1: Bridge at SR 166 Bypass over Big Indian Creek (new location bypass)*	320	40	Big Indian Creek (PS2)
631310	*Structure No. 2: Bridge at SR 166 Bypass over Big Indian Creek (new location bypass)*	320	40	Big Indian Creek (PS5)
631300	*Structure No. 3: At SR 166 and Garrett Creek replace the existing triple 10x10-foot box culvert with a triple 10x 12-foot box culvert*	150	40	Garrett Creek (PS 25)
631300	*Structure No. 4: At SR 166 and Little Tallapoosa River, construct a new separate 400-foot bridge parallel to the existing bridge*	400	40	Little Tallapoosa River (PS 33)

*Stream and Wetland number designations are per the Ecology Resource Survey Report (April 5, 2013).

Detailed Alternative Descriptions/Rationale across PI Nos. 631310/631300

Alternative 2 (Best Fit Alternative, Northern New Location Bypass -West Jonesville Road):

Alternative 2 would consist of a 2-lane limited access bypass that would begin west of Bowdon, would extend on new location to the north, would cross SR 100, and would be co-located along West Jonesville Road until the intersection with existing SR 166. At this point, SR 166 would be widened along the existing alignment to the north and south, minimizing impacts to historic resources, wetlands/streams, and displacements, and terminate at CR 828/Farmer's High Road. Along SR 166 east of North Jonesville Road, Alternative 2 would introduce an urban typical section for approximately 570 feet to reduce community impacts in this area.

Estimated Property Impacts:	**146**	**Estimated Total Cost:**	**$78,313,357**
Estimated Right-of-Way Cost:	**$20,532,062**	**Estimated construction Time:**	**36 months**

Rationale: Alternative 2 would provide additional capacity through the incorporation of a 2-lane bypass to the north of Bowdon; would address the public's concerns about a southern bypass around Bowdon that received public opposition in 2007; and would remove heavy truck traffic from downtown Bowdon to reduce the vehicles per day at the existing SR 100/SR 166 intersection to improve conditions to reduce crash/injury/fatality rates. The environmental impacts along the new location bypass would be minimized through construction of a 2-lane bypass which meets the capacity needs on the smallest possible footprint. The bypass would utilize existing pavement/corridor along West Jonesville Road to reduce new location impacts to an area with limited development.

The majority of the study corridor is comprised of rural agricultural and rural residential land use. Remaining natural areas are comprised of, in order of relative dominance, mixed pine/hardwood forest, old field with herbaceous and early successional woody vegetation, hardwood forest, pine forest, forested wetlands, open waters, maintained ROW, and emergent wetlands. Three streams within one-mile of the project study area, Little Tallapoosa River, Buffalo Creek, and Indian Creek, are listed as "non-supporting" biota impaired on the Georgia Environmental Protection Division (GA EPD) 2012 Integrated 305(b)/303(d) List of Waters. No additional environmentally sensitive areas were identified within the project corridor. No terrestrial federal or state listed flora or fauna were identified within the project survey area during field reconnaissance. Potential habitat for the federally listed Indiana bat was identified. Since the northern long-eared bat is proposed to be federally listed during the course of this project's development, and the Indiana bat habitat is similar to northern long-eared bat habitat, surveys for Indiana bat and the proposed federally endangered northern long-eared bat summer roosting occurrences are expected to occur in 2014. Two streams within the project survey area contain suitable habitat for federal and state listed aquatic species and during field surveys, occurrences of state listed fish species were identified. Four streams within the project survey area contain suitable habitat for state listed aquatic species, but during field surveys no occurrences of these species were found.

Total impacts for Alternative 2, according to the May 2013 project plans, include: 1.48 acre of wetland, 3,140 linear feet of stream (2,650 linear feet of direct fill impacts and 490 linear feet of shading impacts, based on ecology field survey); lower risk for archeological resource impacts compared to Alternative 4 (based on the archaeological screening analysis); no historic property impacts (anticipate "no adverse" and/or "de minimis" effects, based on history field survey); and 31 residential and/or commercial displacements (based on rooftop counts from aerial photography).

Alternative 4 (Northern New Location Bypass):

Alternative 4 would utilize the western portion of Alternative 2, would diverge from Alternate 2, just west of SR 100, and would tie into SR 166 at a point just south of West Jonesville Road. At this point, SR 166 would be widened along the existing alignment to the north and south, minimizing impacts to historic resources, wetlands/streams, and displacements, and would terminate at CR 828/Farmer's High Road. Along SR 166 east of North Jonesville Road, Alternative 2 would introduce an urban typical section for approximately 570 feet to reduce community impacts in this area.

Estimated Property Impacts:	**150**	**Estimated Total Cost:**	**$81,356,009**
Estimated Right-of-Way Cost:	**$21,753,486**	**Estimated Construction Time:**	**36 months**

Rationale: This alternative represents a bypass option based on the Best Fit Alternative which would follow Alternative 2 on new location beginning west of Bowdon, would diverge from Alternative 2 just west of SR 100, where it would extend south and easterly and would tie into SR 166 on the east side of Bowdon just south of West Jonesville Road. However, along existing SR 166 just south of West Jonesville Road, there are historic resources and higher potential for Section 4(f) impacts. Due to the historic resources along SR 166, there is a more limited footprint with which to design a widening of SR 166 to 4 lanes while avoiding Section 4(f) resources and displacements.

