Tennessee Environmental Evaluation Report

Interstate 24

Interchange at Epps Mill Road/Buchanan Road &
Epps Mill Road, From west of Capital Way to SR-2 (US-41)

Rutherford County

PIN 124683.06

Submitted Pursuant to the National Environmental Policy Act of 1969, 42 U.S.C. 4332(2)

Document Approval

By signing below, the authorized signatory concurs that this document is in compliance with all applicable environmental laws, regulations and procedures. The authorized signatory has reviewed and verified the document's quality, accuracy, and completeness and that all source material has been compiled and included in the attachments and technical appendices.

Erick Hunt-Hawkins

Digitally signed by Erick Hunt-Hawkins
Date: 2025.05.20 11:41:46 -05'00'

Tennessee Department of Transportation

Environmental Commitments

Owner	Commitment
Cultural Resources	Avoid Pearson and Cobb Cemeteries with at least a 10ft buffer.

Project Information

General Information

Route: Interstate 24

Termini: Interchange at Epps Mill Road/Buchanan Road &
Epps Mill Road, From west of Capital Way to SR-2 (US-41)

Municipality:

County: Rutherford County

PIN: PIN 124683.06

Plans: ETSA & Concept Report

Date of Plans: 05/02/2024

Type of Work Modify Interchange

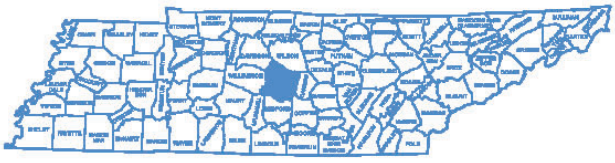
Project Funding

Planning Area: Nashville Area Metropolitan Planning Organization (MPO)

STIP/TIP: Not Applicable (State-Funded)

Funding Source	Preliminary Engineering	Right-of-Way	Construction
Federal	N/A	N/A	N/A
State	PE-N: 75I024-S0-009 PE-D: 75I024-S1-010 PE-D: 75CCOU-S1-002	75I024-S2-010 75CCOU-S2-002	75I024-S3-010 75CCOU-S3-002

Project Location



LOCATION MAP
RUTHERFORD COUNTY
EPPS MILL ROAD (LR-01044)
L.M. 0.00 TO L.M. 0.86
SCALE: 1"=600'
SOURCE: BING MAPS

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Project Overview

Introduction

The Tennessee Department of Transportation (TDOT) proposes to reconstruct the Interstate 24 (I-24) entrance/exit ramps at the interchange with Epps Mill Road and to replace the existing Epps Mill Road bridge over I-24. The proposed project would also widen Epps Mill Road from near Capital Way to State Route 2 (SR-2) from the existing two-lanes to three-lanes (one lane in each direction with a center turn lane). The proposed widening of Epps Mill Road will be on new alignment. In addition, the intersection of Epps Mill Road and Miller Road would also be modified to one southbound lane and two northbound lanes (one left turn lane and one straight/right turn lane).

Due to the proposed project currently being funded exclusively with state funds, the project qualifies to be covered under a Tennessee Environmental Evaluation Report (TEER).

Background

A Concept Report for the proposed project was prepared on 06/04/2024. At that time, it was anticipated that federal funds would be used on the project; however, since then, it has been determinated that the project completed under child PIN .06 will be solely state-funded.

Widening Epps Mill Road from SR-2 to just past Capital Way (LM 0.00 to LM 0.86), including interchange ramp improvements and replacement of the bridge over I-24, has been identified by TDOT to improve safety and traffic flow and to accommodate rapid growth in southern Rutherford County.

Planned and Future Development:
As summarized in the Concept Report, Rutherford County is experiencing high population growth and increased planned commercial, residential, and school development within a 5-mile radius the I-24/Epps Mill Road interchange. This location along I-24 is within 5-miles of Joe B. Jackson Parkway (Exit 84), which is the site of significant industrial and commercial warehouse development, including Amazon's largest distribution center in the area. At Exit 89, there are large truck stops on either side of I-24 and another is proposed to be built in the southeast quadrant of the interchange.

On 07/27/2022, the Rutherford County Planning and Engineering Department provided the following information about proposed new developments in proximity to the proposed project. Proposed developments near the interchange include:
1. New warehouse with 128 dock doors, more than 470 parking spaces for semis, and 316 regular parking spaces.
2. CarMax vehicle storage site with more than 580 parking spaces
3. Blue Gate boat and RV storage site with 208 storage spaces
4. Gas station and restaurant
5. Plainview Middle School and Plainview High School
6. Miller Lane Storage Yard for construction job site trailers and portables

It is anticipated that, as a result of the two new school campuses, that residential subdivision developments will also occur nearby, based on the previously observed trends of families choosing to live near school campuses.

Capacity Analysis Study:
A Capacity Analysis Memorandum was completed for the subject project in June 2024. The analysis studied seven existing intersections with Epps Mill Road, including at the Capital Way/Dollar General driveway, Miller Road, I-24 EB off ramp, the I-24 WB on/off ramps, Miller Lane/Love's Travel Stops driveway, Forbus Drive, and SR-2. The Level of

Service (LOS) for 2028 Base Year No-Build, 2048 Future Year No-Build, 2028 Base Year Build, and 2048 Build Year conditions were assessed. No-Build and Build conditions were assessed for both the base year and future year because the proposed project would reduce the number of existing intersections from seven to five by realigning the intersections at I-24 EB and Miller Road into a single 4-way intersection, removing the intersection at Love's Travel Stop, and realigning the intersections at Miller Lane and Forbus Drive into a single 4-way intersection. Please refer to the Capacity Analysis Memorandum included with the 06/04/2024 Concept Report for Tables 2 thru 5, which show the forecasted LOS for all intersections in the 2028 and 2048 Build and No-Build Conditions.

The LOS of the seven intersections during the 2028 No-Build Conditions range from A to C for all directions of travel during both AM and PM peak periods. However, the 2048 No-Build Conditions indicate significant delays (LOS F) at each intersection in at least one direction of travel during both AM and PM peak periods. Similarly, the LOS during the 2028 Build Conditions range from A to C for all directions of travel during both AM and PM peak periods. The LOS of the five intersections in the 2048 Build Condition are improved when compared to the 2048 No-Build Conditions. However, two of the intersections (Capital Way/Dollar General and SR-2) would have a LOS F in at least one direction of travel during the 2048 Build Conditions. Because the intersection at Capital Way/Dollar General did not satisfy any signal warrants and it is typical for minor street approaches to experience LOS F levels of delay during peak periods in more urban areas, this intersection has not been recommended for further improvements. The intersection with SR-2 did satisfy signal warrant analysis. However, additional improvements along SR-2, including widening SR-2 in 1,500-ft in both directions from the intersection, would be required in order to address traffic queuing anticipated as a result of signalization. It was determined that this work would fall outside the scope of the subject proposed project. TDOT intends to address the signalization at the intersection of Epps Mill Road and SR-2 in a future, separate project before the 2048 Future Year. Based on the results of the capacity analysis, all study intersections during 2048 Build Conditions are projected to operate at an acceptable overall LOS during AM and PM peak hours.

Crash Analysis Study:

Included with the Concept Report was a crash analysis for Epps Mill Road from LM 0.00 to LM 0.860. The crash analysis included data from 2020 to 2023. Crash analysis considers the Critical Crash Rate, which is a rate that is derived by formula and applies a recognized statistical method to analyze crash data. This method compares the Actual Crash Rate at a site with the Critical Crash Rate unique to each site. An Actual Crash Rate that is greater than the Critical Crash Rate indicates a possibility that there is some unfavorable characteristic of local conditions contributing to crash occurrences. Exceedance of the Critical Crash Rate is expressed when the ratio of the Actual Crash Rate to the Critical Crash Rate (A/C) is greater than 1.0.

Crashes are random and relatively infrequent occurrences, therefore, comparing the actual crash rate of a roadway segment, spot or intersection to statewide average crash rates alone does not imply statistical significance. Instead, the Critical Crash Rate is used to determine whether the actual crash rate is significantly higher than average. The Critical Crash Rate is a threshold value, calculated for a given roadway segment, spot or intersection, that determines whether the actual crash rate of that segment, spot or intersection significantly deviates from the average statewide crash rate for facilities with similar characteristics.

For Epps Mills Road, from 2020 to 2023, 48 crashes including two incapacitating injury crashes and five other injury crashes occurred. The remaining 41 crashes were property damage crashes. During the study period, Epps Mill Road had a severe crash rate of 0.574, which exceeds the statewide average severe crash rate for Urban Major Collectors (0.230). The Actual Crash Rate for the segment is 13.767, while the Critical Crash Rate has been calculated to be 5.488, resulting in an A/C ratio of 2.51. This ratio, which is greater than 1.0, indicates that the high number of crashes are not likely due to random occurrence, but that there may be some unfavorable characteristics of the roadway that contribute to the crash rate.

A crash analysis for I-24 from LM 25.330 to LM 26.070 was also included, based on data from 2020 to 2023. Within this period, 63 crashes occurred, including two incapacitating injury crashes and 12 other injury crashes. The remaining 49 crashes were property damage only crashes. During the study period, I-24 had a severe crash rate of 0.042, which exceeds the statewide average severe crash rate for Urban Interstates (0.027). The Actual Crash Rate for the segment is 1.315, while the Critical Crash Rate has been calculated to be 1.493, resulting in an A/C ratio of 0.88. Since the ratio is less than 1.0, there is no indication that there are unfavorable characteristics of the roadway that contribute to the crash rate.

Existing I-24 Ramp Deficiencies:

The existing interchange has deficient deceleration lane lengths for the exit ramps. The existing exit ramp for I-24 EB is warned for 40 miles per hour (MPH), warranting a deceleration lane length of 440-ft to the controlling geometry; however, the current length is 310-ft and therefore deficient. Similarly, the existing exit ramp for I-24 WB is warned for 35 MPH, warranting a deceleration lane length of 490-ft to the controlling geometry; however, the current length is 380-ft.

Epps Mills Bridge over I-24 - Bridge Inspection Report:

Every two years, TDOT performs a comprehensive inspection and subsequent evaluation of all public bridges across the state in order to determine the status of their working condition and operating limits to ensure that they are in accordance with the Federal Highway Administration (FHWA) National Bridge Inspection Standards (NBIS). These inspections are recorded and published in the National Bridge Inventory (NBI) Tennessee Inventory and Appraisal Report. One of the components of this evaluation is the condition ratings. Condition ratings are used to describe the existing, in-place bridge as compared to the as-built condition. The physical condition of the deck, superstructure, and substructure components of a bridge are evaluated for a condition rating. Condition ratings are assigned codes ranging from 0-9, with zero being failed condition and 9 being excellent condition. Another component of the NBI are the appraisal ratings. Appraisal ratings are used to evaluate a bridge in relation to the level of service which it provides. The structure is compared to a new structure built to current standards for the particular type of road. Components evaluated and given an appraisal rating include the structural evaluation, deck geometry, the underclearance rating, waterway adequacy, and the approach roadway alignment. Appraisal ratings are assigned codes ranging from 0-9, with zero being a closed bridge and 9 being superior to present desirable criteria.

The most recent NBI report, dated 03/11/2024, and the most recent Bridge Inspection Report, dated 06/14/2024 show the following condition and appraisal ratings:

Table 1. NBI Ratings for Epps Mill Road bridge over I-24 (Bridge ID# 75I00240041)

Bridge ID#: 75I00240041			
Condition Ratings	**Number**	**Rating**	**Description**
Deck	6	Satisfactory	structural elements show some minor deterioration
Superstructure	6	Satisfactory	structural elements show some minor deterioration
Substructure	7	Good	some minor problems
Stream Channel and Channel Protection	N/A		
Appraisal Ratings	**Number**	**Description**	
Structural Evaluation	5	Somewhat better than minmum adequacy to tolerate being left in place as is	
Deck Geometry	4	Meets minimum tolerable limits to be left in place as is	
Approach Roadway Alignment	8	Equal to present desirable to criteria	
Underclearance Rating	5	Somewhat better than minmum adequacy to tolerate being left in place as is	

The Inspection Report provided an overall condition rating of "2 -Fair." The bridge was constructed in 1968 and has not been rehabilitated. It is approaching 60 years of service life. Additionally, the existing Epps Mill bridge over I-24 is not sufficient to support the proposed widening of Epps Mill Road without replacement.

Project Development

Need

Rutherford County is experiencing continued high population growth within the surrounding area. Within a 5-mile radius of the I-24 and Epps Mill Road interchange, there is planned commercial, residential, and school development which is anticipated to increase traffic within the proposed project area.

As indicated by the Capacity Analysis Memo, without improvements, Epps Mills Road is forecasted to experience significant travel delays (LOS F) at each intersection within the proposed project area in at least one direction of travel during the 2048 Future Year No-Build conditions.

Based on the crash analysis for Epps Mill Road from 2020 to 2023, the existing A/C ratio (2.51) is greater than 1.0, indicating that the high number of crashes are not likely due to random occurrence, but that there may be some unfavorable characteristics of the roadway that contribute to the crash rate. Epps Mill Road also had a severe crash rate of 0.574, which exceeds the statewide average severe crash rate for Urban Major Collectors (0.230). I-24 had a severe crash rate of 0.042, which exceeds the statewide average severe crash rate for Urban Interstates (0.027).

The existing interchange has deficient exit ramp and deceleration lane lengths for I-24 EB and WB, based on the existing warned speed limits.

In addition, the existing Epps Mill Road bridge over I-24 is approaching 60 years of service life and is not wide enough to support other improvements, which would be implemented to address the capacity and safety issues described above.

Purpose

The proposed project would modify the existing I-24 and Epps Mill Road interchange to support planned commercial, residential and school developments within the surrounding area.

The proposed project would implement improvements along Epps Mill Road to address the forecasted poor LOS (LOS F in at least one direction of travel at each intersection within the proposed project area during peak AM and PM periods) during 2048 Future Year No-Build conditions. It is anticipated that the LOS for each intersection would be improved under 2048 Future Year Build conditions, as compared to the No-Build scenario. Please refer to the Capacity Analysis Memorandum in the 06/04/2024 Concept Report (included in the Technical Appendices) for specific LOS at each intersection for the 2028 and 2048 Build and No-Build scenarios.

Existing Epps Mill Road would be modified to address the high crash rate as well as structural and geometric deficiencies along the roadway in order to improve safety and support the current and anticipated growth in traffic volumes within the project area.

The proposed project would modify the length of acceleration and deceleration lanes to meet minimum design standards as needed, based on existing and proposed speed limits for the I-24 entry/exit ramps.

The existing Epps Mill Road bridge over I-24 would be modified to tie into other roadway improvements and meet current TDOT design standards.

Range of Alternatives

Other than the selected design, were any alternative build designs developed for this project? **No**

No-Build	In the development of design solutions that address the needs outlined above and achieve the purpose of the project, TDOT evaluated the potential consequences should the project not be implemented. This option, known as the No-Build alternative, assumed the continuation of current conditions and set the baseline from which the impacts of the selected design were compared. The No-Build Alternative was not selected, as it does not meet the purpose and need of the proposed project.

Public Involvement

Has there been any public involvement for the project? **No**

Project Design

Existing Conditions and Layout

Within the project area, I-24 is classified as an Urban Interstate and consists of four 12-ft lanes (two in each direction) divided by a grassy median, with 4-ft inside shoulders and 10-ft outside shoulders. As I-24 approaches Epps Mill Road, acceleration/deceleration lanes of varying widths are provided for motorists to access the entrance/exit ramps at the Exit 89 interchange with Epps Mill Road. At the intersection with Epps Mill Road the entrance/exits ramps are not signalized and traffic flow is controlled by stop and yield signs. The interchange is a partial cloverleaf configuration, which was necessitated due to the presence of Pearson Cemetery in the southwest quadrant of the interchange.

Epps Mill Road is classified as an Urban Major Collector, consisting of two 10- to 11-ft wide lanes (one lane in each direction, with shoulder widths of 2- to 4-ft. Epps Mill Road widens to the northeast and southwest of the interchange to accommodate 11-ft wide left-turn lanes. An 11-ft right-turn is also accommodated to the southwest of the interchange for motorists turning onto Capital Way.

The Epps Mill Bridge over I-24 is a two-span, steel structure with a concrete cast-in-place deck. The bridge is 300-ft long and has a 32-ft and 6-inch out-to-out width.

SR-2 is classified as an Urban Minor Arterial and consists of two 12-ft lanes (one in each direction) and 2- to 3-ft outside shoulders.

Proposed Project Description

The proposed project would widen Epps Mill Road from the existing two-lane typical section to a three-lane roadway with two, 12-ft wide travel lanes (one in each direction) and one 12-ft wide center turn lane. The widened roadway would have 8-ft shoulders (6-ft paved). The alignment of Epps Mill Road on the west side of the interchange would be shifted north to reduce the curvature near the interchange for the I-24 EB exit. Epps Mill Road would shifted south east of the intersection with Miller Lane/Forbus Drive, near the intersection with SR-2.

The proposed project would realign the I-24 EB and WB entrance and exits ramps. The I-24 EB entrance and exit ramps will be moved west and aligned with Miller Road, to form a single, signalized intersection with Epps Mill Road. At the proposed intersection, the entrance ramp for I-24 EB would consist of a single, 16-ft wide lane with an 8-ft (6-ft paved) outside shoulder and a 6-ft (4-ft paved) inside shoulder and guardrail. The I-24 EB exit ramp would vary from a single, 16-ft lane to three, 12-ft lanes (one left-turn lane, one center lane, and one right-turn lane) with a 12-ft (10-ft paved) outside shoulder and a 6-ft (4-ft paved) inside shoulder and guardrail. South of the proposed intersection, Miller Road would would be improved to three lanes (one 12-ft travel lane in each direction and one NB dedicated left-turn lane).

The I-24 WB entrance and exit ramps would be moved west and realigned to form a single, signalized intersection with Epps Mill Road. The entrance ramp would consist of two lanes narrowing to a single acceleration lane. The exit ramp would begin as a single lane and widen to two lanes (one left-turn lane and one right-turn lane). Along Epps Mill Road, the EB approach would include a dedicated left-turn lane for motorists turning onto the I-24 WB entrance ramp.

In addition, the proposed project would increase the design speed of all I-24 entrance and exit ramps by at least 5 MPH. Along I-24 EB, the existing deceleration lane for the exit onto Epps Mill Road would be lengthened to 550-ft with a 300-ft taper. A length for the acceleration lane from the the entrance ramp was not provided, but the lane would have a 300-ft taper. Along I-24 WB, the existing deceleration lane would be lengthened to 450-ft with a 300-ft taper. The acceleration lane would be lengthened to 850-ft with a 300-ft taper.

To the east of the Epps Mill Road/I-24 interchange, existing intersection at Love's Travel Stop/Miller Lane would be removed. The intersection at Forbus Drive would also be modified and signalized, with the entrance to Love's being moved to Forbus Drive to the north of Epps Mill Road. Miller Lane would also be realigned to intersect Forbus Drive south of Epps Mill Road; however, the realignment of Miller Lane will not be completed as a part of this project or by TDOT, but a part of the private development at 5720 Epps Mill Road. The roadway at the south approach to the new intersection would be renamed as Miller Lane. Both the NB and SB approaches for Forbus Drive/realigned Miller Lane would be altered to three lanes (one lane in each direction with a dedicated right-turn lane).

At the east terminus of the proposed project, the existing three-way intersection of Epps Mill Road with SR-2 would be shifted to the south and reconfigured into a 90 degree intersection. SR-2 would be widened at the proposed intersection to accommodate the addition of a 150-foot long NB dedicated left-turn lane, and a 150-foot SB dedicated right-turn lane. Both of the proposed turn lanes would taper for an additional 330 feet until reducing back down to the single mainline. The proposed widening of SR-2 at this location would also include the addition of a painted, tapered median on both sides of the intersection dividing the NB and SB flows of traffic.

Proposed Typical Section

As described in the Concept Report (06/04/2024), the proposed project would not alter the existing typical section along I-24 EB or WB.

Within the limits of the proposed project, Epps Mill Road would be widened to three, 12-ft wide lanes (two lanes in each direction with a 12-ft center turn lane).

Right-of-Way

Does this project require the acquisition of right-of-way or easements? **Yes**

Right-of-Way Acquisition Table						
Permanent Acquisition					**Temporary Acquisition**	
R.O.W Acquisition	Drainage Easements	Slope Easements	Air Rights	**Total**	Construction Easements	**Total**
28.37	0	0	0	**28.37**	0	**0**

*Measured in acres

An estimated amount of fee-simple acquisition was provided on 04/28/2025, based on the boundary lines from the 03/28/2024 ETSA included in the Concept Report.

Relocations

Will this project result in residential, business or non-profit relocations? No

Changes in Access Control

Will changes in access control permanently impact the functional utility of any adjacent parcels? No

Traffic Control Measures

At this time, are traffic control measures and temporary access information available? No

s Traffic Control information is made available, it will be included in future reevaluation efforts.

