

**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA**

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

FILE P.I. # 0010419

OFFICE Design Policy & Support

Fulton County
GDOT District 7 - Metro Atlanta
SR 140 @ CR 186/Hembree Road

DATE November 2, 2012

FROM  for Brent Story, State Design Policy Engineer

TO SEE DISTRIBUTION

SUBJECT APPROVED CONCEPT REPORT

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

Attachment

DISTRIBUTION:

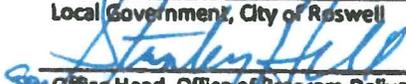
Bobby Hilliard, Program Control Administrator
Genetha Rice-Singleton, State Program Delivery Engineer
Glenn Bowman, State Environmental Administrator
Cindy VanDyke, State Transportation Planning Administrator
Kathy Zahul, State Traffic Engineer
Angela Robinson, Financial Management Administrator
Lisa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

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

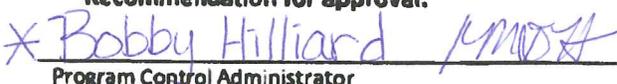
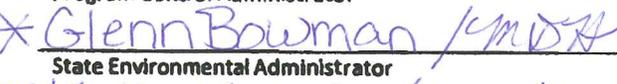
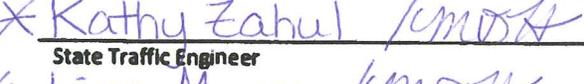
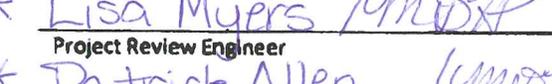
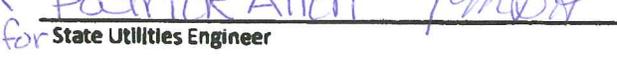
Project Type: Operational Improvements P.I. Number: 0010419
 GDOT District: District 7 County: Fulton
 Federal Route Number: None State Route Number: SR 140

SR 140 @ CR 186/Hembree Rd

Submitted for approval:

	<u>August 30, 2012</u>
Consultant Designer & Firm, URS Corporation	DATE
	<u>8-30-12</u>
Local Government, City of Roswell	DATE
	<u>9-10-12</u>
Office Head, Office of Program Delivery	DATE
	<u>8/31/2012</u>
GDOT Project Manager	DATE

Recommendation for approval:

* 	<u>9/17/2012</u>
Program Control Administrator	DATE
* 	<u>9/23/2012</u>
State Environmental Administrator	DATE
* 	<u>9/18/2012</u>
State Traffic Engineer	DATE
* 	<u>9/14/2012</u>
Project Review Engineer	DATE
* 	<u>9/26/12</u>
for State Utilities Engineer	DATE
_____	_____
District Engineer	DATE
_____	_____
State Transportation Financial Management Administrator	DATE

The concept as presented herein and submitted for approval is consistent with that which is included in the Regional Transportation Plan (RTP) and/or the State Transportation Improvement Program (STIP).

	<u>9-17-12</u>
State Transportation Planning Administrator	DATE

* Recommendation on file - 

PROJECT LOCATION



PI Number	0010419
County	Fulton
Description	SR 140 @ CR 186/Hembree Rd

PLANNING & BACKGROUND DATA

Project Justification Statement:

SR 140/Houze Road at CR 186/Hembree Road in Fulton County was identified for intersection improvements. The proposed project is to be included in the GDOT Operational Improvement Lump Sum Program from the Office of Traffic Operations. This proposed project was approved by the Operational Improvement Committee as a QUICK project.

SR 140 and Hembree Road are both urban minor arterials that serve major residential areas in the cities of Roswell and Alpharetta. At the intersection, SR 140 is a two lane undivided roadway with one 12-foot left turn lane in each direction. Hembree Road is a two lane undivided roadway without auxiliary lanes. The intersection is currently signalized with protected-permissive left turn phases on SR 140. The project limits should not extend more than 800 feet from the center of the intersection for all intersection approaches.

The City of Roswell provided an Intersection Study capturing the corridor operations and a comparison of the improved signalized intersection with turn lanes and a multilane roundabout. Currently, the existing intersection has extensive queues exceeding over 750 feet for multiple approaches during both peak hour periods and approach delays exceeding 50 seconds during the afternoon peak hour. The project consists of expanding the capacity of the intersection to meet future year traffic demand. The project will also integrate the City of Roswell's proposed Roswell Loop trail through the intersection with a multi-use path. The engineering study recommended installing a multilane roundabout with two-lane approaches on Hembree Road and Houze Road southbound and a single lane approach on Houze Road northbound. The splitter island and truck apron should be constructed to allow for future minor widening of the Houze Road northbound approach to a two-lane approach, to accommodate increased capacity in 2025. The interim and ultimate roundabout designs had better delay reductions and queue length reductions compared to the improved signalized intersection. See Table 6, Ultimate Roundabout Configuration, Table 7, Interim Configuration #1, and Table 10 & 11, Peak Hour Operations Comparison in the *SR 140 (Houze Road)/Hembree Road Intersection Study* for information showing the design configurations and operational measures of effectiveness.

A benefit-cost analysis of the crashes by the Office of Traffic Operations has determined that this project does not qualify for funding under the Department's Safety program. Although this intersection has a crash history, the proposed improvements mainly address the operational issues and reduces crash frequency and severity.

The project lies within the boundaries of the Atlanta Regional Commission (ARC), Atlanta's Metropolitan Planning Organization (MPO). As an operational improvement project, this project is categorized under the "operational improvement lump sum category" in the MPO's RTP or TIP.

Description of the proposed project: This project proposes to expand the capacity of the existing intersection to handle the existing and future traffic needs by constructing a roundabout at the intersection of Houze Road (SR 140) and Hembree Road. The intersection improvement will also integrate the City of Roswell’s proposed Roswell Loop trail system by constructing a 12-foot multiuse path along Hembree Road for pedestrian and bike mobility. The normal typical section for Houze Road and Hembree Road is a two lane urban section. The posted speed limits are 35mph for Hembree Road and 35mph for Houze Road. The existing right of way for both Houze Road and Hembree Road varies from 60 feet to 70 feet. Additional right of way will be required for expansion of the intersection.

Federal Oversight: Full Oversight Exempt State Funded Other

MPO: N/A MPO – Atlanta Regional Commission (ARC)

Regional Commission: N/A RC – Atlanta Regional Commission (ARC)

Congressional District: 6

Projected Traffic ADT: SR 140/ Houze Rd.

Current Year (2011): 12,550 Open Year (2015): 13,060 Design Year (2035): 15,940

Functional Classification (Mainline): Minor Arterial

Is this project on a designated bike route? No YES

The project is located on the Purple and Blue Route of the Roswell Loop, a citywide network of trails. See Attachment for Multi-use Path for additional information.

Is this project located on a pedestrian plan? No YES

The project is located on the Purple and Blue Route of the Roswell Loop, a citywide network of trails. See Attachment for Multi-use Path for additional information.

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

CONTEXT SENSITIVE SOLUTIONS

Use of a roundabout as a part of the design is context sensitive to the Roswell Community and will bring a design aesthetic to this area as well as provide enhanced operations of this intersection.

Landscaped bio filtration areas outside of the proposed shoulders of the roadway are proposed to enhance water quality and reduce water runoff into the perennial stream crossing Hembree Road within the project limits.

DESIGN AND STRUCTURAL DATA

Mainline Design Features:

Houze Road/ Mainline

Feature	Existing	Standard*	Proposed
Typical Section			
- Number of Lanes	2	2	2
- Lane Width(s)	11'	10' to 12'	12'
- Median Width & Type	None	None	None
- Outside Shoulder Width & Type	Varies	12' urban	12' urban
- Outside Shoulder Slope	Varies	2% Max.	2% Max.
- Inside Shoulder Width & Type	None	None	None
- Sidewalks	None	4' Min	5' LT (South)
- Auxiliary Lanes	None	None	None
- Bike Lanes	None	None	None
Posted Speed	35 mph		35 mph
Design Speed	40 mph	40 mph	40 mph
Min Horizontal Curve Radius	1200'	533'	533'
Superelevation Rate	4%	4%	4%
Grade	0.3% to 6%	0.3% to 10%	0.3% to 6%
Access Control	None	None	None
Right-of-Way Width	60 to 110 ft	N/A	70 to 170 ft
Maximum Grade – Crossroad	10%	10%	10%
Design Vehicle	WB 67	WB 67	WB 67

*According to current GDOT design policy if applicable

Major Structures: Proposed gabion wall and concrete wall system along the southeast quadrant of the intersection to limit the impacts of an existing perennial stream.

Major Interchanges/Intersections: Major intersections include:

- Houze Road at Hembree Road (existing stop/go signal)

Utility Involvements:

Fulton County

- 10 Inch Cast Iron Water Main/ North side of Hembree
- 10 inch cast iron water main / west side of Houze
- Water Valves and Meter Boxes
- Sewer line/ 100-feet east of Hembree

Atlanta Gas Light

- 2 inch plastic gas line/ south side of Hembree
- 2 inch plastic gas line/ north side of Houze

GA Power and Cobb EMC

- Georgia Power Network Underground/ Hembree Road
- Cobb County EMC distribution and GA Power/ Houze Road & Hembree Road east of Houze

AT&T

- 1-25 pairs, 4-40 pairs, and 3-900 pairs – AT&T network underground

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

SUE Required: Yes No

Railroad Involvement: N/A

Right-of-Way:

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

Anticipated number of impacted parcels: 12
 Anticipated number of displacements (Total): 0
 Businesses: 0
 Residences: 0
 Other: 0

Location and Design approval: Not Required Required

Off-site Detours Anticipated: No Yes Undetermined

No permanent off-site detours are anticipated. Temporary (weekend) closure, requiring detours, may be necessary.

Transportation Management Plan Anticipated: YES NO

Design Exceptions to FHWA/AASHTO controlling criteria anticipated:

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

Design Variances to GDOT standard criteria anticipated:

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

MOEA

11. Rumble Strips/Safety Edge

VE Study anticipated: No Yes Completed – Date:

ENVIRONMENTAL DATA

Anticipated Environmental Document:

GEPA: NEPA: Categorical Exclusion EA/FONSI EIS

Air Quality:

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

This project is exempt from Air Quality analysis on the basis that it is not a capacity project and is a congestion mitigation project. The project is not anticipated to increase traffic volumes.

Environmental Permits/Variations/Commitments/Coordination anticipated:

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

Is a PAR required? No Yes Completed – Date:

NEPA/GEPA: *URS will prepare documentation required by NEPA and coordinate review with applicable state and federal agencies.*

Ecology: *Four streams are located within or adjacent to the project area. Two stream segments are located within the existing right-of-way meaning any work on the intersection will likely impact the channels and their buffers. Bank stabilization is needed to prevent undermining of the roadway. A buffer variance and a section 404 permit are anticipated.*

History: *Anticipate no issues of concern.*

Archeology: *Anticipate no issues of concern.*

Air & Noise: *Anticipate no modeling will be required; qualitative analysis only.*

Public Involvement: *A Public Information Meeting was held on March 29, 2012. A synopsis of the meeting is attached.*

Major stakeholders: *A Stakeholders meetings was held on May 16, 2012.*

ROUNABOUTS

Lighting agreement/commitment letter received: No Yes
Agreement is attached.

Planning Level assessment: *The roundabout checklist is provided in the attachments to this report and within the attached Traffic Report and Roundabout Data sections. All of the items found in the Planning Level Assessment have been addressed and this location is favorable for the inclusion of a roundabout in the design of this project.*

Feasibility Study: *The completed feasibility study can be found in the attachments.*

Peer Review required: No Yes Completed – Date:
The roundabout is being design by a GDOT qualified peer reviewer.

CONSTRUCTION

Issues potentially affecting constructability/construction schedule: *The existing intersection is located near a low point for Hembree Road and in sag for Houze Road. Anticipated improvements will most likely require the elevation of the intersection to be raised. The proposed offset of the new intersection to the East and North provides flexibility for staged construction. No permanent off-site detours are anticipated. Temporary (weekend) closures, requiring detours, are anticipated to construct the roundabout.*

Early Completion Incentives recommended for consideration: No Yes

PROJECT RESPONSIBILITIES

Project Activities:

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

Lighting required: No Yes

Lighting will be required for the roundabout. Lighting will be maintained by the City of Roswell. The agreement is in the attachments.

Initial Concept Meeting: *An Initial Concept Team meeting will not be held on this project.*

Concept Meeting: *A Concept Meeting was held on June 13, 2012. A copy of the meeting minutes is in the attachments.*

Other Projects in the Area:

- *-Roswell DOT is planning a multiuse trail extension on the east side of the project along Hembree Road. A description of the Roswell Loop (multiuse path information) is included as an attachment.*
- *-Roswell DOT is planning a locally funded project to construct sidewalks on both sides of the Houze Road (SR 140), from the roundabout to Saddle Creek's swim and tennis entrance.*
- *-Under PI# 721300, GDOT plans to widen Houze Road (SR-140) from Mansell Rd to Ranchette Rd, with a current construction date of 2020. This project would also include bike lanes. Construction is expected to start in 2020. Project information sheet is attached.*

Other coordination to date:

N/A

Project Cost Estimate and Funding Responsibilities:

	Breakdown of PE	ROW	Utility	CST*	Environmental Mitigation	Total Cost
By Whom	<i>GDOT</i>	<i>GDOT</i>	<i>GDOT</i>	<i>GDOT</i>	<i>City of Roswell</i>	
\$ Amount	\$300,000	\$467,000	\$0	\$1,348,591	\$57,069	\$2,172,660
Date of Estimate	5/30/2012	6/8/2012	6/25/2012	10/3/2012	10/3/2012	

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

ALTERNATIVES DISCUSSION

Numerous alternatives have been evaluated including a roundabout, no-build, and an improved signal.

Roundabout Alternate (Preferred Alternative)

A variety of multilane configurations were evaluated in order to identify the number of lanes on each approach and lane configurations needed to accommodate the design year 2035 forecast traffic volumes. For the 2035 ultimate roundabout configuration, a two-lane roundabout with two entering and exiting lanes on each approach and two circulating lanes are recommended to provide acceptable vehicle operations. The eastbound approach is forecast to operate at or near capacity during the 2035 weekday am peak hour, depending on the analysis methodology applied, with a 95th percentile queue length of less than 400 feet. All other approaches for am and pm peak hours are forecast to have delays of less than 40 seconds and 95th percentile queue lengths of 250 feet or less. A sketch of the design year roundabout can be found in the roundabout feasibility study.

Two interim roundabout alternatives were evaluated to identify opportunities to provide phased construction of the ultimate roundabout configuration. The intent of the analysis was to identify a configuration that would be compatible with the ultimate configuration (to provide ease of future expansion) while providing sufficient capacity to accommodate traffic volumes through year 2025 (10 years from the opening year 2015). The preferred interim configuration reduces the number of entering/exiting lanes along Houze Road and is forecasted to operate below capacity in 2025 and 2015.

Care was taken to provide for an easy conversion of the interim roundabout to the design year roundabout. No additional R/W will be needed, and the main things needed are to make the northbound entrance, northbound exit, southbound exit, and circulatory roadway on the east side two lanes instead of one lane. The entry angles to the interim roundabout would not need to be adjusted.

Roundabouts have been found to reduce fuel consumption and air pollution, according to GDOT’s DPM and NCHRP 672. Also a roundabout’s greater opportunity for landscaping and aesthetic improvements can provide greater community identity, as outlined in Imagine Roswell 2030. The roundabout was also evaluated with crash prediction models, and after conversion to a roundabout the models predicted a 66% reduction in fatal/injury crashes and a 23% reduction in total crashes.

Roundabout Alternate (Preferred Alternate)			
Estimated Property Impacts:	12	Estimated Total Cost:	\$2,172,660
Estimated ROW Cost:	\$467,000	Estimated CST Time:	1 year
Rationale: <i>This alternate is the preferred alternative because it best meets the project justification statement's goal of improving operational issues.</i>			

The “roundabout alternative” is the preferred alternative. The roundabout is forecasted to meet the project’s goal of expanding the capacity of the intersection to meet present and future traffic needs, when analyzed using the HCM 2010 model (with CALTRANS modification). With respect to approach delay and queue length, the roundabout alternative is forecasted to provide better operations than the other alternatives. A roundabout also has many environmental and crash frequency and severity benefits that the other alternatives do not have.

No-Build Alternate

The no-build alternate was analyzed to identify how the Houze Road/Hembree Road intersection will operate if no improvements are made to the existing intersection. The results of that analysis showed that by 2035 delay is forecast to exceed 80 seconds (threshold for Level-of-service “F”) with 95th percentile queue lengths exceeding 1,200 feet for every approach during either the am or pm peak hour.

No-Build Alternate:			
Estimated Property Impacts:	0	Estimated Total Cost:	\$0
Estimated ROW Cost:	\$0	Estimated CST Time:	N/A
Rationale: <i>This alternate was not selected due to the high delays the intersection is anticipated to experience during the design year.</i>			

The no-build alternative was discounted as it does not meet the need and purpose of the project.

Improved Signal

The improved signal would add an auxiliary through/right turn lanes on the northbound and southbound approaches along Houze Rd (SR 140), and left and right turn lanes on the eastbound and westbound approaches along Hembree Rd. The intersection is forecast to provide sufficient capacity to serve the 2035 am and pm peak hour volumes. During the am, peak hour delays are expected to exceed 40 seconds on the eastbound approach and queues are expected to exceed 850 feet. During the pm, peak hour delays are expected to exceed 35 seconds on the northbound and westbound approaches and queues are expected to exceed 700 feet on the westbound approach.

Improved Signal Alternate:			
Estimated Property Impacts:	26	Estimated Total Cost:	\$2,290,000
Estimated ROW Cost:	\$590,000	Estimated CST Time:	1 year
Rationale: <i>This alternative was not selected because it improves operational issues less than the proposed alternate.</i>			

The “improved signal alternative” was discounted as it has more impacts to right of way and is less efficient than the roundabout alternative in terms of approach delay and queue length.

Attachments:

1. Concept Layout
2. Typical sections
3. Detailed Cost Estimates:
 - a. Cost Cover Letter
 - b. Construction including Engineering and Inspection
 - c. Completed Fuel & Asphalt Price Adjustment forms
 - d. Right-of-Way
 - e. Utilities
 - f. Environmental Mitigation
4. Roundabout memo
 - a. Roundabout Checklist
 - b. Roundabout Feasibility Study
 - c. Truck Turning Templates
 - d. Fastest Paths
5. Approved Traffic diagrams
6. Lighting Commitment Letter
7. Minutes of Concept Team Meeting
8. PIOH Synopsis
9. PFA
10. Multi-use Path Information (City of Roswell)
11. Other Projects in the Area

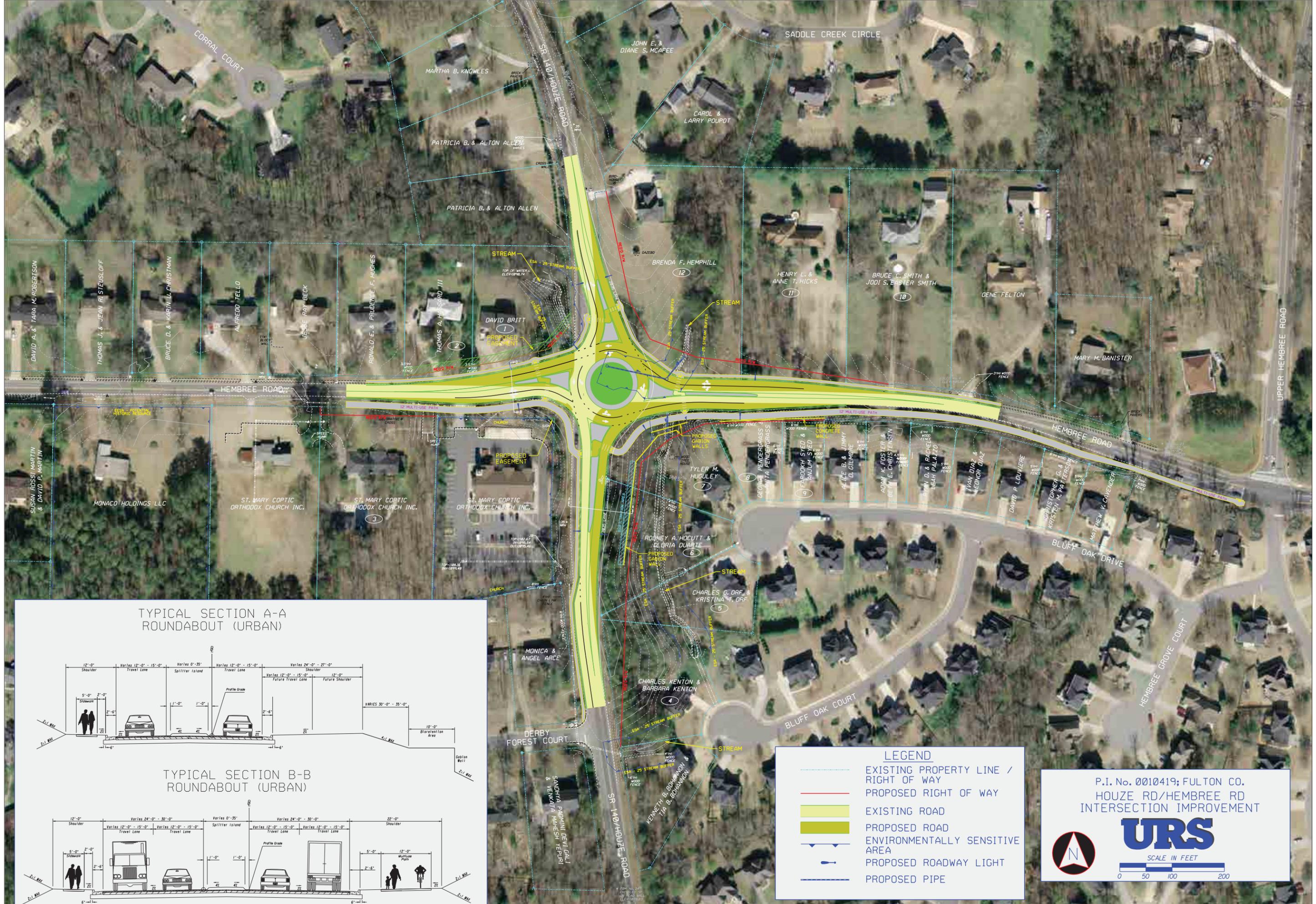
APPROVALS

Concur: 
Director of Engineering

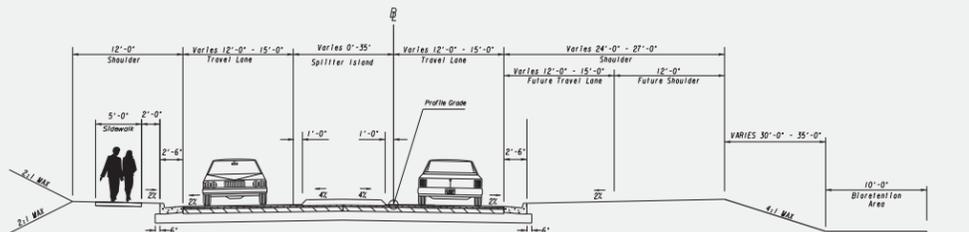
Approve: 
Chief Engineer

11-1-12
Date

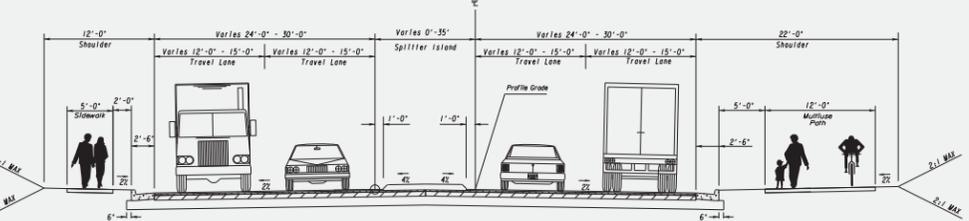
Attachment #1



TYPICAL SECTION A-A
ROUNDBOUT (URBAN)



TYPICAL SECTION B-B
ROUNDBOUT (URBAN)



LEGEND

- EXISTING PROPERTY LINE / RIGHT OF WAY
- PROPOSED RIGHT OF WAY
- EXISTING ROAD
- PROPOSED ROAD
- ENVIRONMENTALLY SENSITIVE AREA
- PROPOSED ROADWAY LIGHT
- PROPOSED PIPE

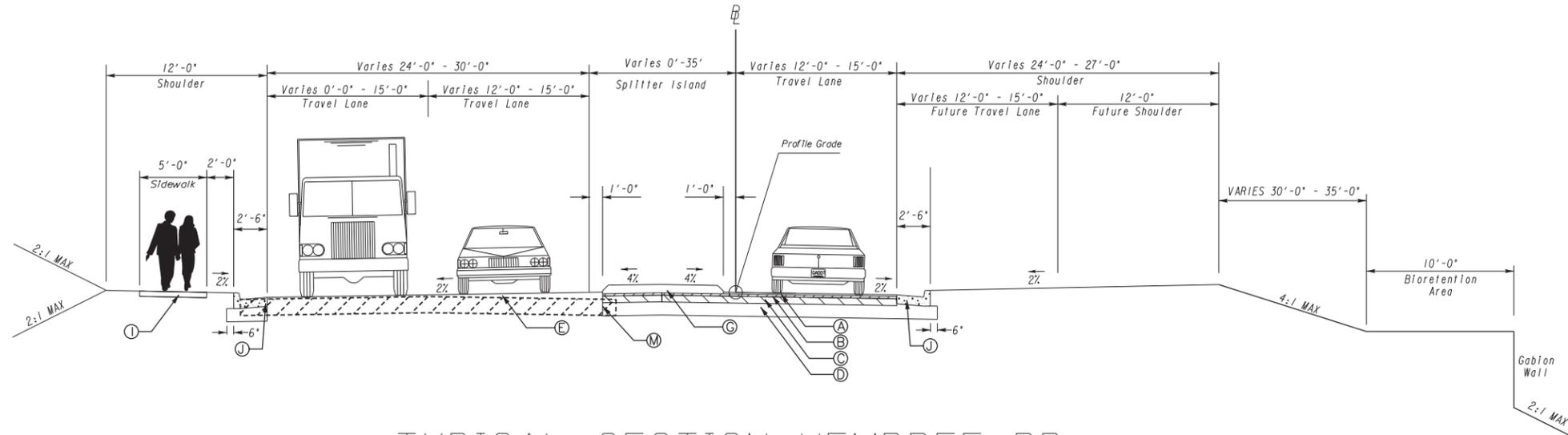
P.I. No. 0010419; FULTON CO.
 HOUZE RD/HEMBREE RD
 INTERSECTION IMPROVEMENT

URS

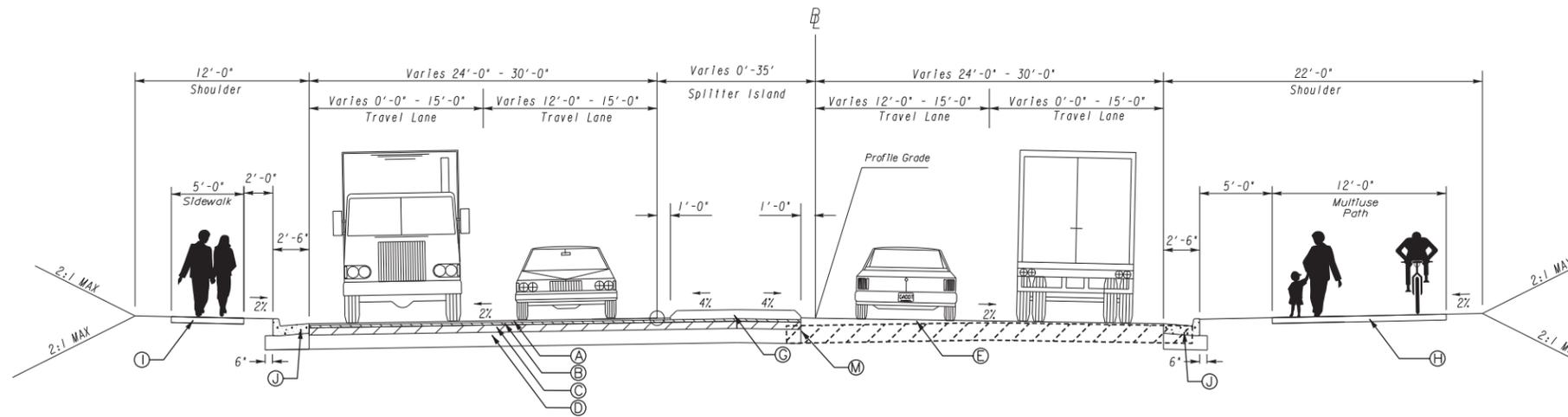
SCALE IN FEET

Attachment #2

TYPICAL SECTION HOUZE RD. (SR 140) ROUNDABOUT (URBAN)



TYPICAL SECTION HEMBREE RD. ROUNDABOUT (URBAN)



REQUIRED PAVEMENT

- (A) RECYCLED ASPH CONC 12.5 mm SUPERPAVE, GP 2 ONLY, INCL BITUM MATL & H LIME (165 LB/SY)
- (B) RECYCLED ASPH CONC 19 mm SUPERPAVE, GP1 OR 2, INCL BITUM MATL & H LIME (220 LB/SY)
- (C) RECYCLED ASPH CONC 25 mm SUPERPAVE, GP1 OR 2, INCL BITUM MATL & H LIME (440 LB/SY)
- (D) GRADED AGGREGATE BASE CRS, 12", INCL MATL
- (E) ASPHALTIC CONCRETE LEVELING, INCL BITUM MATL AND H LIME (AS REQ'D)
- (F) PLAIN PC CONC PVMT, CL 1 CONC, 10 INCH THICK
- (G) CONCRETE INTEGRAL MEDIAN, 6"

- (H) 4'X12' ASPHALT SIDEWALK
- (I) 4'X5' CONC. SIDEWALK, GA. DETAIL A-3
- (J) 8'X30" CONC. CURB & GUTTER, GA. STD. 9032 B. TYPE 2
- (K) 6" CONC. HEADER CURB, GA STD. 9032B TYPE 7
- (L) 4" CONC. HEADER CURB, GA STD. 9032B TYPE 9
- (M) PAVEMENT FABRIC MATERIAL

URS

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

NOT TO SCALE

REVISION DATES

STATE OF GEORGIA
 DEPARTMENT OF TRANSPORTATION

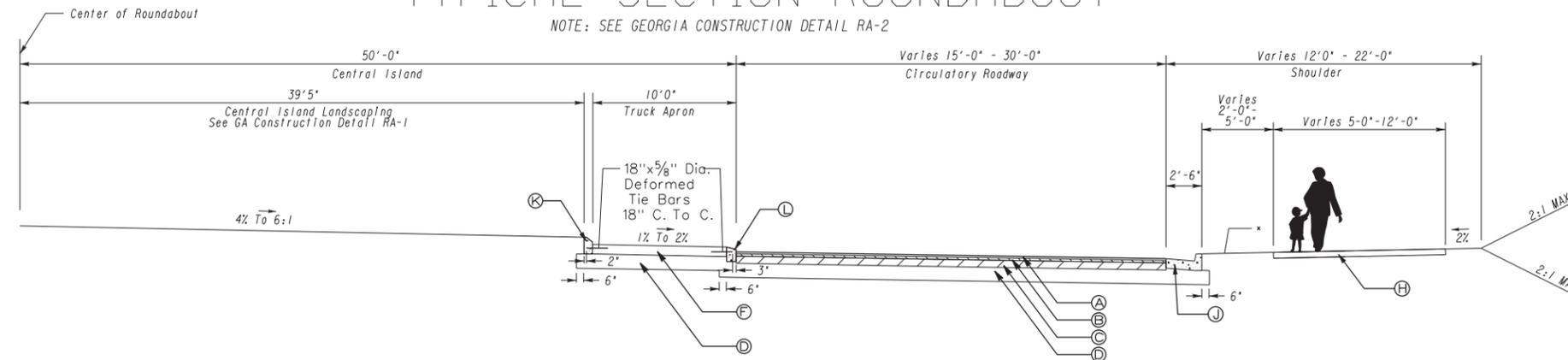
OFFICE:

TYPICAL SECTIONS

DRAWING No.
 05-001

TYPICAL SECTION ROUNDABOUT

NOTE: SEE GEORGIA CONSTRUCTION DETAIL RA-2



REQUIRED PAVEMENT

- (A) RECYCLED ASPH CONC 12.5 mm SUPERPAVE, GP 2 ONLY, INCL BITUM MATL & H LIME (165 LB/SY)
- (B) RECYCLED ASPH CONC 19 mm SUPERPAVE, GP1 OR 2, INCL BITUM MATL & H LIME (220 LB/SY)
- (C) RECYCLED ASPH CONC 25 mm SUPERPAVE, GP1 OR 2, INCL BITUM MATL & H LIME (440 LB/SY)
- (D) GRADED AGGREGATE BASE CRS, 12", INCL MATL
- (E) ASPHALTIC CONCRETE LEVELING, INCL BITUM MATL AND H LIME (AS REQ'D)
- (F) PLAIN PC CONC PVMT, CL 1 CONC, 10 INCH THICK
- (G) CONCRETE INTEGRAL MEDIAN, 6"

- (H) 4'X12' ASPHALT SIDEWALK
- (I) 4'X5' CONC. SIDEWALK, GA. DETAIL A-3
- (J) 8'X30' CONC. CURB & GUTTER, GA. STD. 9032 B. TYPE 2
- (K) 6' CONC. HEADER CURB, GA STD. 9032B TYPE 7
- (L) 4' CONC. HEADER CURB, GA STD. 9032B TYPE 9
- (M) PAVEMENT FABRIC MATERIAL

URS

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

NOT TO SCALE

REVISION DATES

NO.	DATE	DESCRIPTION

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION

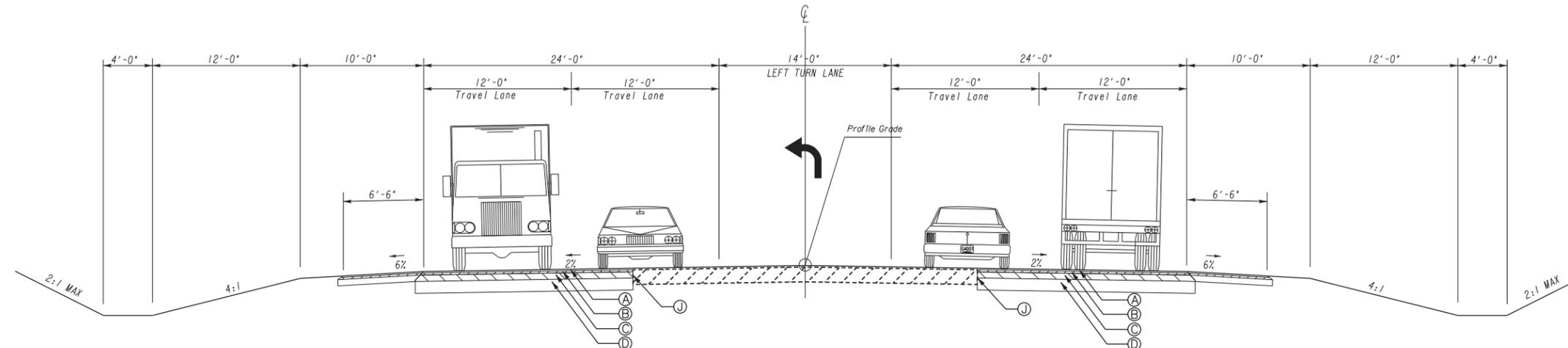
OFFICE:

TYPICAL SECTIONS

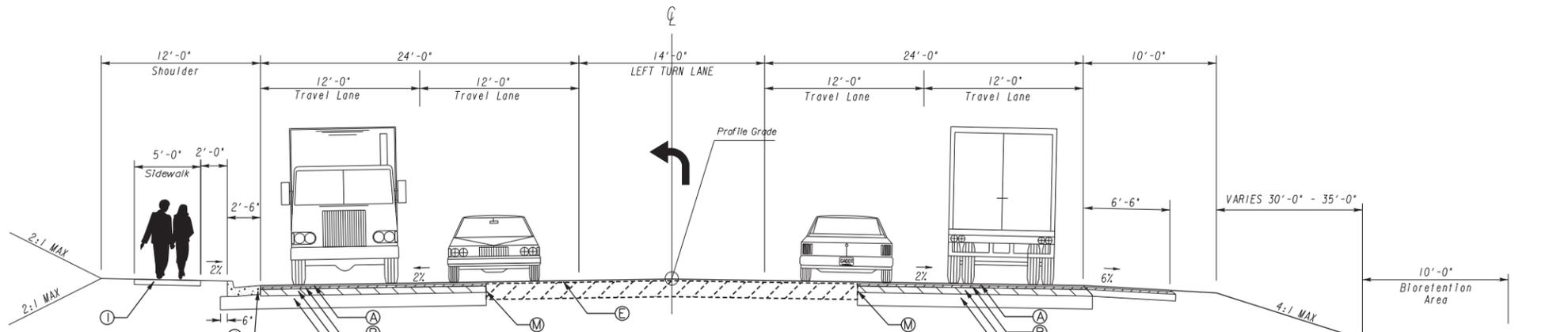
DRAWING No.
05-002

ALTERNATIVE TYPICALS

TYPICAL SECTION HOUZE RD. (SR 140) NORTH OF HEMBREE RD. SIGNAL INTERSECTION (RURAL) W/TURN LANE



TYPICAL SECTION HOUZE RD. (SR-140) SOUTH OF HEMBREE RD. SIGNAL INTERSECTION (URBAN & RURAL) W/TURN LANE



REQUIRED PAVEMENT

- (A) RECYCLED ASPH CONC 12.5 mm SUPERPAVE, GP 2 ONLY, INCL BITUM MATL & H LIME (165 LB/SY)
- (B) RECYCLED ASPH CONC 19 mm SUPERPAVE, GP1 OR 2, INCL BITUM MATL & H LIME (220 LB/SY)
- (C) RECYCLED ASPH CONC 25 mm SUPERPAVE, GP1 OR 2, INCL BITUM MATL & H LIME (440 LB/SY)
- (D) GRADED AGGREGATE BASE CRS, 12", INCL MATL
- (E) ASPHALTIC CONCRETE LEVELING, INCL BITUM MATL AND H LIME (AS REQ'D)
- (F) PLAIN PC CONC PVMT, CL 1 CONC, 10 INCH THICK
- (G) CONCRETE INTEGRAL MEDIAN, 6"

- (H) 4'X12' ASPHALT SIDEWALK
- (I) 4'X5' CONC. SIDEWALK, GA. DETAIL A-3
- (J) 8'X30' CONC. CURB & GUTTER, GA. STD. 9032 B. TYPE 2
- (K) 6' CONC. HEADER CURB, GA. STD. 9032B TYPE 7
- (L) 4' CONC. HEADER CURB, GA. STD. 9032B TYPE 9
- (M) PAVEMENT FABRIC MATERIAL

URS

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

NOT TO SCALE

REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION

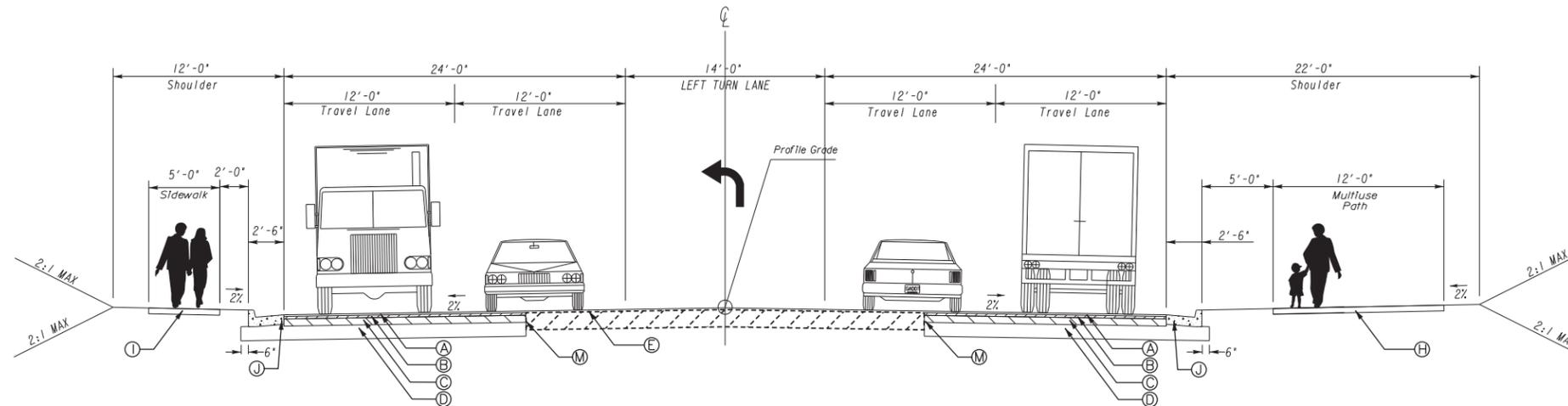
OFFICE:

TYPICAL SECTIONS

DRAWING No.
05-003

ALTERNATIVE TYPICALS

TYPICAL SECTION HEMBREE RD. SIGNAL INTERSECTION (URBAN) W/TURN LANE



REQUIRED PAVEMENT

- (A) RECYCLED ASPH CONC 12.5 mm SUPERPAVE, GP 2 ONLY, INCL BITUM MATL & H LIME (165 LB/SY)
- (B) RECYCLED ASPH CONC 19 mm SUPERPAVE, GP1 OR 2, INCL BITUM MATL & H LIME (220 LB/SY)
- (C) RECYCLED ASPH CONC 25 mm SUPERPAVE, GP1 OR 2, INCL BITUM MATL & H LIME (440 LB/SY)
- (D) GRADED AGGREGATE BASE CRS, 12", INCL MATL
- (E) ASPHALTIC CONCRETE LEVELING, INCL BITUM MATL AND H LIME (AS REQ'D)
- (F) PLAIN PC CONC PVMT, CL 1 CONC, 10 INCH THICK
- (G) CONCRETE INTEGRAL MEDIAN, 6"

- (H) 4'X12' ASPHALT SIDEWALK
- (I) 4'X5' CONC. SIDEWALK, GA. DETAIL A-3
- (J) 8'X30" CONC. CURB & GUTTER, GA. STD. 9032 B. TYPE 2
- (K) 6" CONC. HEADER CURB, GA. STD. 9032B TYPE 7
- (L) 4" CONC. HEADER CURB, GA. STD. 9032B TYPE 9
- (M) PAVEMENT FABRIC MATERIAL

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

NOT TO SCALE

REVISION DATES		

STATE OF GEORGIA
 DEPARTMENT OF TRANSPORTATION
 OFFICE:
TYPICAL SECTIONS

DRAWING No.
05-004

Attachment #3

DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE PROJECT No. , **OFFICE**
 DATE

P.I. No.

FROM

TO Ronald E. Wishon, Project Review Engineer

SUBJECT REVISIONS TO PROGRAMMED COSTS

PROJECT MANAGER

MNGT LET DATE

MNGT R/W DATE

PROGRAMMED COST (TPro W/OUT INFLATION)

LAST ESTIMATE UPDATE

CONSTRUCTION \$
 RIGHT OF WAY \$
 UTILITIES \$

DATE
 DATE
 DATE

REVISED COST ESTIMATES

CONSTRUCTION* \$
 RIGHT OF WAY \$
 UTILITIES \$

* Costs contain % Engineering and Inspection

REASON FOR COST INCREASE

CONTINGENCY SUMMARY

Construction Cost Estimate:	\$ 1,197,768.53	(Base Estimate)
Engineering and Inspection:	\$ 59,888.43	(Base Estimate x 5 %)
Total Fuel Adjustment	\$ 0.00	(From attached worksheet)
Total Liquid AC Adjustment	\$ 90,933.52	(From attached worksheet)
Construction Total:	\$ 1,348,590.48	

REIMBURSABLE UTILITY COST

Utility Owner

Reimbursable Cost

Attachments

JOB ESTIMATE REPORT

JOB NUMBER : 0010419 SPEC YEAR: 01
 DESCRIPTION: INTERSECTION IMPROVEMENT SR140 (HOUZE RD)@ CR186 (HEMBREE RD)
 ROUNDABOUT ALT

COST GROUPS FOR JOB 0010419

COST GROUP	DESCRIPTION	QUANTITY	PRICE	AMOUNT	ACTIVE?
THSY	SIGNING AND MARKING (LS)	1.000	30000.00000	30000.00	Y
ACTIVE COST GROUP TOTAL				30000.00	
INFLATED COST GROUP TOTAL				30000.00	

ITEMS FOR JOB 0010419

LINE	ITEM	ALT	UNITS	DESCRIPTION	QUANTITY	PRICE	AMOUNT
0005	009-3500		LS	MISC LANDSCAPE ITEMS	1.000	100000.00	100000.00
0010	150-0001		LS	TRAFFIC CONTROL, NON-REFUNDABLE DEDUCT	1.000	50000.00	50000.00
0015	163-0001		LS	EROSION CONTROL, NON-REFUNDABLE DEDUCT	1.000	30000.00	30000.00
0020	210-0100		LS	GRADING COMPLETE - .	1.000	125000.00	125000.00
0025	310-1101		TN	GR AGGR BASE CRS, INCL MATL	4050.000	14.77	59818.50
0030	402-1812		TN	RECYL AC LEVELING, INC BM&HL	1225.000	60.00	73500.00
0035	402-3121		TN	RECYL AC 25MM SP, GP1/2, BM&HL	1210.000	71.00	85910.00
0040	402-3130		TN	RECYL AC 12.5MM SP, GP2, BM&HL	860.000	56.00	48160.00
0045	402-3190		TN	RECYL AC 19 MM SP, GP 1 OR 2 , INC BM&HL	610.000	71.00	43310.00
0050	413-1000		GL	BITUM TACK COAT	2470.000	2.45	6051.50
0055	430-0200		SY	PLN PC CONC PVMT/CL1C/ 10" TK	190.000	40.00	7600.00
0060	432-0206		SY	MILL ASPH CONC PVMT/ 1.50" DEP	6550.000	1.05	6877.50
0065	441-0104		SY	CONC SIDEWALK, 4 IN	3300.000	23.66	78078.00
0070	441-0748		SY	CONC MEDIAN, 6 IN - CONC SPLITTER ISLANDS	725.000	46.74	33886.50
0075	441-5008		LF	CONC HEADER CURB, 6 IN, TP 7	260.000	16.00	4160.00
0080	441-5025		LF	CONC HEADER CURB, 4", TP 9	320.000	16.00	5120.00
0085	441-6022		LF	CONC CURB & GUTTER, 6"X30"TP2	3600.000	16.55	59580.00
0090	500-3110		LF	CLASS A CONCRETE, TYPE P1, RETAINING WAL	200.000	265.00	53000.00
0095	550-1180		LF	STM DR PIPE 18", H 1-10	448.000	30.00	13440.00
0100	550-1360		LF	STM DR PIPE 36", H 1-10	116.000	57.52	6672.32
0105	550-1421		LF	STM DR PIPE 42", H 10-15	40.000	67.25	2690.00
0110	550-4218		EA	FLARED END SECT 18 IN, ST DR	1.000	479.17	479.17
0115	550-4242		EA	FLARED END SECT 42 IN, ST DR	1.000	1377.00	1377.00
0120	647-1000		LS	TRAF SIGNAL INSTALLATION NO - - 8 HAWK SIGNALS	1.000	100000.00	100000.00
0125	668-3300		EA	SAN SEW MANHOLE, TP 1	2.000	3373.66	6747.32
0130	668-2100		EA	DROP INLET, GP 1	8.000	1820.09	14560.72
0135	682-9030		LS	LIGHTING SYSTEM - 10 LIGHT INSTALLATIONS	1.000	100000.00	100000.00

DATE : 10/05/2012
PAGE : 2

STATE HIGHWAY AGENCY

JOB ESTIMATE REPORT

0140	999-0045	SF	GABION WALL	2070.000	25.00	51750.00
ITEM TOTAL						1167768.53
INFLATED ITEM TOTAL						1167768.53
TOTALS FOR JOB 0010419						
ESTIMATED COST:						1197768.53
CONTINGENCY PERCENT (5.0):						59888.43
ESTIMATED TOTAL:						1257656.96

JOB ESTIMATE REPORT

JOB NUMBER : 0010419-ALT1 SPEC YEAR: 01
 DESCRIPTION: INTERSECTION IMPROVEMENT SR140 (HOUZE RD)@ CR186(HEMBREE RD)
 SIGNAL ALT

COST GROUPS FOR JOB 0010419-ALT1

COST GROUP	DESCRIPTION	QUANTITY	PRICE	AMOUNT	ACTIVE?
THSY	SIGNING AND MARKING (LS)	1.000	25000.00000	25000.00	Y
ACTIVE COST GROUP TOTAL				25000.00	
INFLATED COST GROUP TOTAL				25000.00	

ITEMS FOR JOB 0010419-ALT1

LINE	ITEM	ALT	UNITS	DESCRIPTION	QUANTITY	PRICE	AMOUNT
0005	009-3500		LS	MISC LANDSCAPE ITEMS	1.000	85000.00	85000.00
0010	150-0001		LS	TRAFFIC CONTROL, NON-REFUNDABLE DEDUCT	1.000	25000.00	25000.00
0015	163-0001		LS	EROSION CONTROL, NON-REFUNDABLE DEDUCT	1.000	30000.00	30000.00
0020	210-0100		LS	GRADING COMPLETE - .	1.000	129000.00	129000.00
0025	310-1101		TN	GR AGGR BASE CRS, INCL MATL	4590.000	14.77	67794.30
0030	402-1812		TN	RECYL AC LEVELING, INC BM&HL	680.000	60.00	40800.00
0035	402-3121		TN	RECYL AC 25MM SP, GP1/2, BM&HL	1375.000	71.00	97625.00
0040	402-3130		TN	RECYL AC 12.5MM SP, GP2, BM&HL	1300.000	56.00	72800.00
0045	402-3190		TN	RECYL AC 19 MM SP, GP 1 OR 2 , INC BM&HL	690.000	71.00	48990.00
0050	413-1000		GL	BITUM TACK COAT	3770.000	2.45	9236.50
0055	432-0206		SY	MILL ASPH CONC PVMT/ 1.50" DEP	9500.000	1.05	9975.00
0060	441-0104		SY	CONC SIDEWALK, 4 IN	3500.000	23.66	82810.00
0065	441-6720		LF	CONC CURB & GUTTER/ 6"X30"TP7	3700.000	12.60	46620.00
0070	500-3110		LF	CLASS A CONCRETE, TYPE P1, RETAINING WAL	290.000	265.00	76850.00
0075	550-1180		LF	STM DR PIPE 18", H 1-10	286.000	30.00	8580.00
0080	550-1360		LF	STM DR PIPE 36", H 1-10	164.000	57.52	9433.28
0085	550-1421		LF	STM DR PIPE 42", H 10-15	28.000	67.25	1883.00
0090	550-4218		EA	FLARED END SECT 18 IN, ST DR	1.000	479.17	479.17
0095	550-4236		EA	FLARED END SECT 36 IN, ST DR	1.000	926.32	926.32
0100	550-4242		EA	FLARED END SECT 42 IN, ST DR	1.000	1377.00	1377.00
0105	647-1000		LS	TRAF SIGNAL INSTALLATION NO - HOUZE-HEMBREE IMPROVED SIGNAL	1.000	150000.00	150000.00
0110	668-2100		EA	DROP INLET, GP 1	5.000	1820.09	9100.45
0115	668-3300		EA	SAN SEW MANHOLE, TP 1	3.000	3373.66	10120.98
0120	682-9030		LS	LIGHTING SYSTEM - 10 LIGHT INSTALLATIONS	1.000	100000.00	100000.00
0125	999-0045		SF	GABION WALL	2070.000	25.00	51750.00
ITEM TOTAL							1166151.00
INFLATED ITEM TOTAL							1166151.00

DATE : 10/05/2012
PAGE : 2

STATE HIGHWAY AGENCY

JOB ESTIMATE REPORT

TOTALS FOR JOB 0010419-ALTI

ESTIMATED COST:	1191151.00
CONTINGENCY PERCENT (5.0):	59557.55
ESTIMATED TOTAL:	1250708.55

PROJ. NO.

0010419 Roundabout

CALL NO.

P.I. NO.

0010419

DATE

5/30/2012

INDEX (TYPE)

REG. UNLEADED

May-12

\$ 3.668

DIESEL

\$ 4.057

LIQUID AC

\$ 690.00

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)

80833.5

\$

80,833.50

Monthly Asphalt Cement Price month placed (APM)

Max. Cap

60%

\$ 1,104.00

Monthly Asphalt Cement Price month project let (APL)

\$ 690.00

Total Monthly Tonnage of asphalt cement (TMT)

195.25

ASPHALT	Tons	%AC	AC ton
Leveling	1225	5.0%	61.25
12.5 OGFC	0	5.0%	0
12.5 mm	860	5.0%	43
9.5 mm SP	0	5.0%	0
25 mm SP	1210	5.0%	60.5
19 mm SP	610	5.0%	30.5
	3905		195.25

BITUMINOUS TACK COAT

Price Adjustment (PA)

\$ 6,401.42

\$

6,401.42

Monthly Asphalt Cement Price month placed (APM)

Max. Cap

60%

\$ 1,104.00

Monthly Asphalt Cement Price month project let (APL)

\$ 690.00

Total Monthly Tonnage of asphalt cement (TMT)

15.46236332

Bitum Tack

Gals	gals/ton	tons
3600	232.8234	15.4623633

PROJ. NO.

0010419 Roundabout

CALL NO.

P.I. NO.

0010419

DATE

5/30/2012

BITUMINOUS TACK COAT (surface treatment)

Price Adjustment (PA)					3698.597306	\$	3,698.60
Monthly Asphalt Cement Price month placed (APM)		Max. Cap	60%	\$	1,104.00		
Monthly Asphalt Cement Price month project let (APL)				\$	690.00		
Total Monthly Tonnage of asphalt cement (TMT)					8.933809918		

Bitum Tack	SY	Gals/SY	Gals	gals/ton	tons
Single Surf. Trmt.	10400	0.20	2080	232.8234	8.933809918
Double Surf.Trmt.	0	0.44	0	232.8234	0
Triple Surf. Trmt	0	0.71	0	232.8234	0
					8.933809918

TOTAL LIQUID AC ADJUSTMENT						\$	90,933.52
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Department of Transportation State of Georgia

Interdepartmental Correspondence

FILE R/W Cost Estimate **OFFICE** Atlanta
DATE June 8, 2012
FROM Phil Copeland, Right of Way Administrator
LaShone Alexander, Right of Way Cost Estimator
TO Sue Anne H. Decker, P.E, Project Manager
SUBJECT **Preliminary Right of Way Cost Estimate**
Project: Fulton County
P.I. No.: 0010419
Description: Intersection Improvement

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

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

PC:LA
Attachments
c: file

**GEORGIA DEPARTMENT OF TRANSPORTATION
PRELIMINARY ROW COST ESTIMATE SUMMARY**

Date: 6/4/2012 Project: 0010419
 Revised: County: Fulton
 PI: 0010419

Description: Intersection Improvement
 Project Termini: Intersection Improvement

Existing ROW: Varies
 Required ROW: Varies
 Parcels: 9

Land and Improvements \$277,500.00

Proximity Damage	\$0.00
Consequential Damage	\$0.00
Cost to Cures	\$0.00
Trade Fixtures	\$0.00
Improvements	\$35,000.00

Valuation Services \$9,000.00

Legal Services \$81,075.00

Relocation \$18,000.00

Demolition \$0.00

Administrative \$80,500.00

TOTAL ESTIMATED COSTS \$466,075.00

TOTAL ESTIMATED COSTS (ROUNDED) \$467,000.00

Preparation Credits	Hours	Signature

Prepared By: Lashara Alexander CG#: 286999 6/4/2012
 Approved By: Joshua Alexander CG#: 286999 6/4/2012

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

**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA**

INTERDEPARTMENT CORRESPONDENCE

FILE P.I. No. 0010419 **OFFICE** Chamblee
FROM Jonathan Walker **DATE** June 25, 2012
District Utilities Engineer
TO Bobby Hilliard, State Program Delivery Engineer
ATTN Sue Anne H. Decker, P.E.

SUBJECT PRELIMINARY UTILITY COST (ESTIMATE)

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

FACILITY OWNER	NON- REIMBURSABLE	REIMBURSABLE	TOTAL
Atlanta Gas Light Co.	\$108,000.00	\$0.00	
AT&T/BellSouth	\$ 115,000.00	\$0.00	
Comcast of Georgia, Inc.	\$ 70,000.00	\$0.00	
Georgia Power Co.	\$920,000.00	\$0.00	
Fulton County Water	\$123,000.00	\$0.00	
Fulton County Sewer	\$318,000.00	\$0.00	
Totals	\$1,654,000.00	\$ 0.00	\$1,654,000.00

If you have any questions, please contact Clyde Cunningham at 770-986-1117.

C: Jeff Baker, State Utilities Engineer
Angela Robinson, Office of Financial Management
Sebastian Nesbitt, Area Engineer

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE P.I. No. 0010419 **OFFICE** Environmental Services

DATE October 3, 2012

FROM *GB/DC*
Glenn Bowman, P.E., State Environmental Administrator

TO Sue Anne Decker, Project Manager

SUBJECT Preliminary Mitigation Cost Estimate

As requested by your office, we are furnishing you with a preliminary cost estimate for the subject project. The project is located at SR 140 and CR 186/Hembree Road in Fulton County, Georgia. After reviewing the NWI mapping and based on the information provided, wetlands will be impacted and mitigation will be required. The estimated cost for mitigation is \$57,068.50.

DISCLAIMER: This information is based solely on a desktop review of the information available. Only after a field reconnaissance, can a more detailed and accurate cost be estimated.

Thank you for your cooperation and expeditious handling of this matter. If you have any questions or need additional information, please contact Lisa Westberry (404) 631-1772 of our office.

GB/HDC/lmw

cc: Sean Pharr, URS
General File

Attachment #4

GDOT ROUNDABOUT DESIGN CHECKLIST - CONCEPT DEVELOPMENT

Notes:

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

PI Number: <u>10419</u>	County: <u>Fulton</u>
Design Phase Leader: _____	Design Office: _____
Description: <u>SR 140 (Houze Road) at Hembree Road</u>	

No.	Completed	Action By	Item	Commentary <small>(Can modify text to replace with project specific info, will show in bold letters.)</small>
-----	-----------	-----------	------	--

1. Operations - Planning Level Assessment - See DPM Section 8.2.1

1	<input checked="" type="checkbox"/>	<input type="checkbox"/> JAB	Vicinity Map	<i>Aerial Photo obtained from City of Roswell that illustrates the study area within a mile in each direction.</i>
2	<input checked="" type="checkbox"/>	<input type="checkbox"/> JAB	Intersection Layout	<i>Recent aerial photo obtained from City of Roswell that illustrates existing intersection layout and adjacent properties access points, and buldings.</i>
3	<input checked="" type="checkbox"/>	<input type="checkbox"/> JAB	Letter of support from local government	<i>N/A. City of Roswell issued RFP and is managing project.</i>
4	<input checked="" type="checkbox"/>	<input type="checkbox"/> JAB	Crash history	<i>Crash data obtained from GDOT for years 2006 through 2011.</i>
5	<input checked="" type="checkbox"/>	<input type="checkbox"/> JAB	Pedestrian and bike activity	<i>Low pedestrian and bike activity. Peds prohibited from crossing north and east legs. No bike facilities in the intersection vicinity. Future multi-use path planned through intersection.</i>
6	<input checked="" type="checkbox"/>	<input type="checkbox"/> JAB	Estimate current traffic volumes	<i>Existing AADT - 11,300 Hembree Road (east leg), 7,400 Hembree Road (west leg), 11,800 Houze Road (south leg), 13,300 Houze Road (north leg). Total entering volume ~22,000 ADT.</i>
7	<input checked="" type="checkbox"/>	<input type="checkbox"/> JAB	Estimate design year traffic volumes	<i>2035 ~28,000 ADT</i>
8	<input checked="" type="checkbox"/>	<input type="checkbox"/> JAB	Percent traffic on major roads	<i>57% on Houze Road / 43% on Hembree Road</i>
9	<input checked="" type="checkbox"/>	<input type="checkbox"/> JAB	Number of circulatory lanes	<i>2-lane roundabout for design year. Partial multilane roundabout for opening year (single-lane entry/exit on south leg and single-lane exit on north leg).</i>
10	<input checked="" type="checkbox"/>	<input type="checkbox"/> JAB	Favorable conditions	<i>Existing operational (delay and queue) issues during peak hour. 60 reported crashes in 6 years from 2006 to 2011. Existing sight distance limitations that could be addressed.</i>
11	<input checked="" type="checkbox"/>	<input type="checkbox"/> JAB	Unfavorable conditions	<i>Highly directional peak hour volumes create need for multilane configuration. Adjacent drainage and vertical alignment constraints that impact placement of roundabout.</i>
12	<input checked="" type="checkbox"/>	<input type="checkbox"/> JAB	Purpose of roundabout	<i>The purpose of the project is to provide operational and safety improvements at the study intersection.</i>
13	<input checked="" type="checkbox"/>	<input type="checkbox"/> JAB	Roundabout sketch	<i>See feasibility study memorandum. Several options for size and placement developed at a sketch level.</i>

PI Number:	10419	County:	Fulton
Design Phase Leader:		Design Office:	
Description:	SR 140 (Houze Road) at Hembree Road		

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

1	<input checked="" type="checkbox"/>	JAB	Vicinity Map	Aerial Photo obtained from City of Roswell that illustrates the study area within a mile in each direction.
2	<input checked="" type="checkbox"/>	JAB	Approach speeds	Posted speed is 35 mph through the intersection for both roadways.
3	<input checked="" type="checkbox"/>	JAB	Grades	Grade slopes toward the intersection on the east and north legs. Roundabout horizontal placement and vertical profiles "bench" the intersection to minimize cross-slope.
4	<input checked="" type="checkbox"/>	JAB	Functional classification	SR 140 (Houze Road) is a Minor Arterial. Hembree Road is a collector roadway.
5	<input checked="" type="checkbox"/>	JAB	Current year traffic volumes	Existing 2011 traffic counts collected by City of Roswell. All raw data provided in appendix of the Traffic Study Report.
6	<input checked="" type="checkbox"/>	JAB	Base year traffic projections	Base year 2015 and Design Year 2035 traffic projections reviewed and approved by GDOT. 1% annual growth rate assumed for developing the future year volumes.
7	<input checked="" type="checkbox"/>	JAB	Design year traffic projections	
8	<input checked="" type="checkbox"/>	JAB	Future projects	A ped-bike multi-use trail is planned along Hembree Road through the study intersection.
9	<input checked="" type="checkbox"/>	JAB	Desirable LOS	Refer to DPM Section 6.14, Summary of Design Criteria for Cross Section Elements. For Urban conditions an LOS C or D is desired.

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

1	<input checked="" type="checkbox"/>	JAB	Intersection base map	Aerial Photo obtained from City of Roswell
2	<input checked="" type="checkbox"/>	JAB	Signal Warrant Study	A signal is currently present at the intersection. A signal warrant study is not applicable.
3	<input checked="" type="checkbox"/>	JAB	Identify/sketch alternative intersection forms	Several sketch level roundabout configurations were developed that illustrated alternatives with different roundabout diameters and locations. See feasibility study memorandum for illustrations.
4	<input checked="" type="checkbox"/>	JAB	Safety assessment	See Traffic Study Report for details. Estimated reduction of total crashes by 23% and injury crashes by 66% with conversion from existing signal to a roundabout.
5	<input checked="" type="checkbox"/>	JAB	Number of entry lanes for each approach leg	Based upon future turning movement volumes, a two-lane roundabout is needed for 2035. Fewer entering and exiting lanes are possible for the Houze Road approaches in the opening year. See Traffic Study Report for additional detail.
6	<input checked="" type="checkbox"/>	JAB	Operational Analyses	See Traffic Study Report for additional detail. Analysis was performed using SIDRA Intersection, HCM 2010 methodologies, and a calibrated HCM procedure.
7	<input checked="" type="checkbox"/>	URS	Cost Comparison	Costs developed by URS for a roundabout and improved signal alternative. Improved signal estimated to cost \$1.46 million. Roundabout estimated at \$1.41 million.
8	<input checked="" type="checkbox"/>	JAB	Select most favorable alternate	The preferred roundabout size and location was identified in coordination with City staff. See Feasibility Study memo for additional information on considerations that went into selection.