Compared to Alternative 2, Alternative 4 has a greater potential for historic resource impacts and archaeological resource impacts. Ecological impacts determined by calculating impacts based on the design plans for Alternative 4 include approximately 1.48 acre of wetland and 3,020 linear feet of stream (2,615 linear feet of fill impacts and 405 linear feet of shading impacts, based on ecology field survey); higher risk for archeological resource impacts compared to Alternative 2 (based on the archeological screening analysis); potential for historic property physical impacts with the potential for Section 4(f) impacts, based on history field survey); and 31 residential and/or commercial displacements (based on rooftop counts from aerial photography).

Alternative 11 (No-Build):

This alternative represents one in which no bypass or widening would occur.

Estimated Property Impacts:	**0**	**Estimated Total Cost:**	**$0**
Estimated Right-of-Way Cost:	**$0**	**Estimated Construction Time:**	**N/A**

Rationale: *The No Build Alternative would not address the need and purpose. Although no impacts would occur, the capacity and crash concerns would not be addressed.*

NOTE: Alignments considered during the preliminary concept phase do not include all design elements needed to accurately quantify impacts to resources. Impacts to resources reported in this report are estimates for the purpose of making comparisons between alignments; however, they are not precise and are expected to decrease once final plans are developed and avoidance and minimization measures are implemented.

TABLE 6: ALTERNATIVES ANALYSIS for Alternatives 2 and 4
(as measured from the point of divergence of alternatives)

Variable		ALTERNATIVE 2 (along West Jonesville Road)[1]	PAR ALTERNATIVE 4 (New Location south of Alternative 2)
Brief Description		Extends on new location from just west of SR 100 and ties into West Jonesville Road for 0.87 mile	Diverges from Alt 1 just west of SR 100, extends south crossing A2 (Big Indian Creek) and heads east to tie into SR 166 at Elaine Drive. Represents an avoidance alternative to PS A2, PS A3, OW A5.
Length (miles)		1.96	2.07
New Location Impacts		●	◒
Avoidance/minimization measures		Min. impacts to W. Jonesville Road w/urban typical section with c/g and s/w, closed drainage; utilizes existing infrastructure of 0.87 m	Represents avoidance alternative to PS A2, PS A3, OW A5, but results in physical impacts Historic Resource #36 and potential visual impacts to Historic Resource #37
Typical Sections		"A"-Rural; "B"- Urban w/c/g and s/w (along W. Jonesville Rd)	"A"- Rural
Environmental Impacts			
Residential and Commercial		◒	◒
Potential Hist. Res. Impacts –Visual/Physical		●	○
Potential Archaeological Impacts		●	○
Potential for Section 4f Impacts		●	○
Potential for Impacts to Intact Ecosystems		●	○
Potential tor Forested Habitat Impacts		●	○
Potential for Protected Bat Habitat Impacts		●	○
Potential for Protected Species Impacts (e.g. aquatic/plant, excludes bats)		◒	◒
Wetlands/ Open Waters	Impacts	◒	◒
Streams	Linear Feet of Direct Impacts	◒	◒
	# of Streams Impacted	●	○
-Potential Direct Impacts to PS 5		●	●
-Potential Direct Impacts to IS 6		○	●
-Potential Direct Impacts to PS A2		●	●
-Potential Direct Impacts to IS A7		●	○
-Potential Direct Impacts to IS A8		●	○
Stream Buffer Impacts		◒	◒
Potential for Farmland Impacts*		◒	○
Potential for Community Impacts		◒	◒
Cost			
Construction Costs (PI 631310)**		◒	◒
Right-of-Way		●	◒
Total Cost ($)		◒	◒
Mitigation	Wetland/Open Water	◒	◒
	Stream	○	◒
Performance			
Local Government Support		●	◒
Operational/Geometric Function		●	◒
Traffic Use/Connectivity with Infrastructure		●	◒

Legend: ●=Alternative Performs Well, ◒= Alternative Performs Neutrally, ○=Alternative Performs Poorly

[1] Both Alt 2 and Alt 4 have had the same level of special studies completed to date

*consists of length of alternative as measured from SR 166 west of Bowdon to SR 166 east of Bowdon.