Water Resources

Are there any water resources impacted within the project area? **Yes**

Project Name: Interchange at Epps Mill Road/Buchanan Road; Epps Mill Road, From west of Capital Way to SR-2 **PIN:**124683.06

Water Resource Table for NEPA Documentation

Based on: ETSA
Date: 3/29/2024
Table Amounts are based on (choose only one): Estimated extent of resource within ETSA

Water Resources (Non-Wetland)

Label	Type	Latitude	Longitude	Receiving Waters	Quality	Amount (Linear Feet)	Amount (Acres)
STR-1	Intermittent Stream	35.728237	-86.324907	Hurricane Creek	Unassessed	232	0.03
					Total:	232	0

Water Resources (Wetland)*

Label	Type	Latitude	Longitude	Receiving Waters	Quality	Amount (Acres)
WTL-1	Emergent	35.72147	-86.320737	N/A	Low Resource Value	0.01
WTL-2	Emergent	35.722939	-86.32089	N/A	Low Resource Value	0.04
WTL-3	Emergent	35.724615	-86.318577	N/A	Low Resource Value	0.002
					Total:**	0.052

*Unless described otherwise in the NEPA document; all wetlands are presumed to serve the following functions to varying degrees, based on location: wildlife habitat, flood storage, groundwater recharge, nutrient processing, contaminant filtering, and recreation.

**For the purposes of the NEPA document, Amount is assumed to be Permanent Loss.

Note- Features and estimated amounts referenced in this table are based on information available and may change as the project is further refined througout project development.

Throughout the design process, TDOT will endeavor to mitigate impacts to streams, wetlands, or any other jurisdictional water features through avoidance and minimization. Where impacts cannot be avoided or sufficiently minimized, compensatory mitigation for permanent impacts would be accomplished either through permitee-responsible mitigation, mitigation banking, or In-Lieu Fee mitigation to satisfy statutory requirements.

The Environmental Boundaries Report (10/25/2024) and TDOT Ecology's ESR response (11/20/2024) are included in the Technical Appendices.

Species Coordination

U.S. Fish and Wildlife Service (USFWS):

On 10/24/2024, the USFWS responded to the TDOT Ecology Section's request for coordination. In their response, the USFWS confirmed that plant surveys for the federally endangered leafy prairie clover (*Dalea foliosa*) completed on July 27 & 28, 2020 and on September 20, 2024 were negative and therefore, concur that the proposed project is "not likely to adversely affect" the protected plant species. The obligations under section 7 of the Endangered Species Act have been fulfilled.

Correspondence between TDOT and the USFWS is included in the Technical Appendices as part of the EBR (10/25/2024).

Tennessee Wildlife Resources Agency (TWRA):

On 06/20/2024, the TWRA responded to the TDOT Ecology Section's request for coordination. In their response, the TWRA confirmed that the proposed project is not anticipated to adversely affect and federally or state-listed endangered, threatened, or deemed-in-need-of-management species under TWRA's authority.

Correspondence between TDOT and the TWRA is included in the Technical Appendices as part of the EBR (10/25/2024).

Tennessee Department of Environment and Conservation (TDEC):

On 10/09/2024, the TDEC Division of Natural Areas (DNA) responded to the TDOT Ecology Section's request for coordination. In their response, the TDEC-DNA confirmed that their office does not anticipate impacts to rare, threatened, or endangered plant species as a result of the proposed project.

Correspondence between TDOT and the TDEC-DNA is included in the Technical Appendices as part of the EBR (10/25/2024).

Floodplain Management

Flood Zone: Zone X (White) - Area Determined to be Outside the 500-year Floodplain.

The project is not in a Federal Emergency Management Agency (FEMA) floodway, floodplain, or study area, and is located on Flood Insurance Rate Map (FIRM) in Rutherford County, Panels 402 and 404 of 457, Maps # 47149C0402H and 47149C0404H. A portion of the FEMA FIRM is included as an attachment.

Air Quality

Transportation Conformity:

On 11/18/2024, the TDOT Air Quality and Noise Section stated: "This project is in Rutherford County which is in attainment for all regulated criteria pollutants. Therefore, conformity does not apply to this project."

The Air Quality and Noise ESR response is included in the Technical Appendices.

Mobile Source Air Toxics (MSAT):

The Section also stated: "This project qualifies as a categorical exclusion under 23 CFR 771.117 and, therefore, does not require an evaluation of MSATs per FHWA’s 'Interim Guidance Update on Air Toxic Analysis in NEPA Documents' dated January 2023."

The Air Quality and Noise ESR response is included in the Technical Appendices.

Noise

In accordance with FHWA requirements and TDOT's Noise Policy this project is determined to be **Type III**

This project is Type III in accordance with the FHWA noise regulation in 23 CFR 772 and TDOT's noise policy; therefore, a noise study is not needed.

Farmland

Is this project exempt from the provisions of the Farmland Protection Policy Act **Yes**

(FPPA)?FPPA Exemption: Urbanized Area

Section 4(f)

Does this project involve the use of property protected by Section 4(f) (49 USC 303)? **No**

Section 6(f)

Does this project involve the use of property assisted by the L&WCF? **No**

Cultural Resources

Are any Agreements/Exemptions regarding Cultural Resources applicable to this project? **No**

Are NRHP listed or eligible cultural resources within the project Area of Potential Effect (APE)? **No**

Historic/Architectural Concurrence:

Concurrence from the TN State Historic Preservation Office (TN-SHPO) was received on 08/06/2024.

In their response, the TN-SHPO stated: "Considering the information provided, we find that no architectural resources eligible for listing in the National Register of Historic Places will be affected by this undertaking. If project plans are changed please contact this office to determine what further action, if any, will be necessary to comply with Section 106 of the National Historic Preservation Act."

Coordination with the TDOT Historic Preservation Section is included in the Technical Appendices.

Archaeology Concurrence:

Concurrence from the TN State Historic Preservation Office (TN-SHPO) was received on 02/12/2025.

An Archaeological Assessment was prepared for the proposed project and coordinated with the TN-SHPO on 02/12/2025. As a result of the Phase I archaeological survey, two previously identified sites and two new sites were recorded. None of the sites were determined to be eligible for listing on the National Register of Historic Places:

1. Cobb Cemetery (Site 40RD300)
2. Agricultural field (Site 40RD342)
3. Pearson Cemetery
4. Isolated Find 1

In their response, the TN-SHPO stated: "Considering the information provided, we find that no archaeological resources eligible for listing in the National Register of Historic Places will be affected by this undertaking. If project plans are changed or archaeological remains are discovered during project construction, please contact this office to determine what further action, if any, will be necessary to comply with Section 106 of the National Historic Preservation Act."

However, as a result of the Phase 1 archaeology survey, one project commitment was requested by the TDOT Archaeology Section:

"*Avoid Pearson and Cobb Cemeteries with at least a 10-ft buffer.*"

Coordination with the TDOT Archaeology Section is included in the Technical Appendices.

Native American Consultation

Does this project require Native American consultation? **No**

TDOT projects that are not Federal Highway Administration (FHWA) projects per Title 23 U.S.C., do not qualify as FHWA undertakings. Projects that are not FHWA undertakings as defined in 36 CFR 800.16(y), pursuant to Section 106 of the National Historic Preservation Act, do not require Native American Consultation (NAC) to be performed by FHWA. Therefore, NAC will not be performed by TDOT on projects that are not FHWA undertakings. If a TDOT project requires a permit or other federal action, and it is not an FHWA undertaking, the lead federal agency is responsible for conducting NAC under Section 106.

Hazardous Materials

Does the project involve any hazardous material sites? **Yes**

On 11/18/2024, the TDOT Hazardous Materials Section provided the following response: "Based on the Environmental Technical Study Area figures dated 2 May 2024, the project has five known hazardous materials sites located adjacent to the project corridor as follows. Continued avoidance and minimization of these properties is recommended at this time.

1. TDEC UST Facility #5750366, Kwik Stop Market, 6137 Epps Mill Road, Christiana, 37037. This is an inactive facility with three permanently out of use tanks.
2. TDEC UST Facility #5750451, Love's Travel Stop No. 314, 6137 Epps Mill Road, Christiana, 37037. This is an active facility with seven currently in use tanks.
3. TDEC UST Facility #5750055, Crazy J's Fireworks, 6177 Epps Mill Road, Murfreesboro, 37130. This is an inactive facility with three permanently out of use tanks. This site is listed by TDEC as a facility with an environmental related activity that occurred due to a tank closure, a suspected release, or a confirmed release. The case is closed.
4. TDEC UST Facility #5750038, Outpost, 5435 Miller Lane, Christiana, 37037. This is an inactive facility with three permanently out of use tanks. This site is listed twice by TDEC as a facility with an environmental related activity that occurred due to a tank closure, a suspected release, or a confirmed release. Both cases are closed.
5. TDEC UST Facility #5750256, Serve N Go No.19, 5965 Miller Road, Christiana, 37037. This is an active facility with four currently in use and eight permanently out of use tanks. This site is listed twice by TDEC as a facility with an environmental related activity that occurred due to a tank closure, a suspected release, or a confirmed release. Both cases are closed.

Barrett Firearms Manufacturing, 5926 Miller Lane, Christiana, 37037 is listed in the EPA EnviroFacts Hazardous Waste database, but is not within the project footprint."

The TDOT Hazardous Materials ESR response is included in the Technical Appendices.

Multimodal Transportation

Does this project include accommodations for bicycles and pedestrians? **Yes**

On 11/18/2024, the TDOT Office of Active Transportation stated: "This project includes sidewalks along the bridge and pedestrian infrastructure to connect the two truck stops on either side of I-24 per the project information. See TDOT Roadway Design Guidelines Chapter 3 and TDOT Multimodal Policy VII.Procedures.A.1 through 7."

The TDOT Office of Active Transportation ESR response and 2015 Multimodal Policy are included in the Technical Appendices.

Environmental Commitments

Does this project involve any environmental commitments? **Yes**

One environmental project commitment has been requested by the TDOT Archaeology Section. The commitment is shown on the Green Sheet and on Page 14 of this document.

Additional Environmental Issues

Are there any additional environmental concerns involved with this project? **No**

Conclusion

Review Determination

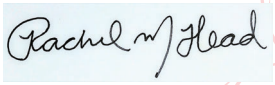
This solely state-funded highway project qualifies for an environmental evaluation under the Tennessee Department of Transportation's current environmental procedures. This evaluation does not require Federal Highway Administration approval and has been documented in a Tennessee Environmental Evaluation Report.

Reference Material

All source material used in support of the information and conclusions presented in this document are included in the technical appendices. The technical appendices are compiled as a separate document and include information on funding, agency concurrence, applicable agency agreements, special commitment support, project plans, technical reviews, reports and any other additional information.

Preparer Certification

By signing below, you certify that this document has been prepared in compliance with all applicable environmental laws, regulations and procedures. You can attest to the document's quality, accuracy, and completeness, and that all source material has been compiled and included in the technical appendices.



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Date: 2025.05.13 12:55:11 -05'00'

Document Preparer

Acronyms

AADT	Annual Average Daily Traffic
ADA	Americans with Disabilities Act
APE	Area of Potential Effect
BMP	Best Management Practice
CAA	Clean Air Act
CE	Categorical Exclusion
CFR	Code of Federal Regulations
CMAQ	Congestion Mitigation and Air Quality
DEIS	Draft Environmental Impact Statement
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
EPH	Ephemeral Stream
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
FPPA	Farmland Protection Policy Act
GIS	Geographic Information System
IAC	Interagency Consultation
LWCF	Land and Water Conservation Fund
LOS	Level of Service
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MPO	Metropolitan Planning Organization
MSAT	Mobile Source Air Toxics
NEPA	National Environmental Policy Act
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
PCE	Programmatic Categorical Exclusion
PIN	Project Identification Number
PM	Particulate Matter
PND	Pond
RCRA	Resource Conservation and Recovery Act
ROD	Record of Decision
ROW	Right-of-Way
RPO	Rural Planning Organization
SIP	State Implementation Plan
SNK	Sinkhole
SR	State Route
STIP	State Transportation Improvement Program
STR	Stream
TDEC	TN Department of Environment and Conservation
TDOT	Tennessee Department of Transportation
TIP	Transportation Improvement Program
SHPO	State Historic Preservation Office
TPO	Transportation Planning Organization
TVA	Tennessee Valley Authority
TWRA	Tennessee Wildlife Resources Agency
USACE	U.S. Army Corps of Engineers
USDOT	U.S. Department of Transportation
USFWS	U.S. Fish and Wildlife Service
UST	Underground Storage Tank
VMT	Vehicle Miles Traveled
VPD	Vehicles Per Day
WWC	Wet Weather Conveyance

Technical Appendices

Tennessee Environmental Evaluation Report

Interstate 24

Interchange at Epps Mill Road/Buchanan Road & Epps Mill Road, From west of Capital Way to SR-2 (US-41)

Rutherford County

TN TDOT Department of Transportation
U.S. Department of Transportation Federal Highway Administration
SEMS Statewide Environmental Management System

Project Development

NATIONAL BRIDGE INVENTORY
TENNESSEE INVENTORY AND APPRAISAL REPORT

TN TDOT Department of Transportation

BRIDGE ID NUMBER: **75I00240041**
BRIDGE OWNER: **STATE OF TENNESSEE**
FIPS CODE: **00000**
ROAD NAME: **EPPS MILL RD.**
CROSSING: **EPPS MILL RD / I24**
LOCATION: **5.2 MI NE JCT SR10&SR269**

COUNTY: **RUTHERFORD**
ROUTE: **01044**
SPECIAL CASE: **0**
COUNTY SEQUENCE: **1**
LOG MILE: **0.48**
SUFFICIENCY RATING: **60.6**

IDENTIFICATION

(16a,b) LATITUDE:	**N**	**35.72240**	**DEGREES**
(17a,b) LONGITUDE:	**W**	**86.32037**	**DEGREES**
(98a) BORDER BRIDGE STATE CODE:			**N/A**
(98b) PERCENT SHARE:			**00**
(99) BORDER BRIDGE NUMBER:			**NOT APPLICABLE**

BRIDGE TYPE AND MATERIAL

(43a) MAIN SPAN MATERIAL: **STEEL CONTINUOUS**
(44a) APPR SPAN MATERIAL: **NOT APPLICABLE**

(45) NUMBER OF MAIN SPANS: **2**
(46) NUMBER OF APPROACH SPANS: **0**
(107) TYPE OF DECK: **CONCRETE CAST-IN-PLACE**
(108) TYPE OF WEARING SURFACE AND DECK PROTECTION:
A) TYPE OF SURFACE: **ASPHALT**
B) TYPE MEMBRANE: **NONE**
C) TYPE PROTECTION: **NONE**

AGE AND SERVICE

(27) YEAR THE BRIDGE WAS BUILT: **1968**
(106) YEAR THE BRIDGE WAS REHABILITATED: **N/A**
(42a) SERVICE ON BRIDGE: **HIGHWAY**
(42b) UNDER BRIDGE: **HIGHWAY**
(28a) NUMBER OF LANES CARRIED BY BRIDGE: **2**
(28b) NUMBER OF LANES UNDER THE BRIDGE: **4**

GEOMETRIC DATA

(48) MAXIMUM SPAN LENGTH: **149.9 FT**
(49) TOTAL BRIDGE LENGTH: **299.9 FT**
(50a) LEFT SIDEWALK WIDTH: **0.0 FT**
(50b) RIGHT SIDEWALK WIDTH: **0.0 FT**
(51) BRIDGE CURB TO CURB WIDTH: **27.9 FT**
(52) BRIDGE OUT TO OUT WIDTH: **32.5 FT**
(32) APPROACH ROADWAY (W/ SHLDS) WIDTH: **31.8 FT**
(33) BRIDGE MEDIAN: **NO MEDIAN**
(34) BRIDGE SKEW: **10 DEGREES**
(35) BRIDGE FLARE: **NO FLARE**
(520) MIN VERTICAL CLEARANCE OVER RD: **100 FT**
(47) MIN HORIZONTAL CLEARANCE ON ROADWAY: **27.9 FT**
(54a) VERT UNDERCLR: **HIGHWAY BENEATH BRIDGE**
(54b) MIN VERTICAL UNDERCLEARANCE: **16.17 FT**
(55a) HORZ UNDERCLR: **HIGHWAY BENEATH BRIDGE**
(55b) MIN HORZ UNDERCLR ON RIGHT: **36.09 FT**
(56) MIN HORZ UNDERCLR ON LEFT: **52.17 FT**

NAVIGATION DATA

(38) NAV CONTROL: **NOT APPLICABLE**
(39) NAVIGATION VERTICAL CLEARANCE: **N/A**
(116) LIFT BRIDGE VERT CLEARANCE: **N/A**
(40) NAVIGATION HORZ CLEARANCE: **N/A**

PUBLICATION DATE
11-Mar-24

CLASSIFICATION

(112) MEETS NBIS BRIDGE LENGTH: **YES**
(104) NATIONAL HIGHWAY SYSTEM: **NOT A NHS ROUTE**
(26) FUNCTIONAL CLASS: **URBAN COLLECTOR**
(101) PARALLEL BRIDGE: **NO PARALLEL BRIDGE**
(102) TRAFFIC DIR: **2-WAY TRAFFIC**
(103) TEMPORARY BRIDGE: **NOT APPLICABLE**
(110) NATIONAL TRUCK ROUTE: **NOT ON TRUCK NETWORK**
(37) HISTORICAL CLASS: **BRIDGE IS NOT ELIGIBLE FOR THE NATIONAL REGISTER**

CONDITION RATINGS

(58) DECK: **6**
(59) SUPERSTRUCTURE: **6**
(60) SUBSTRUCTURE: **7**
(61) STREAM CHANNEL AND CHANNEL PROTECTION: **N**
(62) CULVERT CONDITION (IF APPLICABLE): **N**

DESIGN LOAD AND WEIGHT POSTING

(31) DESIGN LOADING: **H-20-44**
WEIGHT POSTING (2 AXLE VEHICLES): **ALL LEGAL LOADS**
WEIGHT POSTING (3 OR MORE AXLES): **ALL LEGAL LOADS**
(70) BRIDGE POSTING CODE: **5**
(41) WT POSTING STATUS: **WEIGHT POSTED**

APPRAISAL

(67) STRUCTURAL EVALUATION: **5**
(68) DECK GEOMETRY: **4**
(69) UNDERCLEARANCE RATING: **5**
(71) WATERWAY ADEQUACY: **N**
(72) APPROACH ROADWAY ALIGNMENT: **8**
(36) TRAFFIC SAFETY FEATURES: **011N**
(113) SCOUR CONDITION RATING: **N**

RECOMMENDED IMPROVEMENTS

(75) TYPE OF WORK: **BRIDGE DECK REPAIR**
(76) LENGTH OF BRIDGE IMPROVEMENT: **299.9 FT**
(94) BRIDGE IMPROVEMENT COST: **$443,000.00**
(95) ROADWAY IMPROVEMENT COST: **$45,000.00**
(96) TOTAL PROJECT COST: **$665,000.00**
(97) YEAR OF IMPROVEMENT COST ESTIMATE: **2022**

INSPECTION DATES

(90) DATE OF LAST REGULAR INSPECTION: **6/14/2022**
(91) REGULAR INSPECTION FREQUENCY (MONTHS): **24**
(93b) DATE OF LAST UNDERWATER INSP (MO/YR): **N/A**
(92b) UNDERWATER INSP FREQUENCY (MONTHS): **N00**
(93c) DATE OF SPECIAL INSPECTION (MO/YR): **N/A**
(92c) SPECIAL INSP FREQUENCY (MONTHS): **N00**

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TN TDOT Department of Transportation

Asset **#75I00240041**(Routine)

County: 75 - Rutherford, **Route:** 01044, **Log mile:** 0.480

Team Lead: Carlos Goncalves, **Inspection Date:** 06/14/2024

Latitude:35.72240, Longitude:-86.32037

Region 03, 75 - Rutherford County

Team Leader: Carlos Goncalves

Inspectors: Maxwell Benefield, Daryl Ballard, Seth Mechling

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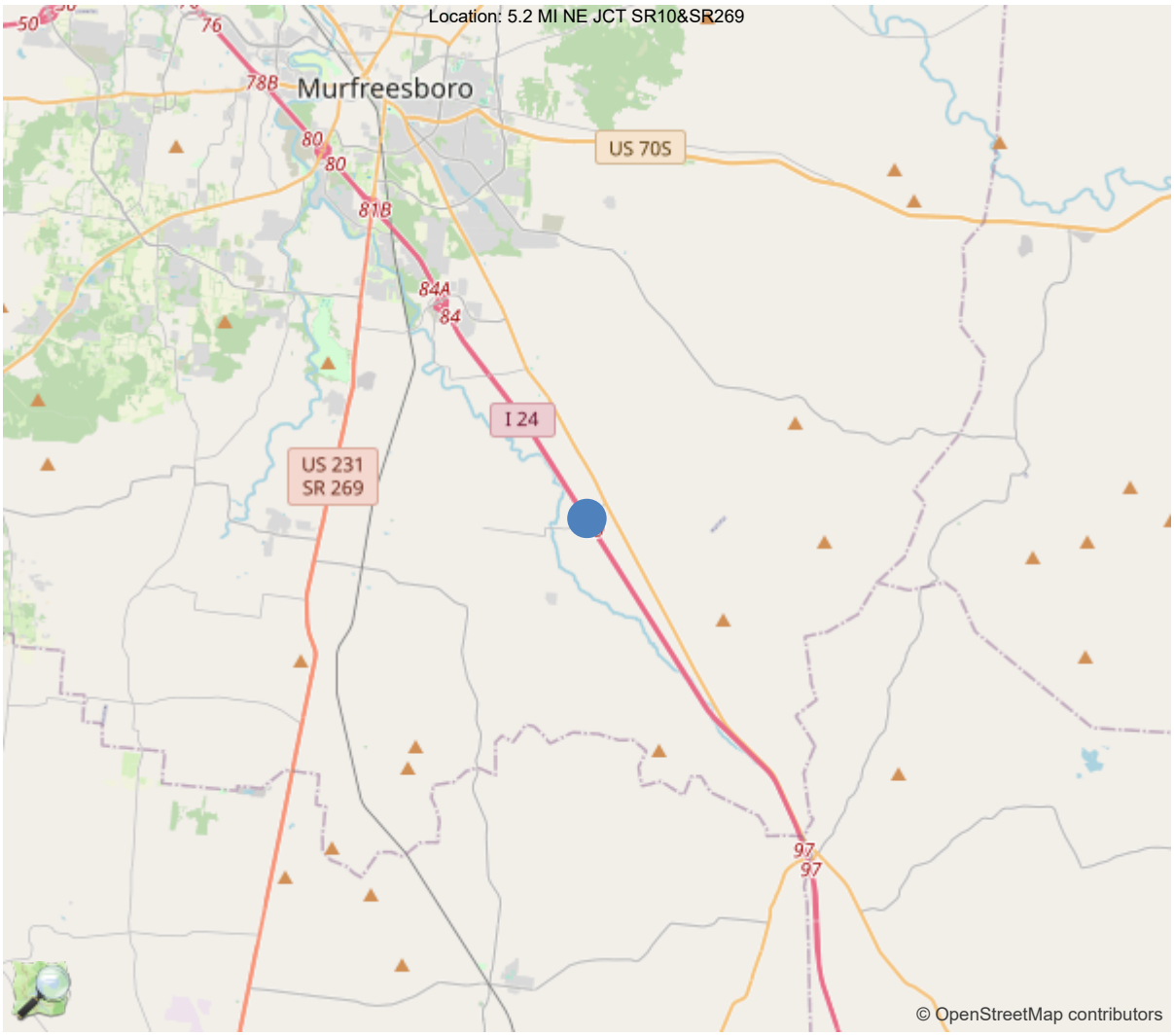

EPPS MILL RD. Crossing I24

35.72240, -86.32037

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TN TDOT Department of Transportation

Asset **#75I00240041** (Routine)

Region: 03, **County:** 75 - Rutherford

Team Lead: Carlos Goncalves, **Inspection Date:** 06/14/2024

90 - LAST INSPECTION DATE	06/14/2022
10 - MIN. V.C. OVER DECK (ROADWAY + SHOULDERS)	99.99 FT.
520 - MIN. V.C. OVER DECK (EXCLUDES SHOULDERS)	99.99 FT.

