

**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA**

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

FILE P.I. # 0006967 **OFFICE** Design Policy & Support
CSSTP-0006-00(967)
Upson County
GDOT District 3 - Thomaston **DATE** 10/27/2015
SR 74 East One-Way Pair in Thomaston

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
Albert Shelby, State Program Delivery Engineer
Darryl VanMeter, State Innovative Delivery Engineer
Bobby Hilliard, Program Control Administrator
Cindy VanDyke, State Transportation Planning Administrator
Hiral Patel, State Environmental Administrator
Andrew Heath, State Traffic Engineer
Angela Robinson, Financial Management Administrator
Lisa Myers, State Project Review Engineer
Charles "Chuck" Hasty, State Materials Engineer
Lee Upkins, State Utilities Engineer
Richard Cobb, Statewide Location Bureau Chief
Andy Casey, State Roadway Design Engineer
Michael Presley, District Engineer
Adam Smith, District Preconstruction Engineer
Jason Mobley, District Design Engineer
Scott Parker for District Utilities Engineer
Iheanachor Njoku, Project Manager
BOARD MEMBER - 3rd Congressional District

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

Project Type: <u>Roadway Project</u>	P.I. Number: <u>0006967</u>
GDOT District: <u>3</u>	County: <u>Upson</u>
Federal Route Number: <u>N/A</u>	State Route Number: <u>36, 74</u>

The proposed project seeks to improve operations and reduce crash frequency and severity along SR 74/36 by upgrading four intersections. The project will include the reconstruction of the five-way intersection of SR 36/74/Bethel, SR 36 W/74 W/Main St, and SR 36/Barnesville Hwy into a roundabout. Also, three intersection improvements at the intersection of SR 36 / W Gordon St, SR 36 / W Main St, and SR 36 / E Gordon St. Additionally, the intersection of SR 36 and E Gordon St will be reconfigured into one lane on the east bound approach to better accommodate the wide movements of trucks. The project is approximately 1 mile in length.

Submitted for approval:

<u><i>[Signature]</i></u> District Engineer	<u>7/2/15</u> Date
<u>Albert V. Shelby III</u> <i>8/16</i> State Program Delivery Engineer	<u>7/7/15</u> Date
<u><i>[Signature]</i></u> <i>K980</i> GDOT Project Manager	<u>7/6/15</u> Date

Recommendation for approval:

* <u>Hiral Patel/KLP</u> State Environmental Administrator	<u>8-11-15</u> Date
* <u>Ken Werho/KLP</u> FOR State Traffic Engineer	<u>7-27-15</u> Date
* <u>Lisa Myers/KLP</u> Project Review Engineer	<u>7-16-15</u> Date
* <u>Yulonda Pride-Foster/KLP</u> FOR State Utilities Engineer	<u>7-23-15</u> Date

* Recommendations on File

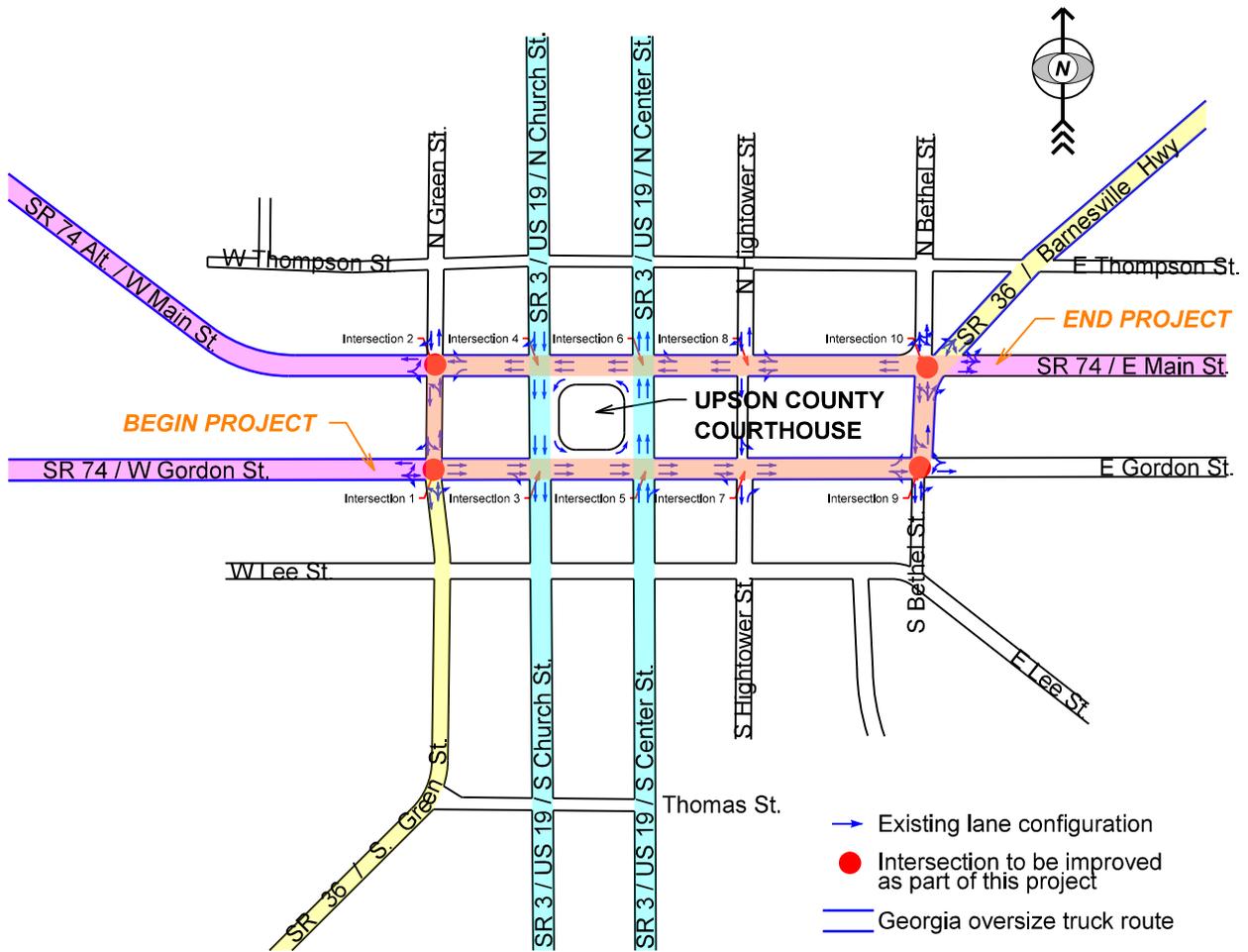
- MPO Area: This project is consistent with the MPO adopted Regional Transportation Plan (RTP)/Long Range Transportation Plan (LRTP).
- Rural Area: This project is consistent with the goals outlined in the Statewide Transportation Plan (SWTP) and/or is included in the State Transportation Improvement Program (STIP).

<u><i>[Signature]</i></u> State Transportation Planning Administrator	<u>7-23-15</u> Date
--	------------------------

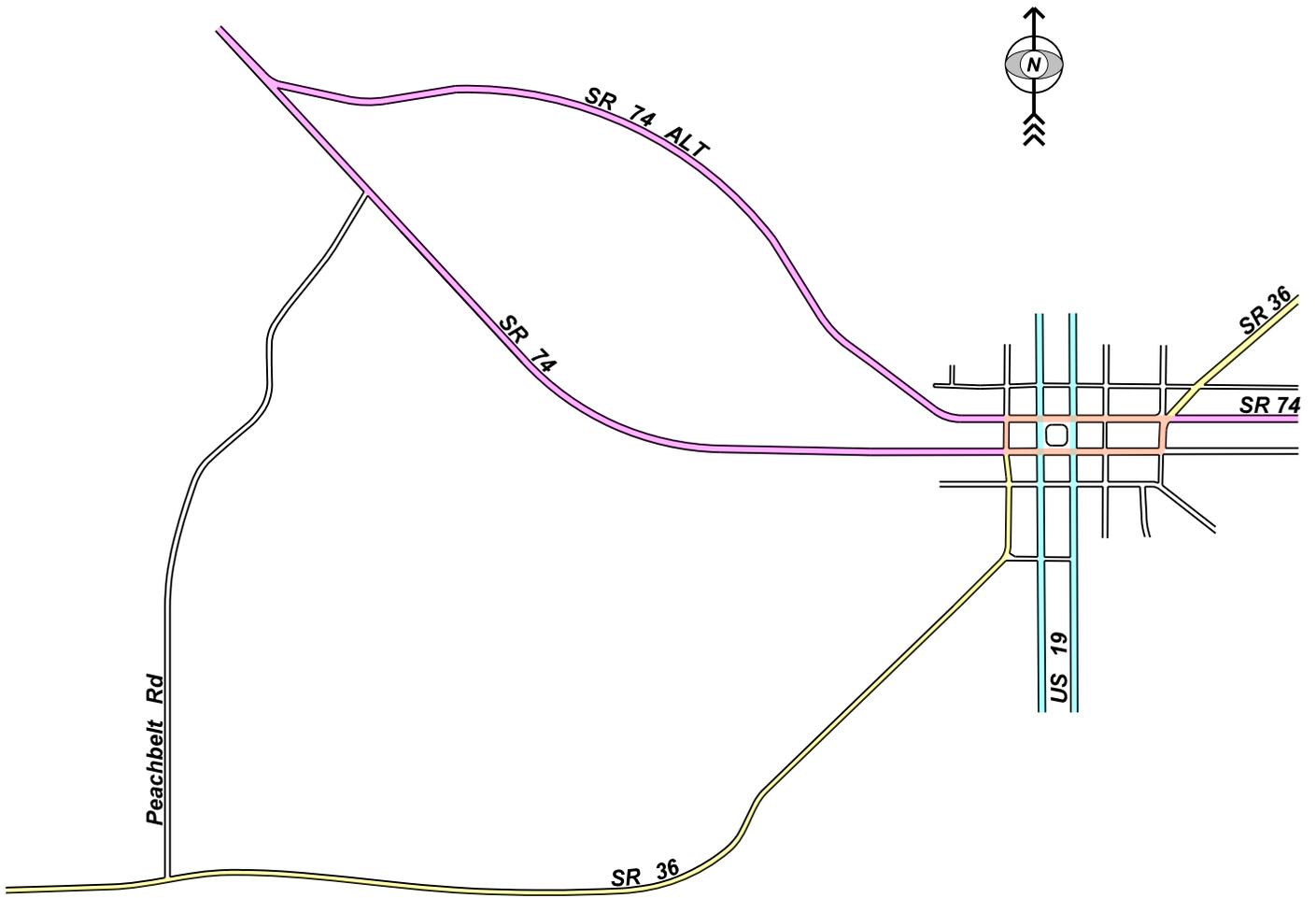
PROJECT LOCATION MAP



INTERSECTION LOCATION MAP DOWNTOWN THOMASTON



AREA MAP DOWNTOWN THOMASTON



County: Upson

PLANNING AND BACKGROUND

Project Justification Statement: The project corridor was identified as a need in the Pike, Upson and Lamar Counties Regional Transportation Study (PULRTS) that was completed in 2004. It was added to the Department's Work Program in August 2004. State Route 74 is a major east-west corridor that runs through the heart of downtown Thomaston, Georgia and is functionally classified as an urban principal arterial. State Route 36 briefly shares the same one-way pair of alignments with SR 74 as it runs through downtown and is classified as an urban principal arterial. The project corridor has a large volume of trucks, and has operational and crash incident issues at four intersections: SR36/SR 74 at Green Street (2 intersections) and SR 36 /SR 74 at Bethel Street (2 intersections). This project will improve the operations of the four intersections along the SR 74/SR 36 one-way pair by realigning the intersections and improving geometry.

The 2012 average annual daily traffic (AADT) for the SR 74 one-way pair ranges from 3,630 to 6,680 vehicles per day. With an expected yearly growth rate of 1.5 %, the future projected 2037 AADT ranges from 5,262 to 9,684 vehicles per day. Truck traffic constitutes an estimated 12-19 % of the total vehicles traveling the downtown corridor based on Georgia's State Traffic and Report Statistics (STARS).

The latest crash data available was gathered for the years 2006, 2007, 2008, and 2009. This section of roadway exhibits higher crash rates and injury rates for all four years as compared to the statewide averages for this classification of roadway.

The eastern limits are currently at Bethel Street, on the east side of downtown where the existing one-way pair ends. The western limit is Green Street, on the west side of downtown where the existing one-way pair begins. Beyond these limits, there are no significant adverse operational conditions on the SR 74 corridor within Thomaston. Operational improvements are needed in the area to address the operational deficiencies at four intersections on SR 36/SR 74, at Bethel Street and at Green Street. Operational improvements are also needed to reduce the number of crash incidents and better accommodate truck movements at the four intersections. Final determination of logical termini is dependent on the Office of Environmental Services coordination with FHWA during the development of the environmental document.

Georgia Department of Transportation
Office of Planning

County: Upson

Existing Conditions: The project is located in downtown Thomaston, Georgia on the one-way pair of SR 36 and SR 74. There are no major utilities but there are numerous aerial distribution lines and underground utilities along the project. There are no major structures on the project. SR 36 and SR 74 have two 12 foot lanes with parallel parking on the adjacent shoulders. All the streets have curb and gutter with sidewalks that vary from 4 to 12 feet in width. The one-way pair begins at Green St and ends at the Bethel St, consisting of ten intersections. Eight of the ten intersections are signalized. The two intersections that are not signalized are located on Bethel Street. The South Bethel St and SR 36/74/Gordon St intersection has four legs. The west leg consists of two one-way eastbound lanes with no stop control. The other three legs are two-way with stop control. The five-leg intersection of SR 36/74/Bethel, SR 36 W/74 W/Main St, and SR 36/Barnesville Hwy has stop control in all directions.

Other projects in the area:

Project ID	Description	Location	Notes
0013065	SR 74 from SR 109 to SR 3/US 19	Located west of project	Improve passing opportunities along SR 74, project is long range, should not affect project
0013066	SR 74 from SR 3 to SR 7	Located east of project	Improve passing opportunities along SR 74, project is long range, should not affect project

MPO: N/A

TIP #: N/A

TIA Regional Commission: Three Rivers

RC Project ID: N/A

Congressional District(s): 003

Federal Oversight: Exempt

Projected Traffic: AADT

SR 74 Alternate / W. Main St

Current Year (2013): 3700

Open Year (2019): 3930

Design Year (2039): 4795

SR 36 / SR 74 / Bethel St

Current Year (2013): 7195

Open Year (2019): 7635

Design Year (2039): 9320

SR 36 West / SR 74 West / Green St

Current Year (2013): 5400

Open Year (2019): 5730

Design Year (2039): 6995

SR 74/E. Main St

Current Year (2013): 6200

Open Year (2019): 6580

Design Year (2039): 8030

Traffic Projections Prepared by: GDOT Office of Planning

Functional Classification:

SR 36 / SR 74 / SR 36 West and SR 74 West are classified as Urban Principal Arterial.

Bethel St. / SR 74 Alternate are classified as Urban Minor Arterial.

East Gordon from Bethel to Glendale / Green St. are classified as Urban Local.

County: Upson

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

Warrants met: None Bicycle Pedestrian Transit

This project meets the standard warrants to provide pedestrian accommodations per section 9 of the GDOT Design Policy Manual. Existing sidewalks are present in the area. There are several pedestrian travel generators and destinations along and near the project. Residential neighborhoods exist around the project. Upson-Lee Elementary and High School are located approximately 2 miles east of the project location. Between the project and school is a local civic center. Public events are often hosted here which will occasionally generate a high volume of pedestrian traffic.

This project does not meet the standard warrants to provide bicycle accommodations. The project is not located on a designated bike route and there are no existing bicycle accommodations. However, the project does meet the guidelines for bicycle accommodations so, at a minimum, bike lanes should be considered. There is an elementary and high school located within 3 miles of the project, and a civic center is located within 1 mile. The scope of this project does not allow for the addition of any meaningful bicycle accommodations.

This project does not meet the standard warrants for transit accommodations. The corridor is not serviced by fixed-route transit and there are no transit facilities located near the project. School buses frequently travel through the area, but have no stops along the project corridor.

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

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

County: Upson

DESIGN AND STRUCTURAL

Description of the proposed project: The proposed project would improve intersection operations and reduce crash frequency and severity on a segment of SR 36 and SR 74 through downtown Thomaston in Upson County, Georgia. The project is approximately 1 mile long. The project will include the following:

- SR 74 W/SR 36 W/Main St. @ Green St. – Radii improvements
- SR 74/SR 36/Gordon St. @ Green St. – Radii improvements
- SR 74/SR 36/Main St. @ Bethel – Roundabout
- SR 74/SR 36/Gordon St. @ Bethel – Radii improvements and reduction to one eastbound lane

Major Structures: N/A

Mainline Design Features:

SR 36 / SR 74 (Urban Principal Arterial)

	Existing ¹	Standard ²	Guidance	Proposed
Posted Speed	35 mph			35 mph
Design Speed	Unknown	30-60 mph	55 mph	35 mph
Design Vehicle	Unknown	N/A	WB-40 or WB-62	WB-67 and confirm 100ft vehicle can traverse roundabout on SR 36 and SR 74
Maximum Superelevation	N/A	4-6% ³	4%	4%
Min Horizontal Curve Radius	N/A	371 ft	N/A	≥ 371 ft
Maximum Grade	1-5%	6-9%	6 %	1-5%
Typical Section				
- Number of Lanes	2	N/A	N/A	2
- Lane Width	12 ft	10-12 ft	11-12 ft	12 ft
- Outside Shoulder or Border Area Width	8-14 ft	8 ft min.	10-16 ft	8-14 ft
- Outside Shoulder Slope	1-2%	2-6%	2%	2%
- Inside Shoulder Width	N/A	N/A	N/A	N/A
- Inside Shoulder Slope	N/A	N/A	N/A	N/A
- Median Width & Type	N/A	N/A	N/A	N/A
- Sidewalks	4-12 ft	4 ft ⁴	5 ft	4-12 ft
- Bike Lanes	None	N/A	4 ft	None ⁵
- Auxiliary Lanes	⁶	N/A	N/A	⁶
Access Control	By Permit	By Permit	By Permit	By Permit
Pavement Type	Asphalt	N/A	Asphalt	Asphalt

¹ Existing information taken from survey data and field inspections

² According to current GDOT design policy if applicable

³ Superelevation may be omitted in urban areas with many constraints

⁴ Sidewalks less than 5 ft in width require the addition of a passing section every 200 ft

⁵ See the complete streets section for further discussion.

⁶ See intersection location map on page 3

County: Upson

Bethel St. and SR 74 Alternate (Urban Minor Arterial)

	Existing ¹	Standard ²	Guidance	Proposed
Posted Speed	30 mph			30 mph
Design Speed	Unknown	30-60mph	45 mph	30 mph
Design Vehicle	Unknown	N/A	WB-40 or BUS-40	WB-67
Maximum Superelevation	N/A	4-6% ³	4%	4%
Min Horizontal Curve Radius	N/A	250 ft	N/A	≥ 250 ft
Maximum Grade	1-4.5%	6-9%	7 %	1-4.5%
Typical Section				
- Number of Lanes	2	N/A	N/A	2
- Lane Width	10-12 ft	10-12 ft	11-12 ft	10-12 ft
- Outside Shoulder or Border Area Width	8-14 ft	8 ft min.	10-16 ft	8-14 ft
- Outside Shoulder Slope	1-2%	2-6%	2%	2%
- Inside Shoulder Width	N/A	N/A	N/A	N/A
- Inside Shoulder Slope	N/A	N/A	N/A	N/A
- Median Width & Type	N/A	N/A	N/A	N/A
- Sidewalks	4-5 ft	4 ft ⁴	5 ft	4-5 ft
- Bike Lanes	None	N/A	4 ft	None ⁵
- Auxiliary Lanes	⁶	N/A	N/A	⁶
Access Control	By Permit	By Permit	By Permit	By Permit
Pavement Type	Asphalt	N/A	Asphalt	Asphalt

¹ Existing information taken from survey data and field inspections

² According to current GDOT design policy if applicable

³ Superelevation may be omitted in urban areas with many constraints

⁴ Sidewalks less than 5 ft in width require the addition of a passing section every 200 ft

⁵ See the complete streets section for further discussion.

⁶ See intersection location map on page 3

County: Upson

East Gordon from South Bethel to Glendale and North Green St (Urban Local Street)

East Gordon from South Bethel to Glendale	Existing ¹	Standard ²	Guidance	Proposed
Posted Speed	30 mph			30 mph
Design Speed	Unknown	20-30 mph	35 mph	30 mph
Design Vehicle	Unknown	N/A	SU or P	BUS-40
Maximum Superelevation	N/A	4-6% ³	4%	4%
Min Horizontal Curve Radius	N/A	250 ft	N/A	≥ 250 ft
Maximum Grade	1-4.5%	8%	11 %	1-4.5%
North Green Street				
Posted Speed	35 mph			35 mph
Design Speed	Unknown	20-30 mph	35 mph	35 mph
Design Vehicle	Unknown	N/A	SU or P	BUS-40
Maximum Superelevation	N/A	4-6% ³	4%	4%
Min Horizontal Curve Radius	N/A	371 ft	N/A	≥ 371 ft
Maximum Grade	1-4.5%	8%	11 %	1-4.5%

Typical Section				
- Number of Lanes	2	N/A	N/A	2
- Lane Width	10-12 ft	10-12 ft	11-12 ft	10-12 ft
- Outside Shoulder or Border Area Width	10 ft	5 ft min ⁴	10-16 ft	10 ft
- Outside Shoulder Slope	1-2%	2-6%	2%	2%
- Inside Shoulder Width	N/A	N/A	N/A	N/A
- Inside Shoulder Slope	N/A	N/A	N/A	N/A
- Median Width & Type	N/A	N/A	N/A	N/A
- Sidewalks	4-5 ft	4 ft ⁵	5 ft	4-5 ft
- Bike Lanes	N/A	N/A	4 ft	None ⁶
- Auxiliary Lanes	⁷	N/A	N/A	⁷
Access Control	By Permit	By Permit	By Permit	By Permit
Pavement Type	Asphalt	N/A	Asphalt	Asphalt

¹ Existing information taken from survey data and field inspections

² According to current GDOT design policy if applicable

³ Superelevation may be omitted in urban areas with many constraints

⁴ Where the available right-of-way is limited, a border width of 2 ft may be tolerated where there is no sidewalk

⁵ Sidewalks less than 5 ft in width require the addition of a passing section every 200 ft

⁶ See the complete streets section for further discussion.

⁷ See intersection location map on page 3

County: Upson

Major Interchanges/Intersections: The SR 36 and SR 74 one-way pair corridor includes ten intersections which begin at Green Street and end at Bethel Street. The US 19 / SR 3 one-way pair corridor bisects the project but it is not part of the project.

Intersection 1 – SR 36/Green St. @ EB SR 74/SR 36/Gordon St

This radius will be improved to accommodate truck turning from S. Green St. to Gordon St. Trucks are presently driving over the curbs and sidewalks while making this turning movement.

Intersection 2 – SR 36/Green St. @ WB SR 74/SR 36/Gordon St/Main St

Numerous crashes have occurred by trucks turning left from W. Main St. to SR 36/Green Street. Trucks have damaged the building on the southwest quadrant on several occasions and have frequently knocked down highway signs on the southeast corner of the intersection. This intersection will be improved to accommodate truck turning. The improvement will be a combination of enlarging the corner radius and relocating the stop bar on Green St.

Intersection 3 – SR 3/Church St. @ EB SR 74/SR 36/Gordon St

Intersection 4 – SR 3/Church St. @ WB SR 74/SR 36/Gordon St/Main St

Intersection 6 – SR 3/Center St. @ WB SR 74/SR 36/Gordon St/Main St

There are no proposed improvements for these intersections. All the turning movements have two receiving lanes for the trucks to maneuver through. There are many historical buildings located at these intersections that are located at the edge of the right-of-way. For the historical preservation of the buildings, right-of-way acquisition would be impractical at these intersections.

Intersection 5 – SR 3/Center St. @ EB SR 74/SR 36/Gordon St

There are no proposed improvements for this intersection as it is not part of the scope of this project. However, the current conditions do not accommodate the movements of larger trucks. Turning movements were analyzed and a WB-67 cannot execute the turn from US 19 to SR 74 without running over the inside or outside curb. The surrounding buildings are historic and right of way is limited at all quadrants of this intersection. Trucks will continue to mount the curbs unless the intersection can be improved. The downside to this is that some of the on-street parking will be affected and the length of the pedestrian crosswalk will be increased. Alternative routes for WB-67s travelling northbound on SR 19 to continue east on SR 74 include E. Lee St. to S. Bethel St. or driving around the courthouse square onto SR 74 E.

Intersection 7 – S. Hightower St. @ EB SR 74/SR 36/Gordon St

There are no proposed improvements for this intersection. There are no capacity or safety issues at the current intersection.

Intersection 8 – S. Hightower St. @ WB SR 74/SR 36/Gordon St/Main St

There is an actuator on N. Hightower St. that only provides southbound through movement when a vehicle is present. For the majority of the time, the signal is green for westbound traffic on SR 74/SR 36/ Main St, and adequate car storage exists between intersections 6 and 10. During peak hours however, traffic will occasionally back up from intersection 8 into

County: Upson

intersection 10 which would hinder the operations of the proposed roundabout. District 3 Traffic Operations may need to implement timing adjustments, separate to this project.

Intersection 9 – S. Bethel St. @ EB SR 74/SR 36/Gordon St

Presently, eastbound trucks move to the right lane while turning left from Gordon St. to Bethel St. Trucks will often travel over the curbs and sidewalks. Eastbound Gordon St. will be reduced from 2 lanes to 1 prior to the intersection which will allow trucks sufficient turning radius without encroaching on adjacent lanes. A capacity study has been performed and the results support the lane reduction. Capacity analysis has also shown that southbound traffic on Bethel St. has sufficient gaps to accommodate traffic without backing up into the roundabout. The study is provided in attachment 6 of this report.

Intersection 10 – Five leg intersection, SR 36/SR 74/Bethel St. @ SR 74/E. Main St. @ SR 36/Barnesville Hwy

Presently, this is a 5-legged all-way stop-controlled intersection stricken with high delay at peak traffic hours. A roundabout is proposed with the aim of improving operations and reducing crash frequency and severity by reducing delays and queues at the intersection. The specific design details of the proposed roundabout are discussed in other areas of this report.

Lighting required: No Yes (for the roundabout only)

Off-site Detours Anticipated: No Yes Undetermined

State route traffic will not be detoured. Local streets may be detoured if needed. Detour meetings will be held if warranted.

Transportation Management Plan [TMP] Required: No Yes
 Project classified as: Non-significant Significant
 TMP Components Anticipated: TTC TO PI

Design Exceptions to FHWA/AASHTO controlling criteria anticipated:

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

County: Upson

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	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2. Intersection Sight Distance	DP&S	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3. Intersection Skew Angle	DP&S	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4. Lateral Offset to Obstruction	DP&S	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5. Rumble Strips	DP&S	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6. Safety Edge	DP&S	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7. Median Usage	DP&S	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
8. Roundabout Illumination Levels	DP&S	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
9. Complete Streets	DP&S	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10. ADA & PROWAG	DP&S	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11. GDOT Construction Standards	DP&S	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
12. GDOT Drainage Manual	DP&S	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13. GDOT Bridge & Structural Manual	Bridges	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

VE Study anticipated: No Yes Completed – Date:

County: Upson

UTILITY AND PROPERTY

Railroad Involvement: There is a Norfolk Southern railroad approximately 500ft north of the project limits on N Bethel St. The project does not affect this railroad.

Utility Involvements:

- Atlanta Gas Light – Natural Gas
- Charter Communications – Cable
- City of Thomaston – Electric
- City of Thomaston – Water & Sewer
- Georgia Power – Electric
- Upson EMC – Electric
- Upson County Board of Commissioners – Siren
- Windstream – Cable
- Parker Fibernet – Cable

SUE Required: No Yes Undetermined

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

Right-of-Way (ROW): Existing width: Varies 40ft - 60ft Proposed width: Varies 40ft - 60ft

Required Right-of-Way anticipated: None Yes Undetermined

Easements anticipated: None Temporary Permanent Utility Other

Anticipated total number of impacted parcels:	20	
Displacements anticipated:	Businesses:	0
	Residences:	0
	Other:	0
	Total Displacements:	0

Location and Design approval: Not Required Required

County: Upson

ROUNDABOUTS

Roundabout Lighting Agreement/Commitment Letter received: No Yes

See attachment 11 for more detail on the progress of this item.

Roundabout Planning Level Assessment: None

Roundabout Feasibility Study: A roundabout feasibility study was performed. The preferred option is a four legged roundabout that maintains connectivity with SR 36 (Barnesville Highway). The preferred alternative was found to have several advantages over other alternative designs:

- Capacity analyses suggest that the roundabout will operate well below capacity in the design year (2039).
- The roundabout would improve safety by reducing the severity of crashes.
- Route connectivity will be maintained by providing better mobility with more direct connections and easier truck movements.
- Property impact is shifted to vacant parcels, away from the Dollar General and critical areas to the southeast.
- Pedestrians are better accommodated due to reduced number of crossings.
- The preferred option provides shifts the construction off alignment which greatly reduces construction duration and cost while improving work zone safety.

The roundabout feasibility study is provided as attachment 4 of this report.

Roundabout Peer Review Required: No Yes Completed – Date: September, 2014

CONTEXT SENSITIVE SOLUTIONS

Issues of Concern: None

Context Sensitive Solutions Proposed: N/A

CONSTRUCTION

Issues potentially affecting constructability/construction schedule: N/A

Early Completion Incentives recommended for consideration: No Yes

County: Upson

ENVIRONMENTAL & PERMITS

Anticipated Environmental Document:

GEPA: NEPA: CE EA/FONSI EIS

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

Is a PAR required? No Yes Completed – Date:

Environmental Comments and Information:

NEPA/GEPA: CE is not approved. Approval is anticipated for July 2016.

Ecology: The ecology resource survey report was completed on August 4, 2015. There are no ecology resources on this project. There are no biota impaired streams that will be affected by this project. This project will not impact any streams so fish passage will not be a concern.

History: The history resource survey report was approved on April 13, 2015. The boundaries are shown on the concept layout.

Archeology: The archaeology survey report was approved on July 15, 2015. There are no archaeological resources on this project.

Air Quality:

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

The air quality survey was approved on May 19, 2015.

Noise Effects: The noise effects survey was approved on May 19, 2015. A Type III noise analysis was prepared for this project. No modeling required.

Public Involvement: A PIOH was conducted on March 26, 2015. Several concerns were identified by respondents, including: the need for closing Bethel St. access to roundabout, the need for a roundabout compared to a 4-way stop controlled intersection, the accuracy of the traffic modelling presented at the PIOH, potential difficulties merging into the right lane on Gordon St. when the left lane is closed, possible use of splitter islands for heavy amount of truck traffic, and the need for the dead end of Bethel St. as opposed to a 3-way intersection with Thompson St. A detour meeting will be scheduled if required as project progresses. See Attachment 9 for responses to comments from the public.

Major stakeholders: City of Thomaston, Thomaston Police, Upson Board of Education, First Baptist Church, Bank of Upson, Ace Cleaners, Dollar General, Emergency Services, Georgia High School Association, other local businesses and travelling public.

County: Upson

Environmental Permits/Variations/Commitments/Coordination anticipated:

Permit/ Variance/ Commitment/ Coordination Anticipated	No	Yes	Remarks
1. U.S. Coast Guard Permit	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. Forest Service/Corps Land	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3. CWA Section 404 Permit	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4. Tennessee Valley Authority Permit	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5. Buffer Variance	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
6. Coastal Zone Management Coordination	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
7. NPDES	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
8. FEMA	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
9. Cemetery Permit	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
10. Other Permits	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
11. Other Commitments	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
12. Other Coordination	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

County: Upson

COORDINATION, ACTIVITIES, RESPONSIBILITIES, AND COSTS

PTIP Meeting: A PTIP meeting was held September 21, 2012. The local government favored extending SR 74 eastbound onto Gordon St. and constructing a taper to merge onto E. Main St. / SR 74. Concern was brought up concerning the impact to the community, housing and a nearby park. It was suggested that GDOT hire a consultant to address concerns from the locals and perform a roundabout feasibility study. See attachment 8 for further discussion details.

Initial Concept Meeting: An initial concept meeting was held August 26, 2014 with the city of Thomaston. Several alternatives were discussed and the city stated they were in favor of the 4-legged roundabout option with the realignment of Bethel St. Several issues were discussed including a maintenance agreement with the city and bike/pedestrian accommodations. Multiple other intersections were discussed as having need for radii improvements. Additionally, the city was concerned that the shoulder was being used as a left turn lane at Church St. onto Thompson St. It was agreed that this concern would be addressed as a separate issue. See attachment 8 for further discussion details.

Concept Meeting: A concept meeting was held February 27, 2015. All of the alternatives were discussed and the concept team had no issues. A bulk of the discussion was directed towards the proposed roundabout. Several recommendations were made by the group. See attachment 8 for further discussion details.

Project Activity	Party Responsible for Performing Task(s)
Concept Development	GDOT District 3
Design	GDOT District 3
Right-of-Way Acquisition	GDOT District 3
Utility Relocation Construction / Utility Coordination Preconstruction	Utility Owners / GDOT
Letting to Contract	GDOT Bidding Administration
Construction Supervision	GDOT District 3
Providing Material Pits	Contractor
Providing Detours	Contractor
Environmental Studies, Documents, & Permits	GDOT Environmental Services
Environmental Mitigation	GDOT Environmental Services
Construction Inspection & Materials Testing	GDOT District 3 & GDOT Materials

Project Cost Estimate Summary and Funding Responsibilities:

	Breakdown of PE	ROW	Reimbursable Utility	CST*	Environmental Mitigation	Total Cost
Funded By	GDOT	GDOT	GDOT	GDOT	GDOT	
\$ Amount	\$478,248.97	\$1,259,000.00	\$45,000.00	\$3,017,947.21	N/A**	\$4,800,196.18
Date of Estimate	8/2/2007	7/31/2015	2/27/2015	6/30/2015		

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

**Environmental mitigation cost not available at this time

County: Upson

ALTERNATIVES DISCUSSION

The project termini are on the east and west sides of downtown Thomaston. Each side has unique problems that can be addressed with several different alternatives. On the west side, the intersections do not accommodate the wide turning movements of trucks. Consequently, trucks are forced to mount the curbs damaging the concrete and signing surrounding the intersections. On the east side, the 5-legged intersection has proven to be operationally deficient in times of high traffic. In addition to the 5-legged intersection, the surrounding area has great opportunities for improvements to increase safety and operations. Alternatives were considered for each side of downtown and then a preferred chosen for both.

Alternative selection:

WEST SIDE OF DOWNTOWN THOMASTON – (Intersections 1 & 2)

Preferred Alternative: Option 1W – Intersection Improvements			
Estimated Property Impacts:	No displacements	Estimated CST Cost:	\$506,463.92
Estimated ROW Cost:	Low	Estimated CST Time:	12 months
<p>Rationale: Several variations of intersection improvements were considered and can be seen in attachment 10. In order to most effectively accommodate traffic, while minimizing impacts surrounding intersection 2, the intersection radii will be improved, and the stop bar on Green St. will be relocated.</p> <p>The need for intersection improvements is discussed in several areas of the concept report. Improving the radii at the proposed intersections will allow trucks to make wider turns without running over the inside curb. Radii improvements on the intersections have a relatively low cost and the most straightforward approach to address the project needs. Trucks often oversteer to avoid oncoming cars on Green St., so in addition to radii improvements, the stop bar on Green St. will be moved back.</p>			

Alternative 1: Option 2W – Relocate SR 36 between S Green St. @ Thomas St. and Intersection 5			
Estimated Property Impacts:	2 displacements	Estimated CST Cost:	\$1,312,677.65
Estimated ROW Cost:	High	Estimated CST Time:	18 months
<p>Rationale: This improves SR 36 operationally and routes traffic away from the problem intersections. However, re-routing SR 36 will increase the number of turning movements at the intersection of US 19 and Gordon Street (i.e. intersection 5); An intersection that currently does not accommodate large truck turning movements. This may possibly relocate the problem from the west side of Downtown Thomaston to intersection 5.</p>			

Alternative 2: Option 3W – Re-route SR 36 along Peach Belt Road			
Estimated Property Impacts:	No displacements	Estimated CST Cost:	\$2,608,557.54
Estimated ROW Cost:	High	Estimated CST Time:	18 months
<p>Rationale: Peach Belt Road is a logical connection for State Route 36. Trucks would be able to avoid turning movements while traveling through downtown Thomaston. There is sufficient room for the expansion and right-of-way is not limited. However, this alternative is approximately \$2million more expensive than the preferred and re-routing SR 36 traffic into this quiet neighborhood is undesirable and would be met with strong opposition from the public.</p>			

County: Upson

No-Build Alternative:			
Estimated Property Impacts:	N/A	Estimated CST Cost:	N/A
Estimated ROW Cost:	N/A	Estimated CST Time:	N/A
Rationale: Due to the historically high crash rates, a no-build alternative is not recommended. The need for improvements is addressed in the project justification statement.			

EAST SIDE OF DOWNTOWN THOMASTON – (Intersections 9 & 10)

Preferred Alternative: Option 1E – 4-Leg roundabout, maintaining SR 36/Barnesville Hwy with Thompson Street realignment. Also, improve truck turning operations at the intersection of E Gordon and Bethel by converting E Gordon Street to one lane.			
Estimated Property Impacts:	No displacements	Estimated CST Cost:	\$2,511,483.26
Estimated ROW Cost:	Low	Estimated CST Time:	24 months
Rationale: Several roundabouts were considered and are discussed with great detail in the roundabout feasibility study. The proposed roundabout would: maintain and promote better connectivity, minimize property impacts, reduce crash frequency and severity by reducing conflict points, reduce the speed at which impacts may occur, improve sight distance through an improved geometric design, and better accommodate pedestrians by creating highly visible ADA compliant crosswalks where appropriate sight distance is achieved.			
In addition to the roundabout, Gordon St. will be converted to one lane before the intersection at Bethel St. This will allow truck drivers to make wider turns without encroaching on the adjacent lane or damaging the curb. Multiple locations for the lane drop were considered, including at the intersection of Gordon St. and Center St. but the preferred location is between Hightower St. and Bethel St. with closure of the left lane. A right lane closure/left merge was evaluated, but requires a realignment to accommodate trucks by providing adequate space for their turning movements onto S Bethel.			
The preferred alternative most adequately address the project needs with the lowest cost and the least impact on the surrounding area.			

Alternative 1: Option 2E – Extend One-way Pair from Bethel Street to SR 74			
Estimated Property Impacts:	4 displacements	Estimated CST Cost:	\$2,143,397.58
Estimated ROW Cost:	High	Estimated CST Time:	24 months
Rationale: This alternative would cause a number of residential displacements. Additionally, this alternative does not address the congestion at the 5-way intersection because traffic wanting to go to Barnesville still has to access the 5-way intersection. Therefore, this alternative does not satisfy the needs of the project.			

No-Build Alternative:			
Estimated Property Impacts:	N/A	Estimated CST Cost:	N/A
Estimated ROW Cost:	N/A	Estimated CST Time:	N/A
Rationale: Due to the historically high crash rates and operational need, a no-build alternative is not recommended. The need for improvements is addressed in the project justification statement.			

Comments: Several analysis tools have been completed to support alternative selections. See the attachments for further discussion including the signal warrant analysis, roundabout feasibility study, and AutoTURN layouts. Several roundabout alternatives that were not discussed above are covered in the roundabout feasibility study.