**extra earthwork not included in the cost for Alt 4

TABLE 7: Detailed ALTERNATIVES ANALYSIS Table for PAR Alternatives 2 and 4		
Variable	**PAR ALTERNATIVE 2 (along West Jonesville Road)**	**PAR ALTERNATIVE 4 (New Location Bypass south of Alt. 2)**
Brief Description	Extends on new location from just west of SR 100 and ties into West Jonesville Road for 0.87 mile	Diverges from Alt 1 just west of SR 100, extends south crossing A2 (Big Indian Creek) and heads east to tie into SR 166 at Elaine Drive. Represents an avoidance alternative to PS A2, PS A3, OW A5.
Length of uncommon alignment (miles)	1.96	2.07
New Location Impacts	2.44 miles on new location (0.87 W. Jonesville Rd)	3.21 miles New Location (0.38 extra along SR 166)
Avoidance/minimization measures	Minimizes impacts to W. Jonesville Road due to urban typical section with c/g/s/w, closed drainage; utilizes existing infrastructure of 0.87 mile	Represents an avoidance alternative to PS A2, PS A3, OW A5, but results in physical impacts Historic Resource #36 and potential visual impacts to Historic Resource #37
Typical Sections	"A"-Rural "B"- Urban with curb and gutter and sidewalk (along W. Jonesville Rd)	"A"- Rural
Studies completed to date	Ecology Field Survey/Report; Historic Resources Svy Report; Traffic Study; VE Study; PI Plan; LT Form	Ecology Field Survey/Report; Historic Resources Svy Report; Traffic Study; VE Study; PI Plan; LT Form
Displacements		
Residential and Commercial	0 (Alt 2=Alt 4, therefore neutral rating)	0 (Alt 2=Alt 4, therefore neutral rating)
Environmental Impacts		
Potential Historic Resource Impacts - Visual and Physical	0 physical impacts based on SHPO approved Historic Resources Survey Report (HRSR)with field survey; (therefore good performance rating)	2 NRHP eligible resources located adjacent to alignment at SR 166 (2.77 acres impact to the 30-acre NRHP-eligible Resource #36) and no physical impact to NRHP-eligible Resource #37; High risk of physical impact to #36 with; risk of visual impact to #37 (based on Draft 2013 Concept Reports; layouts; SHPO concurred 2013 HRSR (based on SHPO concurred field survey) (poor rating because there are 2 resources under Alt 4 that have the potential to be visually affected, and 1 which would be physically impacted. result in 4f- poss. *de minimis*, but that has yet to be determined)
Potential Archaeological Impacts	0 previously recorded sites based on Archaeology Screening Memo (2011) [desktop only] (therefore good performance rating)	1 previously recorded site adjacent to alignment [Archaeology Screening Memo (2011) [desktop only]] (received poor rating because there is potential for encountering archaeology on the new location portion of Alt 2 just west of SR 166 as compared to Alt 2 where there is no previously recorded site; and Alt 2 has more build out/previously disturbed more compared to Alt 4.
Potential for Section 4(f) Impacts	0; No known Section 4(f) resources at this	1 historic resources (#36) with physical impact and potential for Section 4(f)

TABLE 7: Detailed ALTERNATIVES ANALYSIS Table for PAR Alternatives 2 and 4			
Variable		**PAR ALTERNATIVE 2 (along West Jonesville Road)**	**PAR ALTERNATIVE 4 (New Location Bypass south of Alt. 2)**
		time, therefore, no Section 4(f) (based on history field survey and archaeological screening) (therefore received good performance rating)	evaluation (based on HRSR); 1 potential archaeological (based on Archaeology Screening Memo); (therefore received poor performance rating)
Potential for Impacts to Intact Ecosystems		PS 5, IS 6 (within fringe forest area adjacent to scrub/cleared area to the north) (only has 2 features that comprise the intact ecosystem (including IS6, which is compromised already) (therefore good performance rating)	PS A2, PS A3, OW A5, IS A7 (multiple feature stream and pond complex within forest area) (therefore poor rating since there are so many features nested to create a currently unimpaired system)
Potential tor Forested Habitat Impacts		6.15 acres of impact (therefore good performance rating)	12.72 acres of impact (therefore poor rating since more than double compared to Alt 2)
Potential for Bat Habitat Impacts		5 potential areas based on Ecology Field Survey (therefore received good performance rating)	9 potential areas based on Ecology Field Survey (therefore poor rating since there are almost double the number of potential bat habitat sites along this alternative)
Potential for Protected Species Impacts (e.g. aquatic/plant, excludes bats)		Alt 2 has 1 perennial stream which would be bridged on each (based on Aquatic Survey). No monkeyface orchid habitat (based on Ecology Resource Survey Report). (therefore neutral rating for Alt 2 and 4 since same impacts.)	Alt 4 has 1 perennial stream which would be bridged on each (based on Aquatic Survey). No monkeyface orchid habitat (based on Ecology Resource Survey Report). (therefore neutral rating for Alt 2 and 4 since same impacts.)
Wetlands/ Open Waters	Impacts	0 (based on Ecology Resource Survey Report) (therefore neutral rating for Alt 2 and 4 since same impacts.)	0 (based on Ecology Resource Survey Report) (therefore neutral rating for Alt 2 and 4 since same impacts.)
Streams	Linear Feet of Direct Impacts	420 linear feet (LF) total [including 250 LF direct, 170 LF shading] (based on PAR package and plans) (low quality IS 6 impacted under Alt 2 and comprises additional stream impacts compared to Alt 4) (assigned neutral rating due to 16% more direct impacts to low quality intermittent stream compared to Alt 4)	300 LF total [including 215 LF direct and 85 LF shading] (based on PAR package and plans) (assigned neutral rating since there are impacts, therefore it does not perform well)
	# of Streams Impacted	2 (Ecology Resource Survey Report) (good rating since fewer streams are impacted)	3 (Ecology Resource Survey Report) (poor rating since 1 addl stream constitutes 33% more features being impacted)
-Potential Impacts to PS 5 (LF)		<u>Direct Impacts</u>: 0 (bridge would clear span PS 5) <u>Indirect Impacts</u>: 170 linear feet (shading impacts only, no direct impacts, therefore good rating)	<u>Direct Impacts</u>: 0 (outside survey area) <u>Indirect Impacts</u>: 0 (outside survey area) (therefore good rating)
-Potential Impacts to IS 6 (LF)		<u>Direct Impacts</u>: 250	<u>Direct Impacts</u>: 0 (outside survey area)