36 - TRAFFIC SAFETY FEATURES

Br. Rail	Trans.	Appr. Rail	Terminal	SPEED LIM.
0	1	1	N	

41 - STRC OPEN/CLOSED/POSTED	P
58 - DECK	6
59 - SUPERSTRUCTURE	6
60 - SUBSTRUCTURE	7
61 - CHANL/CHANL PROTECTION	N
62 - CULVERT AND RETAIN WALL	N
71 - WATERWAY ADEQUACY	N
72 - APPROACH RDWY ALIGNMENT	8
521 - OVERALL CONDITION	2 - Fair

16 - LATITUDE	17 - LONGITUDE
35.722400	-86.320367

Carlos Goncalves

TEAM LEADER SIGNATURE

N NOT APPLICABLE

9 EXCELLENT CONDITION

8 VERY GOOD CONDITION - NO PROBLEMS NOTED.

7 GOOD CONDITION - SOME MINOR PROBLEMS.

6 SATISFACTORY CONDITION - MINOR DETERIORATION OF STRUCTURAL ELEMENTS.

5 FAIR CONDITION - ALL PRIMARY STRUCTURAL ELEMENTS ARE SOUND BUT MAY HAVE MINOR SECTION LOSS, CRACKING, SPALLING OR SCOUR.

4 POOR CONDITION - ADVANCED SECTION LOSS, DETERIORATION, SPALLING OR SCOUR.

3 SERIOUS CONDITION - LOSS OF SECTION, DETERIORATION, SPALLING OR SCOUR HAVE SERIOUSLY AFFECTED PRIMARY STRUCTURAL COMPONENTS. LOCAL FAILURES ARE POSSIBLE. FATIGUE CRACKS IN STEEL OR SHEAR CRACKS IN CONCRETE MAY BE PRESENT.

2 CRITICAL CONDITION - ADVANCED DETERIORATION OF PRIMARY STRUCTURAL ELEMENTS. FATIGUE CRACKS IN STEEL OR SHEAR CRACKS IN CONCRETE MAY BE PRESENT OR SCOUR MAY HAVE REMOVED SUBSTRUCTURE SUPPORT. UNLESS CLOSELY MONITORED IT MAY BE NECESSARY TO CLOSE THE BRIDGE UNTIL CORRECTIVE ACTION IS TAKEN.

1 "IMMINENT" FAILURE CONDITION - MAJOR DETERIORATION OR SECTION LOSS PRESENT IN CRITICAL STRUCTURAL COMPONENTS OR OBVIOUS VERTICAL OR HORIZONTAL MOVEMENT AFFECTING STRUCTURAL STABILITY. BRIDGE IS CLOSED TO TRAFFIC BUT CORRECTIVE ACTION MAY PUT IT BACK IN LIGHT SERVICE.

0 FAILED CONDITION - OUT OF SERVICE AND BEYOND CORREC

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TN TDOT Department of Transportation

Asset **#75I00240041**(Routine)

County: 75 - Rutherford, **Route:** 01044, **Log mile:** 0.480

Team Lead: Carlos Goncalves, **Inspection Date:** 06/14/2024

IDENTIFICATION	
(1) State Names	47 - Tennessee
(8) Structure Number	75I00240041
(5) Inventory Route	1
(2) Highway Agency District	Region 3
(3) County Code	75 - Rutherford
(4) Place Code	00000
(6) Features Intersected	I0024
(7) Facility Carried	NFA 1044 (SA 7516)
(9) Location	5.2 MI NE JCT SR10&SR269
(11) Mile Point	0.480 mi
(12) Base Highway Network	No
(13) LRS Inventory Rte & Subrte	
(16) Latitude	35.722400
(17) Longitude	-86.320367
(98) Border Bridge State Code	
(99) Border Bridge Structure No.	
STRUCTURE TYPE AND MATERIAL	
(43) Main Structure Type	42
Material	4 - Steel continuous
Type	2 - Stringer/Multi-beam or girder
(44) Approach Structure Type	00
Material	0 - Other / None
Type	0 - Other / None
(45) No. of Spans in Main Unit	2
(46) No. of Approach Spans	0
(107) Deck Structure Type	1 - Concrete Cast-in-Place
(108) Wearing Surface/Protective System	
Type of Wearing Surface	6 - Bituminous
Type of Membrane	0 - None
Type of Deck Protection	0 - None
AGE AND SERVICE	
(27) Year Built	1968
(106) Year Reconstructed	0
(42) Type of Service	11
On	1 - Highway
Under	1 - Highway, with or without pedestrian
(28) Lane	
On	2
Under	4
(29) Average Daily Traffic	3334
(30) Year of ADT	2021
(109) Truck ADT	3 %
(19) Bypass, Detour Length	10 mi
GEOMETRIC DATA	
(48) Length of Maximum Span	149.9 ft
(49) Structure Length	299.9 ft
(50) Curb or Sidewalk Width	
Left	0.0 ft
Right	0.0 ft
(51) Bridge Roadway Width Curb to Curb	27.9 ft
(52) Deck Width Out to Out	32.5 ft
(32) Approach Roadway Width (W/Shoulders)	31.8 ft
(33) Bridge Median	0 - No median
(34) Skew	80 Deg
(35) Structure Flared	0 - No flare
(10) Inventory Route Min Vert Clear	99.99 ft
(47) Inventory Route Total Horiz Clear	27.9 ft
(53) Min Vert Clear Over Bridge Rdwy	99.99 ft
(54) Min Vert Underclear	16.17 ft
Ref:	
(55) Min Lat Underclear RT	36.1 ft
Ref:	
(56) Min Lat Underclear LT	52.2 ft
NAVIGATION DATA	
(38) Navigation Control	N - Not applicable, no waterwa
(111) Pier Protection	
(39) Navigation Vertical Clearance	0.0 ft
(116) Vert-Lift Bridge Nav Min Vert Clear	ft
(40) Navigation Horizontal Clearance	0.0 ft

CLASSIFICATION	
(112) NBIS Bridge Length	Y
(104) Highway System	0
(26) Functional Class	17 - Urban Collector
(100) Defense Highway	0 - The inventory route is not
(101) Parallel Structure	N - No parallel structure exis
(102) Direction of Traffic	2 - way traffic
(103) Temporary Structure	
(105) Federal Lands Highways	0 - N/A
(110) Designated National Network	0 - The inventory route is not
(20) Toll	3 - On free road. The structu
(21) Maintain	1 - State Highway Agency
(22) Owner	1 - State Highway Agency
(37) Historical Significance	5 - Bridge is not eligible for
CONDITION	
(58) Deck	6
(59) Superstructure	6
(60) Substructure	7
(61) Channel & Channel Protection	N
(62) Culverts	N
LOAD RATING AND POSTING	
(31) Design Load	4 - M 18 / H 20
(63) Operating Rating Method	8
(64) Operating Rating	
Type	8 - Load and Resistance Factor Rating (LRF
Rating	23.98
(65) Inventory Rating Method	8 - Load and Resistance Factor
(66) Inventory Rating	
Type	
Rating	18.47
(70) Bridge Posting	5 - Equal to or above legal loads
(41) Structure Open/Posted/Closed	P - Posted for load (may inclu
APPRAISAL	
(67) Structural Evaluation	5
(68) Deck Geometry	4
(69) Clearances, Vertical/Horizontal	5
(71) Waterway Adequacy	N
(72) Approach Roadway Alignment	8
(36A) Bridge Railings	0 - Inspected feature does not meet
(36B) Transitions	1 - Inspected feature meets current
(36C) Approach Guardrail	1 - Inspected feature meets current
(36D) Approach Guardrail Ends	N - Not applicable or a safety feat
(113) Scour Critical Bridges	N - Bridge not over waterway.
PROPOSED IMPROVEMENTS	
(75) Type of Work	36 - Bridge deck rehabilitatio
(76) Length of Structure Improvement	299.9 ft
(94) Bridge Improvement Cost	$ 443
(95) Roadway Improvement Cost	$ 45
(96) Total Project Cost	$ 665
(97) Year of Improvement Cost Estimate	2022
(114) Future ADT	5334
(115) Year of Future ADT	2042

INSPECTIONS *

(90) Inspection Date			06/14/2024
(91) Frequency			24
(92) Critical Feature Inspection	Done	Freq. (Mon)	Date
A: Fracture Critical Detail	No		
B: Underwater Inspection	No		
C: Other Special Inspection	No		

* The inspection date and frequency information in this box contains the current NBI date and frequency information. Please refer to the report header for the date this inspection was conducted.

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TN TDOT Department of Transportation

Asset **#75I00240041**(Routine)
County: 75 - Rutherford, **Route:** 01044, **Log mile:** 0.480
Team Lead: Carlos Goncalves, **Inspection Date:** 06/14/2024

PERFORMANCE EVALUATION

Time of Day Inspected: 11:02 AM
Weather Conditions: SUNNY 88
Vehicles Observed: ALL TYPES

LIVE LOAD BEHAVIOR

Sub Horiz./ Vert. Defl	(No)	
Sub Vibration	(No)	
Super Horiz./ Vert. Defl	(Yes)	
Super Vibration	(No)	

APPROACH

Alignment	(Good)	
Pavement	(Fair)	AC PATCHES AND POTHOLES AT BOTH ENDS
Embankment	(Good)	
Approach Drains	(Good)	MOD DEBRIS BUILD-UP 'A' END RT.

TRAFFIC SAFETY FEATURES

Bridge Railing Rating	(Good)	SPAN #1 LT.-SPALL, LGT SURFACE SCALE
Transitions Rating	(Good)	
Guardrail Rating	(Good)	A END RIGHT - IMPACT DAMAGE

SIGNS POSTED ON ROUTE

Paddleboards	No
Vertical Clearance (<14'-6")	No
Posted Height	
Narrow Bridge Signs	No
One Lane Bridge Signs	No
Other Signs or Plaques	

Weight Limit Posted	Yes
Gross	40 Tons
Single-unit Vehicle	Tons
Multi-unit Vehicle	Tons
564 Assigned Bridge Name	

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County: 75 - Rutherford, **Route:** 01044, **Log mile:** 0.480

Team Lead: Carlos Goncalves, **Inspection Date:** 06/14/2024

DECK

Wearing Surface Type	Asphalt	**Wearing Surface Depth**	10

Wearing Surface	(Fair)	SP 2--AC PATCHES DOWN CENTERLINE
Deck - Structural Condition	(Fair)	NUMEROUS MAP CRACKS W/EFF, RANDOM SPALLS
Curbs	(Good)	
Expansion Joints	(Poor)	MOD DEBRIS BUILD-UP, ANGLED UP 90 DEGRES @ ENDS TRAPPING DEBRIS

SUPERSTRUCTURE

Bearing Devices	(Fair)	MOD CORR ABUT #1 & #2. ALSO BEARINGS HAVE A TILT UPSTATION OF 2"-2-1/2" @ AB #1, BRG. 'A' @ BENT-LOOSE NUT
Girders	(Fair)	LGT CORR & PITT ON BTM FLANGES, IMPACT DAMAGE- BM 'D' SPAN #2 REPAIRED 2014
Diaphragms	(Good)	IMPACT DAMAGE @ BAY 'C' SPAN #2 REPAIRED 2014
Trusses - Bracing	(Good)	INTERMEDIATE SPANS #1 & #2
Superstructure Paint	(Fair)	FLAKING & AREAS OF ACTIVE CORROSION
Alignment of Members	(Good)	

TEXTURE COAT

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TN TDOT Department of Transportation

Asset **#75I00240041**(Routine)

County: 75 - Rutherford, **Route:** 01044, **Log mile:** 0.480

Team Lead: Carlos Goncalves, **Inspection Date:** 06/14/2024

ABUTMENTS

Abutment Caps	(Good)	ABUT. #1 & #2-VERT., DIAG, HORIZ. CRACKS UP TO 1/16" OPEN, SPALLS; ABUT 1--DELAM
Abutment Breastwall	(Good)	ABUT #1 & #2-VERT. CRACKS UP TO 1/16" OPEN WITH EFF.
Abutment Wings	(Good)	MAP CRACKS WITH EFF.
Abutment Backwall	(Good)	1/16” VERTICAL CRACKS, ABUTMENT #2 - MAP CRACKING W/EFF.
Abutment Plumb	(Good)	
Abutment Piles	(Not Visible)	
Abutment Embankment	(Good)	
Abutment Bearing Surface	(Good)	
Abutment Slope Paving	(Good)	

BENTS

Bent Caps	(Good)	
Bent Columns	(Good)	
Bent Plumb	(Good)	
Bent Footing	(Not Visible)	
Bent Bearing Surface	(Good)	

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Inspection Team's Summary

The 2 span WPG bridge on Epps Mill Road over I0024 was inspected and found to be in overall FAIR condition.

Bridge is posted for 40 tons. Approach traffic safety features are good and standard.

Approach alignment and embankment are good. Approach pavement is fair with a/c patches at both ends.

The asphalt-wearing surface is fair with a/c patches in span #2. The strip seal joints are poor with moderate-heavy debris, corrosion and light section loss. Joints are angled up 90 degrees at ends which is trapping debris in joint. The underside of the deck is fair with numerous map cracks with efflorescence. The bridge rails are good. The current Deck condition rating is Fair (6).

Girders are fair due to light corrosion and pitting on bottom flanges, and impact damage repairs on beam ‘D’ span #2. Bearings are fair at abutment #1 and #2 with moderate corrosion and 2" to 2.5" of tilt up station. The current Superstructure condition rating is Fair (6).

Abutments are good. The bent cap and columns are good. The current Substructure condition rating is Good (7).

The underpass safety features are good.

General Inspection Comment

HQ notes to TL

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County: 75 - Rutherford, **Route:** 01044, **Log mile:** 0.480

Team Lead: Carlos Goncalves, **Inspection Date:** 06/14/2024

ELEMENTS	DESCRIPTION	UNITS	TOTAL	CS1	CS2	CS3	CS4
12	Re Concrete Deck	SF	9741	5795	3946	0	0
1080	Delamination/Spall/Patched Area	SF	50	0	50	0	0
1130	Cracking (RC and Other)	SF	3896	0	3896	0	0
510	Wearing Surfaces	SF	8340	7340	1000	0	0
3210	Delamination/Spall/Patched Area/Pothole (Wearing Surfaces)	SF	1000	0	1000	0	0
(12) Element record added 2016-06-06.							
(1080-12) Element record added 7/14/2020							
(510-12) Element record added 2016-06-06.							
107	Steel Opn Girder/Beam	LF	1201	951	200	50	0
1000	Corrosion	LF	250	0	200	50	0
515	Steel Protective Coating	SF	15613	0	0	15313	300
3440	Effectiveness (Steel Protective Coatings)	LF	15613	0	0	15313	300
(107) Element record added 2016-06-06.							
(1000-107) Element record added 2016-06-29.							
(515-107) Element record added 2016-06-06.							
205	Re Conc Column	EA	2	2	0	0	0
(205) Element record added 2016-06-06.							
215	Re Conc Abutment	LF	66	34	32	0	0
1080	Delamination/Spall/Patched Area	LF	2	0	2	0	0
1130	Cracking (RC and Other)	LF	30	0	30	0	0
(215) Element record added 2016-06-06.							
(1080-215) Element record added 2016-06-29.							
234	Re Conc Pier Cap	LF	30	26	4	0	0
1130	Cracking (RC and Other)	LF	4	0	4	0	0
(234) Element record added 2016-06-06.							
303	Assem Jnt With Seal	LF	66	0	0	0	66
2350	Debris Impaction	LF	66	0	0	0	66
(303) Element record added 2016-06-06.							
(2350-303) Element record added 2016-06-29.							
311	Moveable Bearing	EA	8	0	8	0	0
1000	Corrosion	EA	7	0	7	0	0
1020	Connection	EA	1	0	1	0	0

TN TDOT Department of Transportation

Asset **#75I00240041**(Routine)

County: 75 - Rutherford, **Route:** 01044, **Log mile:** 0.480

Team Lead: Carlos Goncalves, **Inspection Date:** 06/14/2024

ELEMENTS	DESCRIPTION	UNITS	TOTAL	CS1	CS2	CS3	CS4
515	Steel Protective Coating	SF	16	16	0	0	0
(311) Element record added 2016-06-06.							
(1000-311) Element record added 2016-06-29.							
(1020-311) Element record added 2016-06-29.							
(515-311) Element record added 2016-06-06.							
313	Fixed Bearing	EA	4	4	0	0	0
515	Steel Protective Coating	SF	8	8	0	0	0
(313) Element record added 2016-06-06.							
(515-313) Element record added 2016-06-06.							
331	Re Conc Bridge Railing	LF	600	599	0	1	0
1080	Delamination/Spall/Patched Area	LF	1	0	0	1	0
(331) Element record added 2016-06-06.							
(1080-331) Element record added 2016-06-29.							