PI Number:	10419	County:	Fulton
Design Phase Leader:		Design Office:	
Description:	SR 140 (Houze Road) at Hembree Road		

No.	Completed	Action By	Item	Commentary <small>(Can modify text to replace with project specific info, will show in bold letters.)</small>
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4. Design - Roundabout Feasibility Study, Part 2 - Roundabout layout (as required to define the footprint)

1	<input checked="" type="checkbox"/>	JAB	Design alternate roundabout layouts	The preferred roundabout size/location alternative was further developed in Microstation. See Feasibility Study memo for additional information.
2	<input type="checkbox"/>		Identify likely impacts	Identify potential conflicts with underground utilities and likely property and environmental resource impacts, etc.
3	<input checked="" type="checkbox"/>	JAB	Fastest paths	See Feasibility Study memo for figures illustrating fastest paths.
4	<input checked="" type="checkbox"/>	JAB	Design vehicle	A WB-67 design vehicle was utilized for the through movements along Houze Road. A WB-50 design vehicle was identified to/from Hembree Road due to truck restrictions that would preclude travel by large trucks. A WB-67 will be accommodated on Hembree Road.
5	<input checked="" type="checkbox"/>	JAB	Design vehicle swept path	See Feasibility Study memo for figures of design vehicle swept paths.
6	<input checked="" type="checkbox"/>	JAB	Stopping sight distance	Based upon 35 mph posted speeds, a stopping sight distance of approximately 250 feet is required. Each of the approaches is estimated to provide stopping sight distance in excess of this value.
7	<input checked="" type="checkbox"/>	JAB	Staging improvements	A single-lane roundabout will not provide sufficient capacity for opening year. However, an interim opening year design with reduced numbers of entering and existing lanes on Houze Road is recommended. See Traffic Study and Feasibility Study.
8	<input type="checkbox"/>		Finalize concept layout	Prepare a concept layout of the proposed roundabout. May be CAD or hand drawn, but should be to scale. Should show central island, splitter islands, sidewalks, crosswalks and truck apron. Note or list dimensions for ICD, circulatory roadway width, truck apron widths, angles between approach centerlines. Will be helpful to include preliminary striping for multilane roundabouts. Show scale and North arrow.

5. Design - Other information - required for concept report

1	<input type="checkbox"/>		Typical section	Required for concept reports.
2	<input type="checkbox"/>		Construction sequencing	Briefly describe expected staging for construction, e.g. built under traffic, off-site detour, new location...
3	<input type="checkbox"/>		Lighting	Include in cost estimate. Define if need is to address high speeds on approaches, pedestrian activity and if approaches are lighted.
4	<input type="checkbox"/>		Landscaping requirements	Include in cost estimate. Will normally be required. This is particularly the case for high speed approaches to enhance visibility of the roundabout from a distance.
5	<input type="checkbox"/>		Pavement Type	Will normally match major road pavement. Asphalt commonly provides for easier staging for construction at existing intersections.

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

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

PI Number: <u>10419</u>	County: <u>Fulton</u>
Design Phase Leader: _____	Design Office: _____
Description: <u>SR 140 (Houze Road) at Hembree Road</u>	

No.	Completed	Action By	Item	Commentary <small>(Can modify text to replace with project specific info, will show in bold letters.)</small>
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7. Complete quality assurance reviews - occurs at various points in the process

1	<input type="checkbox"/>	<input type="checkbox"/>	QA review by design process	Feasibility studies should be reviewed within the originating design office, in accordance with the Department's QC/QA manual (located on ROADS).
2	<input type="checkbox"/>	<input type="checkbox"/>	Informal review by GDOT roundabout SME	Upon request, a GDOT SME will, (prior to peer review), perform an informal review of a feasibility study or any in-progress work products. Contact either Scott Zehngraff (szehngraff@dot.ga.gov) of the Office of Traffic Operations or Daniel Pass (dpass@dot.ga.gov) of the Office of Design Policy and Support.
3	<input type="checkbox"/>	<input type="checkbox"/>	Peer Review by Consultant peer reviewer	See Daniel Pass for a list of approved roundabout peer reviewers and a scope of work for a peer review task order. Peer review can be accomplished either in discrete events or incrementally from start of concept to letting. Should be completed prior to the concept team meeting where a complex roundabout is proposed. See DPM Section 8.2.3. Review of Feasibility Studies.

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

- List of Acronyms:**
- SME - Subject Matter Expert
 - DPM - Design Policy Manual
 - ICD - Inscribed Diameter
 - TPAS - Traffic Polling and Analysis System



KITTELSON & ASSOCIATES, INC.

TRANSPORTATION ENGINEERING / PLANNING

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TECHNICAL MEMORANDUM

SR 140 (Houze Road) at Hembree Road

Roundabout Feasibility Evaluation

Date: June 12, 2012
To: Sean Pharr, URS
From: Justin Bansen, P.E.

Project #: 11812

INTRODUCTION AND EXECUTIVE SUMMARY

Kittelison & Associates, Inc. (KAI) evaluated the operational and geometric feasibility of a roundabout at the intersection of SR 140 (Houze Road) with Hembree Road in Roswell, Georgia. This memorandum documents the development of the conceptual roundabout design for the study intersection, including options for roundabout size and placement that were considered. For the roundabout alternative, KAI developed several design options at a sketch level to identify the anticipated footprint, potential impacts, and potential constructability associated with each option. One option was selected, in consultation with the City of Roswell staff, to be further refined and advanced as the final roundabout concept design. Operational analyses are documented under a separate Transportation Analysis report.

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

Based upon KAI's evaluation, a roundabout is a feasible alternative for improving the operational performance of the SR 140 (Houze Road) at Hembree Road intersection. A two-lane roundabout is anticipated to adequately serve estimated traffic volumes through the design year 2035. The roundabout concept has been developed to allow for a phased implementation with single-lane entries or exits on some approaches for initial construction, with expansion to a full two-lane roundabout (two entering and exiting lanes on all legs) as traffic volumes grow (estimated to be after year 2025).

A roundabout at the study intersection requires acquisition of right-of-way within the immediate intersection vicinity and will have impacts to the existing drainage features within the northeast quadrant of the intersection. Positioning the center of the roundabout to be offset towards the east of the existing intersection is recommended to minimize potential changes to the vertical alignments of the intersecting roadways. This will also minimize corresponding impacts to adjacent properties and cut-and-fill in the northwest, northeast, and southeast quadrants.

ROUNABOUT LANE CONFIGURATIONS AND OPERATIONAL PERFORMANCE

KAI evaluated the proposed roundabout build alternative to identify the necessary number of lanes and lane configurations to accommodate opening year 2015 and design year 2035 traffic volumes. Analysis of the 2035 traffic conditions was initially performed to identify the ultimate lane configuration for the roundabout. A sensitivity analysis was then performed to evaluate whether an interim roundabout configuration with fewer lanes would provide acceptable operations through 2025. The 2015 opening year traffic volumes were then evaluated for the interim roundabout configurations.

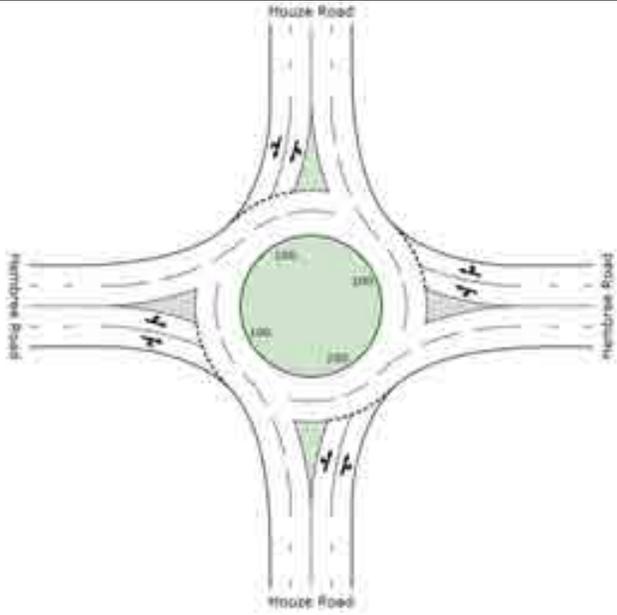
KAI evaluated the proposed roundabout build alternative using three methodologies to provide a range of expected performance. The capacity models utilized include the Highway Capacity Manual (HCM) 2010 procedures, the HCM 2010 model with a calibration by the California Department of Transportation (Caltrans), and SIDRA Intersection (an Australian Software package). The use of the three models is intended to provide some perspective on the potential range of long-term performance of the roundabouts. These models are not intended to imply any correlation between Roswell drivers and those in California or Australia.

The following is a summary of the recommended roundabout lane configurations and corresponding performance during the design years. More detailed information is provided in a separate Transportation Analysis report for the project. All analysis outputs, turning movement volumes, and other documentation are also provided in the separate Transportation Analysis report.

2035 Design Year Roundabout Alternatives

KAI evaluated a variety of roundabout configurations in order to identify the number of lanes on each approach and lane configurations needed to accommodate the 2035 design traffic volumes. For the 2035 ultimate roundabout configuration, a two-lane roundabout with two entering and exiting lanes on each approach and two circulating lanes is recommended to provide acceptable vehicle operations. All other combinations of lane configurations that were evaluated (including a single lane roundabout and a variety of multilane configurations with fewer lanes on one or more approaches) were found to result in a v/c ratio greater than 1.0 on one or more approaches.

Table 1 2035 Design Year Roundabout Analysis – Ultimate Roundabout Configuration

<p>Lane Configurations</p>									
<p>Analysis Methodology</p>	<p>SIDRA Intersection</p>			<p>HCM 2010</p>			<p>HCM 2010 (WITH CALTRANS CALIBRATION)</p>		
<p>Approach</p>	<p>Volume to Capacity Ratio</p>	<p>Approach Delay (sec/veh)</p>	<p>95th Percentile Queue (veh)</p>	<p>Volume to Capacity Ratio*</p>	<p>Approach Delay (sec/veh)</p>	<p>95th Percentile Queue (veh)</p>	<p>Volume to Capacity Ratio</p>	<p>Approach Delay (sec/veh)</p>	<p>95th Percentile Queue (veh)</p>
<p>AM Peak Hour</p>									
<p>Eastbound</p>	<p>0.72</p>	<p>11.3</p>	<p>5</p>	<p>1.01</p>	<p>74.1</p>	<p>14</p>	<p>0.89</p>	<p>46.4</p>	<p>10</p>
<p>Westbound</p>	<p>0.16</p>	<p>6.2</p>	<p>1</p>	<p>0.20</p>	<p>6.0</p>	<p>0.8</p>	<p>0.15</p>	<p>4.1</p>	<p>1</p>
<p>Northbound</p>	<p>0.33</p>	<p>8.4</p>	<p>2</p>	<p>0.40</p>	<p>14.4</p>	<p>1.9</p>	<p>0.35</p>	<p>12.8</p>	<p>2</p>
<p>Southbound</p>	<p>0.51</p>	<p>7.1</p>	<p>4</p>	<p>0.65</p>	<p>14.5</p>	<p>5.0</p>	<p>0.48</p>	<p>7.9</p>	<p>3</p>
<p>PM Peak Hour</p>									
<p>Eastbound</p>	<p>0.16</p>	<p>5.7</p>	<p>1</p>	<p>0.19</p>	<p>6.9</p>	<p>1</p>	<p>0.15</p>	<p>5.2</p>	<p>1</p>
<p>Westbound</p>	<p>0.76</p>	<p>18.6</p>	<p>10</p>	<p>0.87</p>	<p>36.6</p>	<p>10</p>	<p>0.70</p>	<p>18.1</p>	<p>6</p>
<p>Northbound</p>	<p>0.42</p>	<p>5.6</p>	<p>2</p>	<p>0.51</p>	<p>11.0</p>	<p>3</p>	<p>0.37</p>	<p>6.8</p>	<p>2</p>
<p>Southbound</p>	<p>0.45</p>	<p>11.8</p>	<p>4</p>	<p>0.42</p>	<p>12.2</p>	<p>2</p>	<p>0.34</p>	<p>9.4</p>	<p>2</p>

Interim Year Roundabout Alternatives

The roundabout was evaluated to identify opportunities for phased construction of the ultimate roundabout configuration. The intent of the analysis was to identify an interim configuration that would be compatible with the ultimate configuration (to provide ease of future expansion) while providing sufficient capacity to accommodate traffic volumes through year 2025 (10 years from the opening year 2015). Several interim alternatives were evaluated. The information presented below is for the recommended interim configuration for implementation in opening year 2015.

Table 2 2025 Interim Year Roundabout Analysis – Interim Configuration

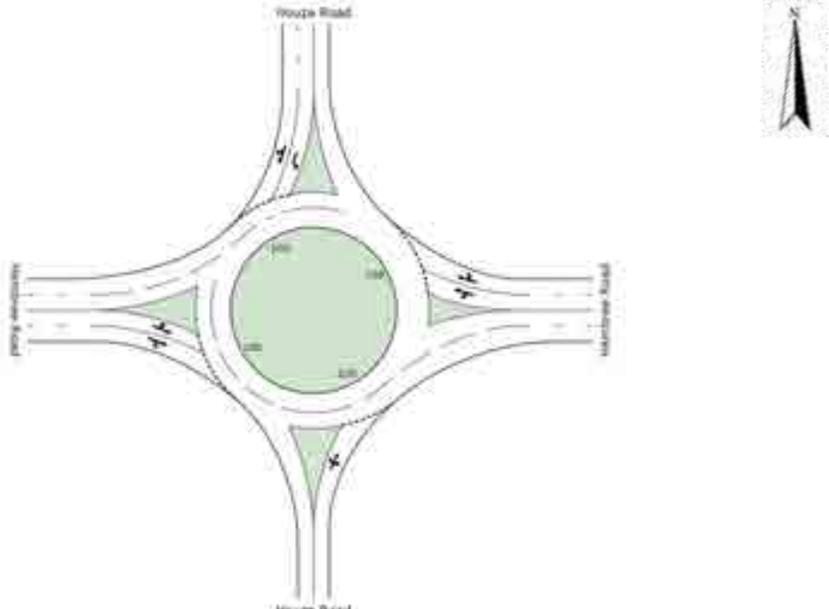
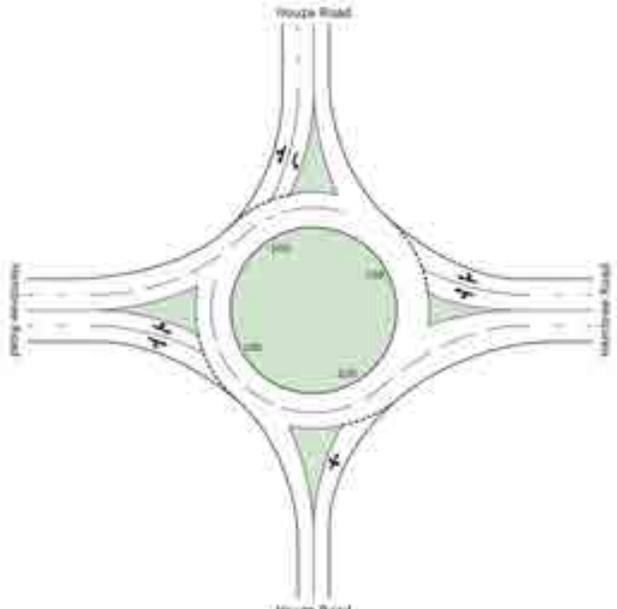
Lane Configurations									
	Analysis Methodology	SIDRA Intersection			HCM 2010			HCM 2010 (WITH CALTRANS CALIBRATION)	
Approach	Volume to Capacity Ratio	Approach Delay (sec/veh)	95 th Percentile Queue (veh)	Volume to Capacity Ratio*	Approach Delay (sec/veh)	95 th Percentile Queue (veh)	Volume to Capacity Ratio	Approach Delay (sec/veh)	95 th Percentile Queue (veh)
AM Peak Hour									
Eastbound	0.77	18.6	9	0.85	38.6	9	0.72	23.7	7
Westbound	0.15	7.9	2	0.20	6.2	1	0.15	4.6	1
Northbound	0.80	22.0	7	0.64	21.5	5	0.54	15.3	4
Southbound	0.65	9.6	8	0.81	22.1	9	0.58	9.7	4
PM Peak Hour									
Eastbound	0.15	7.8	1	0.17	6.4	1	0.13	4.7	1
Westbound	0.79	22.3	12	0.93	49.9	12	0.73	21.5	7
Northbound	0.89	16.7	15	0.84	26.1	11	0.62	10.9	5
Southbound	0.58	15.8	6	0.54	14.8	4	0.44	10.1	3

Table 3 2015 Opening Year Roundabout Analysis – Interim Configuration

Lane Configurations									
	Analysis Methodology	SIDRA Intersection			HCM 2010			HCM 2010 (WITH CALTRANS CALIBRATION)	
Approach	Volume to Capacity Ratio	Approach Delay (sec/veh)	95 th Percentile Queue (veh)	Volume to Capacity Ratio*	Approach Delay (sec/veh)	95 th Percentile Queue (veh)	Volume to Capacity Ratio	Approach Delay (sec/veh)	95 th Percentile Queue (veh)
AM Peak Hour									
Eastbound	0.63	13.7	6	0.71	24.7	6	0.60	17.0	4
Westbound	0.19	8.0	2	0.17	5.8	1	0.14	4.4	1
Northbound	0.64	15.9	5	0.54	16.4	3	0.45	11.9	2
Southbound	0.57	9.0	5	0.72	16.6	6	0.52	8.3	3
PM Peak Hour									
Eastbound	0.13	7.6	1	0.15	6.0	1	0.11	4.4	1
Westbound	0.85	20.8	15	0.78	29.0	7	0.62	15.4	4
Northbound	0.77	11.8	9	0.75	18.6	8	0.54	9.1	3
Southbound	0.48	12.9	4	0.47	12.2	3	0.37	8.5	2

SAFETY ANALYSIS

A total of 49 crashes were reported during the years 2006 to 2008 and 2011 (2009 and 2010 data excluded due to nearby construction). Of these crashes, 41 were property damage only and 8 resulted in injury. No fatal crashes were reported between years 2006 to 2011.

Crash prediction models published in NCHRP Report 572 were applied to estimate the difference in crash frequency and severity that could be expected with conversion of the existing signal to a two-lane roundabout. Table 4 summarizes the results. More detailed information related to historical crash trends is provided in the separate Transportation Analysis report for the project.

Table 4 Relative Change in Crashes Predicted with Conversion to a Roundabout from a Traffic Signal

	Relative Change in Crash Frequency (number of crashes per year)	Percentage Change in Crash Frequency
Total	-2.5	-23%
Fatal and Injury	-1.1	-66%
Property Damage Only (PDO)	-1.4	-16%

EXISTING SITE CONDITIONS AND CONSTRAINTS

SR 140 (Houze Road) is a north-south state road with a two-lane undivided cross-section and a posted speed of 35 mph. Separate left- and right-turn lanes are provided at most signalized and major unsignalized connections. Houze Road serves as a truck route through the area for vehicles longer than 30 feet. It currently carries an Annual Average Daily Traffic (AADT) of 11,800 vehicles to the south of Hembree Road and 13,300 vehicles to the north. No pedestrian or bike facilities are provided along Houze Road in the vicinity of the study intersection.

Hembree Road is an east-west two-lane undivided roadway with a speed limit of 35 mph. The posted speed increases to 40 mph to the east of the study intersection. Hembree Road carries an existing AADT of 7,400 vehicles to the west of SR 140 and 11,300 to the east. A sidewalk is provided along the north side of Hembree Road, east of SR 140. No other pedestrian or bike facilities are provided along Hembree Road in the vicinity of the study intersection.

KAI conducted field observations of the project site on two occasions in Fall 2011. The following bullet points highlight a brief summary of key site conditions and constraints observed during the field visits. An aerial of the existing intersection is provided in Figure 1.

- **Vertical Road Geometry** – The intersection is located at the bottom of a sag vertical curve along Hembree Road. The north leg of the intersection (Houze Road) also slopes down to the intersection. Although the existing intersection sits on a relatively level grade, vertical curves are needed to tie into the existing roadways. The west leg (Hembree Road) has the largest grade (approximately 5%) of any approach and has the largest potential influence on the design. The properties in the southwest and northwest quadrants sit in an elevated

position relative to the intersection. In the southwest quadrant, the elevation is lower relative to the intersection. In the northwest quadrant, drainage outflows into a swale that is protected with guardrail.

- Drainage – Open drainage streams cross under the north, south, and east legs of the intersection. In the northeast quadrant, the drainage features create a small pool surrounded by trees and brush within a ravine. Drainage outflows into the southeast quadrant of the intersection.
- Adjacent Properties – Residential properties are located in the northeast and southwest quadrants. The structures on these parcels are set back from the roadway and are not expected to be impacted; however, portions of the properties could be impacted depending upon the size or position of the roundabout. In the southeast quadrant, the land is undeveloped primarily due to the vertical and drainage features previously described. In the southwest quadrant is a church facility (St. Mary's Coptic Orthodox Church).
- Multimodal Facilities – No bike lanes are present on any of the approaching roadways. Sidewalk is provided on the north side of Hembree Road (west of Houze Road). No other existing sidewalk is present in the site vicinity connecting to the intersection. Under existing conditions, no pedestrians were observed during each of the field visits or when intersection turning movement count data was collected. However, increased pedestrian activity is anticipated in the future to correspond with improved multimodal facilities.
- Truck Traffic – Based upon traffic count data, the measured volume of trucks along Houze Road is approximately six-percent of the total daily volume and four-percent of the volume during the a.m. and p.m. peak-hours of the day. These percentages include the combination of single-unit trucks, buses, and tractor-trailer trucks. Based upon traffic count data, tractor-trailer trucks are estimated to account for approximately 1% of the volume along Houze Road during the peak traffic hours. Relatively low volumes of tractor-trailer vehicles were also observed during site visits in the peak hours. During one hour-long observation in the p.m. peak, zero tractor trailers were observed. On a second visit, two tractor trailers were observed.
- Utilities – Wooden utility poles are located on the east side of SR 140 (Houze Road) and on the south side of Hembree Road that carry above ground telephone and electricity. Other underground utilities in the intersection vicinity include water, sewer, and gas.



Hembree Road looking east – Extended downgrade approaching intersection.



SR 140 (Houze Road) looking north – Houze Road slopes towards the south through the intersection.



Hembree Road Eastbound at Houze Road - Drainage culvert under the south leg of intersection. No turns on red from either Hembree Road approach.



Hembree Road – Trucks over 18 tons or 30 ft in length restricted from Hembree Road. Houze Road is the designated truck route through the intersection. The speed along Hembree Road changes from 35 to 40 mph east of Houze Road.



Hembree Road looking westbound – grade in SE quadrant is lower relative to intersection.



Houze Road looking northbound – NE quadrant protected by guardrail. No pedestrians allowed.



Hembree Road looking westbound – drainage swale (surrounded by trees and vines) in NE quadrant.



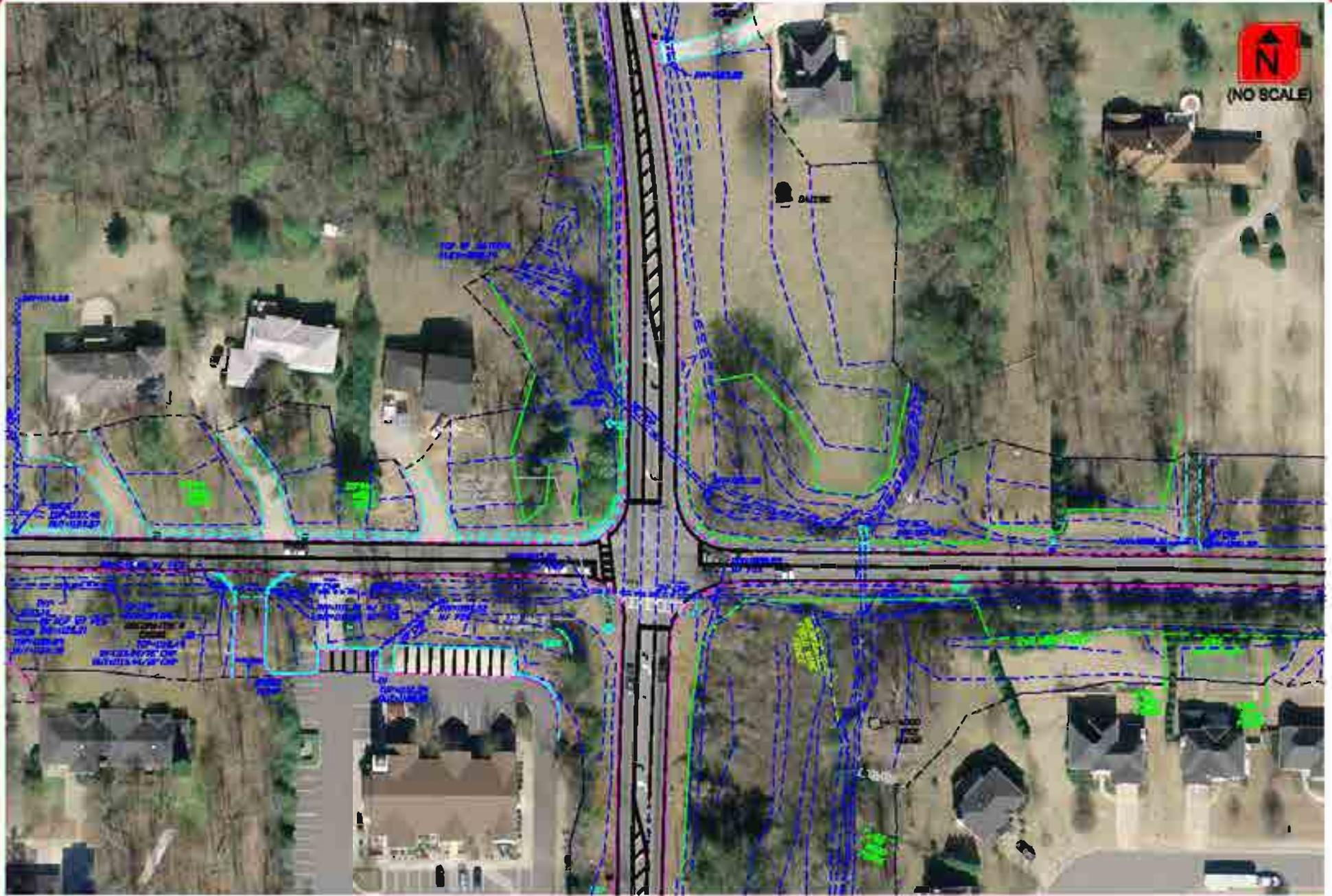
Houze Road looking southbound.



NE quadrant of intersection – depressed drainage swale behind guardrail.



Church property in SW quadrant of intersection.



KAL FILE MODEL DATE TIME

**INTERSECTION VICINITY MAP
SR 140 (HOUZE ROAD) AT HEMBREE ROAD
ROSWELL, GEORGIA**

CONCEPTUAL GEOMETRIC DESIGN

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

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

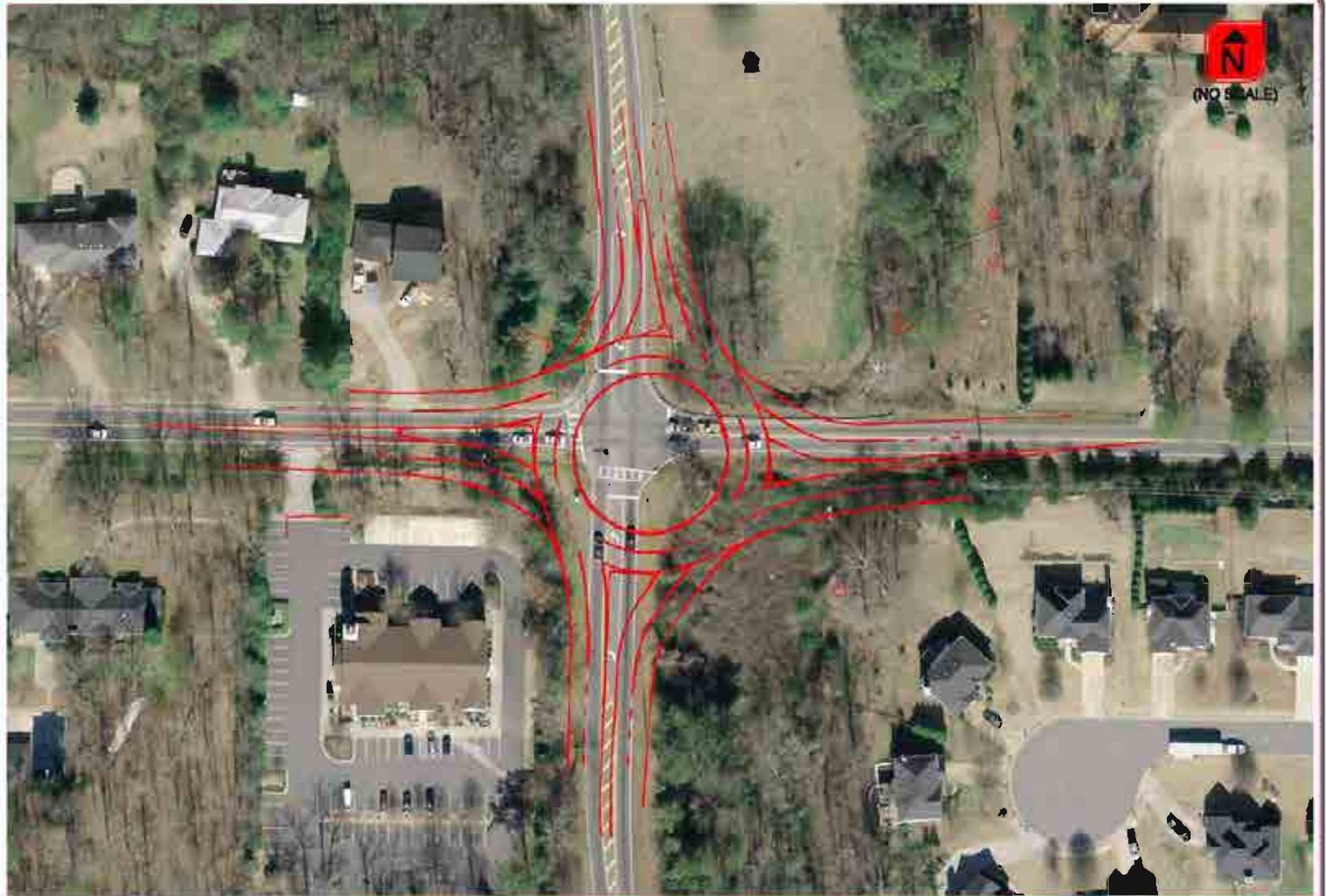
Figures 2, 3, 4, and 5 present four options for roundabout size and location. Each illustrates the impacts that the various alternatives have on adjacent land uses, environmental features, and ROW. Lane configurations shown in the figures represent the ultimate lane configurations for 2035, which include two entering and exiting lanes on each approach and a two lane circulatory roadway.

- Option 1 – Center of roundabout offset slightly to the east and south. 175 foot diameter.
- Option 2 – Center of roundabout offset to east and to north. 175 foot diameter.
- Option 3 – Center of roundabout centered on existing intersection. 160 foot diameter.
- Option 4 – West edge of the roundabout inscribed circle aligned with west edge of existing intersection. Offset slightly north of existing intersection. 160 foot diameter.