County: Upson

LIST OF ATTACHMENTS/SUPPORTING DATA

1. Concept layout
2. Typical sections
3. Detailed cost estimates:
 - a. Construction including Engineering and Inspection and Contingencies
 - b. Completed Liquid AC Adjustment forms
 - c. Right-of-Way
 - d. Utilities
4. Roundabout feasibility study
 - a. Traffic diagrams
 - b. Signal warrant analyses
 - c. Roundabout analysis tool
 - d. Concept plans
 - e. Crash data & Crash modification factors
5. Design traffic for preferred alternative
6. Capacity analysis summary
7. Pavement design
8. Minutes of coordination meetings
 - a. Project team initiation process – 9/21/2012
 - b. Initial concept team meeting – 8/26/2014
 - c. Concept team meeting – 2/27/2015
9. Public Information Open House comments and responses– 3/26/2015
10. AutoTURN layouts and roundabout design checks
11. Road closure concurrence and indication of support for roundabout lighting from the City of Thomaston

APPROVALS

Concur: 
Director of Engineering

Approve: 
Chief Engineer

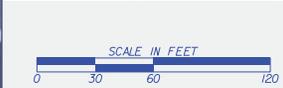
10.22.15
Date

ATTACHMENT 1 – CONCEPT LAYOUTS

PREFERRED W ALT. - RADII IMPROVEMENTS



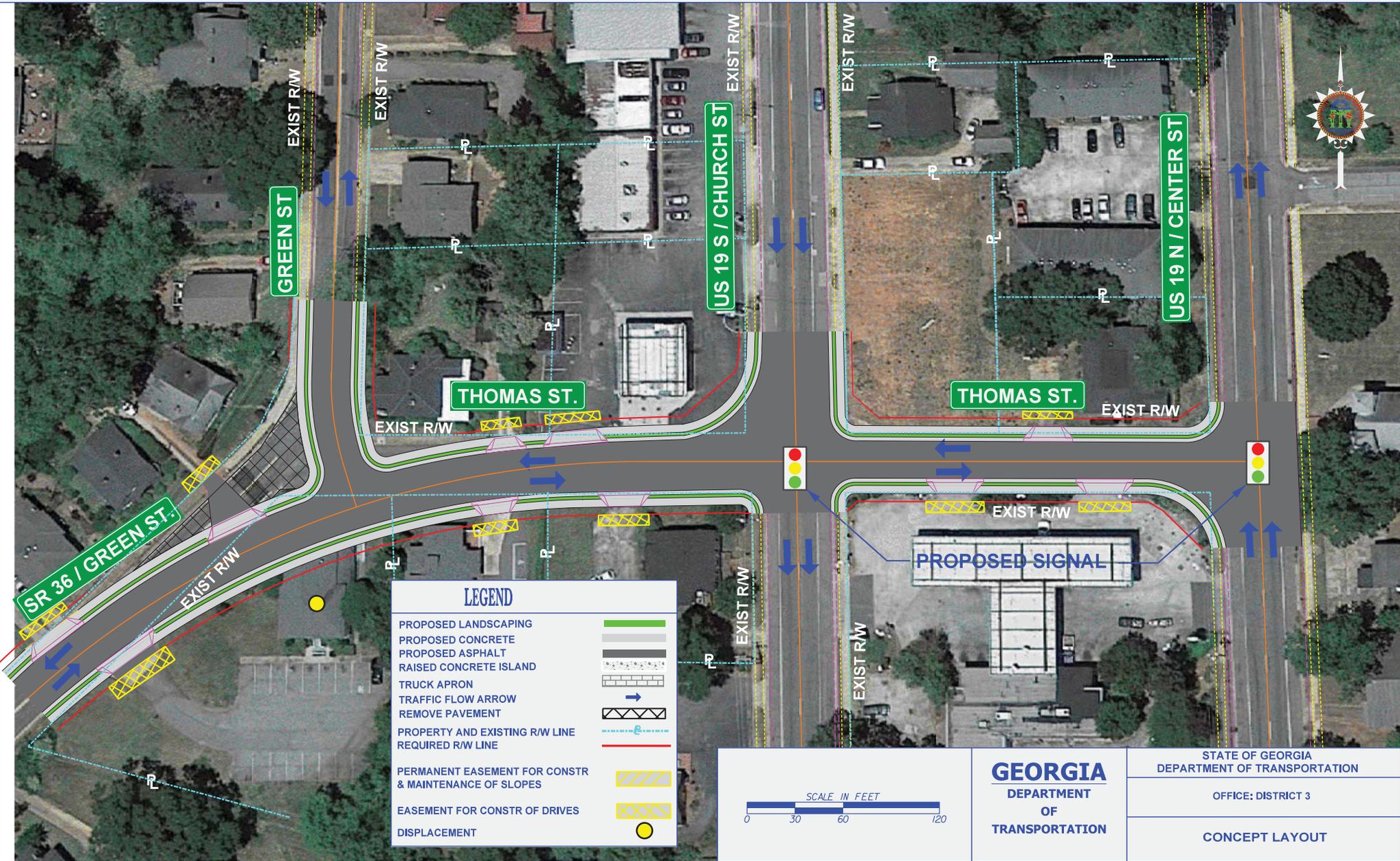
LEGEND	
PROPOSED LANDSCAPING	
PROPOSED CONCRETE	
PROPOSED ASPHALT	
RAISED CONCRETE ISLAND	
TRUCK APRON	
TRAFFIC FLOW ARROW	
REMOVE PAVEMENT	
PROPERTY AND EXISTING R/W LINE	
REQUIRED R/W LINE	
PERMANENT EASEMENT FOR CONSTR & MAINTENANCE OF SLOPES	
EASEMENT FOR CONSTR OF DRIVES	



GEORGIA
DEPARTMENT
OF
TRANSPORTATION

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: DISTRICT 3
CONCEPT LAYOUT

OPTION 2W - RE-ROUTE SR 36 ALONG THOMAS STREET



OPTION 3W - RE-ROUTE SR 36 ALONG PEACH BELT ROAD



SCALE IN FEET
0 200 400 800

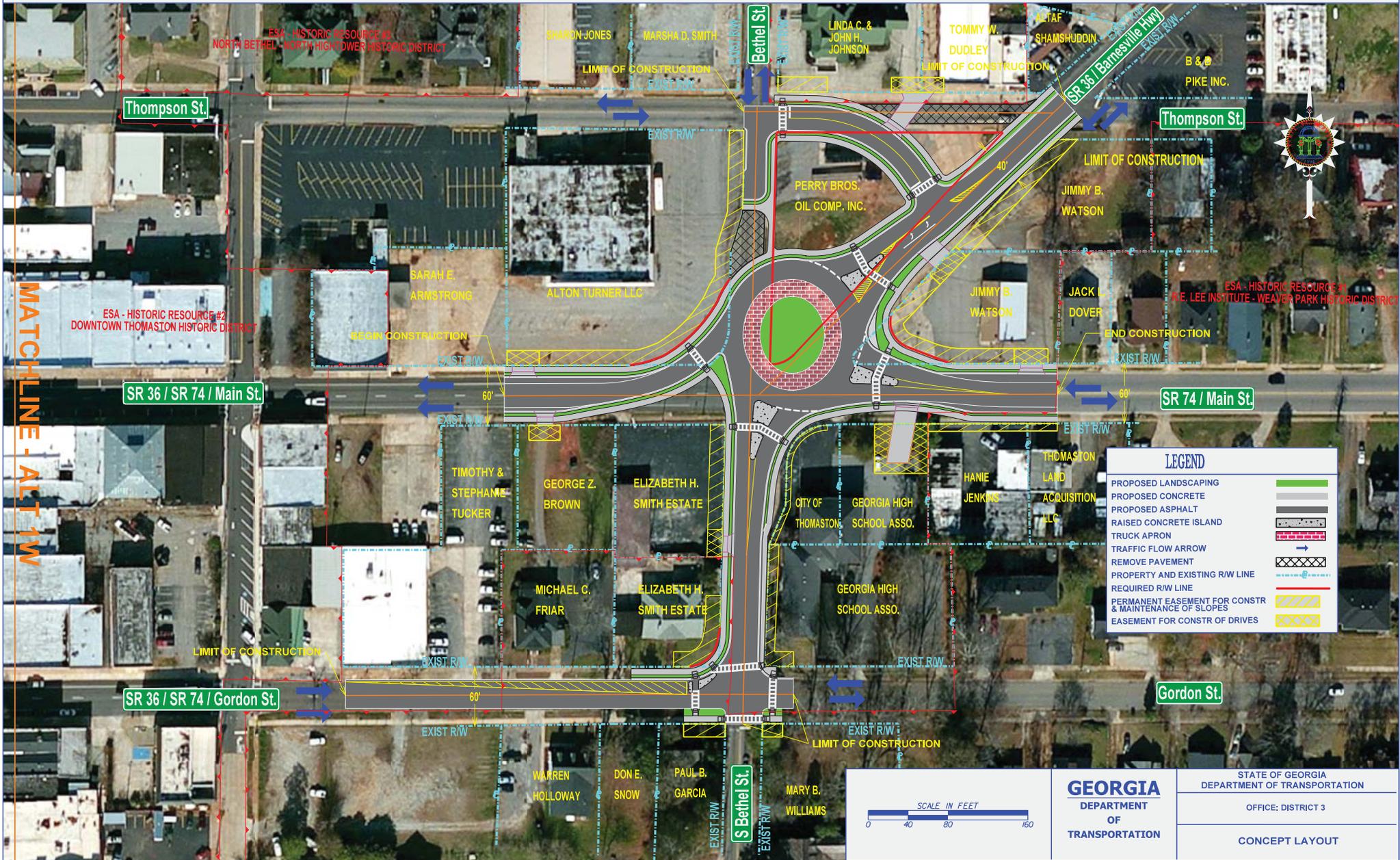
GEORGIA
DEPARTMENT
OF
TRANSPORTATION

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION

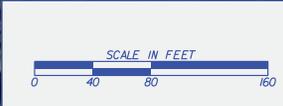
OFFICE: DISTRICT 3

CONCEPT LAYOUT

PREFERRED E ALT. - 4-LEG ROUNDABOUT



MATCHLINE - ALT 1W



GEORGIA
DEPARTMENT
OF
TRANSPORTATION

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION

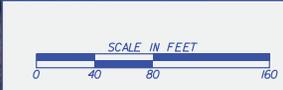
OFFICE: DISTRICT 3

CONCEPT LAYOUT

OPTION 2E - EXTEND ONE-WAY PAIR FROM BETHEL STREET TO SR 74



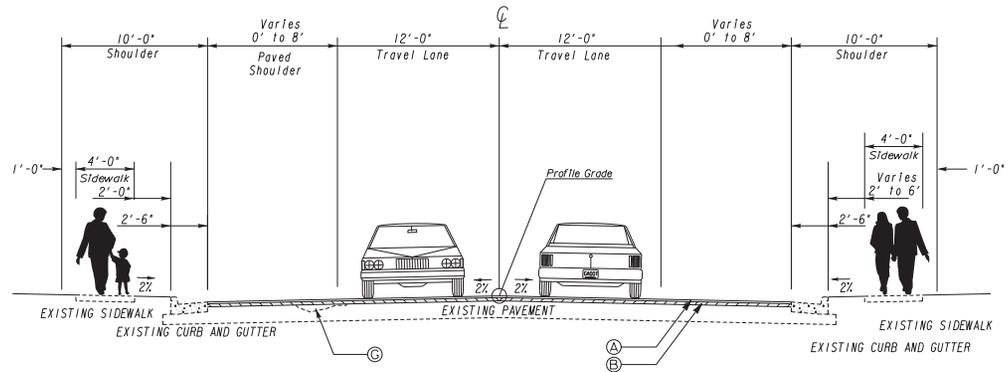
LEGEND	
PROPOSED LANDSCAPING	
PROPOSED CONCRETE	
PROPOSED ASPHALT	
RAISED CONCRETE ISLAND	
TRUCK APRON	
TRAFFIC FLOW ARROW	
REMOVE PAVEMENT	
PROPERTY AND EXISTING R/W LINE	
REQUIRED R/W LINE	
PERMANENT EASEMENT FOR CONSTR & MAINTENANCE OF SLOPES	
EASEMENT FOR CONSTR OF DRIVES	
DISPLACEMENT	



GEORGIA
DEPARTMENT
OF
TRANSPORTATION

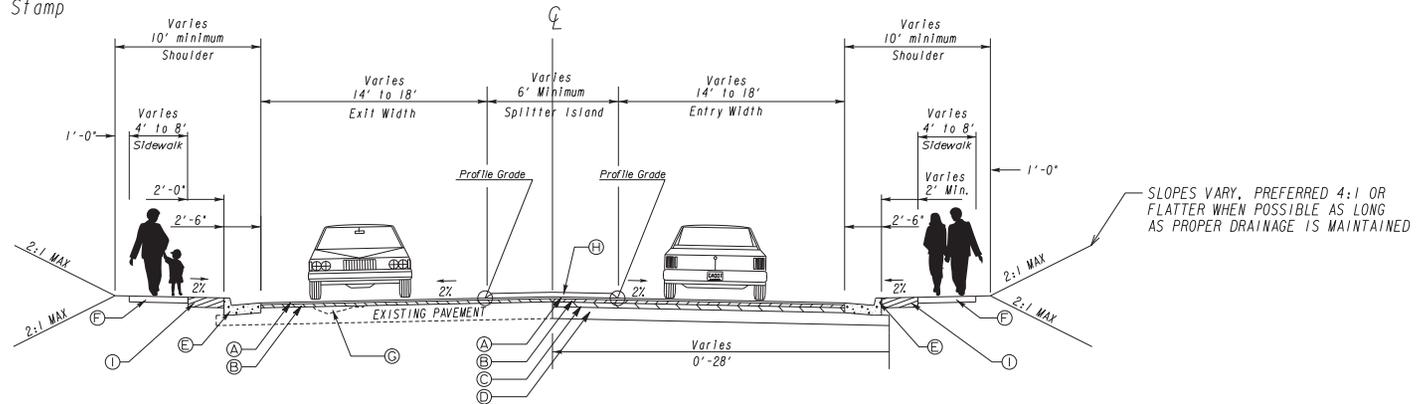
STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: DISTRICT 3
CONCEPT LAYOUT

ATTACHMENT 2 – TYPICAL SECTIONS



- A - 1.25" 9.5 mm Type II Superpave
- B - 2.00" 19 mm Superpave
- C - 3.00" 25 mm Superpave
- D - 12.00" Graded Aggregate Base
- E - Concrete Curb & Gutter, 8"x30"
- F - Concrete Sidewalk, 4"
- G - Rec. AC Leveling, incl. Bitum. Matl. & H Lime (as req'd)
- H - Concrete Splitter Island, 6"
- I - Concrete Sidewalk, 8" with Stamp & Red Color

SR 74/ SR 36/ E. MAIN ST. - ROUNDABOUT APPROACH

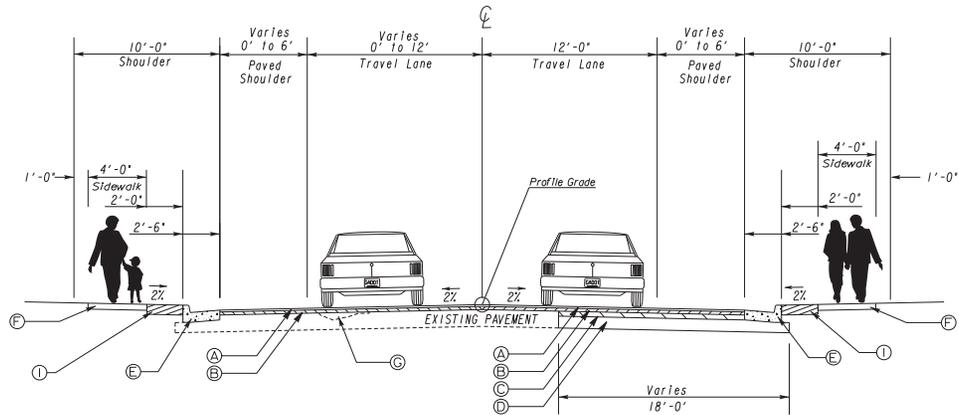


SR 74/ SR 36/ E. MAIN ST. - ROUNDABOUT ENTRANCE AND EXIT

GEORGIA
DEPARTMENT
OF
TRANSPORTATION

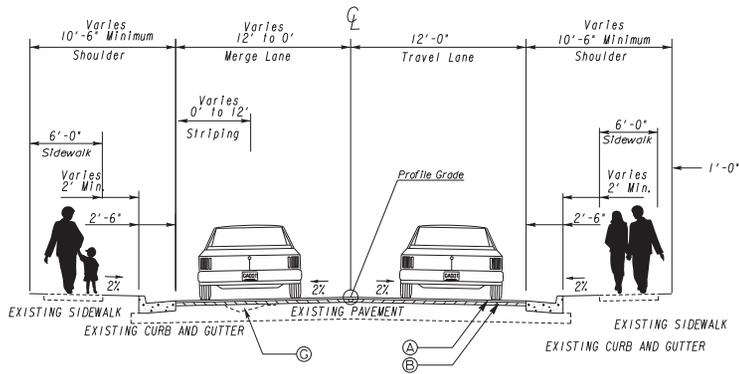
NOT TO SCALE

REVISION DATES	STATE OF GEORGIA DEPARTMENT OF TRANSPORTATION DISTRICT 3 TYPICAL SECTIONS
	SR 36 / SR 74 EASTSIDE
	DRAWING NO. 05-001



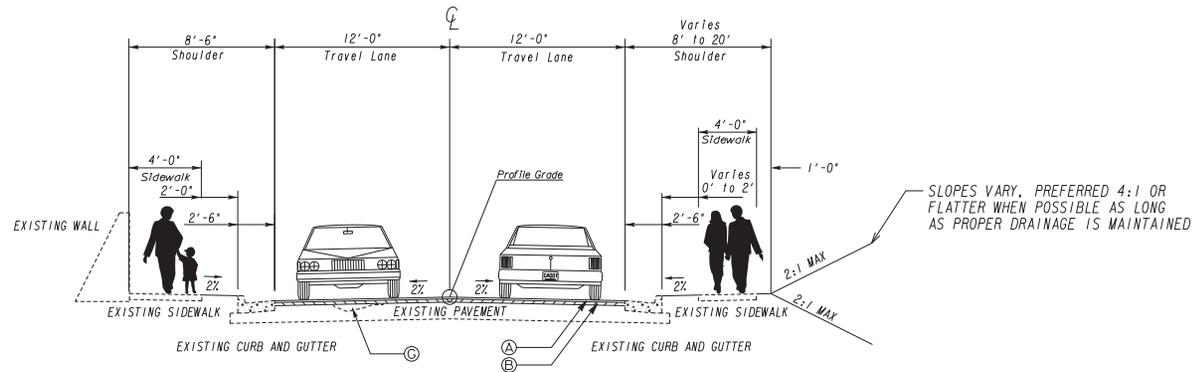
SR 74/ SR 36/ E. MAIN ST. - ONE-WAY ROUNDABOUT EXIT

- A - 1.25" 9.5 mm Type II Superpave
- B - 2.00" 19 mm Superpave
- C - 3.00" 25 mm Superpave
- D - 12.00" Graded Aggregate Base
- E - Concrete Curb & Gutter, 8"x30"
- F - Concrete Sidewalk, 4"
- G - Rec. AC Leveling, incl. Bitum. Matl. & H Lime (as req'd)
- H - Concrete Splitter Island, 6"
- I - Concrete Sidewalk, 8" with Stamp & Red Color



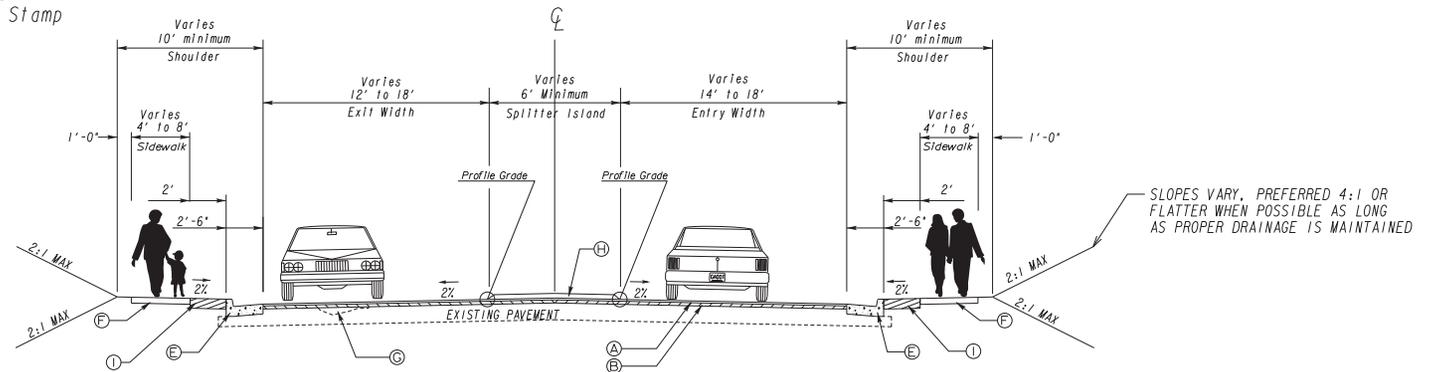
SR 74/ SR 36/ E. GORDON ST

REVISION DATES			STATE OF GEORGIA DEPARTMENT OF TRANSPORTATION	
			OFFICE:	
			TYPICAL SECTIONS	
			SR 36 / SR 74 EASTSIDE	
			DRAWING NO. 05-002	



- A - 1.25" 9.5 mm Type II Superpave
- B - 2.00" 19 mm Superpave
- C - 3.00" 25 mm Superpave
- D - 12.00" Graded Aggregate Base
- E - Concrete Curb & Gutter, 8"x30"
- F - Concrete Sidewalk, 4"
- G - Rec. AC Leveling, incl. Bitum. Matl. & H Lime (as req'd)
- H - Concrete Splitter Island, 6"
- I - Concrete Sidewalk, 8" with Stamp & Red Color

SR 74/ SR 36/ BETHEL ST. - ROUNDABOUT APPROACH



SR 74/ SR 36/ BETHEL ST. - ROUNDABOUT ENTRANCE AND EXIT

GEORGIA
DEPARTMENT
OF
TRANSPORTATION

NOT TO SCALE

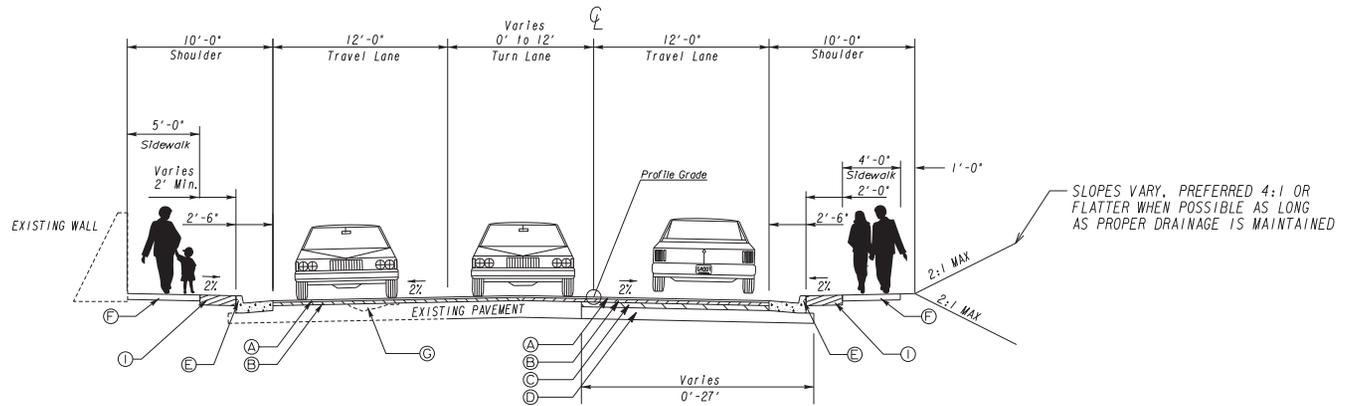
REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: DISTRICT 3
TYPICAL SECTIONS

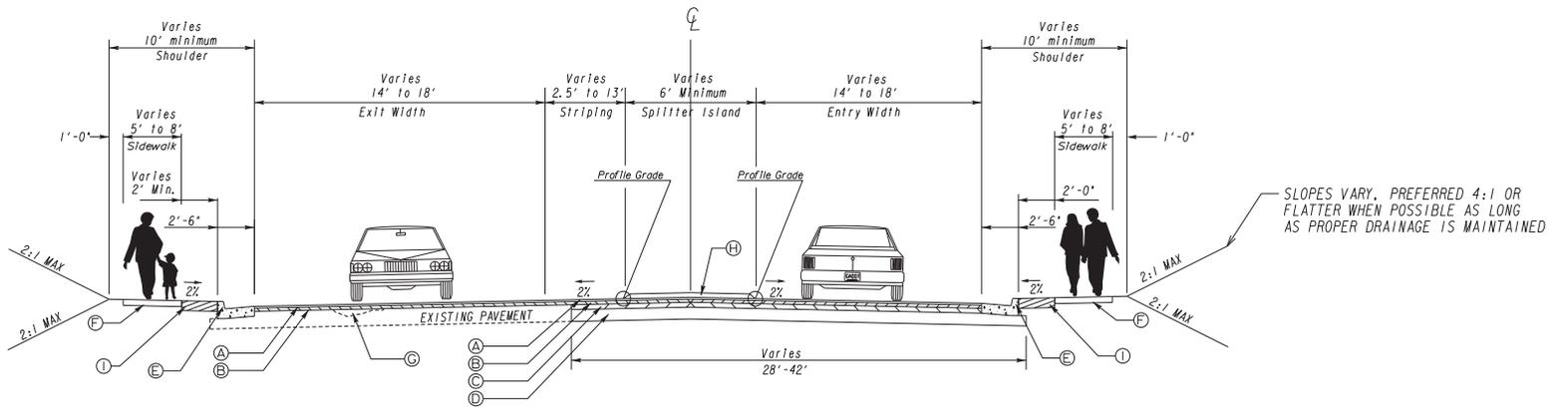
SR 36 / SR 74 EASTSIDE

DRAWING NO.
05-003

- A - 1.25" 9.5 mm Type II Superpave
- B - 2.00" 19 mm Superpave
- C - 3.00" 25 mm Superpave
- D - 12.00" Graded Aggregate Base
- E - Concrete Curb & Gutter, 8"x30"
- F - Concrete Sidewalk, 4"
- G - Rec. AC Leveling, incl. Bitum. Matl. & H Lime (as req'd)
- H - Concrete Splitter Island, 6"
- I - Concrete Sidewalk, 8" with Stamp & Red Color



SR 36/ BARNESVILLE HWY - ROUNDABOUT APPROACH



SR 36/ BARNESVILLE HWY - ROUNDABOUT ENTRANCE AND EXIT

GEORGIA
DEPARTMENT
OF
TRANSPORTATION

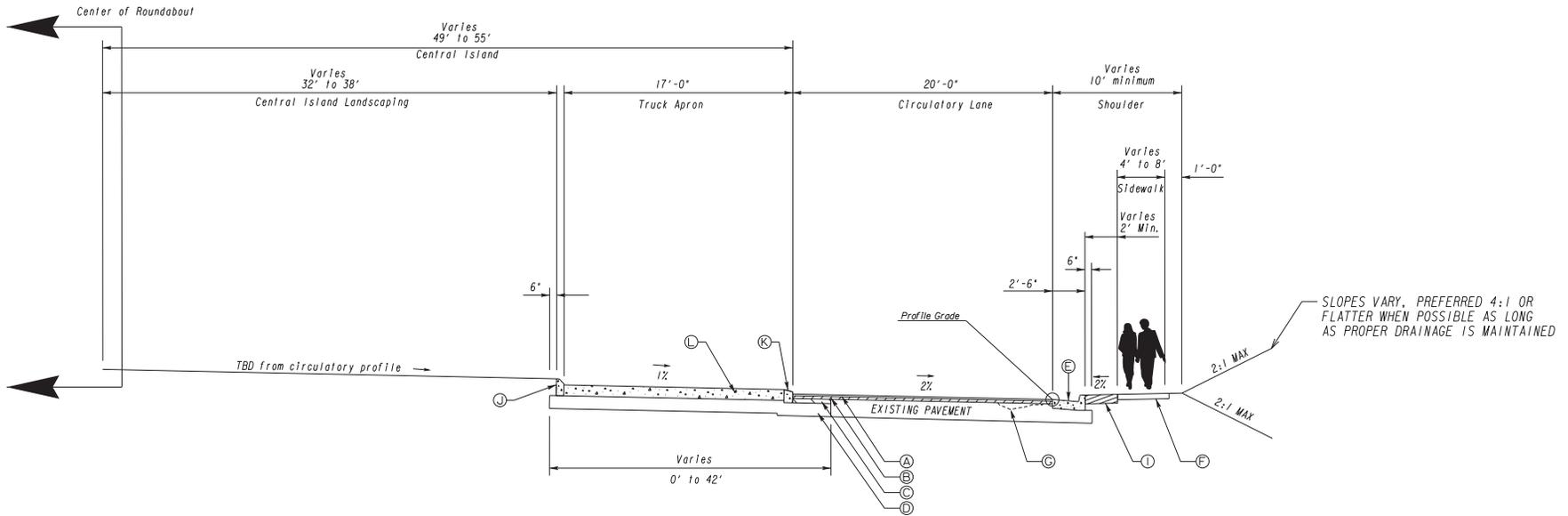
NOT TO SCALE

REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: DISTRICT 3
TYPICAL SECTIONS

SR 36 / SR 74 EASTSIDE

DRAWING NO.
05-004



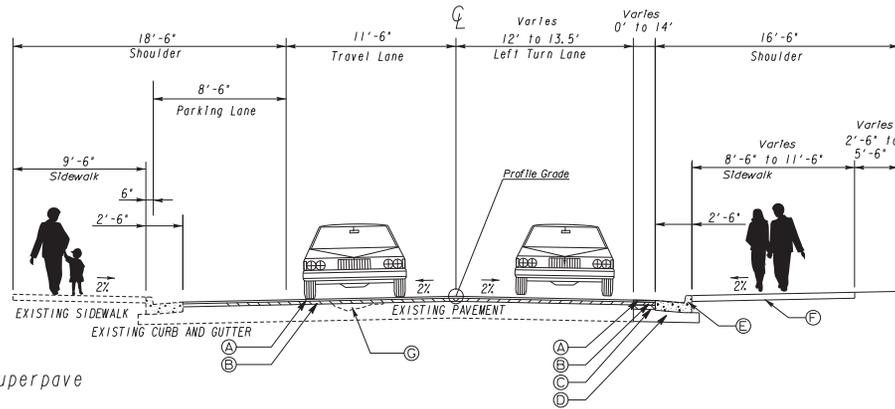
SR 74/ SR 36/ E. MAIN ST. - ROUNDABOUT CIRCULATORY SECTION

- A - 1.25" 9.5 mm Type II Superpave
- B - 2.00" 19 mm Superpave
- C - 3.00" 25 mm Superpave
- D - 12.00" Graded Aggregate Base
- E - Concrete Curb & Gutter, 8"x30"
- F - Concrete Sidewalk, 4"
- G - Rec. AC Leveling, incl. Bitum. Matl. & H Lime (as req'd)
- H - Concrete Splitter Island, 6"
- I - Concrete Sidewalk, 8" with Stamp & Red Color
- J - Concrete Header Curb, 6", Type 7
- K - Concrete Header Curb, 4", Type 9
- L - Plain PC Concrete Pavement, CL 1 Conc. 10", Stamp & Red Color Full Depth of Conc.

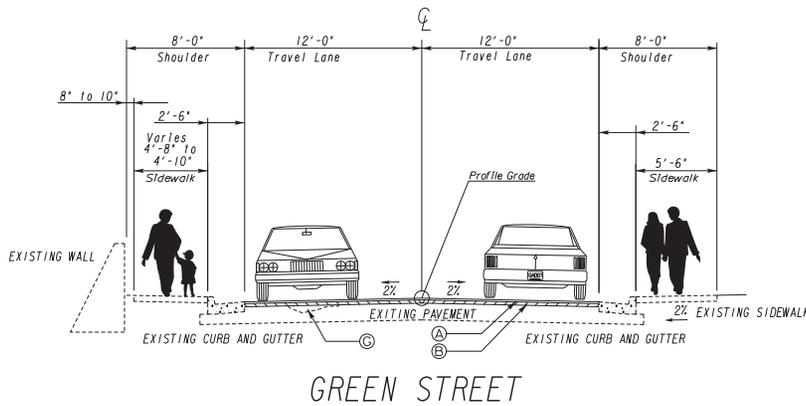
GEORGIA
DEPARTMENT
OF
TRANSPORTATION

NOT TO SCALE

REVISION DATES		STATE OF GEORGIA DEPARTMENT OF TRANSPORTATION	
		DISTRICT 3	
		OFFICE: TYPICAL SECTIONS	
		SR 36 / SR 74 EASTSIDE	
		DRAWING NO. 05-005	



- A - 1.25" 9.5 mm Type II Superpave
- B - 2.00" 19 mm Superpave
- C - 3.00" 25 mm Superpave
- D - 9.00" Graded Aggregate Base
- E - Concrete Curb & Gutter, 8"x30"
- F - Concrete Sidewalk, 4"
- G - Rec. AC Leveling, incl. Bitum. Matl. & H Lime (as req'd)



GEORGIA
DEPARTMENT
OF
TRANSPORTATION

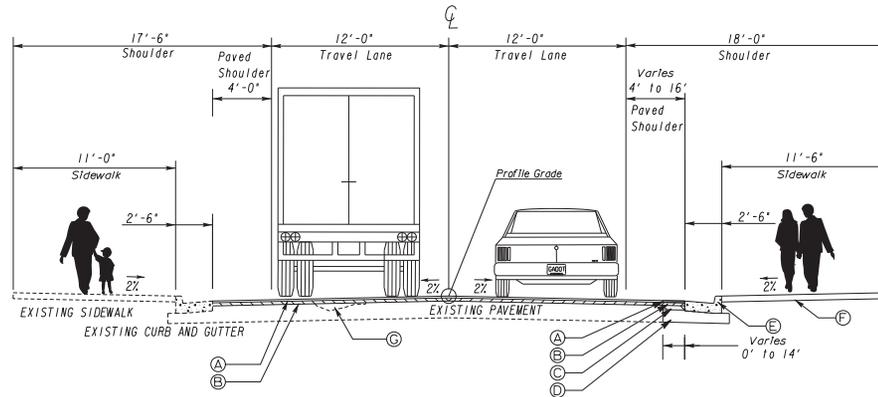
NOT TO SCALE

REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
DISTRICT 3
TYPICAL SECTIONS

SR 36 / SR 74 WESTSIDE

DRAWING NO.
05-006



- A - 1.25" 9.5 mm Type II Superpave
- B - 2.00" 19 mm Superpave
- C - 3.00" 25 mm Superpave
- D - 12.00" Graded Aggregate Base
- E - Concrete Curb & Gutter, 8"x30"
- F - Concrete Sidewalk, 4"
- G - Rec. AC Leveling, incl. Bitum. Matl. & H Lime (as req'd)

SR 74/ SR 36/ W. GORDON ST.

GEORGIA
DEPARTMENT
OF
TRANSPORTATION

NOT TO SCALE

REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: DISTRICT 3
TYPICAL SECTIONS

SR 36 / SR 74 WESTSIDE

DRAWING NO.
05-007

ATTACHMENT 3 – DETAILED COST ESTIMATES

JOB NUMBER: 0006967

FED/STATE PROJECT NUMBER:

SPEC YEAR: 01

DESCRIPTION: SR 74 EAST ONE-WAY PAIR IN THOMASTON

ITEMS FOR JOB 0006967

10 - ROADWAY

Line Number	ITEM	QUANTITY	UNITS	PRICE	DESCRIPTION	AMOUNT
0015	150-1000	1	LS	\$250,000.00	TRAFFIC CONTROL - CSSTP-0006-00(967)	\$250,000.00
0020	210-0100	1	LS	\$650,000.00	GRADING COMPLETE - CSSTP-0006-00(967)	\$650,000.00
0025	310-1101	1400	TN	\$18.00	GR AGGR BASE CRS, INCL MATL	\$25,200.00
0030	318-3000	1000	TN	\$21.00	AGGR SURF CRS	\$21,000.00
0035	402-1812	3500	TN	\$90.00	RECYL AC LEVELING,INC BM&HL	\$315,000.00
0650	402-3102	640	TN	\$82.24	REC AC 9.5 MM SP,TPII, BL 1 INCL BM & HL	\$52,633.60
0040	402-3121	260	TN	\$77.00	RECYL AC 25MM SP,GP1/2,BM&HL	\$20,020.00
0050	402-3190	1100	TN	\$75.00	RECYL AC 19 MM SP,GP 1 OR 2 ,INC BM&HL	\$82,500.00
0055	413-1000	6500	GL	\$3.00	BITUM TACK COAT	\$19,500.00
0065	430-0200	330	SY	\$95.00	PLN PC CONC PVMT/CL1C/ 10" TK	\$31,350.00
0070	432-5010	8200	SY	\$12.00	MILL ASPH CONC PVMT,VARB DEPTH	\$98,400.00
0655	441-0018	270	SY	\$51.45	DRIVEWAY CONCRETE, 8 IN TK	\$13,892.59
0080	441-0050	30	SY	\$68.84	CONC SLOPE DRAIN	\$2,065.08
0085	441-0104	2200	SY	\$38.00	CONC SIDEWALK, 4 IN	\$83,600.00
0090	441-0106	140	SY	\$42.00	CONC SIDEWALK, 6 IN	\$5,880.00
0095	441-0108	1100	SY	\$45.00	CONC SIDEWALK, 8 IN	\$49,500.00
0105	441-0748	230	SY	\$67.96	CONC MEDIAN, 6 IN	\$15,629.93
0110	441-4030	260	SY	\$53.37	CONC VALLEY GUTTER, 8 IN	\$13,875.18
0115	441-5002	480	LF	\$11.00	CONC HEADER CURB, 6", TP 2	\$5,280.00
0635	441-5008	230	LF	\$12.47	CONC HEADER CURB, 6 IN, TP 7	\$2,868.30
0690	441-5025	330	LF	\$14.95	CONC HEADER CURB, 4", TP 9	\$4,933.50
0130	441-6222	3500	LF	\$18.00	CONC CURB & GUTTER/ 8"X30"TP2	\$63,000.00
0135	446-1100	1700	LF	\$7.82	PVMT REF FAB STRIPS, TP2,18 INCH WIDTH	\$13,294.68
0150	500-3200	50	CY	\$355.00	CL B CONC	\$17,750.00
0160	500-9999	50	CY	\$225.07	CL B CONC,BASE OR PVMT WIDEN	\$11,253.42
0170	550-1180	330	LF	\$60.32	STM DR PIPE 18",H 1-10	\$19,903.96
0660	550-2180	190	LF	\$31.38	SIDE DR PIPE 18",H 1-10	\$5,962.89
0640	632-0003	5	EA	\$15,336.87	CHANGEABLE MESS SIGN,PORT,TP 3	\$76,684.37
0180	634-1200	10	EA	\$118.57	RIGHT OF WAY MARKERS	\$1,185.75
0185	643-8200	2000	LF	\$1.50	BARRIER FENCE (ORANGE), 4 FT	\$3,000.00
0190	668-1100	20	EA	\$2,616.76	CATCH BASIN, GP 1	\$52,335.16
0195	668-2100	15	EA	\$2,619.33	DROP INLET, GP 1	\$39,289.90
0200	668-2110	20	LF	\$185.00	DROP INLET, GP 1, ADDL DEPTH	\$3,700.00
0205	668-4300	10	EA	\$2,873.38	STORM SEW MANHOLE, TP 1	\$28,733.77
0210	668-4311	10	LF	\$250.00	ST SEW MANHOLE,TP 1,A DEP,CL 1	\$2,500.00
SUBTOTAL FOR ROADWAY:						\$2,101,722.08

20 - STRUCTURAL

Line Number	ITEM	QUANTITY	UNITS	PRICE	DESCRIPTION	AMOUNT
-------------	------	----------	-------	-------	-------------	--------

0215	500-3201	90	CY	\$505.00	CL B CONC, RET WALL	\$45,450.00
SUBTOTAL FOR STRUCTURAL:						\$45,450.00

30 - EROSION CONTROL

Line Number	ITEM	QUANTITY	UNITS	PRICE	DESCRIPTION	AMOUNT
0480	163-0232	4	AC	\$593.87	TEMPORARY GRASSING	\$2,375.47
0485	163-0240	100	TN	\$200.00	MULCH	\$20,000.00
0490	163-0300	4	EA	\$1,882.04	CONSTRUCTION EXIT	\$7,528.15
0510	163-0529	500	LF	\$4.00	CNST/REM TEMP SED BAR OR BLD STRW CK DM	\$2,000.00
0620	163-0550	16	EA	\$248.39	CONS & REM INLET SEDIMENT TRAP	\$3,974.20
0520	165-0010	500	LF	\$1.51	MAINT OF TEMP SILT FENCE, TP A	\$752.89
0525	165-0030	3850	LF	\$1.77	MAINT OF TEMP SILT FENCE, TP C	\$6,822.51
0535	165-0071	250	LF	\$1.00	MAINT OF SEDIMENT BARRIER - BALED STRAW	\$250.00
0545	165-0101	4	EA	\$608.13	MAINT OF CONST EXIT	\$2,432.53
0625	165-0105	16	EA	\$102.46	MAINT OF INLET SEDIMENT TRAP	\$1,639.36
0550	167-1000	4	EA	\$500.00	WATER QUALITY MONITORING AND SAMPLING	\$2,000.00
0555	167-1500	24	MO	\$500.00	WATER QUALITY INSPECTIONS	\$12,000.00
0560	171-0010	1000	LF	\$1.50	TEMPORARY SILT FENCE, TYPE A	\$1,500.00
0565	171-0030	7700	LF	\$3.00	TEMPORARY SILT FENCE, TYPE C	\$23,100.00
0570	603-2024	100	SY	\$42.00	STN DUMPED RIP RAP, TP 1, 24"	\$4,200.00
0575	603-2182	150	SY	\$40.00	STN DUMPED RIP RAP, TP 3, 24"	\$6,000.00
0580	603-7000	250	SY	\$3.50	PLASTIC FILTER FABRIC	\$875.00
0585	700-6910	8	AC	\$1,000.00	PERMANENT GRASSING	\$8,000.00
0590	700-7000	24	TN	\$65.00	AGRICULTURAL LIME	\$1,560.00
0595	700-8000	6	TN	\$450.00	FERTILIZER MIXED GRADE	\$2,700.00
0600	700-8100	400	LB	\$3.11	FERTILIZER NITROGEN CONTENT	\$1,242.64
0610	716-2000	3000	SY	\$1.24	EROSION CONTROL MATS, SLOPES	\$3,720.00
SUBTOTAL FOR EROSION CONTROL:						\$114,672.75

40 - SIGNING, MARKING, AND SIGNAL

Line Number	ITEM	QUANTITY	UNITS	PRICE	DESCRIPTION	AMOUNT
0225	500-3104	4	CY	\$949.74	CL A CONC, SIGNS	\$3,798.94
0665	615-1200	500	LF	\$19.81	DIRECTIONAL BORE - CSSTP-0006-00(967)	\$9,906.40
0245	636-1020	260	SF	\$16.35	HWY SGN,TP1MAT,REFL SH TP3	\$4,251.67
0250	636-1033	400	SF	\$19.82	HWY SIGNS, TP1MAT,REFL SH TP 9	\$7,928.94
0255	636-1072	570	SF	\$23.68	HWY SIGNS,ALUM EXTRD PNLS, RS TP 3	\$13,496.52
0260	636-2070	1000	LF	\$8.92	GALV STEEL POSTS, TP 7	\$8,924.07
0265	636-2090	300	LF	\$10.19	GALV STEEL POSTS, TP 9	\$3,056.06
0270	636-3000	3500	LB	\$3.29	GALV STEEL STR SHAPE POST	\$11,521.58
0275	636-9094	150	LF	\$75.67	P-IN-PL,SIGNS,STL H,HP 12 X 53	\$11,350.85
0670	639-2002	300	LF	\$3.50	STEEL WIRE STRAND CABLE, 3/8"	\$1,049.07
0675	639-4004	4	EA	\$5,356.71	STRAIN POLE, TP IV	\$21,426.83
0365	647-1000	1	LS	\$65,000.00	TRAF SIGNAL INSTALLATION NO - 1	\$65,000.00
0370	647-1000	1	LS	\$65,000.00	TRAF SIGNAL INSTALLATION NO - 2	\$65,000.00
0280	653-0110	12	EA	\$76.11	THERM PVMT MARK, ARROW, TP 1	\$913.34
0285	653-0120	4	EA	\$79.60	THERM PVMT MARK, ARROW, TP 2	\$318.38
0290	653-0130	4	EA	\$97.65	THERM PVMT MARK, ARROW, TP 3	\$390.58
0295	653-0210	2	EA	\$118.31	THERM PVMT MARK, WORD , TP 1	\$236.62
0300	653-1501	5100	LF	\$0.61	THERMO SOLID TRAF ST 5 IN, WHI	\$3,088.36
0305	653-1502	3400	LF	\$0.54	THERMO SOLID TRAF ST, 5 IN YEL	\$1,835.15
0680	653-1704	190	LF	\$4.50	THERM SOLID TRAF STRIPE,24",WH	\$854.15

0310	653-1804	2800	LF	\$2.25	THERM SOLID TRAF STRIPE, 8",WH	\$6,286.70
0315	653-3501	510	GLF	\$0.57	THERMO SKIP TRAF ST, 5 IN, WHI	\$288.70
0320	653-4830	120	GLF	\$2.00	THER SKIP TRAF ST, 18 IN, WHT	\$240.00
0325	653-6004	400	SY	\$3.69	THERM TRAF STRIPING, WHITE	\$1,476.80
0330	653-6006	1400	SY	\$3.34	THERM TRAF STRIPING, YELLOW	\$4,672.85
0335	654-1001	180	EA	\$4.15	RAISED PVMT MARKERS TP 1	\$746.27
SUBTOTAL FOR SIGNING, MARKING, AND SIGNAL:						\$248,058.83

50 - LIGHTING

Line Number	ITEM	QUANTITY	UNITS	PRICE	DESCRIPTION	AMOUNT
0405	681-4277	17	EA	\$3,000.00	LT STD, 25' MH, 6' ARM	\$51,000.00
0410	681-4300	4	EA	\$3,300.00	LT STD, 30' MH, 6' ARM	\$13,200.00
0415	681-6295	5	EA	\$750.00	LUMINAIRE, TP 3, 40 W, LED	\$3,750.00
0420	681-6310	2	EA	\$850.00	LUMINAIRE, TP 3, 90 W, LED	\$1,700.00
0425	681-6315	3	EA	\$1,100.00	LUMINAIRE, TP 3, 105 W, LED	\$3,300.00
0430	681-6316	2	EA	\$1,000.00	LUMINAIRE, TP 3, 130 W, LED	\$2,000.00
0435	681-6410	9	EA	\$850.00	LUMINAIRE, TP 4, 105 W, LED	\$7,650.00
0440	682-1504	10937	LF	\$1.00	CABLE, TP RHH/RHW, AWG NO 10	\$10,937.00
0445	682-6219	2600	LF	\$4.59	CONDUIT, NONMETL, TP 2, 1 IN	\$11,945.57
0450	682-9000	1	LS	\$7,800.00	MAIN SVC PICK UP POINT	\$7,800.00
SUBTOTAL FOR LIGHTING:						\$113,282.57

60 - LANDSCAPE

Line Number	ITEM	QUANTITY	UNITS	PRICE	DESCRIPTION	AMOUNT
0455	700-9300	1800	SY	\$6.76	SOD	\$12,175.09
0460	702-0212	3	EA	\$400.00	CRATAEGUS VIRIDIS - 3 IN CALIPER	\$1,200.00
0465	702-0470	300	EA	\$22.59	ILEX VOMITORIA NANA - 3 GAL	\$6,776.73
0470	702-9005	1400	LB	\$1.25	SPRING APPLICATION FERTILIZER	\$1,754.03
0475	702-9025	8600	SY	\$2.50	LANDSCAPE MULCH	\$21,500.00
SUBTOTAL FOR LANDSCAPE:						\$43,405.85

TOTALS FOR JOB 0006967

ITEMS COST:	\$2,666,592.08
ESTIMATED COST:	\$2,666,592.08
CONTINGENCY PERCENT:	\$133,329.60
ENGINEERING AND INSPECTION:	\$133,329.60
ESTIMATED COST WITH CONTINGENCY AND E&I:	\$2,933,251.29
LIQUID AC ADJUSTMENT COST:	\$84,695.92
TOTAL COST:	\$3,017,947.21

PROJ. NO. CSSTP-0006-00(967)
P.I. NO. 0006967
DATE 6/22/2015

CALL NO.