TN TDOT Department of Transportation

Asset **#75I00240041**(Routine)
County: 75 - Rutherford, **Route:** 01044, **Log mile:** 0.480
Team Lead: Carlos Goncalves, **Inspection Date:** 06/14/2024

Equipment List

General Inspection

_____ Pocket knife
_____ Sounding/chipping hammer
_____ Chain drag
_____ Range pole
Yes 25' rod - depth and clearance

Visual Aid

_____ Binoculars
_____ Flashlight
_____ Magnifying glass
_____ Hand mirror

Cleaning

_____ Wisk broom
_____ Wire brush
_____ Flat bladed screwdriver
_____ Hand shovel
_____ Penetrating oil (WD-40, etc.)

Tools For Access

_____ Ladders
_____ Rope
_____ Waders
_____ Machete or bush axe

Comment

Reach-All Approval and Comments

Tools For Measuring

_____ Masonry/Wood Ruler
_____ 6’ Pocket Tape
Yes 25’ and 100’ Tape
_____ Calipers
Yes Thermometer
_____ Carpenter’s Level
_____ String and Weighted line (plumb bob)

Special Purpose Equipment

_____ Reach All
_____ Bucket Truck
_____ Traffic control
_____ Boat
_____ Sonar depth finder
_____ Increment borer
_____ Survey equipment
_____ Safety Harness
_____ Climbing equipment
_____ Dye penetrant
_____ Drone
_____ Air Meter

Special Purpose Equipment

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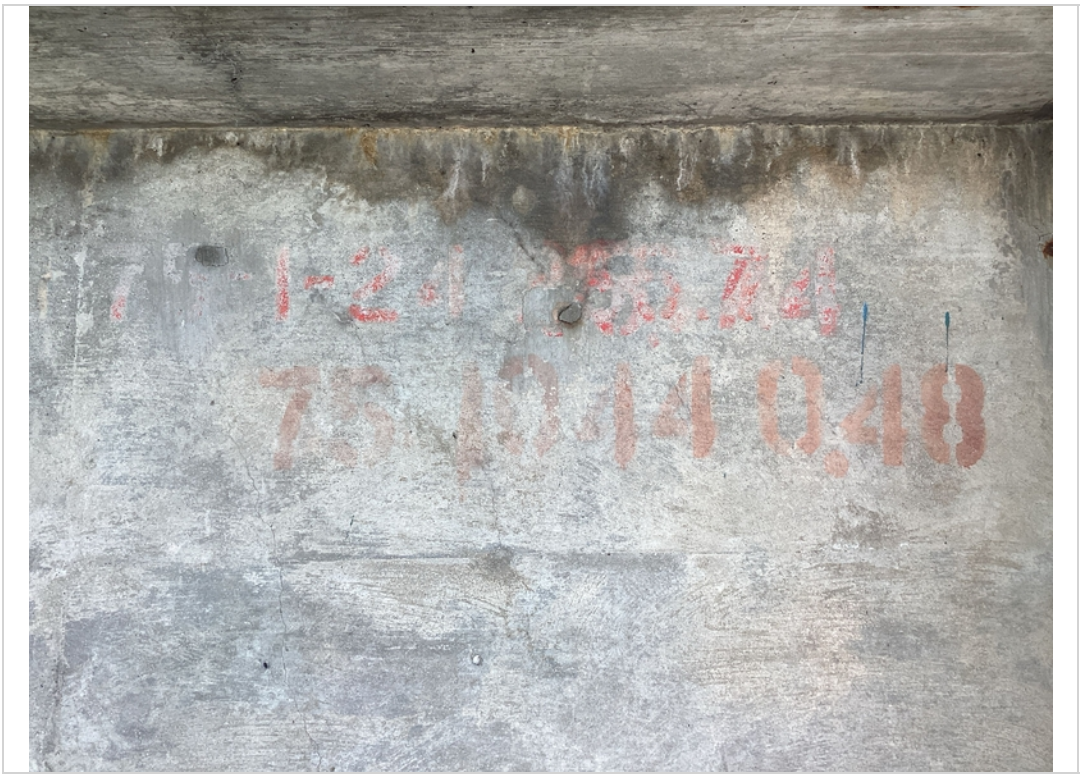

Bridge number abutment 1 Lt. side

Left side view

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Right side view

B approach weight posted sign

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A approach weight posted sign

Elevation Lt Side

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Elevation Rt Side

A approach

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B approach

A approach pavement A/C patches

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TN TDOT Department of Transportation

Asset **#75I00240041**(Routine)
County: 75 - Rutherford, **Route:** 01044, **Log mile:** 0.480
Team Lead: Carlos Goncalves, **Inspection Date:** 06/14/2024

A approach pavement pothole

B approach wearing surface left side pothole

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B approach wearing surface area of map cracking full length

A approach Rt. side guardrail damage

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View along deck

Span 2 near B approach area of small potholes over A/C patches

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Span 1 near A approach 1/8" open longitudinal crack

A approach wearing surface A/C patches

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Bottom of Deck Span 1

Spall in Bot Deck Bay 2 Span 1

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Bottom of Deck Span 2

Bridge parapet right side near B approach joint area of delamination

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Bridge parapet left side near A approach joint area of delamination

Bridge parapet right side near A approach joint spall with exposed steel

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A approach joint filled with light debris

B approach joint filled with light debris

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Abutment 1 moderate corrosion on bearings

Bent 1 Lt. side loose nut at bearing A

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Abutment 2 bearings B - D moderate corrosion

Abutment 1 cap random hairline cracks w/EFF. throughout

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Abutment 1 cap Lt. side area of delamination

Abutment 1 cap Lt. side spall

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Abutment 2 cap Rt. Side spall

Abutment 2 cap random hairline cracks throughout

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Abutment 2 cap map cracking

Abutment 2 cap 1/16" vertical cracks throughout

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Abutment 1 breastwall Random hairline cracks w/EFF. Throughout

Abutment 1

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Abutment 2

Abutment 1 Lt. wing map cracks w/EFF.

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Abutment 1 Rt. Wing map cracks w/EFF.

Abutment 1 backwall Lt. side 1/16" vertical crack

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Abutment 1 backwall Rt. Side 1/16" vertical crack

Abutment 2 Rt. Side backwall map cracking w/EFF

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Abutment 2 backwall Lt. side 1/16" vertical crack

Bent 1 frontside

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TN TDOT Department of Transportation

Asset **#75I00240041**(Routine)

County: 75 - Rutherford, **Route:** 01044, **Log mile:** 0.480

Team Lead: Carlos Goncalves, **Inspection Date:** 06/14/2024

Bent 1 backside

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TN TDOT Department of Transportation

Asset **#75I00240041**(Routine)
County: 75 - Rutherford, **Route:** 01044, **Log mile:** 0.480
Team Lead: Carlos Goncalves, **Inspection Date:** 06/14/2024

Maintenance Recommendations

525 - Repair List # N 523 - Repair List Add Date _____ 524 - Repair List Revise Date 6/14/2022

Date Added	Recommendation	Priority
06/22/2016	CLEAN EXPANSION JOINTS AT BOTH ENDS	
06/22/2016	REPAIR DETERIORATING DECK AREAS	
06/22/2016	CLEAN & PAINT ALL STRUCTURAL STEEL	
06/14/2022	REPAIR APPROACH PAVEMENT @ BOTH ENDS.	2
06/22/2016	EXTEND EXPANSION JOINTS OUT BEYOND BRIDGE RAIL	
06/09/2020	REPAIR JOINT ARMOR @ 'A' & 'B' ENDS	1

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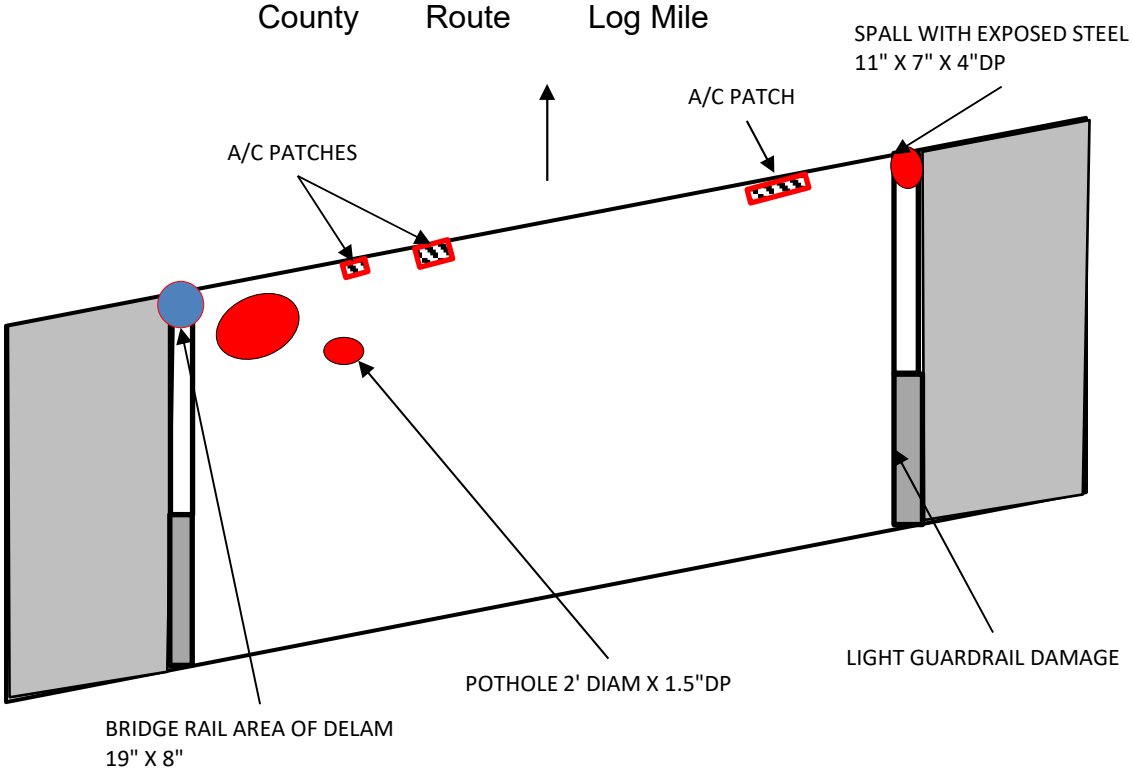
Approach 'A'

Date 6/14/2024
MB

Bridge Location No. 75 (County) 1044 (Route) 0.48 (Log Mile)



PAVEMENT	FAIR	AC PATCHES; POTHOLE
EMBANKS	GOOD	
DRAINS	FAIR	MOD. DEBRIS BLD-UP-RT SIDE
G-RAILS	GOOD	LIGHT DAMAGE
BR RAILS	GOOD	LIGHT SCALE, AREA OF DELAM., SPALL WITH EXPOSED STEEL

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Approach 'B'

Date 6/14/2024
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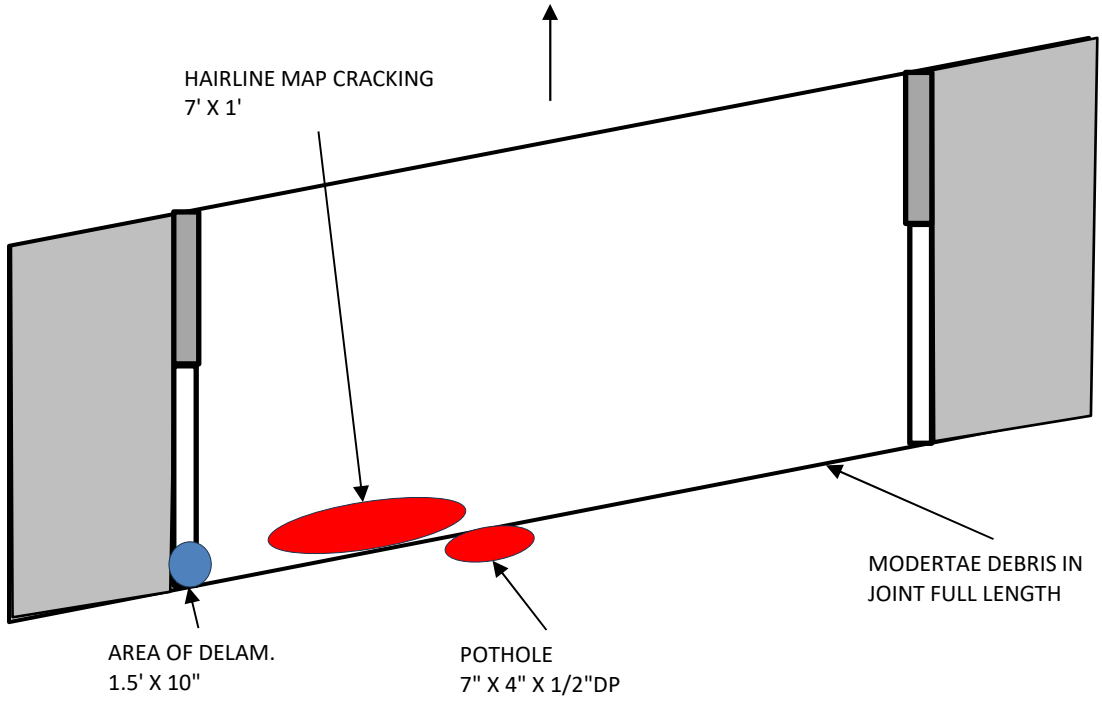

PAVEMENT	FAIR	POTHOLE, HAIRLINE MAP CRACKING
EMBANKS	GOOD	
DRAINS	GOOD	
G-RAILS	GOOD	
BR RAILS	GOOD	LT SCALE

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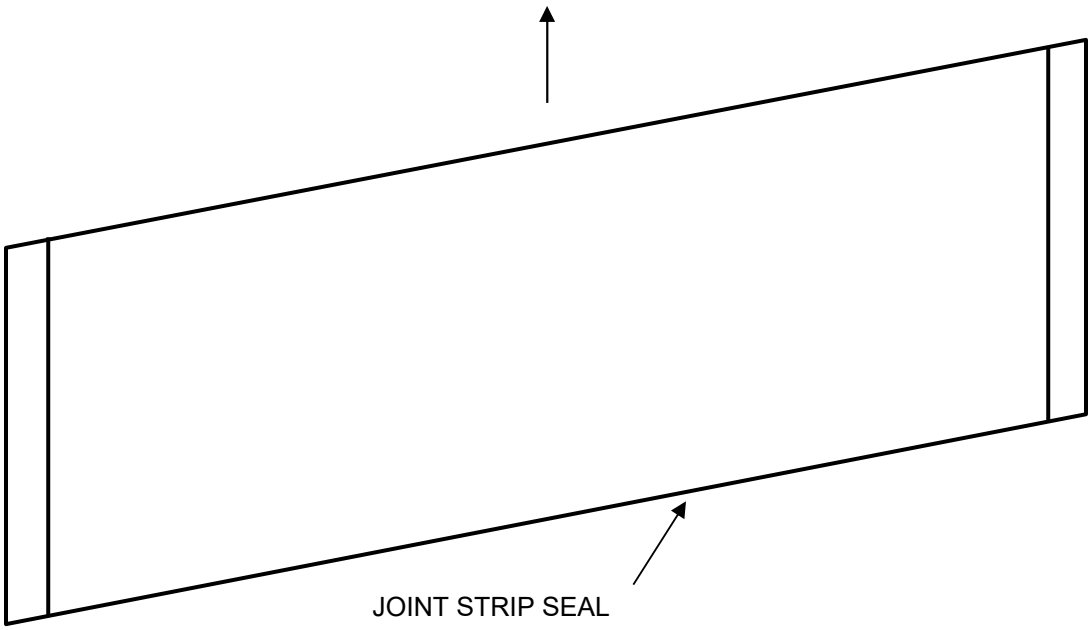
Top of Deck Span No. 1

Date 6/14/2024
MB

Bridge Location No. 75 (County) 1044 (Route) 0.48 (Log Mile)



DECK	NV	A/C OVERLAY- GOOD
CURBS	GOOD	
RAILS	GOOD	LGH. SURFACE SCALE
JOINT	POOR	HVY. DEBRIS BUILD UP

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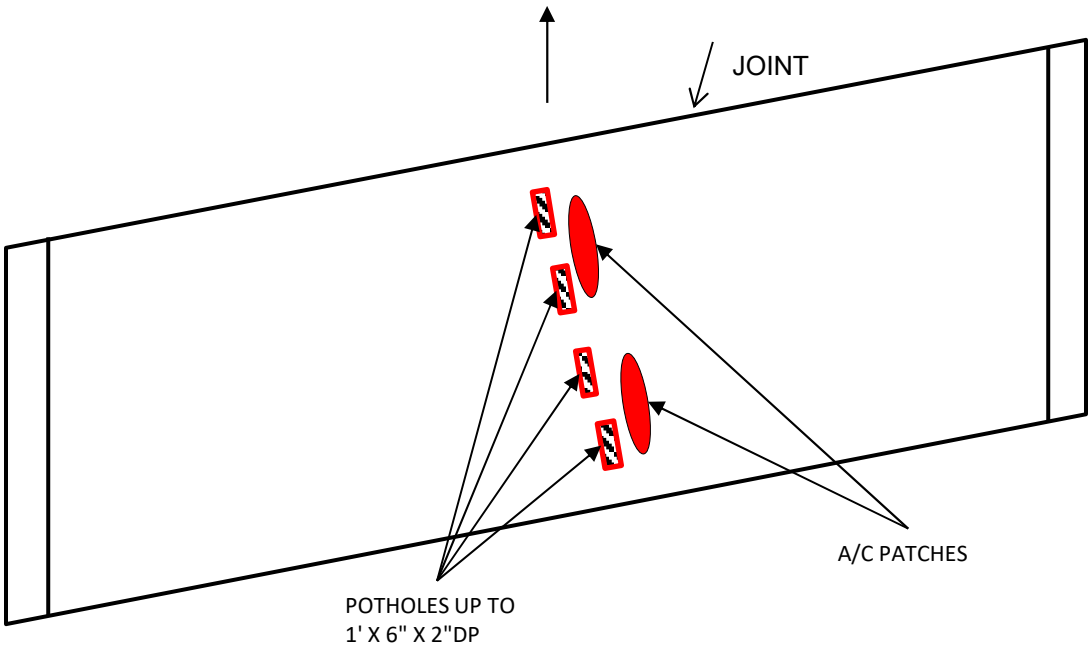
Top of Deck Span No.2

Date 6/14/2024
MB

Bridge Location No. 75 (County) 1044 (Route) 0.48 (Log Mile)



DECK	N/V	A/C OVERLAY-FAIR; AC PATCHES, POTHOLES
CURBS	GOOD	
RAILS	GOOD	LGH. SURFACE SCALE
JOINT	POOR	HVY. DEBRIS BUILD UP

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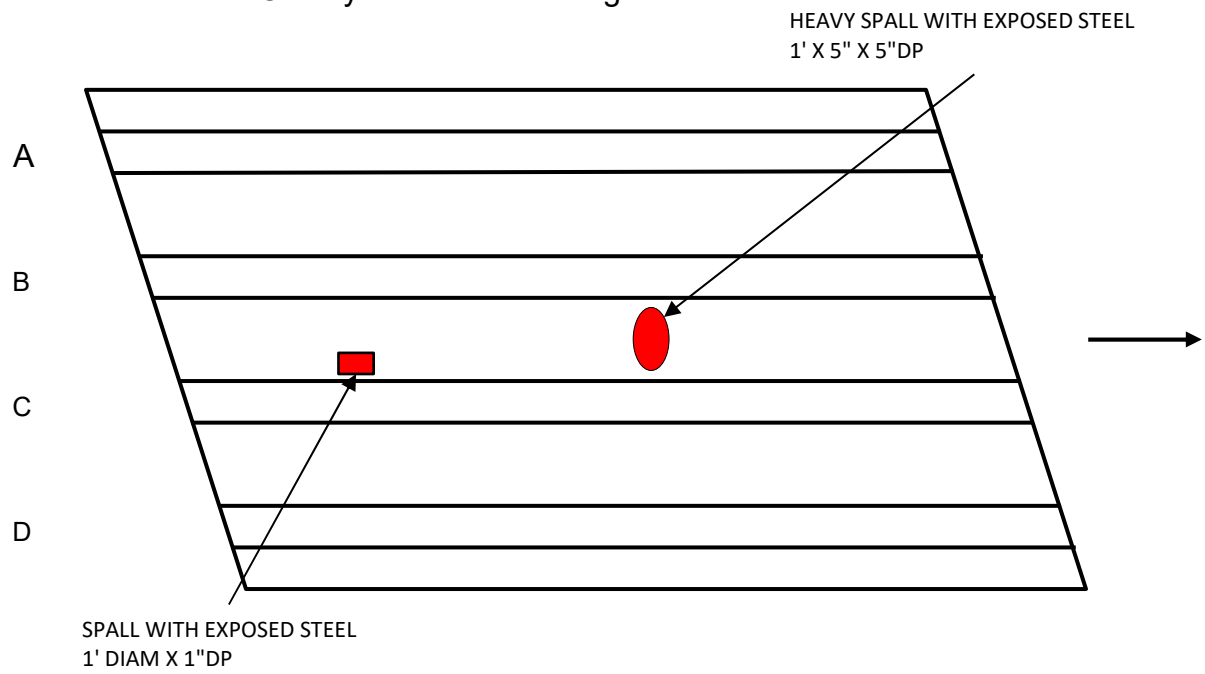
Bottom of Slab Span No. 1

Date 6/14/2024

DB2

Bridge Location No. 75 (County) 1044 (Route) 0.48 (Log Mile)



DECK	FAIR	SPALL /EXP STL 1'DIA X 1"D,
		CONC. REPAIR @ ABUT. #1 AT ALL BAYS
BRACING	GOOD	INTERMEDIATE
DIAPH.	GOOD	
GIRDER A	GOOD	MOD CORR TOP FLANG 3' FROM ABUT #1
GIRDER B	FAIR	MOD CORR BTM FLANGE OVER ROAD
GIRDER C	FAIR	MOD CORR BOTTOM FLANGE- OVER ROAD
GIRDER D	FAIR	MOD. CORRO. TOP FLANGE 3' FROM ABUT. # 1, MOD CORR
		BOTT FLANGE-OVER ROAD
OVERHANGS	GOOD	RDM. H.C.'S W/EFF., RUST STAINS
PAINT	POOR	PEELING BM'S "B"-"D", FADING ALL BMS & DIAPHRAMS

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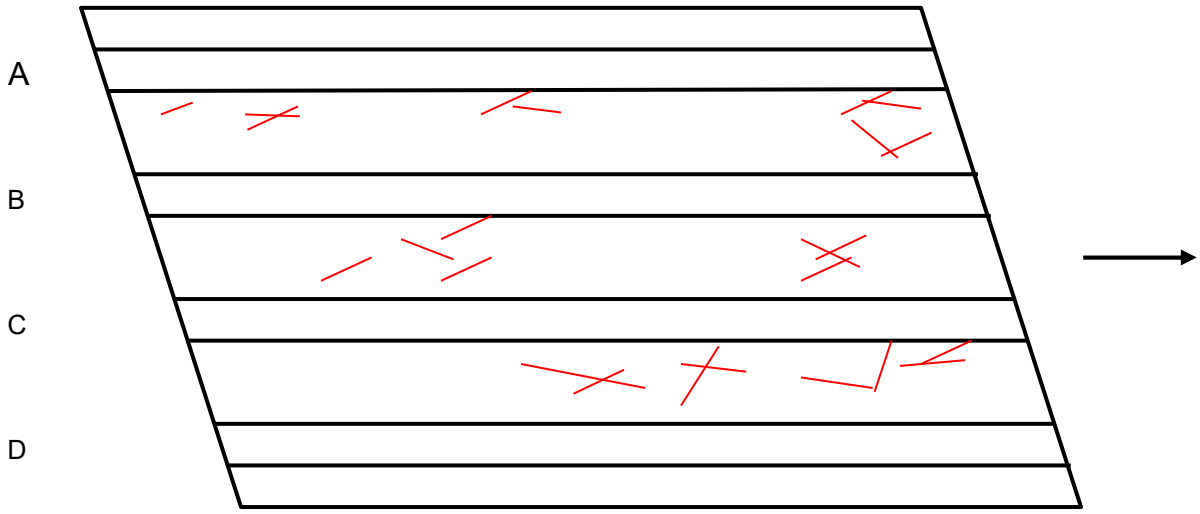
Bottom of Slab Span No. 2