TABLE 7: Detailed ALTERNATIVES ANALYSIS Table for PAR Alternatives 2 and 4		
Variable	**PAR ALTERNATIVE 2 (along West Jonesville Road)**	**PAR ALTERNATIVE 4 (New Location Bypass south of Alt. 2)**
	(proposed culvert) Indirect Impacts: 0 (poor rating due to direct impacts)	Indirect Impacts: 0 (outside survey area) (therefore good rating)
-Potential Impacts to PS A2 (LF)	Direct Impacts: 0 (outside survey area) Indirect Impacts: 0 (outside survey area) (therefore good rating)	Direct Impacts: 0 (bridge would clear span PS A2) Indirect Impacts: 85 LF (shading impacts only, no direct impacts, therefore good rating)
-Potential Impacts to IS A7 (LF)	Direct Impacts: 0 (outside survey area) Indirect Impacts: 0 (outside survey area) (therefore good rating)	Direct Impacts: 94 LF (proposed culvert) Indirect Impacts: 0 (poor rating due to direct impacts)
-Potential Impacts to IS A8 (LF)	Direct Impacts: 0 (outside survey area) Indirect Impacts: 0 (outside survey area) (therefore good rating)	Direct Impacts: 121 linear feet (proposed culvert) Indirect Impacts: 0 (poor rating due to direct impacts)
Stream Buffer Impacts	17,500 square feet (greater than 10% more impact compared to Alt 4, therefore assigned neutral rating)	15,750 square feet (although less impacts than Alt 2, assigned neutral rating since there are extensive impacts; therefore it does not perform in the good category)
Potential for Farmland Impacts**	9.55 ac direct impacts; 23.39 ac indirect (based on May, 2012 calcs of aerial imagery, assumes all land along corridor is farmland and assumes land inside existing ROW is not farmland; no Natural Resource Conservation Service coordination to date) Direct impact would be farmland converted to roadway, and indirect impact is land within the right of way not converted to paved surface) (receives neutral rating since there are impacts, therefore it does not perform well)	12.56 ac direct impact; 26.69 ac indirect impact. (based on May, 2012 calcs of aerial imagery, assumes all land along corridor is farmland and assumes land inside existing ROW is not farmland; no Natural Resource Conservation Service coordination to date) Results in 3.01 ac more direct impact and 3.3 ac more indirect impact than Alt 2 (receives poor rating since over 20% more direct impacts compared to Alt 2)
Potential for Community Impacts	2012 PIOH comments equal support/opposition for Alt 2 but remainder non-committal. The impact of concern to the West Jonesville Road residents at the 2012 PIOH consisted mostly about traffic along this portion of the bypass and potential environmental and right-of-way impacts because West Jonesville Road would serve as a segment of the bypass. The residents along West Jonesville Road were mixed in terms of their overall support for the project and preferred bypass alternative. In fact,	comment in 2012 PIOH regarding bisecting an active cattle pasture; 2012 PIOH comment about lands held in Soil Conservation Program easements. (therefore neutral rating)

TABLE 7: Detailed ALTERNATIVES ANALYSIS Table for PAR Alternatives 2 and 4			
Variable		**PAR ALTERNATIVE 2 (along West Jonesville Road)**	**PAR ALTERNATIVE 4 (New Location Bypass south of Alt. 2)**
		the 11 responses from West Jonesville Road residents at the 2012 PIOH consisted of 27.3 percent in favor, 27.3 percent opposed, 18.2 percent conditional, and 27.3 uncommitted to the overall project. (therefore neutral rating)	
Cost			
Construction Costs (PI 631310)*		$28,182,812 (neutral rating because less than 10% difference compared to Alt 4)	$30,058,746 (neutral rating because less than 10% difference compared to Alt 2)
Right-of-Way		$10,258,062 (good rating because over 10% difference compared to Alt 4)	$11,479,486 (neutral rating because just over 10% difference compared to Alt 2; therefore did not assign poor category in an effort to be conservative)
Total Cost ($)		This cost is $3.1MM less than Alt 4 (neutral rating because just under 10% difference compared to Alt 4)	Alt 4 is $3.1MM more than Alt 2, but is not considered fiscally cost constrained. $3MM/$33= 10% (neutral rating because just under 10% difference compared to Alt 2)
Mitigation	Wetland/Open Water	$0 (therefore good rating)	$0 (therefore good rating)
	Stream	$48,810 (Ecology Resource Survey Report) which represents $12,570 or approx. 34% more than Alt 4; (therefore considered poor rating in the overall evaluation)	$36,240 (Ecology Resource Survey Report) (neutral rating because there is a cost)
Performance			
Local Government Support		During meeting in 2011/2012, local govt. supported Alt 2 (therefore good performance rating)	Local govt meetings did not prefer Alt 4. (but there was support for a northern bypass in general, so a neutral not poor rating was assigned)
Operational/Geometric Function (qualitative)		W. J'ville Road naturally extends out of SR 166 before curve heading into Bowdon. Also, the locals recently realigned W J'ville Road to tie in directly to Dixson Road which continues east and south around Bowdon. (therefore good performance rating) Of note, a roundabout study has been performed at this intersection and would be part of this design.	Potential safety concern with 5-lane section between North and West Jonesville Road, comes down further into town, more turning movements for the driver relative to Alt 2 (therefore neutral rating)
Traffic Use/ Connectivity with existing Infrastructure		Build 2023 – 6,715 vpd along W.Jville Rd/Bypass; No Build 2023 – 1,015 vpd along W. Jville Rd; therefore, 17.5% more VPD would occur along the bypass along W. Jville Rd compared to the new location roadway. (therefore good performance rating due	Build 2023- 5,700 VPD along Bypass; Build 2023- 1,015 VPD along W. J'ville Rd. Connects to Elaine Road, local county road, then to Dixson Road, e.g. not direct connection (therefore neutral performance rating due to potential connectivity but not direct