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

Design Context

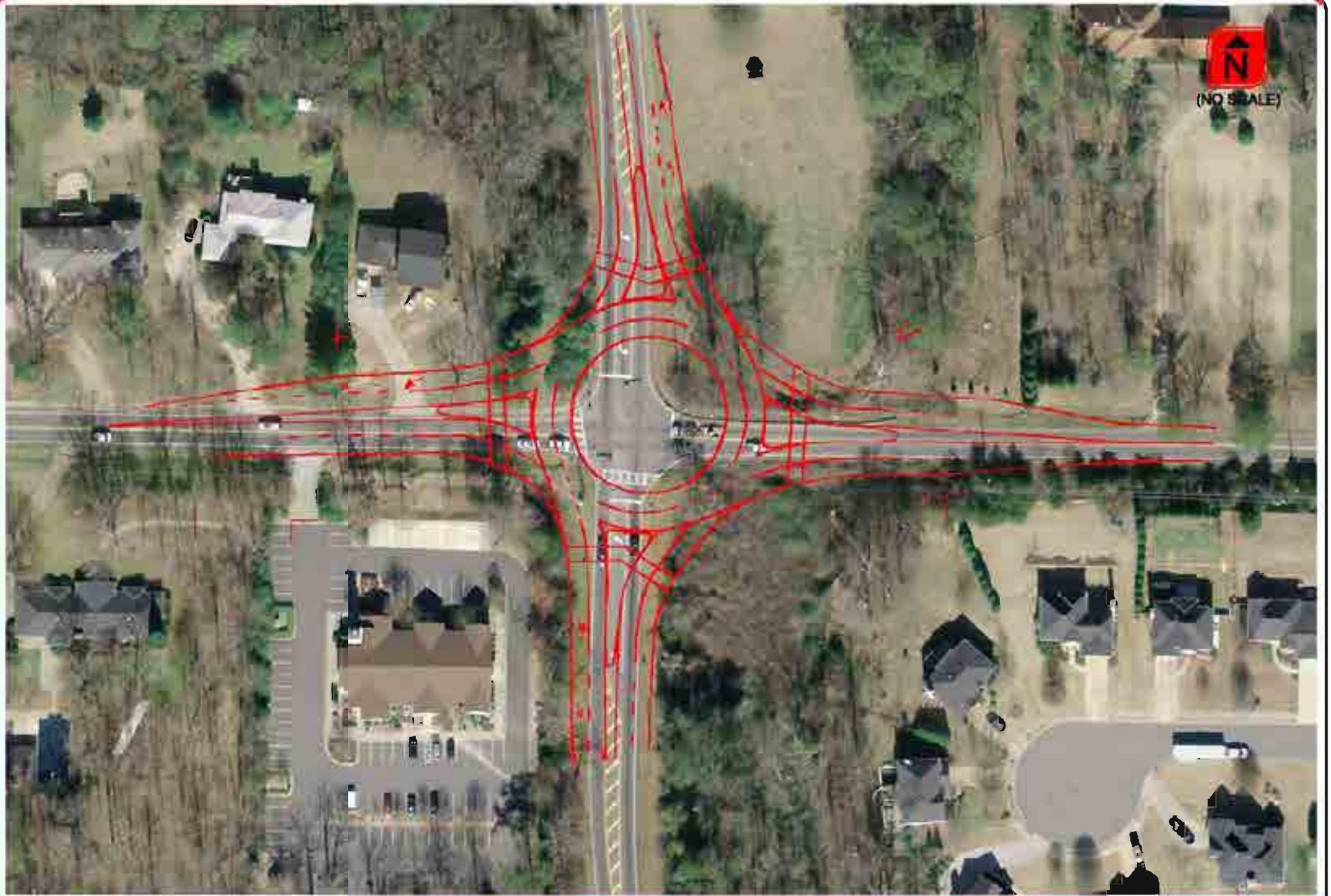
The study intersection is located within a suburban residential context. The project purpose is focused on improving intersection operations and safety for the auto mode. However, this is balanced with creating a more desirable pedestrian environment and improving regional pedestrian connectivity through new a new multiuse trail east-west along Hembree Road. No existing pedestrian activity was observed as part of the traffic data collection. However, improved pedestrian facilities are expected to increase activity by non-auto modes. Peak hour operations for the auto mode consist of strong directional flows (southbound and eastbound in the am peak hour, northbound and westbound in the pm peak hour) based upon commuter travel patterns.



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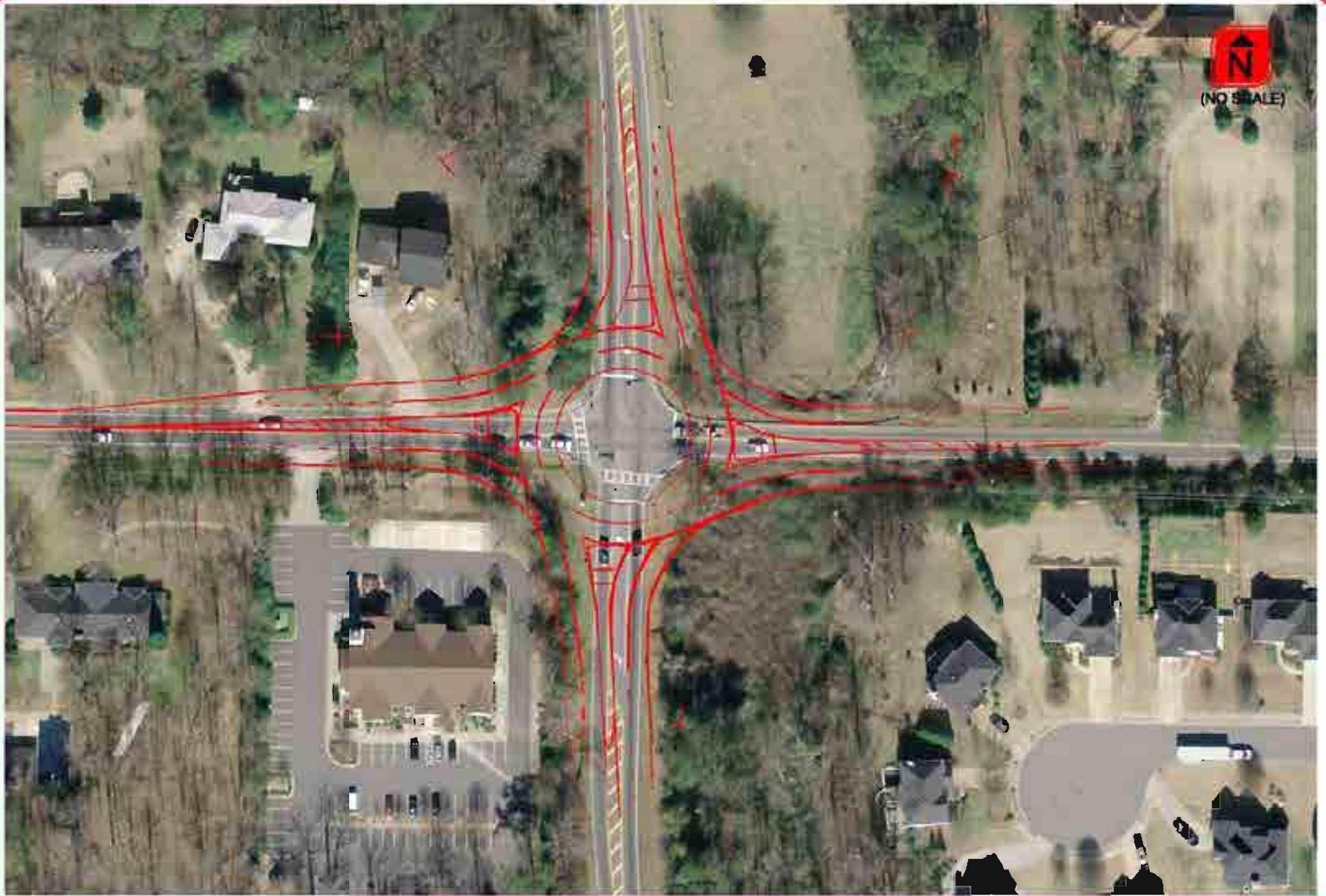
**SKETCH OPTION 1 - 175 FT ICD
SR 140 (HOUZE ROAD) AT HEMBREE ROAD
ROSWELL, GEORGIA**

**FIGURE
2**



KAL FILE MODEL DATE TIME

**SKETCH OPTION 2 - 175 FT ICD
SR 140 (HOUZE ROAD) AT HEMBREE ROAD
ROSWELL, GEORGIA**

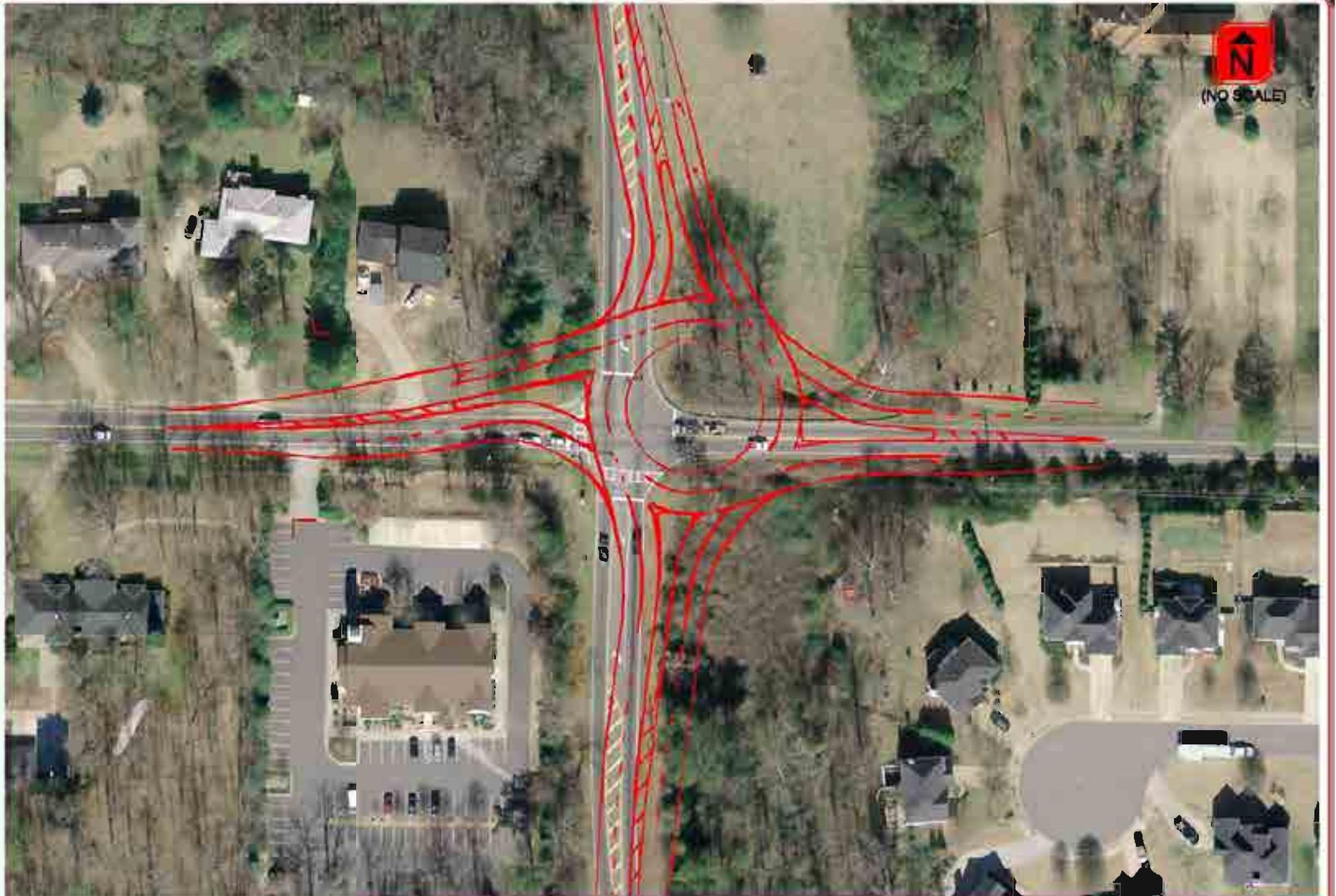


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(NO SCALE)

KAL FILE MODEL DATE TIME

**SKETCH OPTION 3 - 160 FT ICD
SR 140 (HOUZE ROAD) AT HEMBREE ROAD
ROSWELL, GEORGIA**

FIGURE
4



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**SKETCH OPTION 4 - 160 FT ICD
SR 140 (HOUZE ROAD) AT HEMBREE ROAD
ROSWELL, GEORGIA**

Design Vehicle Considerations

The design concepts were developed to accommodate a WB-67 size tractor-trailer truck on all approaches. For the northbound and southbound SR 140 approaches, the design was set up to allow for side-by-side navigation of a WB-67 with a passenger car. The WB-67 design vehicle encroaches into the adjacent lane; however, sufficient separation is provided for a passenger car to navigate through the intersection adjacent to the WB-67 truck.

Trucks greater than 30 feet in length are restricted along Hembree Road, which equates to vehicles larger than a single-unit (SU) truck. However, a larger BUS-40 design vehicle was selected for the Hembree Road approaches to account for the use of the intersection by fire trucks or buses. Design checks were performed for both the SU and BUS-40 to verify that these vehicles are adequately accommodated by the design. Accommodation of a WB-67 size vehicle on the Hembree Road approaches assumes that the tractor-trailer truck will utilize both lanes to navigate through the eastbound and westbound entries and exits. However, vehicles of this size are not expected along Hembree Road due to the truck restrictions.

Truck volumes represent approximately 4% of the existing SR 140 traffic volumes during the peak traffic hours. The following pictures illustrate representative trucks observed during field observations. Design checks illustrating the swept path for WB-67, SU, and BUS-40 vehicles are provided in Attachment A.



Speed Control

Speed control at entry is one of the fundamental design criteria for roundabouts. The designs were developed based upon the fastest path criteria from NCHRP Report 672. Consistent with new guidance, the procedure estimates the fastest path that would be achieved by a vehicle ignoring all lane lines approaching and traveling through the roundabout. The designs were developed to maintain fastest path speeds entering the roundabout of less than 30 mph on all multilane approaches (if drivers cross both lanes on the entry and exit) or 25 mph for single-lane approaches (or

assuming drivers stay in lane on two-lane approaches). Fastest path speed checks reflect an aggressive driver in an off-peak (low volume) condition that is trying to go as fast as possible by weaving across all lane lines. For most drivers, typical operating speeds will be below 25 mph, particularly during a.m. and p.m. peak hours when other vehicles are present and drivers must maintain their lane. Fastest path vehicle speed design checks are provided in Attachment B.

Natural Vehicle Paths

On each of the multilane approaches, consideration is given to the position of vehicles in each lane as they approach the yield line to confirm that the horizontal geometry naturally aligns vehicles into the correct lane within the circulatory roadway. Correct alignment of vehicle paths reduces the potential for vehicle path overlap and improves the potential intersection safety performance. The KAI concepts use a short segment of tangent at the yield line to encourage proper natural paths alignment. The length of tangent on each approach is not a standard value, but rather is a product of the entry alignment, entry angle, and entry radius. These values were achieved through an iterative process to balance alignment, vehicle speeds, and design vehicle accommodations.

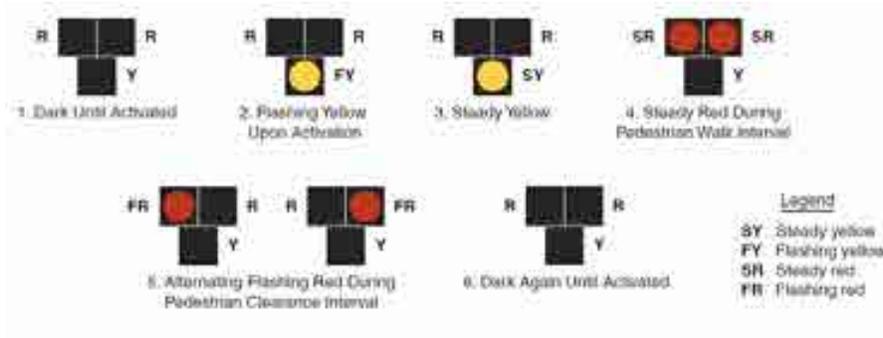
Non-Motorized Users

For the suburban environment, the design assumes the presence of pedestrians. While the existing pedestrian activity is minimal, a multiuse trail is planned along Hembree Road that will provide enhanced multimodal connectivity. Future sidewalk connections to the north along Houze Road may also increase pedestrian mobility, resulting in greater numbers of non-motorized users.

Splitter island lengths and widths were designed to allow sufficient space for the incorporation of pedestrian crossings and pedestrian refuges. The pedestrian crossings utilize a “Z” configuration where the marked crossing on the entrance lanes of the approach are closer to the circulatory roadway than across the exiting lanes. This allows for additional vehicle queuing storage on the exit while otherwise minimizing out-of-direction pedestrian travel to the extent practical. It also reinforces the message to pedestrians to cross the roadway in two stages. A two-stage crossing allows pedestrians to deal with each direction of automobile traffic independently, with the splitter island providing sufficient space for pedestrians to wait prior to complete the crossing movement.

Accommodation of visually impaired pedestrians at multilane roundabouts has been identified to be a challenging task due to the continuous flow of traffic that removes many of the audible cues that pedestrians who are blind use to navigate pedestrian street crossings. At multilane roundabouts, the United States Access Board’s proposed *Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way* identifies that a pedestrian-activated signal must be provided for each multilane segment of each crossing, including the splitter island. Signals are not proposed to be required across single-lane roundabout entries and exits.

A Pedestrian Hybrid Beacon (aka “HAWK” signal) is a traffic control signal that is specifically identified in the proposed Access Board Guidelines as a device that can be used for pedestrian crossings at multilane roundabouts. As shown in the illustration below, the Pedestrian Hybrid Beacon is a signal display that rests in dark until activated by pedestrians. When activated, the Pedestrian Hybrid Beacon displays a flashing yellow followed by a solid red indication then finally a flashing red sequence before returning to dark. During the flashing red, drivers may proceed with caution if pedestrians are clear. The lack of green indication helps to prevent potential confusion between the signal controlling the pedestrian crossing and the Yield control prior to entering the roundabout.



Source: 2009 Manual on Uniform Traffic Control Devices

While the proposed Access Board Guidelines indicate that pedestrian-actuated signalization at multilane roundabouts is a current best practice, the proposed guidelines have not yet been adopted as a final rule. Therefore, the topic of signalization of the pedestrian crossings is expected to be further discussed as part of the design process. Regardless, the roundabout has been designed to be compatible with allowing for implementation of Pedestrian Hybrid Beacons either as part of the opening year configuration or in the future, if the proposed guidelines become a requirement.

Staging of Improvements

KAI developed the roundabout concepts initially based upon the ultimate two-lane configuration illustrated in Table 1 for the design year 2035 (See operational analysis section of this report for details). Lanes were then removed from the ultimate configuration to develop the opening year configuration shown in Tables 2 and 3. This allows for ease of expansion to the ultimate roundabout footprint in the future with a minimum of reconstruction required.

On the northbound entry and exit, future expansion would be accomplished by widening to the outside. This was done to maximize speed control and minimize the intersection footprint for the interim configuration. On the southbound exit, the design uses a wide splitter island to reduce the two-lane exit (for the ultimate configuration) down to one lane for the interim configuration. Future expansion on the southbound exit would be accomplished by reducing the width of the splitter island. This strategy for the interim design helps to reinforce the message to drivers that the inside lane on the southbound approach is for left-turns only and that vehicles should not be exiting southbound from the inside circulating lane.

PREFERRED ALTERNATIVE SELECTION

The KAI sketch options were evaluated with the project team, the City of Roswell, and Georgia DOT staff. Each of the options presented slightly different levels of impact, particularly in terms of impacts to adjacent properties. However, in each option, there were common impacts to the northeast quadrant where any roundabout alternative would impact the drainage features within that area.

After further review of the vertical geometry at the intersection, options where the roundabout was centered near the existing intersection was discarded, since the overall intersection elevation grade would need to be raised to tie the approaching roadway into the roundabout. This would result in excessive cut and fill at the intersection while creating greater impacts to adjacent properties and raise construction costs. In order to minimize impacts, options were targeted that positioned the edge of the circulatory roadway be located no further west than the western edge of the existing intersection. This results in the center of the 160-foot diameter roundabout being positioned approximately 50 feet to the east of the existing Houze Road centerline.

The positioning of the roundabout in the north-south direction along Houze Road considered property impacts and constructability while meeting the roundabout performance objectives for accommodating trucks, speed control, and natural vehicle path alignments. The center of the roundabout inscribed circle was offset approximately 20 feet to the north of the existing Hembree Road centerline to allow for implementation of the pedestrian/bicycle multi-use path on the south side of Hembree Road.

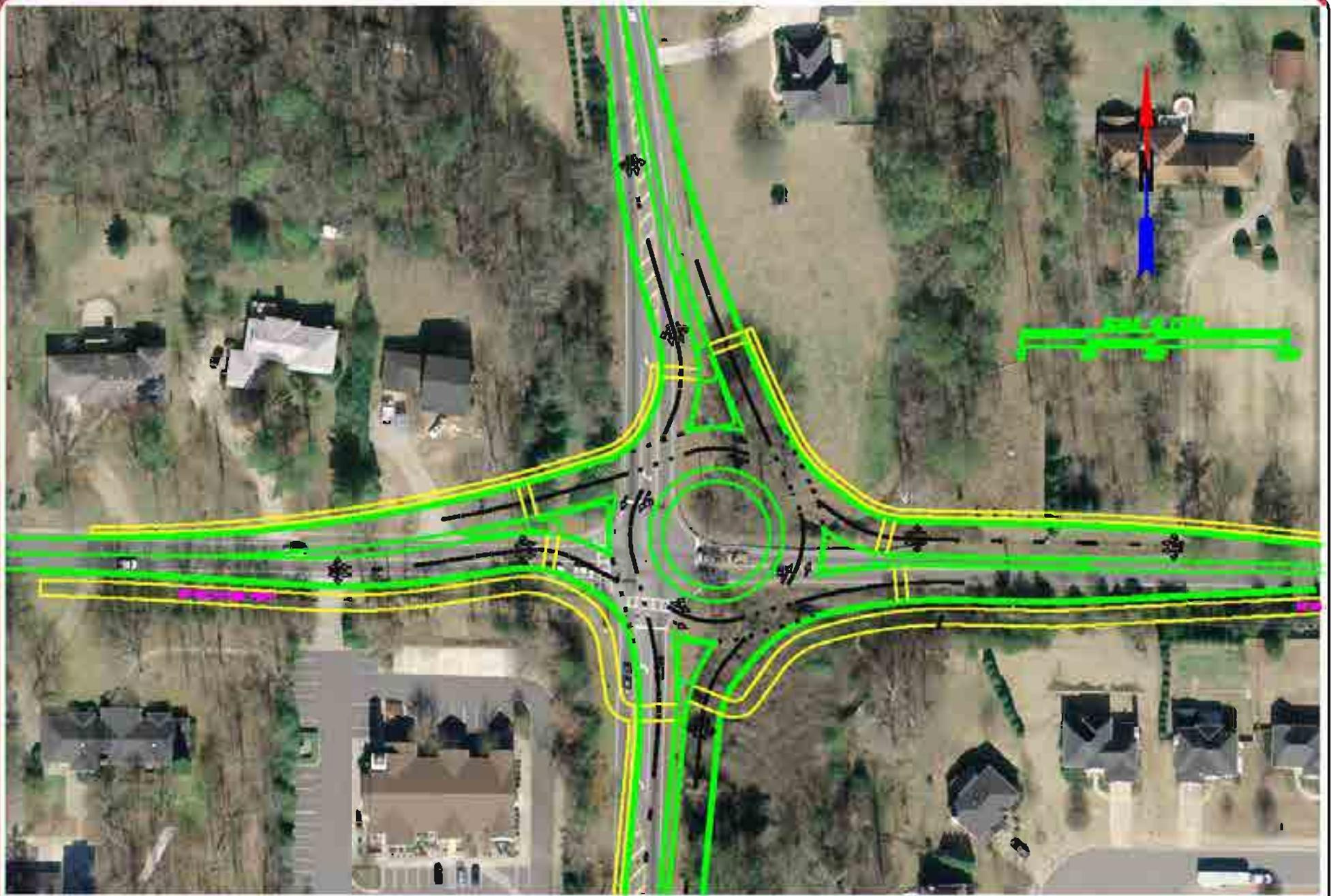
Geometric Characteristics

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

- **Inscribed Circle Diameter:** The concept designs utilized inscribed circle diameters in the range of 160 to 175 feet. The final selected alternative utilized a 160-foot diameter to minimize the overall intersection footprint and impacts to adjacent properties while still meeting the roundabout performance objectives for speed control, truck accommodation, and vehicle alignment. The typical range of inscribed circle diameter for a two-lane roundabout is approximately 150 to 220 feet according to NCHRP Report 672.
- **Approach alignment –** The alignments of each approach were offset to the left of the center of the roundabout. The offset-left alignment emphasizes the entry path deflection to maintain adequate speed control with the use of a smaller inscribed circle diameter. The offset-left alignment also improves the channelization of vehicles on the approach.
- **Entry Curves –** An entry radius of approximately 70 feet was used for each approach. Entry radii typically range from approximately 65 to 100 feet.
- **Exit Curves –** For the exit curves, large radii of approximately 250 feet or greater were used for all approaches. For exits with larger radii, the potential speed of vehicles through

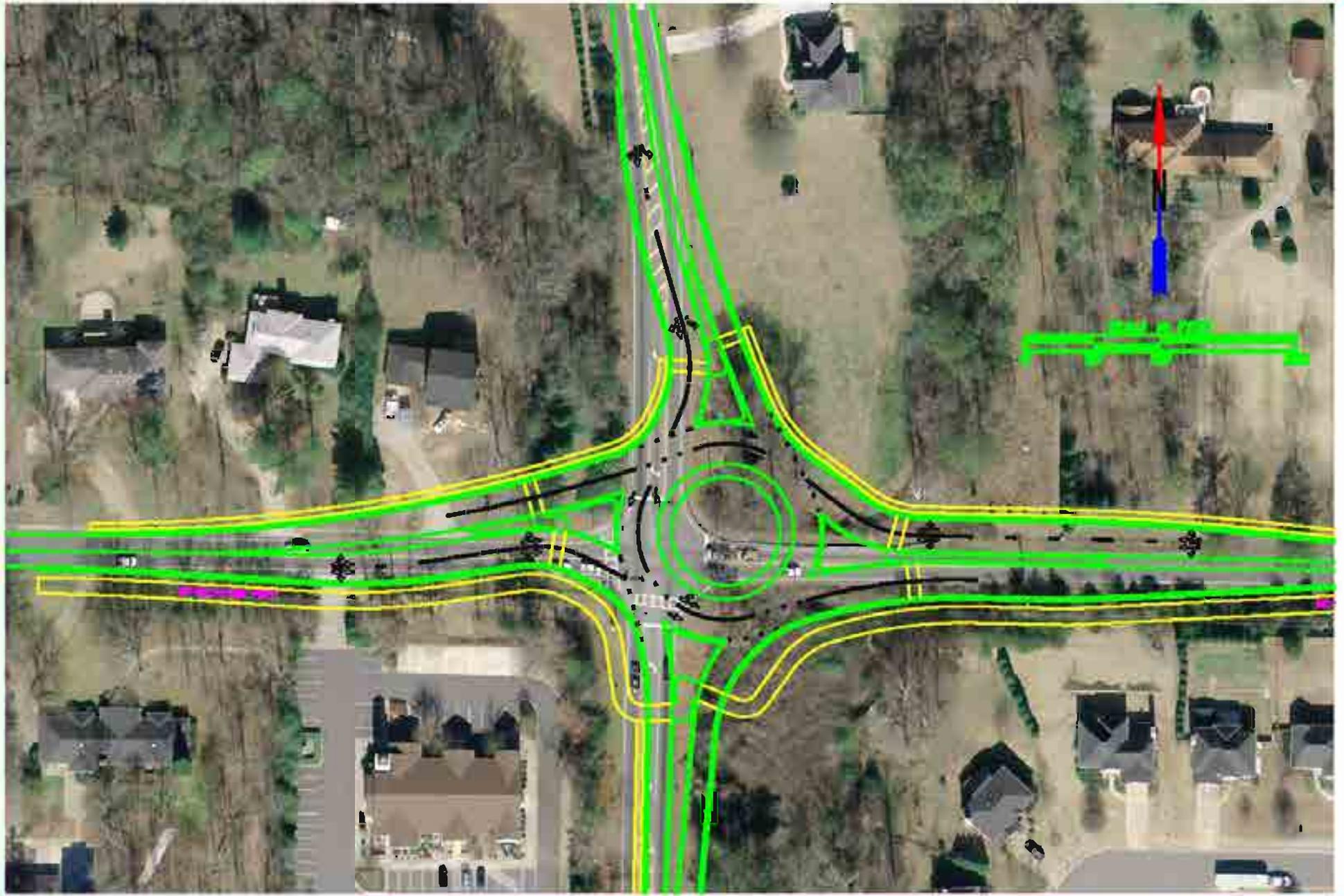
the exit is limited by the acceleration characteristics of the vehicles. In this case, speed control is emphasized upon the entry to the roundabout.

- Lane Widths – The concept design utilizes circulatory roadway widths of 30 feet (two 15-foot lanes) for the two-lane section and 20 feet for the single-lane portions. Entry and exit widths for the two-lane approaches are approximately 14 feet near the yield line. For the single-lane entries and exits in the interim design configuration, lane widths are approximately 15 feet in the vicinity of the pedestrian crossing and flare out to match the 20-foot circulatory roadway width at the yield line.
- Splitter Islands – The splitter islands are designed to provide sufficient length and width to be visible to drivers, providing adequate pedestrian refuge, vehicle channelization, and vehicle speed control. Splitter island lengths range from approximately 100 to 200 feet. 50 feet is the minimum length, with 100 feet or more desirable. Splitter islands are designed based upon the guidance in NCHRP Report 672 to provide appropriate nose radii and offsetting of curb lines at the approach ends.