INDEX (TYPE)	DATE	INDEX
REG. UNLEADED	Jun-15	\$ 2.681
DIESEL		\$ 2.867
LIQUID AC		\$ 466.00

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)				76890	\$	76,890.00
Monthly Asphalt Cement Price month placed (APM)	Max. Cap	60%	\$	745.60		
Monthly Asphalt Cement Price month project let (APL)			\$	466.00		
Total Monthly Tonnage of asphalt cement (TMT)				275		

ASPHALT	Tons	%AC	AC ton
Leveling	3500	5.0%	175
12.5 OGFC		5.0%	0
12.5 mm		5.0%	0
9.5 mm SP	640	5.0%	32
25 mm SP	260	5.0%	13
19 mm SP	1100	5.0%	55
	5500		275

BITUMINOUS TACK COAT

Price Adjustment (PA)			\$	7,805.92	\$	7,805.92
Monthly Asphalt Cement Price month placed (APM)	Max. Cap	60%	\$	745.60		
Monthly Asphalt Cement Price month project let (APL)			\$	466.00		
Total Monthly Tonnage of asphalt cement (TMT)				27.91815599		

Bitum Tack

Gals	gals/ton	tons
6500	232.8234	27.918156

BITUMINOUS TACK COAT (surface treatment)

Price Adjustment (PA)			\$	0	\$	-
Monthly Asphalt Cement Price month placed (APM)	Max. Cap	60%	\$	745.60		
Monthly Asphalt Cement Price month project let (APL)			\$	466.00		
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

TOTAL LIQUID AC ADJUSTMENT \$ 84,695.92

GEORGIA DEPARTMENT OF TRANSPORTATION
PRELIMINARY ROW COST ESTIMATE SUMMARY

Date: 7/31/2015 Project: Upson
 Revised: County: Upson
 PI: 0006967

Description: SR 74 East One Way Pair in Thomaston
 Project Termini: SR 74 East One Way Pair in Thomaston

Existing ROW: Varies
 Required ROW: Varies
 Parcels: 30

Land and Improvements _____ \$603,750.00

Proximity Damage	\$25,000.00
Consequential Damage	\$150,000.00
Cost to Cures	\$50,000.00
Trade Fixtures	\$0.00
Improvements	\$150,000.00

Valuation Services _____ \$112,500.00

Legal Services _____ \$207,750.00

Relocation _____ \$60,000.00

Demolition _____ \$0.00

Administrative _____ \$275,000.00

TOTAL ESTIMATED COSTS _____ \$1,259,000.00

TOTAL ESTIMATED COSTS (ROUNDED) _____ \$1,259,000.00

Preparation Credits	Hours	Signature

Prepared By: Dashone Alexander CG#: 286999 07/31/2015 (DATE)
 Approved By: Dashone Alexander CG#: 286999 07/31/2015 (DATE)

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

Georgia Department of Transportation
Preliminary ROW Cost Estimate Worksheet

Project/County/PI Upson Upson 0006967

	A	B	C	D
Land and Improvements	Agriculture	Residential	Commercial	Industrial
1 Estimate Low (ac)	\$0.00	\$0.00	\$0.00	\$0.00
2 Estimate High (ac)	\$0.00	\$0.00	\$0.00	\$0.00
3 Estimate Used (ac)	\$20,000.00	\$35,000.00	\$225,000.00	\$0.00
4 Fee Simple Area (ac)	0.00	1.50	0.00	0.00
5 Fee Simple Estimate	\$0.00	\$52,500.00	\$0.00	\$0.00
6 Perm Esmt Area (ac)	0.00	0.00	0.00	0.00
7 Perm Esmt Factor	0%	0%	0%	0%
8 Perm Esmt Estimate	\$0.00	\$0.00	\$0.00	\$0.00
9 Temp Esmt Area (ac)	0.00	0.00	0.00	0.00
10 Temp East Factor	0%	0%	0%	0%
11 Temp Esmt Estimate	\$0.00	\$0.00	\$0.00	\$0.00
12 Proximity Damages	\$0.00	\$25,000.00	\$0.00	\$0.00
13 Consequential Damages	\$0.00	\$150,000.00	\$0.00	\$0.00
14 Cost to Cures	\$0.00	\$50,000.00	\$0.00	\$0.00
15 Improvements	\$0.00	\$150,000.00	\$0.00	\$0.00
16 Trade Fixtures	\$0.00	\$0.00	\$0.00	\$0.00
17				
18 PROPERTY TYPE TOTALS	\$0.00	\$402,500.00	\$0.00	\$0.00
19	SUB TOTAL PROPERTY TYPES			\$402,500.00
20	Counter Offers and Condemnation Increases			\$201,250.00
21				
22	GRAND TOTAL LANDS AND IMPROVEMENTS			\$603,750.00

Georgia Department of Transportation
Preliminary ROW Cost Estimate Worksheet

Project/County/PI Upson Upson 0006967

	A	B	C	D
Valuation Services	Agriculture	Residential	Commercial	Industrial
1 Appraisals (# of Parcels)	0	30	0	0
2 Estimated Fees (per Parcel)	\$0.00	\$3,000.00	\$0.00	\$0.00
3 TOTAL APPRAISALS	\$0.00	\$90,000.00	\$0.00	\$0.00
4 Sign Estimates	0	0	0	0
5 Estimated Fees	\$0.00	\$0.00	\$0.00	\$0.00
6 TOTAL SIGN ESTIMATES	\$0.00	\$0.00	\$0.00	\$0.00
7 Specialty Reports	0	0	0	0
8 Estimated Fees	\$0.00	\$0.00	\$0.00	\$0.00
9 TOTAL SPECIALTY REPORTS	\$0.00	\$0.00	\$0.00	\$0.00
10 Septic/Well Reports	0	0	0	0
11 Estimated Fees	\$0.00	\$0.00	\$0.00	\$0.00
12 TOTAL SEPTIC/WELL REPORTS	\$0.00	\$0.00	\$0.00	\$0.00
13				
14				
15				
16 TOTAL VALUATION FEES	\$0.00	\$90,000.00	\$0.00	\$0.00
17	SUB TOTAL VALUATION SERVICES			\$90,000.00
18	Updates and Incidentals (Min \$2,500 or 25%)			\$22,500.00
19	GRAND TOTAL VALUATION SERVICES			\$112,500.00

Georgia Department of Transportation
Preliminary ROW Cost Estimate Worksheet

Project/County/PI Upson Upson 0006967

	A	B	C	D
	Parcels	Estimated Fees		TOTALS
1	Meeting with Attorney	30	\$125.00	\$3,750.00
2	Preliminary Titles	30	\$200.00	\$6,000.00
3	Closing and Final Title	30	\$300.00	\$9,000.00
4	Recording Fees	30	\$50.00	\$1,500.00
5	Condemnation Filing	5	\$5,000.00	\$25,000.00
6	Litigation Costs	5	\$25,000.00	\$125,000.00
7	Updates and Incidentals	5	\$7,500.00	\$37,500.00
8				
9				
10				
11				
12				
13				
14				
15				
16				
17	GRAND TOTAL LEGAL SERVICES			\$207,750.00

Georgia Department of Transportation
Preliminary ROW Cost Estimate Worksheet

Project/County/PI Upson Upson 0006967

	A	B	C	D
Relocation	Displacements	Estimated Costs		TOTALS
1 Business Displacement	0	\$15,000.00		\$0.00
2 Residential Tenant		\$20,000.00		\$0.00
3 Residential Owner	0	\$40,000.00		\$0.00
4 Pro-Rata Taxes	30	\$1,000.00		\$30,000.00
5 Property Pin Replacement	30	\$1,000.00		\$30,000.00
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17	GRAND TOTAL RELOCATION			\$60,000.00

Georgia Department of Transportation
Preliminary ROW Cost Estimate Worksheet

Project/County/PI Upson Upson 0006967

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

Georgia Department of Transportation
Preliminary ROW Cost Estimate Worksheet

Project/County/PI Upson Upson 0006967

	A	B	C	D
	Parcels	Man hours per Parcel		TOTALS
1	Pre-Acquisition	30	40	\$60,000.00
2	Acquisition	30	100	\$150,000.00
3	Relocation	8	50	\$20,000.00
4	Administrative Appeals	8	50	\$20,000.00
5	Post-Acquisition	5	100	\$25,000.00
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17	GRAND TOTAL INHOUSE			\$275,000.00

**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA**

INTERDEPARTMENT CORRESPONDENCE

FILE **CSSTP-0006-00(967), Upson County, P.I. # 00006967** OFFICE Thomaston
SR 74 East One-Way Pair in Thomaston
DATE February 27, 2015

FROM Kerry Gore, District Utilities Engineer

TO Sue Anne Decker, Project Manager

SUBJECT **PRELIMINARY UTILITY COST (ESTIMATE)**

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

<u>FACILITY OWNER</u>	<u>NON-REIMBURSABLE</u>	<u>REIMBURSABLE</u>
Atlanta Gas Light	210,000	
Charter Communications	63,000	
City of Thomaston Electric	900,000	45,000
City of Thomaston Water/Wastewater	367,500	
Windstream	315,000	
TOTALS	\$ 1,855,500	\$ 45,000

Total Preliminary Utility Cost Estimate **1,900,500**.

If you have any questions, please contact Tyler Peek at 706-646-7605.

KG/TP

cc: Mike Bolden, State Utilities Engineer (*via: e-mail*)
Angela Robinson, Office of Financial Management (*via: e-mail*)
Mike Williams, Area Engineer (*via: e-mail*)

ATTACHMENT 4 – ROUNDABOUT FEASIBILITY STUDY



Roundabout Feasibility Study



PI#: 0006967

SR 74 East (One-Way Pair) at
SR 36, Main St & N Bethel St
Upson County, GA

Author: Andrew Duerr, PE

Reviewed by: Mark Lenters, PE

September 2014

Executive summary

The proposed project (PI# 0006967) is intended to improve the operational efficiency and safety of the SR 74 East (One-Way Pair) /SR 36/Main Street/N Bethel Street intersection in Thomaston, Upson County. The purpose of this study was to determine the feasibility of roundabout alternatives at the intersection and to identify a preferred roundabout alternative.

Roundabouts have been identified as one of nine proven countermeasures by the Federal Highway Administration (FHWA). The installation of roundabouts in comparison to traditional safety countermeasures such as traffic signals has resulted in a reduction in crash frequency and in many instances superior operational efficiency. Roundabouts are generally navigated at slower speeds which correlates with fewer and less severe crashes. Roundabouts also present fewer conflict points than traditional intersections, generally resulting in fewer collisions.

GHD generated four concepts for review by District 3 staff. After receiving comments from the District, GHD explored variations of the original concepts as necessary to address the comments. The revised options considered in this report include the following:

- Option 1: 5-leg roundabout;
- Option 2: 4-leg roundabout (maintain Bethel Street);
- Option 3: 4-leg roundabout (maintain Barnesville Hwy); and
- Option 4: 4-leg roundabout (maintain Barnesville Hwy with Thompson Street realignment).

The selected improvements must operate at a LOS C during the 2039 design year in accordance with GDOT policy for the intersection context and roadway classifications. The quantitative and qualitative criteria used to compare the various alternatives included:

- Street grid connectivity;
- Construction (cost and complexity);
- Mobility (level of service);
- Safety;
- Truck accommodation;
- Property access & business impacts, and
- Pedestrian accessibility.

Through a deliberative evaluation process, the design team has determined that Option 4 is the preferred alternative. Option 4 is a four-leg alternative that maintains connectivity with SR 36 (Barnesville Highway) and provides for a minor relocation of E. Thompson Street.

Table of contents

1.	Introduction.....	1
1.1	Background.....	1
1.2	Location & Context.....	1
1.3	Traffic Volumes	3
1.4	Needs Statement	3
1.5	Signal Warrant Analysis.....	3
2.	Operational Analyses	4
2.1	Analysis Inputs.....	4
2.2	Roundabout Analyses.....	4
3.	Concept Development.....	5
4.	Safety Assessment	6
5.	Summary Evaluation/Recommendations.....	7
5.1	Criteria Definitions and Details	7
5.2	Conclusion & Recommendations.....	9

Table index

Table 1	2039 Roundabout Capacity Analysis – Option 1 (Five Leg Roundabout).....	4
Table 2	Roundabout Geometric Overview.....	5
Table 3	Collision History	6
Table 4	Crash Modification Factors by Countermeasure	6
Table 5	Comparison of Alternative Roundabout Concepts	8

Figure index

Figure 1	Location Map	2
----------	--------------------	---

Appendices

- Appendix A – Traffic Volume Data
- Appendix B – Signal Warrant Analysis
- Appendix C – Roundabout Analyses
- Appendix D – Concept Plans & Documentation
- Appendix E – Crash Data & CMFs

1. Introduction

1.1 Background

At the request of GDOT District 3 and McGee Partners, Inc., GHD completed a feasibility study to compare the operational and safety performance of roundabout alternatives for the intersection of SR 74 East (One-Way Pair) and SR 36 (Barnesville Highway, Main St & N Bethel St in the City of Thomaston, Upson County (PI# 0006967).

GHD began by generating four concepts for review by District 3 staff. After receiving comments from the District, GHD explored variations of the original concepts as necessary to address the comments. The revised options considered in this report include the following:

- Option 1: 5-leg roundabout;
- Option 2: 4-leg roundabout (maintain Bethel Street);
- Option 3: 4-leg roundabout (maintain Barnesville Hwy); and
- Option 4: 4-leg roundabout (maintain Barnesville Hwy with Thompson Street realignment).

The proposed project is intended to enhance safety and improve operational efficiency at the intersection. The purpose of this study was to determine the feasibility of roundabout alternatives at the intersection and to identify a preferred roundabout alternative. The quantitative and criteria used to compare the various alternatives included the following:

- Street grid connectivity;
- Construction (cost and complexity);
- Mobility (level of service);
- Safety;
- Truck accommodation;
- Property access & business impacts; and
- Pedestrian accessibility.

1.2 Location & Context

The project is located at the 5-leg junction of the SR 74 one-way pair, SR 36 (Barnesville Highway), and a local road, Bethel Street. The intersection is depicted in the location map on Page 2. SR 74 is two-way east of the intersection and one-way (on Main Street) west of the intersection. The intersection currently operates as All-Way Stop Control .

During the project kick-off meeting, the District noted a number of project constraints and provided additional information regarding the roadway context.

1.2.1 Project constraints

- The northeast quadrant of the five-point intersection, Barnesville Highway, is mostly vacant.
- The Dollar General (northwest quadrant) has parking near the right-of-way and the site was recently renovated. All the roundabout alternatives are likely to impact parking. A site plan

provided more recently by Jim Hoskins shows accesses on three sides: east, south and north.

- The southeast quadrant, east of Bethel Street, is to be avoided. The southwest corner is not as constrained. Vertical grade constraints also exist on those corners. If a roundabout is placed, the grade control will be dominated by the south side of the circle.

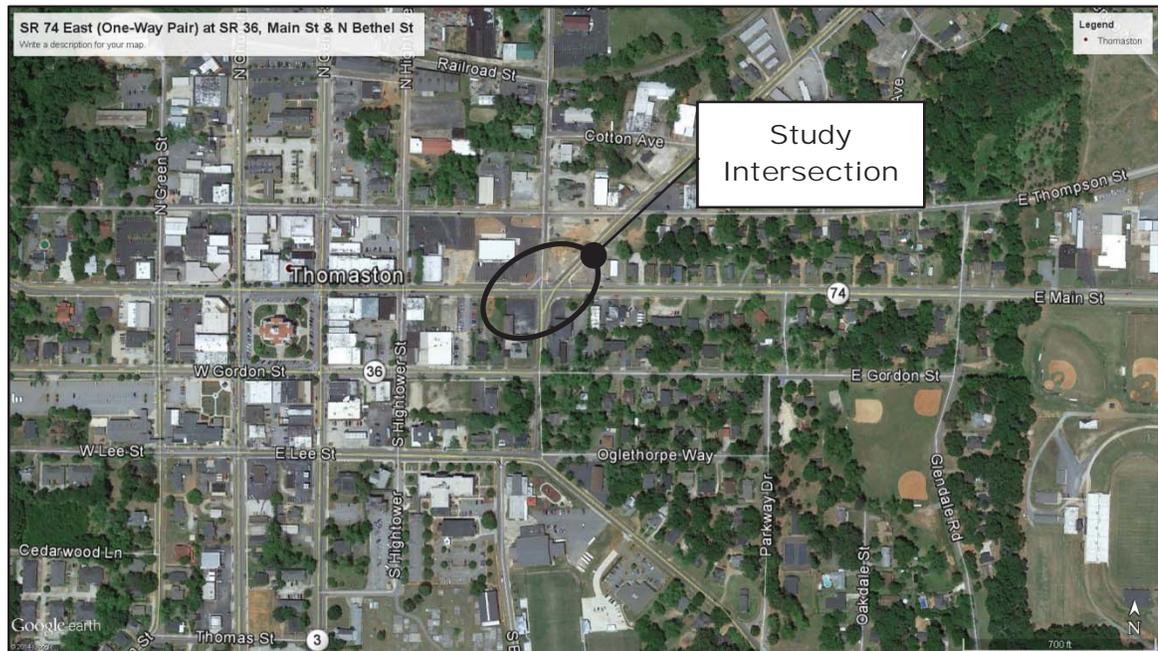


Figure 1 Location Map

1.2.2 Roadway grades

Grades at the five-points intersection from a recent survey:

- SR 74 / West Main Street – 4%
- SR 36 / Barnesville Highway – 4.3%
- North Bethel Street / CS 006005 – 1.3%
- SR 36 West / SR 74 West / East Main Street – 4.3 %
- SR 36 / Bethel Street – 1.8 %

1.2.3 Posted speeds & Functional classification

Posted speeds at the five-points intersection:

- SR 74 / West Main Street – 45 MPH – Urban Principal Arterial
- SR 36 / Barnesville Highway – 35 MPH – Urban Principal Arterial
- North Bethel Street – 30 MPH – Urban Minor Arterial
- SR 36 West / SR 74 West / East Main Street – 35 MPH (exit lane only) – Urban Principal Arterial
- SR 36 / Bethel Street – 35 MPH – Urban Principal Arterial

Approach speeds to the Gordon Street and Bethel Street intersection are as follows:

- SR 36 / Bethel Street – 35 MPH (Exit lane only) – Urban Principal Arterial
- SR 36 / East Gordon Street – 35 MPH – Urban Principal Arterial
- East Gordon Street – 25 MPH – Urban Local
- Bethel Street – 30 MPH – Urban Minor Arterial

1.2.4 Design vehicles

The Design Vehicle is a WB-67 tractor trailer. Although OSOW Permit Office records were provided to GHD, vehicle specific details are still needed to develop swept paths.

1.3 Traffic Volumes

GDOT's Office of Planning provided ADTs and design hourly volumes (DHV) for the existing year (2013), the opening year (2019), and the design year (2039) for build and no-build conditions. The traffic volumes are included in Appendix A. Given the urban nature of the proposed intersection, GHD assumed a peak hour factor of 0.92 (all movements) for analysis purposes.

1.4 Needs Statement

The proposed project is intended to improve operational efficiency and safety at the project intersection. The intersection currently experiences congestion during peak periods and crash data collected from the years 2009-2013 indicates that 18 crashes occurred at this intersection resulting in 15 total injuries.

In Georgia, nearly a third of fatal crashes occur at intersections making intersection safety a focus area for the Georgia Department of Transportation. Nationally intersection crashes account for 40% of all reported crashes and approximately 20% of traffic fatalities. Of those fatalities, nearly 50% are the result of angle collisions. Angle collisions are often high speed, high impact crashes which often result in serious injuries or fatalities.

1.5 Signal Warrant Analysis

A signal warrant analysis was completed by District 3 on September 10, 2014. The results of the analysis suggest that none of the MUTCD signal warrants are satisfied at this intersection. The Signal Warrant Analysis is attached in Appendix B.

2. Operational Analyses

GHD performed analyses of the five-leg roundabout option (Option 1) for the opening and design years. Several four-leg options exist, but forecasts were not prepared for the purpose of operational analysis. However, the five-leg analysis shows such good level of service that the four-leg roundabout configurations can be expected to be equally satisfactory.

2.1 Analysis Inputs

Roundabout analyses were completed in accordance with Chapter 8, Section 8.2.2 of the GDOT Design Policy Manual (DPM). Roundabouts were analyzed with GDOT's Roundabout Analysis Tool v. 2.1 and the ARCADY roundabout capacity model in Junctions 8 software. In order to account for lower capacities experienced in the US compared to the UK, a 10% capacity reduction was utilized for the 2035 peak hour volumes in the ARCADY analysis.

The Levels of Service discussed herein are based on the 2010 Highway Capacity Manual for unsignalized intersections. Queues listed represent the 95th percentile queue per lane assuming average vehicle lengths of 25 feet. Delay is presented in seconds.

2.2 Roundabout Analyses

The results of the roundabout analyses are summarized in Table 1 for the AM and PM peak periods during the design (2039) year. Detailed reports are included in Appendix C. The approach LOS, volume-to-capacity (v/c) ratio, 95th percentile queue length (back-of-queue, in feet), and average delay per vehicle (in seconds) is reported for each leg of the roundabout. A v/c ratio of 0.85 is generally considered to be the threshold for acceptable roundabout operations.

As the data in Table 1 indicates, a single lane roundabout is expected to operate well below capacity (maximum v/c ratio 0.61) through the design (2039) year.

Table 1 2039 Roundabout Capacity Analysis – Option 1 (Five Leg Roundabout)

		SB Bethel St	SB SR 36 (Barnesville Hwy)	WB SR 74 (E Main St.)	NB SR 36 (Bethel St.)	Exit Only (Exit to WB Main St)	
GDOT Tool (Calibrated)	AM Peak	LOS	A	A	B	A	--
		v/c	0.18	0.40	0.49	0.55	--
		Queue	17	50	72	90	--
	PM Peak	Delay	7.0	9.0	10.0	9.0	--
		LOS	A	A	A	A	--
		v/c	0.26	0.37	0.44	0.55	--
ARCADY	AM Peak	Queue	27	44	59	91	--
		Delay	8.0	8.0	9.0	9.0	--
		LOS	A	A	A	A	--
	PM Peak	v/c	0.18	0.41	0.51	0.61	--
		Queue	1.00	1.00	1.00	1.00	--
		Delay	6.66	7.32	8.85	8.85	--
	PM Peak	LOS	A	A	A	A	--
		v/c	0.26	0.38	0.46	0.61	--
		Queue	1.00	1.00	1.00	1.00	--
	Delay	7.03	7.18	7.75	8.94	--	

3. Concept Development

GHD developed detailed concepts for Options 1 and 4 and schematic level sketches for Options 2 and 3. The concept and schematic sketches are included in Appendix D.

The roundabouts were sized and located to balance a number of competing goals. First, offset left approach geometry was implemented to reinforce speed reduction on the approaches to enhance pedestrian safety. Second, the approaches were adjusted as necessary to accommodate WB-67 turning movements. And third, the roundabout was shifted north and east to the extent possible to minimize impacts to the parcels in the northwest and southeast quadrants. A number of key design elements are listed in Table 2 below.

Table 2 Roundabout Geometric Overview

	GDOT Guidance ¹	NCHRP 672 Guidance ²	Design Goal
Roundabout Classification	Urban	Urban	Urban
Entry Lanes per Approach	1 ³	1	1
Design Speed (entry)	-	25 mph (max.)	25 mph (max.)
Design Vehicle – Turning Movements	WB-67	WB-50/WB-67	WB-67
Design Vehicle – Circulatory Roadway	Bus-40/SU	Bus/SU	Bus-40/SU
Inscribed Circle Diameter	-	130 -180 ft.	136 -150 ft.
Entry Lane Widths (EW)	-	15-20 ft.	18 ft. ⁴
Truck Apron Width	-	3-15 ft. ⁴	17 ft. ⁴
Circulatory Roadway Width	-	1.0-1.2 x EW ⁴	20 ft. ⁴
Splitter Island Lengths	50 ft.	50 ft. (min.)	50 ft. ⁵
Normal Cross Slope	2%	2% 2%	
Truck Apron Cross Slope	-	1-2%	1-2%
Maximum Approach Grade	-	3-4% (desirable)	Match existing
Minimum Sidewalk Set Back Distance	2' (min.) 6' (preferred)	2' (min.)	2' (min.)

1. Sources: GDOT Design Policy Manual, Chapters 8 & 9
2. Source: NCHRP 672
3. Lane configuration verified with GDOT's Roundabout Analysis Tool v 2.1 and ARCADY
4. Entry, Circulatory Roadway and Truck Apron widths are dependent on selected design vehicles and speed consistency analyses. OSOW considerations may also play a role in determining final dimensions.
5. The splitter islands developed for the concepts were generally 50 feet (minimum) in length. However, for Option 1, the splitter island on the southbound Bethel Street approach was reduced due to site constraints.

4. Safety Assessment

GDOT collected collision data for the study intersection for the time period between 2009 and 2013. A summary of the collision history is provided in Table 3 and the supporting documentation is provided in Appendix E. The types of crashes were not known and crash diagrams were not available at the time of this writing. The crash data indicates that 18 crashes occurred at this intersection resulting in 15 total injuries.

Table 3 Collision History

	2009	2010	2011	2012	2013
Total crashes	9	1	0	2	6
Total injuries	8	2	0	1	4

GHD reviewed the [Crash Modification Factors Clearinghouse](#) website to obtain the most current and applicable crash modification factors (CMFs) for the various alternatives and the site characteristics. The clearinghouse is a Web-based database providing CMFs and supporting documentation to assist transportation engineers in identifying the most appropriate countermeasures for safety needs. A CMF is a multiplicative factor used to compute the expected number of crashes after implementing a given countermeasure at a specific site. A summary of the CMF's for each countermeasure is provided in Table 4 below. Details for each CMF ID are included in Appendix E.

Table 4 Crash Modification Factors by Countermeasure

CMF ID (Year)	Description	CMF (CRF)	Crash Type	Crash Severity
4932 (2013)	Convert all-way, stop-controlled intersection to roundabout	1.114 (-11.36)	All	All
4933 (2013)		0.544 (45.6)	All	Fatal & Injury

The CMFs provided above suggest a mixed safety experience when converting all-way stop controlled intersections to roundabouts. Although the total number of crashes is likely to increase 12% after the conversion, the number of severe (fatal, severe injury, and minor injury) crashes is expected to be cut by nearly 46%. It is also reasonable to expect the 4-leg options to provide better crash reduction than the 5-leg option because there will be fewer conflict points at the intersection with the 4-leg options.

5. Summary Evaluation/Recommendations

During a progress meeting held on June 5, 2014, the design team conducted a trial evaluation of a methodology to assess performance criteria and to determine the feasibility of potential options. At the beginning of the meeting, the design team agreed on a set of evaluation criteria and assigned a weight to each criteria for the purpose of ranking the options. The various performance criteria are listed below and an evaluation matrix is provided in **Table 5** on the following page.

5.1 Criteria Definitions and Details

Street Grid Connectivity

- Route connectivity and continuity
- Minimize traffic diversions onto local road network
- EMS accessibility
- Way-finding

Construction (Cost and Complexity)

- Staging complexity
- Cost of construction

Mobility

- Minimizes congestion
- Integrates multi-modal

Safety

- Minimize conflict points
- Minimal conflict points
- Enhanced roadway lighting
- Reduce intersection deficiencies
- Decrease levels of enforcement (Sustainable Safety)

Truck Accommodation

- Route connectivity
- Turning path demands

Property Access / Business Impacts

- Impact on driveways
- Minimal Right of Way acquisition
- Compatibility with local land use plans

Pedestrian Accessibility

- Services pedestrian desire lines
- Shortest most direct routing
- Create a more walkable community

Table 5 Comparison of Alternative Roundabout Concepts

Evaluation Criteria	Option 1 Five Leg	Option 2 Four-leg Bethel St.	Option 3 Four-leg Barnesville Hwy.	Option 4 Four-leg Barnesville Hwy. (E. Thompson Realigned)
Street Grid Connectivity 1 2 3 4 5	Maintains existing connectivity intact. Roundabout simplifies existing five-point intersection and improves operations.	Impacts SR 36 by eliminating a short section of Barnesville Hwy.	Impacts connectivity by eliminating Bethel Street connection to Main Street.	Eliminates Bethel Street connection to Main Street and realigns Thompson Street slightly.
Construction (Cost and Complexity) 1 2 3 4 5	Construct roundabout utilizing staged construction unless short term detours are an option.	Construct roundabout utilizing staged construction unless short term detours are an option.	Closing Bethel St allows for constructing 2/3 of roundabout off alignment. Complete roundabout utilizing staged construction.	Closing Bethel St allows for constructing 2/3 of roundabout off alignment. Thompson St connector also constructed off-line. Complete roundabout utilizing staged construction.
Mobility (LOS) 1 2 3 4 5	Improved mobility over four leg options – more direct routes.	Improved mobility but least desirable route connections.	Improved mobility but less direct connections.	Improved mobility while maintaining connections.
Safety 1 2 3 4 5	Roundabout will improve safety, but does not reduce the number of adjacent intersections.	Roundabout simplifies existing five-point intersection and improves operations.	Roundabout simplifies existing five-point intersection and improves operations.	Roundabout will improve safety and reduce the number of intersections..
Truck Accommodation 1 2 3 4 5	Trucks are accommodated with balanced impacts to turns.	Trucks are accommodated but tight turns at minor intersections.	Trucks are accommodated but tight turns WB to NB.	Trucks are accommodated with balanced impacts to turns.
Property Access/Business Impacts 1 2 3 4 5	Option 1 creates more impacts than Options 2 or 3.	Less impact than Options 1 or 4.	Less impact than Options 1 or 4.	Option 4 creates the greatest impacts.
Pedestrian Accessibility 1 2 3 4 5	Single lane crossings with refuge islands will improve access and reduce exposure.	Single lane crossings with refuge islands will improve access and reduce exposure. Option 2 results in one less crossing at the roundabout than Option 1.	Single lane crossings with refuge islands will improve access and reduce exposure. Option 3 results in one less crossing at the roundabout than Option 1.	Single lane crossings with refuge islands will improve access and reduce exposure. Option 4 results in one less crossing at the roundabout than Option 1.

5.2 Conclusion & Recommendations

Based on an evaluation of the criteria in the evaluation matrix, Option 4 is the preferred alternative. Option 4 is a four-leg alternative that maintains connectivity with SR 36 (Barnesville Highway) and provides for a minor relocation of E. Thompson Street:

- Capacity analyses suggest that the roundabouts will operate well below capacity in the design year (2039) . Similarly, all of the roundabout options are expected to improve intersection safety by reducing crash severities.
- During discussions amongst the design team regarding the evaluation criteria, Options 1 and 4 were identified to be more desirable than Options 2 and 3 because they better maintain route connectivity, provide better mobility with more direct connections, and accommodate large trucks more easily.
- Option 4 will create more property impacts than Option 1 – but the much of the impact is shifted to vacant parcels and away from the Dollar General parking lot.
- Option 4 simplifies the operation of the roundabout (i.e. conflict points) by eliminating the Bethel Street approach – but requires a realigned connection to E Thompson Street to accommodate truck turning movements. Option 4 also results in fewer pedestrian crossings at the intersection.
- And finally, by eliminating Bethel Street, a large portion of the Option 4 roundabout can be constructed off alignment – greatly reducing construction duration and costs and improving work zone safety. Unless short term detours are acceptable, Option 1 would be constructed completely using staged construction.

Disclaimer

This report: has been prepared by GHD for the Georgia Department of Transportation and may only be used and relied on by GDOT for the purpose agreed between GHD and the GDOT as set out the scope of work.

GHD otherwise disclaims responsibility to any person other than GDOT arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by and others who provided information to GHD (including Government authorities)], which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

GHD Inc.

1240 North Mountain Road
Harrisburg, PA 17112

T: (717) 460-8958 E: andrew.duerr@ghd.com

© GHD Inc. 2014

This document is and shall remain the property of GHD. The document may only be used for the purpose of assessing our offer of services and for inclusion in documentation for the engagement of GHD. Unauthorized use of this document in any form whatsoever is prohibited.

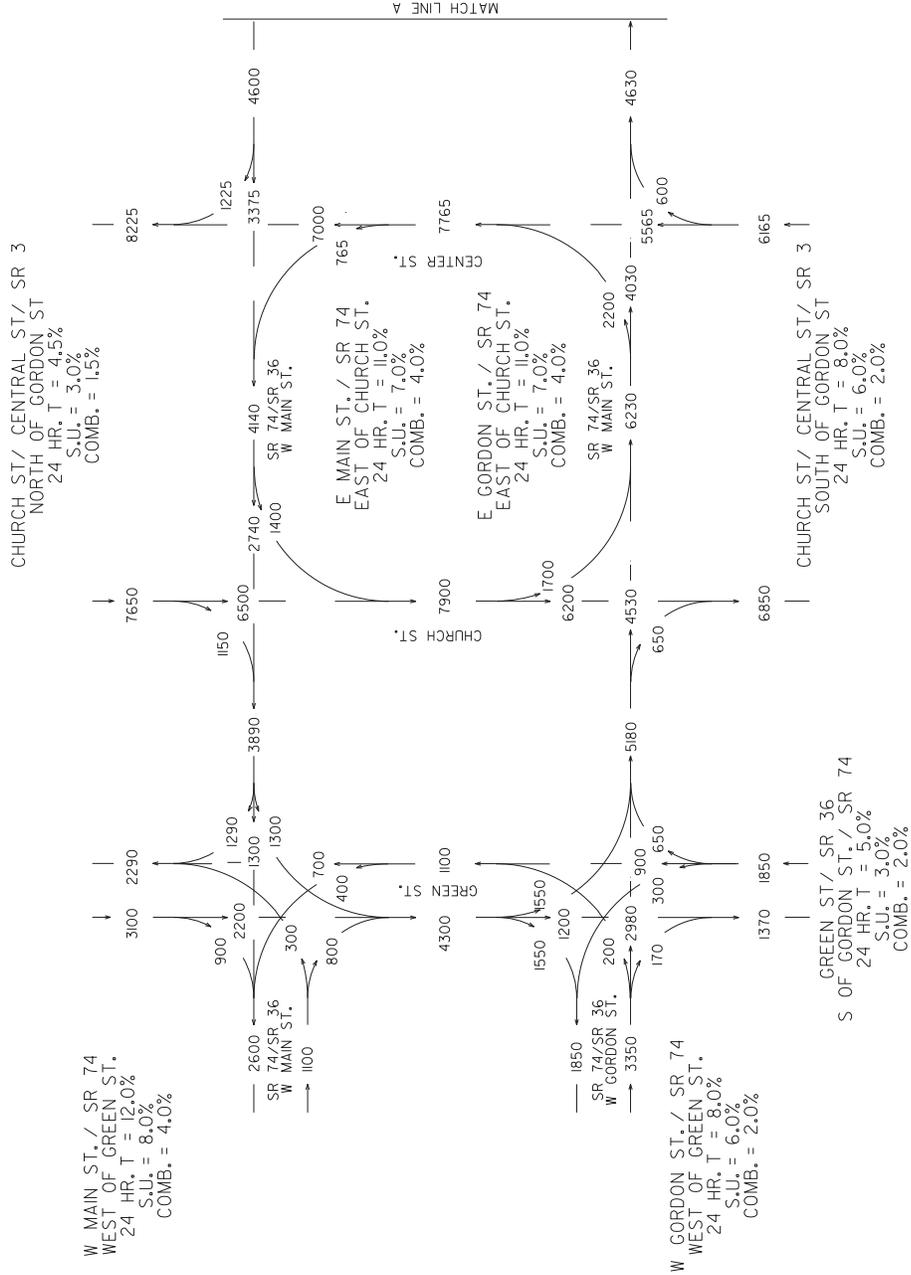
I:\Projects\8616759 PI 0006967, SR 74 East One-Way Pair, Georgia (McGee)\Feasibility Study\Upson Feasibility Study report (v6).docx

Document Status

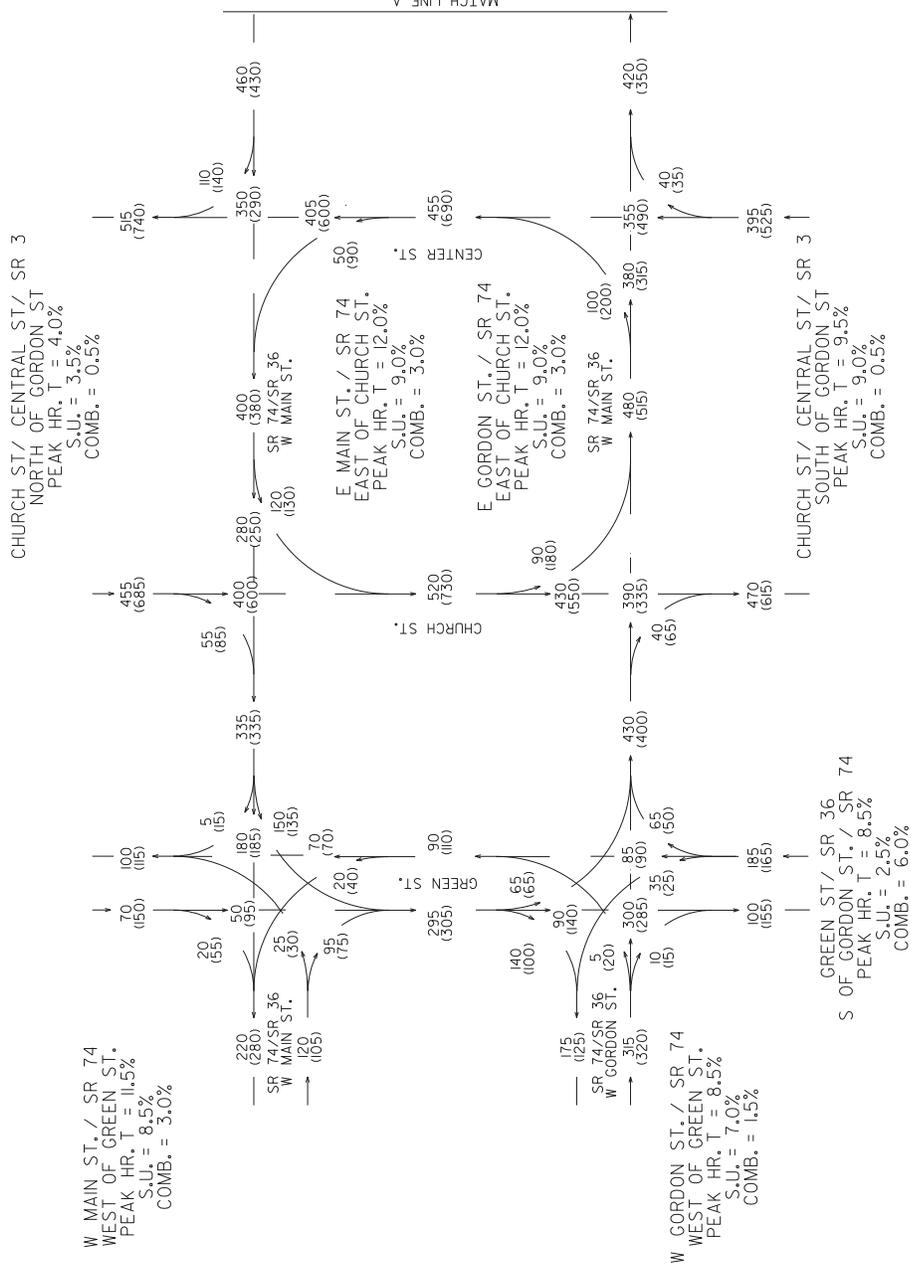
Rev No.	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
0	ATD	Mark Lenters				

Appendices

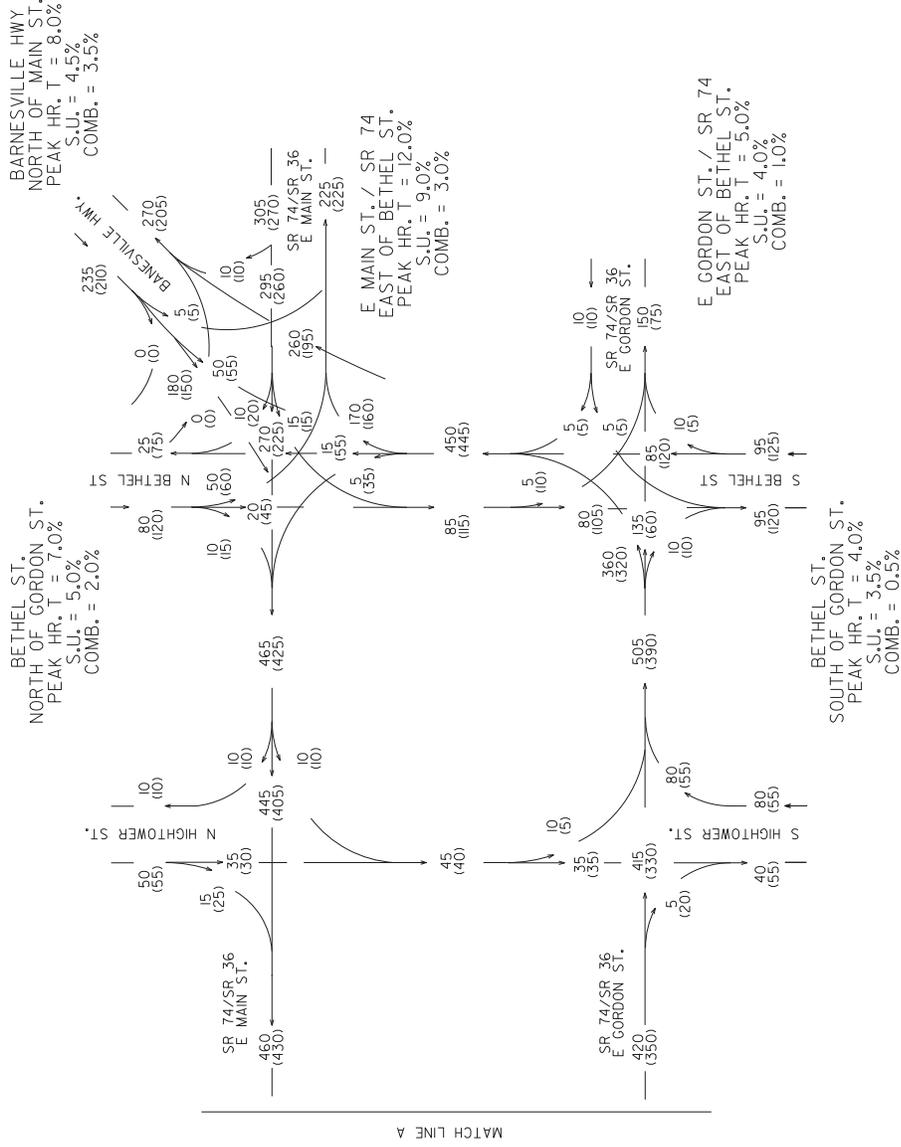
Appendix A – Traffic Volume Data



CSSTP-0006-00(967) P.I.# 0006967 UPSON COUNTY THOMASTON OPERATIONAL IMPROVEMENTS	EXISTING 2013 AADT	GEORGIA DEPARTMENT OF TRANSPORTATION	REVISION DATES 1/15/2014 FORESITE 4/16/2014 FORESITE 5/8/2014 DRF 5/16/2014 DRF	STATE OF GEORGIA DEPARTMENT OF TRANSPORTATION OFFICE: PLANNING
			TRAFFIC DIAGRAM	DRAWING NO. 10-1



CSSTP-0006-00(967) P.I.# 0006967 UPSON COUNTY THOMASTON OPERATIONAL IMPROVEMENTS	EXISTING 2013 AM (PM) DHV	GEORGIA DEPARTMENT OF TRANSPORTATION	REVISION DATES 1/15/2004 FORESITE 4/16/2004 FORESITE 5/18/2004 DRF 5/16/2004 DRF
			OFFICE: PLANNING TRAFFIC DIAGRAM