Date 6/14/2024

DB2

Bridge Location No. 75 (County) 1044 (Route) 0.48 (Log Mile)



DECK	FAIR	H.L. MAP CRACKS W/EFF, CONC.
		REPAIRS AT ABUT #2 AT ALL BAYS
BRACING	GOD	INTERMEDIATE
DIAPH.	GOOD	
GIRDER A	FAIR	LIGHT CORR--BOT FLANGE, TOP FLANGE AT ABUT 2
GIRDER B	GOOD	LIGHT CORROSION
FIRDER C	GOOD	LIGHT CORROSION
GIRDER D	FAIR	REPAIRED SECTION FROM IMPACT DAMAGE, LGT. CORR.
		OUTSIDE OF TOP & BTM. FLANGE 3'L, LGH CORR. BOTT
		FLANGE 25'L OVER RD, TOP FLANGE AT ABUT 2
OVERHANGS	FAIR	MAP CRACKS W/EFF, H.C.'S W/EFF
PAINT	FAIR	FADING, PEELING ON ALL BEAMS

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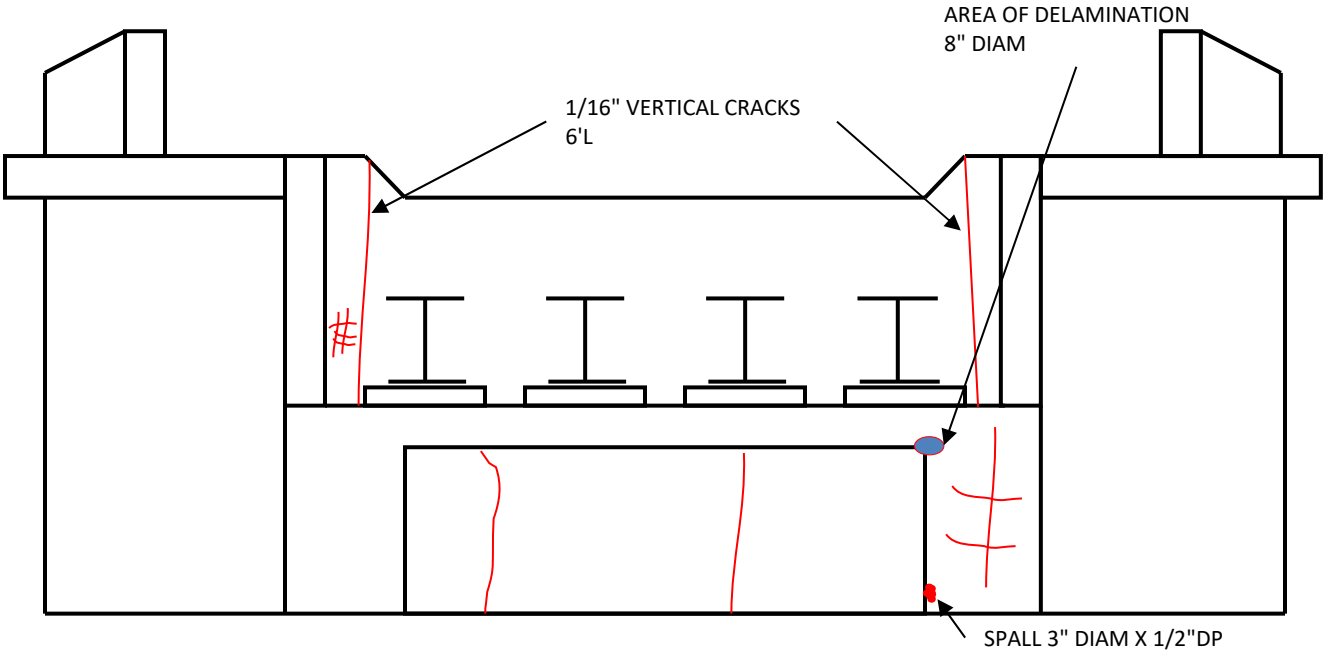
Abutment No. 1

Date: 6/14/2024
SM

Bridge Location No. 75 (County) 1044 (Route) 0.48 (Log Mile)



WALL	GOOD	OPEN CRACK UP TO 1/16" OPEN- 6'L W/ H.L. PATTERN CRACKS
CAP	GOOD	HORIZ/VERT H.C.'S W/EFFL
		LGT RUST STAINS; IMPACT DMG; AREA OF DELAM. 8"DIA
BEARING	FAIR	MOD. CORROSION ON ALL - PAINTED W/ MOD.RUST STAINS
LT. WING	GOOD	RDM MAP CRACK W/EFF
RT. WING	GOOD	RDM MAP CRACKS W/EFF
EMBANKMNT	GOOD	

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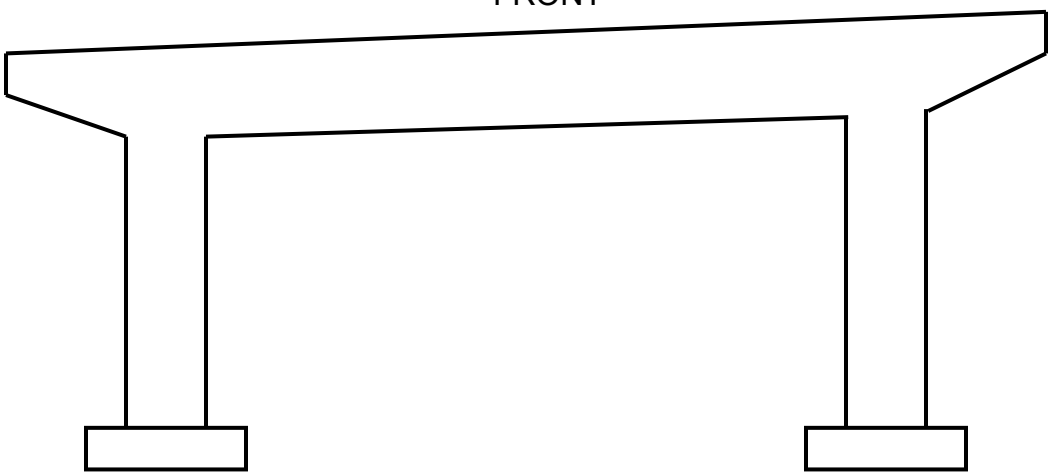
BENT # 1

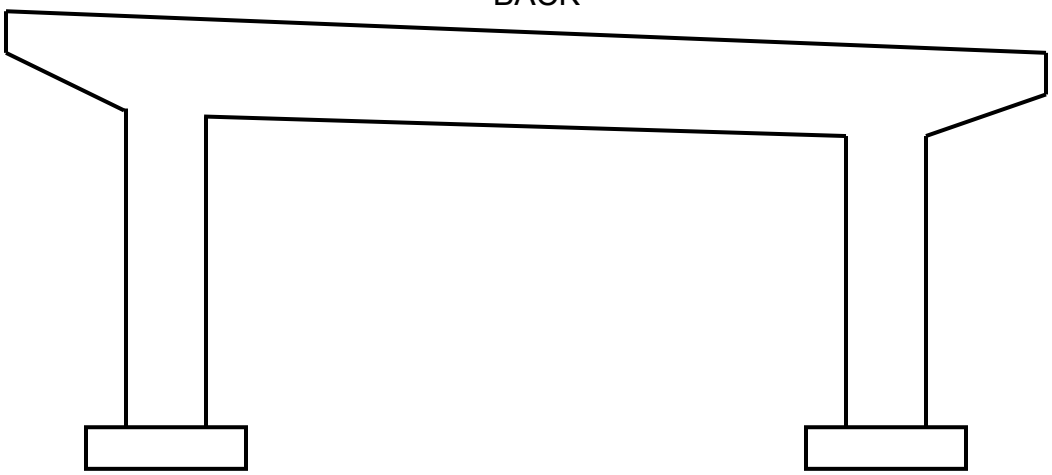
Date 6/14/2024
SM

Bridge Location No. 75 (County) 1044 (Route) 0.48 (Log Mile)

FRONT



BACK



CAP	GOOD	
COLUMN	GOOD	
BEARINGS	GOOD	LIGHT RUST, LOOSE NUT @ 'A'

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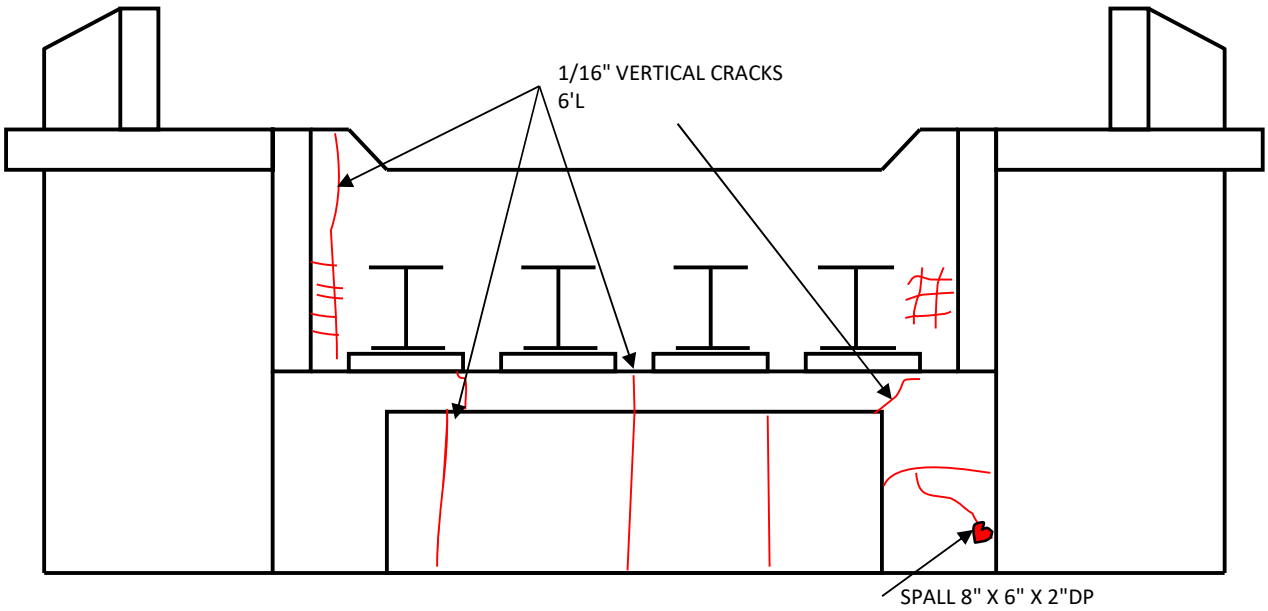
Abutment No. 2

Date: 6/14/2024

SM

Bridge Location No. 75 (County) 1044 (Route) 0.48 (Log Mile)



WALL	GOOD	PATTERN H.C.'S, VERT CRACK UP TO 1/16" OPEN,
		FULL HEIGHT
CAP	GOOD	VERT CRACKS UP TO 1/16" OPEN-UP TO FULL HEIGHT,
		RANDOM DIAG/HORIZ H.C.'S, SPALL
BEARING	FAIR	MOD. CORROSION AT "B, C, & D"
LT. WING	GOOD	RANDOM H.L. PATTERN CRACKS
RT. WING	GOOD	

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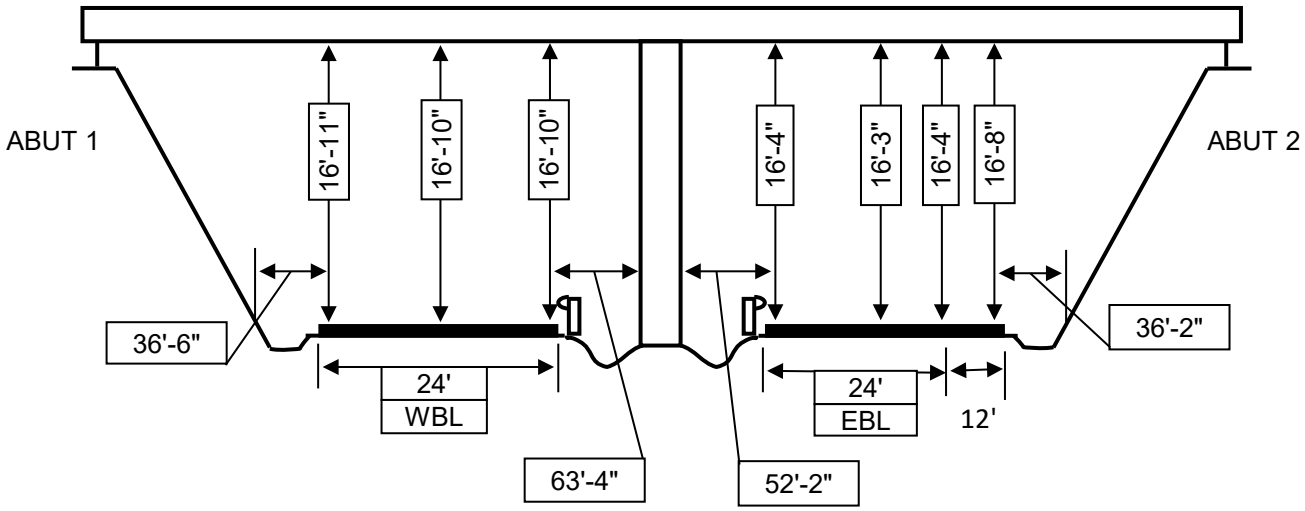
Clearances

Date: 6/14/2024

Bridge Location No. 75 (County) 1044 (Route) 0.48 (Log Mile)

EPPS MILL RD



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Williams, Colin

From: Konner Spradlin <Konner.Spradlin@tn.gov>
Sent: Monday, May 8, 2023 8:28 AM
To: Thompson, Brad
Cc: Williams, Colin
Subject: FW: [EXTERNAL] RE: I-24 Exit 89, Epps Mill Rd General Fund Transfer
Attachments: image002.png; image001.png; Epps Mill Rd & I-24 Interchange Area Development.pdf; tn-rutherford_epps-mill-road_site-plan_2022-06-10_ALT (003).pdf

Follow Up Flag: Follow up
Flag Status: Completed

This e-mail is from outside STV

Development surrounding Epps Mill Interchange

From: Konner Spradlin <Konner.Spradlin@tn.gov>
Sent: Wednesday, July 27, 2022 2:57 PM
To: Ty Tucker <Ty.Tucker@tn.gov>
Subject: Fwd: [EXTERNAL] RE: I-24 Exit 89, Epps Mill Rd General Fund Transfer

FYI

Sent from my iPhone

Begin forwarded message:

> **From:** Mike Hughes <mhughes@rutherfordcountytn.gov>
> **Date:** July 27, 2022 at 2:37:18 PM EDT
> **To:** Konner Spradlin <Konner.Spradlin@tn.gov>
> **Cc:** Michael Gilbert <Michael.Gilbert@tn.gov>, Doug Demosi <ddemosi@rutherfordcountytn.gov>, Shelia Huffmire <shuffmire@rutherfordcountytn.gov>, Bill Ketron <bketron@rutherfordcountytn.gov>, Steve Sandlin <ssandlin@rutherfordcountytn.gov>, Stanley Sumner <Stanley.Sumner@tn.gov>, Greg Brooks <greg.brooks@rutherfordcountytn.gov>
> **Subject: [EXTERNAL] RE: I-24 Exit 89, Epps Mill Rd General Fund Transfer**
>
> ***** This is an EXTERNAL email. Please exercise caution. DO NOT open attachments or click links from unknown senders or unexpected email - STS-Security. *****
>
> Konner,
> As I stated to you earlier, there is a lot of development activity and interest in the Epps Mill Road & I-24 Interchange area.
> Some of the most notable developments & projects are listed below (see attached map & inset below):
>
> Existing:
> 1) Love's Travel Stop & Country Store: 6137 Epps Mill Rd – Tax Map 156, Parcel 26.00 – Large Truck Stop & McDonald's Restaurant with 86 Overnight Truck Parking Spaces on 12.39-acres on Murfreesboro City sewer
> 2) Big Rig Semi-Tractor Trailer Parking: 104 Forbus Dr – Tax Map 156, Parcel 26.05 – 108 Overnight Truck Parking Spaces on 6.63-acres

3) Barrett Enterprises: 5926 Miller Ln – Tax Map 156, 35.00 – Barrett Firearms Manufacturing on 9.06-acres on Murfreesboro City Sewer
4) Plainview Elementary School (formerly called Tan Oak Elem., prior to opening): 7182 Otter Pond Way (off of Sledge Rd) – Tax Map 172, Parcel 9.01 – 139,200-sq.ft. Elementary School with 1,000 students on Murfreesboro City sewer – Opened 2021
5) Capital Way Business Park: - Various existing business with an additional +100-acres of undeveloped land on Murfreesboro City sewer
6) Buchanan Estates Subdivision: Epps Mill Road – Residential Subdivision with +680 Lots (existing & proposed) on Murfreesboro City sewer
7) Valley Farms Subdivision: Residential Subdivision, adjacent to the Buchanan Estates Subdivision above with 126-Lots on Murfreesboro City sewer

Proposed:
1) Epps Mill Rd & Miller Rd Warehouse: Tax Map 156, Parcels 47.00, & 48.00 – 1,281,960-sq.ft. Warehouse with 128 Dock Doors & +470 Semi-Tractor Trailer Parking and 316 Regular Parking Spaces (See attached Site Plan Exhibit) on 131.44-acres – projected to be on Murfreesboro City sewer
2) CarMax Vehicle Storage Site: 5501 Miller Ln (on the old Outpost Armory Site) Tax Map 156, 21.01 – Vehicle storage parking lot with +580 spaces for local CarMax Dealerships on 9.80-acres
3) Blue Gate Boat & RV Storage Site: 6275 Miller Rd – Tax Map 156, Parcel 46.01 – 208 Boat & RV Storage Spaces on 8.01-acres
4) Epps Mill Gas Station and Restaurant: 5720 Epps Mill Rd – on a 1.84-acre portion of Tax Map 156, Parcel 32.00 to be on Murfreesboro City sewer
5) Plainview Middle School & High School: Otter Pond Way (off of Sledge Rd) – Tax Map 172, Parcel 9.01 – Middle School projected to have 1,200 students & High School projected to have 2,500 students – both to be on Murfreesboro City sewer
6) Miller Lane Storage Yard: (un-numbered) Miller Ln – Tax Map 156, Parcel 21.07 – Storage Yard for construction job site trailers & portables on 15.69-acres

Also to consider, that with the new Plainview 3-school cluster, we expect to see a tremendous amount of new residential subdivision growth around the school campus as historically, people with school age children love to live near schools.
Something else to consider is that much of the unimproved land around this interchange is already served by Murfreesboro City Sewer and could develop easily, without the need to find suitable soils for septic systems.
However, due to recent sewer service area cut backs by the City of Murfreesboro, a previously approved agreement is required with the City to be on their sewer.

Let me know if you have any questions or comments.
Thanks,

Mike Hughes, P.E., C.F.M.
County Engineer
Rutherford County Planning & Engineering Department
Phone: 615-898-7732
Email: mhughes@rutherfordcountytn.gov

From: Konner Spradlin <Konner.Spradlin@tn.gov>
Sent: Monday, July 25, 2022 8:14 AM
To: Mike Hughes <mhughes@rutherfordcountytn.gov>
Cc: Michael Gilbert <Michael.Gilbert@tn.gov>
Subject: I-24 Exit 89, Epps Mill Rd General Fund Transfer

EXTERNAL EMAIL WARNING	Please do not open links, nor attachments, without verifying their authenticity.

Good morning Mike,

We met on the site visit for I-24 at Exit 89, Epps Mill Rd. TDOT has received a new project at that location though the General Fund Transfer (GFT). This project's early scoping appears to be a widening of Epps Mill Rd though the interchange area to SR-2 (US-41). Proposed improvements from the previous project will be incorporated into the GFT project, as well as intersection improvements to Forbus Dr. When we were on the field visit for the interchange improvement project you had mentioned to me there is a new school being constructed nearby. Would you send me the information including the size and location of the school as well as any other developments in the area? This information will help for design consternations.