TABLE 7: Detailed ALTERNATIVES ANALYSIS Table for PAR Alternatives 2 and 4		
Variable	**PAR ALTERNATIVE 2 (along West Jonesville Road)**	**PAR ALTERNATIVE 4 (New Location Bypass south of Alt. 2)**
	to direct connectivity with existing infrastructure)	connectivity)

*extra earthwork not included in the cost for Alt 4

**- consists of length of alternative as measured from SR 166 west of Bowdon to SR 166 east of Bowdon.

TABLE 8 ALTERNATIVES ANALYSIS (Impacts Evaluated Across PI Nos. 631310/631300)					
FACTOR		**ALTERNATIVE 2 (BEST FIT ALTERNATIVE)**	**ALTERNATIVE 11 (NO BUILD)**	**ALTERNATIVE 4 (New Location Bypass south of Alternative 2)**	**INFORMATION SOURCE**
Length (miles)		11.86	0	11.97	Draft 2013 Concept Reports
Typical Sections		Typical Sections "A" to "D"	N/A*	Typical Sections "A", "C", and "D"	Draft 2013 Concept Reports
Displacements					
Residential and Commercial		31	0	31	Draft 2013 Concept Reports
Other Impacts					
Miscellaneous		N/A	N/A	N/A	N/A
Historic Resource Impacts		0; "no adverse" and/or "de minimis" effect	0	2 NRHP listed resources adjacent to alignment; High risk of physical impact; potential for adverse effect and Section 4(f) evaluation	Draft 2013 Concept Reports
Archeological Impacts		0 previously recorded sites	0	1 previously recorded site adjacent to alignment	Archaeology Screening Memo (2011)
Wetlands/ Open Waters	**Impacts**	1.48 acre	0	1.48 acre	Ecology Field Survey
	# of Impacts	6 wetlands	0	6 wetlands	Ecology Field Survey
	Estimated Mitigation Credits	10.9	0	10.9	Ecology Field Survey
Non-Exempt State Water Buffers		124,500 square feet	0	118,000 square feet	Ecology Field Survey

TABLE 8 ALTERNATIVES ANALYSIS (Impacts Evaluated Across PI Nos. 631310/631300)					
FACTOR		**ALTERNATIVE 2 (BEST FIT ALTERNATIVE)**	**ALTERNATIVE 11 (NO BUILD)**	**ALTERNATIVE 4 (New Location Bypass south of Alternative 2)**	**INFORMATION SOURCE**
Streams	**Impacts**	3,140 linear feet ((2,650 linear feet of direct [fill] impacts and 490 linear feet of shading impacts)	0	3,020 linear feet ((2,615 linear feet of fill impacts and 405 linear feet of shading impacts)	Ecology Field Survey
	# of Impacts*	18 (11 perennial streams and 7 intermittent streams)	0	19 (11 perennial streams and 8 intermittent streams)	Ecology Field Survey
	Estimated Mitigation Credits	13,739	0	13,320	Ecology Field Survey
Construction (PI Nos. 631310/631300)		$57,096,573	0	$58,930,376	Draft 2013 Concept Reports
Mitigation	**Wetland/ Open Water**	$272,543	0	$272,543	N/A
	Stream	$412,179	0	$399,604	N/A
	Total	$684,722	0	$672,147	N/A
Right-of-Way		$20,532,062	0	$21,753,486	Draft 2013 Concept Reports
Total Cost ($)		$78,313,357	0	$81,356,009	N/A

*Of note, the project proposes to bridge any new crossings of perennial streams that are not currently culverted.

TABLE 9: RESOURCE AVOIDANCE AND MINIMIZATION
(Ephemeral Features are excluded)

Resource ID	Resource Type	25-foot Vegetative Buffer	Protected Species Habitat	Avoidance and Minimization Efforts Undertaken In:	Station ID	Fish Passage Design	Typical Section ID	Proposed Impacts
SR 166 Bypass Alternative 2 (Best Fit Alignment), P.I. 631310								
WL 1	Wetland	No	No	Due to proximity between WL 1 and PS 2, in order to cross PS 2 as perpendicularly as possible, the WL 1 impacts would occur in the proposed alignment. If the alignment is shifted to the east, the design would result in a longitudinal encroachment to PS 2. If the alignment is shifted to the west, the project would result in additional impacts to WL 1.	10+00	Not Required	A	Square feet: 14,105 Acre: 0.324
PS 2	Perennial	Yes	Yes Suitable habitat for finelined pocketbook, Tallapoosa darter, lined chub, stippled studfish, and Tallapoosa crayfish. Muscadine darter was observed.	The proposed design includes a 320-foot bridge at PS 2. Shifting the alignment to the east or west would increase impacts to PS 2 due to the channel orientation. The proposed alignment was selected to cross PS 2 perpendicularly.	16+00	Required	A	Linear feet: 135 (shading impacts only, no direct impacts) Mile: 0.026