REVISION DATES	
1/15/2014	FORESITE
4/16/2014	FORESITE
5/8/2014	DRF
5/16/2014	DRF

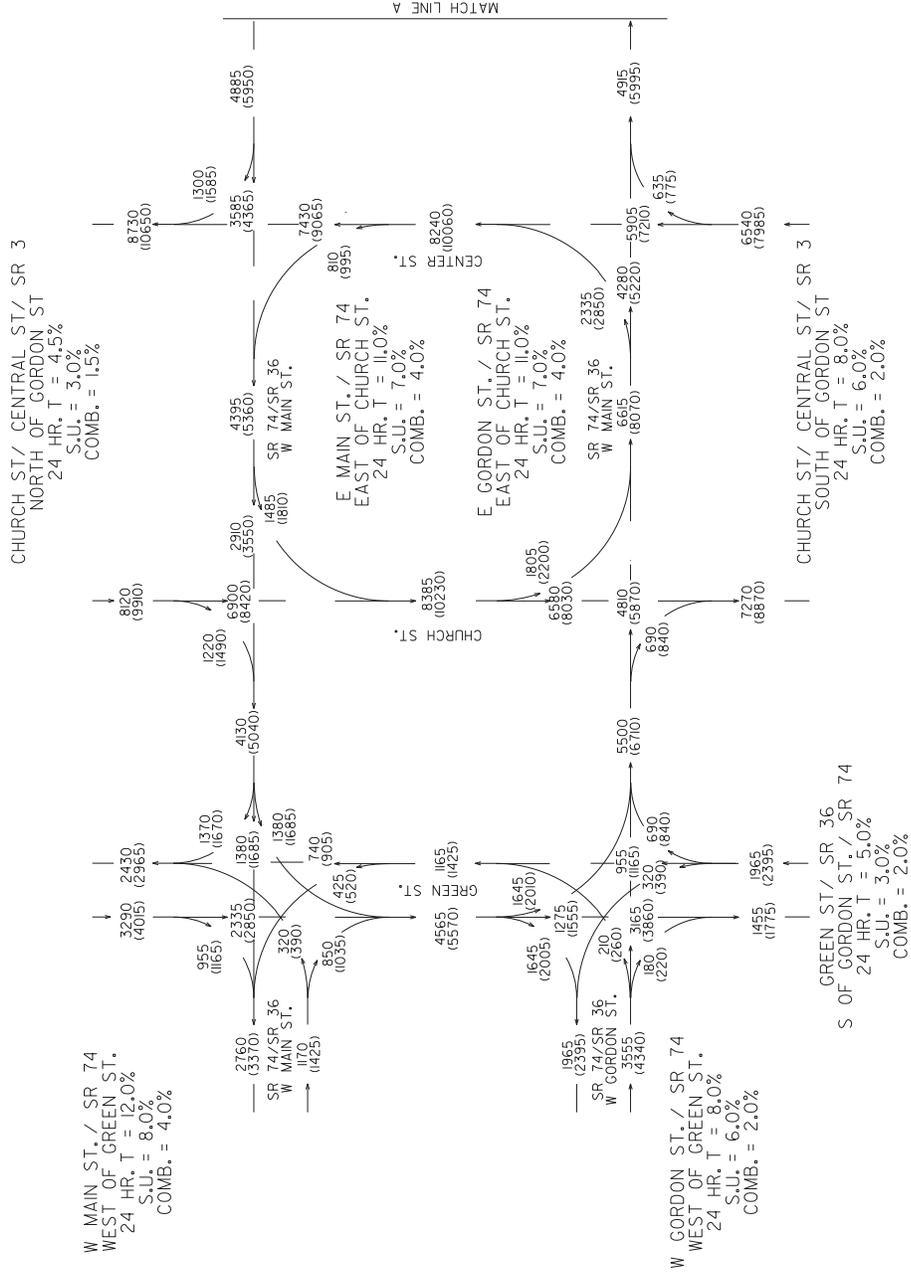
STATE OF GEORGIA
 DEPARTMENT OF TRANSPORTATION
 OFFICE: PLANNING

TRAFFIC DIAGRAM
 DRAWING No. 10-4

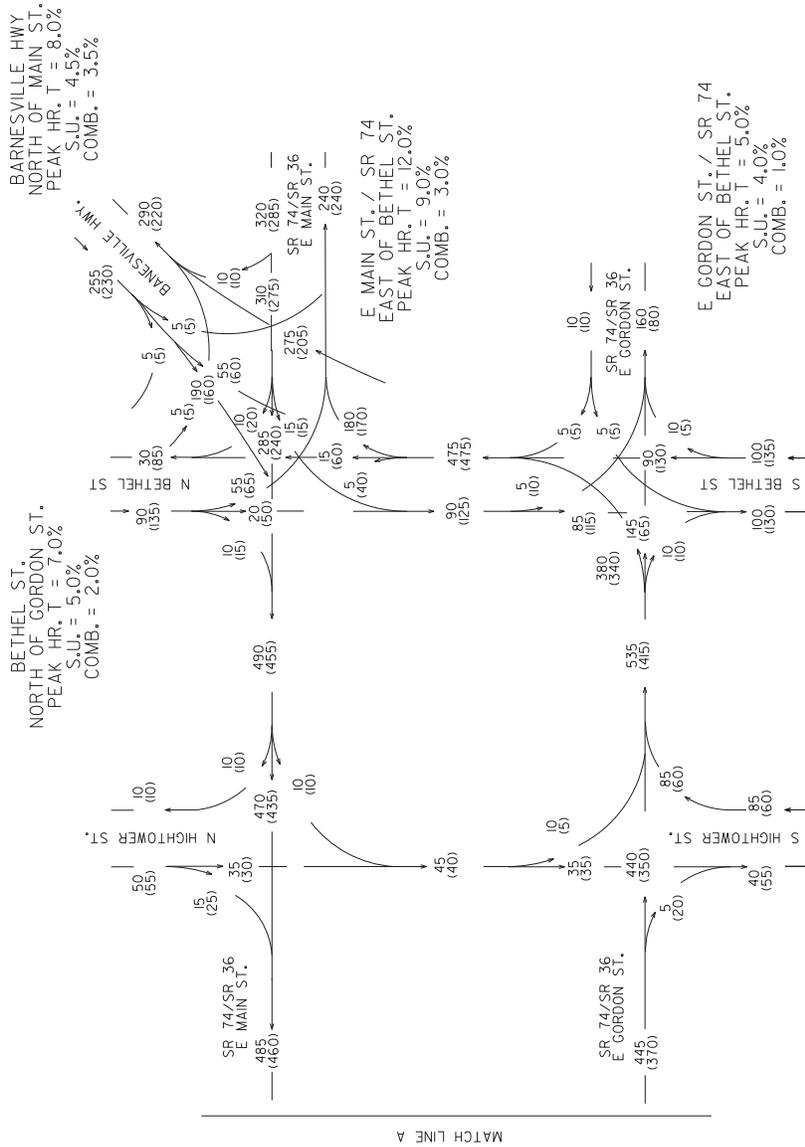
GEORGIA
 DEPARTMENT OF TRANSPORTATION

EXISTING 2013
 AM (PM) DHV

CSSTP-0006-00(967)
 P.I.# 0006967
 UPSON COUNTY
 THOMASTON
 OPERATIONAL IMPROVEMENTS

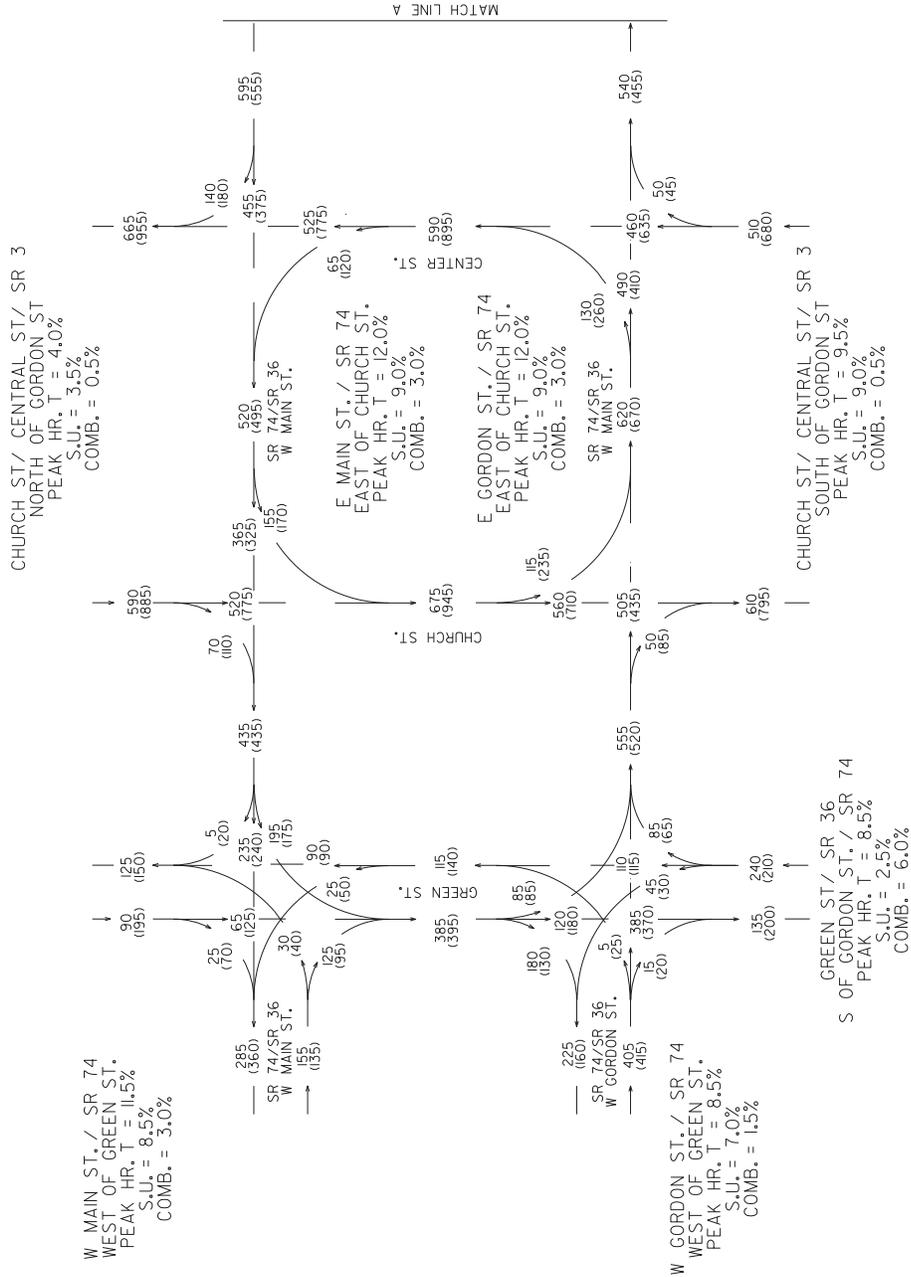


CSSTP-0006-00(967) P.I.# 0006967 UPSON COUNTY THOMASTON OPERATIONAL IMPROVEMENTS	NO BUILD 2019 (2039) AADT	GEORGIA DEPARTMENT OF TRANSPORTATION	REVISION DATES 1/15/2014 FORESITE 4/16/2014 FORESITE 5/8/2014 DRF 5/16/2014 DRF
			OFFICE: PLANNING TRAFFIC DIAGRAM



MATCH LINE A

CSSTP-0006-00(967) P.I.# 0006967 UPSON COUNTY THOMASTON OPERATIONAL IMPROVEMENTS	NO BUILD 2019 AM (PM) DHV	GEORGIA DEPARTMENT OF TRANSPORTATION	REVISION DATES 1/15/2014 FORESITE 4/16/2014 FORESITE 5/16/2014 DRF 5/16/2014 DRF	STATE OF GEORGIA DEPARTMENT OF TRANSPORTATION OFFICE: PLANNING
			TRAFFIC DIAGRAM	



CSSTP-0006-00(967)
 P.I.# 0006967
 UPSON COUNTY
 THOMASTON
 OPERATIONAL IMPROVEMENTS

GEORGIA
DEPARTMENT
OF
TRANSPORTATION

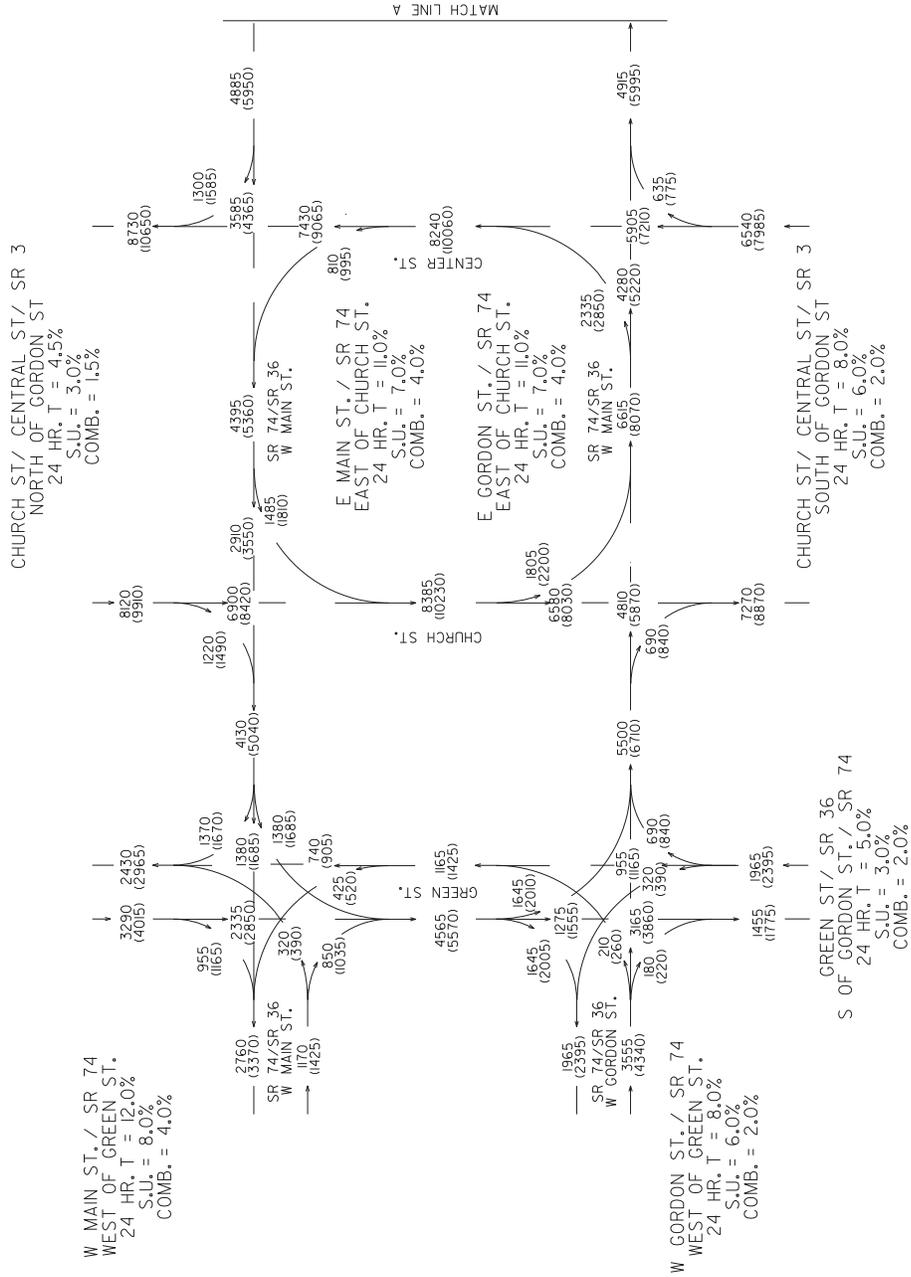
NO. BUILD 2039
AM (PM) DHV

REVISION DATES
 1/15/2014 FORESITE
 4/16/2014 FORESITE
 5/18/2014 DRF
 5/16/2014 DRF

OFFICE: PLANNING

TRAFFIC DIAGRAM

DRAWING No.
10-9



CSSTP-0006-00(967)
P.I.# 0006967
UPSON COUNTY
THOMASTON
OPERATIONAL IMPROVEMENTS

<p>GEORGIA DEPARTMENT OF TRANSPORTATION</p>	<p>BUILD 2019 (2039) AADT</p>	<p>REVISION DATES</p> <table border="1"> <tr><td>1/15/2014</td><td>FORESITE</td></tr> <tr><td>4/16/2014</td><td>FORESITE</td></tr> <tr><td>5/8/2014</td><td>DRF</td></tr> <tr><td>5/16/2014</td><td>DRF</td></tr> </table>	1/15/2014	FORESITE	4/16/2014	FORESITE	5/8/2014	DRF	5/16/2014	DRF
		1/15/2014	FORESITE							
4/16/2014	FORESITE									
5/8/2014	DRF									
5/16/2014	DRF									
<p>OFFICE:</p>	<p>STATE OF GEORGIA DEPARTMENT OF TRANSPORTATION PLANNING</p>	<p>TRAFFIC DIAGRAM</p>								
<p>DRAWING No. 10-11</p>		<p>DATE: 03/14</p>								



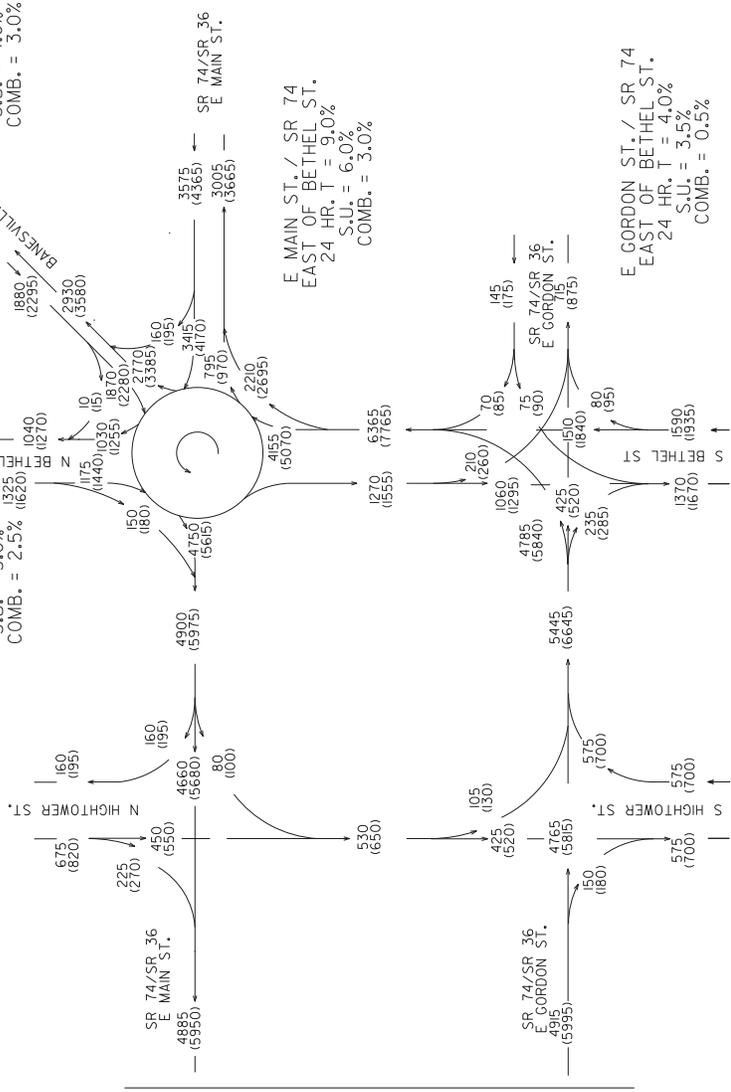
BETHEL ST. NORTH OF GORDON ST. 24 HR. T = 5.5% S.U. = 3.0% COMB. = 2.5%

BARNESVILLE HWY. NORTH OF MAIN ST. 24 HR. T = 7.0% S.U. = 4.0% COMB. = 3.0%

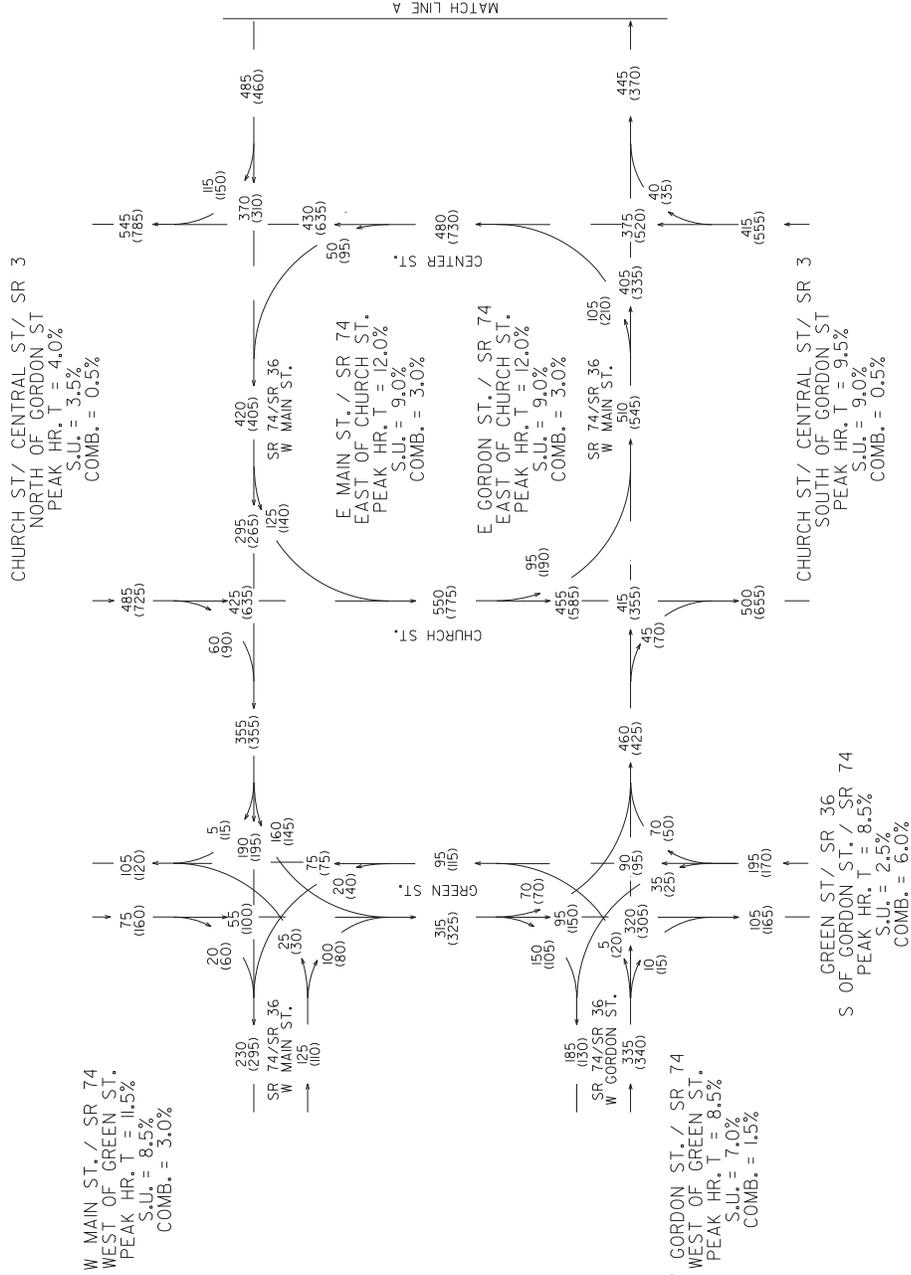
E MAIN ST. / SR 74 EAST OF BETHEL ST. 24 HR. T = 9.0% S.U. = 6.0% COMB. = 3.0%

E GORDON ST. / SR 74 EAST OF BETHEL ST. 24 HR. T = 4.0% S.U. = 3.5% COMB. = 0.5%

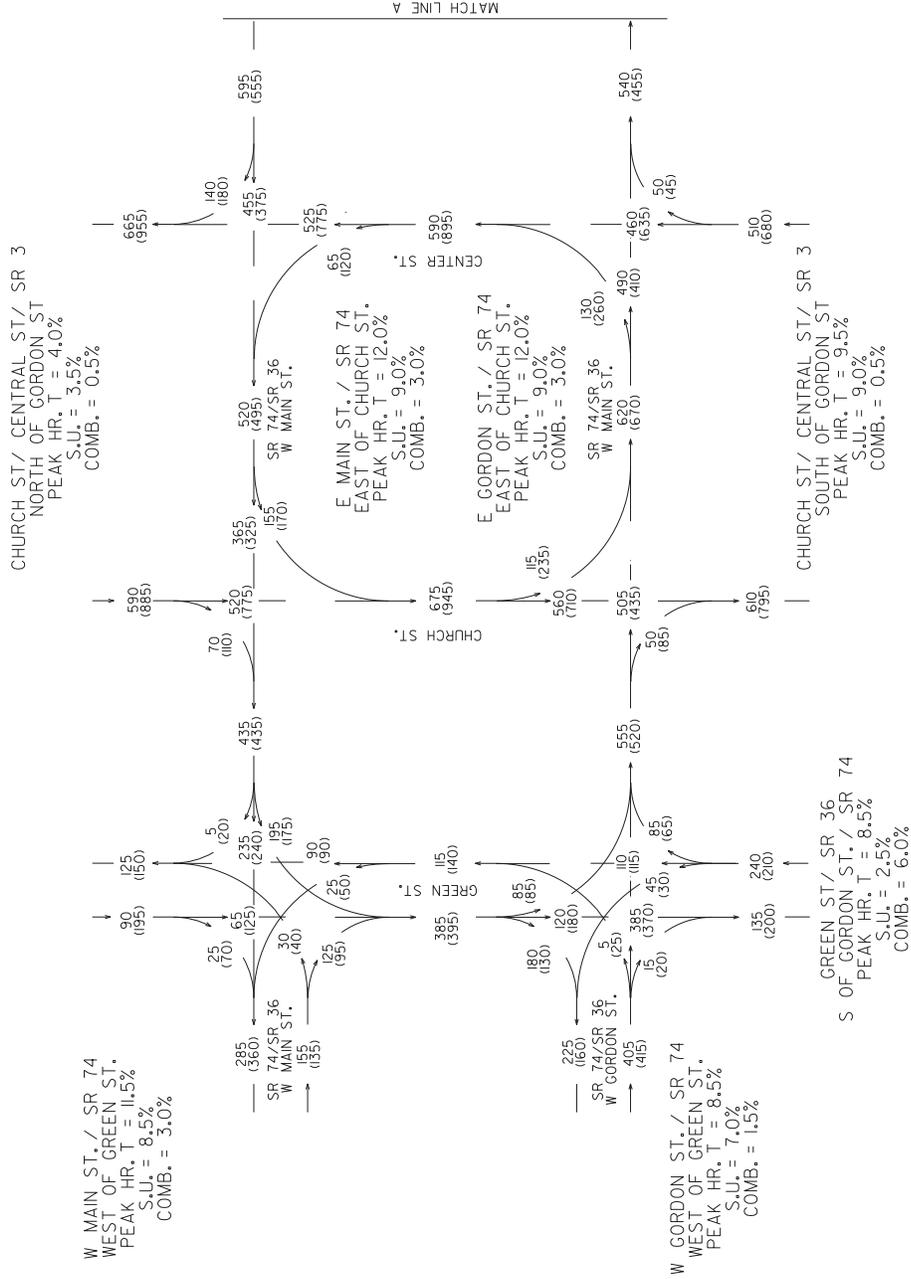
BETHEL ST. SOUTH OF GORDON ST. 24 HR. T = 3.5% S.U. = 3.0% COMB. = 0.5%



CSSTP-0006-00(967) P.I.# 0006967 UPSON COUNTY THOMASTON OPERATIONAL IMPROVEMENTS	BUILD 2019 (2039) AADT	GEORGIA DEPARTMENT OF TRANSPORTATION	REVISION DATES	STATE OF GEORGIA
			1/16/2004 - FORESITE 4/16/2004 - FORESITE 5/18/2004 - DRF 5/16/2004 - DRF	DEPARTMENT OF TRANSPORTATION PLANNING
		OFFICE:		TRAFFIC DIAGRAM
				DRAWING No. 10-12



CSSTP-0006-00(967) P.I.# 0006967 UPSON COUNTY THOMASTON OPERATIONAL IMPROVEMENTS	BUILD 2019 AM (PM) DHV	GEORGIA DEPARTMENT OF TRANSPORTATION	REVISION DATES
			1/15/2014 FORESITE 4/16/2014 FORESITE 5/8/2014 DRF 5/16/2014 DRF
		STATE OF GEORGIA DEPARTMENT OF TRANSPORTATION	OFFICE: PLANNING
		TRAFFIC DIAGRAM	
		DRAWING No. 10-13	



CSSTP-0006-00(967)
 P.I.# 0006967
 UPSON COUNTY
 THOMASTON
 OPERATIONAL IMPROVEMENTS

BUILD 2039
 AM (PM) DHV

GEORGIA DEPARTMENT OF TRANSPORTATION

REVISION DATES:
 1/15/2014 FORESITE
 4/16/2014 FORESITE
 5/8/2014 DRF
 5/16/2014 DRF

OFFICE: PLANNING

TRAFFIC DIAGRAM

DRAWING No. 10-15

DATE: 03/14

Appendix B – Signal Warrant Analysis

GDOT/District 3
 SR 36/SR 74/ Bethel @ SR 74 WB
 (Traffic Diagram information evaluated)
 September 10, 2014

Signal Warrants - Summary

Major Street Approaches

Westbound: SR 74 WB
 Number of Lanes: 1
 Approach Speed: 0
 Total Approach Volume: 3,368

Minor Street Approaches

Northbound: SR 36/SR 74/Bethel
 Number of Lanes: 1

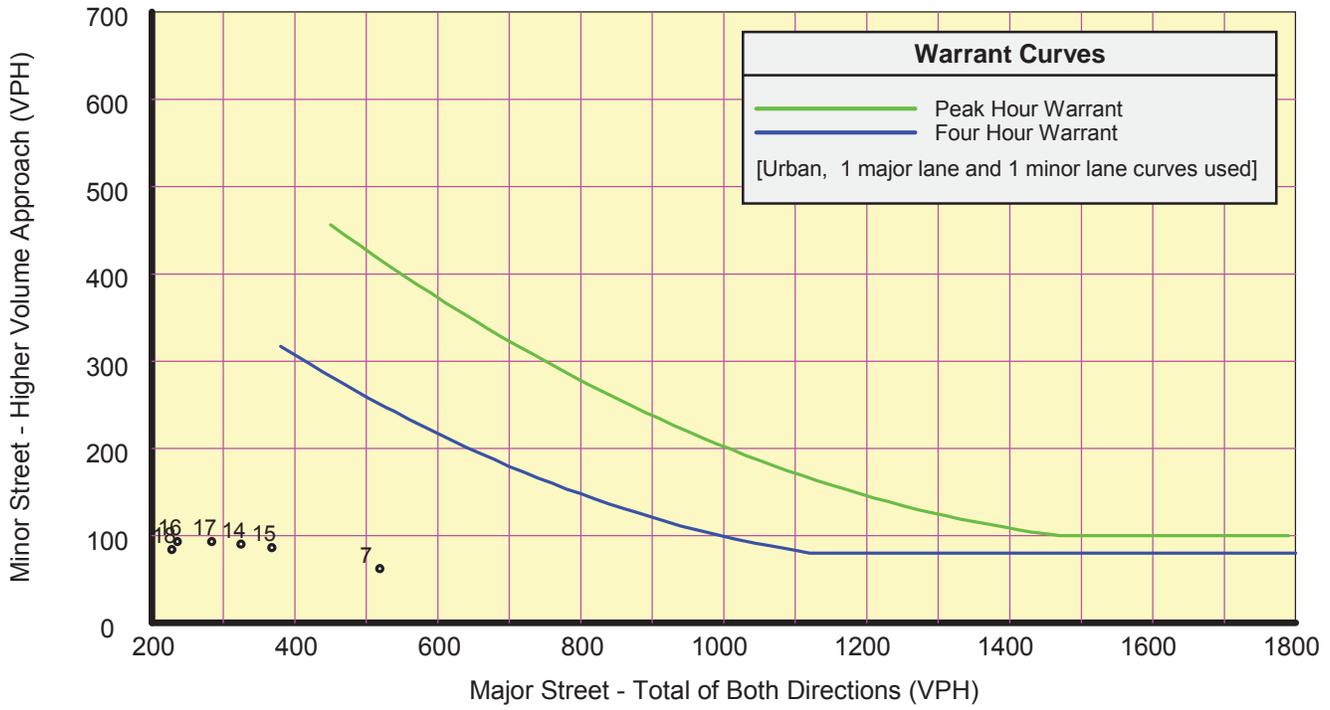
 Total Approach Volume: 1,312

Warrant Summary (Urban values apply.)

Warrant 1 - Eight Hour Vehicular Volumes	Not Satisfied
Warrant 1A - Minimum Vehicular Volume	Not Satisfied
Required volumes reached for 0 hours, 8 are needed	
Warrant 1B - Interruption of Continuous Traffic	Not Satisfied
Required volumes reached for 0 hours, 8 are needed	
Warrant 1 A&B - Combination of Warrants	Not Satisfied
Required volumes reached for 0 hours, 8 are needed	
Warrant 2 - Four Hour Volumes	Not Satisfied
Number of hours (0) volumes exceed minimum < minimum required (4).	
Warrant 3 - Peak Hour	Not Satisfied
Warrant 3A - Peak Hour Delay	Not Satisfied
Total approach volumes and delays on minor street do not exceed minimums for any hour.	
Warrant 3B - Peak Hour Volumes	Not Satisfied
Volumes do not exceed minimums for any hour.	
Warrant 4 - Pedestrian Volumes	Not Satisfied
Required 4 Hr pedestrian volume reached for 0 hour(s) and the single hour volume for 0 hour(s)	
Warrant 5 - School Crossing	Not Satisfied
Number of gaps > .0 seconds (0) exceeds the number of minutes in the crossing period (0).	
Warrant 6 - Coordinated Signal System	Not Satisfied
No adjacent coordinated signals are present	
Warrant 7 - Crash Experience	Not Satisfied
Number of accidents (-1) is less than minimum (5). Volume minimums are not met.	
Warrant 8 - Roadway Network	Not Satisfied
Major Route conditions not met. No volume requirement met.	

GDOT/District 3
 SR 36/SR 74/ Bethel @ SR 74 WB
 (Traffic Diagram information evaluated)
 September 10, 2014

Signal Warrants - Summary



Analysis of 8-Hour Volume Warrants:

Hour Begin	Major Total	Higher Minor Vol	Dir	War-1A			War-1B			War-1A&B		
				Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?
00:00	8	11	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
01:00	9	8	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
02:00	6	7	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
03:00	5	6	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
04:00	16	9	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
05:00	30	18	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
06:00	76	53	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
07:00	519	62	NB	500-Yes	150-No	Major	750-No	75-No	---	600-No	120-No	---
08:00	192	74	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
09:00	141	75	NB	500-No	150-No	---	750-No	75-Yes	Minor	600-No	120-No	---
10:00	136	84	NB	500-No	150-No	---	750-No	75-Yes	Minor	600-No	120-No	---
11:00	155	89	NB	500-No	150-No	---	750-No	75-Yes	Minor	600-No	120-No	---
12:00	151	94	NB	500-No	150-No	---	750-No	75-Yes	Minor	600-No	120-No	---
13:00	153	86	NB	500-No	150-No	---	750-No	75-Yes	Minor	600-No	120-No	---
14:00	325	90	NB	500-No	150-No	---	750-No	75-Yes	Minor	600-No	120-No	---
15:00	368	86	NB	500-No	150-No	---	750-No	75-Yes	Minor	600-No	120-No	---
16:00	236	93	NB	500-No	150-No	---	750-No	75-Yes	Minor	600-No	120-No	---
17:00	284	93	NB	500-No	150-No	---	750-No	75-Yes	Minor	600-No	120-No	---
18:00	228	84	NB	500-No	150-No	---	750-No	75-Yes	Minor	600-No	120-No	---
19:00	133	60	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
20:00	88	49	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
21:00	60	38	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
22:00	25	24	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
23:00	24	19	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---

Appendix C – Roundabout Analyses

General & Site Information		v2.1							
Analyst:	Andrew Duerr, PE								
Agency/Co:	GHD Inc.								
Date:	8/28/2014								
Project or PI#:	#0006967								
Year, Peak Hour:	2039 AM								
County/District:	Upson								
Intersection Name:	SR 74 East (One-Way Pair) at SR 36, Main St and N Bethel St								

		Volumes							
		Entry Legs (FROM)							
		N (1)	NE (2)	E (3)	SE (4)	S (5)	SW (6)	W (7)	NW (8)
Exit Legs (TO)	N (1), vph		5	15		20		0	
	NE (2), vph	5		15		335		0	
	E (3), vph	65	5			220		0	
	SE (4), vph								
	S (5), vph	25	65	20				0	
	SW (6), vph								
	W (7), vph	15	235	350		5			
	NW (8), vph								
Output	Total Vehicles	110	310	400	0	580	0	0	0

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	96%	96%	96%	100%	96%	100%	100%	100%
% Heavy Vehicles	4%	4%	4%	0%	4%	0%	0%	0%
% Bicycle	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians (ped/hr)	0	0	0	0	0	0	0	0
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
F _{HV}	0.962	0.962	0.962	1.000	0.962	1.000	1.000	1.000
F _{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pcu/h	0	6	17	0	23	0	0	0
NE (2), pcu/h	6	0	17	0	379	0	0	0
E (3), pcu/h	73	6	0	0	249	0	0	0
SE (4), pcu/h	0	0	0	0	0	0	0	0
S (5), pcu/h	28	73	23	0	0	0	0	0
SW (6), pcu/h	0	0	0	0	0	0	0	0
W (7), pcu/h	17	266	396	0	6	0	0	0
NW (8), pcu/h	0	0	0	0	0	0	0	0
Entry flow, pcu/h	124	350	452	0	656	0	0	0
Conflicting flow, pcu/h	769	463	413	0	85	0	0	0

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

Results: Approach Measures of Effectiveness								
HCM 2010 Model (build)	N	NE	E	SE	S	SW	W	NW
Entry Capacity, vph	504	684	719	NA	998	NA	1130	NA
Entry Flow Rates, vph	120	337	435	NA	630	NA	0	NA
V/C ratio	0.24	0.49	0.60		0.63		0.00	
Control Delay, s/veh	11	13	15		13		3	
LOS	B	B	C		B		A	
95th % Queue (ft)	24	71	107		121		0	
Calibrated Model (future)	N	NE	E	SE	S	SW	W	NW
Entry Capacity, vph	693	885	921	NA	1198	NA	1333	NA
Entry Flow Rates, vph	120	337	435	NA	630	NA	0	NA
V/C ratio	0.18	0.40	0.49		0.55		0.00	
Control Delay, sec/pcu	7	9	10		9		3	
LOS	A	A	B		A		A	
95th % Queue (ft)	17	50	72		90		0	

Notes:

v2.1

Unit Legend:

vph = vehicles per hour

PHF = peak hour factor

F_{HV} = heavy vehicle factor

pcu = passenger car unit

Bypass Lane Merge Point Analysis (if applicable)						
Bypass Characteristics	Bypass #1	Bypass #2	Bypass #3	Bypass #4	Bypass #5	Bypass #6
Select Entry Leg from Bypass (FROM)						
Select Exit Leg for Bypass (TO)						
Does the bypass have a dedicated receiving lane?						
<i>Volumes</i>						
Right Turn Volume removed from Entry Leg						
<i>Volume Characteristics (for entry leg)</i>						
PHF						
F _{HV}						
F _{ped}						
NOTE: Volume Characteristics for Exit Leg are already taken into account						
<i>Entry/Conflicting Flows</i>						
Entry Flow, pcu/hr						
Conflicting Flow, pcu/hr						
Bypass Lane Results (HCM 2010 Model)						
Entry Capacity of Bypass, vph						
Flow Rates of Exiting Traffic, vph						
V/C ratio						
Control Delay, s/veh						
LOS						
95th % Queue (ft)						
<i>Approach w/Bypass Delay, s/veh</i>						
<i>Approach w/Bypass LOS</i>						

General & Site Information		v2.1							
Analyst:	Andrew Duerr, PE								
Agency/Co:	GHD Inc.								
Date:	8/28/2014								
Project or PI#:	#0006967								
Year, Peak Hour:	2039 PM								
County/District:	Upson								
Intersection Name:	SR 74 East (One-Way Pair) at SR 36, Main St and N Bethel St								
Volumes		Entry Legs (FROM)							
		N (1)	NE (2)	E (3)	SE (4)	S (5)	SW (6)	W (7)	NW (8)
Exit Legs (TO)	N (1), vph		5	25		70		0	
	NE (2), vph	5		15		255		0	
	E (3), vph	80	5			205		0	
	SE (4), vph								
	S (5), vph	60	70	20				0	
	SW (6), vph								
	W (7), vph	20	195	295		45			
	NW (8), vph								
Output	Total Vehicles	165	275	355	0	575	0	0	0
Volume Characteristics		N	NE	E	SE	S	SW	W	NW
% Cars		96%	96%	96%	100%	96%	100%	100%	100%
% Heavy Vehicles		4%	4%	4%	0%	4%	0%	0%	0%
% Bicycle		0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians (ped/hr)		0	0	0	0	0	0	0	0
PHF		0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
F _{HV}		0.962	0.962	0.962	1.000	0.962	1.000	1.000	1.000
F _{ped}		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Entry/Conflicting Flows		N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pcu/h		0	6	28	0	79	0	0	0
NE (2), pcu/h		6	0	17	0	288	0	0	0
E (3), pcu/h		90	6	0	0	232	0	0	0
SE (4), pcu/h		0	0	0	0	0	0	0	0
S (5), pcu/h		68	79	23	0	0	0	0	0
SW (6), pcu/h		0	0	0	0	0	0	0	0
W (7), pcu/h		23	220	333	0	51	0	0	0
NW (8), pcu/h		0	0	0	0	0	0	0	0
Entry flow, pcu/h		187	311	401	0	650	0	0	0
Conflicting flow, pcu/h		712	514	424	0	102	0	0	0
Roundabout Type		Standard Single Lane or Urban Compact							
Enter type here...		Standard Single Lane							

Results: Approach Measures of Effectiveness								
HCM 2010 Model (build)	N	NE	E	SE	S	SW	W	NW
Entry Capacity, vph	533	650	711	NA	981	NA	1130	NA
Entry Flow Rates, vph	179	299	386	NA	625	NA	0	NA
V/C ratio	0.34	0.46	0.54		0.64		0.00	
Control Delay, s/veh	12	12	14		13		3	
LOS	B	B	B		B		A	
95th % Queue (ft)	38	63	86		124		0	
Calibrated Model (future)	N	NE	E	SE	S	SW	W	NW
Entry Capacity, vph	725	849	913	NA	1182	NA	1333	NA
Entry Flow Rates, vph	179	299	386	NA	625	NA	0	NA
V/C ratio	0.26	0.37	0.44		0.55		0.00	
Control Delay, sec/pcu	8	8	9		9		3	
LOS	A	A	A		A		A	
95th % Queue (ft)	27	44	59		91		0	

Notes:

v2.1

Unit Legend:

vph = vehicles per hour

PHF = peak hour factor

F_{HV} = heavy vehicle factor

pcu = passenger car unit

Bypass Lane Merge Point Analysis (if applicable)						
Bypass Characteristics	Bypass #1	Bypass #2	Bypass #3	Bypass #4	Bypass #5	Bypass #6
Select Entry Leg from Bypass (FROM)						
Select Exit Leg for Bypass (TO)						
Does the bypass have a dedicated receiving lane?						
<i>Volumes</i>						
Right Turn Volume removed from Entry Leg						
<i>Volume Characteristics (for entry leg)</i>						
PHF						
F _{HV}						
F _{ped}						
NOTE: Volume Characteristics for Exit Leg are already taken into account						
<i>Entry/Conflicting Flows</i>						
Entry Flow, pcu/hr						
Conflicting Flow, pcu/hr						
Bypass Lane Results (HCM 2010 Model)						
Entry Capacity of Bypass, vph						
Flow Rates of Exiting Traffic, vph						
V/C ratio						
Control Delay, s/veh						
LOS						
95th % Queue (ft)						
<i>Approach w/Bypass Delay, s/veh</i>						
<i>Approach w/Bypass LOS</i>						

Bethel Street & Main Street & Barnesville HWY
Operational Analysis Documentation

ARCADY Results
2039- AM Peak Period

Roundabout Volumes

From \ To	1st	2nd	3rd	4th	U-Turn	Total
SB - Bethel St.	15,000	25,000	65,000	5,000	0,000	110,000
Main St.	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	0,000
NB - Bethel St.	220,000	335,000	20,000	5,000	0,000	580,000
WB - Main St.	15,000	15,000	350,000	20,000	0,000	400,000
SWB - Barnesville Hwy	5,000	235,000	65,000	5,000	0,000	310,000
Total	255,000	610,000	500,000	35,000	0,000	-

4% Trucks on All Legs

Geometry and Analysis Results – All Directions
A 15% Capacity Reduction was Applied to All Legs