Thank you,

Konner Spradlin, P.E. | C.E. Manager 1
Strategic Transportation Investments Division
James. K. Polk Building, 10th Floor
505 Deaderick Street, Nashville, TN 37243
p. 615-253-2432 c. 615-920-2822
Konner.Spradlin@tn.gov
tn.gov/tdot
https://www.tn.gov/tdot/strategic-transportation-investments.html

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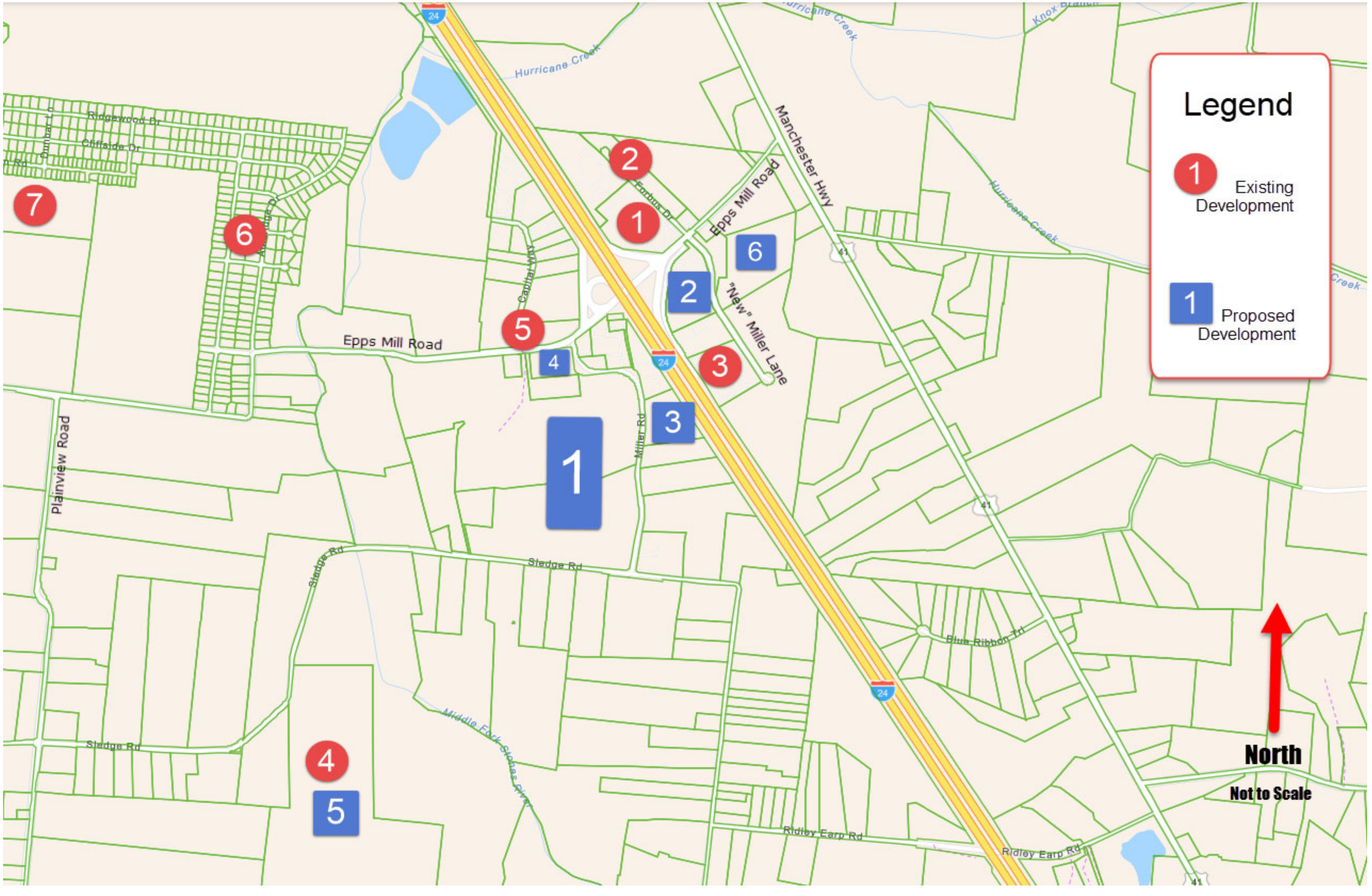
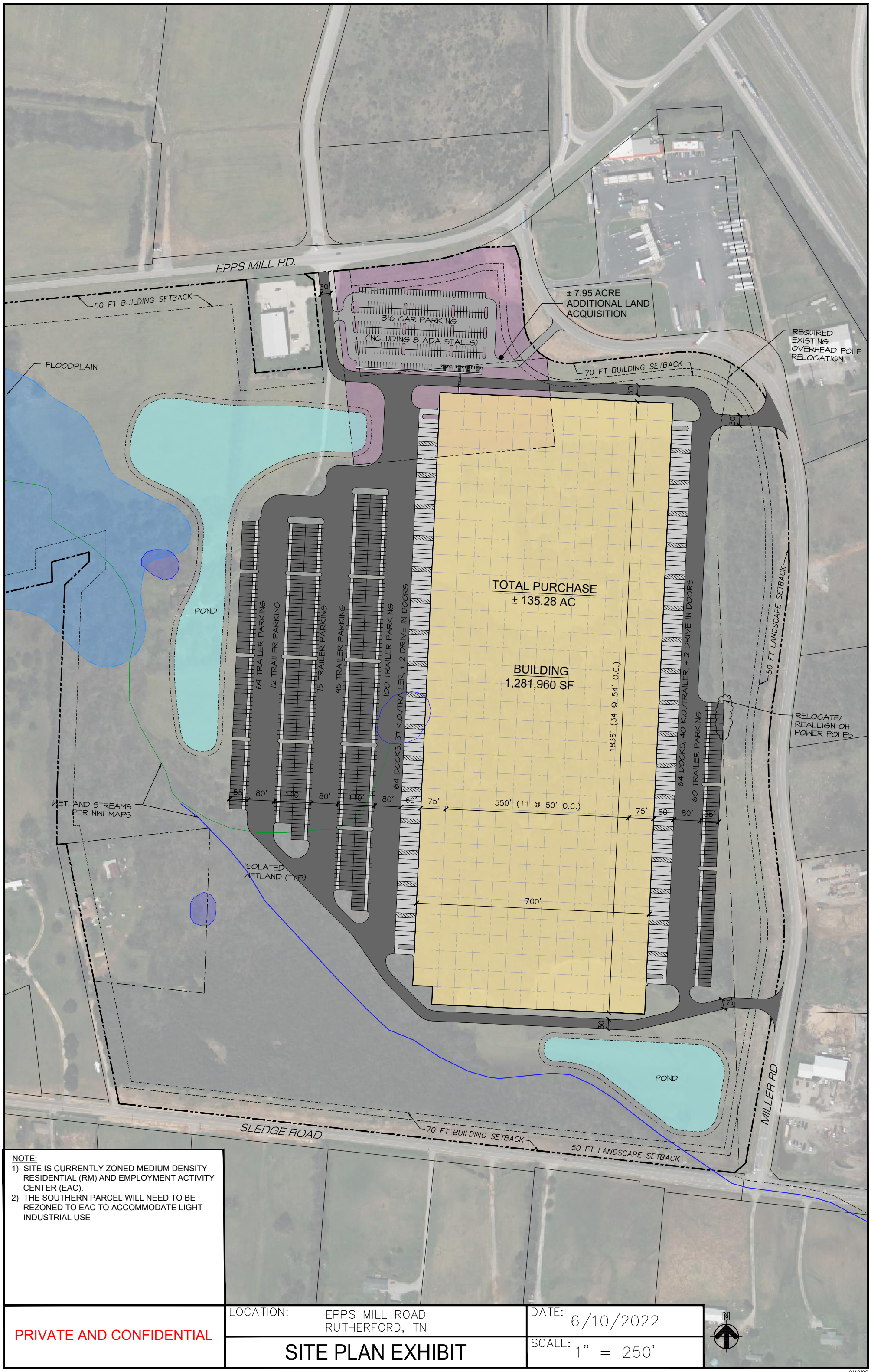

Legend
1 Existing Development
1 Proposed Development
North
Not to Scale
Hurricane Creek
Epps Mill Road
Manchester Hwy
"New" Miller Lane
Capital Way
Forbus Dr
Miller Rd
Ridgewood Dr
Cliffside Dr
Plainview Road
Sledge Rd
Middle Fork Stones River
Ridley Earp Rd
Blue Ribbon Trl
Knox Branch
24
41



NOTE:
1) SITE IS CURRENTLY ZONED MEDIUM DENSITY RESIDENTIAL (RM) AND EMPLOYMENT ACTIVITY CENTER (EAC).
2) THE SOUTHERN PARCEL WILL NEED TO BE REZONED TO EAC TO ACCOMMODATE LIGHT INDUSTRIAL USE

PRIVATE AND CONFIDENTIAL

LOCATION: EPPS MILL ROAD
RUTHERFORD, TN

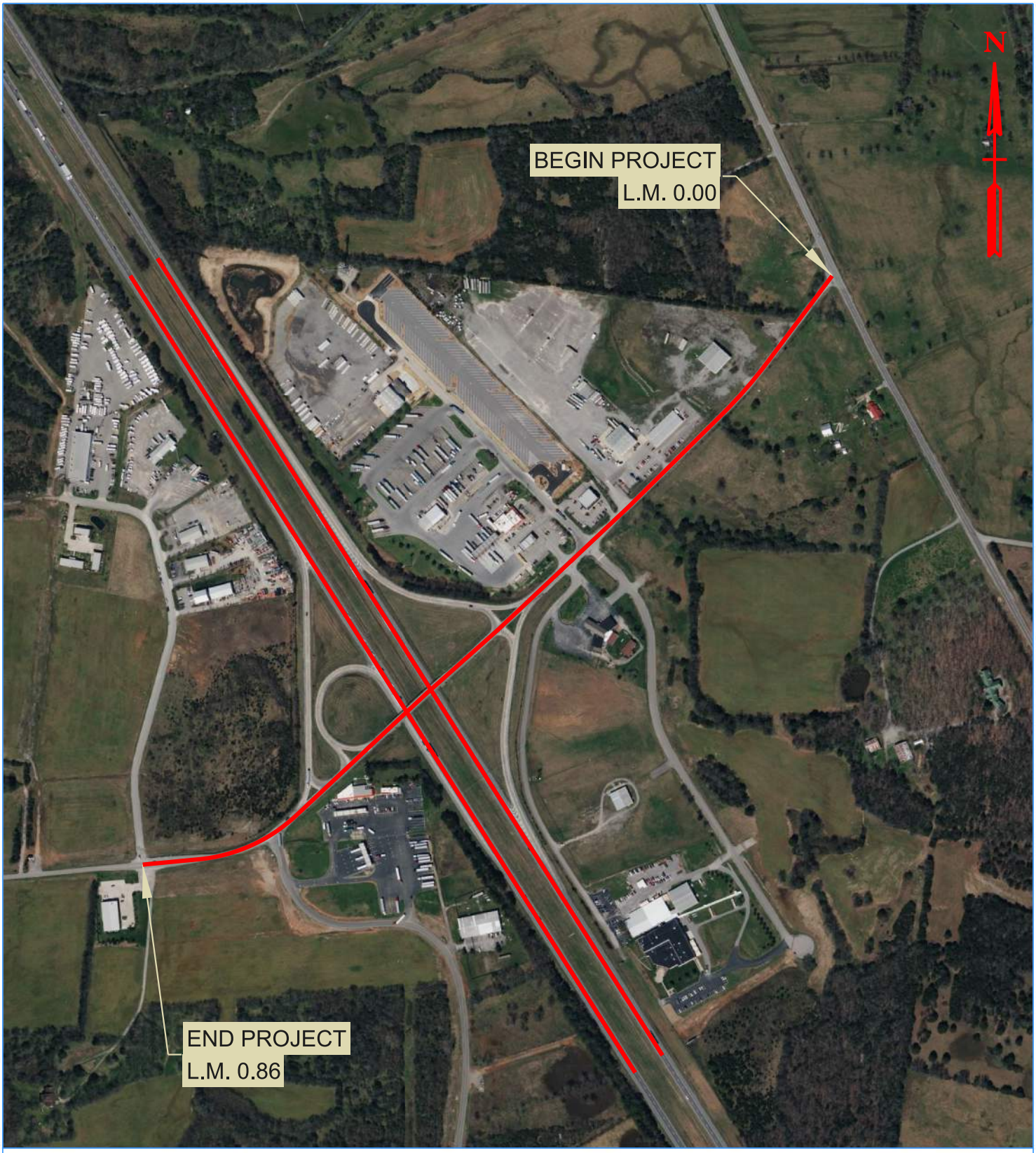
DATE: 6/10/2022

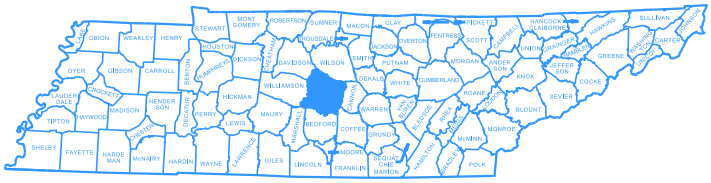
SITE PLAN EXHIBIT

SCALE: 1" = 250'

6/10/22

Project Design





LOCATION MAP

RUTHERFORD COUNTY

EPPS MILL ROAD (LR-01044)

L.M. 0.00 TO L.M. 0.86

SCALE: 1"=600'

SOURCE: BING MAPS

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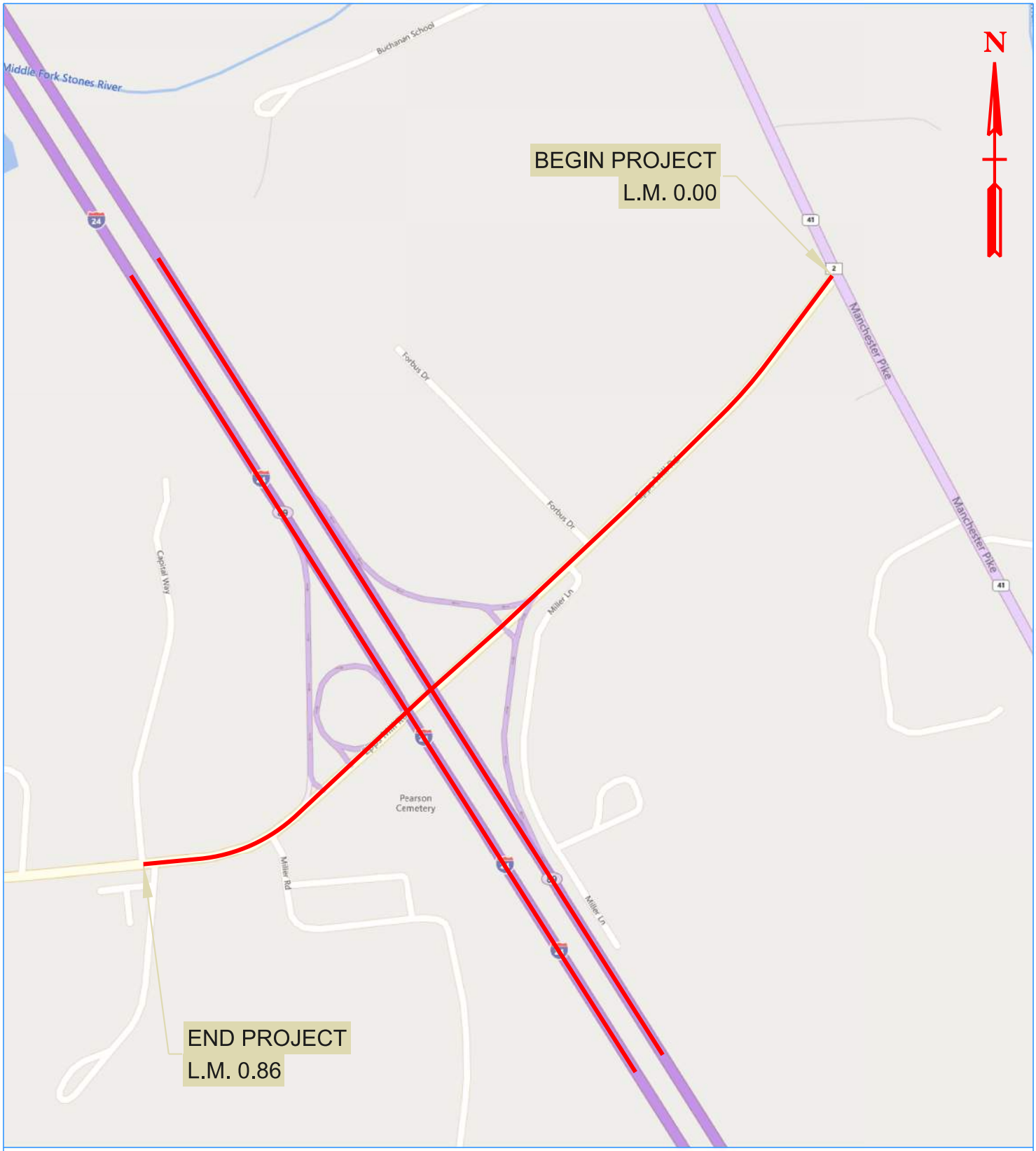

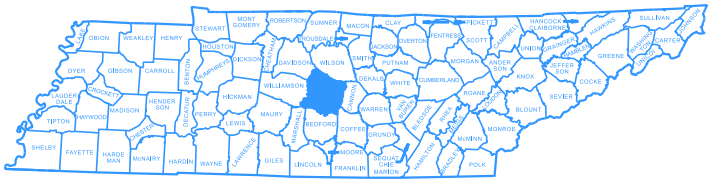

AREA MAP

RUTHERFORD COUNTY

EPPS MILL ROAD (LR-01044)

L.M. 0.00 TO L.M. 0.86

SCALE: 1"=600'

SOURCE: BING MAPS

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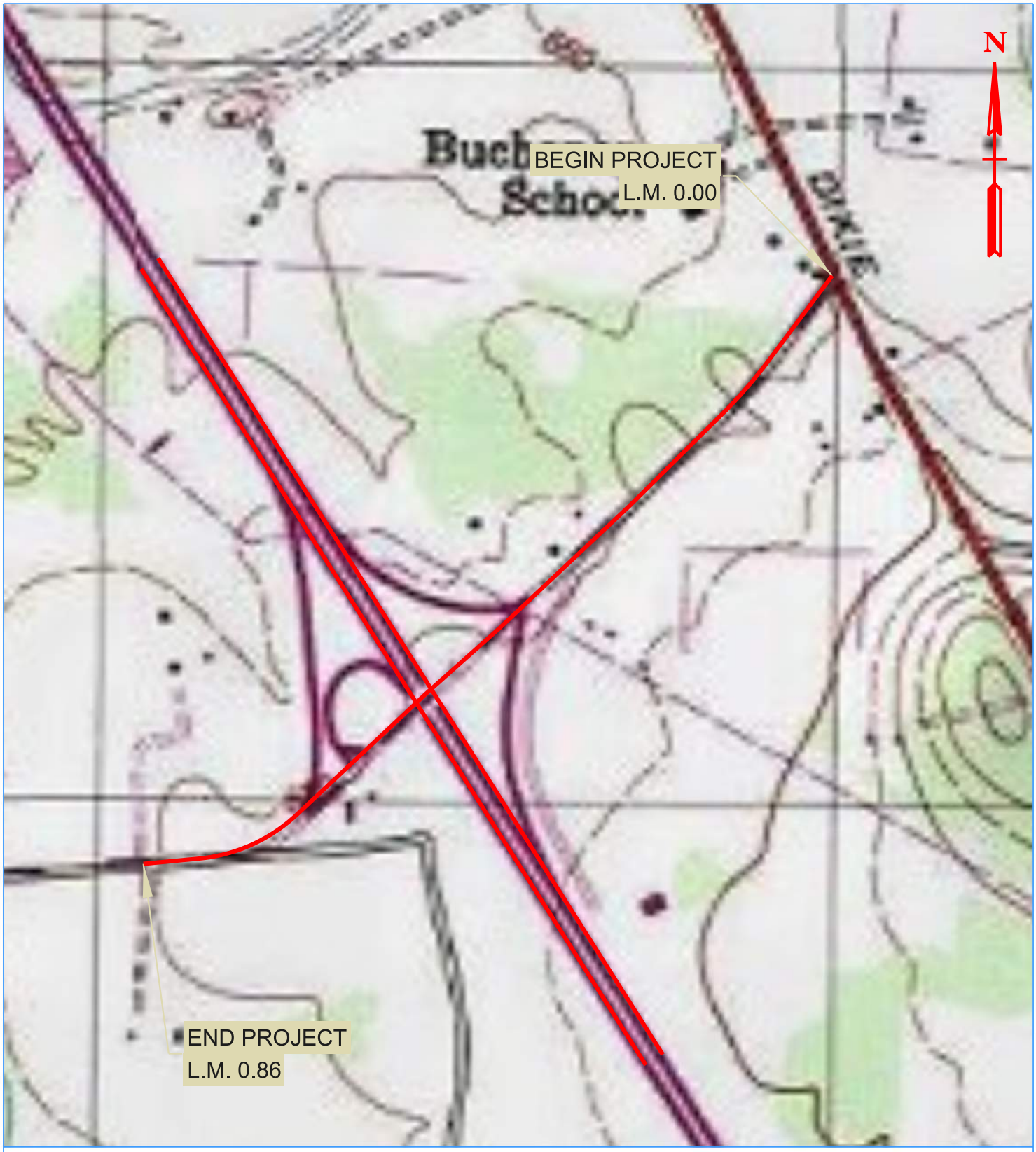
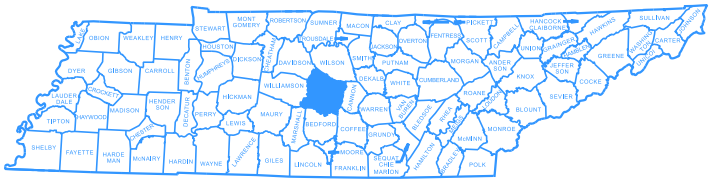
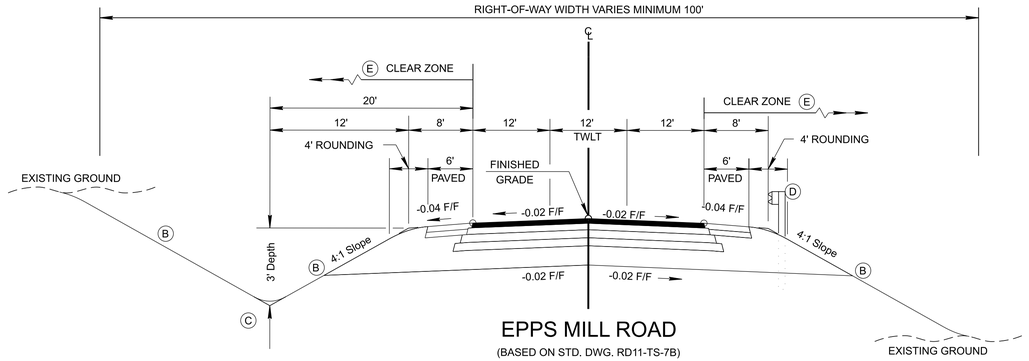