TABLE 9: RESOURCE AVOIDANCE AND MINIMIZATION
(Ephemeral Features are excluded)

Resource ID	Resource Type	25-foot Vegetative Buffer	Protected Species Habitat	Avoidance and Minimization Efforts Undertaken In:	Station ID	Fish Passage Design	Typical Section ID	Proposed Impacts
PS 3	Perennial	Yes	No	The proposed alignment is a perpendicular crossing at PS 3. If the alignment is shifted to the south, the design would impact additional wetlands. If the alignment is shifted to the north, the design would result in additional stream and wetland impacts.	78+00	Required The culvert is being evaluated as an embedded culvert.	A	Linear feet: 143 Mile: 0.027
PS 5	Perennial	Yes	Yes Suitable habitat for finelined pocketbook, lined chub, stippled studfish, and Tallapoosa crayfish.Tallapoosa darter and muscadine darter were observed.	The proposed design includes a 320-foot bridge at PS 5. Shifting the alignment to the north or south would increase impacts to PS 5 due to the channel orientation. The proposed alignment was selected to maximize the perpendicular crossing at PS 5.	104+00	Required	A	Linear feet: 170 (shading impacts only, no direct impacts) Mile: 0.032
IS 6	Intermittent	Yes	No	If the alignment is shifted to the south, the design would result in a residential displacement. If the alignment is shifted to the north the design it would result in additional impacts to IS 6, where the channel is parallel to the proposed alignment.	116+00	Not Required	A	Linear feet: 250 Mile: 0.047
WL 12	Wetland	No	No	The proposed design would not impact WL 12.	290+00	Not Required	A	Square feet: 0

TABLE 9: RESOURCE AVOIDANCE AND MINIMIZATION
(Ephemeral Features are excluded)

Resource ID	Resource Type	25-foot Vegetative Buffer	Protected Species Habitat	Avoidance and Minimization Efforts Undertaken In:	Station ID	Fish Passage Design	Typical Section ID	Proposed Impacts
PS 13	Perennial	Yes	No	The proposed alignment is a perpendicular crossing at PS 13. The current design includes approximately 12 feet of fill in order to meet the proposed design speed at this location. If the alignment is shifted to the south, the design would be closer to residences which may result in displacements. If the alignment is shifted to the north, the design would impact WL 12 and historic resources.	291+00	Required The culvert is being evaluated as an embedded culvert.	A	Linear feet: 177 Mile: 0.034
WL 14	Wetland	No	No	The current design includes approximately 12 feet of fill in order to meet the proposed design speed at this location. If the alignment is shifted to the south, the design would be closer to residences which may result in displacements. If the alignment is shifted to the north, the design would impact WL 12 and historic resources.	291+00	Not Required	D	Square feet: 4,935 Acre: 0.113
IS 15	Intermittent	Yes	No	The proposed design would not impact IS 15.	290+00	Not Required	D	Linear feet: 0
SR 166 Widening Best Fit Alignment (at this portion of the corridor, Alternative 2 and Alternative 4 follow the same alignment), P.I. 631300								
IS 20	Intermittent	Yes	No	If the alignment is shifted to the north, the design would not impact IS 20 but would result in residential displacements. If the alignment is shifted to the south, the design would result in additional impacts to IS 20 as IS 20 originates south of SR 166.	510+00	Not Required	D	Linear feet: 54 Mile: 0.010
IS 21	Intermittent	Yes	No	The existing 24-inch PVC pipe would be replaced with a RCP pipe (size to be determined based upon drainage calculations). If the alignment is shifted to the north, the design would not impact IS 21 but would result in residential displacements. If the alignment is shifted to the south, the design would result in additional impacts to IS 21 as IS 21 originates south of SR 166.	518+00	Not Required	D	Linear feet: 90 Mile: 0.017

TABLE 9: RESOURCE AVOIDANCE AND MINIMIZATION
(Ephemeral Features are excluded)

Resource ID	Resource Type	25-foot Vegetative Buffer	Protected Species Habitat	Avoidance and Minimization Efforts Undertaken In:	Station ID	Fish Passage Design	Typical Section ID	Proposed Impacts
IS 22	Intermittent	Yes	No	The existing culvert is proposed to be extended. If the alignment is shifted to the north, the design would not impact IS 22 but would result in residential displacements. If the alignment is shifted to the south, the design would result in additional impacts to IS 22 as IS 22 originates south of SR 166.	533+00	Not Required	D	Linear feet: 46 Mile: 0.009
IS 24	Intermittent	Yes	No	If the alignment is shifted to the south, the design would result in additional impacts to OW 27 and OW 28 and would impact an adjacent historic resource. If the alignment is shifted to the north, the design would result in residential displacements and additional impacts to PS 25, WL 26, and IS 24, as IS 24 originates south of SR 166.	564+00	Not Required	D	Linear feet: 187 Mile: 0.035
PS 25	Perennial (Garrett Creek)	Yes	Yes Suitable habitat for stippled studfish.	The existing triple 10-foot by 10-foot box culvert is proposed to be replaced with a triple 10-foot by 12-foot box culvert. If the alignment is shifted to the south, the design would result in additional impacts to OW 27 and OW 28 and would impact an adjacent historic resource. If the alignment is shifted to the north, the design would result in additional impacts to IS 24 and WL 26.	575+00	Required The culvert is being evaluated as an embedded culvert.	D	Linear feet: 255 Mile: 0.048
WL 26	Wetland	No	No	If the alignment is shifted to the south, the design would result in additional impacts to OW 27 and OW 28 and would impact an adjacent historic resource. If the alignment is shifted to the north, the design would result in impacts to WL 29.	577+00	Not Required	D	Square feet: 33,428 Acre: 0.767