Leg	SB - Bethel St.	Main St.	NB - Bethel St.	WB - Main St.	SWB - Barnesville Hwy
V - Approach road half-width (ft)	12.00	Exit-only	12.00	12.00	12.00
E - Entry width (ft)	14.00	Exit-only	14.00	14.00	14.00
l - Effective flare length (ft)	130.00	Exit-only	130.00	130.00	130.00
R - Entry radius (ft)	75.00	Exit-only	75.00	75.00	75.00
D - Inscribed circle diameter (ft)	140.00	Exit-only	140.00	140.00	140.00
PHI - Conflict (entry) angle (deg)	20.00	Exit-only	20.00	20.00	20.00
Exit Only	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Leg Has Bypass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Percentage Intercept Adjustment (%)	85.00	85.00	85.00	85.00	85.00
Average Demand (Veh/hr)	110.00	Exit-only	580.00	400.00	310.00
Max V/C Ratio	0.18	Exit-only	0.61	0.51	0.41
Max Delay (s)	6.66	Exit-only	8.85	8.55	7.32
Max LOS	A	Exit-only	A	A	A
Max 95th percentile Queue (Veh)	?	Exit-only	1.00	?	1.00



Bethel Street & Main Street & Barnesville HWY
Operational Analysis Documentation

ARCADY Results
2039- PM Peak Period

Roundabout Volumes

From \ To	1st	2nd	3rd	4th	U-Turn	Total
SB - Bethel St.	20.000	60.000	80.000	5.000	0.000	165.00
Main St.	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	0.00
NB - Bethel St.	205.000	255.000	70.000	45.000	0.000	575.00
WB - Main St.	15.000	25.000	295.000	20.000	0.000	355.00
SWB - Barnesville Hwy	5.000	195.000	70.000	5.000	0.000	275.00
Total	245.00	535.00	515.00	75.00	0.00	-

4% Trucks on All Legs

Geometry and Analysis Results – All Directions
A 15% Capacity Reduction was Applied to All Legs

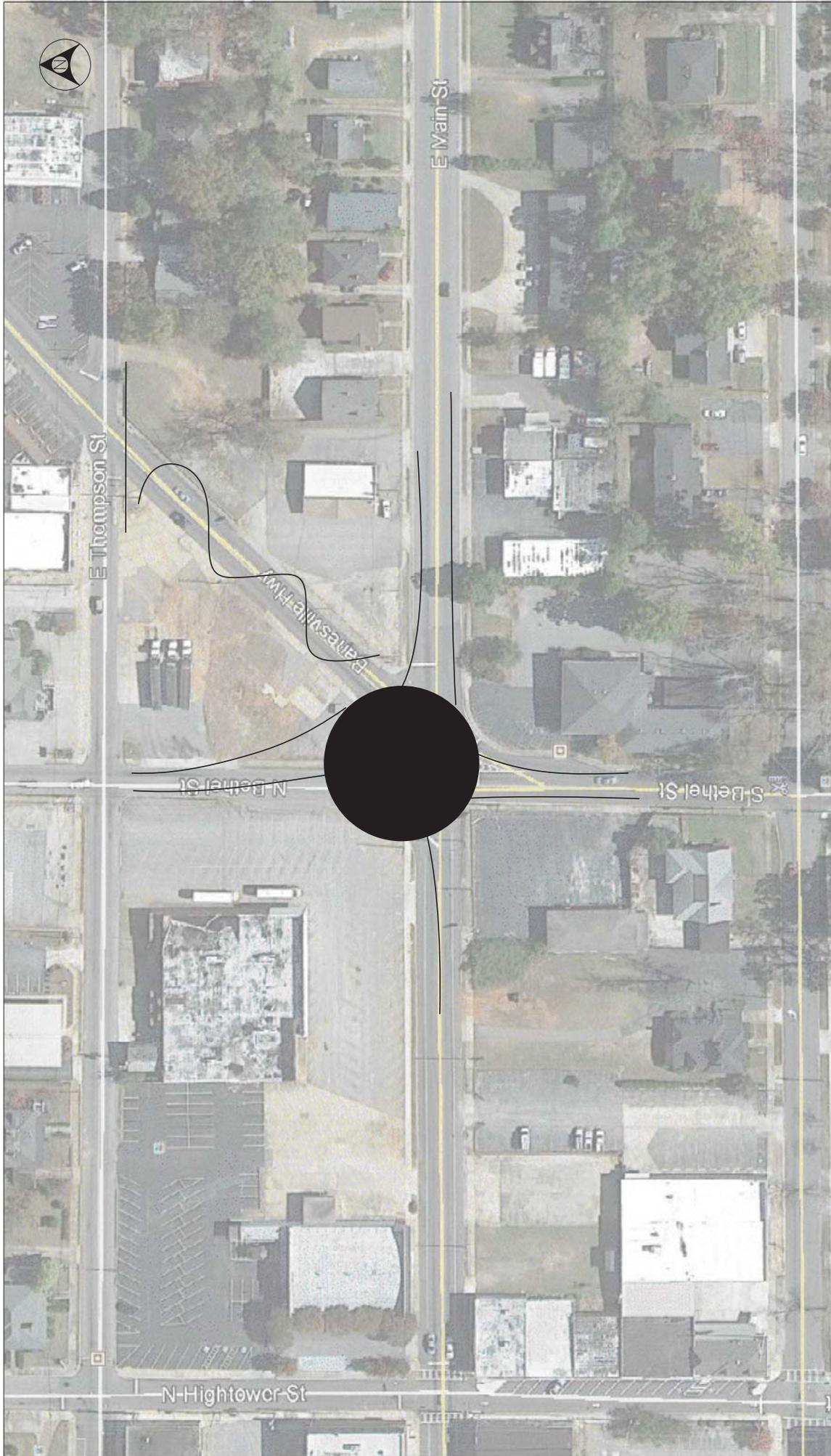
Leg	SB - Bethel St.	Main St.	NB - Bethel St.	WB - Main St.	SWB - Barnesville Hwy
V - Approach road half-width (ft)	12.00	Exit-only	12.00	12.00	12.00
E - Entry width (ft)	14.00	Exit-only	14.00	14.00	14.00
f - Effective flare length (ft)	130.00	Exit-only	130.00	130.00	130.00
R - Entry radius (ft)	75.00	Exit-only	75.00	75.00	75.00
D - Inscribed circle diameter (ft)	140.00	Exit-only	140.00	140.00	140.00
PHI - Conflict (entry) angle (deg)	20.00	Exit-only	20.00	20.00	20.00
Exit Only	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Leg Has Bypass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Percentage Intercept Adjustment (%)	85.00	85.00	85.00	85.00	85.00
Average Demand (Veh/hr)	165.00	Exit-only	575.00	355.00	275.00
Max V/C Ratio	0.26	Exit-only	0.61	0.46	0.38
Max Delay (s)	7.03	Exit-only	8.94	7.75	7.18
Max LOS	A	Exit-only	A	A	A
Max 95th percentile Queue (Veh)	?	Exit-only	1.00	1.00	1.00



Appendix D – Concept Plans & Documentation



<p>SR 74 East (One-Way Pair) at SR 36, Main St & N Bethel St P.I. #0006967 Upson County</p>	<p>5 LEG CONCEPT REVISED (OPTION 1)</p>
<p>GHD, Inc. 5305 Wall Street, Suite 200 Raleigh, NC 27605 E.moskov@ghd.com W.www.ghd.com</p>	<p>SCALE 0 75 EXHIBIT: C.1</p>



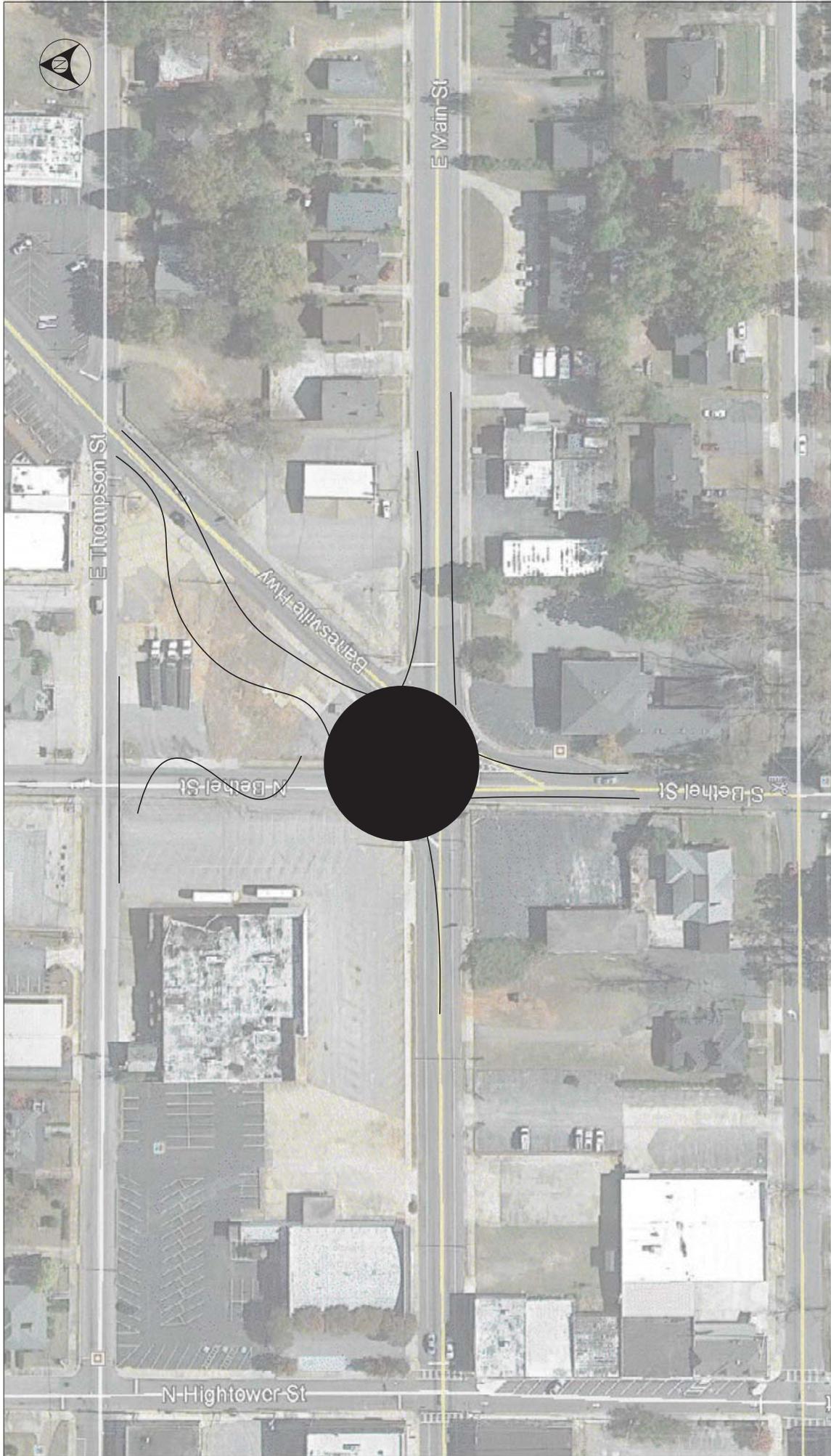
SCALE 0 75
EXHIBIT: C.2

OPTION 2 (130-ft ICD)

SR 74 East (One-Way Pair) at SR 36, Main St & N Bethel St
P.I. #0006967
Upson County

GHD
GHD, Inc.
5305 Wall Street, Suite 2005
Charlotte, NC 28205
E: mrosario@ghd.com W: www.ghd.com

File Name: SR_36upson_155
File Name: SR_36upson_155



SCALE 0 75
EXHIBIT: C.3

OPTION 3 (130-ft ICD)

SR 74 East (One-Way Pair) at SR 36, Main St & N Bethel St
P.I. #0006967
Upson County

GHD
GHD, Inc.
5305 Wall Street, Suite 2005
Atlanta, GA 30328
E: mrosario@ghd.com W: www.ghd.com
P:\Projects\14_348696967_15

File Name: 15_348696967_15



<p>SR 74 East (One-Way Pair) at SR 36, Main St & N Bethel St P.I. #0006967 Upson County</p>	<p>SCALE 0 75 </p>	<p>4 LEG CONCEPT REVISED (OPTION 4)</p>	<p>EXHIBIT: C.4</p>
<p>GHD, Inc. 5305 Walk Street, Suite 2005 Raleigh, NC 27609 E.mason@ghd.com W.www.ghd.com</p> <p>File Name: SR_3606967_05 File Name: SR_3606967_05</p>			

Appendix E – Crash Data & CMFs

Crash Data for the most recent five years 2009-2013

5 leg - SR 74 / Main St. - SR 36 / Barnesville St. - Bethell St.

Year	Date	Incidental I.D.	Injuries	Fatalities
2013	3/12/2013	4387555	1	0
	3/30/2013	4402117	0	0
	8/15/2013	4541934	0	0
	9/6/2013	4564993	0	0
	9/13/2013	4571235	1	0
	10/29/2013	4631326	2	0

Year	Date	Incidental I.D.	Injuries	Fatalities
2012		4279569	1	0
		4305784	0	0

Year	Date	Incidental I.D.	Injuries	Fatalities
2011	none			

Year	Date	Incidental I.D.	Injuries	Fatalities
2010	7/23/2010	3452878	2	0

Year	Date	Incidental I.D.	Injuries	Fatalities
2009	2/3/2009	232409	0	0
	3/5/2009	217520	0	0
	3/13/2009	217625	3	0
	4/17/2009	238497	2	0
	4/17/2009	241357	2	0
	4/30/2009	224382	0	0
	5/2/2009	270992	0	0
	5/7/2009	271370	0	0
	7/10/2009	315457	1	0

*State-wide data compilation not yet available for 2010-2013

Crash Data for the most recent five years 2009-2013

E. GORDON @ BETHEL ST.

Year	Date	Incidental I.D.	Injuries	Fatalities
2013	4/2/2013	4402560	4	0
	5/25/2013	4460238	0	0
	6/6/2013	4471331	0	0

Year	Date	Incidental I.D.	Injuries	Fatalities
2012	none			

Year	Date	Incidental I.D.	Injuries	Fatalities
2011	2/28/2011	3657753	0	0

Year	Date	Incidental I.D.	Injuries	Fatalities
2010	none			

Year	Date	Incidental I.D.	Injuries	Fatalities
2009	9/29/2009	408575	0	0

*State-wide data compilation not yet available for 2010-2013



CMF / CRF Details

CMF ID: 4932

Convert all-way, stop-controlled intersection to roundabout

Description:

Prior Condition: The intersection was operating under AWSC control.

Category: Intersection geometry

Study: [Evaluation of Roundabout Safety, Qin et al., 2013](#)

Star Quality Rating:



[\[View score details\]](#)

Crash Modification Factor (CMF)

Value: 1.114

Adjusted Standard Error:

Unadjusted Standard Error: 0.259

Crash Reduction Factor (CRF)

Value: -11.36 (*This value indicates an **increase** in crashes*)

Adjusted Standard Error:	
Unadjusted Standard Error:	25.9

Applicability	
----------------------	--

Crash Type:	All
Crash Severity:	All
Roadway Types:	Not specified
Number of Lanes:	2,4
Road Division Type:	All
Speed Limit:	
Area Type:	All
Traffic Volume:	
Time of Day:	All

<i>If countermeasure is intersection-based</i>	
---	--

Intersection Type:	Roadway/roadway (not interchange related)
Intersection Geometry:	3-leg,4-leg
Traffic Control:	Stop-controlled
Major Road Traffic Volume:	4100 (total entering) to 48100 (total entering) Annual Average Daily Traffic (AADT)
Minor Road Traffic Volume:	

Development Details

Date Range of Data Used:	1994 to 2010
Municipality:	Statewide
State:	WI
Country:	USA
Type of Methodology Used:	Before/after using empirical Bayes or full Bayes
Sample Size Used:	Crashes
Before Sample Size Used:	50 Crashes
After Sample Size Used:	70 Crashes

Other Details

Included in Highway Safety Manual?	No
Date Added to Clearinghouse:	08-01-2013
Comments:	- Study included three-year before and after crash data for each site. - Reported traffic volume is total entering volume.

This site is funded by the U.S. Department of Transportation Federal Highway Administration and maintained by the University of North Carolina Highway Safety Research Center

The information contained in the Crash Modification Factors (CMF) Clearinghouse is disseminated under the sponsorship of the U.S. Department of Transportation in the interest of information exchange. The U.S. Government assumes no liability for the use of the information contained in the CMF Clearinghouse. The information contained in the CMF Clearinghouse does not constitute a standard, specification, or regulation, nor is it a substitute for sound engineering judgment.



CMF / CRF Details

CMF ID: 4933

Convert all-way, stop-controlled intersection to roundabout

Description:

Prior Condition: The intersection was operating under AWSC control.

Category: Intersection geometry

Study: [Evaluation of Roundabout Safety, Qin et al., 2013](#)

Star Quality Rating:



[\[View score details\]](#)

Crash Modification Factor (CMF)

Value: 0.544

Adjusted Standard Error:

Unadjusted Standard Error:

0.196

Crash Reduction Factor (CRF)

Value: 45.6 (*This value indicates a **decrease** in crashes*)

Adjusted Standard Error:	
Unadjusted Standard Error:	19.6

Applicability	
----------------------	--

Crash Type:	All
Crash Severity:	Fatal,Serious injury,Minor injury
Roadway Types:	Not specified
Number of Lanes:	2,4
Road Division Type:	All
Speed Limit:	
Area Type:	All
Traffic Volume:	
Time of Day:	All

<i>If countermeasure is intersection-based</i>	
---	--

Intersection Type:	Roadway/roadway (not interchange related)
Intersection Geometry:	3-leg,4-leg
Traffic Control:	Stop-controlled
Major Road Traffic Volume:	4100 (total entering) to 48100 (total entering) Annual Average Daily Traffic (AADT)
Minor Road Traffic Volume:	

Development Details

Date Range of Data Used:	1994 to 2010
Municipality:	Statewide
State:	WI
Country:	USA
Type of Methodology Used:	Before/after using empirical Bayes or full Bayes
Sample Size Used:	Crashes
Before Sample Size Used:	22 Crashes
After Sample Size Used:	12 Crashes

Other Details

Included in Highway Safety Manual?	No
Date Added to Clearinghouse:	08-01-2013
Comments:	- Study included three-year before and after crash data for each site. - Reported traffic volume is total entering volume.

This site is funded by the U.S. Department of Transportation Federal Highway Administration and maintained by the University of North Carolina Highway Safety Research Center

The information contained in the Crash Modification Factors (CMF) Clearinghouse is disseminated under the sponsorship of the U.S. Department of Transportation in the interest of information exchange. The U.S. Government assumes no liability for the use of the information contained in the CMF Clearinghouse. The information contained in the CMF Clearinghouse does not constitute a standard, specification, or regulation, nor is it a substitute for sound engineering judgment.

**ATTACHMENT 5 – DESIGN TRAFFIC FOR PREFERRED
ALTERNATIVE**

Department of Transportation
State of Georgia

MEMORANDUM

DATE: July 7, 2015
SUBJECT: **Design Traffic for Preferred 4-Leg Roundabout Configuration**

The design traffic used in the Roundabout Feasibility Study (see Appendix A of Attachment 4), is for the 5-leg roundabout configuration. The design traffic for the preferred 4-leg roundabout configuration is shown here. The results of the Roundabout Analysis are also attached, and show the acceptability of the 4-leg roundabout alternative in terms of Level of Service (LOS).

Note that the only difference between the design traffic for the 5-leg and 4-leg roundabout alternatives, is the configuration of the traffic diagrams. There are no changes in vehicular volumes or truck percentages.

Department of Transportation State of Georgia

INTERDEPARTMENT CORRESPONDENCE

FILE CSSTP-0006-00(967), Upson County **OFFICE** Planning
P.I. # 0006967
DATE July 6, 2015

FROM Cynthia L. VanDyke, State Transportation Planning Administrator

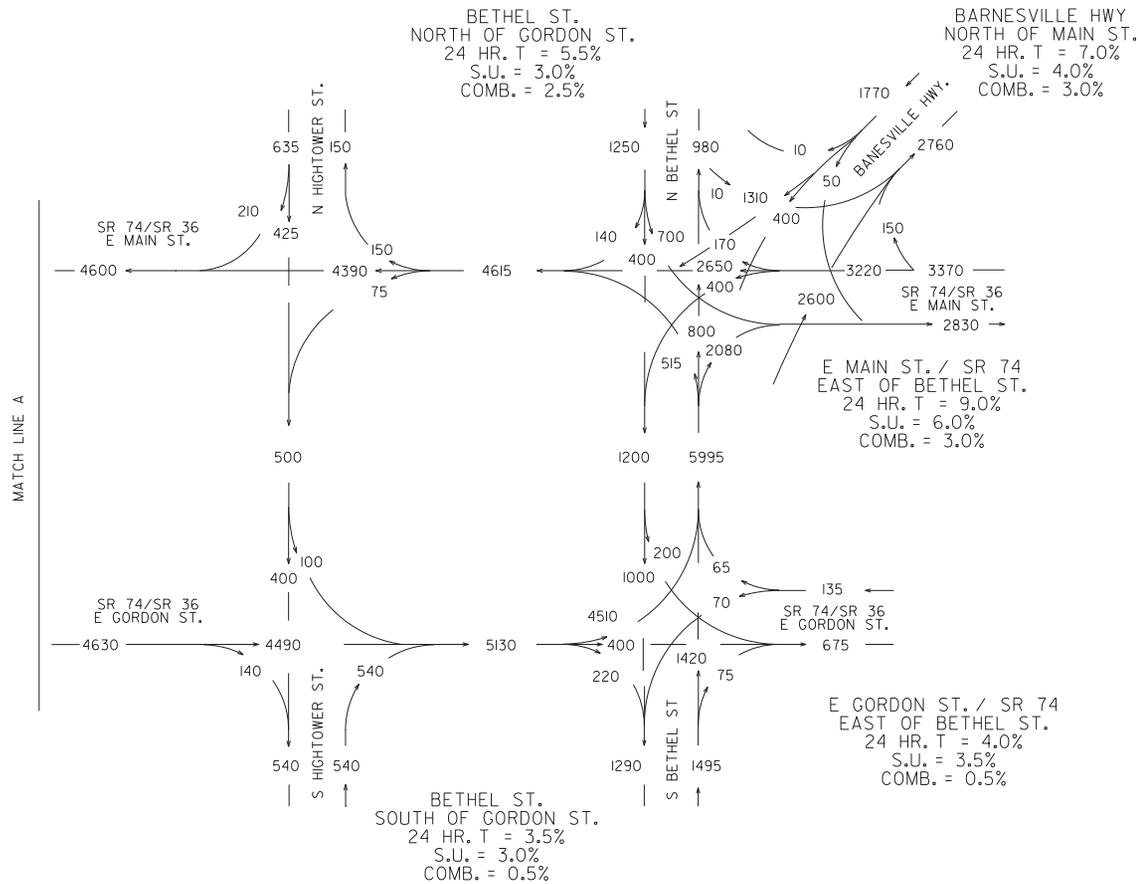
TO Albert Shelby, State Program Delivery Engineer
Attention: Iheachor Njoku

SUBJECT **Updated Design Traffic** for SR 74 East One- Way Pair in Thomaston.

The Updated Design Traffic for the above project is attached in pdf and dgn format.

If you have any questions concerning this information please contact Rhonda Niles at (404) 631-1924.

CLV/rfn



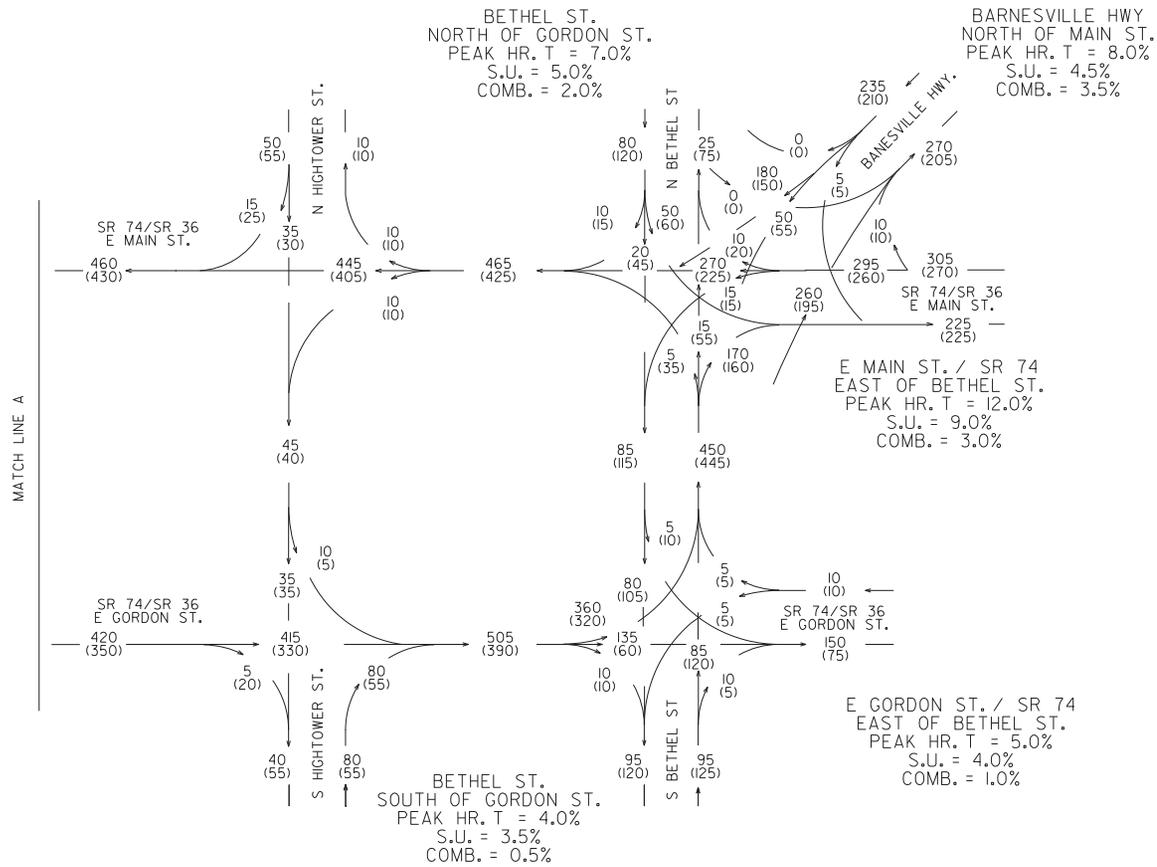
MATCH LINE A

CSSTP-0006-00(967)
P.I.# 0006967
UPSON COUNTY
THOMASTON
OPERATIONAL IMPROVEMENTS

EXISTING 2013 AADT

GEORGIA
DEPARTMENT
OF
TRANSPORTATION

REVISION DATES		STATE OF GEORGIA	
1/15/2014	FORESITE	DEPARTMENT OF TRANSPORTATION	
4/16/2014	FORESITE	OFFICE:	PLANNING
5/8/2014	DRF	TRAFFIC DIAGRAM	
5/16/2014	DRF		
			DRAWING No. 10-2



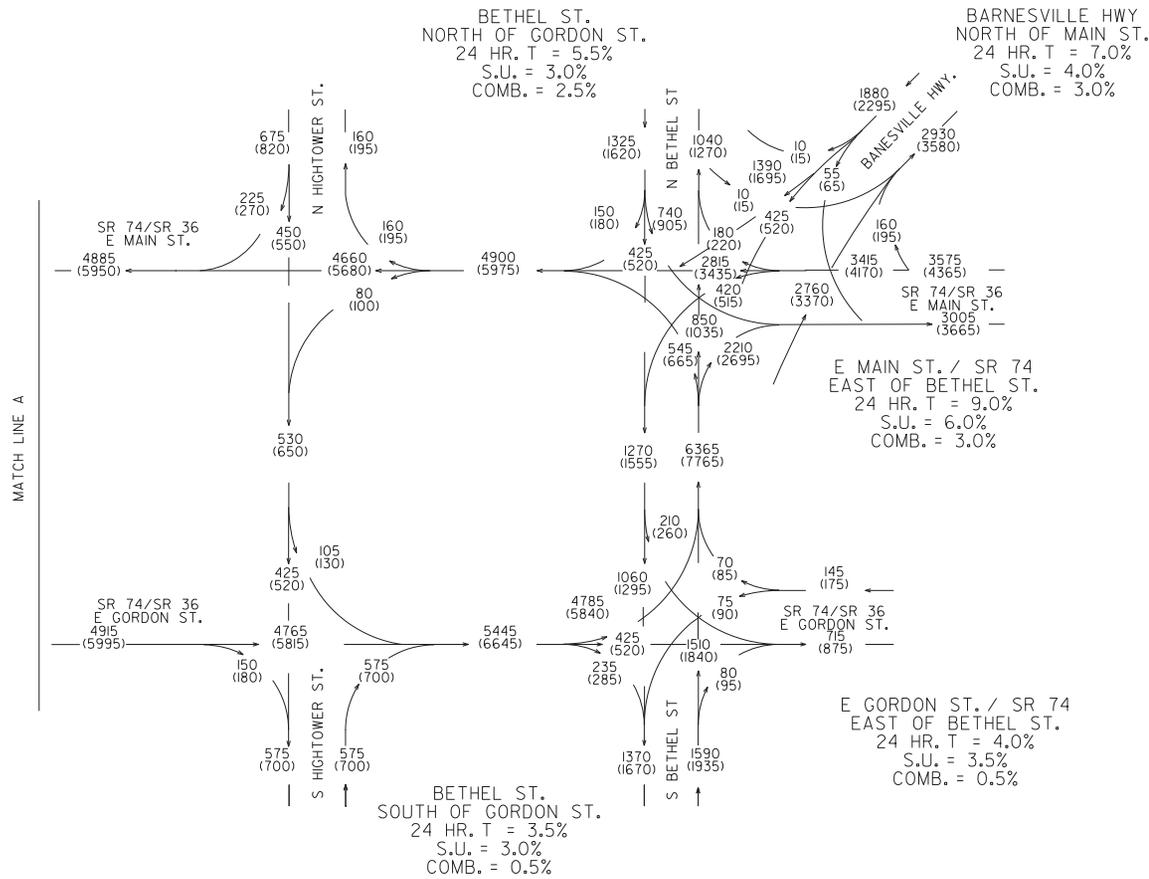
CMR
03/14

CSSTP-0006-00(967)
P.I.# 0006967
UPSON COUNTY
THOMASTON
OPERATIONAL IMPROVEMENTS

EXISTING 2013
AM (PM) DHV

GEORGIA
DEPARTMENT
OF
TRANSPORTATION

REVISION DATES		STATE OF GEORGIA	
1/15/2014	EDRESITE	DEPARTMENT OF TRANSPORTATION	
4/16/2014	EDRESITE	OFFICE:	PLANNING
5/8/2014	DRF	TRAFFIC DIAGRAM	
5/16/2014	DRF		
			DRAWING No. 10-4



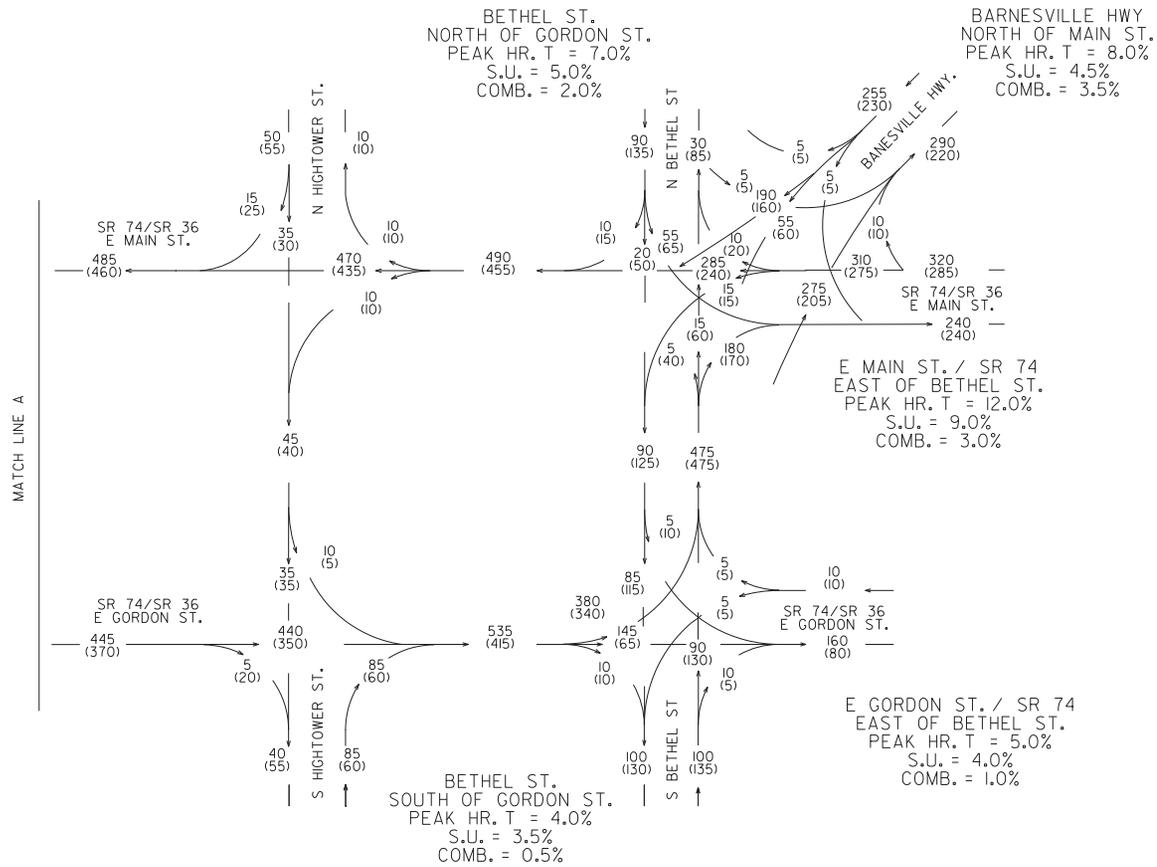
CMR 03/14

CSSTP-0006-00(967)
P.I.# 0006967
UPSON COUNTY
THOMASTON
OPERATIONAL IMPROVEMENTS

NO BUILD 2019 (2039) AADT

GEORGIA
DEPARTMENT
OF
TRANSPORTATION

REVISION DATES		STATE OF GEORGIA	
1/15/2014	FOR SITE	DEPARTMENT OF TRANSPORTATION	
4/16/2014	FOR SITE	OFFICE:	PLANNING
5/8/2014	DRF	TRAFFIC DIAGRAM	
5/16/2014	DRF		
		DRAWING No. 10-6	



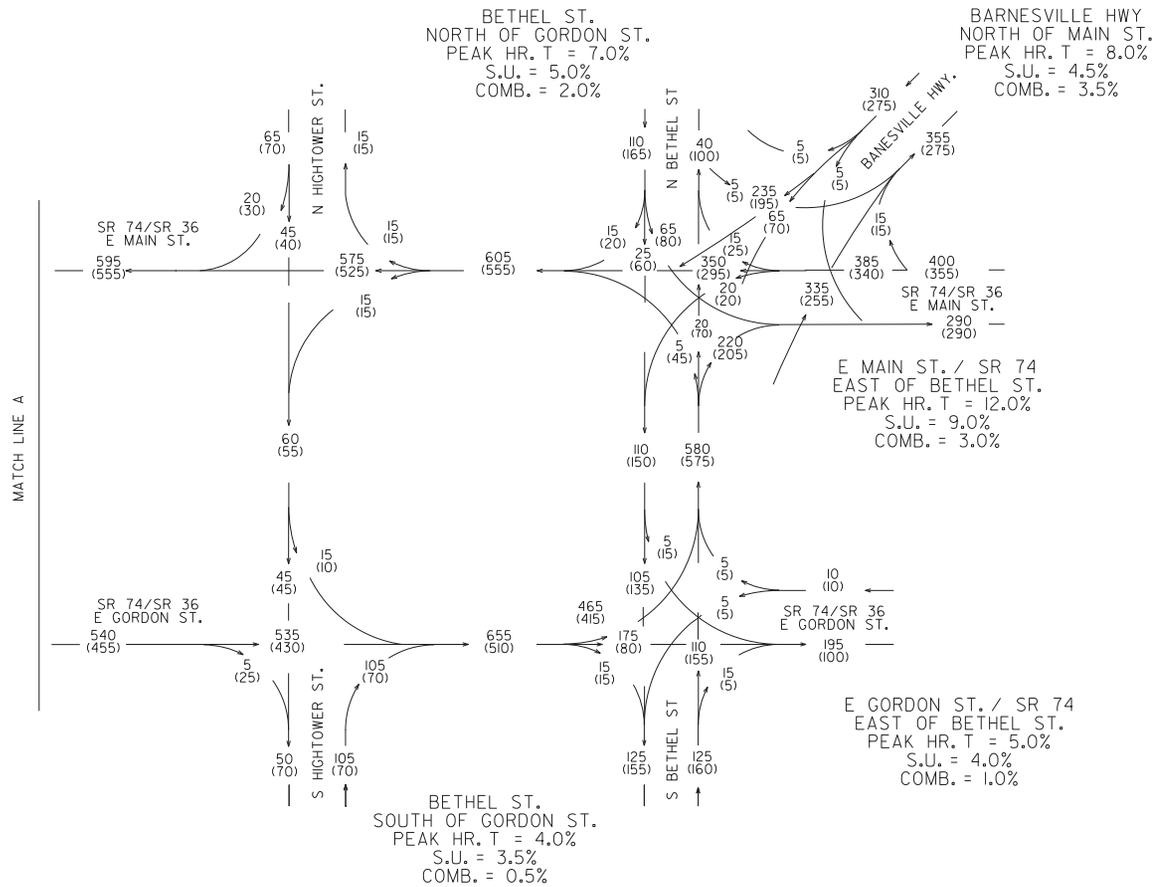
CMR
03/14

CSSTP-0006-00(967)
 P.I.# 0006967
 UPSON COUNTY
 THOMASTON
 OPERATIONAL IMPROVEMENTS

NO BUILD 2019
 AM (PM) DHV

GEORGIA
 DEPARTMENT
 OF
 TRANSPORTATION

REVISION DATES		STATE OF GEORGIA	
1/15/2014	FORESITE	DEPARTMENT OF TRANSPORTATION	
4/16/2014	FORESITE	OFFICE:	PLANNING
5/8/2014	DRF	TRAFFIC DIAGRAM	
5/16/2014	DRF		
			DRAWING No. 10-8



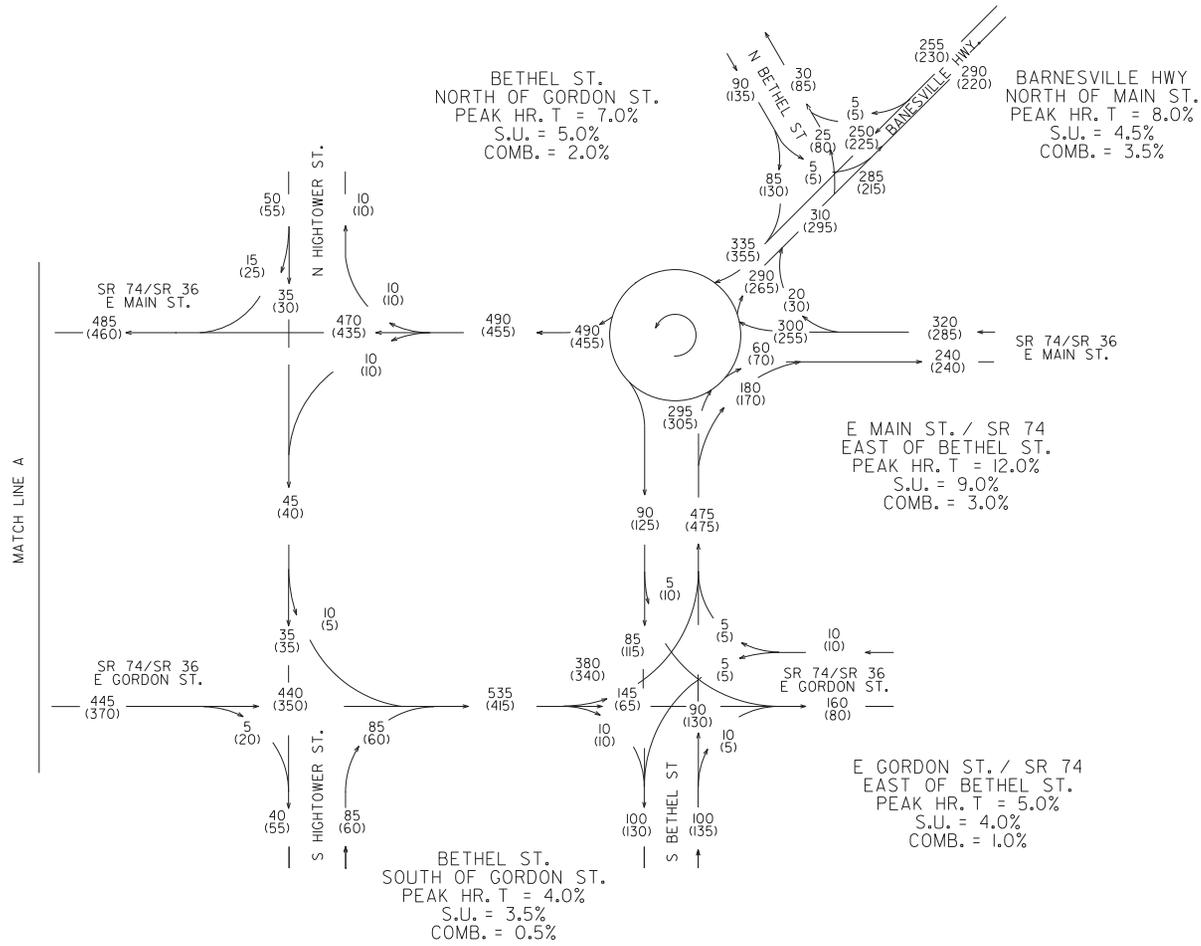
CMR
03/14

CSSTP-0006-00(967)
 P.I.# 0006967
 UPSON COUNTY
 THOMASTON
 OPERATIONAL IMPROVEMENTS

NO BUILD 2039
 AM (PM) DHV

GEORGIA
 DEPARTMENT
 OF
 TRANSPORTATION

REVISION DATES		STATE OF GEORGIA	
1/15/2014	FORESITE	DEPARTMENT OF TRANSPORTATION	
4/16/2014	FORESITE	OFFICE:	PLANNING
5/8/2014	DRF	TRAFFIC DIAGRAM	
5/16/2014	DRF		
			DRAWING No. 10-10



MATCH LINE A

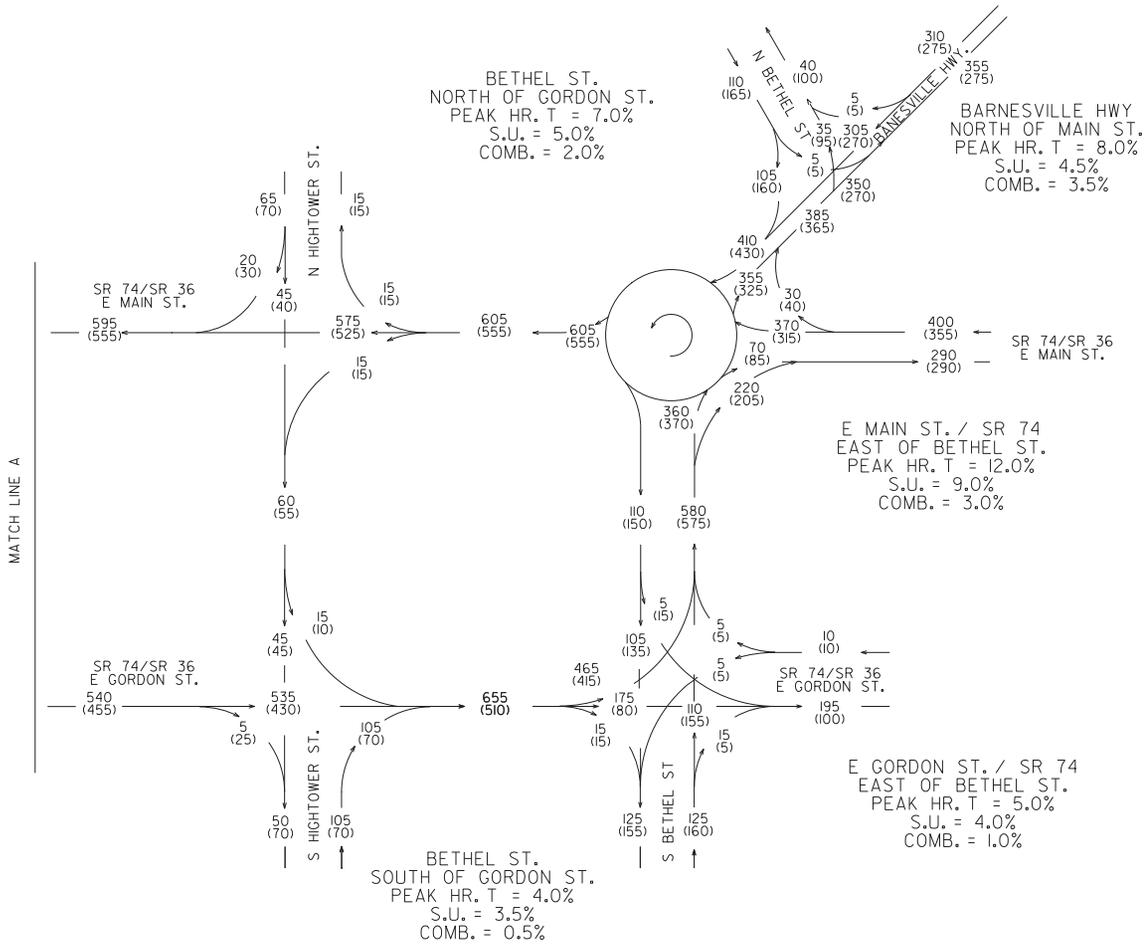
CMR
03/14

CSSTP-0006-00(967)
P.I.# 0006967
UPSON COUNTY
THOMASTON
OPERATIONAL IMPROVEMENTS

BUILD 2019
AM (PM) DHV

GEORGIA
DEPARTMENT
OF
TRANSPORTATION

REVISION DATES		STATE OF GEORGIA	
1/15/2014	FORESITE	DEPARTMENT OF TRANSPORTATION	
4/16/2014	FORESITE	OFFICE:	PLANNING
5/8/2014	DRF	TRAFFIC DIAGRAM	
5/16/2014	DRF		
6/25/2015	REN		
		DRAWING NO. 10-14	