KAL FILE MODEL DATE TIME

2035 DESIGN YEAR ULTIMATE CONFIGURATION CONCEPT DESIGN
SR 140 (HOUZE ROAD) AT HEMBREE ROAD
ROSWELL, GEORGIA



**OPENING YEAR INTERIM CONFIGURATION CONCEPT DESIGN
SR 140 (HOUZE ROAD) AT HEMBREE ROAD
ROSWELL, GEORGIA**

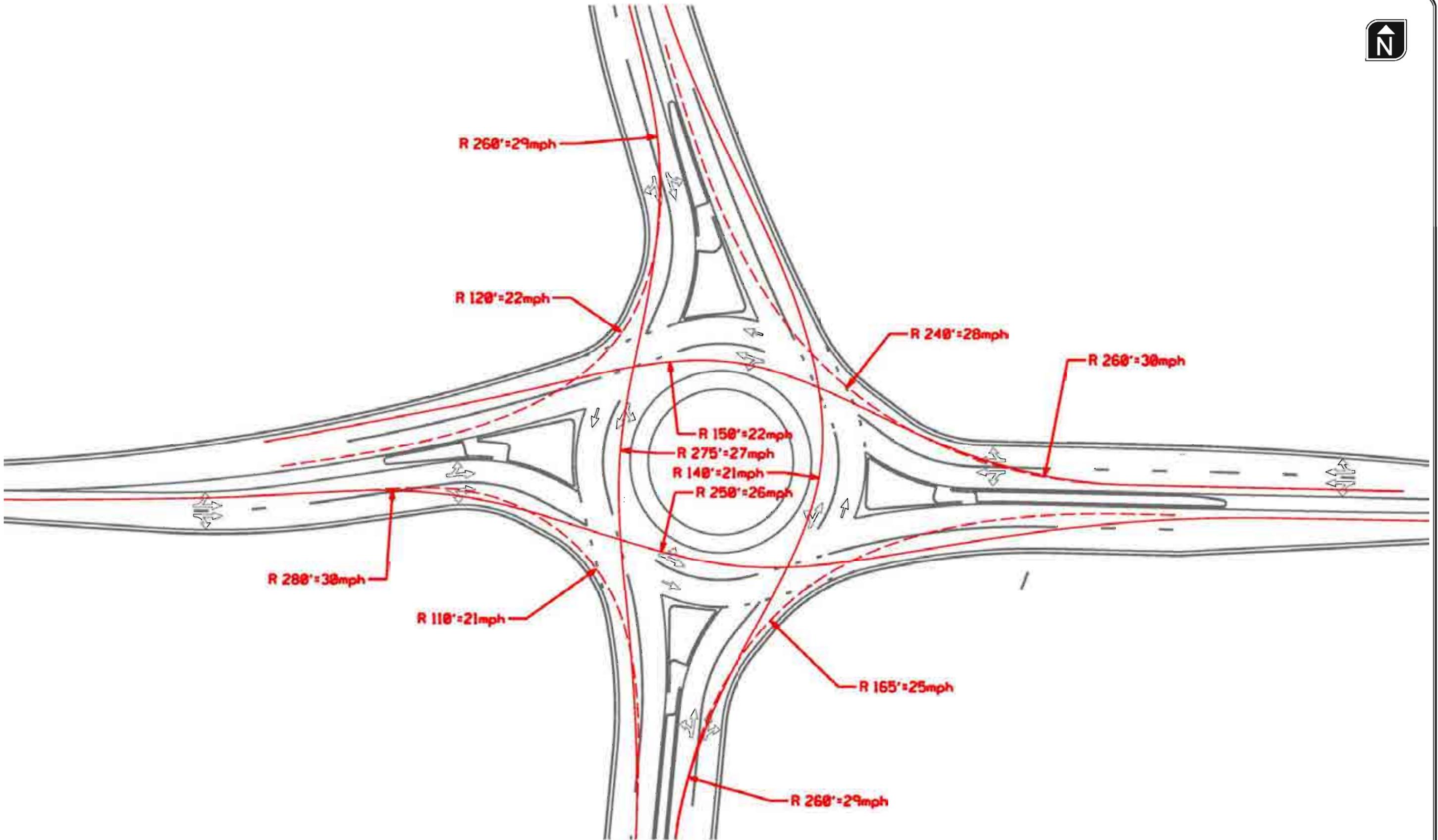
FIGURE
7

KAL FILE MODEL DATE TIME

Attachment A – Design
Vehicle Swept Paths

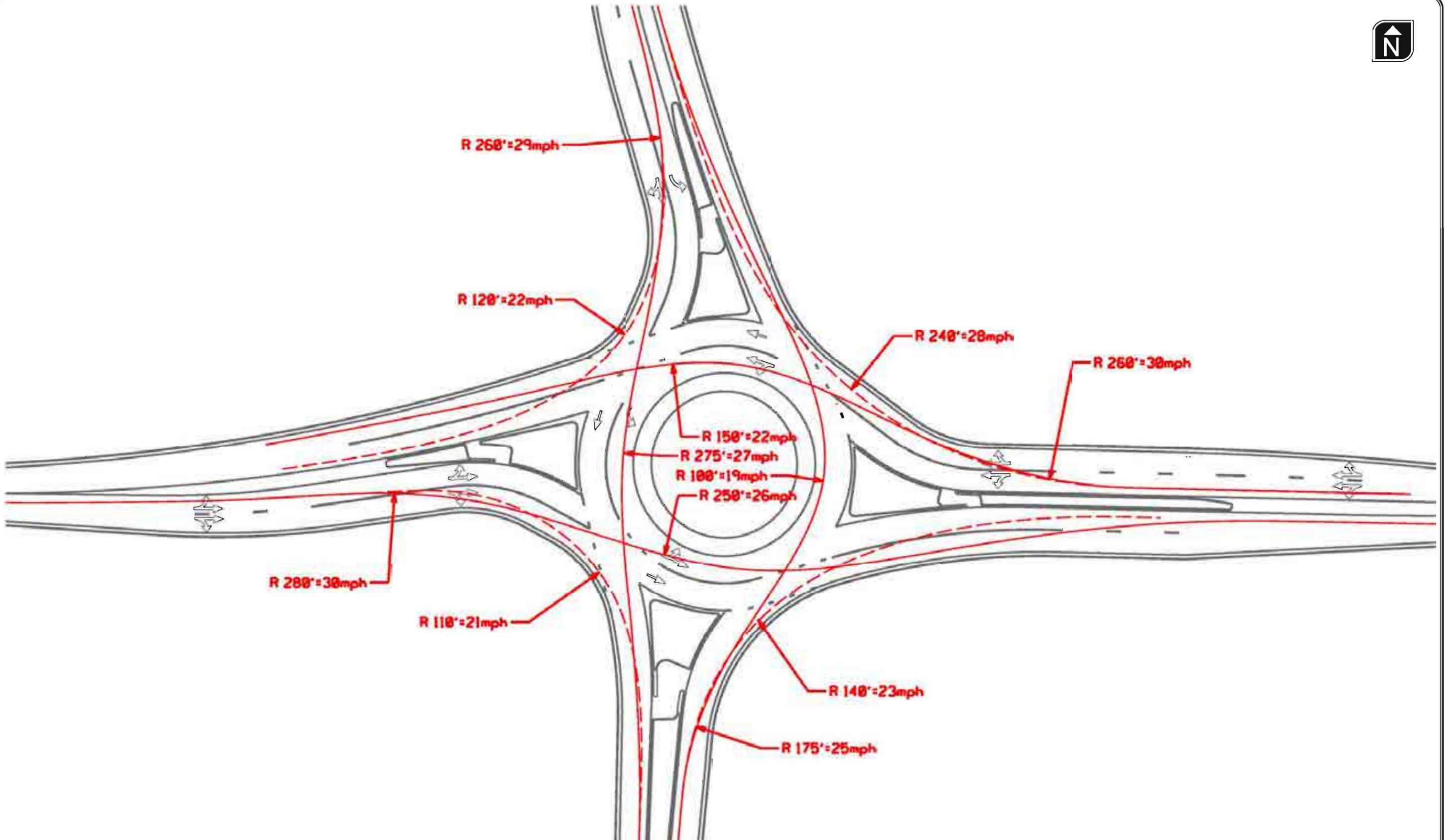
Copy of Design Vehicle
Swept Paths (Truck
Turning Templates)
Already Attached.

Attachment B – Fastest
Path Speed Checks



**FASTEST VEHICLE PATHS - 2035 ULTIMATE CONFIGURATION
SR 140 (HOUZE ROAD) AT HEMBREE ROAD
ROSWELL, GEORGIA**

\$File\$



**FASTEST VEHICLE PATHS - OPENING YEAR INTERIM CONFIGURATION
SR 140 (HOUZE ROAD) AT HEMBREE ROAD
ROSWELL, GEORGIA**

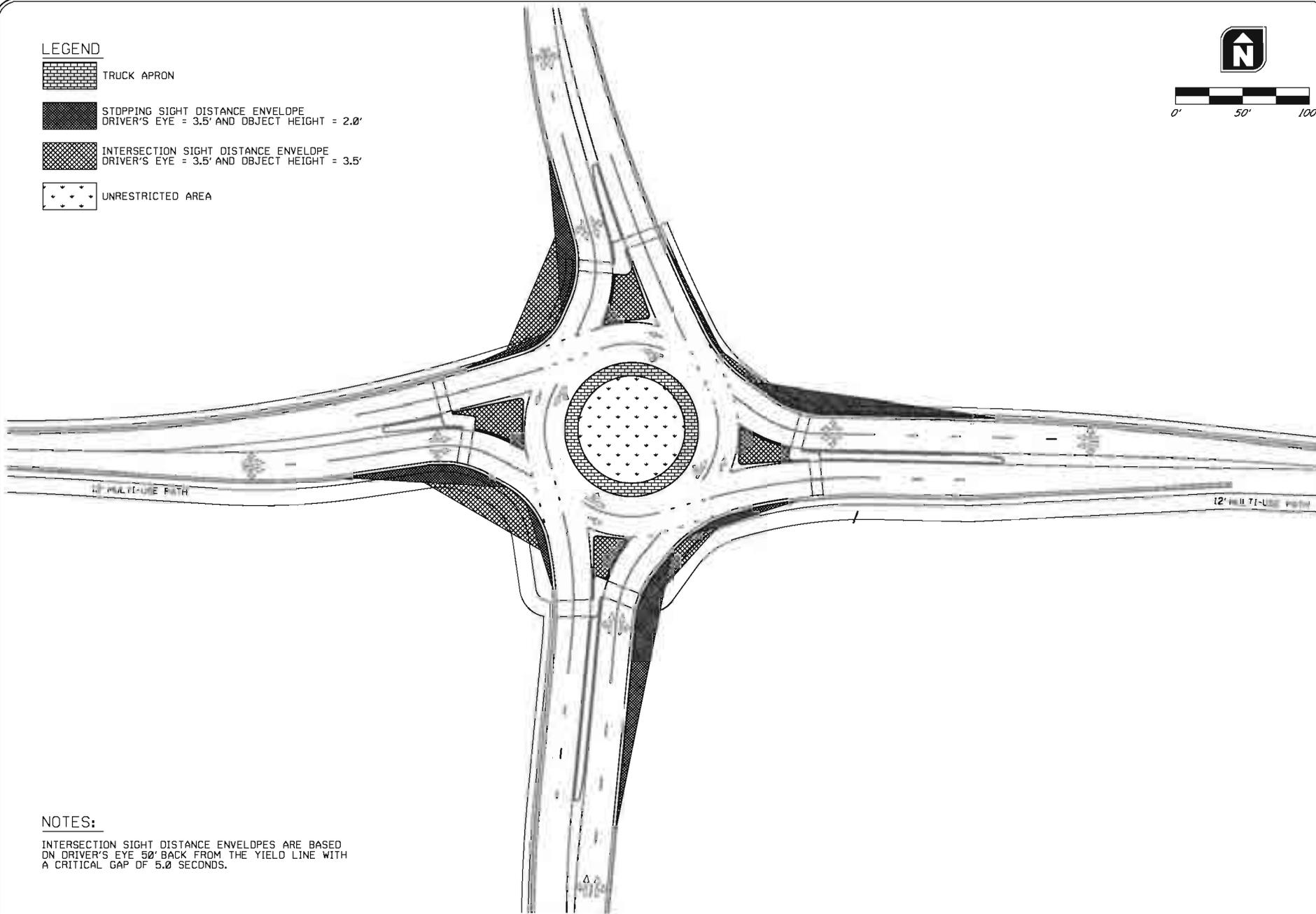
\$File\$

Attachment C – Sight
Distance Envelopes

K:\H_Oriando\profile\11812 - Houze Rd at Hembree Rd Roundabout\dwg\design\Figure_Sight Triangles.dgn Sight Triangles 2035 (Model) 6/8/2012 - 11:08:49 AM

LEGEND

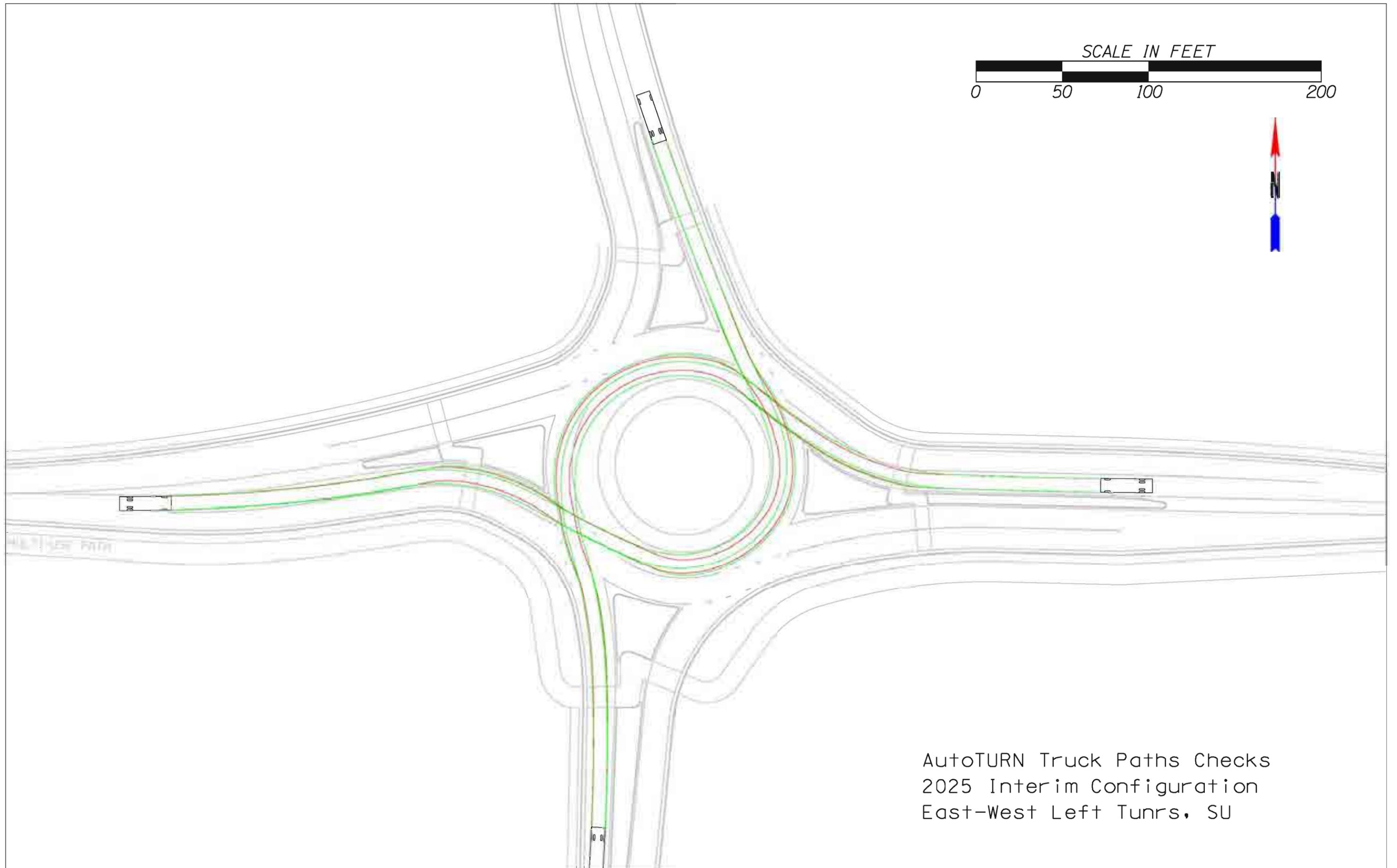
-  TRUCK APRON
-  STOPPING SIGHT DISTANCE ENVELOPE
DRIVER'S EYE = 3.5' AND OBJECT HEIGHT = 2.0'
-  INTERSECTION SIGHT DISTANCE ENVELOPE
DRIVER'S EYE = 3.5' AND OBJECT HEIGHT = 3.5'
-  UNRESTRICTED AREA

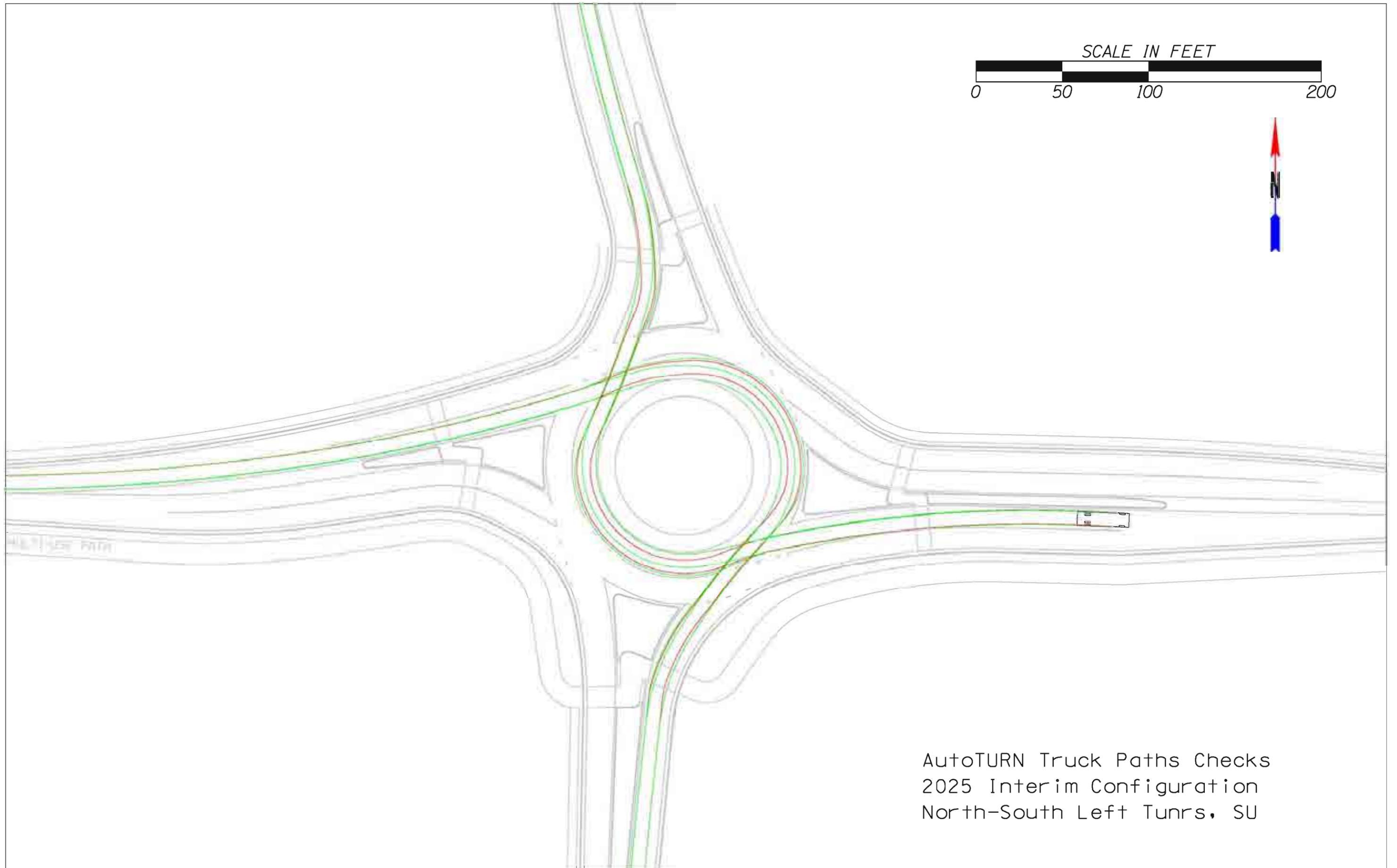


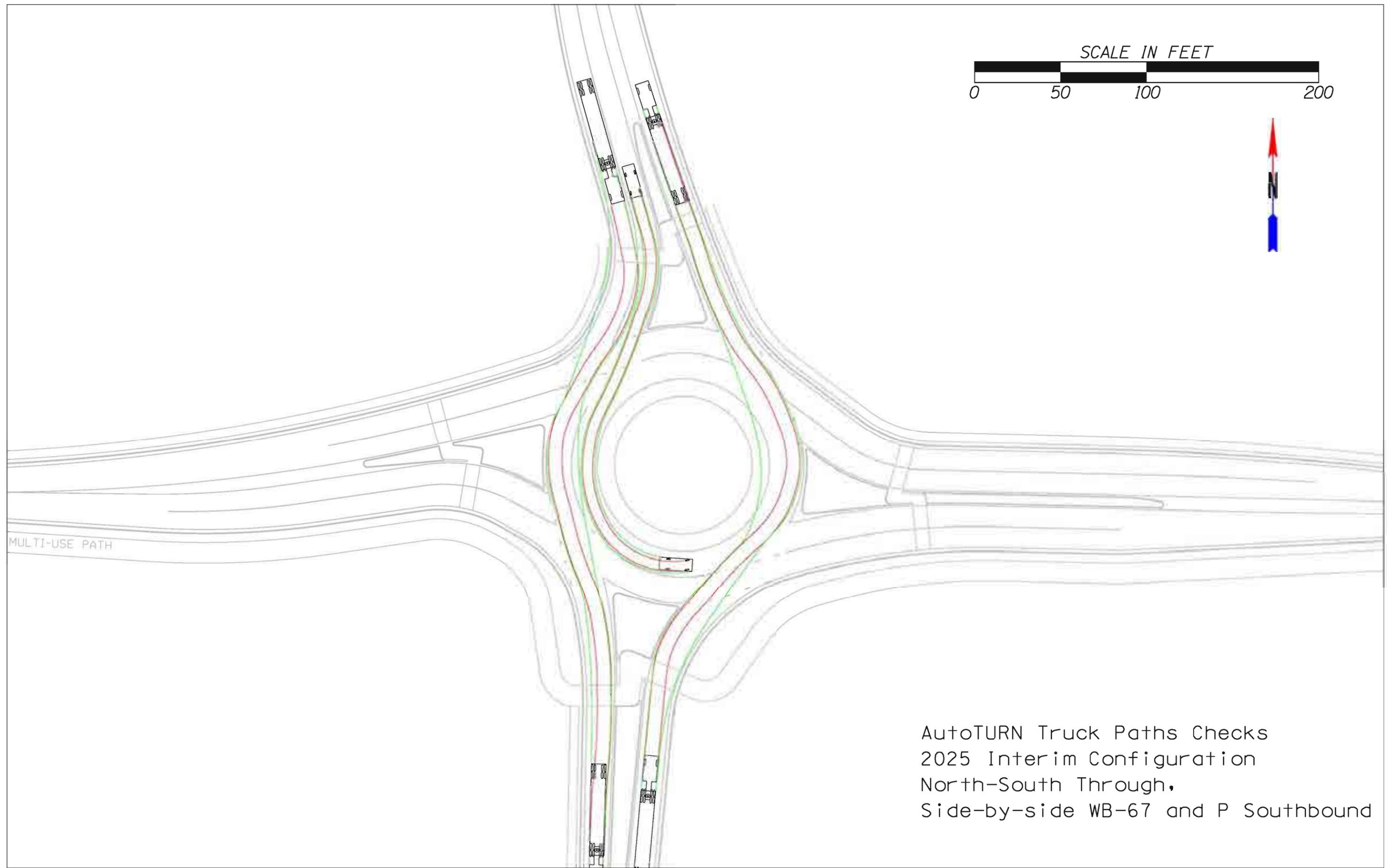
NOTES:

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

**SIGHT DISTANCE ENVELOPES
SR 140 (HOUZE ROAD) AT HEMBREE ROAD
ROSWELL, GEORGIA**

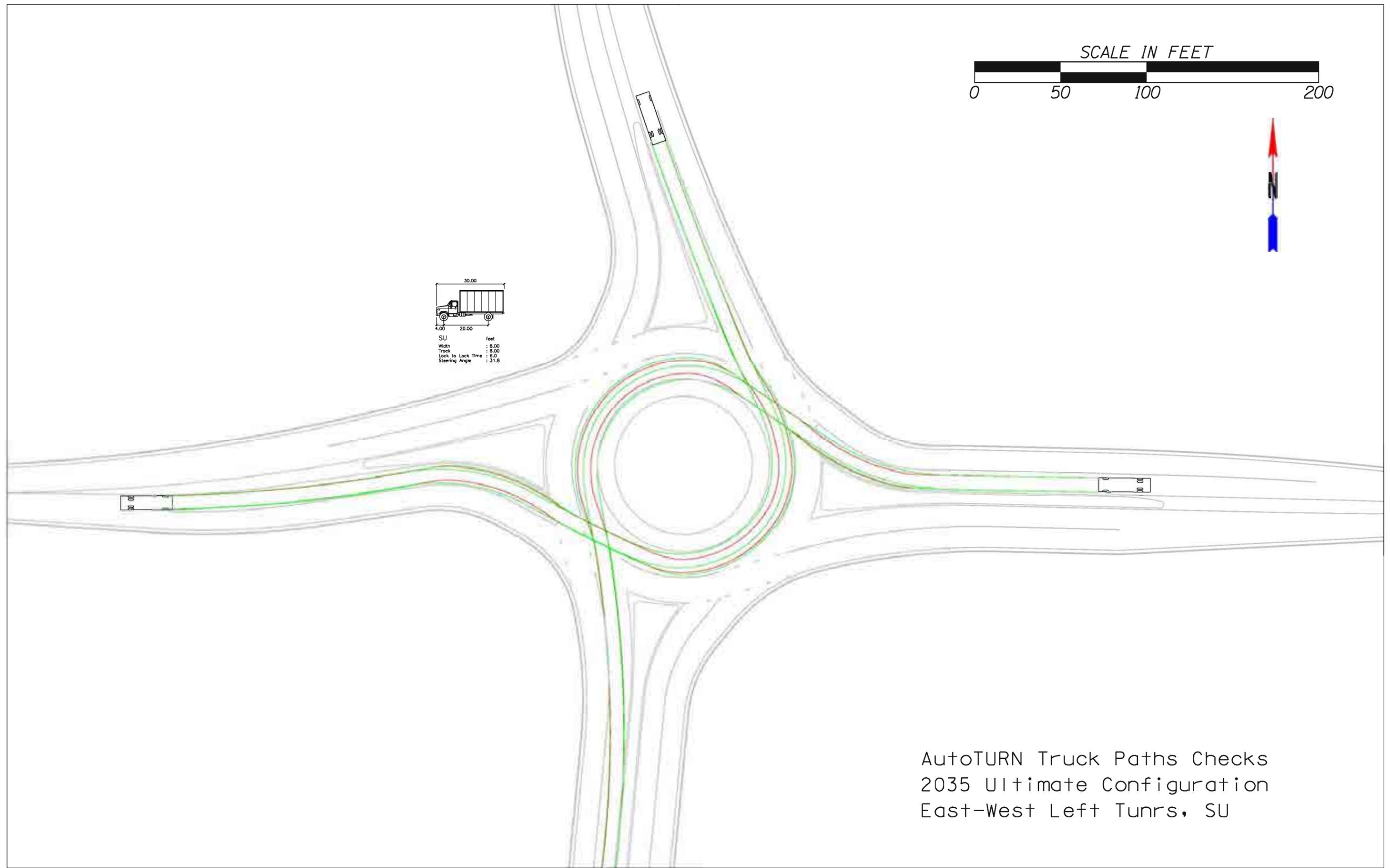
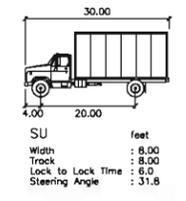




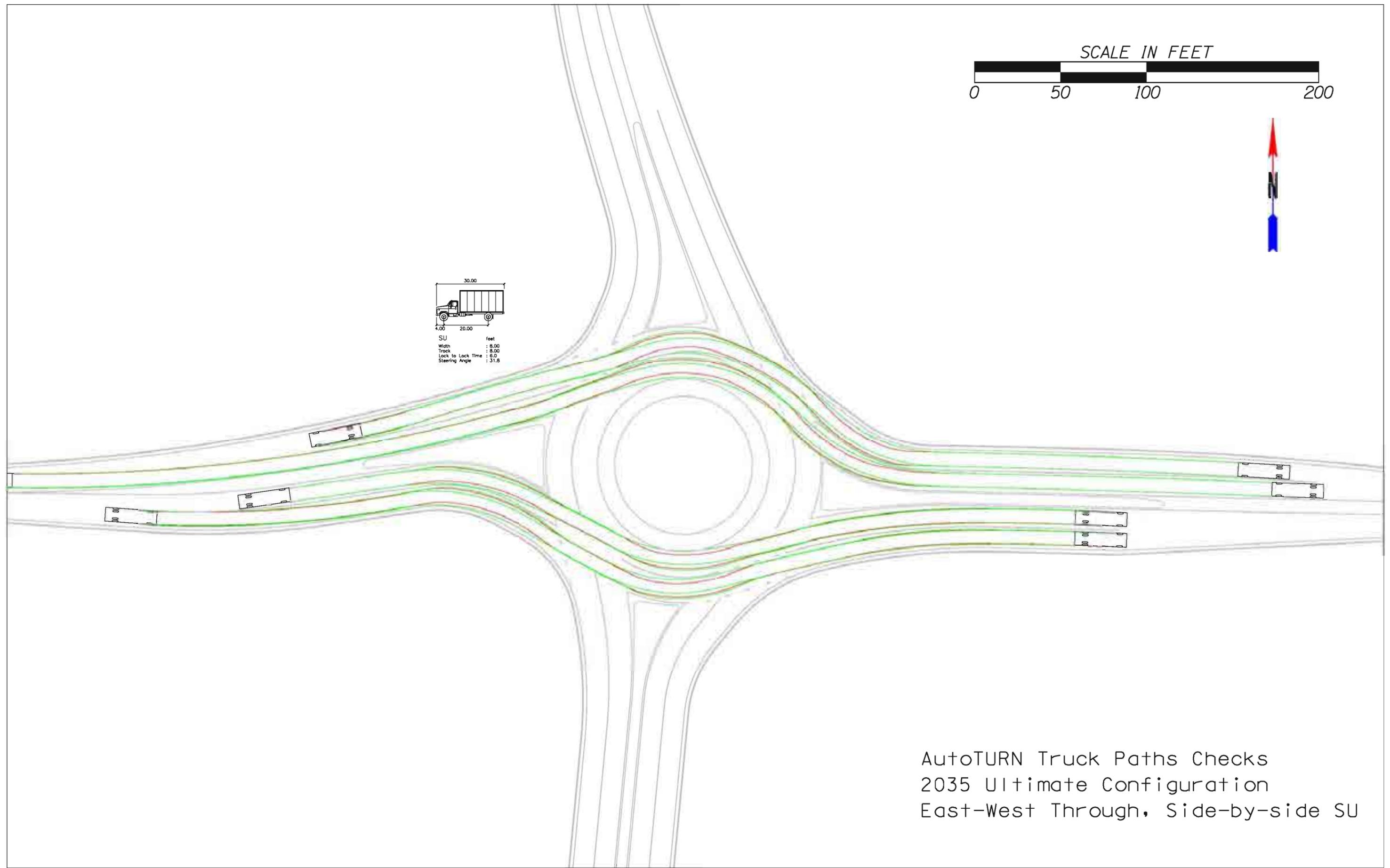
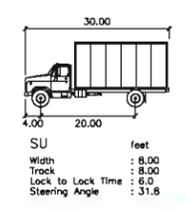


MULTI-USE PATH

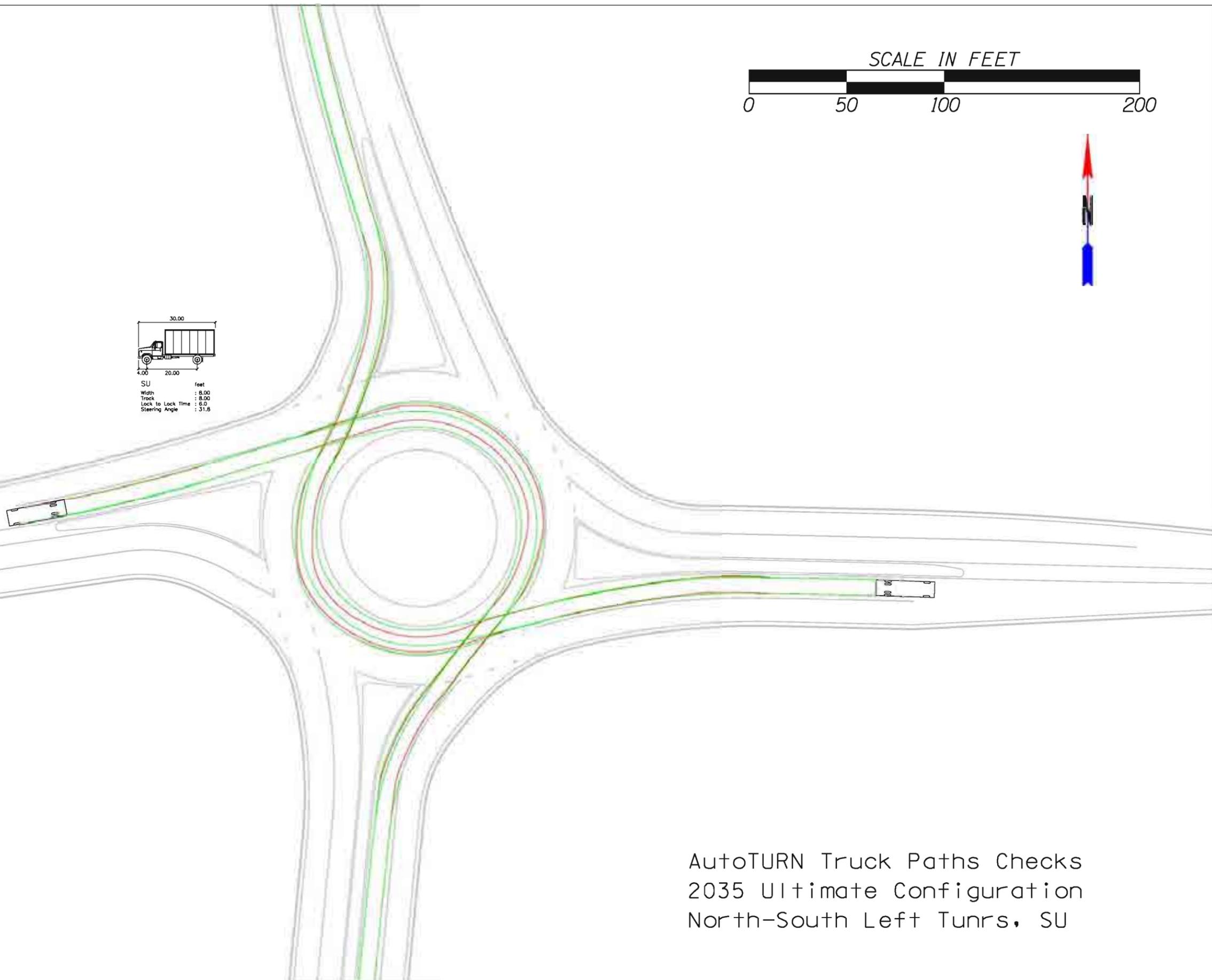
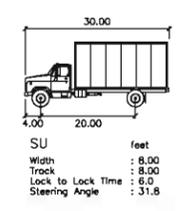
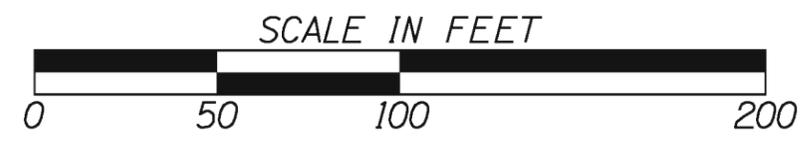
AutoTURN Truck Paths Checks
2025 Interim Configuration
North-South Through,
Side-by-side WB-67 and P Southbound