TABLE 9: RESOURCE AVOIDANCE AND MINIMIZATION
(Ephemeral Features are excluded)

Resource ID	Resource Type	25-foot Vegetative Buffer	Protected Species Habitat	Avoidance and Minimization Efforts Undertaken In:	Station ID	Fish Passage Design	Typical Section ID	Proposed Impacts
OW 27	Open Water	Yes	No	The proposed design would not impact OW 27, but would impact the buffer. If the alignment is shifted to the south, the design would impact OW 27.	580+00	Not Required	D	Square feet: 0
OW 28	Open Water	Yes	No	The proposed design would not impact OW 28, but would impact the buffer. If the alignment is shifted to the south, the design would impact OW 28.	585+00	Not Required	D	Square feet: 0
WL 29	Wetland	No	No	The proposed design would not impact WL 29. If the alignment is shifted to the north, the design would impact WL 29.	590+00	Not Required	D	Square feet: 0
PS 30	Perennial	Yes	Yes Suitable habitat for stippled studfish.	The existing box culvert would be extended. If the alignment is shifted to the south, the design would impact OW 27, OW 28, and would result in residential displacements. If the alignment is shifted to the north, the design would impact WL 29.	590+00	Required The culvert is being evaluated as an embedded culvert.	D	Linear feet: 172 Mile: 0.033
PS 32	Perennial (Little Tallapoosa River)	Yes	Yes Suitable habitat for finelined pocketbook, lined chub, and stippled studfish.	If the alignment is shifted to the south, the design would increase impacts to the PS 32 oxbow. If the alignment is shifted to the north, the design would increase impacts to WL 35 and WL 36. Shifting to the north and south would cause approximately equal impacts to PS 33.	617+00	Required The culvert is being evaluated as an embedded culvert.	D	Linear feet: 120 Mile: 0.023

TABLE 9: RESOURCE AVOIDANCE AND MINIMIZATION
(Ephemeral Features are excluded)

Resource ID	Resource Type	25-foot Vegetative Buffer	Protected Species Habitat	Avoidance and Minimization Efforts Undertaken In:	Station ID	Fish Passage Design	Typical Section ID	Proposed Impacts
PS 33	Perennial (Little Tallapoosa River)	Yes	Yes Suitable habitat for finelined pocketbook, lined chub, and stippled studfish.	A separate 400-foot bridge would be constructed parallel to the existing bridge. If the alignment is shifted to the south, the design would impact an adjacent historic resource. If the alignment is shifted to the north, the design would increase impacts to IS 34, WL 35, and WL 36.	622+00	Required	D	Linear feet: 185 (shading impacts only, no direct impacts) Mile: 0.035
IS 34	Intermittent	Yes	No	If the alignment is shifted to the south, the design would result in additional impacts to the PS 32 oxbow. If the alignment is shifted to the north, the design would increase impacts to WL 35 and WL 36. Shifting to the north and south would cause approximately equal impacts to PS 33.	624+00	Not Required	D	Linear feet: 359 Mile: 0.068
WL 35	Wetland	No	No	If the alignment is shifted to the south, the design would impact an adjacent historic resource. If the alignment is shifted to the north, the design would increase impacts to IS 34, WL 35, and WL 36. Shifting to the north and south would cause approximately equal impacts to PS 33.	623+00	Not Required	D	Square feet: 2,848 Acre: 0.065
WL 36	Wetland	No	No	If the alignment is shifted to the south, the design would impact an adjacent historic resource. If the alignment is shifted to the north, the design would increase impacts to IS 34, WL 35, and WL 36. Shifting to the north and south would cause approximately equal impacts to PS 33.	627+00	Not Required	D	Square feet: 3,013 Acre: 0.069
IS 37	Intermittent	Yes	No	The proposed design would not impact IS 37.	626+00	Not Required	D	Linear feet: 0

TABLE 9: RESOURCE AVOIDANCE AND MINIMIZATION
(Ephemeral Features are excluded)