CMR
03/14

CSSTP-0006-00(967)
P.I.# 0006967
UPSON COUNTY
THOMASTON
OPERATIONAL IMPROVEMENTS

BUILD 2039
AM (PM) DHV

GEORGIA
DEPARTMENT
OF
TRANSPORTATION

REVISION DATES		STATE OF GEORGIA DEPARTMENT OF TRANSPORTATION	
1/15/2014	EOBSITE	OFFICE: PLANNING	
4/16/2014	EOBSITE		
5/8/2014	DRF		
5/16/2014	DRF	TRAFFIC DIAGRAM	
6/25/2015	RFN		
			DRAWING No. 10-16

General & Site Information		v2.1
Analyst:	Jim Hoskins	
Agency/Co:	GDOT	
Date:	5/21/2014	
Project or PI#:	6967	
Year, Peak Hour:	2039 am	
County/District:	Upson/District 3	
Intersection Name:	4 leg intersection SR 36, SR 74, Bethel, Main St., Barnesville Hwy	

		Entry Legs (FROM)							
		N (1)	NE (2)	E (3)	SE (4)	S (5)	SW (6)	W (7)	NW (8)
Exit Legs (TO)	N (1), vph							0	
	NE (2), vph			30		355		0	
	E (3), vph		70			220		0	
	SE (4), vph								
	S (5), vph		90	20				0	
	SW (6), vph								
	W (7), vph		250	350		5			
	NW (8), vph								
Output	Total Vehicles	0	410	400	0	580	0	0	0

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	100%	92%	88%	100%	93%	100%	88%	100%
% Heavy Vehicles	0%	8%	12%	0%	7%	0%	12%	0%
% Bicycle	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians (ped/hr)	0	0	0	0	0	0	0	0
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
F _{HV}	1.000	0.926	0.893	1.000	0.935	1.000	1.000	1.000
F _{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pcu/h	0	0	0	0	0	0	0	0
NE (2), pcu/h	0	0	37	0	413	0	0	0
E (3), pcu/h	0	82	0	0	256	0	0	0
SE (4), pcu/h	0	0	0	0	0	0	0	0
S (5), pcu/h	0	106	24	0	0	0	0	0
SW (6), pcu/h	0	0	0	0	0	0	0	0
W (7), pcu/h	0	293	426	0	6	0	0	0
NW (8), pcu/h	0	0	0	0	0	0	0	0
Entry flow, pcu/h	0	481	487	0	675	0	0	0
Conflicting flow, pcu/h	0	456	419	0	82	0	0	0

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

Results: Approach Measures of Effectiveness								
HCM 2010 Model (build)	N	NE	E	SE	S	SW	W	NW
Entry Capacity, vph	NA	663	664	NA	973	NA	1130	NA
Entry Flow Rates, vph	NA	446	435	NA	630	NA	0	NA
V/C ratio		0.67	0.66		0.65		0.00	
Control Delay, s/veh		19	18		13		3	
LOS		C	C		B		A	
95th % Queue (ft)		140	136		132		0	
Calibrated Model (future)	N	NE	E	SE	S	SW	W	NW
Entry Capacity, vph	NA	857	851	NA	1167	NA	1333	NA
Entry Flow Rates, vph	NA	446	435	NA	630	NA	0	NA
V/C ratio		0.56	0.57		0.58		0.00	
Control Delay, sec/pcu		12	13		10		3	
LOS		B	B		B		A	
95th % Queue (ft)		96	104		104		0	

Notes:

v2.1

Unit Legend:

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

Bypass Lane Merge Point Analysis (if applicable)						
Bypass Characteristics	Bypass #1	Bypass #2	Bypass #3	Bypass #4	Bypass #5	Bypass #6
Select Entry Leg from Bypass (FROM)						
Select Exit Leg for Bypass (TO)						
Does the bypass have a dedicated receiving lane?						
<i>Volumes</i>						
Right Turn Volume removed from Entry Leg						
<i>Volume Characteristics (for entry leg)</i>						
PHF						
F _{HV}						
F _{ped}						
NOTE: Volume Characteristics for Exit Leg are already taken into account						
<i>Entry/Conflicting Flows</i>						
Entry Flow, pcu/hr						
Conflicting Flow, pcu/hr						
Bypass Lane Results (HCM 2010 Model)						
Entry Capacity of Bypass, vph						
Flow Rates of Exiting Traffic, vph						
V/C ratio						
Control Delay, s/veh						
LOS						
95th % Queue (ft)						
<i>Approach w/Bypass Delay, s/veh</i>						
<i>Approach w/Bypass LOS</i>						

General & Site Information		v2.1
Analyst:	Jim Hoskins	
Agency/Co:	GDOT	
Date:	5/21/2014	
Project or PI#:	6967	
Year, Peak Hour:	2039 pm	
County/District:	Upson/District 3	
Intersection Name:	4 leg intersection SR 36, SR 74, Bethel, Main St., Barnesville Hwy	

		Entry Legs (FROM)							
		N (1)	NE (2)	E (3)	SE (4)	S (5)	SW (6)	W (7)	NW (8)
Exit Legs (TO)	N (1), vph							0	
	NE (2), vph			40		325		0	
	E (3), vph		85			205		0	
	SE (4), vph								
	S (5), vph		130	20				0	
	SW (6), vph								
	W (7), vph		215	295		45			
	NW (8), vph								
Output	Total Vehicles	0	430	355	0	575	0	0	0

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	100%	92%	88%	100%	93%	100%	88%	100%
% Heavy Vehicles	0%	8%	12%	0%	7%	0%	12%	0%
% Bicycle	0%	0%	0%	0%	0%	0%	0%	0%
# of Pedestrians (ped/hr)	0	0	0	0	0	0	0	0
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
F _{HV}	1.000	0.926	0.893	1.000	0.935	1.000	1.000	1.000
F _{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pcu/h	0	0	0	0	0	0	0	0
NE (2), pcu/h	0	0	49	0	378	0	0	0
E (3), pcu/h	0	100	0	0	238	0	0	0
SE (4), pcu/h	0	0	0	0	0	0	0	0
S (5), pcu/h	0	153	24	0	0	0	0	0
SW (6), pcu/h	0	0	0	0	0	0	0	0
W (7), pcu/h	0	252	359	0	52	0	0	0
NW (8), pcu/h	0	0	0	0	0	0	0	0
Entry flow, pcu/h	0	505	432	0	669	0	0	0
Conflicting flow, pcu/h	0	436	430	0	100	0	0	0

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

Results: Approach Measures of Effectiveness								
HCM 2010 Model (build)	N	NE	E	SE	S	SW	W	NW
Entry Capacity, vph	NA	677	656	NA	956	NA	1130	NA
Entry Flow Rates, vph	NA	467	386	NA	625	NA	0	NA
V/C ratio		0.69	0.59		0.65		0.00	
Control Delay, s/veh		20	16		14		3	
LOS		C	C		B		A	
95th % Queue (ft)		149	108		135		0	
Calibrated Model (future)	N	NE	E	SE	S	SW	W	NW
Entry Capacity, vph	NA	871	844	NA	1150	NA	1333	NA
Entry Flow Rates, vph	NA	467	386	NA	625	NA	0	NA
V/C ratio		0.58	0.51		0.58		0.00	
Control Delay, sec/pcu		13	11		10		3	
LOS		B	B		B		A	
95th % Queue (ft)		103	83		105		0	

Notes:

v2.1

Unit Legend:

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

Bypass Lane Merge Point Analysis (if applicable)						
Bypass Characteristics	Bypass #1	Bypass #2	Bypass #3	Bypass #4	Bypass #5	Bypass #6
Select Entry Leg from Bypass (FROM)						
Select Exit Leg for Bypass (TO)						
Does the bypass have a dedicated receiving lane?						
Volumes						
Right Turn Volume removed from Entry Leg						
Volume Characteristics (for entry leg)						
PHF						
F _{HV}						
F _{ped}						
NOTE: Volume Characteristics for Exit Leg are already taken into account						
Entry/Conflicting Flows						
Entry Flow, pcu/hr						
Conflicting Flow, pcu/hr						
Bypass Lane Results (HCM 2010 Model)						
Entry Capacity of Bypass, vph						
Flow Rates of Exiting Traffic, vph						
V/C ratio						
Control Delay, s/veh						
LOS						
95th % Queue (ft)						
Approach w/Bypass Delay, s/veh						
Approach w/Bypass LOS						

ATTACHMENT 6 – CAPACITY ANALYSIS SUMMARY

Analysis Tool	Approach	Movement		2019								
				AM				PM				
		Move	Turn	V/C	Delav (s/veh)	LOS	95th % Queue (ft)	V/C	Delav (s/veh)	LOS	95th % Queue (ft)	
Gordon St - Bethel ST / SR 36												
Sidra	South	8	T	0.271	17.3	C	28.3	0.314	16.2	C	36.0	
		18	R	0.271	17.3	C	28.3	0.314	16.2	C	36.0	
			Total		0.271	17.3	C	28.3	0.314	16.2	C	36.0
	East	1	L	0.009	8.1	A	0.9	0.009	7.9	A	0.9	
		16	R	0.009	8.1	A	0.9	0.009	7.9	A	0.9	
				Total		0.009	8.1	A	0.9	0.009	7.9	A
	North	7	L	0.265	18.2	C	27.1	0.308	16.7	C	35.2	
		4	T	0.265	18.2	C	27.1	0.308	16.7	C	35.2	
				Total		0.265	18.2	C	27.1	0.308	16.7	C
	West	5	L	0.239	0.0	A	0.0	0.213	0.0	A	0.0	
		2	T	0.094	0.0	A	0.0	0.046	0.0	A	0.0	
		12	R	0.094	0.0	A	0.0	0.46	0.0	A	0.0	
				Total		0.239	0.0	NA	0.0	0.213	0.0	NA
	All Vehicles		Total		0.271	5.0	NA	28.3	0.314	6.4	NA	36.0

Analysis Tool	Approach	Movement		2019								
				AM				PM				
		Move	Turn	V/C	Delav (s/veh)	LOS	95th % Queue (ft)	V/C	Delav (s/veh)	LOS	95th % Queue (ft)	
Gordon St - Bethel ST / SR 36												
Synchro	South	8	T	0.59	49.3	E	80	0.64	44.8	E	97	
		18	R	0.59	49.3	E	80	0.64	44.8	E	97	
			Total		0.59	49.3	E	80	0.64	44.8	E	97
	East	1	L	0.0	3.9	A	0	0.24	23	A	0	
		16	R	0.0	3.9	A	0	0.05	0	A	0	
				Total		0.0	3.9	A	0	0.24	23	A
	North	7	L	0.61	57.7	F	83	0.62	45.8	E	89	
		4	T	0.61	57.7	F	83	0.62	45.8	E	89	
				Total		0.61	57.7	F	83	0.62	45.8	E
	West	5	L	0.27	8.2	A	23	0.24	8.0	A	23	
		2	T	0.10	0	A	23	0	0.0	A	23	
		12	R	0.10	0	A	23	0	0.0	A	23	
				Total		0.24	5.8	A	23	0.24	8.0	A
	Intersection Summary		Total		0.423	18	A	83	0.423	21.1	A	97

Analysis Tool	Approach	Movement		2039								
				AM				PM				
		Move	Turn	V/C	Delav (s/veh)	LOS	95th % Queue (ft)	V/C	Delav (s/veh)	LOS	95th % Queue (ft)	
Gordon St - Bethel ST / SR 36												
Sidra	South	8	T	0.387	23.0	C	43.9	0.431	16.2	C	56.3	
		18	R	0.387	23.0	C	43.9	0.431	16.2	C	56.3	
	Total				0.387	23.0	C	43.9	0.431	16.2	C	56.3
	East	1	L	0.10	8.3	A	1.0	0.009	7.9	A	0.9	
		16	R	0.10	8.3	A	1.0	0.009	7.9	A	0.9	
		Total				0.10	8.3	A	1.0	0.009	7.9	A
	North	7	L	0.392	24.2	C	44.4	0.436	16.7	C	57.4	
		4	T	0.392	24.2	C	44.4	0.436	16.7	C	57.4	
		Total				0.392	24.2	C	44.4	0.436	16.7	C
	West	5	L	0.292	0.0	A	0.0	0.261	0.0	A	0.0	
		2	T	0.116	0.0	A	0.0	0.059	0.0	A	0.0	
		12	R	0.116	0.0	A	0.0	0.059	0.0	A	0.0	
		Total				0.292	0.0	NA	0.0	0.213	0.0	NA
	All Vehicles		Total		0.392	6.1	NA	44.4	0.439	8.0	NA	57.4

Analysis Tool	Approach	Movement		2039								
				AM				PM				
		Move	Turn	V/C	Delav (s/veh)	LOS	95th % Queue (ft)	V/C	Delav (s/veh)	LOS	95th % Queue (ft)	
Gordon St - Bethel ST / SR 36												
Synchro	South	8	T	1.06	163.7	F	191	1.05	138.3	F	214	
		18	R	1.06	163.7	F	191	1.05	138.3	F	214	
	Total				1.06	163.7	F	191	1.05	138.3	F	214
	East	1	L	0.0	3.9	A	0	0.00	3.8	A	0	
		16	R	0.0	3.9	A	0	0.00	3.8	A	0	
		Total				0.0	3.9	A	0	0.00	3.8	A
	North	7	L	ERR	ERR	F	ERR	ERR	ERR	F	ERR	
		4	T	ERR	ERR	F	ERR	ERR	ERR	F	ERR	
		Total				ERR	ERR	F	ERR	ERR	ERR	F
	West	5	L	0.33	8.4	A	36	0.29	8.3	A	23	
		2	T	0.12	0.0	A	36	0.06	0	A	23	
		12	R	0.12	0.0	A	36	0.06	0	A	23	
		Total				0.33	8.4	A	36	0.29	8.3	A
	Intersection Summary		Total		0.487	Err	A	191	0.560	ERR	B	214

Analysis Tool	Approach	Movement		2019							
				AM				PM			
		Move ID	Turn	V/C	Delay (s/veh)	LOS	95th % Queue (ft)	V/C	Delay (s/veh)	LOS	95th % Queue (ft)
Green St - Main ST / SR 36 West / SR 74 West											
Sidra	South	3	L	0.194	10.5	B	40.5	0.235	10.2	B	48.6
		8	T	0.194	10.5	B	40.5	0.235	10.2	B	48.6
		Total		0.194	10.5	B	40.5	0.235	10.2	B	48.6
	East	1	L	0.279	7.5	A	60.3	0.259	7.9	A	55.9
		6	T	0.261	6.4	A	67.2	0.297	6.9	A	74.9
		16	R	0.261	6.4	A	67.2	0.297	6.9	A	74.9
		Total		0.279	6.9	A	67.2	0.297	7.3	A	74.9
	North	4	T	0.136	5.7	A	22.4	0.267	5.6	A	19.5
		14	R	0.136	5.7	A	22.4	0.267	5.6	A	18.2
		Total		0.136	5.7	A	22.4	0.267	5.6	A	19
	West	5	L	0.149	1.7	A	21.5	0.146	2.1	A	20.4
		12	R	0.149	1.7	A	21.5	0.146	2.1	A	20.4
		Total		0.149	1.7	A	21.5	0.146	2.1	A	20.4
All Vehicles				0.279	6.3	A	67.2	0.297	6.6	A	74.9

Synchro	South	3	L	0.16	4.9	A	*m15	0.21	5.6	A	m21
		8	T	0.16	4.9	A	*m15	0.21	5.6	A	m21
		Total		0.16	4.9	A	*m15	0.21	5.6	A	m21
	East	1	L	0.38	6.9	A	35	0.24	7.2	A	m33
		6	T	0.31	7.3	A	39	0.33	6.4	A	m40
		16	R	0.31	6	A	39	0.33	6.4	A	m40
	Total		0.31	6.6	A	39	0.33	6.9	A	m40	
	North	4	T	0.11	7.8	A	25	0.25	6.5	A	42
		14	R	0.11	7.8	A	25	0.25	6.5	A	42
		Total		0.11	7.8	A	25	0.25	6.5	A	42
	West	5	L	0.13	8.0	A	25	0.2	8.0	A	25
		12	R	0.13	8.0	A	25	0.2	8.0	A	25
		Total		0.13	8.0	A	25	0.2	8.0	A	25
All Vehicles				0.27	6.8	A	39	0.462	7.1	A	42

* m Volume for 95th queue is metered by upstream signal

Analysis Tool	Approach	Movement		2039							
				AM				PM			
		Move ID	Turn	V/C	Delay (s/veh)	LOS	95th % Queue (ft)	V/C	Delay (s/veh)	LOS	95th % Queue (ft)
Green St - Main ST / SR 36 West / SR 74 West											
Sidra	South	3	L	0.233	10.9	B	49.9	0.313	11.8	B	63.3
		8	T	0.233	10.9	B	49.9	0.313	11.8	B	63.3
		Total		0.233	10.9	B	49.9	0.313	11.8	B	63.3
	East	1	L	0.350	8.2	A	77.2	0.303	7.7	A	67.0
		6	T	0.321	7.0	A	87.6	0.349	6.9	A	93.9
		16	R	0.321	7.0	A	87.6	0.349	6.9	A	93.9
		Total		0.350	7.5	A	87.6	0.349	7.2	A	93.9
	North	4	T	0.163	5.6	A	25.9	0.349	6.6	A	59.3
		14	R	0.163	5.6	A	25.9	0.349	6.6	A	59.3
		Total		0.163	5.6	A	25.9	0.349	6.6	A	59.3
	West	5	L	0.187	1.6	A	25.1	0.176	2.0	A	23.7
		12	R	0.187	1.6	A	25.1	0.176	2.0	A	23.7
		Total		0.187	1.6	A	25.1	0.176	2.0	A	23.7
All Vehicles				0.350	6.6	A	87.6	0.349	7.0	A	93.9

Synchro	South	3	L	0.20	4.9	A	m16	0.26	5.8	A	m23
		8	T	0.20	4.9	A	m16	0.26	5.8	A	m23
		Total		0.20	4.9	A	m16	0.26	5.8	A	m23
	East	1	L	0.42	8.5	A	48	0.37	7.7	A	m41
		6	T	0.38	7.5	A	55	0.41	7.5	A	m50
		16	R	0.38	7.5	A	55	0.41	7.5	A	m50
		Total		0.42	7.9	A	55	0.41	7.6	A	m50
	North	4	T	0.13	8.0	A	29	0.26	9.0	A	50
		14	R	0.13	8.0	A	29	0.26	9.0	A	50
		Total		0.13	8.0	A	29	0.26	9.0	A	50
	West	5	L	0.16	8.3	A	29	0.16	8.3	A	29
		12	R	0.16	8.3	A	29	0.16	8.3	A	29
		Total		0.16	8.3	A	29	0.16	8.3	A	29
All Vehicles				0.31	7.5	A	55	0.34	7.7	A	50

* m Volume for 95th queue is metered by upstream signal

Analysis Tool	Approach	Movement		2019							
				AM				PM			
		Move ID	Turn	V/C	Delay (s/veh)	LOS	95th % Queue (ft)	V/C	Delay (s/veh)	LOS	95th % Queue (ft)

Gordon ST-Green St / SR 36 SR 74

Sidra	South	3	L	0.267	9.0	A	78.1	0.231	8.7	A	66.7	
		8	T	0.267	9.0	A	78.1	0.231	8.7	A	66.7	
		18	R	0.267	9.0	A	78.1	0.231	8.7	A	66.7	
		Total		0.267	9.0	A	78.1	0.231	8.7	A	66.7	
	North	7	L	0.455	11.0	B	143.2	0.481	11.3	B	149.6	
		4	T	0.455	11.0	B	143.2	0.481	11.3	B	149.6	
		14	R	0.455	11.0	B	143.2	0.481	11.3	B	149.6	
		Total		0.455	11.0	B	143.2	0.481	11.3	B	149.6	
	West	5	L	0.518	22.5	C	178.1	0.526	22.6	C	180.9	
		2	T	0.518	22.5	C	178.1	0.526	22.6	C	180.9	
		12	R	0.518	22.5	C	178.1	0.526	22.6	C	180.9	
		Total		0.518	22.5	C	178.1	0.526	22.6	C	180.9	
	All Vehicles				0.518	15.1	B	178.1	0.526	15.4	B	180.9

Synchro	South	3	L	0.28	9.3	A	51	0.21	7.4	A	47	
		8	T	0.28	9.3	A	51	0.21	7.4	A	47	
		18	R	0.28	9.3	A	51	0.04	7.4	A	47	
		Total		0.28	9.3	A	51	0.21	7.4	A	47	
	North	7	L	0.46	12.5	B	108	0.56	11.5	B	109	
		4	T	0.46	12.5	B	108	0.56	11.5	B	109	
		14	R	0.46	12.5	B	108	0.56	11.5	B	109	
		Total		0.46	12.5	B	108	0.56	11.5	B	109	
	West	5	L	0.53	12.2	B	114	0.55	12.8	B	116	
		2	T	0.53	12.2	B	114	0.55	12.8	B	116	
		12	R	0.53	12.2	B	114	0.55	12.8	B	116	
		Total		0.53	12.2	B	114	0.55	12.8	B	116	
	All Vehicles				0.50	11.6	B	114	0.527	11.2	B	116

Analysis Tool	Approach	Movement		2039							
				AM				PM			
		Move ID	Turn	V/C	Delay (s/veh)	LOS	95th % Queue (ft)	V/C	Delay (s/veh)	LOS	95th % Queue (ft)

Gordon ST-Green St / SR 36 SR 74

Sidra	South	3	L	0.319	10.0	A	101.8	0.285	10.3	A	89.0	
		8	T	0.319	10.0	A	101.8	0.285	10.3	A	89.0	
		18	R	0.319	10.0	A	101.8	0.285	10.3	A	89.0	
		Total		0.319	10.0	A	101.8	0.285	10.3	A	89.0	
	North	7	L	0.559	12.6	B	189.4	0.618	14.5	B	206	
		4	T	0.559	12.6	B	189.4	0.618	14.5	B	206	
		14	R	0.559	12.6	B	189.4	0.618	14.5	B	206	
		Total		0.559	12.6	B	189.4	0.618	14.5	B	206	
	West	5	L	0.626	24.0	C	215.8	0.605	23.4	C	221	
		2	T	0.626	24.0	C	215.8	0.605	23.4	C	221	
		12	R	0.626	24.0	C	215.8	0.605	23.4	C	221	
		Total		0.626	24.0	C	215.8	0.605	23.4	C	221	
	All Vehicles				0.626	16.5	B	215.8	0.618	17.3	B	221

Synchro	South	3	L	0.37	10.3	B	65	0.32	9.7	A	58	
		8	T	0.37	10.3	B	65	0.32	9.7	A	58	
		18	R	0.37	10.3	B	65	0.32	9.7	A	58	
		Total		0.37	10.3	B	65	0.32	9.7	A	58	
	North	7	L	0.61	15.4	B	#164	0.67	16.0	B	#185	
		4	T	0.61	15.4	B	#164	0.67	16.0	B	#185	
		14	R	0.61	15.4	B	#164	0.67	16.0	B	#185	
		Total		0.61	15.4	B	#164	0.67	16.0	B	#185	
	West	5	L	0.65	14.4	B	#150	0.66	14.9	B	#163	
		2	T	0.65	14.4	B	#150	0.66	14.9	B	#163	
		12	R	0.65	14.4	B	#150	0.66	14.9	B	#163	
		Total		0.65	14.4	B	#150	0.66	14.9	B	#163	
	All Vehicles				0.63	13.8	B	#164	0.67	14.2	B	#185

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles

ATTACHMENT 7 – PAVEMENT DESIGN

Flexible Pavement Design Analysis

PI Number	0006967	County(s)	Upson (east)
Project Number	Csstp-006-00(967)	Design Name	Bethel St. / SR 36
Project Description	SR 74 / SR 36 one-way pair in Thomaston - intersection reconstruction		

Traffic Data (AADTs are one-way)					Miscellaneous Data		
Initial Design Year	2019	Initial AADT, VPD	6,365	24 Hour Truck %	5.50	Lanes in one direction	1
Final Design Year	2039	Final AADT, VPD	7,765	SU Truck %	3.00	Curb & Gutter/Barrier	Yes
		Mean AADT, VPD	7,065	MU Truck %	2.50		

Design Data					
Lane Distribution Factor (%)	100.00	Soil Support Value	3.00	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	0.90
Non-Standard Value Comment					

Design Loading (Calculated 18-KIP ESAL)					
Mean AADT, VPD	LDF (%)	Vehicle Type	Volume (%)	ESAL Factor	Daily ESAL
7,065	100.00	Single Unit Truck	3.00	0.40	85
		Multi Unit Truck	2.50	1.50	265
Total Daily ESALs					350
Total Design Period ESALs					2,555,000

Proposed Flexible Full Depth Pavement Structure				
Course	Material	Thickness (inches)	Structural Coefficient	Structural Value
Course 1	9.5 mm Type II Superpave	1.25	0.4400	0.55
Course 2	19 mm Superpave	2.00	0.4400	0.88
Course 3	25 mm Superpave	1.25	0.4400	0.55
		2.75	0.3000	0.83
Course 4	Graded Aggregate Base	12.00	0.1600	1.92
Required SN	4.98	Proposed pavement is 5.07% Underdesigned		Proposed SN
				4.73

Design Remarks	Base Year two way ADT - 7635 vpd - use PAY ITEM 402-3103 , Mix Type - 9.5 mm Type II Superpave for Surface - 1.25 inch, 135 lbs/yd2
-----------------------	---

Prepared By	Jim Hoskins, P.E.	6/17/2014 11:57 AM
Recommended By	State Roadway Design Engineer	Date
Approved By	State Pavement Engineer	Date

Flexible Pavement Design Analysis

PI Number	0006967	County(s)	Upson (east)
Project Number	Csstp-006-00(967)	Design Name	SR 74/ E. Main St - East of Bethel
Project Description	SR 74 / SR 36 one-way pair in Thomaston - intersection reconstruction		

Traffic Data (AADTs are one-way)					Miscellaneous Data		
Initial Design Year	2019	Initial AADT, VPD	3,575	24 Hour Truck %	9.00	Lanes in one direction	2
Final Design Year	2039	Final AADT, VPD	4,365	SU Truck %	6.00	Curb & Gutter/Barrier	Yes
		Mean AADT, VPD	3,970	MU Truck %	3.00		

Design Data					
Lane Distribution Factor (%)	80.00	Soil Support Value	3.00	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	0.77
Non-Standard Value Comment					

Design Loading (Calculated 18-KIP ESAL)					
Mean AADT, VPD	LDF (%)	Vehicle Type	Volume (%)	ESAL Factor	Daily ESAL
3,970	80.00	Single Unit Truck	6.00	0.40	77
		Multi Unit Truck	3.00	1.50	143
Total Daily ESALs					220
Total Design Period ESALs					1,606,000

Proposed Flexible Full Depth Pavement Structure				
Course	Material	Thickness (inches)	Structural Coefficient	Structural Value
Course 1	9.5 mm Type II Superpave	1.25	0.4400	0.55
Course 2	19 mm Superpave	2.00	0.4400	0.88
Course 3	25 mm Superpave	1.25	0.4400	0.55
		1.75	0.3000	0.53
Course 4	Graded Aggregate Base	12.00	0.1600	1.92
Required SN	4.65	Proposed pavement is 4.75% Underdesigned		Proposed SN
				4.43

Design Remarks	Base Year two way ADT = 6580vpd - surface 402-3103 9.5 mm Type II Superpave, 1.25 inch ,(135 lbs/yd2)
-----------------------	---

Prepared By _____ Date 6/17/2014 1:38 PM
 Recommended By Jim Hoskins, P.E. Date _____
 Approved By _____ State Roadway Design Engineer Date _____
 _____ State Pavement Engineer Date _____

Flexible Pavement Design Analysis

PI Number	0006967	County(s)	Upson (east)
Project Number	CSSTP-006-00(967)	Design Name	SR 36/ Barnesville Hwy- N. of E. Main St
Project Description	SR 74 / SR 36 one-way pair in Thomaston - intersection reconstruction		

Traffic Data (AADTs are one-way)						Miscellaneous Data	
Initial Design Year	2019	Initial AADT, VPD	2,930	24 Hour Truck %	7.00	Lanes in one direction	1
Final Design Year	2039	Final AADT, VPD	3,580	SU Truck %	4.00	Curb & Gutter/Barrier	Yes
		Mean AADT, VPD	3,255	MU Truck %	3.00		

Design Data					
Lane Distribution Factor (%)	100.00	Soil Support Value	3.00	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	0.87
Non-Standard Value Comment					

Design Loading (Calculated 18-KIP ESAL)					
Mean AADT, VPD	LDF (%)	Vehicle Type	Volume (%)	ESAL Factor	Daily ESAL
3,255	100.00	Single Unit Truck	4.00	0.40	53
		Multi Unit Truck	3.00	1.50	147
Total Daily ESALs					200
Total Design Period ESALs					1,460,000

Proposed Flexible Full Depth Pavement Structure				
Course	Material	Thickness (inches)	Structural Coefficient	Structural Value
Course 1	9.5 mm Type II Superpave	1.25	0.4400	0.55
Course 2	19 mm Superpave	2.00	0.4400	0.88
Course 3	25 mm Superpave	1.25	0.4400	0.55
		2.75	0.3000	0.83
Course 4	Graded Aggregate Base	10.00	0.1600	1.60
Required SN	4.58	Proposed pavement is 3.91% Underdesigned		Proposed SN
				4.41

Design Remarks	Base Year Two-way ADT = 4810 - Surface - 402-3103 - 9.5 mm TYPE II Superpave
-----------------------	--

Prepared By _____ 6/9/2014 4:28 PM
Jim Hoskins, PE **Date**

Recommended By _____
State Roadway Design Engineer **Date**

Approved By _____
State Pavement Engineer **Date**

Flexible Pavement Design Analysis

PI Number	0006967	County(s)	Upson (east)
Project Number	CSSTP-006-00(967)	Design Name	N. Bethel St. - North of E. Gordon St
Project Description	SR 74 / SR 36 one-way pair in Thomaston - intersection reconstruction		

Traffic Data (AADTs are one-way)						Miscellaneous Data	
Initial Design Year	2019	Initial AADT, VPD	1,325	24 Hour Truck %	5.50	Lanes in one direction	1
Final Design Year	2039	Final AADT, VPD	1,620	SU Truck %	3.00	Curb & Gutter/Barrier	Yes
		Mean AADT, VPD	1,473	MU Truck %	2.50		

Design Data					
Lane Distribution Factor (%)	100.00	Soil Support Value	3.00	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	0.90
Non-Standard Value Comment					

Design Loading (Calculated 18-KIP ESAL)					
Mean AADT, VPD	LDF (%)	Vehicle Type	Volume (%)	ESAL Factor	Daily ESAL
1,473	100.00	Single Unit Truck	3.00	0.40	18
		Multi Unit Truck	2.50	1.50	56
Total Daily ESALs					74
Total Design Period ESALs					540,200

Proposed Flexible Full Depth Pavement Structure				
Course	Material	Thickness (inches)	Structural Coefficient	Structural Value
Course 1	9.5 mm Type II Superpave	1.25	0.4400	0.55
Course 2	19 mm Superpave	2.00	0.4400	0.88
Course 3	25 mm Superpave	1.25	0.4400	0.55
		1.75	0.3000	0.53
Course 4	Graded Aggregate Base	8.00	0.1600	1.28
Required SN	3.93	Proposed pavement is 3.75% Underdesigned		Proposed SN
				3.79

Design Remarks	Base Year Two-way ADT = 2365 - Surface - 402-3102 - 9.5mm TYPE II Superpave
-----------------------	---

Prepared By	_____	6/9/2014 4:36 PM
	Jim Hoskins, PE	Date
Recommended By	_____	
	State Roadway Design Engineer	Date
Approved By	_____	
	State Pavement Engineer	Date

Flexible Pavement Design Analysis

PI Number	0006967	County(s)	Upson (east)
Project Number	Csstp-006-00(967)	Design Name	SR 36 West / SR 74 West / W. Main St
Project Description	SR 74 / SR 36 one-way pair in Thomaston - intersection reconstruction		

Traffic Data (AADTs are one-way)					Miscellaneous Data		
Initial Design Year	2019	Initial AADT, VPD	4,130	24 Hour Truck %	12.00	Lanes in one direction	2
Final Design Year	2039	Final AADT, VPD	5,040	SU Truck %	8.00	Curb & Gutter/Barrier	Yes
		Mean AADT, VPD	4,585	MU Truck %	4.00		

Design Data					
Lane Distribution Factor (%)	80.00	Soil Support Value	3.00	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	0.77
Non-Standard Value Comment					

Design Loading (Calculated 18-KIP ESAL)					
Mean AADT, VPD	LDF (%)	Vehicle Type	Volume (%)	ESAL Factor	Daily ESAL
4,585	80.00	Single Unit Truck	8.00	0.40	118
		Multi Unit Truck	4.00	1.50	221
Total Daily ESALs					339
Total Design Period ESALs					2,474,700

Proposed Flexible Full Depth Pavement Structure				
Course	Material	Thickness (inches)	Structural Coefficient	Structural Value
Course 1	9.5 mm Type II Superpave	1.25	0.4400	0.55
Course 2	19 mm Superpave	2.00	0.4400	0.88
Course 3	25 mm Superpave	1.25	0.4400	0.55
		2.75	0.3000	0.83
Course 4	Graded Aggregate Base	12.00	0.1600	1.92
Required SN	4.95	Proposed pavement is 4.61% Underdesigned		Proposed SN
				4.73

Design Remarks	Intersection of W. Main st. and Green Street, Base Year two way ADT - 6580 vpd - Surface 402-3103 9.5 mm Type II Superpave, 1.25 inch (135 lbs/yd ²)
-----------------------	--

Prepared By _____ 6/17/2014 2:05 PM
Jim Hoskins, P.E. Date

Recommended By _____
State Roadway Design Engineer Date

Approved By _____
State Pavement Engineer Date

Flexible Pavement Design Analysis

PI Number	0006967	County(s)	Upson (east)
Project Number	CSSTP-006-00(967)	Design Name	SR 36 / S. Green St. - South of W.Gordon
Project Description	SR 74 / SR 36 one-way pair in Thomaston - intersection reconstruction		

Traffic Data (AADTs are one-way)					Miscellaneous Data		
Initial Design Year	2019	Initial AADT, VPD	1,965	24 Hour Truck %	5.00	Lanes in one direction	1
Final Design Year	2039	Final AADT, VPD	2,395	SU Truck %	3.00	Curb & Gutter/Barrier	Yes
		Mean AADT, VPD	2,180	MU Truck %	2.00		

Design Data					
Lane Distribution Factor (%)	100.00	Soil Support Value	3.00	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	0.84
Non-Standard Value Comment					

Design Loading (Calculated 18-KIP ESAL)					
Mean AADT, VPD	LDF (%)	Vehicle Type	Volume (%)	ESAL Factor	Daily ESAL
2,180	100.00	Single Unit Truck	3.00	0.40	27
		Multi Unit Truck	2.00	1.50	66
Total Daily ESALs					93
Total Design Period ESALs					678,900

Proposed Flexible Full Depth Pavement Structure				
Course	Material	Thickness (inches)	Structural Coefficient	Structural Value
Course 1	9.5 mm Type II Superpave	1.25	0.4400	0.55
Course 2	19 mm Superpave	2.00	0.4400	0.88
Course 3	25 mm Superpave	1.25	0.4400	0.55
		1.75	0.3000	0.53
Course 4	Graded Aggregate Base	9.00	0.1600	1.44
Required SN	4.08	Proposed pavement is 3.35% Underdesigned		Proposed SN
				3.95

Design Remarks	Base Year Two-way ADT = 3420 - surface - 402-3102 - 9.5 mm TYPE II SuperPave
-----------------------	--

Prepared By _____ Date 6/9/2014 4:17 PM

Jim Hoskins, PE Date

Recommended By _____ Date

State Roadway Design Engineer Date

Approved By _____ Date

State Pavement Engineer Date

ATTACHMENT 8 – MINUTES OF COORDINATION MEETINGS

PTIP Meeting Minutes
September 21, 2012 2:30 p.m.
CSSTP-0006-00(967), PI No. 0006967, Upson County

Attendees

- Sue Anne Decker, GDOT Project Manager
- Ken Thompson, GDOT Location Bureau
- Jason Mobley, GDOT District 3 Design
- Katrina Anderson, GDOT Right-of-Way
- Dave Peters, GDOT Design Policy and Support
- Jonathan Cox, GDOT Environmental Services
- Andy Casey, GDOT Roadway Design
- David Millen, GDOT District Three, District Engineer (via phone)

Prior to beginning the meeting, David Millen was teleconferenced into the meeting.

Sue Anne opened the meeting with a description of the project. Aerial images from Google Earth were shown to gain an understanding of field conditions. Then the schedule's activities were discussed.

It was noted that the local government had concerns for what to do with the 5 legged intersection at SR 74 @ SR 36@ S. Bethel Street. They favored extending SR 74 eastbound onto Gordon Street and constructing a taper to merge onto E. Main Street/SR 74.

Since SR 74 EB turns north to intersect the 5 legged intersection, there was concern about traffic still accessing a 5 legged intersection. David Millen stated that the portion of SR 74/S. Bethel St between E. Gordon St and E. Main St would be removed as part of this project. That raised concern over how vehicles would access SR 36 from SR 74. David explained that Trice Cemetery Road would be used as a connector between SR 74 and SR 36, and could become a state route later. He further explained that the streets around the courthouse had very small radii and that the locals wanted a way to keep trucks out of downtown.

Jonathan Cox was very concerned about the impact to the community, housing and a nearby park. He asked if this was a historic area. Jason pulled up street view so that Jonathan could see the types of house that would be impacted by the project. Jonathan stated that the housing looked older, but was unsure if they were historic. David mentioned that most of the housing was rental property.

Andy Casey asked if the planning study performed by the locals looked at any other alternatives other than the merge. David explained that the planning study did not consider any other alternative, and that District 3 desired to correct the 5 legged intersection and take SR 36 (Barnesville St) off system by creating a SR 36 bypass.

Sue Anne suggested that the schedule be reduced to include just a scoping phase and that a consultant be hired to complete a study of this area and provide alternatives to address the concerns that locals and the District had. She also suggested that Public Outreach be performed early to involve the local government and residents on the study's alternatives and to get their feedback on what improvements they would like to see in this area.

Andy asked David if the locals would consider a roundabout at the 5 legged intersection. David thought the locals would like a roundabout at this intersection as a gateway into downtown Thomaston. David also thought the locals would be more than willing to sit down and discuss alternative designs.

Jonathan asked Sue Anne to include history screening in the traffic study.

David mentioned that the locals had a transportation committee that we could meet with and that we could possibly use their office as a venue for stakeholder meetings.

All agreed to completing a traffic study prior to determining a scope for this project.

After the meeting, Jason suggested that the consultant provide a study and an approved concept report.

Action Items

PM

- Find a consultant to perform a traffic study
- Reduce schedule to a scoping phase and concept report phase

Attachments:

0006967 Crawford PTIP Package

0006967 Upson and 0011681 Crawford Sign-in Sheet

CC: Project file

Attendees

Russell McMurry, Director of Engineering

Genetha Rice-Singleton, State Program Delivery Engineer

Glenn Bowman, State Environmental Administrator

Phil Copeland, State Right-of-Way Administrator

CSSTP-0006-00(967), PI No. 0006967, Upson County
SR 74 East One-Way Pair in Thomaston
Meeting with Thomaston
Wednesday, August 26, 2014

Meeting Minutes

Attendees:

See Attached Sign-in Sheet

Minutes:

Jason Mobley opened the meeting by introducing himself and Mark Lenters and giving a brief description of the project.

Introductions were made.

Dan gave a brief description of the roundabout program and its positive impacts on traffic.

Jason stated that the main objective of the project was to reduce congestion. He stated that there were several intersections to discuss and that the 5-way intersection would be discussed first. He turned the meeting over to Mark.

Mark explained the scope of his service was to determine suitable alternatives for large truck traffic through downtown Thomaston. For the 5 way intersection of SR 74/SR36 @ Bethel St, they had determined that stop control and signal control did not meet the criteria established. These options were rejected. They proposed a roundabout. Four roundabout options were discussed.

The project team reviewed a hand out (attached). The criteria to select a suitable layout were reviewed and each option was discussed. Based on the criteria, Options #2 and #3 were eliminated and Options #1 and #4 were reviewed. They were discussed to show which options had been explored and rejected. Mark reviewed the turning movements of the design vehicle (WB-67) for Options 1 and 5.

After the options were discussed the floor was opened for comments. Capt. Corley stated that the signal at Hightower Rd often backs up to the 5-way intersection when the police are directing traffic during high volume hours (typically after school). He also stated that the roundabout needed to accommodate school buses.

Jason stated that the District Traffic office had reviewed removing the traffic signal at Hightower Rd. However, concerns about sight distance need to be addressed prior to removal.

Mark restated that a roundabout at the 5-way intersection would be more responsive to traffic back-ups than a traffic signal.

Chief Greathouse stated that traffic also backs-up to the 5-way intersection from the stop sign at the Bethel and Gordon Street because it is difficult to get a gap in traffic in the after-school rush hour.

Mayor Arnold stated that he was in favor of a roundabout at this location. He stated that SR 85 near Chick-fil-A in Fayette County was a good example of how a roundabout can improve the operations of an intersection.

Mark stated that one of the difficulties with making improvements on a grid system is trying to predict whether you were correcting the problem or simply shifting the bottleneck to another intersection. His team is working to avoid the later.

Dan stated that traffic study and network analysis would be completed, as needed, to evaluate impacts to surrounding intersections. He asked if the team favored one option over another or if they saw any advantages of one option over another.

The Mayor stated that he was in favor of the 4-legged option with the realignment of Bethel Street (Option #4 on the handout). It allows for additional parking as mitigation for impacts to the Dollar General and allows the City to beautify the area on the north side of the intersection.

Bobby Ellington also made favorable comments on the 4-legged option stating it improved sight distance for SR 36 @ Thompson.

Sue Anne stated that the impacts to Dollar General also included closing the access to Bethel St and shifting the access on Main Street.

Mark stated that his team had investigated adding access to Dollar General inside the roundabout. This option was quickly rejected. Captain Corley and Sue Anne both stated they were not in favor of this option.

Mark inquired about the loss of connectivity along Bethel Street with Option #4. Bethel Street run from the south side of town to the north side of town and could be used as an alternative to SR3/US19. The team did not seem to be too concerned about the loss of this connectivity because access to Bethel Street was still provided.

Dan asked if there were any unfavorable comments on Option #4.

Captain Corley inquired if the access to Dollar General on the east side could remain by retaining some of the existing Bethel Street. Traffic coming from the north would be interrupt if this access were to remain. It was agreed that this could be considered in the final design.