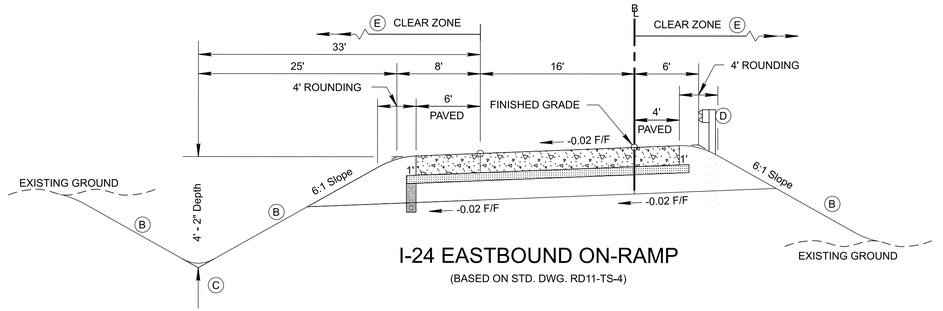
TOPOGRAPHIC MAP
RUTHERFORD COUNTY
EPPS MILL ROAD (LR-01044)
L.M. 0.00 TO L.M. 0.86
SCALE: 1"=600'
SOURCE: USGS

TYPE	YEAR	COUNTY	FIGURE NO.
CR	2023	RUTHERFORD	1



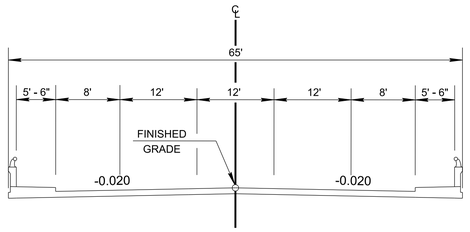
EPPS MILL ROAD

(BASED ON STD. DWG. RD11-TS-7B)



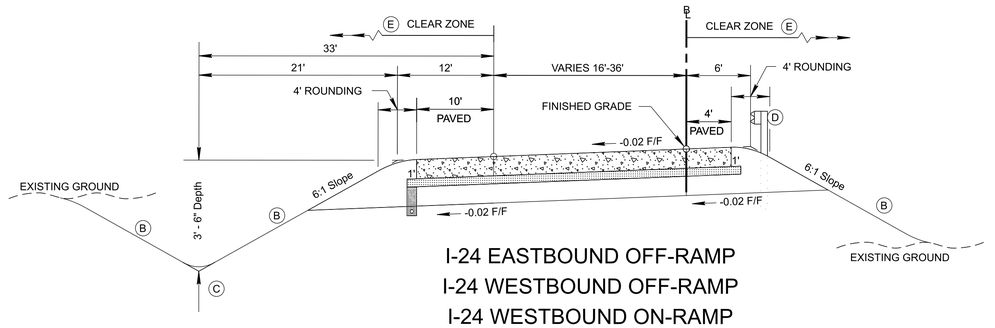
I-24 EASTBOUND ON-RAMP

(BASED ON STD. DWG. RD11-TS-4)



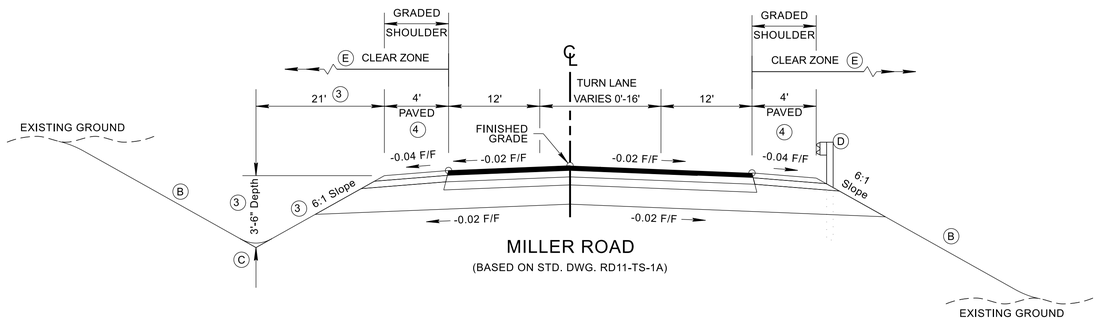
EPPS MILL ROAD BRIDGE OVER I-24

(BASED ON STD. DWG. RD11-TS-7)



I-24 EASTBOUND OFF-RAMP
I-24 WESTBOUND OFF-RAMP
I-24 WESTBOUND ON-RAMP

(BASED ON STD. DWG. RD11-TS-4)



MILLER ROAD

(BASED ON STD. DWG. RD11-TS-1A)

(A) THE SLOPE OF THE SHOULDER AND THE ROADWAY PAVEMENT SHALL NOT EXCEED AN ALGEBRAIC DIFFERENCE OF 7%.

(B) SEE STANDARD DRAWINGS RD11-S-11 AND RD11-S-11B FOR FILL AND CUT SLOPE TABLES, ROUNDING ON TOP OF CUT SLOPES AND TOE OF FILL SLOPES, SPECIAL ROCK TREATMENT AND SUB GRADE ROUNDING IF APPLICABLE.

(C) SEE STANDARD DRAWING RD11-S-11A FOR ROUNDING OF ROADSIDE DITCH SLOPES.

(D) SEE STANDARD DRAWING S-PL-6 FOR TYPICAL GUARDRAIL PLACEMENT.

(E) SEE STANDARD DRAWING S-CZ-1 FOR CLEAR ZONE CRITERIA. SEE THE "ROADSIDE DESIGN GUIDE", AASHTO, 2011, FOR FURTHER INFORMATION REGARDING CLEAR ZONES.

(1) MEDIAN CURBS WILL BE SLOPING CURBS. VERTICAL CURBS WILL NOT BE PERMITTED.

(2) 3:1 SLOPES OR FLATTER ARE DESIRABLE AND ARE THE MAXIMUM IN REGION IV. 2:1 SLOPES ARE APPLICABLE IN AREAS WHERE RIGHT-OF-WAY RESTRICTIONS, ENVIRONMENTAL CONSIDERATIONS, OR COST WARRANTS A STEEPER THAN 3:1 SLOPE.

(3) ADTS OVER 400 AND DESIGN SPEEDS OF 50 MILES PER HOUR AND GREATER SHALL REQUIRE 6:1 SLOPES.
6:1 Slope Require A 21' Ditch Width And A Depth of 3'-6".
4:1 Slope Require A 12' Ditch Width And A Depth of 3'-0".

(4) WHEN THE PROPOSED SHOULDER WIDTH IS 2' OR 4' THE SHOULDER SLOPE CAN MATCH THE ROADWAY PAVEMENT CROSS SLOPE.

N.T.S.

CONCEPT REPORT

I-24 INTERCHANGE AT EPPS MILL ROAD (EXIT 89)
LOG MILE 0.00 TO LOG MILE 0.86
RUTHERFORD COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 1
I-24 INTERCHANGE AT EPPS MILL ROAD (EXIT 89)
TYPICAL SECTIONS

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TYPE	YEAR	COUNTY	FIGURE NO.
CR	2023	RUTHERFORD	2

MATCHLINE SEE FIGURE 4

EPPS MILL ROAD

150' TAPER

70'

CAPITAL WAY

60'

250'

160'

150'

INTERCHANGE LIGHTING
LOCATIONS TBD

I-24 EB

I-24 WB

FUTURE 4 LANE WIDENING LIMITS
FUTURE 4 LANE WIDENING LIMITS

500'

MATCHLINE SEE FIGURE 3

PROPOSED BRIDGE
REPLACEMENT
SPAN LENGTH: 250'
GIRDER TYPE: BT-72

265'

185'

MILLER ROAD

1450' ACCELERATION LENGTH

I-24 EB

I-24 WB

TO BE CONSTRUCTED
BY OTHERS

MILLER LANE

LEGEND
- ASPHALT PAVEMENT
- CONCRETE PAVEMENT
- BRIDGE
- EDGE OF TRAVELED WAY
- CUT LINE
- FILL LINE
- PRESENT RIGHT OF WAY
- PROPOPSED RIGHT OF WAY
- SCARIFY AND REMOVE

MATCHLINE SEE FIGURE 5

0 200' 400' 600'

CONCEPT REPORT

I-24 INTERCHANGE AT EPPS MILL ROAD (EXIT 89)
LOG MILE 0.00 TO LOG MILE 0.86
RUTHERFORD COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 2
I-24 INTERCHANGE AT
EPPS MILL ROAD (EXIT 89)
CONCEPTUAL PLAN

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TYPE	YEAR	COUNTY	FIGURE NO.
CR	2023	RUTHERFORD	3

MATCHLINE SEE FIGURE 2

FORBUS DRIVE

EPPS MILL ROAD

MILLER LANE

S.R. 2

FUTURE GAS STATION

215'

200'

100'

500'

330' TAPER

150'

150'

330' TAPER

LEGEND

- ASPHALT PAVEMENT
- CONCRETE PAVEMENT
- BRIDGE
- EDGE OF TRAVELED WAY
- CUT LINE
- FILL LINE
- PRESENT RIGHT OF WAY
- PROPOPSED RIGHT OF WAY
- SCARIFY AND REMOVE

0 200' 400' 600'

CONCEPT REPORT

I-24 INTERCHANGE AT EPPS MILL ROAD (EXIT 89)
LOG MILE 0.00 TO LOG MILE 0.86
RUTHERFORD COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 3
I-24 INTERCHANGE AT
EPPS MILL ROAD (EXIT 89)
CONCEPTUAL PLAN

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TYPE	YEAR	COUNTY	FIGURE NO.
CR	2023	RUTHERFORD	4

I-24 EB

I-24 WB

FUTURE 4 LANE WIDENING LIMITS
FUTURE 4 LANE WIDENING LIMITS

300' TAPER

300' TAPER

550' DECELERATION LENGTH

850' ACCELERATION LENGTH

CAPITAL WAY

FORBUS DRIVE

MATCHLINE SEE FIGURE 2

LEGEND
- ASPHALT PAVEMENT
- CONCRETE PAVEMENT
- BRIDGE
- EDGE OF TRAVELED WAY
- CUT LINE
- FILL LINE
- PRESENT RIGHT OF WAY
- PROPOPSED RIGHT OF WAY
- SCARIFY AND REMOVE

0 200' 400' 600'

CONCEPT REPORT

I-24 INTERCHANGE AT EPPS MILL ROAD (EXIT 89)
LOG MILE 0.00 TO LOG MILE 0.86
RUTHERFORD COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 4
I-24 INTERCHANGE AT
EPPS MILL ROAD (EXIT 89)
CONCEPTUAL PLAN

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TYPE	YEAR	COUNTY	FIGURE NO.
CR	2023	RUTHERFORD	5

MATCHLINE SEE FIGURE 2

MILLER ROAD

I-24 EB

FUTURE 4 LANE WIDENING LIMITS

FUTURE 4 LANE WIDENING LIMITS

I-24 WB

450' DECELERATION LENGTH

300' TAPER

300' TAPER

MILLER LANE

LEGEND

- ASPHALT PAVEMENT
- CONCRETE PAVEMENT
- BRIDGE
- EDGE OF TRAVELED WAY
- CUT LINE
- FILL LINE
- PRESENT RIGHT OF WAY
- PROPOPSED RIGHT OF WAY
- SCARIFY AND REMOVE

0 200' 400' 600'

CONCEPT REPORT

I-24 INTERCHANGE AT EPPS MILL ROAD (EXIT 89)
LOG MILE 0.00 TO LOG MILE 0.86
RUTHERFORD COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 5
I-24 INTERCHANGE AT
EPPS MILL ROAD (EXIT 89)
CONCEPTUAL PLAN

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TYPE	YEAR	COUNTY	FIGURE NO.
CR	2023	RUTHERFORD	6

STUDY AREA BEGINS 300 FEET BEFORE BEGIN PROJECT

APPROX. 150 FEET FROM END OF SIDE ROAD

APPROX. 50 FEET FROM PROP. R.O.W

BEGIN PROJECT

EPPS MILL ROAD

CAPITAL WAY

APPROX. 50 FEET FROM PROP. R.O.W

MATCHLINE SEE FIGURE 8

I-24 EB

I-24 WB

APPROX. 50 FEET FROM PROP. R.O.W

MATCHLINE SEE FIGURE 7

APPROX. 50 FEET FROM PROP. R.O.W

CEMETARY

MILLER ROAD

APPROX. 150 FEET FROM SIDE ROAD TIE

I-24 EB

I-24 WB

MILLER LANE

APPROX. 50 FEET FROM PROP. R.O.W

MATCHLINE SEE FIGURE 9

LEGEND

- ASPHALT PAVEMENT
- CONCRETE PAVEMENT
- BRIDGE
- EDGE OF TRAVELED WAY
- CUT LINE
- FILL LINE
- PRESENT RIGHT OF WAY
- PROPOPSED RIGHT OF WAY
- ETSA BOUNDARY

0 200' 400' 600'

ENVIRONMENTAL TECHNICAL STUDY AREA

I-24 INTERCHANGE AT EPPS MILL ROAD (EXIT 89)
LOG MILE 0.00 TO LOG MILE 0.86
RUTHERFORD COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 6
I-24 INTERCHANGE AT EPPS MILL ROAD (EXIT 89)
ETSA

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TYPE	YEAR	COUNTY	FIGURE NO.
CR	2023	RUTHERFORD	7

BEGIN PROJECT

APPROX. 50 FEET
FROM PROP. R.O.W

STUDY AREA BEGINS 300 FEET
BEFORE BEGIN PROJECT

APPROX. 50 FEET
FROM PROP. R.O.W

APPROX. 150 FEET
FROM END OF SIDE ROAD

APPROX. 50 FEET
FROM EX. R.O.W

FORBUS DRIVE

EPPS MILL ROAD

MATCHLINE SEE FIGURE 6

APPROX. 50 FEET
FROM PROP. R.O.W

APPROX. 50 FEET
FROM PROP. R.O.W

APPROX. 50 FEET
FROM PROP. R.O.W

MILLER LANE

APPROX. 50 FEET
FROM EX. R.O.W

S.R. 2

END PROJECT

STUDY AREA ENDS 300 FEET
AFTER END PROJECT

APPROX. 300 FEET
FROM END OF SIDE ROAD

LEGEND
- ASPHALT PAVEMENT
- CONCRETE PAVEMENT
- BRIDGE
- EDGE OF TRAVELED WAY
- CUT LINE
- FILL LINE
- PRESENT RIGHT OF WAY
- PROPOPSED RIGHT OF WAY
- ETSA BOUNDARY

0 200' 400' 600'

N

ENVIRONMENTAL TECHNICAL STUDY AREA

I-24 INTERCHANGE AT EPPS MILL ROAD (EXIT 89)
LOG MILE 0.00 TO LOG MILE 0.86
RUTHERFORD COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 7
I-24 INTERCHANGE AT
EPPS MILL ROAD (EXIT 89)
ETSA

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TYPE	YEAR	COUNTY	FIGURE NO.
CR	2023	RUTHERFORD	8

STUDY AREA BEGINS 300 FEET BEFORE BEGIN PROJECT

BEGIN PROJECT

EXISTING R.O.W.

EXISTING R.O.W.

I-24 EB

I-24 WB

FORBUS DRIVE

CAPITAL WAY

APPROX. 50 FEET FROM PROP. R.O.W.

APPROX. 50 FEET FROM PROP. R.O.W.

MATCHLINE SEE FIGURE 6

LEGEND
- ASPHALT PAVEMENT
- CONCRETE PAVEMENT
- BRIDGE
- EDGE OF TRAVELED WAY
- CUT LINE
- FILL LINE
- PRESENT RIGHT OF WAY
- PROPOPSED RIGHT OF WAY
- ETSA BOUNDARY

0 200' 400' 600'

ENVIRONMENTAL TECHNICAL STUDY AREA

I-24 INTERCHANGE AT EPPS MILL ROAD (EXIT 89)
LOG MILE 0.00 TO LOG MILE 0.86
RUTHERFORD COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 8
I-24 INTERCHANGE AT EPPS MILL ROAD (EXIT 89)
ETSA

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TYPE	YEAR	COUNTY	FIGURE NO.
CR	2023	RUTHERFORD	9

MATCHLINE SEE FIGURE 6

EXISTING R.O.W

MILLER ROAD

I-24 EB

I-24 WB

MILLER LANE

EXISTING R.O.W

END PROJECT

STUDY AREA BEGINS 300 FEET
AFTER END PROJECT

LEGEND
- ASPHALT PAVEMENT
- CONCRETE PAVEMENT
- BRIDGE
- EDGE OF TRAVELED WAY
- CUT LINE
- FILL LINE
- PRESENT RIGHT OF WAY
- PROPOPSED RIGHT OF WAY
- ETSA BOUNDARY

0 200' 400' 600'

ENVIRONMENTAL TECHNICAL STUDY AREA

I-24 INTERCHANGE AT EPPS MILL ROAD (EXIT 89)
LOG MILE 0.00 TO LOG MILE 0.86
RUTHERFORD COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 9
I-24 INTERCHANGE AT
EPPS MILL ROAD (EXIT 89)
ETSA

3/28/2024 9:46:48 AM
C:\BMS\STV-PW-01\TRAVIS.PHY\DMS60289\124683-SHT-CONCEPT_04_REDUCTION COMMENTS.DGN

Instructions are provided in red text. This form is designed to be completed in Adobe Acrobat and the red text will be replaced by black as the forms are filled. The red text including this note will not print as part of the document. When complete, print the form to PDF to remove this note and other instructions. Using other PDF editors such as Chrome or Edge will maintain the red text when printed.

Concept Report Form

TN

The Concept Report Form develops an initial project vision, basis of design and report (e.g., the Concept Report) to transition into the subsequent design stages (Stages 1 through 4 in the Project Delivery Network [PDN]). This form summarizes all project components using information to complete the Concept Report.

General Project Information

Project Name	Interchange at Epps Mill Road (Exit 89)								
PIN	124683.00								
Route Information	**Route**	**NHS (Y/N)**	**Functional Class**		**City**		**County**		
	01044	No	Urban Major Collector		Murfreesboro		Rutherford		
Project Information	**Begin Log Mile**	**End Log Mile**	**AADT[1]**	**Design Hour Vol. (DHV)[1]**	**Truck %[1]**	**Design Speed (MPH)**	**Posted Speed (MPH)**	**Base Year**	**Design Year**
	0.00	0.86	3,924	432	3.00	40	30	2028	2048
Project Description & Standard Drawings Used	The proposed project widens and re-aligns Epps Mill Road from State Route 2 (US-41) (L.M. 0.00) to just past Capital Way (L.M. 0.86) including ramp improvements at the interchange (Exit 89) with Interstate 24 (I-24) and bridge replacement. This area within the ramp terminals will be full-access control and partial access control outside of the ramp terminals. The proposed right-of-way (ROW) width of Epps Mill Road is a minimum of 100 feet. RD11-TS-7, RD11-TS-7B, RD11-TS-4								Project Details
Important Project History, Related Projects, or Commitments	This project is being slated for the Design-Build project delivery method for project letting in 2025. This project is expected to utilize federal funding. This project is part of the General Fund Transfer and has local participation.								
Project Purpose/Need	Rutherford County is experiencing continued high population growth within the surrounding area as well as planned commercial, residential, and school development within a 5 mile radius of the interchange. The existing interchange has deficient entry and exit accel/decel lengths as well as an existing bridge that does not support future Epps Mill widening without replacement.								
Major Environmental Considerations	There is a known cemetery within the project limits and two prehistoric sites adjacent to the project. Transportation Conformity for regulated criteria pollutants does not apply to this project. This project likely qualifies as a categorical exclusion and does not require an evaluation of MSATs. A cultural resource survey may be necessary if right-of-way is to be acquired. This project is likely to be a Type 3 project that would not require additional noise studies. There are 5 known UST sites within the project limits. The existing bridge will require an asbestos survey. Refer to Page 48 of this document for further detail.								

Instructions are provided in red text. This form is designed to be completed in Adobe Acrobat and the red text will be replaced by black as the forms are filled. The red text including this note will not print as part of the document. When complete, print the form to PDF to remove this note and other instructions. Using other PDF editors such as Chrome or Edge will maintain the red text when printed.