Resource ID	Resource Type	25-foot Vegetative Buffer	Protected Species Habitat	Avoidance and Minimization Efforts Undertaken In:	Station ID	Fish Passage Design	Typical Section ID	Proposed Impacts
PS 40	Perennial	Yes	No	The existing 8-foot by 6-foot box culvert would be extended. If the alignment is shifted to the south, the design would increase impacts to IS 43 and would result in residential displacements. If the alignment is shifted to the north, the design would increase impacts to WL 41 and would result in residential displacements. Shifting to the north and south would cause approximately equal impacts to PS 42.	687+00	Required The culvert is being evaluated as an embedded culvert.	D	Linear feet: 165 Mile: 0.031
WL 41	Wetland	No	No	If the alignment is shifted to the south, the design would increase impacts to IS 43 and would result in residential displacements. If the alignment is shifted to the north, the design would increase impacts to WL 41 and would result in residential displacements. Shifting to the north or south would cause approximately equal impacts to PS 42.	687+00	Not Required	D	Square feet: 6,060 Acre: 0.139
PS 42	Perennial	Yes	Yes Suitable habitat for Tallapoosa crayfish.	The existing 6-foot by 6-foot box culvert would be extended. If the alignment is shifted to the south, the design would further encroach on the vegetative buffers of PS 42 and IS 43, would result in additional impacts to the channels of these features, and would increase residential displacements. If the alignment is shifted to the north, the design would increase impacts to WL 41. Shifting to the north or south would result in approximately equal impacts to PS 42.	691+00	Required The culvert is being evaluated as an embedded culvert.	D	Linear feet: 230 Mile: 0.044

TABLE 9: RESOURCE AVOIDANCE AND MINIMIZATION (Ephemeral Features are excluded)								
Resource ID	**Resource Type**	**25-foot Vegetative Buffer**	**Protected Species Habitat**	**Avoidance and Minimization Efforts Undertaken In:**	**Station ID**	**Fish Passage Design**	**Typical Section ID**	**Proposed Impacts**
IS 43	Intermittent	Yes	No	If the alignment is shifted to the south, the design would further encroach on the vegetative buffer of PS 42 and IS 43, would result in additional impacts to the channels of these features, and would increase residential displacements. If the alignment is shifted to the north, the design would result in additional impacts to WL 41 and would displace a church.	692+00	Not Required	D	Linear feet: 145 Mile: 0.027
PS 53	Perennial	Yes	No	The existing 6-foot by 5-foot box culvert would be extended. The proposed alignment is a perpendicular crossing at PS 53; shifting the alignment to the north or south would not reduce impacts to PS 53.	936+00	Required The culvert is being evaluated as an embedded culvert.	D	Linear feet: 257 Mile: 0.049
IS 56	Intermittent	Yes	No	The proposed design would not impact IS 56.	957+00	Not Required	D	Linear feet: 0
SR 166 Bypass Alternative 4 Alignment, P.I. 631310								

TABLE 9: RESOURCE AVOIDANCE AND MINIMIZATION (Ephemeral Features are excluded)

Resource ID	Resource Type	25-foot Vegetative Buffer	Protected Species Habitat	Avoidance and Minimization Efforts Undertaken In:	Station ID	Fish Passage Design	Typical Section ID	Proposed Impacts
PS A1	Perennial	Yes	Yes Suitable habitat for Tallapoosa darter, muscadine darter, lined chub, finelined pocketbook, stippled studfish, and Tallapoosa crayfish.	The proposed design would not impact PS A1.	100+00	Required	A	Linear feet: 0
PS A2	Perennial	Yes	Yes Suitable habitat for Tallapoosa darter, muscadine darter, lined chub, finelined pocketbook, stippled studfish, and Tallapoosa crayfish.	The proposed alignment is a perpendicular crossing at PS A2. Shifting the alignment to the north would increase impacts to PS A2 as the crossing would be less perpendicular than the proposed location. Shifting the alignment to the south would increase impacts to PS A1, PS A3, IS A4, and OW A5.	105+00	Required	A	Linear feet: 85 Mile: 0.016

TABLE 9: RESOURCE AVOIDANCE AND MINIMIZATION
(Ephemeral Features are excluded)

Resource ID	Resource Type	25-foot Vegetative Buffer	Protected Species Habitat	Avoidance and Minimization Efforts Undertaken In:	Station ID	Fish Passage Design	Typical Section ID	Proposed Impacts
PS A3	Perennial	Yes	Yes Suitable habitat for Tallapoosa darter, muscadine darter, lined chub, finelined pocketbook, stippled studfish, and Tallapoosa crayfish.	The proposed design would not impact PS A3.	105+00	Required	A	Linear feet: 0
IS A4	Intermittent	Yes	No	The proposed design would not impact IS A4.	105+00	Not Required	A	Linear feet: 0
OW A5	Open Water	Yes	No	The proposed design would not impact OW A5.	111+62	Not Required	A	Square feet: 0
IS A7	Intermittent	Yes	No	The proposed alignment is a perpendicular crossing at IS A7. Shifting the alignment to the north would increase impacts to IS A6 and would increase the likelihood of encroaching on the vegetative buffer of IS A7. Shifting the alignment to the south would increase impacts to PS A3 and OW A5.	140+00	Not Required	A	Linear feet: 94 Mile: 0.018
IS A8	Intermittent	Yes	No	The proposed alignment is a perpendicular crossing at IS A8. Shifting the alignment to the north would increase impacts to OW A9. Shifting the alignment to the south would result in residential displacements.	147+00	Not Required	A	Linear feet: 121 Mile: 0.023
OW A9	Open Water	Yes	No	The proposed design would not impact OW A9.	150+00	Not Required	A	Square feet: 0
OW A11	Open Water	Yes	No	The proposed design would not impact OW A11.	160+00	Not Required	A	Square feet: 0