Dan asked if anyone was more favorable to the 5-legged option (Option # 1). No one spoke up.

Wendy inquired about the pedestrian and bike accommodations.

Jason stated that an 8-foot wide path had been provided on all sides of the roundabout, except the Dollar General side. It had been reduced to 5-foot wide to reduce the impacts to parking. He stated that bike would be able to use the roadway, if needed.

Patrick inquired about beautification of the existing island (Parcel #2). Jason stated that the Department had intended to purchase the entire parcel and would not landscape it. Sue Anne stated that a maintenance agreement could be reached if the City wanted to add landscaping and maintain it. Patrick stated that the City would be in favor of beautification.

Mark stated that small retaining walls could be added to the project to reduce right-of-way impacts.

Jason gave the background on the Tri-County planning study and how this project came to be programmed. He stated that the original scope was to extend Gordon Street by Weaver Park. He showed a layout with this option. He stated that due to the number of residential displacements this option had been rejected. The team agreed it was not a suitable alternative. Sue Anne added that this alternative still did not address the congestion at the 5-way intersection because traffic wanting to go to Barnesville still had to access the 5-way intersection. Therefore, the alternative did not satisfy the need of the project.

Jason stated that one option was to reduce the approach lanes on Gordon @ Bethel Street to one lane. This would allow an increased left turning radius with less right-of-way impacts. He opened the conversation up for advantages and disadvantages.

The Mayor and the Chief were ok with this option. Jason stated that it would also improve sight distance. Sue Anne stated that it may increase delay for those traveling south of Bethel Street. Since there will only be one approach, the level of service (LOS) for the approach will decrease and therefore less gaps in traffic will occur. This will increase the delay time on Bethel Street for the south bound approach and may cause an existing problem to become worse. Patrick stated he was concerned about access to Weaver Park.

Jason mentioned that another option would be to close the east leg of Gordon Street. This would reduce the cut through traffic and improve operations. He asked for the team's thoughts. Dan stated that Gordon Street could become terminated with a cul-de-sac. Patrick stated he was concerned about access to Weaver Park.

Wendy asked about impacts of right-of-way to the existing wall on the northwest corner of the intersection. She was concerned that the wall may contribute to the property which may be historic.

Jason then moved the conversation to the other intersections in the project and presented the following options:

Green Street @ West Main Street

- Increase left turning radius from West Main Street to Green Street
- Ace Cleaners had been hit
- Increased turning radius will have right-of-way impacts of Bank of Upson

Green Street @ Gordon Street

- Increase right turning radius from Green Street onto Gordon Street
- Right-of-way impacts to First Baptist church

Alternatives to move truck traffic away from this intersection

- Shift SR 36 onto Thomas Street
 - Increase turning radius for left turns
 - Right-of-way impacts to dentist
 - Increased right-of-way costs
- Extend Peachbelt Rd from SR 36 to SR 74 for a truck route
 - Concerns about truck traffic on a residential road

The Mayor stated that the Department would receive a lot of opposition to making Peachbelt Rd a truck route. The Chief stated that even with making improvements on Peachbelt Rd the intersection of Green Street @ Gordon Street would still have to be improved.

Dan opened the floor for other intersections of concern. The Chief stated that Center Street @ Gordon Street was an area of concern due to parking on the road without designated parking spaces and the right turn from Gordon onto Church needed improving.

Captain Corley stated that the shoulder was being used as a left turn lane at Church Street onto Thompson Street. He inquired about the turtle shell raised pavement marker that had been placed there in the past. He also stated that the turning arrows for the bank drive through led driver to believe that the shoulder was a left turn lane.

Jason agreed to look into these concerns as separate issues from the project.

CSSTP-0006-00(967), PI No. 0006967, Upson County
SR 74 East One-Way Pair in Thomaston
Meeting with Thomaston
Wednesday, August 26, 2014
Page 4 of 4

Attachments:

- Sign-in sheet
- Options for 5-way intersection (handout)

Concept Team Meeting Minutes

Upson 0006967

February 27, 2015

GDOT, District 3

The meeting was initiated by Sue Anne Decker at 10:00 AM. After introductions, Jason Mobley presented the concept report. He stated that 10 intersections were studied along the SR36/74 1-way pair through Downtown Thomaston.

Gary then introduced the project alternatives. He explained that there would be separate alternatives for the west and east sides of Downtown Thomaston. He then presented each alternative.

Alternative 1W is preferred for the western side which consists of intersection radii improvements. This would include improving the southeast quadrant radius of intersection 1, the southeast quadrant radius of intersection 2, and relocating the stop bar on Green Street at intersection 2. The second alternative was to reroute SR 36 onto Thomas Street and into SR 3. The third alternative was to reroute SR 36 onto Peach Belt Road and into SR 74. There were no comments offered in response to this presentation.

The preferred alternative for the eastern side is a 4-leg roundabout at intersection 10 and an intersection improvement to intersection 9 which consists of reconstructing E Gordon Street to one lane west of the intersection. The second alternative was to reroute SR 36 through a historic neighborhood into SR 74. Again, there were no comments.

Jason finished covering the remainder of the concept report and looked to the group for discussion.

Tyler Peek stated that there are multiple conflicts at the five leg intersection including underground gas and sewer lines. Kerry Gore said it was nothing that could not be worked around.

Dan Pass asked if there would be any impacts to any historic areas. Sue Anne stated that the Garcia and Williams properties were historic, but the wall that would be impacted did not contribute to the property's historic value. All the other impacts were temporary easements. Thomas Howell added that the wall may pose an intersection sight distance concern, which should be studied.

Kerry asked if the sidewalks could be brought closer to the roundabout. He stated the need to accommodate utility poles and the space required to do so. Gary said that the sidewalks shown on the layout follow existing sidewalk patterns. They could be moved closer to the roundabout, but a 2' buffer between the curb and sidewalk would need to be provided.

Thomas asked if any property owned by the First Baptist Church would be impacted. Gary stated that the improvements would remain on the existing right of way for that quadrant. Sue Anne continued by saying it would be nice to provide all new concrete, but as long as the ramps are ADA compliant, no improvements would be needed on the quadrant. Dan confirmed this statement.

Thomas raised concerns about the location of the easement shown at the Georgia High School Association stating that the easement was too close to the building. Jason said that conceptual design layouts normally are more conservative when showing right-of-way requirements. The group agreed that the easement should be reduced to more closely reflect the likely need before presenting the layout to the public.

Dan questioned the high right-of-way cost shown on the concept report. Jason stated this was the preliminary estimate and a new lower estimate should be provided. He asked if the request has been submitted. Gary responded that it has not yet been submitted.

Tyler mentioned that the Reginald Grant Memorial Airport is no longer active and should be removed from the concept report.

Sue Anne questioned the red brick pattern shown on the layout. Dan stated that GDOT commonly provides red stamped concrete for the roundabout truck apron. Gary said the pattern shown was primarily for aesthetics. Dan stated the need to consider aesthetics for the roundabout and what it means to the city. Additionally, the city should have input of the aesthetic features of the roundabout.

Kerry then asked about providing bicycle accommodations. Jason stated that the concept report currently shows that the project meets bike warrants, but only a guideline warrant was met. Dan confirmed that the project does not appear to meet the *standard* warrants for bicycle accommodations.

Kerry also suggested adding a turn lane onto North Bethel Street on the SR 36 / Barnesville Highway leg of the roundabout. He was concerned about traffic traveling northbound on Bethel Street wanting to make a left turn and backing up into the roundabout. Thomas was in favor of the turn lane. The group discussed the issue. Jason stated there was no reason to raise concern. Sue Anne brought up issues about adding the turn lane. She was concerned that adding the turn lane would increase the exit radius and promote higher speeds going through the roundabout. Dan stated exiting vehicle speed is controlled by vehicles circulating within the roundabout and therefore not likely a concern. Gary told Sue Anne that changes to the fastest path for that maneuver would be evaluated and minimized during the design phase.

Thomas also recommended widening the outside truck apron. The one shown on the layout was small and may only accommodate the best truck drivers. The team agreed. Sue Anne mentioned the sidewalk should be distanced from the roundabout as much as possible at this quadrant to better accommodate trucks and pedestrians safely.

The team moved discussion to the intersection of Gordon Street and SR 3 (labeled as Intersection 5 on the intersection location map found on Page 3). Sue Anne said this intersection was not part of the scope. Jason explained that the project justification statement defined four intersections specifically as need for improvement. However, the need for improvement was recognized. Jack Reed mentioned that improving this intersection is on the list of top 10 priorities for Thomaston. Thomas stated not much could be done at the intersection, but that the need should be considered and improvements made if

practical. Gary said that parking used to be prohibited at the intersection, but the striping has been removed and it is no longer enforced. The group continued to discuss the intersection.

Sue Anne said this intersection is not on the scope for environmental but she would talk to Wendy Dyson (HNTB - the environmental consultant) about expanding the scope. Dan suggested that District 3 design develop options for improvements at this location. Sue Anne again stated that this is not part of the scope and suggested that it should be handled by traffic operations as an operational improvement.

After this discussion, there were no more concerns so the meeting was concluded at 11:27 AM.

Action Items:

- District 3 design will make suggested changes to the concept layouts before PIOH
- District 3 design will supply alternatives for intersection 5
- Sue Anne would discuss the feasibility of extending the environmental scope to include Intersection 5 with Wendy

Meeting Attendees:

Name	Agency/Position	Email Address	Phone Number
Sue Anne Decker	GDOT / PM	sdecker@dot.ga.gov	706-646-7559
Dan Pass	GDOT	dpass@dot.ga.gov	706-646-6987
Thomas Howell	GDOT	thowell@dot.ga.gov	706-646-6900
Kim Boyd	GDOT	kboyd@dot.ga.gov	706-646-7554
Ken Robinson	GDOT	krobinson@dot.ga.gov	706-646-7508
Milton Floyd	AGL Resources	mfloyd@aglresources.com	
Greg Cromer	Windstream	greg.cromer@winstream.com	706-656-1759
Josh Crawford	Charter	Josh.crawford@charter.com	
Tyler Peek	GDOT / Utilities	tpeek@dot.ga.gov	706-646-7605
Lea Ward	GDOT / Utilities	lward@dot.ga.gov	706-646-6690
Kerry Gore	GDOT / Utilities	kgore@dot.ga.gov	706-646-7603
Jack Reed	GDOT / Planning	jreed@dot.ga.gov	706-646-7566
Jim Hoskins	GDOT / Design	jhoskins@dot.ga.gov	706-646-7573
Jason Mobley	GDOT / Design	jmobley@dot.ga.gov	706-646-7571
Gary Pierce	GDOT / Design	gpierce@dot.ga.gov	706-646-7581
Jeremy Daniel	GDOT / Engineering Services	jedaniel@dot.ga.gov	
Raymond Chandler	GDOT / Utilities SUE	rchandler@dot.ga.gov	404-631-1360

**ATTACHMENT 9 – PUBLIC INFORMATION OPEN HOUSE
COMMENTS AND RESPONSES**



May 5, 2015

Julian Bethel
211 North Bethel Street
Thomaston, GA 30286

Re: Responses to Open House Comments for PI#: 0006967, Upson County, State Route (SR) 74 One-Way Pair in Thomaston, Project Number: CSSTP-0006-00(967)

Dear Julian Bethel:

Thank you for your comments concerning the proposed project referenced above. We appreciate your participation and all of the input that was received as a result of the March 26, 2015 Public Information Open House. Every written comment received and verbal comment given to the court reporter will be made part of the project's official record.

A total of 21 people attended the open house. Of the five respondents who formally commented, four were in support of the project, none were opposed, none were uncommitted, and one expressed conditional support.

The attendees of the open house and those persons sending in comments within the comment period raised the following questions and concerns. The Georgia Department of Transportation (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.

- *"Too many drivers are confused at the 5-way regarding who goes when. The roundabout will, after a period of time, improve movement through the intersection."*

Thank you for your comment. The purpose of the proposed roundabout is to facilitate traffic flow through the existing five-way intersection.

- *"I'm not sure closing Bethel Street is the right move."* (in reference to closing southbound Bethel Street access to Main Street)

The options of either closing Bethel Street or incorporating it into a five-leg roundabout were considered and analyzed. Both operated efficiently; however the studies performed by GDOT show that closing Bethel Street, rather than incorporating Bethel Street into the roundabout, would reduce impacts to the businesses near the intersection as the impacts would be mainly limited to the vacant parcels nearby. This will also allow most of the roundabout to be constructed alongside the existing road without road closure, substantially reducing construction duration and cost and greatly improving work zone safety.

- *"This is a much needed improvement."*

Thank you for your comment and for taking the time to attend the Public Information Open House.

- *"I'm concerned that the traffic modeling does not cover the complete signal system that feeds the roundabout. The model being displayed showed random arrivals into the system. This cannot be the case because of the signal system and how it releases traffic...If a traffic model was conducted on the entire*

system including a 0.5% growth rate for the 20 year time the operation will likely fail.” (in reference to the traffic visualization of the proposed roundabout shown at the Public Information Open House)

One of the models displayed during the Public Information Open House was purely an artistic rendering. Although the second model showed the traffic, it did not include the complete signal system. These models were for demonstration purposes. The roundabout and the complete signal system have been modeled and do perform acceptably as does the left lane closure on Gordon Street approaching the intersection of Gordon Street at Bethel Street.

- *“A left lane closure is the least preferable since the driver is having to look over their right shoulder to merge.”* (in reference to the intersection of South Bethel and Gordon Street)

The traffic movement of a left lane merging right is repeated at each intersection at the courthouse square, where left turning vehicles are yielding to through movements and then merging right. Given the low speed of the corridor and the pattern that currently exists around the courthouse square, GDOT believes that a left lane closure and a right merge between Hightower Street and Bethel Street on Gordon Street corresponds well with the existing geometry and lane configurations.

Various alternatives were examined including the option of displacing the house on the corner of Bethel Street and Gordon Street. This would have provided enough space for truck left turning movements onto Bethel Street without closing any lanes on Gordon Street. However, this property is a contributing feature of a National Register-eligible historic district; therefore, this option is not viable per Section 4(f) of the U.S. Department of Transportation Act as a prudent and feasible alternative to displacing this structure exists (i.e. the improvement shown at the public meeting).

The option of a left merge between Hightower Street and Bethel Street was also considered. However, realignment would be needed to provide space for truck left turning movements onto Bethel Street and inadequate space exists between Hightower Street and Bethel Street for these operations to be performed safely.

Another option considered was the closure of a lane at the southeast corner of the courthouse square (Gordon Street and Center Street). This would require closing the existing left turn lane and reconfiguring the existing through lanes to a left turn and a through left turn. When analyzed for operational efficiency, this configuration operated as if the lane drop occurred further back at Green Street due to people moving over earlier between Green Street and Center Street. Because of this, inadequate storage was provided between Green Street and Center Street and there were larger queues and delays at Green Street. GDOT also believes that altering the existing pattern around the courthouse square at just the one corner is undesirable.

- *“With the high volume of trucks traveling SR 74 from Macon to LaGrange, special attention should be used to address the design for the right turning trucks with the splitter islands in the middle of the approach.”*

Truck accommodations will be integrated into the roundabout design. The installation of an outer truck apron to accommodate the turning radius of trucks turning right from SR 74 onto SR 36/ Barnesville Highway is already being considered.

- *Another area of concern is the close proximity of Thompson St. at SR 36 intersection to the roundabout. A better design may be to shift the roundabout to the northeast along the SR 36 alignment and include*

Thompson St. or Bethel St. into the roundabout. Thompson St. would be better operationally, however, my observations would lead me to think Bethel St. carries more traffic."

A 5-leg roundabout, in which Bethel Street is incorporated was modeled and examined alongside the 4-leg option shown at the Public Information Open House. It was found that the 4-leg configuration operates well below capacity in the design year (2039), while simplifying the operations of the roundabout by eliminating specific conflict points present in the 5-leg configuration. It also shifts property impacts away from the Dollar General to vacant parcels and enables a substantial portion of the roundabout to be constructed off alignment improving work zone safety and greatly reducing construction duration and costs. The location of the roundabout displayed during the Public Information Open House also maintains the existing alignment of SR 74 with minimal realignment needed.

The proximity of the Thompson Street at SR 36/Barnesville Highway intersection to the roundabout will be examined further. The option of moving it further away, along SR 36/Barnesville Highway is already being considered.

- *"After deciding to reduce the 5-way to a 4-way intersection...simply blocking Bethel Street access on the north side, a better solution would be to open-up all the other points of access and egress to a 4-way intersection rather than requiring a circuit about the roundabout."*

The roundabout analysis suggests that a roundabout is the most appropriate solution for improving traffic flow at this intersection and will operate well below capacity in design year 2039. Roundabouts can be expected to always offer better operational performance for vehicles than all-way stop controlled intersections given the same traffic conditions. Eliminating the Bethel Street approach results in fewer pedestrian crossings which increases pedestrian safety at the intersection as well.

- *"The need utility of a sidewalk that prematurely terminates traffic at the middle block is also questionable. What benefit is gained by vehicles using half a block to a dead end that would not be better served by turning the intersection a Thompson and Bethel into a 3-way?"* (in reference to Bethel Street)

At the proposed Bethel Street dead end, a driveway entrance to Dollar General is located on Bethel Street. To provide the same number of access points to Dollar General, Bethel Street would remain open to the Dollar General driveway. Although vehicular traffic is terminated at the dead end of Bethel Street, pedestrian traffic may wish to continue through the intersection to access downtown Thomaston. The proposed sidewalk layout provides a safe path for pedestrians to do so as it reduces the number of crossing required.

Again, thank you for your comments. Should you have further questions, comments or concerns, please call the project manager, Achor Njoku, at (404) 631-1550 or the environmental analyst, Paul Alimia, at (404) 631-1353.

Sincerely,



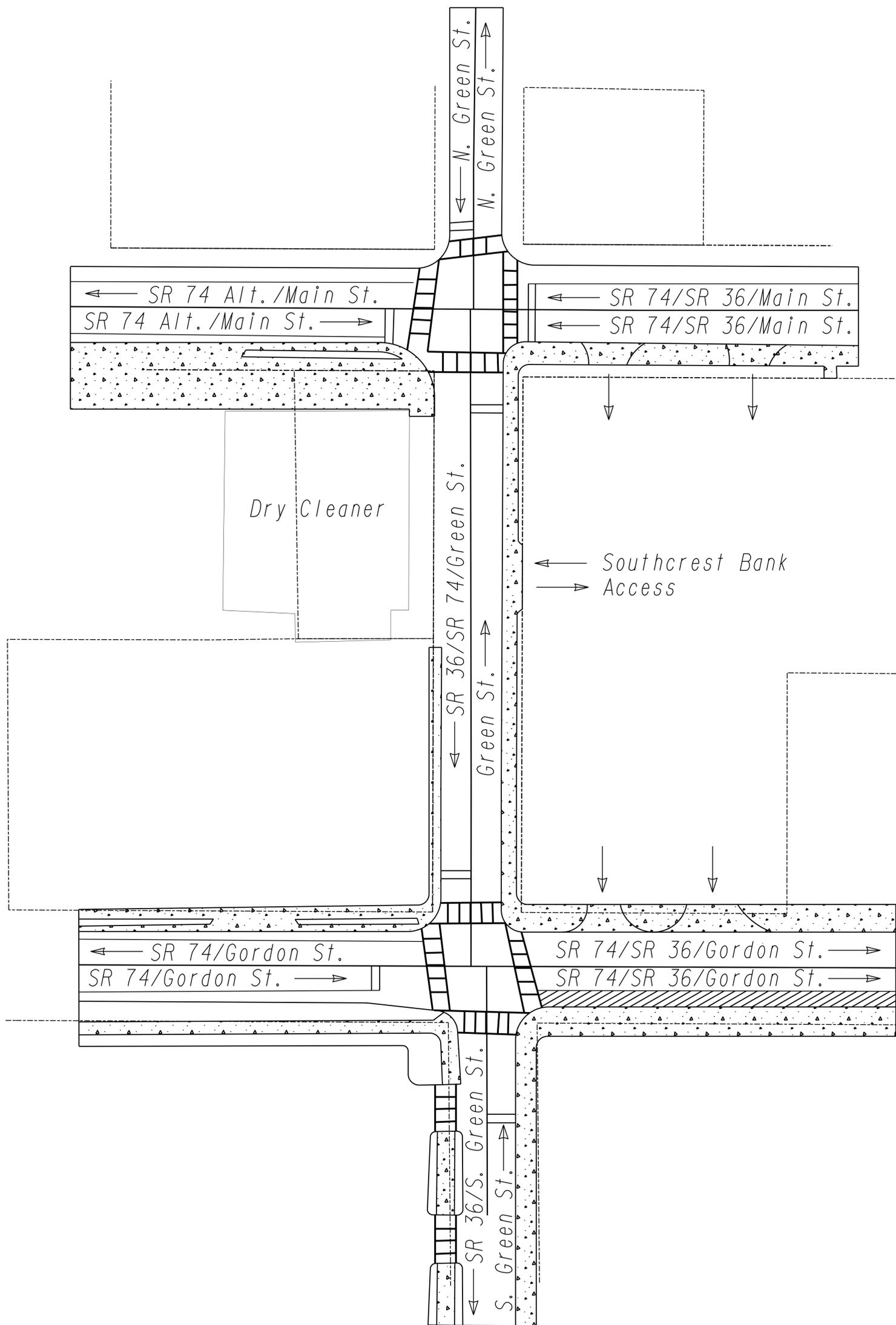
Hiral Patel, P.E.
State Environmental Administrator

HP/ppa

cc: Achor Njoku, GDOT Project Manager (via email)
PDF for Project File; Hardcopy to General Files

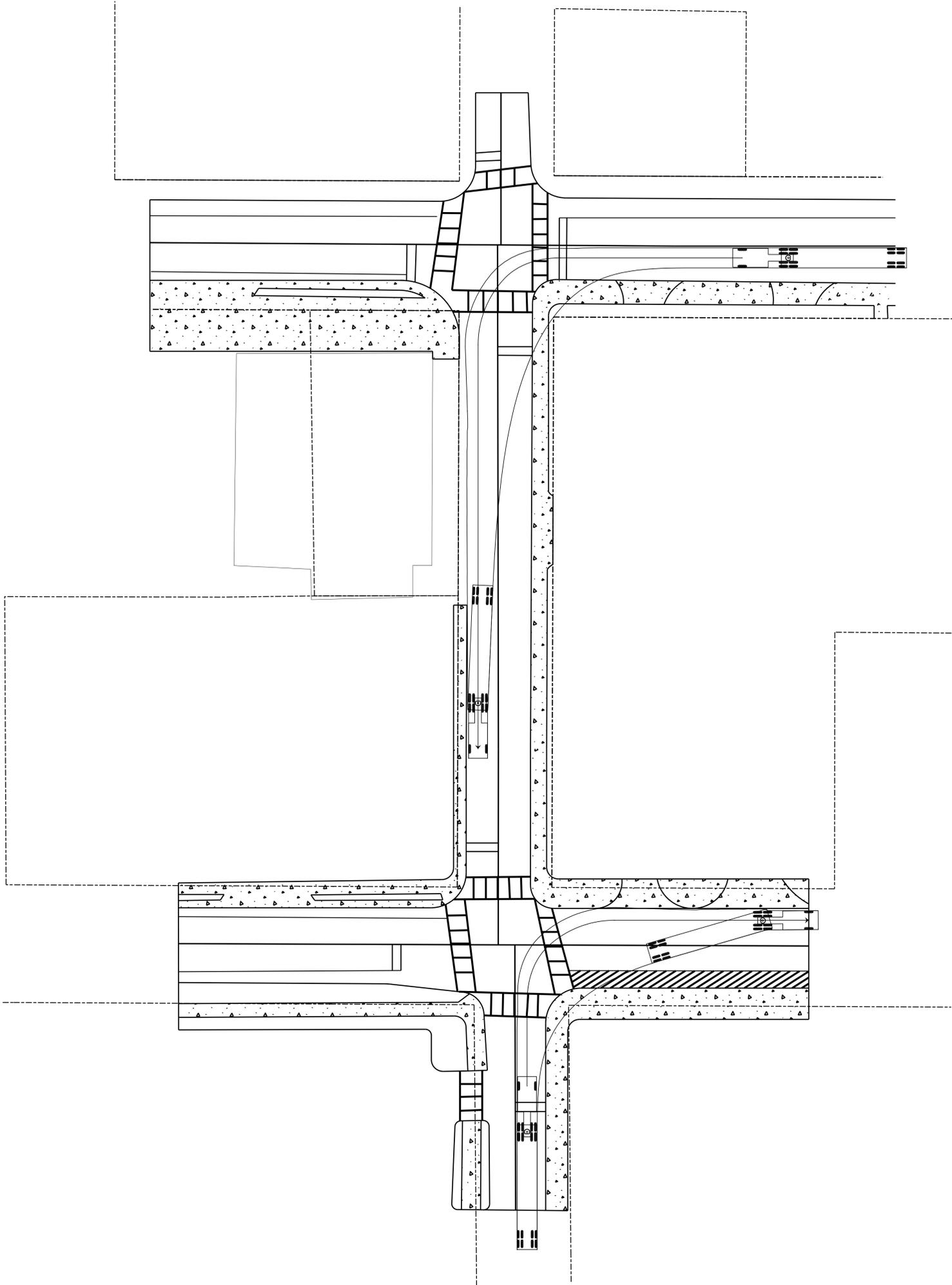
**ATTACHMENT 10 – AUTOTURN LAYOUTS & ROUNDABOUT
DESIGN CHECKS**

EXISTING ROADS WITH TRAFFIC PATTERNS



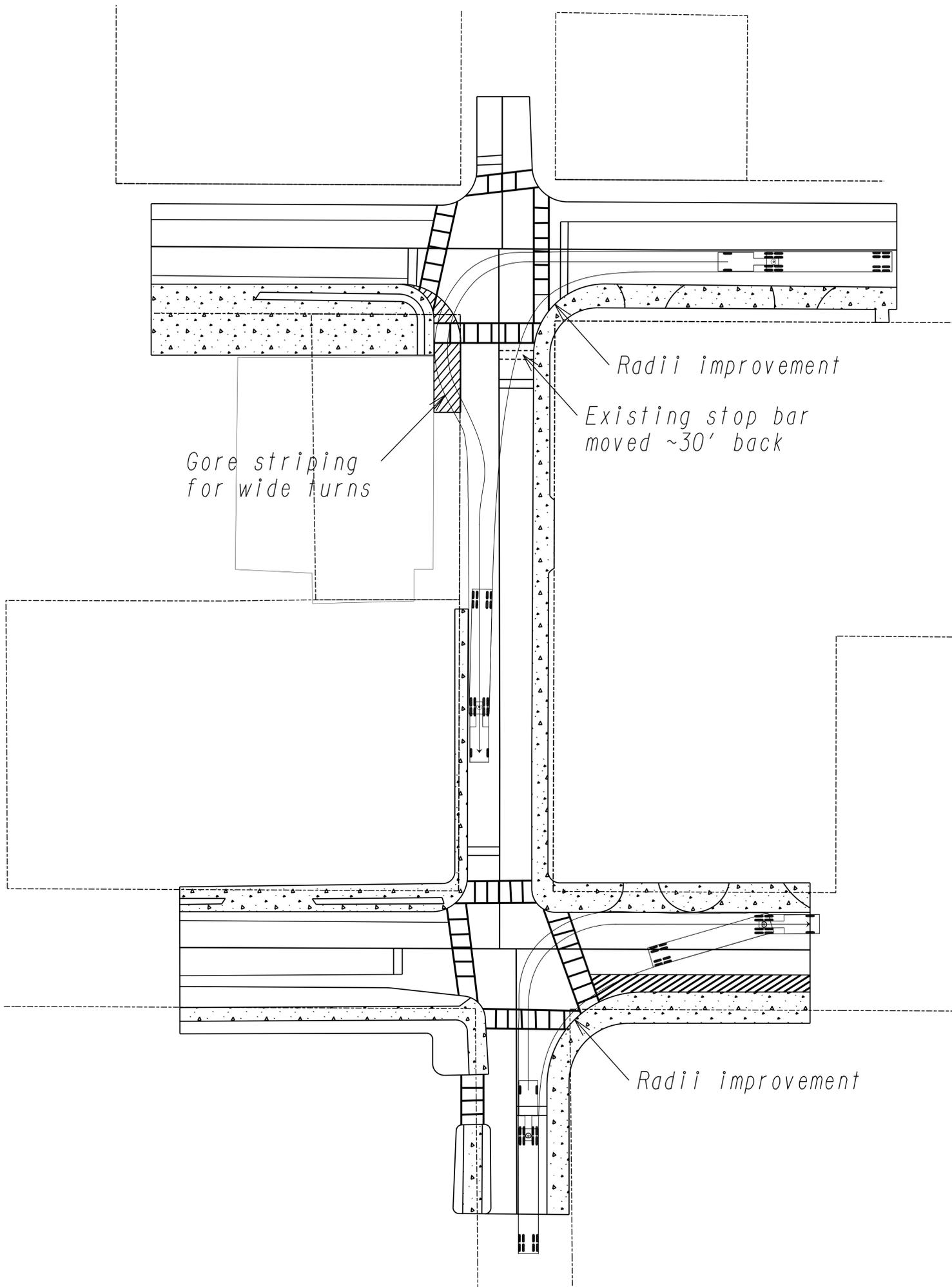
EXISTING TRUCK MOVEMENTS

WB-67 turn from inside lane, no oversteer



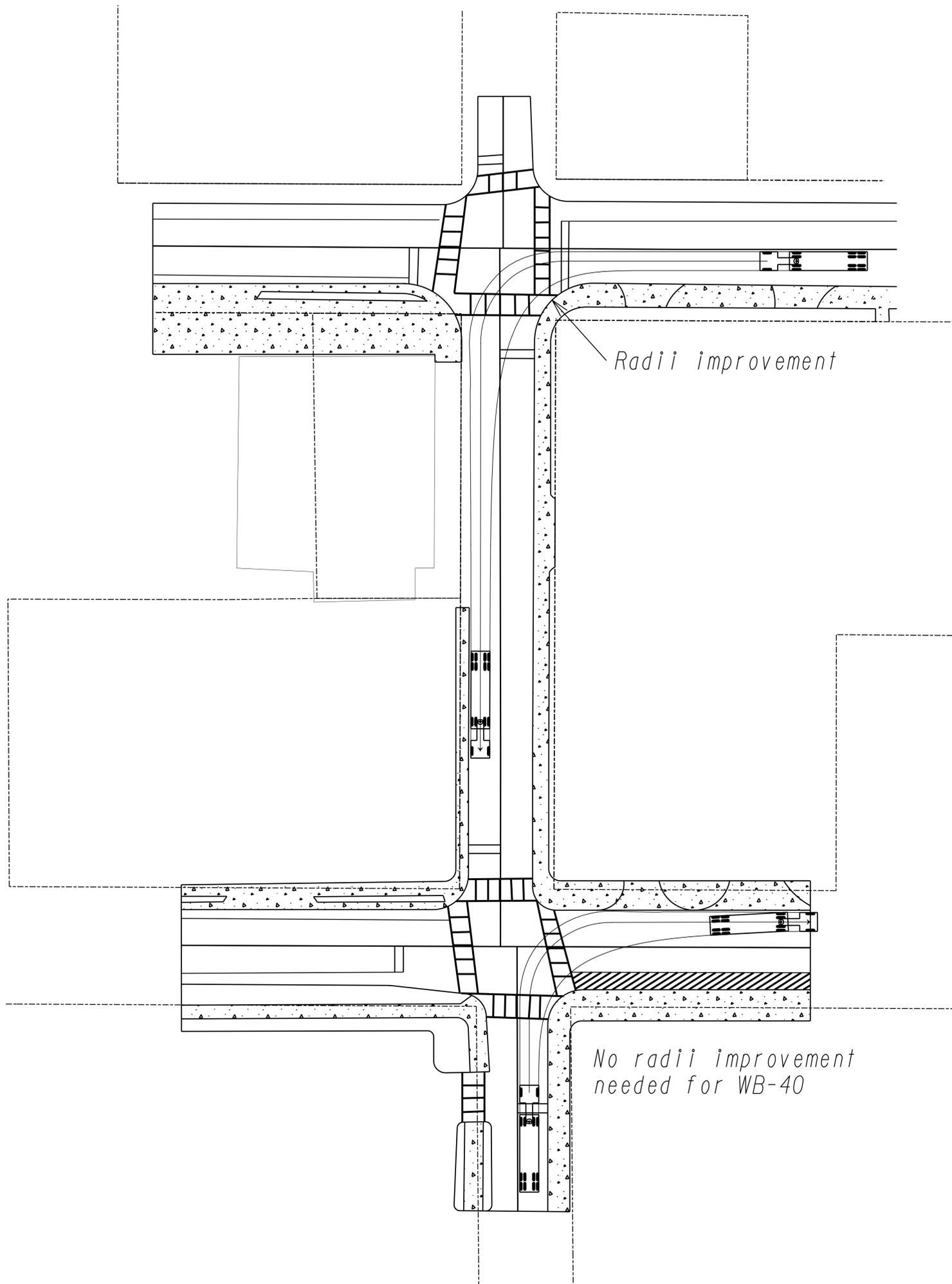
VARIATION 1

Gore zone in Dry Cleaner ROW, radii improvement,
stop bar relocated. WB-67 turn from inside lane,
15' oversteer



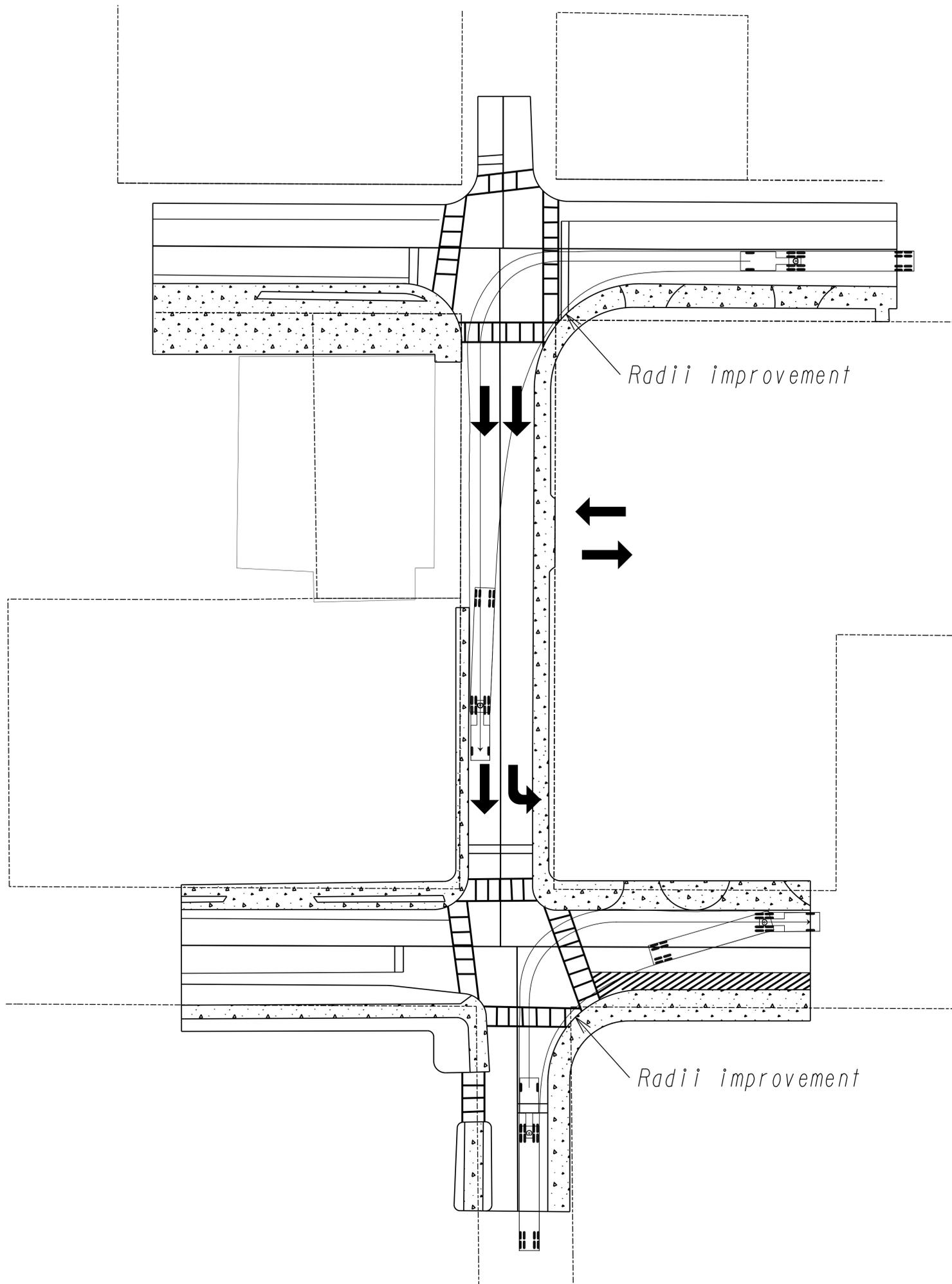
VARIATION 2

*Do not accommodate WB-67, instead accommodate WB-40
with radii improvement. WB-40 turn from inside lane
no oversteer*



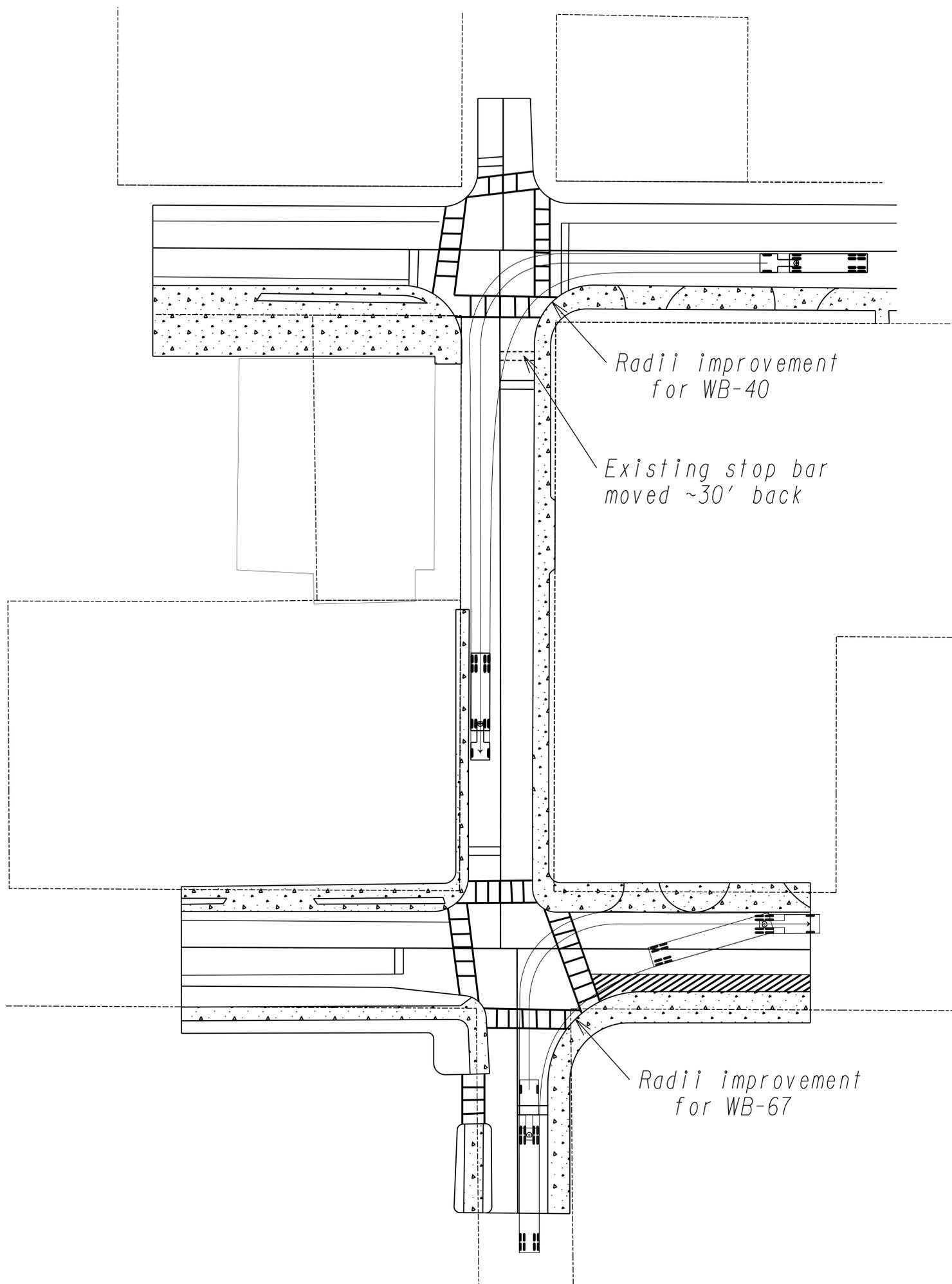
VARIATION 3

Green St. one way conversion, radii improvement.
WB-67 turn from inside lane, no oversteer

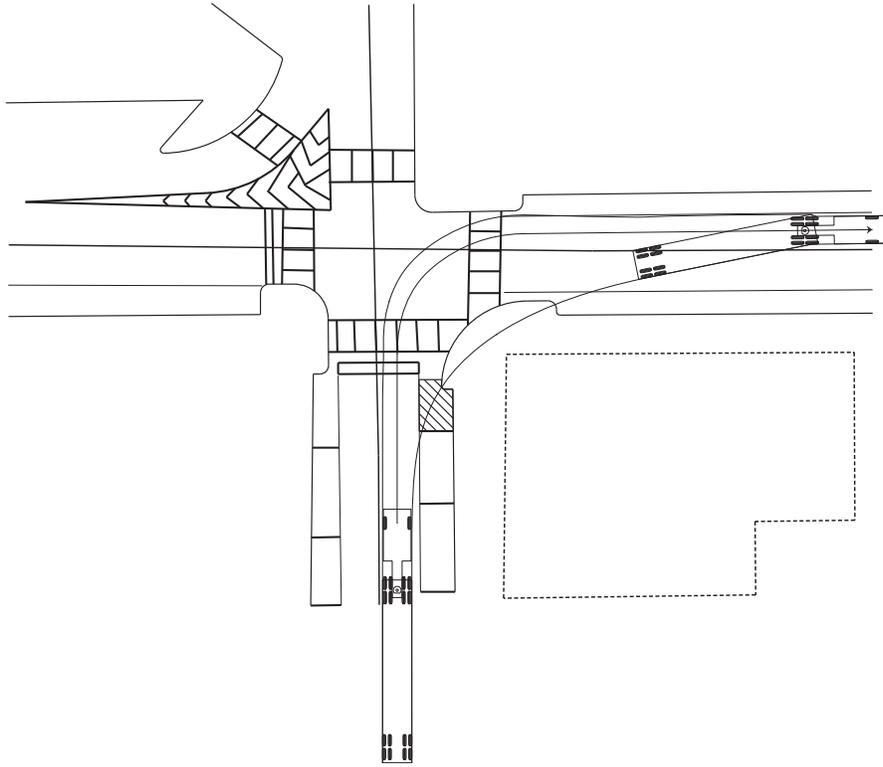


VARIATION 4

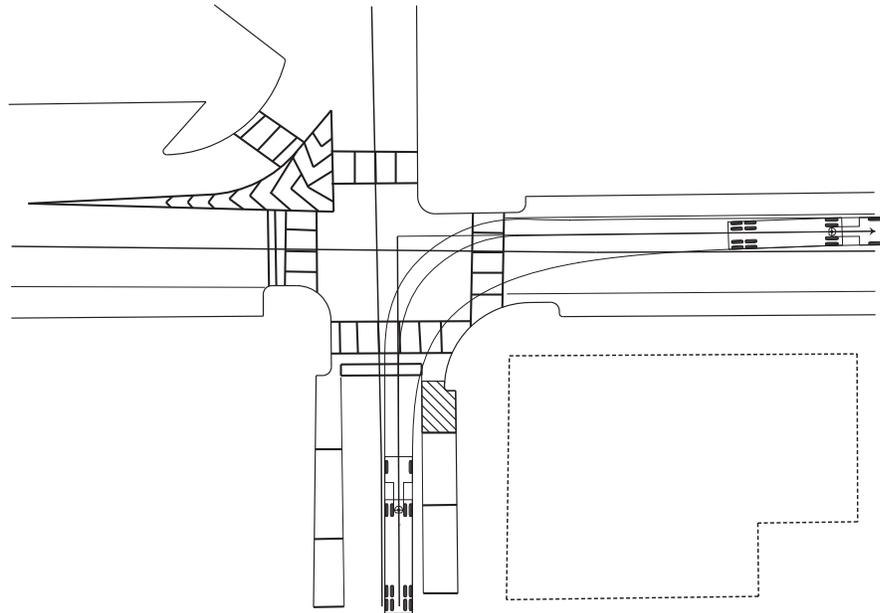
Radii improvement for WB-40 at one intersection to minimize property impacts, stop bar relocated to improve conditions for WB-67. Trucks turn from inside lanes, no oversteer



INTERSECTION 5 - WB-67



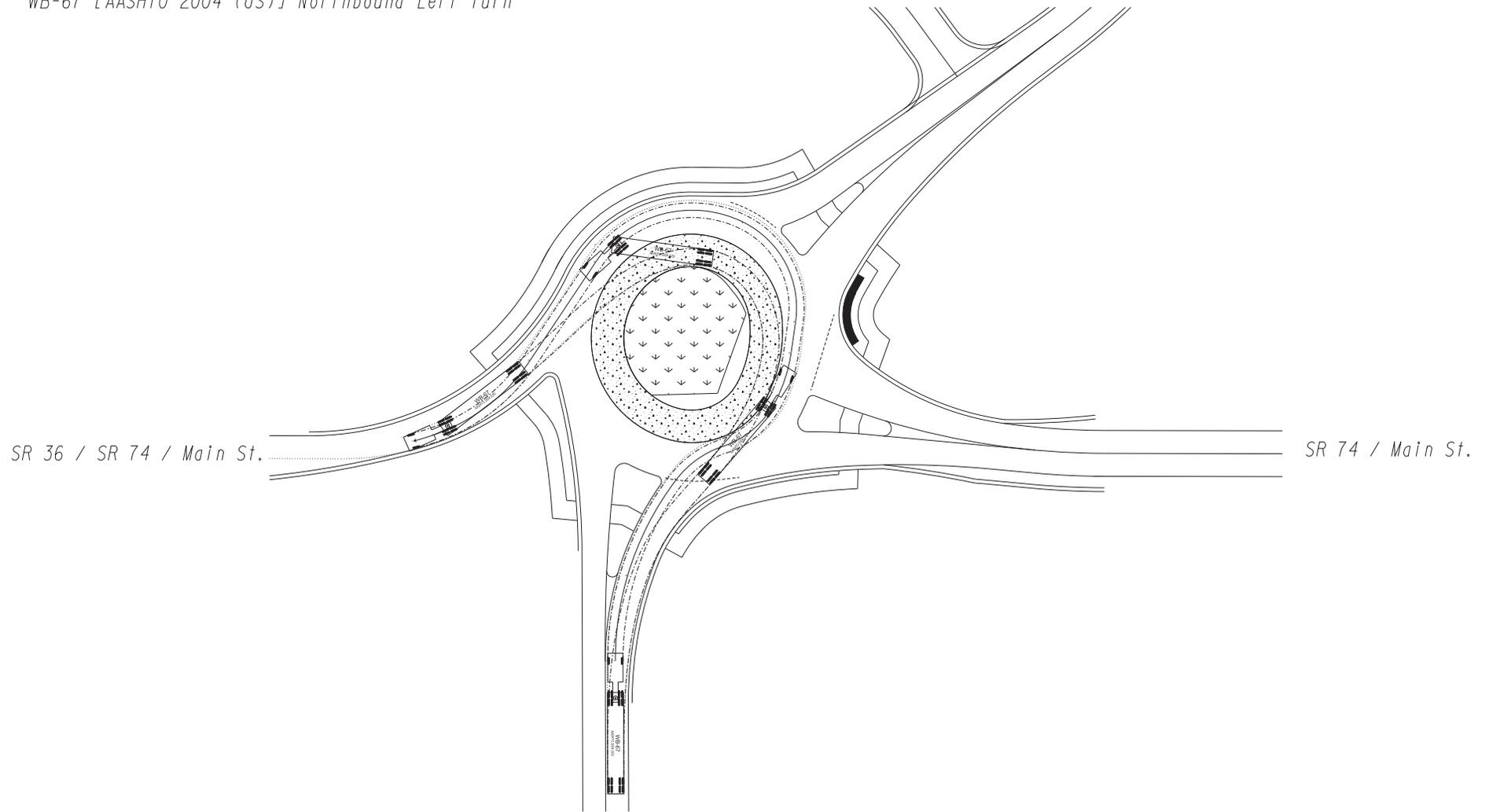
INTERSECTION 5 - WB-40



ROUNDAABOUT TRUCK MOVEMENTS

SR 36 / BARNESVILLE HWY

WB-67 [AASHTO 2004 (US)] Northbound Left Turn



SR 36 / SR 74 / Main St.