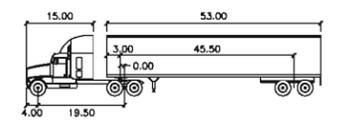
AutoTURN Truck Paths Checks
2035 Ultimate Configuration
East-West Left Turns, SU



AutoTURN Truck Paths Checks
2035 Ultimate Configuration
East-West Through, Side-by-side SU

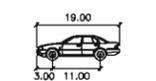


AutoTURN Truck Paths Checks
2035 Ultimate Configuration
North-South Left Turns, SU



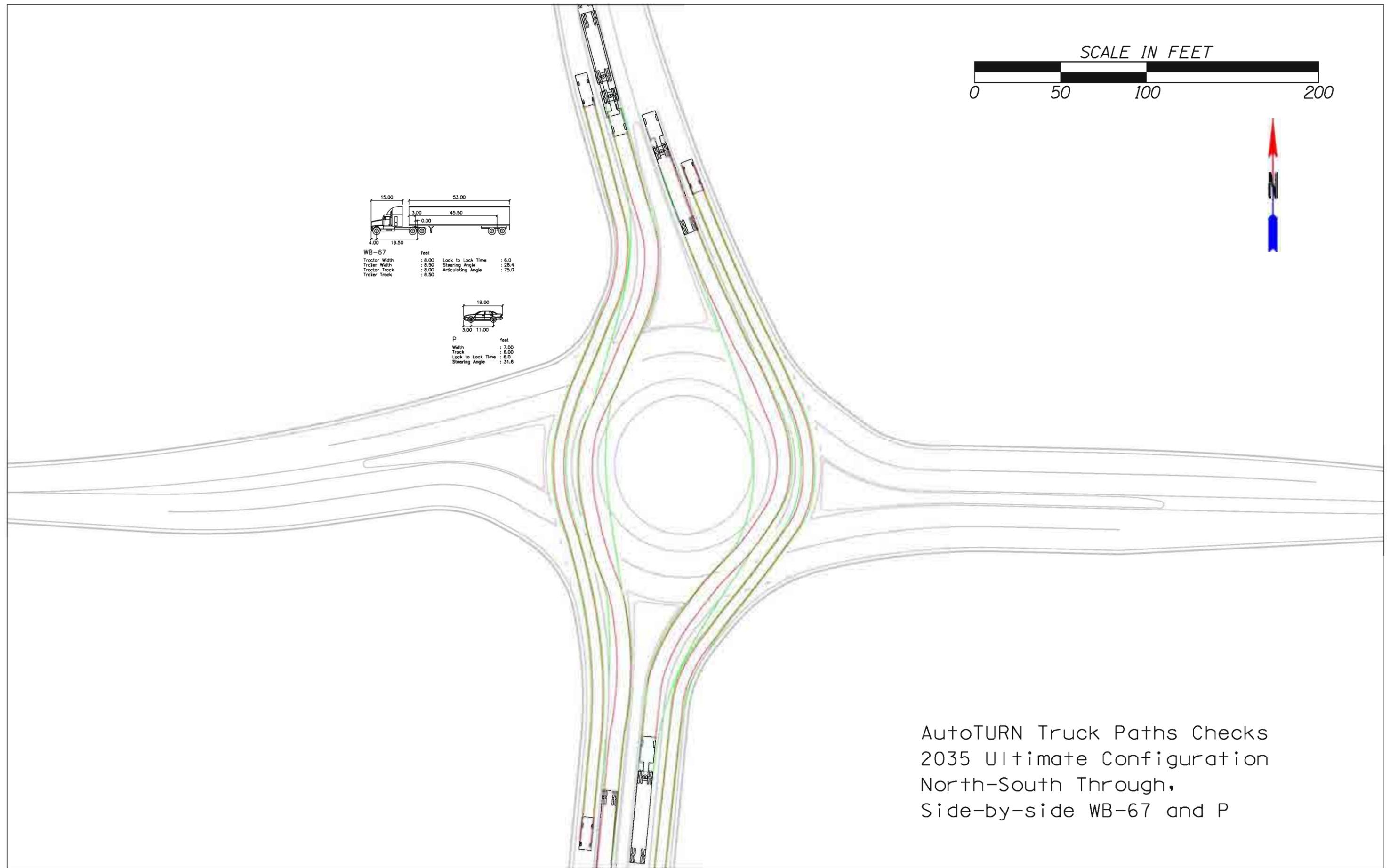
WB-67

feet	
Tractor Width	: 8.00
Trailer Width	: 8.50
Tractor Track	: 8.00
Trailer Track	: 8.50
Lock to Lock Time	: 6.0
Steering Angle	: 28.4
Articulating Angle	: 73.0

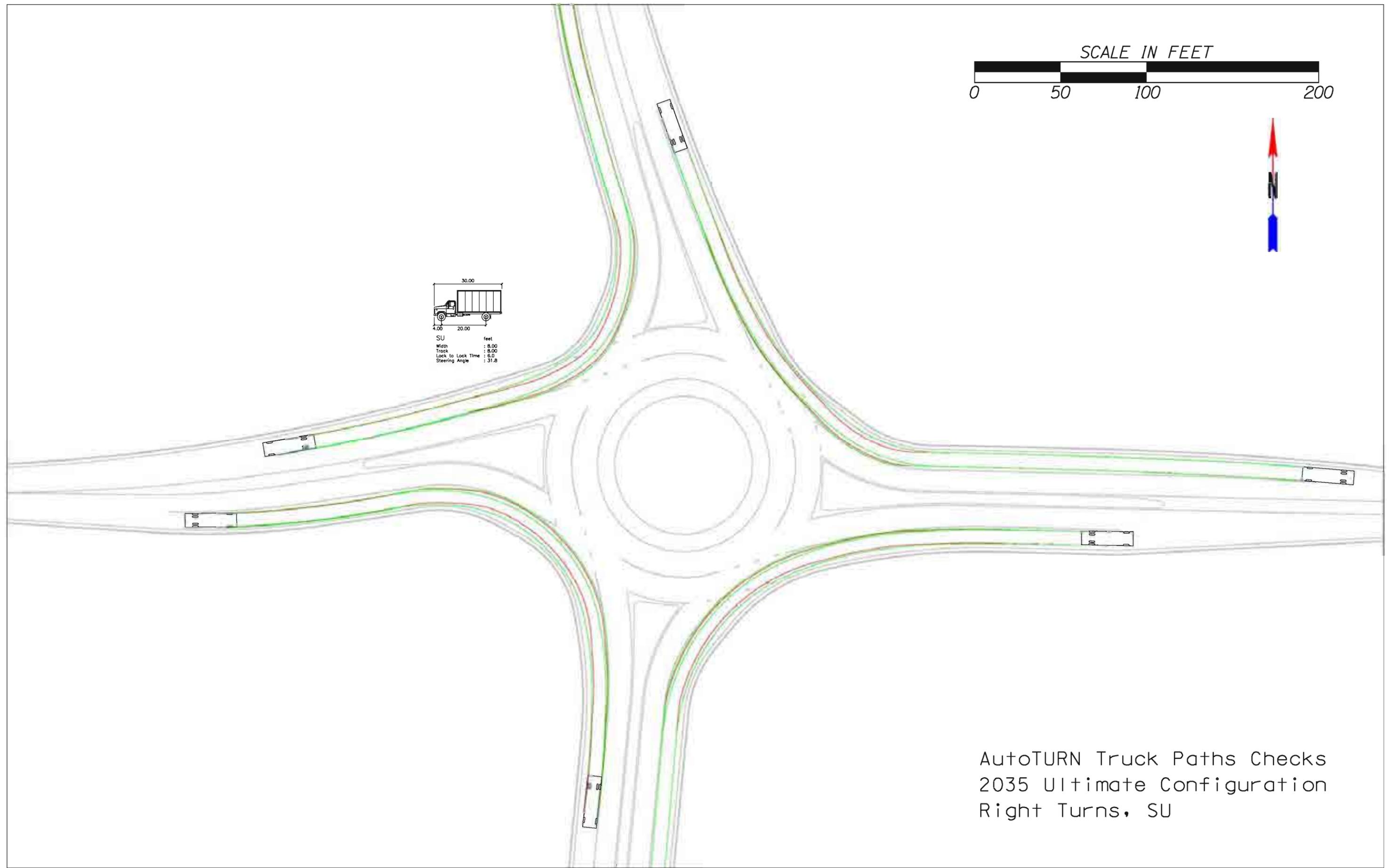
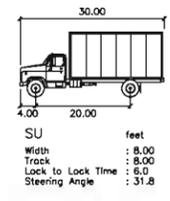
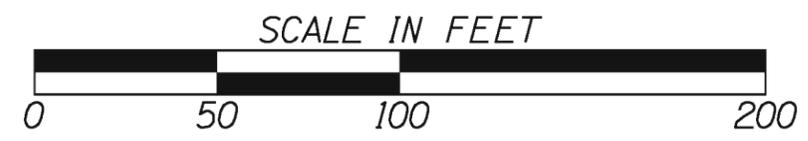


P

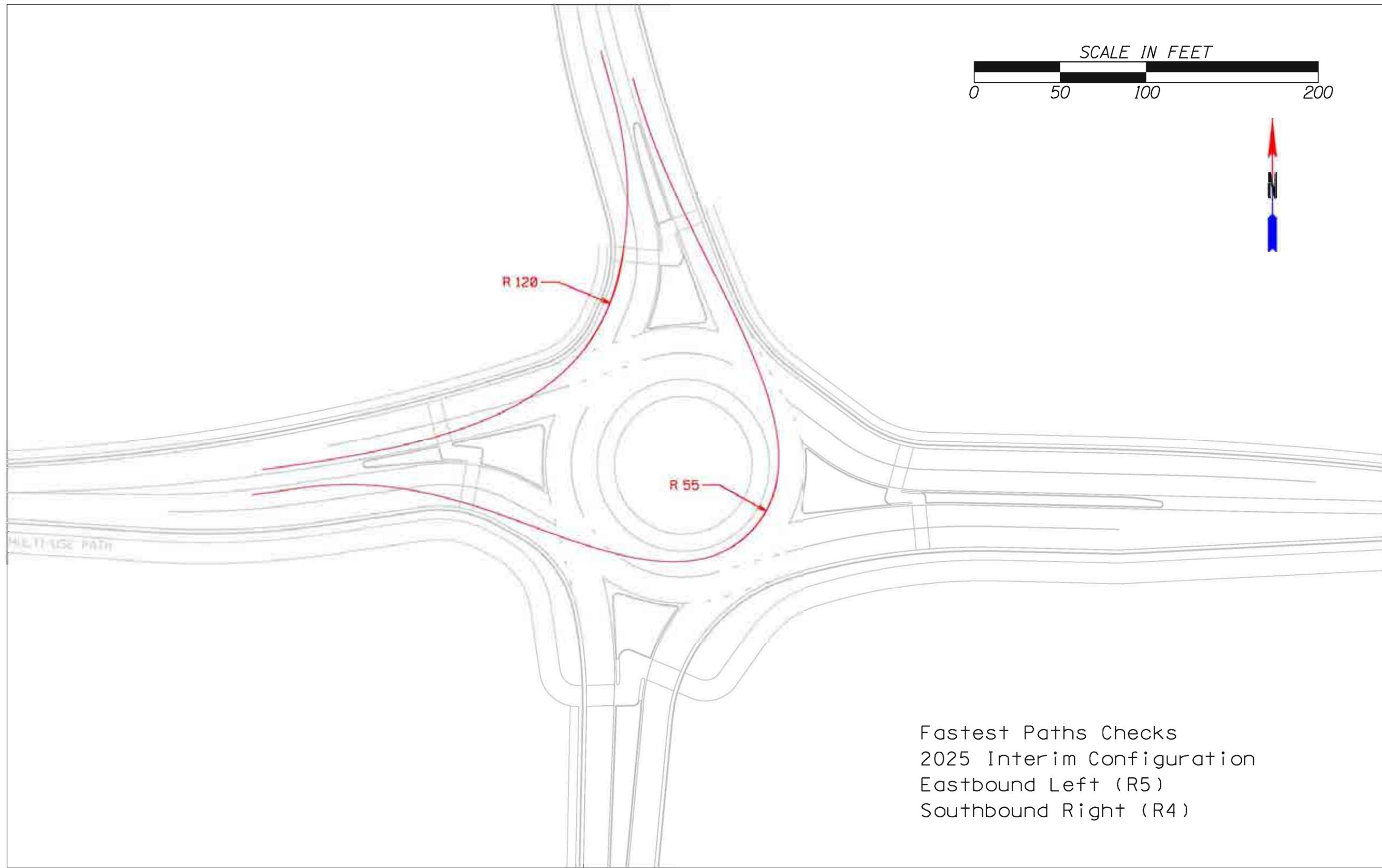
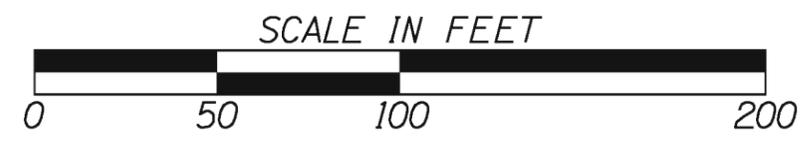
feet	
Width	: 7.00
Track	: 6.00
Lock to Lock Time	: 6.0
Steering Angle	: 31.6



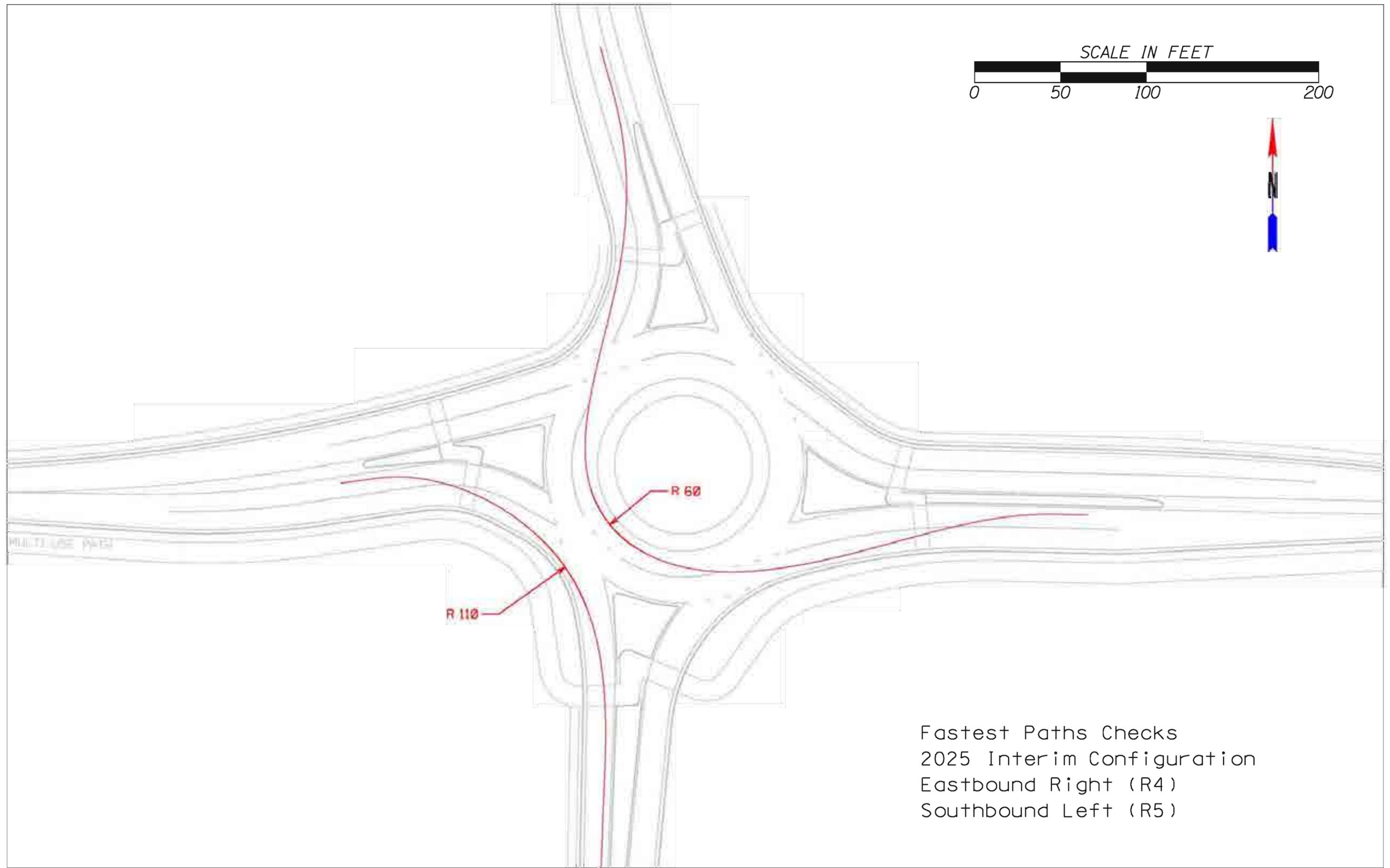
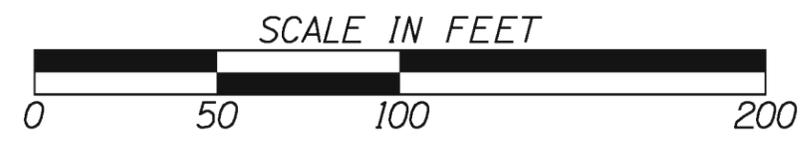
AutoTURN Truck Paths Checks
 2035 Ultimate Configuration
 North-South Through,
 Side-by-side WB-67 and P



AutoTURN Truck Paths Checks
2035 Ultimate Configuration
Right Turns, SU



Fastest Paths Checks
2025 Interim Configuration
Eastbound Left (R5)
Southbound Right (R4)

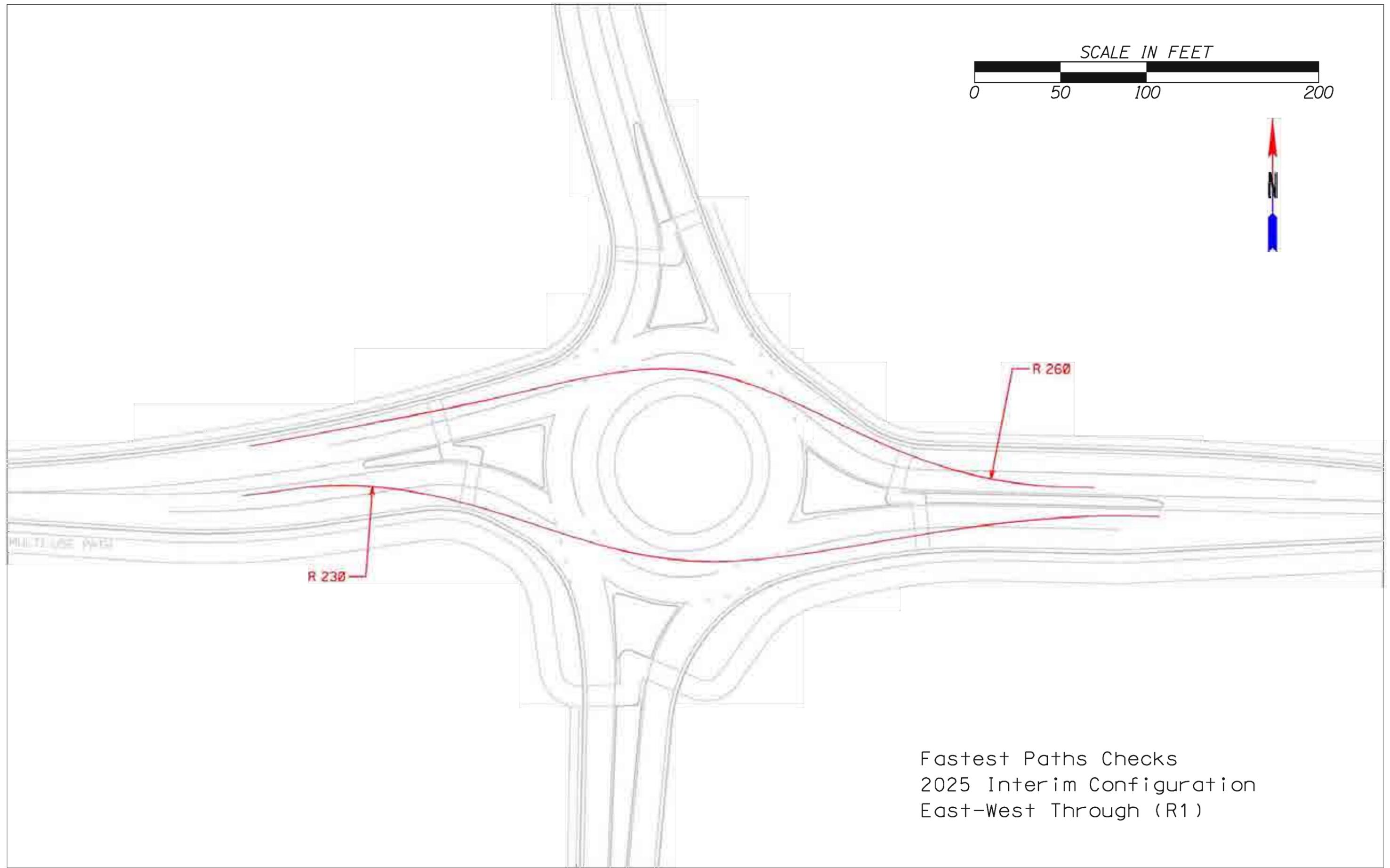
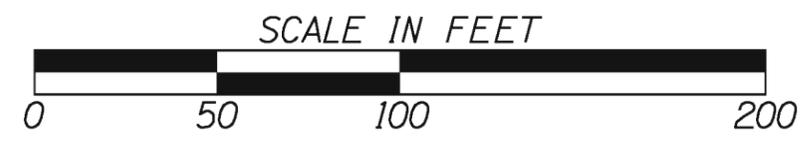


R 60

R 110

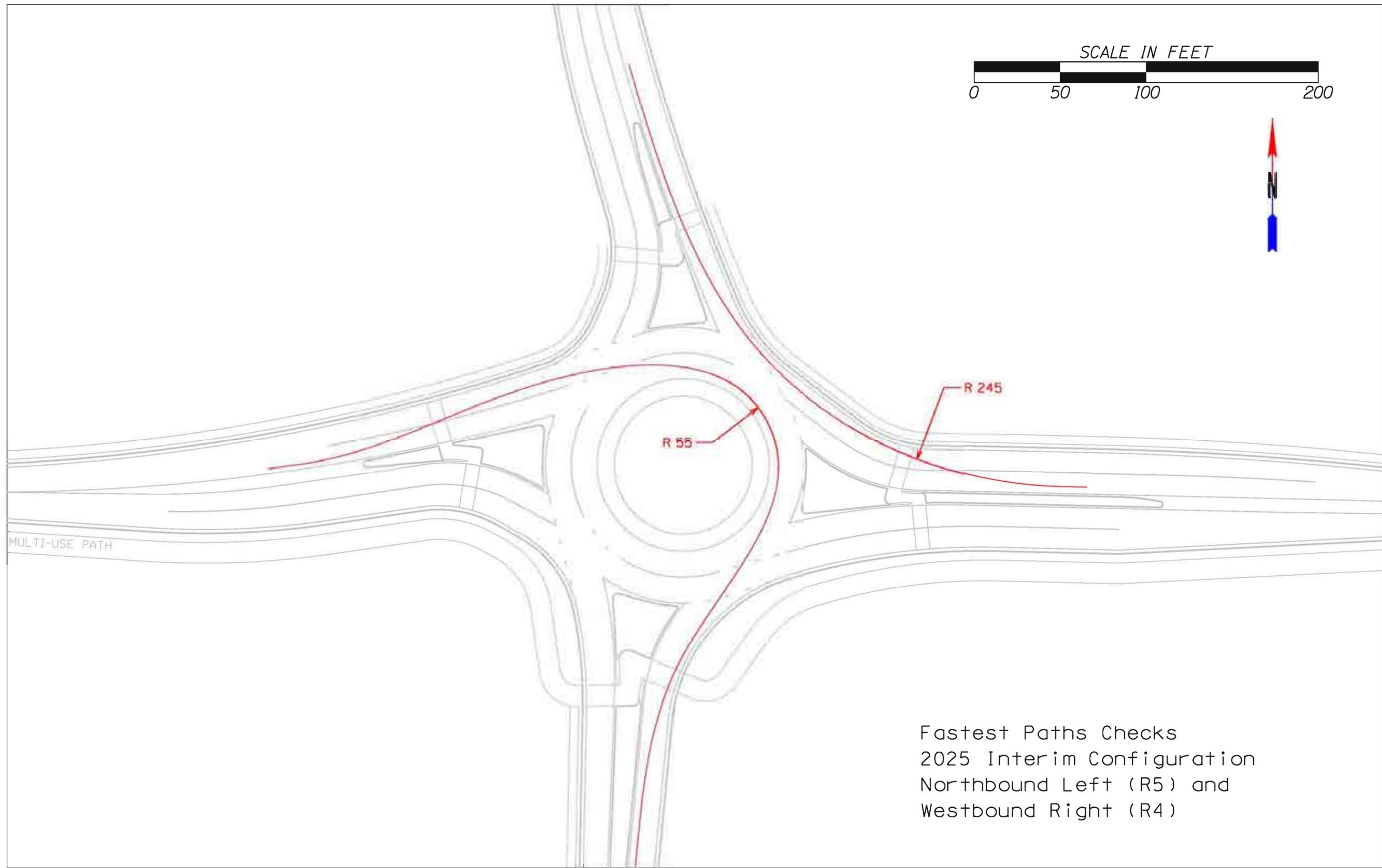
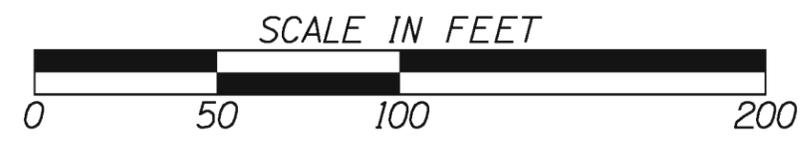
MULTI-USE PATH

Fastest Paths Checks
2025 Interim Configuration
Eastbound Right (R4)
Southbound Left (R5)

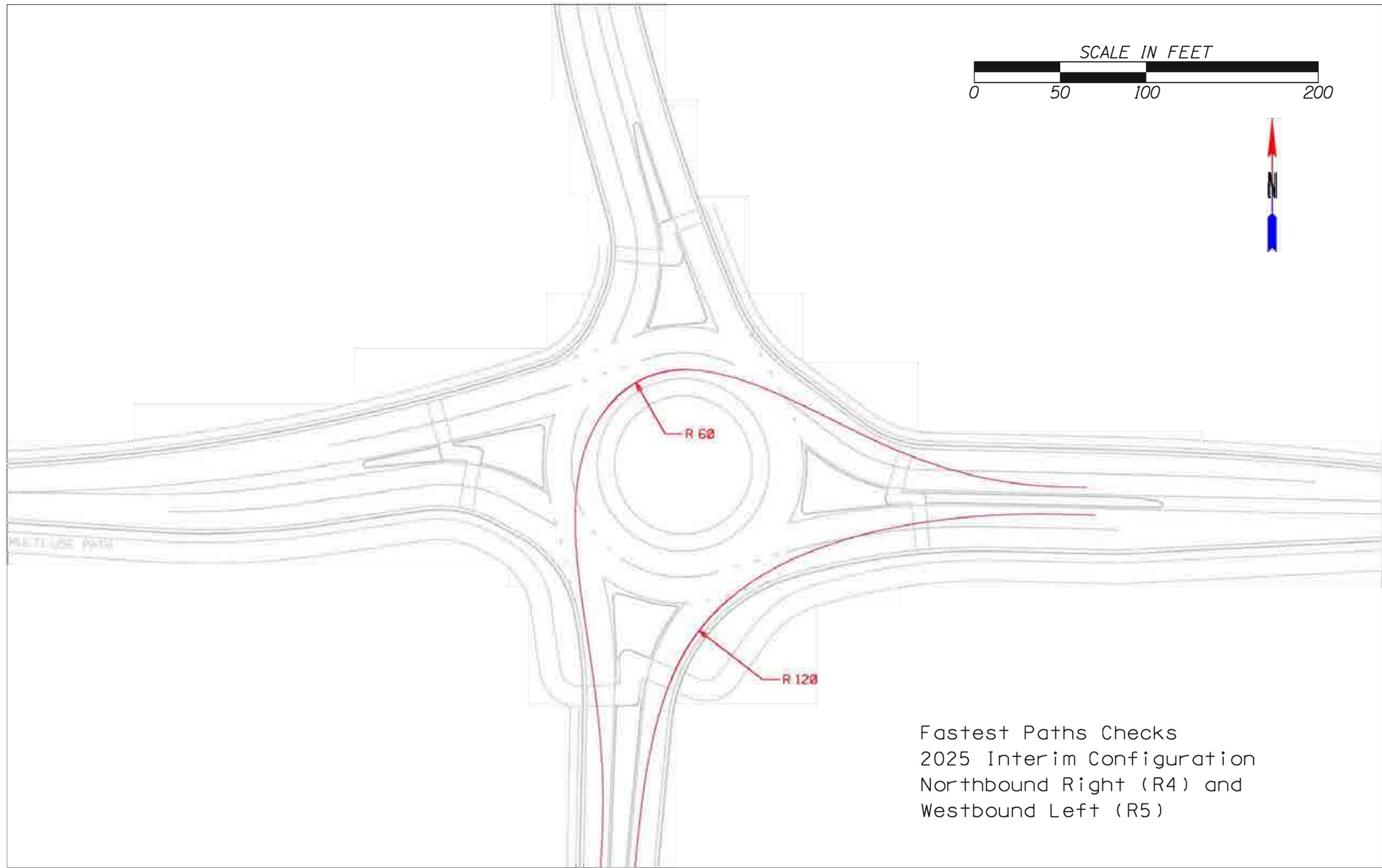


MULTI-USE PATH

Fastest Paths Checks
2025 Interim Configuration
East-West Through (R1)

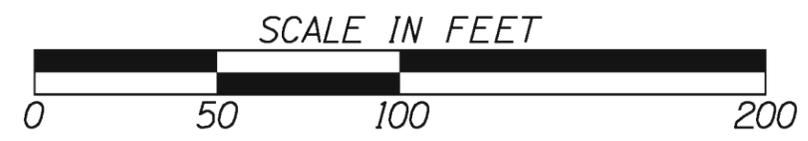


Fastest Paths Checks
2025 Interim Configuration
Northbound Left (R5) and
Westbound Right (R4)



MULTI-USE PATH

Fastest Paths Checks
2025 Interim Configuration
Northbound Right (R4) and
Westbound Left (R5)