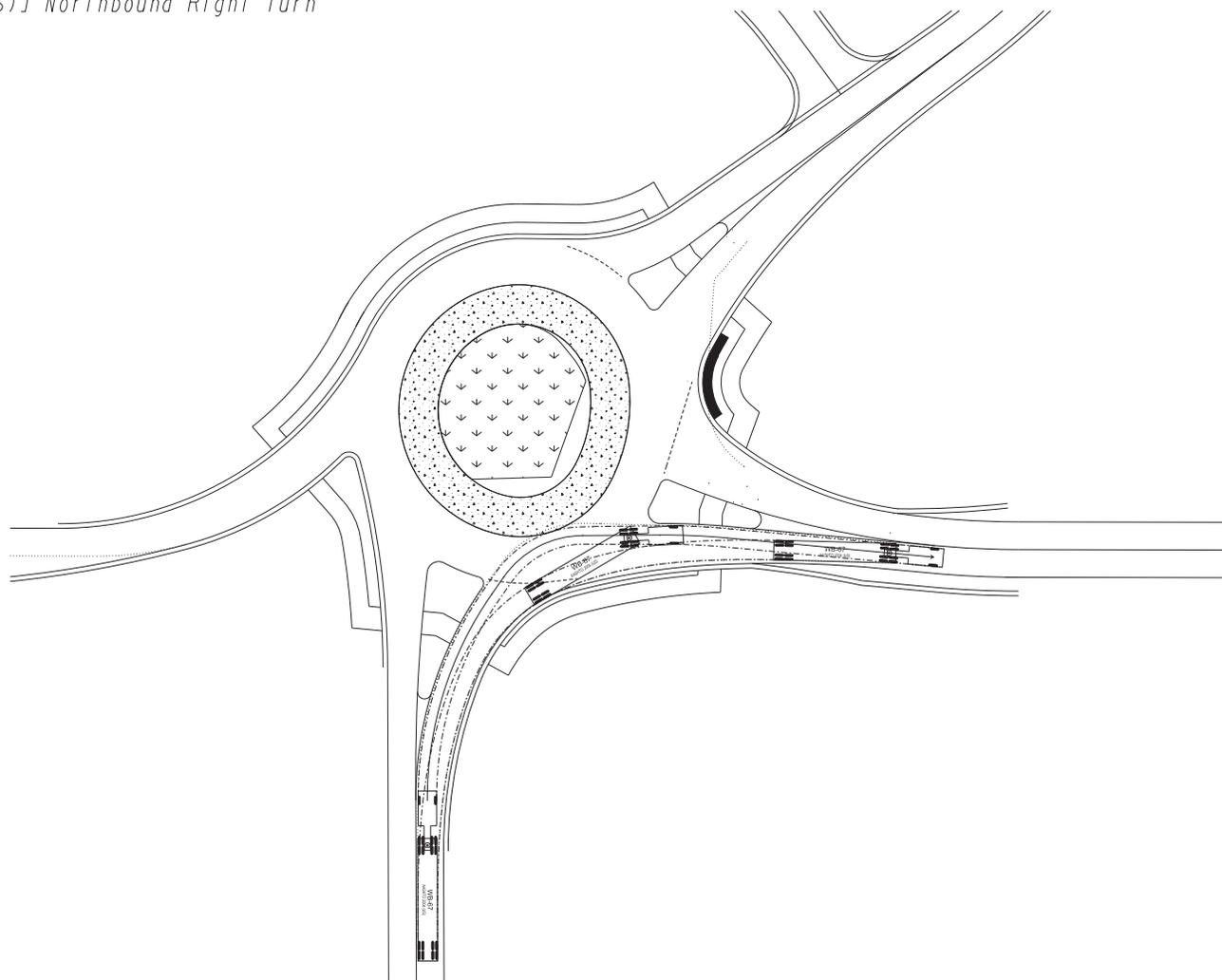
SR 74 / Main St.

SR 36 / SR 74 / S. Bethel St.

Roundabout design checks performed by GHD, Inc.

ROUNABOUT TRUCK MOVEMENTS

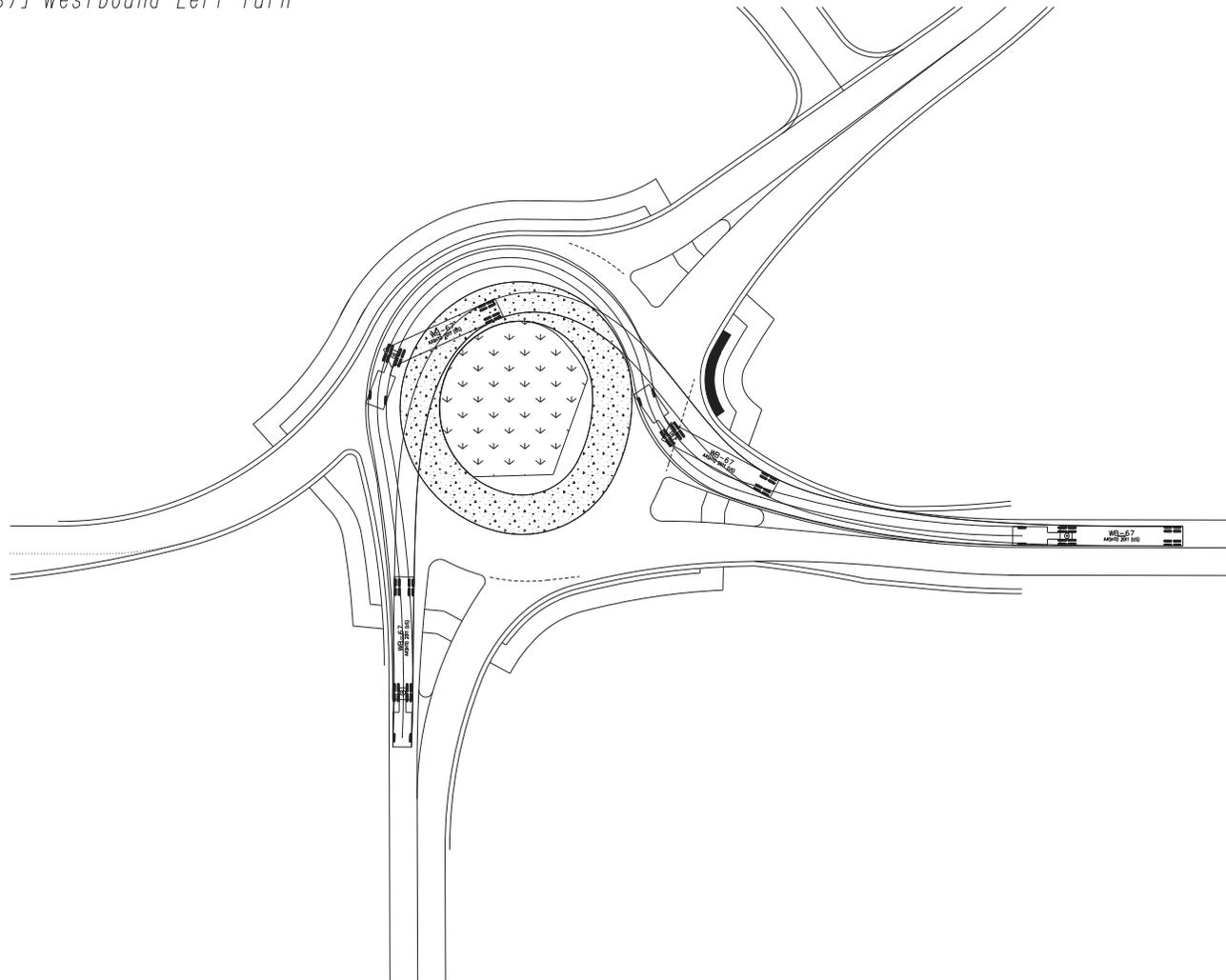
WB-67 [AASHTO 2004 (US)] Northbound Right Turn



Roundabout design checks performed by GHD, Inc.

ROUNDAABOUT TRUCK MOVEMENTS

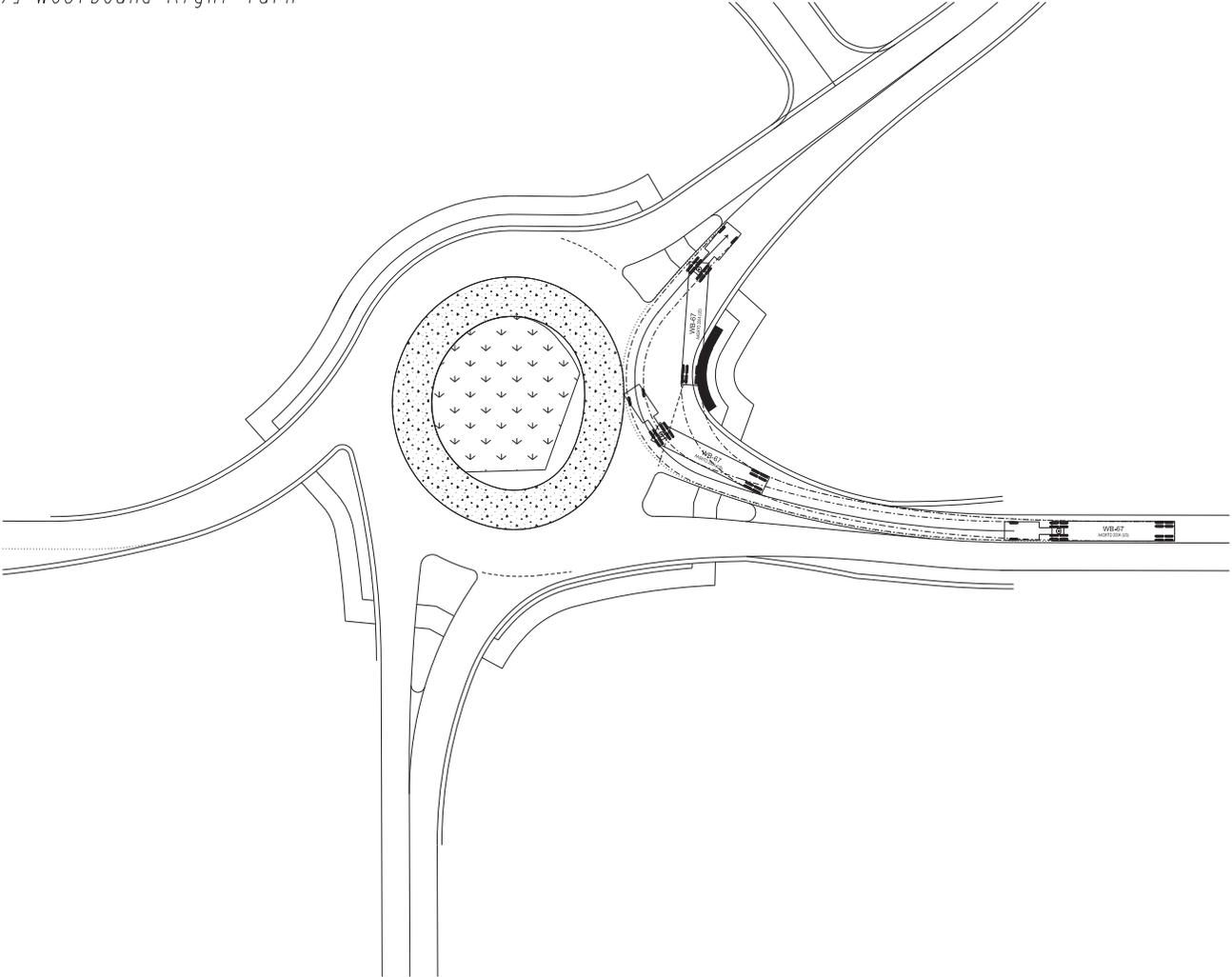
WB-67 [AASHTO 2004 (US)] Westbound Left Turn



Roundabout design checks performed by GHD, Inc.

ROUNDAABOUT TRUCK MOVEMENTS

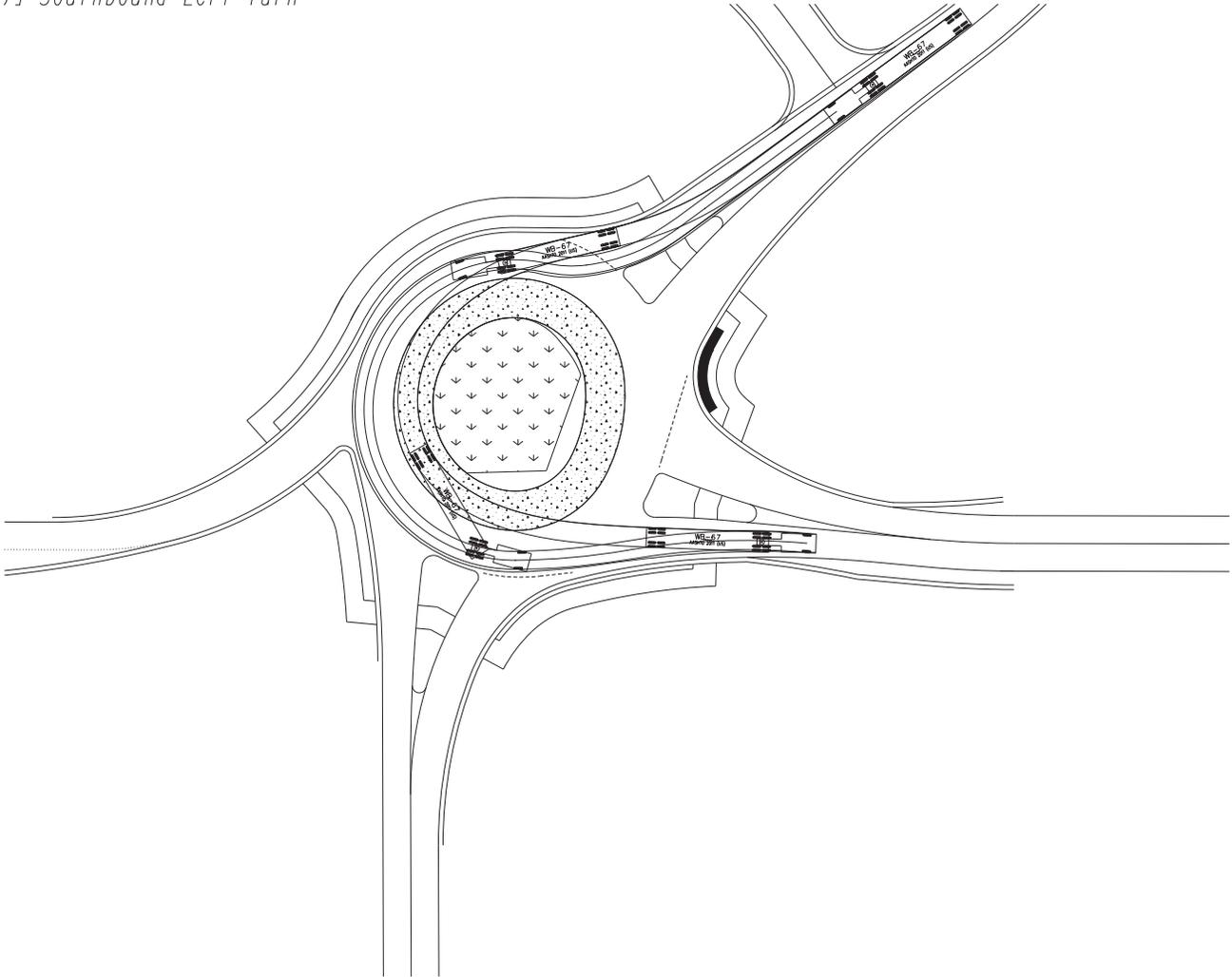
WB-67 [AASHTO 2004 (US)] Westbound Right Turn



Roundabout design checks performed by GHD, Inc.

ROUNDABOUT TRUCK MOVEMENTS

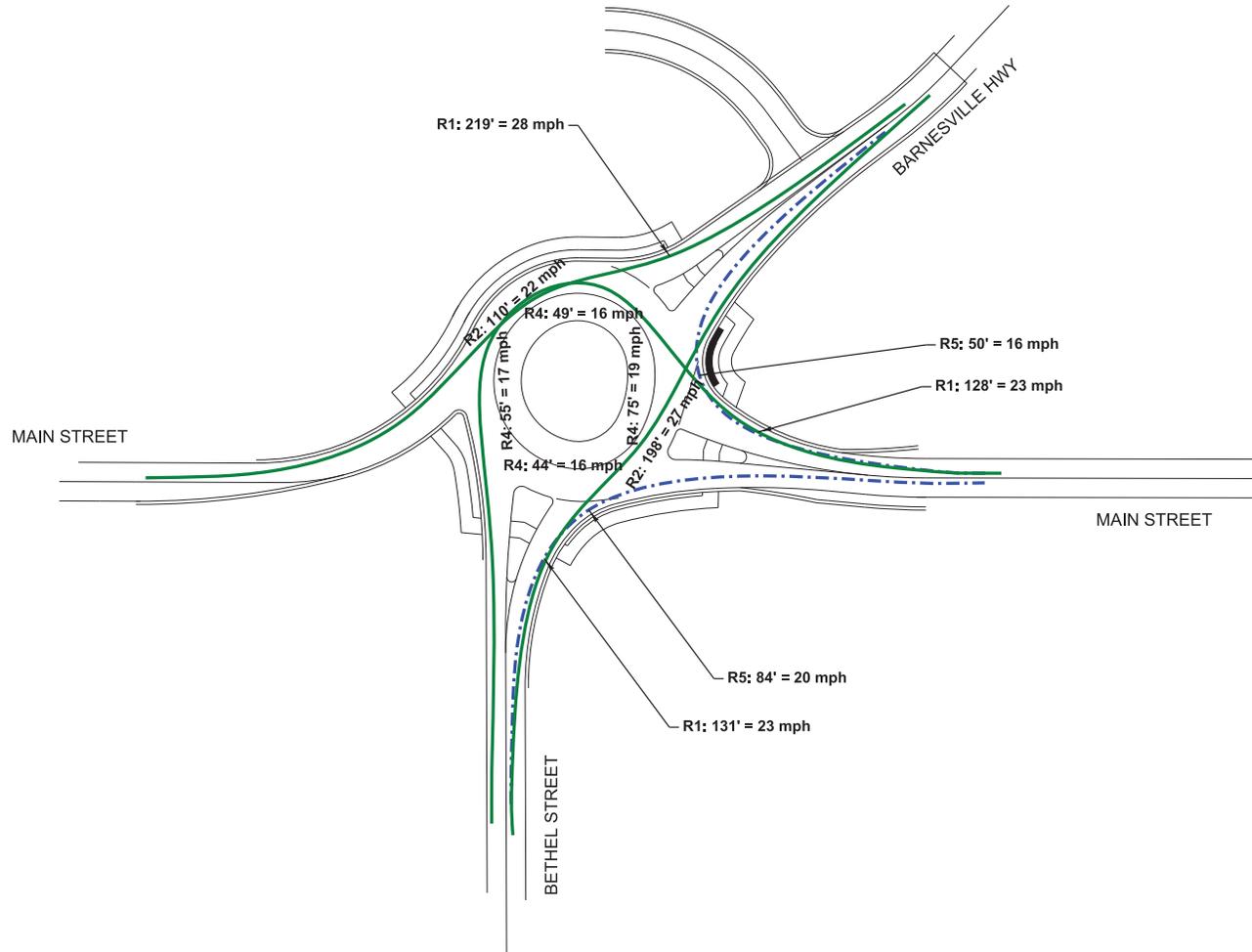
WB-67 [AASHTO 2004 (US)] Southbound Left Turn



Roundabout design checks performed by GHD, Inc.

LEGEND

- THRU FAST PATH (R1 AND R2)
- - - RIGHT TURN FAST PATH (R5)



GHD, Inc.
5325 Wall Street, Suite 2305
T 608 249 4543 F 608 249 4422
E madison@ghd.com W www.ghd.com

BETHEL ST. & MAIN ST. & BARNESVILLE HWY
THOMASTON, GEORGIA

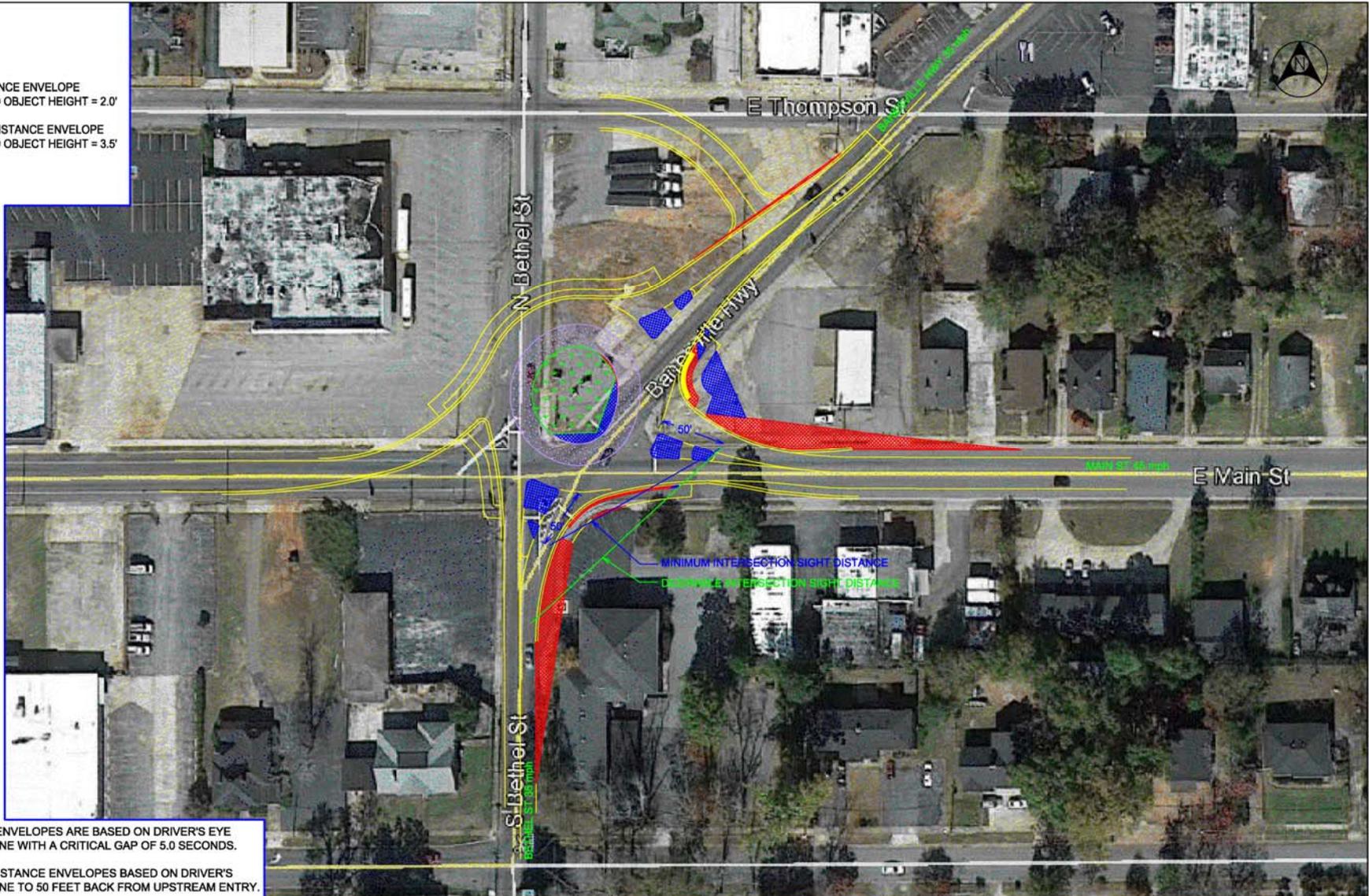
**ENTRY PATH CURVATURE
FASTEST PATHS**



EXHIBIT: 1.3

LEGEND

-  TRUCK APRON
-  STOPPING SIGHT DISTANCE ENVELOPE
DRIVER'S EYE = 3.5' AND OBJECT HEIGHT = 2.0'
-  INTERSECTION SIGHT DISTANCE ENVELOPE
DRIVER'S EYE = 3.5' AND OBJECT HEIGHT = 3.5'
-  UNRESTRICTED AREA



MAIN ST
45 MPH DESIGN SPEED

BETHEL ST
35 MPH DESIGN SPEED

BARNESVILLE HWY
35 MPH DESIGN SPEED

NOTES:

INTERSECTION SIGHT DISTANCE ENVELOPES ARE BASED ON DRIVER'S EYE 50 FEET BACK FROM THE YIELD LINE WITH A CRITICAL GAP OF 5.0 SECONDS.

MINIMUM INTERSECTION SIGHT DISTANCE ENVELOPES BASED ON DRIVER'S EYE 50 FEET BACK FROM YIELD LINE TO 50 FEET BACK FROM UPSTREAM ENTRY.



GHD, Inc.
5325 West Street, Suite 2305
T 800 249 4245 F 602 349 4422
E madison@ghd.com W www.ghd.com

BETHEL ST & MAIN ST at BARNESVILLE HWY
THOMASTON, GEORGIA

SIGHT DISTANCE ENVELOPES

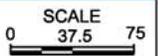


EXHIBIT: 1.2

**ATTACHMENT 11 – ROAD CLOSURE CONCURRENCE and
INDICATION OF SUPPORT FOR ROUNDABOUT LIGHTING FROM THE
CITY OF THOMASTON**

Department of Transportation

State of Georgia

MEMORANDUM

DATE: September 25, 2015

SUBJECT: Road Closure Concurrence and Indication of Support for Roundabout Lighting

The purpose of this memorandum is to provide an update on the status of the attached Road Closure Concurrence letter, and Indication of Roundabout Lighting Support letter. Both were submitted to the City of Thomaston in June 2015.

Road Closure Concurrence

On September 3, 2015, Mr. Patrick Comiskey (Thomaston City Manager) sent an email to Mr. Tyler Peek (GDOT District Traffic Engineer, District 3), explaining that a public meeting had been held and an ordinance to permanently close part of N Bethel Street was being drafted. Once complete the ordinance is to be taken before the Thomaston City Council for approval. As of the date of this memorandum the next City Council meeting will be on October 6, 2015. It is anticipated that the ordinance will be complete and on the council agenda for approval at that meeting. Once approved the Road Closure Concurrence letter will be signed. See the attached emails.

Indication of Support for Roundabout Lighting

In a phone conversation between Mr. Comiskey and Mr. Daniel Trevorrow (GDOT Civil Engineer, District 3), in late September 2015, Mr. Comiskey requested that the City of Thomaston be involved in the design meetings for this project, in order to have an input in the roundabout lighting design. Mr. Jason Mobley (GDOT District Design Engineer, District 3), emailed Mr. Comiskey on September 17, 2015, explaining that the City of Thomaston will be invited to field plan reviews for the opportunity to review/comment on the roundabout lighting design. City of Thomaston attorney Mr. Joel Bentley has since stated that the City is working with Mr. Mobley to resolve this matter. It is anticipated that the lighting support letter will be signed before or at the October 6 council meeting. See the attached emails.

From: [Mobley, Jason](#)
To: [Njoku, Iheanachor](#); [Trevorrow, Daniel J](#)
Subject: FW: Letter of Support for roundabout (SR 36/74 @ Bethel Street)
Date: Thursday, September 24, 2015 9:02:23 AM
Attachments: [image001.png](#)

Jason W. Mobley, P.E. - District Design Engineer
Georgia Department of Transportation, District 3
115 Transportation Boulevard, Thomaston, GA 30286
Direct: 706.646.7571 Email: jmobley@dot.ga.gov

From: Peek, Tyler
Sent: Wednesday, September 23, 2015 7:14 AM
To: Mobley, Jason
Subject: FW: Letter of Support for roundabout (SR 36/74 @ Bethel Street)

Tyler Peek, P.E.
District Traffic Engineer
GDOT District Three – Thomaston
706.646.7591 (office)

From: Joel [<mailto:ajbjr@windstream.net>]
Sent: Tuesday, September 22, 2015 4:30 PM
To: Peek, Tyler
Cc: Patrick Comiskey
Subject: Re: Letter of Support for roundabout (SR 36/74 @ Bethel Street)

Tyler,

I am in the process of drafting a letter from the City and a resolution. I've been working with Jason Mobley on this matter.

I should have the documents within the next several days.

Please contact me if you have any questions.

Joel

Sent from my iPad

On Sep 22, 2015, at 4:19 PM, Peek, Tyler <tpeek@dot.ga.gov> wrote:

Pat – can you let me know a status on this Letter of Support?

Tyler Peek, P.E.
District Traffic Engineer
GDOT District Three – Thomaston
706.646.7591 (office)

From: Peek, Tyler
Sent: Thursday, September 03, 2015 9:47 AM
To: 'Patrick Comiskey'
Cc: 'ajbjr@windstream.net'; Gail Hammock
Subject: RE: Letter of Support for roundabout (SR 36/74 @ Bethel Street)

When is your next council meeting?

Tyler Peek, P.E.
District Traffic Engineer
GDOT District Three – Thomaston
706.646.7591 (office)

From: Patrick Comiskey [<mailto:pcomiskey@cityofthomaston.com>]
Sent: Thursday, September 03, 2015 9:45 AM
To: Peek, Tyler
Cc: 'ajbjr@windstream.net'; Gail Hammock
Subject: RE: Letter of Support for roundabout (SR 36/74 @ Bethel Street)

Tyler,

We posted and held a public hearing on it and had a handful of citizens review the matter. We are now working on an ordinance to close off the road sections as set out in the DOT Roundabout Plan. We hope to have the ordinance on the council agenda to approve at the next upcoming city council meeting. This vote will authorize the mayor to sign off on the plan.

-Patrick

From: Peek, Tyler [<mailto:tpeek@dot.ga.gov>]
Sent: Thursday, September 03, 2015 9:11 AM
To: Patrick Comiskey
Subject: Letter of Support for roundabout (SR 36/74 @ Bethel Street)

Pat – we seem to be playing phone tag so I'll just summarize this in an email. Has the City Council been able to sign the Letter of Support for the new roundabout at SR 36/74 @ Bethel Street? I know there were some other pending issues related to the closing of N. Bethel but I wanted to get a status on the document. Please advise.

Tyler Peek, P.E.

District Traffic Engineer

GDOT – District Three

115 Transportation Blvd.

Thomaston, GA 30286

706.646.7591 (office)

tpeek@dot.ga.gov

<image001.png>

Traffic fatalities are on the rise since the beginning of 2015 and Georgia could see the first increase in nine years! Many of these fatalities are the result of distracted driving. DriveAlert ArriveAlive implores motorists to drive responsibly. 1—buckle up; 2—stay off the phone/no texting; and 3—drive alert. Visit www.dot.ga.gov/DS/SafetyOperation/DAAA. #ArriveAliveGA

From: [Peek, Tyler](#)
To: [Trevorrow, Daniel J](#); [Mobley, Jason](#)
Cc: [Njoku, Iheanachor](#); [MacLean, Scott](#)
Subject: RE: Ltr of support for roundabout
Date: Tuesday, August 18, 2015 8:36:55 AM
Attachments: [image001.png](#)

I spoke with Patrick Comiskey this morning. He said that they held their public meeting and instructed their City Attorney to draft an ordinance closing that routes that we had requested. That ordinance has not been completed – once it is they can take it and the letter of support before Council. They meet on the 1st and 3rd Tuesday evenings (tonight is their next scheduled meeting), so it looks like it would be minimum 2 weeks before they have it on their agenda.

Tyler Peek, P.E.
District Traffic Engineer
GDOT District Three – Thomaston
706.646.7591 (office)

From: Peek, Tyler
Sent: Thursday, August 13, 2015 4:13 PM
To: Trevorrow, Daniel J
Subject: Ltr of support for roundabout

FYI – I called the City Manager’s office and he is out until Monday, left a message for him.

Tyler Peek, P.E.
District Traffic Engineer
GDOT – District Three
115 Transportation Blvd.
Thomaston, GA 30286
706.646.7591 (office)
tpeek@dot.ga.gov



Traffic fatalities are on the rise since the beginning of 2015 and Georgia could see the first increase in nine years! Many of these fatalities are the result of distracted driving. DriveAlert ArriveAlive implores motorists to drive responsibly. 1—buckle up; 2—stay off the phone/no texting; and 3—drive alert. Visit www.dot.ga.gov/DS/SafetyOperation/DAAA. #ArriveAliveGA

From: [Mobley, Jason](#)
To: [Patrick Comiskey](#)
Cc: [Njoku, Iheanachor](#); ajbjr@windstream.net; [Trevorrow, Daniel J.](#); [Boyd, William](#); [Smith, Adam](#); [Peek, Tyler](#); ghammock@cityofthomaston.com; [Phillips, Kim](#)
Subject: Written Update needed - Upson 0006967 - Road Closure Concurrence and Support for Roundabout Lighting - SR74 Improvements
Date: Thursday, September 17, 2015 12:10:09 PM

Patrick, Your response will help us facilitate concept approval. Please provide an update/status of these two requests.

- Road Closure Concurrence – I've just spoken with Mr. Joel Bentley to answer his questions concerning the request. I understand this should be completed and approved at the upcoming council meeting on October 6th.
- Support for Roundabout Lighting – We will invite you to the field plan reviews for your opportunity to review/comment on the proposed lighting design. Will this be sufficient for you to move forward with the letter of support? And, should we expect this to be approved as well on October 6th?

I hope all is going well with you. Feel free to contact me anytime if you have questions or need assistance with any of our projects.

Thank you,

Jason W. Mobley, P.E. - District Design Engineer
Georgia Department of Transportation, District 3
115 Transportation Boulevard, Thomaston, GA 30286
Direct: 706.646.7571 Email: jmobley@dot.ga.gov

Traffic fatalities are on the rise since the beginning of 2015 and Georgia could see the first increase in nine years! Many of these fatalities are the result of distracted driving. DriveAlert ArriveAlive implores motorists to drive responsibly. 1—buckle up; 2—stay off the phone/no texting; and 3—drive alert. Visit www.dot.ga.gov/DS/SafetyOperation/DAAA. #ArriveAliveGA

Russell R. McMurry, P.E., Commissioner



GEORGIA DEPARTMENT OF TRANSPORTATION

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

May 28, 2015

Honorable Mayor Hays Arnold
City of Thomaston
106 E. Lee Street
Thomaston, GA 30286

Subject: P.I. 0006967 Upson County Roadway Project

Dear Mayor Arnold,

The Georgia Department of Transportation requests concurrence from the City of Thomaston for permanent closure of N. Bethel Street between Thompson St. and SR 74/ E. Main St. as shown on the attached layout. This layout was displayed during the Public Information Open House on February 27, 2015. Permanent closure of this portion of N. Bethel St. is required for construction of the proposed 4-leg roundabout, the option most favored by the City of Thomaston in the Initial Concept Team Meeting on August 26, 2014.

This design maximizes pedestrian safety, while minimizing impacts to the Dollar General store. This enables construction of the roundabout without temporary road closure and without the need of a SR 74/ SR 36 detour. Driveway access to the Dollar General store from N. Bethel St. will still be provided.

Please send your concurrence of this request to the attention of the project manager.

If you require any additional information, please do not hesitate to contact the Project Manager, Iheanachor Njoku, at (404) 631-1550.

Sincerely,

Albert V. Shelby, III
State Program Delivery Engineer

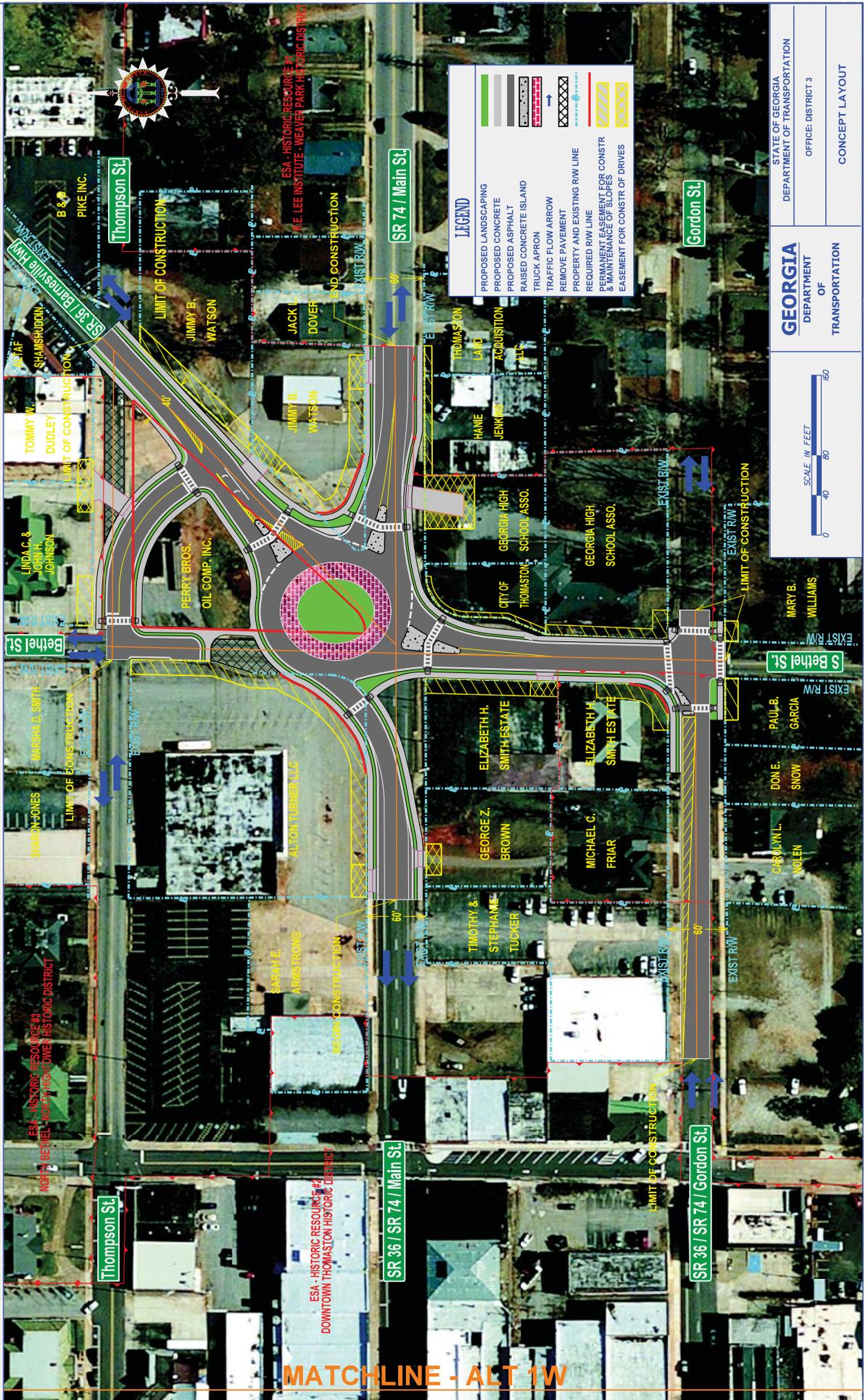
Concurrence with this request: _____
Mayor of Thomaston Date

8/18 KESD

AVS:BWS:KESD:IUN:RRM
Attachment: 0006967 Upson - Alt. 1E Layout

c: Michael Presley, District Engineer
District Preconstruction Engineer

OPTION 1E - 4-LEG ROUNDABOUT



DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INDICATION OF ROUNDABOUT SUPPORT

Scott A. MacLean, Lead Design Engineer
Georgia Department of Transportation
Office of Design Policy & Support
One Georgia Center ~ 26th Floor
600 West Peachtree Street, NW
Atlanta, Georgia 30308

Location

The City of Thomaston supports the consideration of a roundabout at the location specified below.

Description: **SR 36/SR 74 @ Bethel Street**

State/County Route Numbers: (see above)

Project: CSSTP-0006-00(967) Upson County P.I. No. 0006967

Associated Conditions

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

- The full and entire cost to energize the Lighting system installed and to provide for the operation/maintenance 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 _____ day of _____, 2015

Attest:

By: _____

City Clerk

Title: _____