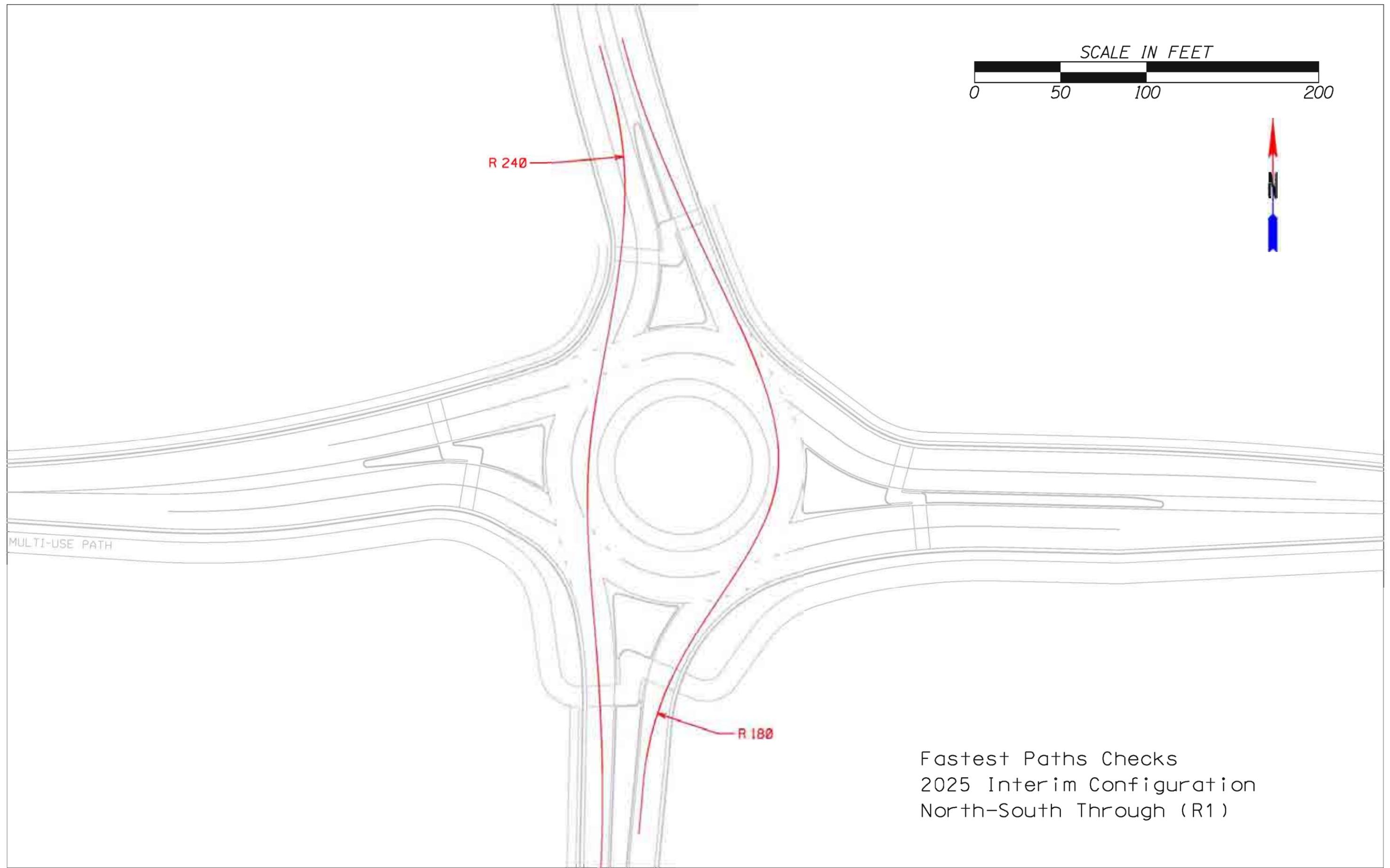


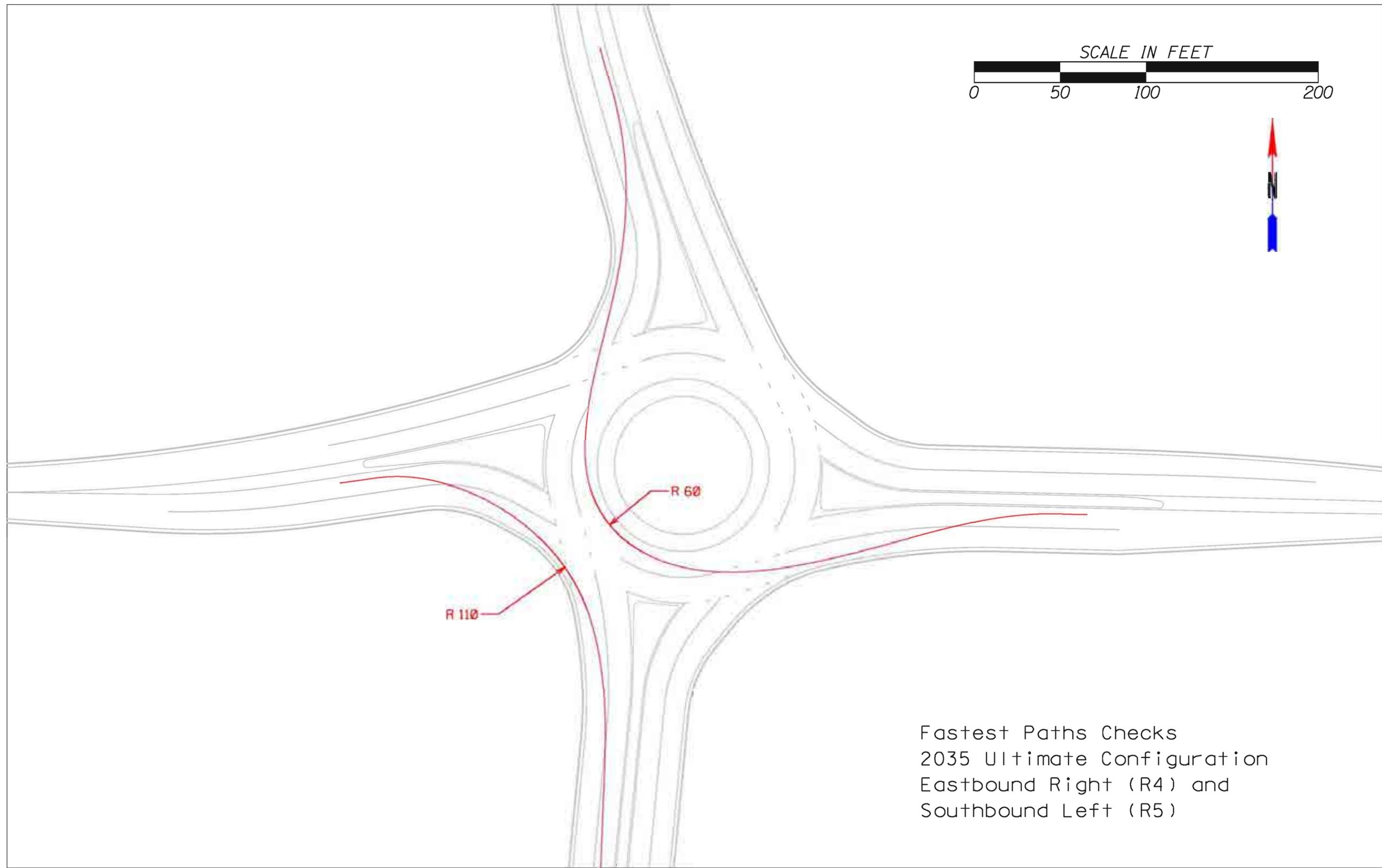
R 240

R 180

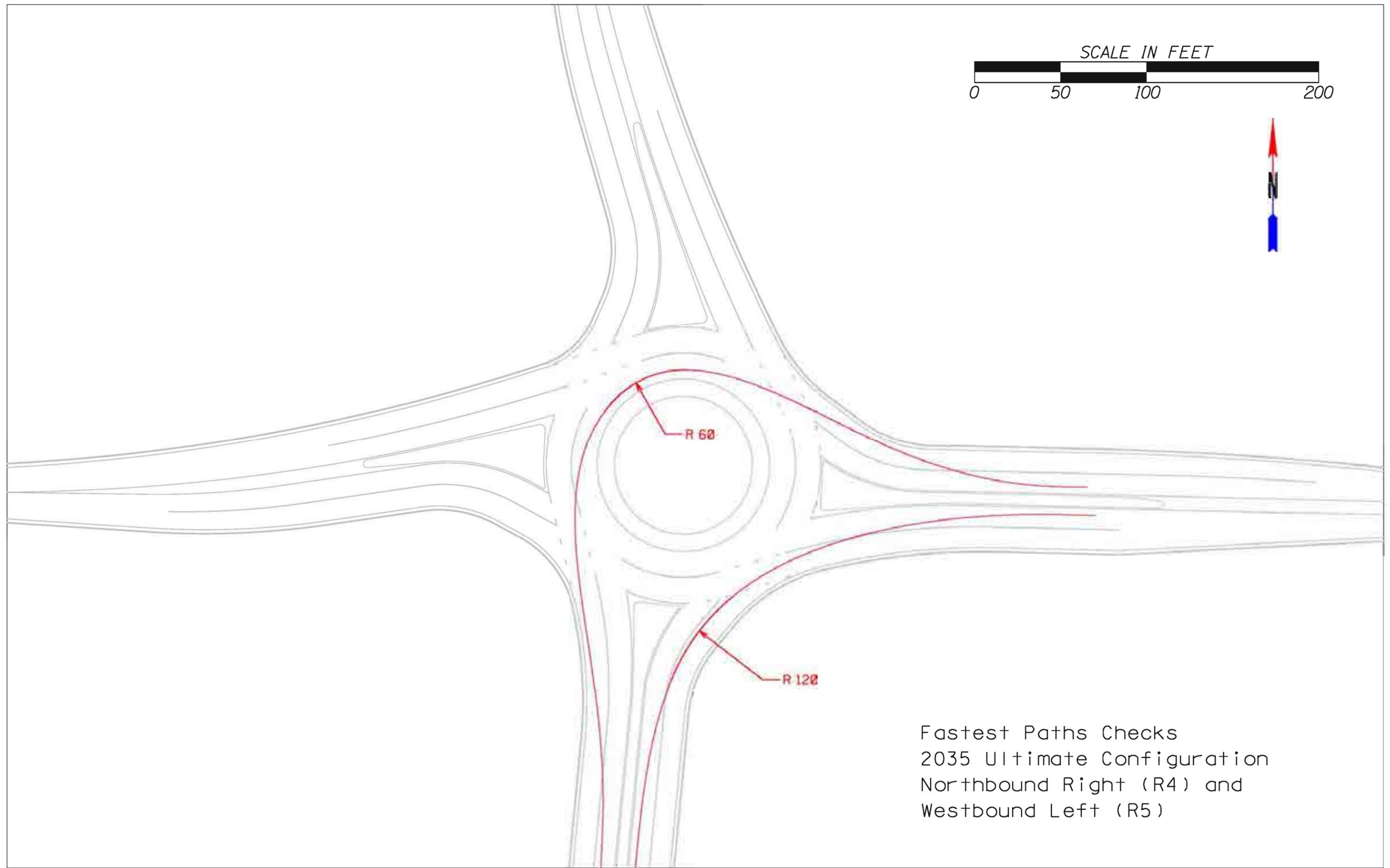
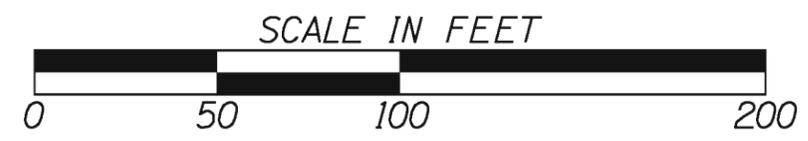
MULTI-USE PATH

Fastest Paths Checks
2025 Interim Configuration
North-South Through (R1)





Fastest Paths Checks
2035 Ultimate Configuration
Eastbound Right (R4) and
Southbound Left (R5)



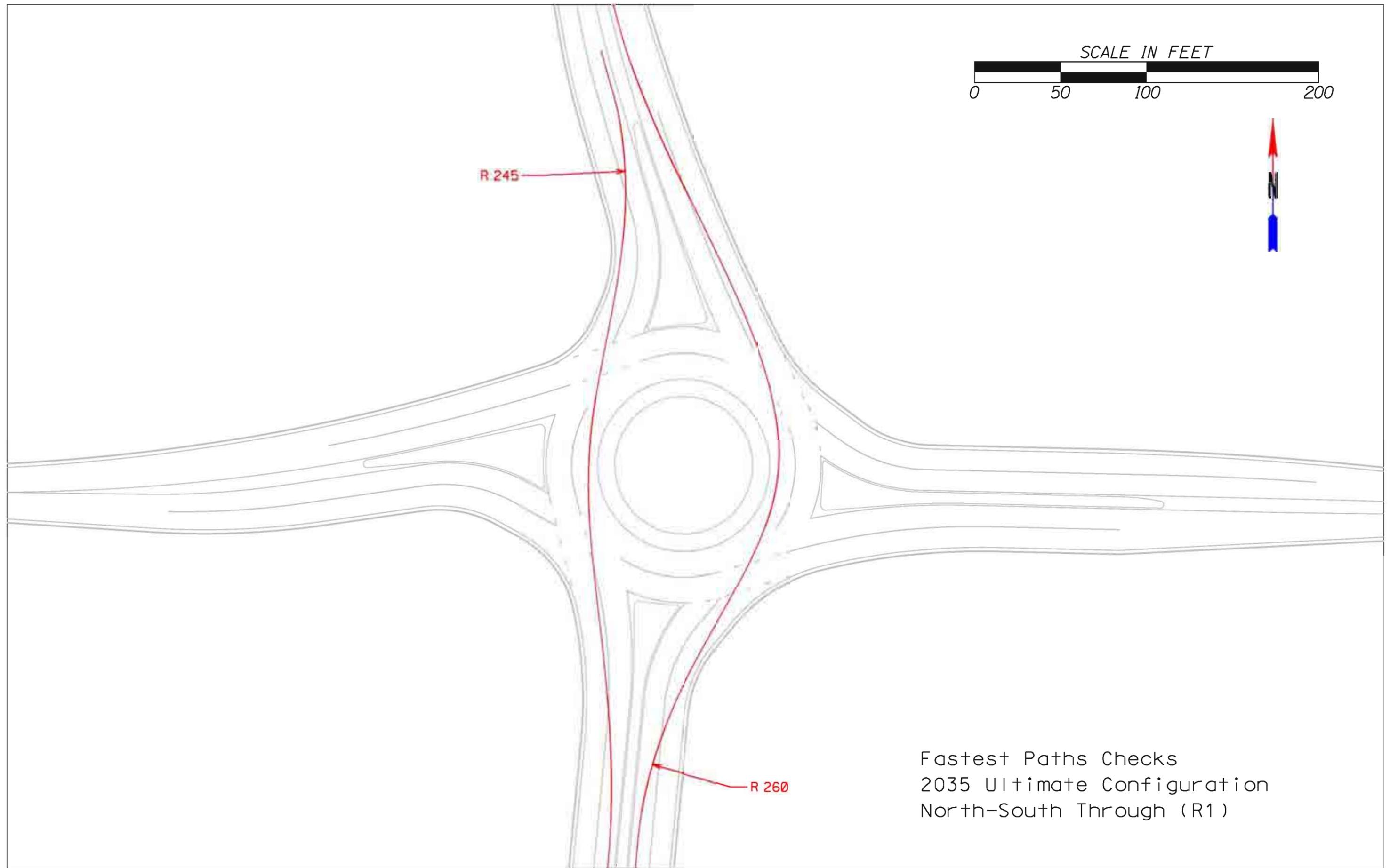
Fastest Paths Checks
2035 Ultimate Configuration
Northbound Right (R4) and
Westbound Left (R5)

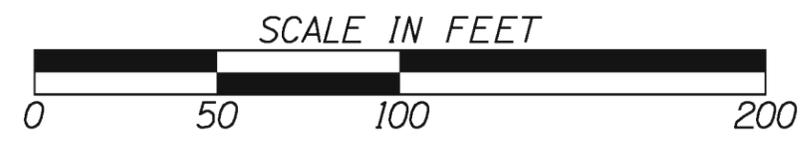


R 245

R 260

Fastest Paths Checks
2035 Ultimate Configuration
North-South Through (R1)

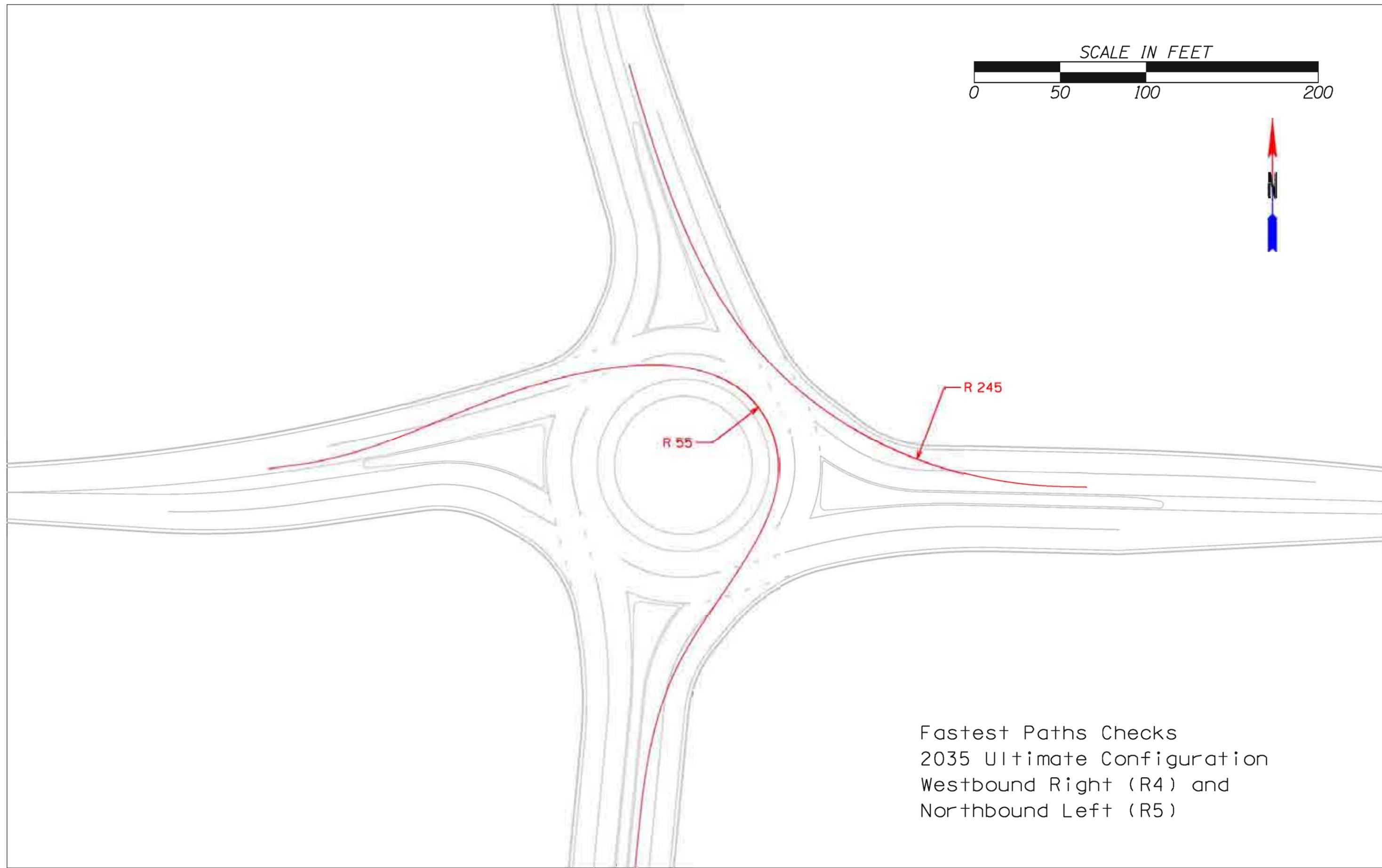
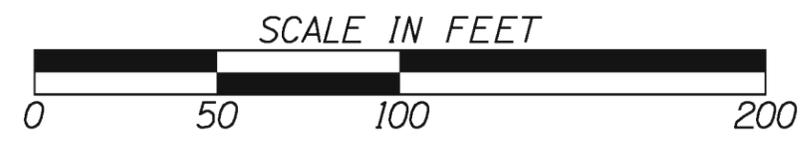




R 120

R 55

Fastest Paths Checks
2035 Ultimate Configuration
Southbound Right (R4) and
Eastbound Left (R5)



Fastest Paths Checks
2035 Ultimate Configuration
Westbound Right (R4) and
Northbound Left (R5)

Attachment #5

Department of Transportation State of Georgia

INTERDEPARTMENT CORRESPONDENCE

FILE Fulton County **OFFICE** Planning
P.I. # 0010419

DATE April 16, 2012

FROM Cynthia L. VanDyke, State Transportation Planning Administrator

TO Bobby K. Hilliard, P.E., State Program Delivery Design Engineer
Attention: Sue Anne Decker

SUBJECT **Reviewed** Design Traffic for S.R. 140 @ C.R. 186/Hembree Road.

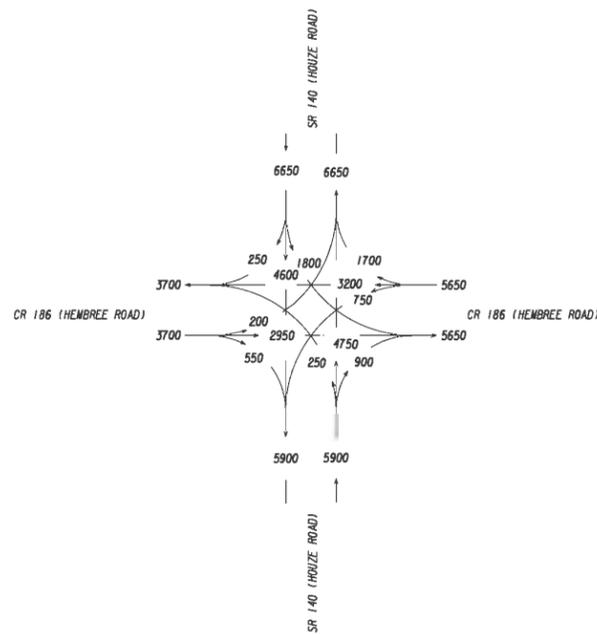
As per your request, we reviewed the consultant's Design Traffic for the above project.

The Design Traffic is approved based on the information furnished. If you have any questions concerning this information please contact Leslie R. Woods at (404) 631-1773.

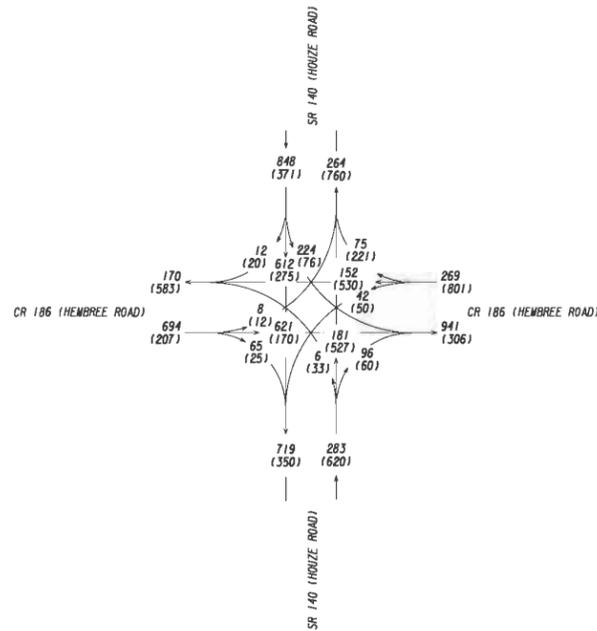
CLV/LRW



FULTON COUNTY
2011 AADT = 000



FULTON COUNTY
2011 AM PEAK = 000
2011 PM PEAK = 000

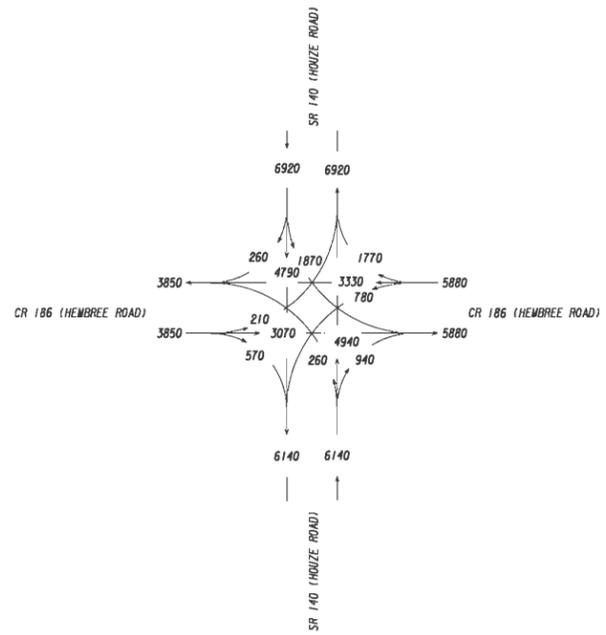


K Kittelson & Associates, Inc.
225 E. Robinson St., Suite 450
Orlando, FL 32801 (407)540-0555

REVISION DATES		

STATE OF GEORGIA DEPARTMENT OF TRANSPORTATION
OFFICE: TRAFFIC DIAGRAM
HOUZE ROAD AT HEMBREE ROAD INTERSECTION IMPROVEMENTS
DRAWING No. 10-01

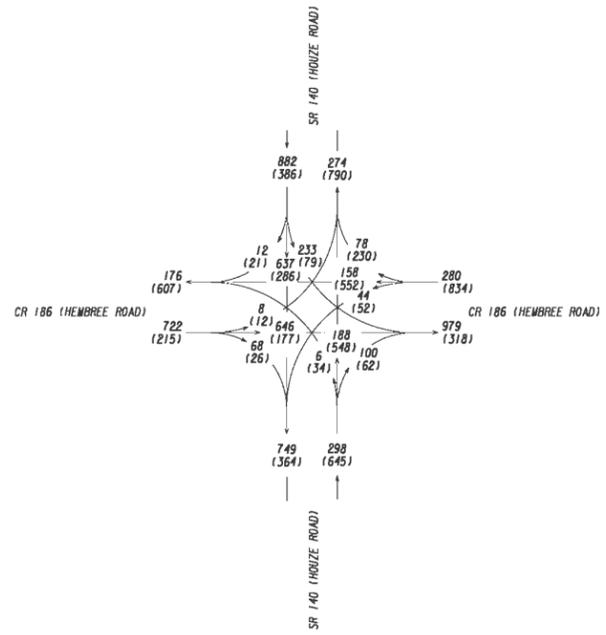
FULTON COUNTY
 2015 AADT = 000



BASE YEAR 2015 DAILY
NO-BUILD TRAFFIC VOLUMES

24 HR TRUCKS:
 HOUZE ROAD: 6% TOTAL, 5% S.U., 1% C.U.
 HEMBREE ROAD: 5% TOTAL, 5% S.U., 0% C.U.

FULTON COUNTY
 2015 AM PEAK = 000
 2015 PM PEAK = 1000



BASE YEAR 2015 DHV
NO-BUILD TRAFFIC VOLUMES

PEAK HOUR TRUCKS:
 HOUZE ROAD: 4% TOTAL, 3% S.U., 1% C.U.
 HEMBREE ROAD: 3% TOTAL, 3% S.U., 0% C.U.

K FACTORS:
 HOUZE ROAD: 8.4%
 HEMBREE ROAD: 11.1%

Kittelson & Associates, Inc.
 225 E. Robinson St., Suite 450
 Orlando, FL 32801 (407)540-0555

REVISION DATES		

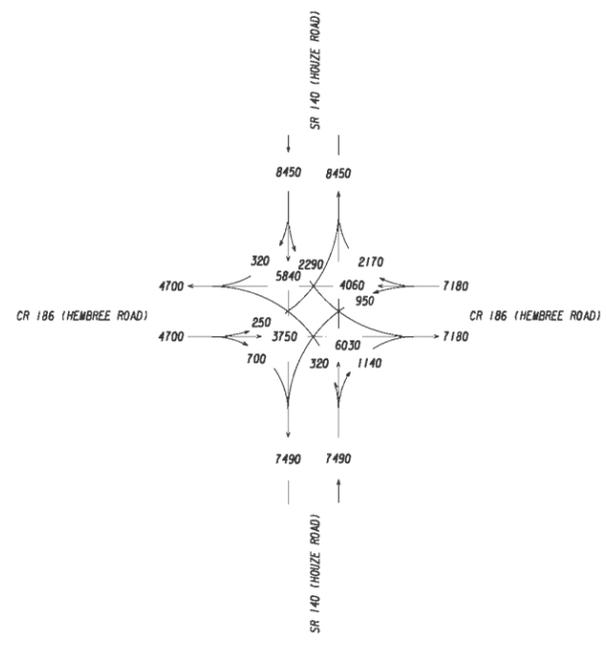
STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION

OFFICE: **TRAFFIC DIAGRAM**

HOUZE ROAD AT HEMBREE ROAD
INTERSECTION IMPROVEMENTS

DRAWING NO.
10-02

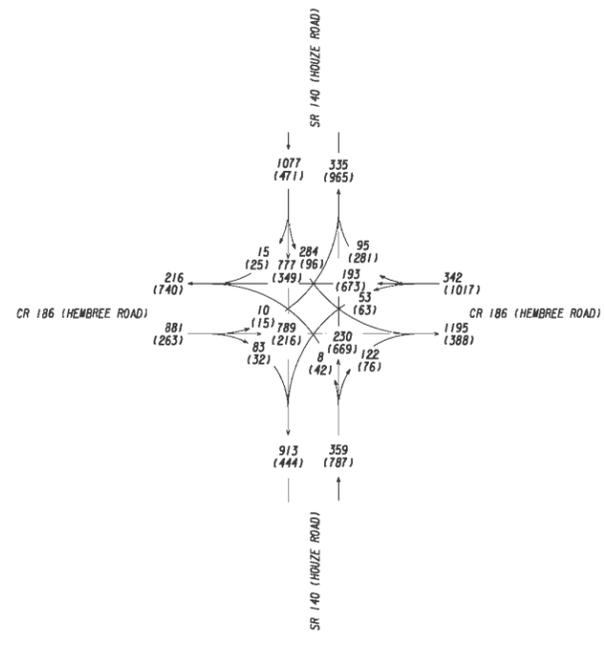
FULTON COUNTY
 2035 AADT = 000



DESIGN YEAR 2035 DAILY
NO-BUILD TRAFFIC VOLUMES

24 HR TRUCKS:
 HOUZE ROAD: 6% TOTAL, 5% S.U., 1% C.U.
 HEMBREE ROAD: 5% TOTAL, 5% S.U., 0% C.U.

FULTON COUNTY
 2035 AM PEAK = 000
 2035 PM PEAK = 1000



DESIGN YEAR 2035 DHV
NO-BUILD TRAFFIC VOLUMES

PEAK HOUR TRUCKS:
 HOUZE ROAD: 4% TOTAL, 3% S.U., 1% C.U.
 HEMBREE ROAD: 3% TOTAL, 3% S.U., 0% C.U.

K FACTORS:
 HOUZE ROAD: 8.4%
 HEMBREE ROAD: 11.1%

Kittelson & Associates, Inc.
 225 E. Robinson St., Suite 450
 Orlando, FL 32801 (407)540-0555

REVISION DATES		

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION

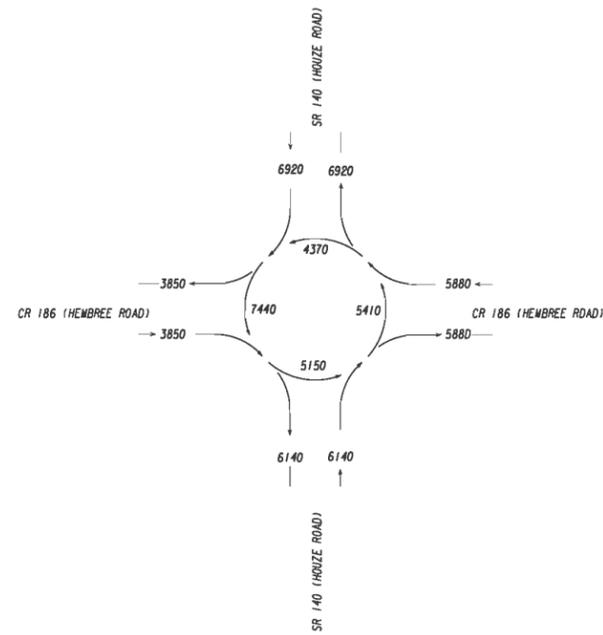
OFFICE: **TRAFFIC DIAGRAM**

HOUZE ROAD AT HEMBREE ROAD
INTERSECTION IMPROVEMENTS

DRAWING No.
10-03



FULTON COUNTY
2015 AADT = 000

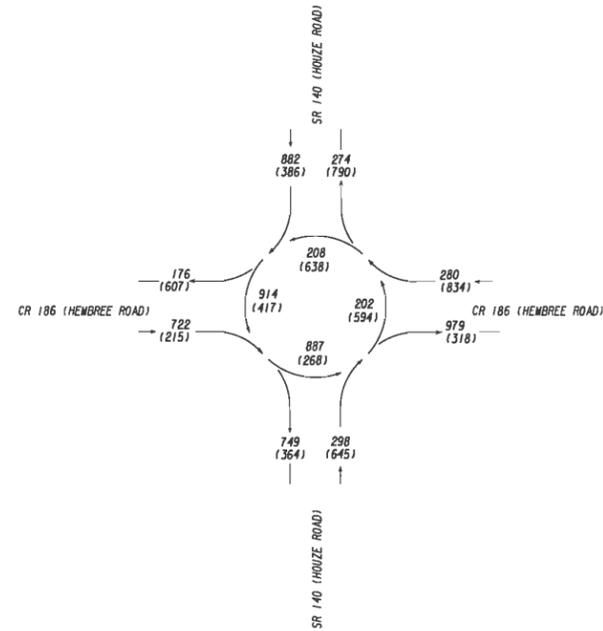


BASE YEAR 2015 DAILY
BUILD TRAFFIC VOLUMES

24 HR TRUCKS:
HOUZE ROAD: 6% TOTAL, 5% S.U., 1% C.U.
HEMBREE ROAD: 5% TOTAL, 5% S.U., 0% C.U.



FULTON COUNTY
2015 AM PEAK = 000
2015 PM PEAK = 1000



BASE YEAR 2015 DHV
BUILD TRAFFIC VOLUMES

PEAK HOUR TRUCKS:
HOUZE ROAD: 4% TOTAL, 3% S.U., 1% C.U.
HEMBREE ROAD: 3% TOTAL, 3% S.U., 0% C.U.

K FACTORS:
HOUZE ROAD: 8.4%
HEMBREE ROAD: 11.1%

REVISION DATES		

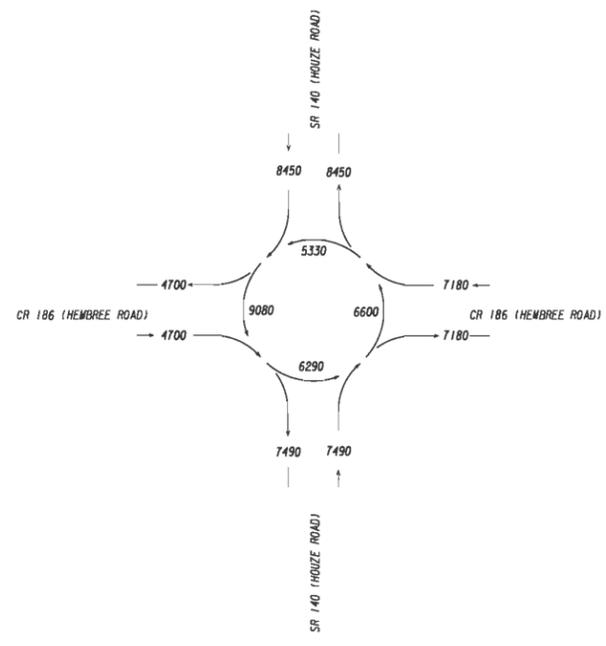
STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION

OFFICE: **TRAFFIC DIAGRAM**

HOUZE ROAD AT HEMBREE ROAD
INTERSECTION IMPROVEMENTS

DRAWING NO.
10-04

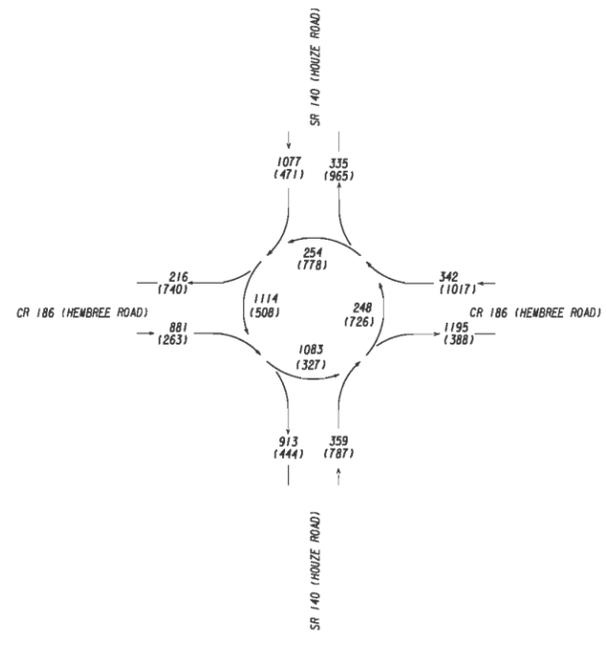
FULTON COUNTY
 2035 AADT = 000



DESIGN YEAR 2035 DAILY
BUILD TRAFFIC VOLUMES

24 HR TRUCKS:
 HOUZE ROAD: 6% TOTAL, 5% S.U., 1% C.U.
 HEMBREE ROAD: 5% TOTAL, 5% S.U., 0% C.U.

FULTON COUNTY
 2035 AM PEAK = 000
 2035 PM PEAK = 1000



DESIGN YEAR 2035 DHV
BUILD TRAFFIC VOLUMES

PEAK HOUR TRUCKS:
 HOUZE ROAD: 4% TOTAL, 3% S.U., 1% C.U.
 HEMBREE ROAD: 3% TOTAL, 3% S.U., 0% C.U.

K FACTORS:
 HOUZE ROAD: 8.4%
 HEMBREE ROAD: 11.1%

Kittel & Associates, Inc.
 225 E. Robinson St., Suite 450
 Orlando, FL 32801 (407)540-0555

REVISION DATES		

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION

OFFICE: **TRAFFIC DIAGRAM**

HOUZE ROAD AT HEMBREE ROAD
INTERSECTION IMPROVEMENTS

DRAWING NO.
10-05

Attachment #6



April 23, 2012

Mr. Scott MacLean
Georgia Department of Transportation – Design Policy and Support
One Georgia Center
600 West Peachtree Street, NW
Atlanta, GA 30308

Subject: Lighting for proposed roundabout intersection: SR 140/Houze Road at Hembree Road (PI 0010419)

Dear Scott:

Thank you for your letter dated March 20, 2012 concerning the above referenced topic. The City of Roswell is aware of the IESNA and AASHTO lighting guidelines for a roundabout. Our consultant, URS, has a subconsultant to properly design the lighting for this project.

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

If you need any additional information, please contact Rob Dell-Ross (770-594-6292) or myself (770-594-6510).

Sincerely,

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



Attachment #7



Sign In Sheet

June 12, 2012 | 9:00 am

Concept Team Meeting - Sign in sheet

PI # 0010419

Name	Organization Project Role	Email Address	Phone
SEAN PHARR	URS PM	Sean.pharr@urs.com	678 808 8839
Sue Anne Decker	GDOT PM	sdecker@dot.ga.gov	706-646-6974
Mike Lobdell	GDOT DT	mlobdell@dot.ga.gov	7/986-1765
SCOTT LEE	GDOT DT	SLEE@Dot.ga.gov	7-986-1261
Rob Dell Ross	City City PM	rdelross@roswellga.com	770 594 6292
FRANCO-DEMARCO	City Roswell	FJEMARCO@ROSWELLGOV.COM	770-994-6274
ANDREW ANWEILER	CITY OF ROSWELL	aantweiler@roswellgov.com	678-239-7540
DONALD LEE WELCH	GDOT DT CUST	dwelch@dot.ga.gov	770986-1414
Marc Start	URS traffic	marc.start@urs.com	404.357.6631

Mickey O'Brien

URS - ARCHITECT

MICKEY.OBRIEN@URS.COM

June 13, 2012

678-808-8884

Page 1



Meeting Minutes – Concept Team Meeting, GDOT PI # 0010419

MEETING DATE: June 13, 2012, 9:00 am
GDOT, District 7 - Conference Room

SR 140(Houze Road) at Hembree Road – Intersection Improvement City of Roswell

I. Project Team Introductions/Sign in Sheet

Sue Anne Decker – GDOT OPD	sdecker@dot.ga.gov
Mike Lobdell – GDOT District 7	mlobdell@dot.ga.gov
Scott Lee – GDOT District 7	slee@dot.ga.gov
Donna Lee Welch– GDOT District 7	dwelch@dot.ga.gov
Franco Demarco – City of Roswell	fdemarco@roswellgov.com
Rob Dell-Ross – City of Roswell	rdellross@roswellgov.com
Andrew Antweiler– City of Roswell	aantweiler@roswellgov.com
Sean Pharr– URS	sean.pharr@urs.com
Mickey O’Brien – URS	mickey.o'brien@urs.com
Marc Start – URS	marc.start@urs.com

II. Introductions

Sue Anne Decker welcomed the attendees and introduced Sean Pharr as the URS project manager for the City of Roswell for this project.

After introductions, Sean Pharr provided an overview of the project and discussed major elements of the concept report as provided in the agenda items;

III. Review of Agenda Items(Agenda Attached)

Sean Pharr noted the need and purpose of the project is to improve the operations of the intersection of SR 140(Houze Road) and Hembree Road. A roundabout was initially studied at this location. The draft concept report includes a signal alternative, and a preferred roundabout alternative.

Sean Pharr briefly discussed the preferred concept and noted the following;

Design year is 2035, and a dual lane roundabout provides is required in the design year(*two lanes on all approaches and exits.*

There are no transit routes through the intersection. The roundabout will be design to accommodate a WB-67.

Roswell has proposed loop trail system (along Hembree Road) through this intersection.

A signalized intersection requires two through lanes along Houze Road in the design year to operate at a level of service D.

The design configuration of the 2035 year roundabout has following benefits compared to the signal option;

Reduced in delay

Reduced travel speeds

Reduced impact to # of properties

(12 parcels for the roundabout and 26 for the signal option)

Reduced utility impacts

The roundabout will be constructed for an interim 2025 year build. The right of way will be acquired for the 2035 year build.

The following utilities are likely within the project limits.

GA Power – Distribution

Cobb EMC – Network Underground

AGL

AT&T

Fulton County Water

The level of environmental documentation required is anticipated to be a Categorical Exclusion (CE). A stream buffer will be required.

The following project were noted in the area

TIA funded project along SR 140 from Rucker Road to Houze Way.

Sidewalk Extension from the intersection to Saddle Creek along Houze Road by Roswell

Multi use loop trail system by Roswell along Hembree Road.

The proposed location of the roundabout facilitates construction. The grade of Houze Road will be raised from 2 to 3 feet, shifting the roundabout to the north east quadrant will facilitate construction sequencing for the roads to remain open. With the preferred roundabout alternative, no permanent detours are anticipated. Shifting of the roundabout west up Hembree Road would require extensive work to lower a portion of Hembree Road and would result in lane closures. Holding the existing grade of Hembree Road is necessary to limit impacts, thereby shifting the center of the roundabout east from the existing intersection. Temporary lane closures and detours are anticipated and will be presented at the next public meeting.

Sue Anne Decker noted the project will be built under traffic, and this should be noted in the concept report.

Rob Dell-Ross commented that the City will investigate the most suitable temporary detour route, and there is a lower traffic volume along Hembree Road.

Mickey O'Brien noted that construction costs are similar for the roundabout verses the signal option.

Sean Pharr discussed pedestrian treatments will be studied for the roundabout crossings, specifically pedestrian HAWK signals on all crossings.

Scott Lee inquired existing pedestrian facilities.

Sean Pharr responded there is an existing sidewalk on the northwest quadrant along Hembree and no existing facilities on Houze Road.

Mike Lobdell questioned if the acceleration lane south from Derby Forest could be removed with this project.

Rob Dell-Ross noted that could be part of the TIA improvements, and the City's traffic engineer will investigate this.

Rob Dell-Ross questioned if the splitter islands and center island could be landscaped, and noted that the City's preference is for landscaping to be part of the project. GDOT has an existing standard detail for providing landscaping in the center island.

Sue Anne Decker noted that this was a state route and typically the islands are concrete.

Rob Dell-Ross noted that the City of Roswell has a maintenance agreement with GDOT to maintain the landscaping on all state routes.

Sue Anne Decker recommended the need for landscaping be clearly noted in the environmental document. This project is using federal funds.

Andrew Antweiler noted the City's preference is for landscaping and that the citizens seem to be in favor of landscaping.

Sue Anne Decker noted that landscaping should not be done solely for the betterment a property owner.

Mike Lobdell noted that if a temporary detour is proposed, another public meeting will be required.

Rob Dell-Ross responded it is proposed to hold another public meeting. The City's preference if any closures are required is a temporary closure of only one leg during a weekend.

Sue Anne-Decker noted the public involvement is ahead of schedule and the concept report needs to be submitted as soon as possible.

These meeting minutes are compiled from short hand notes and from memory and do not represent direct quotes from attendees but more of a summary of topics and comments discussed during the meeting.

Attachments:

- 1. Kick-off Meeting Agenda**
- 2. Sign-in sheet**

Attachment #8

DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE: P. I. No. 0010419 OFFICE: Environmental Services
DATE: April 24, 2012

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

TO Distribution Below

SUBJECT PUBLIC INFORMATION OPEN HOUSE SYNOPSIS

PROJECT No. & COUNTY: N/A, Fulton

PROJECT DESCRIPTION: SR 140 @ CR 186/Hembree Rd

DATE: 3/29/2012

NUMBER IN ATTENDANCE: 90

FOR: 13

CONDITIONAL: 6

UNCOMMITTED: 4

AGAINST: 20

OFFICIALS IN ATTENDANCE: Steve Acenbrak, P.E., LEED AP
Rob Dell-Ross, P.E.
Franco DeMarco, P.E.
Sue Anne Decker, P.E.
Scott Lee

ADDITIONAL COMMENTS: 3 comment forms incorrectly filled out

PREPARED BY: Sean Pharr, P.E.

TELEPHONE No.: (678) 808-8839

cc: Gerald M. Ross, P.E.
Bobby Hilliard, P.E.
Bryant Poole, P.E.
Scott Lee

Attachment #9



October 20, 2011

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

Dear Mr. Wood:

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

PROJECT#: Fulton County, P.I. #0010419

We look forward to working with you on the successful completion of the joint project. Should you have any questions, please contact the Project Manager Sue Anne Decker at (706)646-6974.

Sincerely,

A handwritten signature in black ink, appearing to read "Angela Robinson".

Angela Robinson,
Financial Management Administrator

AR:rm

Enclosure

c: Bob Rogers
Bryant Poole – District 7
Vicki Gavalas – District 7
Jonathan Walker – District 7
Jeff Baker – Utilities
Stuart Moaring

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

This Framework Agreement is made and entered into this 12th day of October, 2011, by and between the DEPARTMENT OF TRANSPORTATION, an agency of the State of Georgia, hereinafter called the "DEPARTMENT", and the **CITY OF ROSWELL**, acting by and through its Mayor and City Council, hereinafter called the "LOCAL GOVERNMENT".

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

a. Prepare the PROJECT Concept Report and Design Data Book in accordance with the format used by the DEPARTMENT. The concept for the PROJECT shall be developed to accommodate the future traffic volumes as generated by the LOCAL GOVERNMENT as provided for in paragraph 7b and approved by the DEPARTMENT. The concept report shall be approved by the DEPARTMENT prior to the LOCAL GOVERNMENT beginning further development of the PROJECT plans. It is recognized by the parties that the approved concept may be updated or modified by the LOCAL GOVERNMENT as

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

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

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

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

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

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

f. Perform all work required to obtain all applicable PROJECT permits, including, but not limited to, Cemetery, TVA and US Army Corps of Engineers permits, Stream Buffer Variances and Federal Emergency Management Agency (FEMA) approvals. The LOCAL GOVERNMENT shall provide all mitigation

required for the project, including but not limited to permit related mitigation. All mitigation costs are considered PE costs. PROJECT permits and non-construction related mitigation must be obtained and completed 3 months prior to the scheduled let date. These efforts shall be coordinated with the DEPARTMENT.

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

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

it is determined through the DEPARTMENT's Project Manager and State Utilities Office during the concept or design phases the need to utilize Overhead/Subsurface Utility Engineering, hereinafter referred to as "SUE", to obtain the existing utilities, the LOCAL GOVERNMENT shall be responsible for acquiring those services. SUE costs are considered PE costs.

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

j. Prepare PROJECT cost estimates for construction, Right of Way and Utility/railroad relocation along with a Benefit Cost, hereinafter referred to as "B/C ratio" at the following project stages: Concept, Preliminary Field Plan Review, Right of Way plan approval (Right of Way cost only), Final Field Plan Review and Final Plan submission using the applicable method approved by the DEPARTMENT. The cost estimates and B/C ratio shall also be updated yearly if the noted project stages occur at a longer frequency. Failure of the LOCAL GOVERNMENT to provide timely and accurate cost estimates and B/C

ratio may delay the PROJECT's implementation until additional funds can be identified for right of way or construction, as applicable.

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

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

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

8. The Primary Consultant firm or subconsultants hired by the LOCAL GOVERNMENT to provide services on the PROJECT shall be prequalified with the DEPARTMENT in the appropriate area-classes. The DEPARTMENT shall, on request, furnish the LOCAL GOVERNMENT with a list of prequalified consultant firms in the appropriate area-classes. The LOCAL GOVERNMENT shall comply with all applicable

state and federal regulations for the procurement of design services and in accordance with the Brooks Architect-Engineers Act of 1972, better known as the Brooks Act, for any consultant hired to perform work on the PROJECT.

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

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

11. The LOCAL GOVERNMENT unless otherwise noted in attachment "A" shall be responsible for funding all LOCAL GOVERNMENT owned utility relocations and all other reimbursable utility/railroad costs. The costs include but are not limited to PE, easement acquisition, and construction activities necessary for the utility/railroad to accommodate the PROJECT. The terms for any such reimbursable relocations shall be laid out in an agreement that is supported by plans, specifications, and itemized costs of the work agreed upon and shall be executed prior to certification by the DEPARTMENT.

The LOCAL GOVERNMENT shall certify via written letter to the DEPARTMENT's Project Manager and District Utilities Engineer that all Utility owners' existing and proposed facilities are shown on the plans with no conflicts 3 months prior to advertising the PROJECT for bids and that any required agreements for reimbursable utility/railroad costs have been fully executed. Further, this certification letter shall state that the LOCAL GOVERNMENT understands that it is responsible for the costs of any additional reimbursable utility/railroad conflicts that arise on construction.

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

13. The LOCAL GOVERNMENT shall be responsible for acquiring a Value Engineering Consultant for the DEPARTMENT to conduct a Value Engineering Study if the total estimated PROJECT cost is \$10 million or more. The Value Engineering Study cost is considered a PE cost. The LOCAL GOVERNMENT shall provide project related design data and plans to be evaluated in the study along with appropriate staff to present and answer questions about the PROJECT to the study team. The LOCAL GOVERNMENT shall provide responses to the study recommendations indicating

whether they will be implemented or not. If not, a valid response for not implementing shall be provided. Total project costs include PE, right of way, and construction, reimbursable utility/railroad costs.

14. The LOCAL GOVERNMENT, unless shown otherwise on Attachment A, shall acquire the Right of way in accordance with the law and the rules and regulations of the FHWA including, but not limited to, Title 23, United States Code; 23 CFR 710, et. Seq., and 49 CFR Part 24 and the rules and regulations of the DEPARTMENT. Upon the DEPARTMENT's approval of the PROJECT right of way plans, verification that the approved environmental document is valid and current, a written notice to proceed will be provided by the DEPARTMENT for the LOCAL GOVERNMENT to stake the right of way and proceed with all pre-acquisition right of way activities. The LOCAL GOVERNMENT shall not proceed to property negotiation and acquisition whether or not the right of way funding is Federal, State or Local, until the right of way agreement named "Contract for the Acquisition of Right of Way" prepared by the DEPARTMENT's Office of Right of Way is executed between the LOCAL GOVERNMENT and the DEPARTMENT. Failure of the LOCAL GOVERNMENT to adhere to the provisions and requirements specified in the acquisition contract may result in the loss of Federal funding for the PROJECT and it will be the responsibility of the LOCAL GOVERNMENT to make up the loss of that funding. Right of way costs eligible for reimbursement include land and improvement costs, property damage values, relocation assistance expenses and contracted property management costs. Non reimbursable right of way costs include administrative expenses such as appraisal, consultant, attorney fees and any in-house property management or staff expenses. The LOCAL GOVERNMENT

shall certify that all required right of way is obtained and cleared of obstructions, including underground storage tanks, 3 months prior to advertising the PROJECT for bids.

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

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

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

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

17. The LOCAL GOVERNMENT agrees that all reports, plans, drawings, studies, specifications, estimates, maps, computations, computer files and printouts, and any other data prepared under the terms of this Agreement shall become the property of the DEPARTMENT if the PROJECT is being let by the DEPARTMENT. This data shall be organized, indexed, bound, and delivered to the DEPARTMENT no later than the advertisement of the PROJECT for letting. The DEPARTMENT shall have the right to use this material without restriction or limitation and without compensation to the LOCAL GOVERNMENT.

18. The LOCAL GOVERNMENT shall be responsible for the professional quality, technical accuracy, and the coordination of all reports, designs, drawings, specifications, and other services furnished by or on behalf of the LOCAL GOVERNMENT pursuant to this Agreement. The LOCAL GOVERNMENT shall correct or revise, or cause to be corrected or revised, any errors or deficiencies in the reports,

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

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

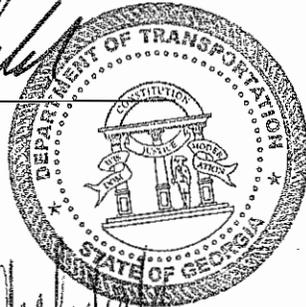
The covenants herein contained shall, except as otherwise provided, accrue to the benefit of and be binding upon the successors and assigns of the parties hereto.

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

DEPARTMENT OF TRANSPORTATION

CITY OF ROSWELL

BY: [Signature]
Commissioner



BY: [Signature]
Jere Wood
Mayor

ATTEST: [Signature]
Treasurer

Signed, sealed and delivered this 5th day of August, 2011, in the presence of:

[Signature]
Witness

[Signature]
Notary Public
ROBYN KENNER
NOV 28, 2011
FORST COUNTY, GEORGIA

This Agreement approved by the CITY OF ROSWELL, the 5th day of August, 2011.

Attest
[Signature]
Marlee Press, City Clerk

FEIN: 58-6000655

ATTACHMENT "A"

Project Number: 0010419 – City of Roswell

Project	Preliminary Engineering		Right of Way			Construction		Utility Relocation	
(PI#, Project #, Description)	Funding	PE Activity by	*Funding of Real Property	Acq. by	Acq. Fndd by	*Funding	Letting by	Utility Funding by	Railroad Funding by
P.I. # 0010419 SR 140 @ CR 186/Hembree Rd	Local Gov. PE: (100%) Federal (\$300,000) GDOT Oversight PE: (100%) Federal (\$100,000) >(\$400,000) 100% Local Gov.	Local Gov.	(100%) Federal (\$300,000) >(\$300,000) 100% Local Gov.	Local Gov.	GDOT	(100%) Federal (\$1,000,000) >(\$1,000,000) 100% Local Gov.	Local Gov.	GDOT	GDOT

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

ATTACHMENT "B"
0010419 – City of Roswell

Proposed Project Schedule

Environmental Phase				
Concept Phase				
Preliminary Plan Phase				
Right of Way Phase				

Deadlines for Responsible Parties	Execute Agreement	Month/Year (Approve Concept)	Month/Year (Approve Env. Document)	Month/Year (Authorize Right of Way funds)	Month/Year (Authorize Const. funds)
		<i>December 2011</i>	<i>December 2012</i>	<i>May 2013</i>	<i>May 2014</i>

Annual Reporting Requirements

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



GEORGIA SECURITY AND IMMIGRATION COMPLIANCE ACT AFFIDAVIT

Contract No. and Name: PI 0010419
SR140@CR186 | Hembree Road
Name of Contracting Entity: City of Roswell, GA

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

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

The undersigned person or entity further agrees to maintain records of such compliance and provide a copy of each such verification to the Georgia Department of Transportation at the time the subcontractor(s) is retained to perform such service.

47127
EEV / E-Verify™ User Identification Number

July 11, 2007
Date of Authorization

Kay G. Love
BY: Authorized Officer or Agent
(Name of Person or Entity)

9-11-11
Date

City Administrator
Title of Authorized Officer or Agent

Kay G. Love
Printed Name of Authorized Officer or Agent

SUBSCRIBED AND SWORN
BEFORE ME ON THIS THE

11 DAY OF September, 2011

[Signature]
Notary Public



My Commission Expires: _____

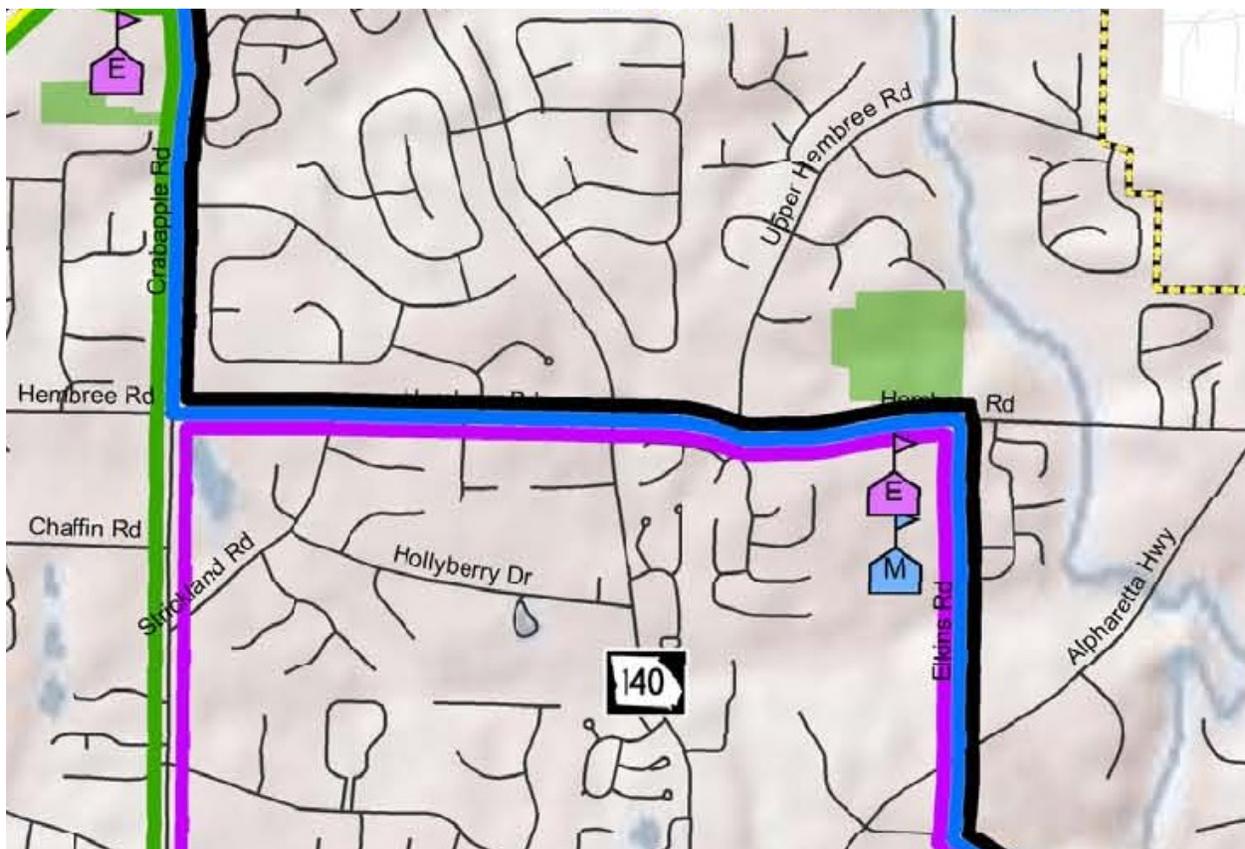
* or any subsequent replacement operated by the United States Department of Homeland Security or any equivalent federal work authorization program operated by the United States Department of Homeland Security to verify information of newly hired employees, pursuant to the Immigration Reform and Control Act of 1986 (IRCA), P.L. 99-603

Attachment #10

Multi-use Path Information

Roswell, under the Transportation Master Plan adopted in 2006, is constructing a series of multi-use paths that connect the City's parks, schools, historic downtown district, several neighborhoods, and other city resources. The multi-use path, included as a part of this project, helps the City of Roswell to achieve their goal of increasing bicycle and pedestrian mobility, as outlined in the city's Transportation Master Plan.

Below is a portion of the Roswell Loop Map, outlining the routes of the multi-use trail routes. As seen below, Hembree Road, at Houze Rd (SR 140) is part of the black, blue, and purple routes.



Attachment #11

PRECONSTRUCTION STATUS REPORT FOR PI:721300-

PROJ ID : 721300-	SR 140/CELESTINE SIBLEY HWY FM MANSELL RD TO NR RANCHETTE RD	MGMT LET DATE :
COUNTY : Fulton		MGMT ROW DATE :
LENGTH (MI) : 4.55		BASELINE LET DATE
PROJ NO.: STP00-0187-01(014)	MPO: Atlanta TMA	CONG. DIST: 6
PROJ MGR: Pegram, Vinesha	TIP #: FN-126A	BIKE: E
AOHD Initials: AVS	MODEL YR : 2030	MEASURE: Y
OFFICE : Program Delivery	TYPE WORK: Widening	NEEDS SCORE: 04
CONSULTANT: Consultant Design (DOT contract)	CONCEPT: ADD 4R/U(MED20)	BRIDGE SUFF:
SPONSOR : GDOT	PROG TYPE: Reconstruction/Rehabilitation	
DESIGN FIRM: Jordan, Jones & Goulding, Inc.	BOND PROJ :	

BASE START	BASE FINISH	LATE START	LATE FINISH	TASKS	ACTUAL START	ACTUAL FINISH	%

PROGRAMMED FUNDS						
Activity	Approved	Proposed	Cost	Fund	Status	Date Auth
PE	1992	1992	16,371.48	33C	AUTHORIZED	3/3/1992
PE	1992	1992	5,010,692.76	L240	AUTHORIZED	3/3/1992
ROW	1992	1992	1,870,900.00	Q24	AUTHORIZED	6/29/1992
ROW	2016	2018	26,298,211.06	L240	PRECST	
CST	2020	2020	31,414,927.37	L240	PRECST	
UTL	2020	2020	1,215,276.12	L240	PRECST	

Cost Estimate Amount			Funding Match			
Activity	Amount	Date	Activity	Fed	State	Other
PE			ROW	\$1,496,720.00	\$374,180.00	\$0.00
PE			PE	\$4,008,554.20	\$1,002,138.56	\$0.00
ROW	1,870,900.00	10/3/2012	PE	\$13,097.18	\$3,274.30	\$0.00
ROW	23,819,100.00	10/3/2012	ROW	\$21,038,568.85	\$5,259,642.21	\$0.00
UTL	1,057,971.00	10/3/2012	UTL	\$972,220.90	\$243,055.22	\$0.00
CST	27,348,584.78	10/3/2012	CST	\$25,131,941.90	\$6,282,985.47	\$0.00

PDD: [GFX 11/24/97. ROSWELL OPPOSES PROJECT. 2/3/00
Bridge: BRIDGE REQUIRED (FOS)
Design: VCP/Jacobs-LT issue elevated to management 10-22-2012
EIS: EA\NotApvd\Working on Schedule\Cox 07.18.11
LGPA: NOTIFICATION LETTER SENT TO ALPHARETTA\SANDY SPRINGS & ROSWELL 6-12-12.
Planning: SR 140/Celestine Sibley Hwy fm Mansell Rd. to Ranchette Rd. is on the ARC Bike Trans/Ped Walkways Plan (2002) pg 75 & 96
Programming: PROP4-LN..PE/PA-4-7-92..626B/ROW=AC=11-4-92|#4 3-04|#5 11-05|#6 2-06|#7 5-07|CONFIRMED FOS PER FHWA 9-7-2012
ROW: ADVANCED ACQ
Railroad: NO
Traffic Op: SEND PFPR PLANS FOR REVIEW 8-5-09 + * \$
UST: UNKNOWN
Utility: CC: NEED PPLANS 11/10; OCD SUE;Tk1,Ct16
EMG: 1234 (H85-W/V29); C=M(LANDAIR)/S/D(JJ&G)
Engr Services: Not ready to Do 1 VE w/621240,721305,0006040

District Comments

Environmental with PI 621240, 721305, 0006040 . Need Lt. sissue elevated to 10-22-2012Environmental document with 0006040, 0006040, 721300, and 621240. Management Working with FHWA on LT for corridor.

CST EST:8-24-2012
 CST:27,348,584.78
 ROW:\$25,690,000
 UTIL:\$1,057,971

Prel. Parcel CT: 340	Total Parcel in ROW System: 1	Cond. Filed: 0	Acquired by: DOT	DEEDS CT: 1
Under Review: 0	Options - Pending: 0	Relocations: 0	Acquisition MGR: RHB	
Released: 1	Condemnations- Pend: 0	Acquired: 1	R/W Cert Date:	