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General Project Information

Project Name	Interchange at Epps Mill Road (Exit 89)								
PIN	124683.00								
Route Information	**Route**	**NHS (Y/N)**	**Functional Class**		**City**		**County**		
	I-24	Yes	Urban Interstate		Murfreesboro		Rutherford		
Project Information	**Begin Log Mile**	**End Log Mile**	**AADT[1]**	**Design Hour Vol. (DHV)[1]**	**Truck %[1]**	**Design Speed (MPH)**	**Posted Speed (MPH)**	**Base Year**	**Design Year**
	25.33	26.07	61,026	5,493	28.00	75	70	2028	2048
Project Description & Standard Drawings Used	The proposed project widens and re-aligns Epps Mill Road from State Route 2 (US-41) (L.M. 0.00) to just past Capital Way (L.M. 0.86) including ramp improvements at the interchange (Exit 89) with Interstate 24 (I-24) and bridge replacement. This area within the ramp terminals will be full-access control and partial access control outside of the ramp terminals. The proposed right-of-way (ROW) width of Epps Mill Road is a minimum of 100 feet. RD11-TS-7, RD11-TS-7B, RD11-TS-4								Project Details
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Multi-Modal Considerations	The proposed bridge will include sidewalks for future improvement to connect the Truck Stops on either side of I-24 at this Interchange.			
Major Project Risks	Large ROW Impacts to the Northwest quadrant of currently vacant land could slow down project delivery and be a risk item going forward for the design build teams. FHWA is currently willing to accept A Safety and Operational Analysis Report (SOAR) in lieu of an Interstate Access Request (IAR) report but this could change at any point during the project cycle including during the Design Build Procurement due to alternative technical concepts (ATC). This document is covered by 23 USC 407 and its production pursuant to fulfilling public planning requirements does not waive the provisions of 407.			
Concept Estimate and Timeline	**Total Current Project Cost**		**Construction Year Estimate**	Preliminary Estimates
	$ 64,500,000		$ 73,800,000	
	Proposed Construction Year		**Estimated Construction Duration**	
	2026		TBD	

[1] Traffic numbers reflect identified design year

Approvals

Executed for approval of this Concept Report

STID Director — Date

The following individuals to execute if a bridge concept report:

Structures Director — Date

Regional Project Development Director — Date

Bureau Chief of Engineering — Date

Bureau Chief of Environment and Planning — Date

This checklist details actions for the STID Project Manager to complete when developing the Concept Report. These actions are organized/aligned with the PDN's activities but can generally be completed at any point in the Planning Stage. Depending on project type, not all actions listed in the checklist are necessary. When all actions are completed, save this Action Checklist to the project file. This note and checklist will not be printed for the final document.

Action Checklist			
0SD1 Initiate Concept Report and Request Funding			
Complete	**NA**		**Date Completed**
✔		Request and Finalize Safety Data	04/19/2023
✔		Request Project Number, PIN, and Task Profile Numbers	04/19/2023
✔		Coordinate with Long Range Planning	04/19/2023
✔		Request and Finalize Traffic Data	04/19/2023
		Request Preliminary Survey Data	
✔		Initiate Division Reviews	06/12/2023
✔		Schedule Site Review (with appropriate Divisions)	05/24/2023
0EN1 Conduct Environmental Desktop Review			
Complete	**NA**		**Date Completed**
✔		Confirm Environmental Desktop Review is Complete	04/19/2023
0MM1 Conduct Multimodal Review			
Complete	**NA**		**Date Completed**
		Confirm Multimodal Review is Complete	
	✔	Review Multimodal Considerations & Recommendations	
0TO1 Conduct Initial Traffic Ops/TSMO Review *(include HQ Traffic Ops and Regional Traffic Office)*			
Complete	**NA**		**Date Completed**
✔		Confirm Transportation Systems Management & Operations (TSMO) Alignment & Operations Review is Complete	04/19/2023
		Request Concept Report Review	
0ST1 Develop Structures Recommendations			
Complete	**NA**		**Date Completed**
✔		Confirm Recommended Structure Type for Concept Report is Complete	05/05/2023
✔		Confirm Hydraulic Recommendations for Concept Report is Complete	05/05/2023
0SY1 Provide Preliminary Survey Data			
Complete	**NA**		**Date Completed**
		Confirm Control Ground Survey Set	
		Review Preliminary Survey Data	
		Determine Time to Complete the Aerial Survey	
0GT1 Conduct Preliminary Geotechnical Assessment			
Complete	**NA**		**Date Completed**
		Confirm Geotechnical Division Review is Complete	
0RD1 Provide Roadway Desktop Review			
Complete	**NA**		**Date Completed**
		Confirm Roadway Division Review is Complete	

Action Checklist			
0SD2 Develop Draft Concept Report			
Complete	**NA**		**Date Completed**
✔		Conduct Intersection and Interchange Evaluation (IIE)	07/15/2023
✔		Complete Conceptual Signal Warrants	07/01/2023
✔		Develop Draft Conceptual Layouts/Crash Figures for Site Visit	05/31/2023
✔		Compile Initial Divisional Reviews for Site Visit	05/31/2023
✔		Prepare & Send Site Visit Packet	05/31/2023
✔		Lead Site Visit	06/12/2023
	✔	Initiate Interstate Access Requests (IAR) Concept Coordination with FHWA (if applicable)	
✔		Develop, Compile, and Distribute the Draft Concept Report	07/24/2023
0TO2 Develop TSMO Scope Items *(include HQ Traffic Ops and Regional Traffic Office)*			
Complete	**NA**		**Date Completed**
✔		Confirm Signal Warrants Analysis is Complete	07/15/2023
		Confirm Lighting Warrants Analysis is Complete	
✔		Review and Confirm TSMO & ITS Scope and Budget	04/19/2023
0RW1 Complete Preliminary Right-of-Way Estimates			
Complete	**NA**		**Date Completed**
		Review and Confirm Preliminary Right-of-Way Cost Estimates	
0UT1 Complete Utility Preliminary Estimates			
Complete	**NA**		**Date Completed**
		Review and Confirm Preliminary Utility Estimate	
		Review and Confirm Preliminary Railroad Cost Estimate	
0SD3 Finalize Concept Report			
Complete	**NA**		**Date Completed**
		Compile and Review Initial Risk Assessment	
✔		Finalize Conceptual Layouts	03/28/2024
✔		Develop Environmental Technical Study Area (ETSA)	07/19/2023
✔		Address Comments and Finalize Concept Report	04/01/2024
		Address Comments and Finalize Interstate Access Requests (IAR) Document and Memo (if applicable)	
		Develop Roadway Safety Audit (RSA) No Plans Document	
		Submit the final Concept Report for Review and Signatures (as needed; see 0SD3 for additional information)	
		Finalize Document and Upload All Needed Electronic Files	
		Notify the Project Management Director or Assigned Project Manager to Set Up Project (1PM1)	

NA Justification

Document is anticipated to be a SOAR but not a full IAR.
Lighting warrant not needed for this type of report; high-mast interchange lighting will be used.
No railroad within the project limits.
Initial Risk Assessment form not needed for this type of concept report.
RSA No Plans document not needed for SOAR document.
0SY1 not needed for SOAR document.
0GT1 not needed for SOAR document.
0RW1 not needed for SOAR document.
0UT1 not needed for SOAR document.
Initiate Interstate Access Requests (IAR) Concept Coordination with FHWA not needed for SOAR document.

The following table of contents lists attachments the STID Project Manager completes or compiles with the Concept Report for approval and publication. Depending on project type, not all attachments listed in the checklist are necessary (N/A) and additional documentation may be added. This note will not be printed for the final document.

Concept Report Table of Contents/Attachments		
	Included	**NA**
One-Page Summary (with project location map)	✔	
Conceptual Layout(s) and Cross Section	✔	
Environmental Technical Study Area (ETSA) Layout	✔	
Concept Cost Estimate (Construction Year Estimate)	✔	
TSMO & ITS Scope and Budget[1]	✔	
ROW Form 44-A[1]		
Crash Packet[1]	✔	
Crash Prediction Analysis[1]	✔	
Site Visit Attendee List	✔	
Environmental Desktop Review Form[1]	✔	
Multimodal Considerations & Recommendations[1]	✔	
Existing Structure Summary[1]	✔	
Email or memo containing Structure Type Recommendations[1]	✔	
Email or memo containing Hydraulic Recommendations[1]	✔	
Hydraulic Data		✔
Intersection and Interchange Evaluation (IIE) Analysis and Summary Form	✔	
Traffic Analysis Summary/Tables	✔	
Forecasted Traffic Sheets[1]	✔	
Traffic Modeling (e.g., Synchro, VISSIM, Highway Capacity Software (HCS) Output)[1]	✔	
Signal Warrant[1]	✔	
Lighting Warrant[1]		
Initial Risk Assessment using the Risk Assessment Form		
Final Interstate Access Request (IAR) Document and Memo with Letter from STID Director		✔
Road Safety Audit (RSA) No Plans[1]		✔

NA Justification

There are no streams within the project area. This project at this time does not require an IAR. This project is not an RSA. Project will utilize interchange lighting. Risk Assessment Form and ROW Form 44-A are not required for this type of Concept Report.

[1] External document to STID

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2028 Signal Warrants 316

2033 Signal Warrants 342

2048 Signal Warrants 368

Initial Risk Assessment 394

Location Summary

Widening Epps Mill Road from State Route 2 (US-41) (L.M. 0.00) to just past Capital Way (L.M. 0.86) including interchange ramp improvements and bridge replacement has been identified by TDOT to improve safety and traffic flow to accommodate rapid growth in southern Rutherford County. This site along I-24 is within 5 miles of Joe B Jackson Pkwy (Exit 84) the site of significant industrial/commercial warehouse development including Amazon's largest distribution center in the area. Right off I-24 in either direction are large truck stops with another proposed for the southeast quadrant of the interchange that will be constructing a realignment of Miller Lane.

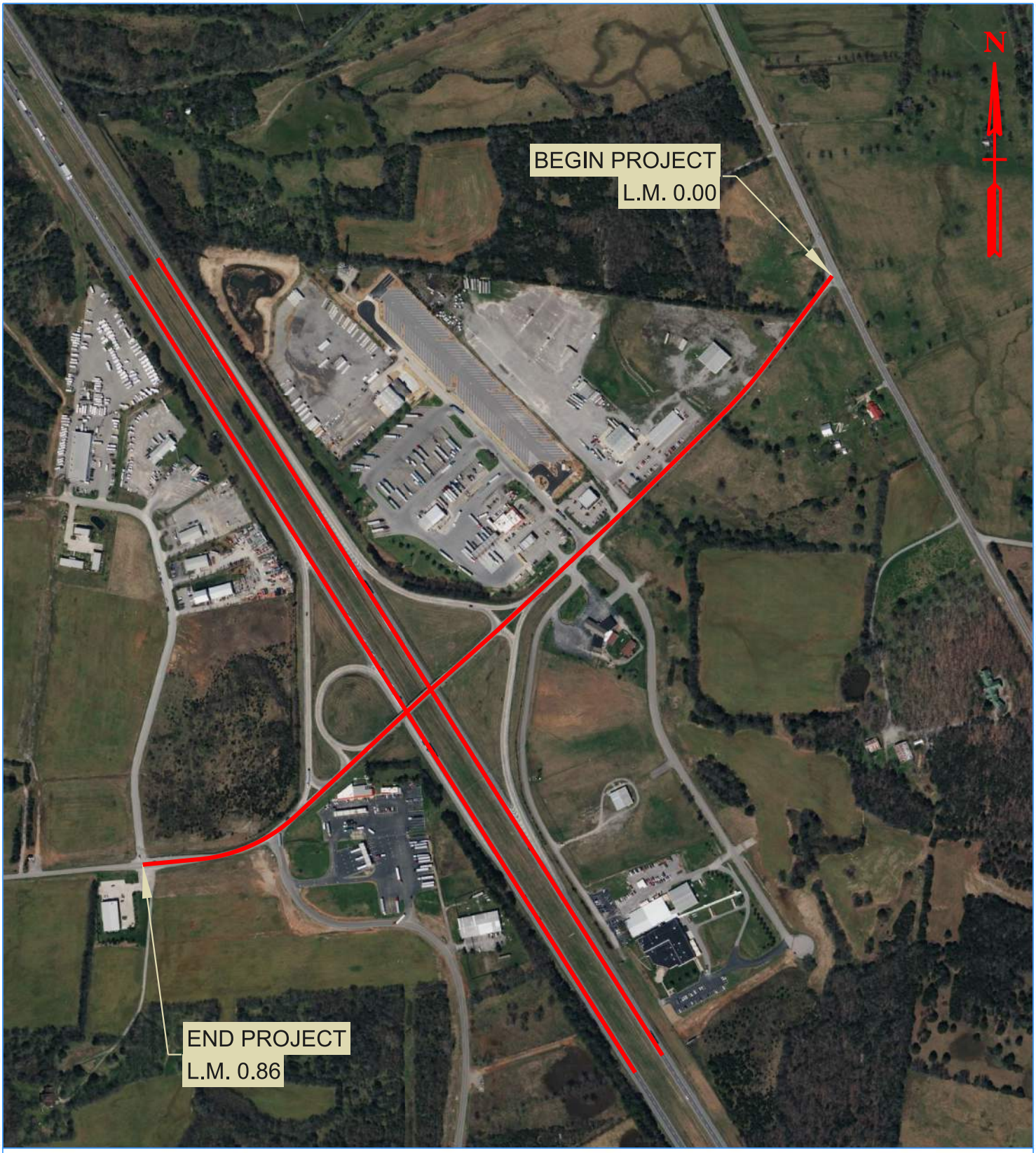
Existing Conditions

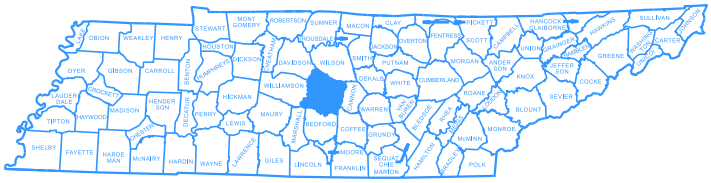
Epps Mill Road begins at State Route 2 (US-41) and the existing roadway is classified as a two (2) lane Urban Major Collector with a right-of-way width of sixty (60) feet. Epps Mill Road has lane widths of ten (10) to eleven (11) feet and shoulder widths of two (2) to four (4) feet. Epps Mill Road widens at some intersections throughout the segment to establish eleven (11) foot dedicated turn lanes. Epps Mill Road has a posted speed limit of thirty (30) mph from Log Mile 0.000 to Log Mile 0.86. As you approach I-24 from the east development density increases with multiple driveways per parcel located on Epps Mill Road. The existing interchange is a partial cloverleaf (parclo) configuration with stop signs for left turn movements and all right-turn movements are yield condition. There is a cemetery on the southwest quadrant of the interchange that necessitated the original partial cloverleaf (parclo) configuration. The existing bridge over I-24 is a two-span 300' long haunched steel welded plate girder bridge that is approaching 60 years of service life.

Design Summary

- Epps Mill Road
    - Widen and realign Epps Mill Road to three lanes from SR-2 to Capital Way with a center two-way left turn lane following TDOT Standard Drawing RD11-TS-7B. The intersection with SR-2 will be shifted south to improve intersection geometry. Forbus Drive and the ramp terminals will all be signalized with protected left turn lanes when needed due to traffic in the design year. The existing north edge-of-pavement will be held between Forbus Drive and SR-2 to reduce ROW impacts to commercial business along Epps Mill Road. From Forbus Drive to Miller Road the alignment will be shifted to be at a higher skew angle than the existing roadway as it crosses I-24. This aids in constructability allowing more of the proposed roadway to be built outside of the existing roadway as well as avoiding impacts to the cemetery on the southwest quadrant of the interchange. Miller Road and the I-24 eastbound (EB) ramp terminals will be combined into a single intersection to improve intersection spacing and reduce conflict points. The proposed design speed is 40 mph with a posted speed of 30 mph. All curves along Epps Mill Road will be flattened to increase stopping sight distance and minimize the need for superelevation that could increase ROW impacts.
    - Proposed bridge over I-24 will have an out-to-out width of 65' with three (3) twelve (12) foot travel lanes with eight (8) foot shoulders and five (5) foot sidewalks on either side. The structure will be a concrete two (2) span bridge 250 feet in length. Each span will be 125 feet long. The preliminary girder selection is a 72" Bulb Tee (BT-72) because it can accommodate span lengths of 120 to 155 feet without dense beam spacing per the PCI Bridge Design Manual and is a beam shape that is a standard TDOT approved beam type. Superstructure depth=89.8"=72" (beam)+10" (deck)+ 7.8" ((width in inches x 0.02)/2).

- I-24
    - I-24 eastbound (EB) ramps will see improved acceleration and deceleration lanes to meet required minimums. The I-24 EB on-ramp loop will be improved to a design speed of 35 mph from 25 mph and will also feature a combined intersection point with Epps Mill Road using newly adopted standards for parclo intersections to mirror traditional sideroad configurations more closely to reduce the potential wrong way driver probability at this style of interchange. The I-24 EB off-ramp will feature an improved departure speed of 40 mph up from 30 mph and be realigned around the new loop configuration to tie into the four-way intersection with Epps Mill Road and Miller Road.
    - I-24 westbound (WB) ramps will be straightened out and aligned to be perpendicular to Epps Mill Road. This has multiple benefits including increased constructability, higher speed ramp geometry, increased safety, and sight distance at the intersection with Epps Mill Road and improved intersection spacing with Forbus Drive. The WB on-ramp will have a design speed of 45 mph and the WB off-ramp will have a departure speed of 40 mph.
- SR-2
    - Widening for a dedicated left and right turn lane will accommodate design year traffic volumes with roughly 1100 feet of improvements to SR-2. The design speed is 60 mph and posted for 55 mph.
- Forbus Drive
    - The Love's truck stop will lose driveway access to Epps Mill Road in accordance with TDOT's Highway System Access Manual for intersection and driveway spacing. Due to this, a signal will be installed at Forbus Drive. The signal will feature a dedicated right turn lane onto Epps Mill Road due to the high volumes of traffic turning out of the truck stop and toward I-24. Due to limited ROW availability, thru and left movements will be combined into a thru-left lane with appropriate signal phasing. Signal warrants can be found on page 291 of this report.
- Miller Lane
    - Miller Lane will be realigned by others as a part of a proposed gas station and its connection with Epps Mill Road will be via a four-way intersection with Forbus Drive. A left-thru movement and signal phasing will mirror the Forbus Drive side of the intersection.
- Miller Road
    - Miller Road will be re-aligned to intersect Epps Mill Road perpendicular and across from the new I-24 EB ramp terminals. The design speed is 35 mph and posted for 30 mph.





LOCATION MAP

RUTHERFORD COUNTY

EPPS MILL ROAD (LR-01044)

L.M. 0.00 TO L.M. 0.86

SCALE: 1"=600'

SOURCE: BING MAPS

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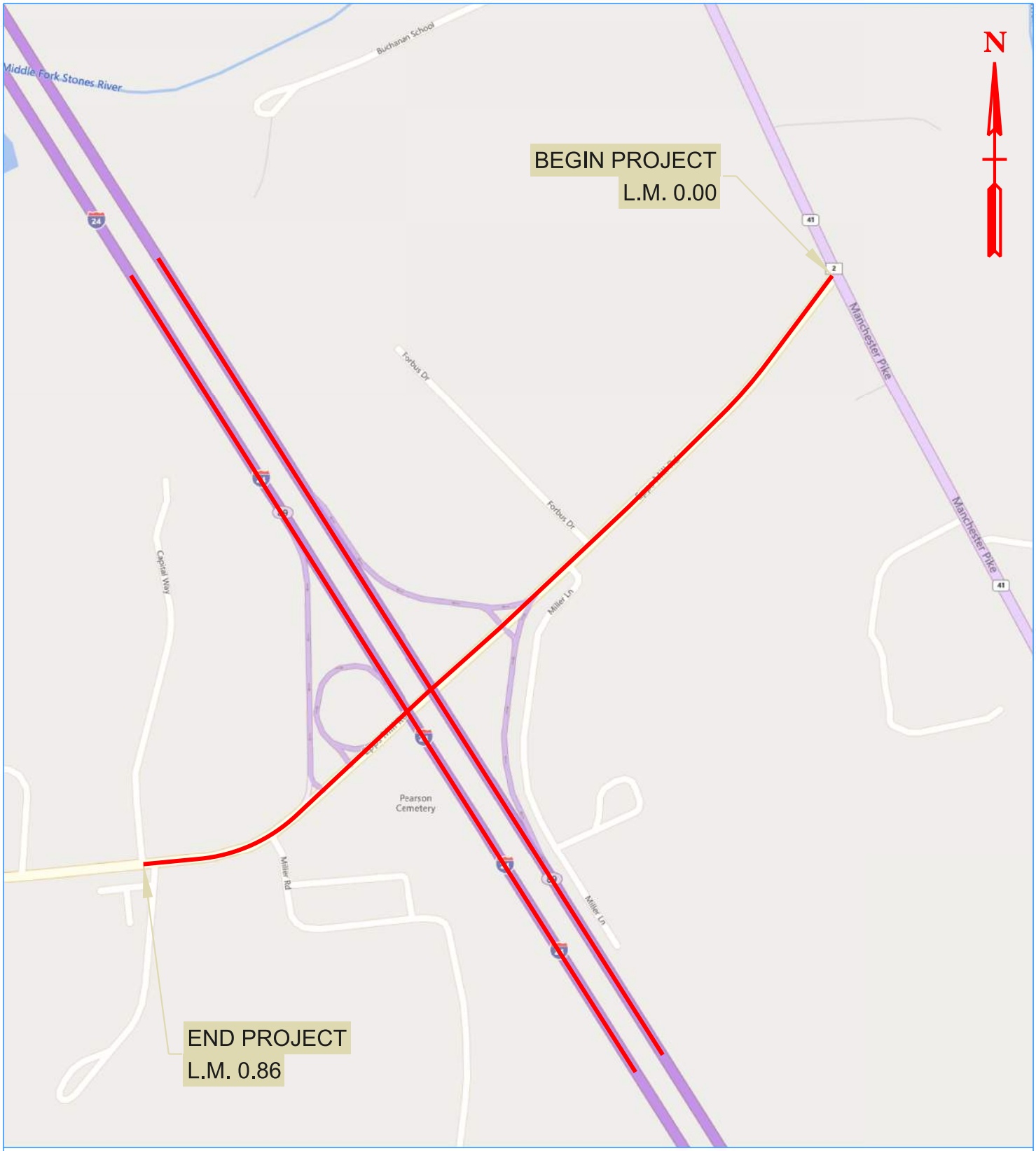

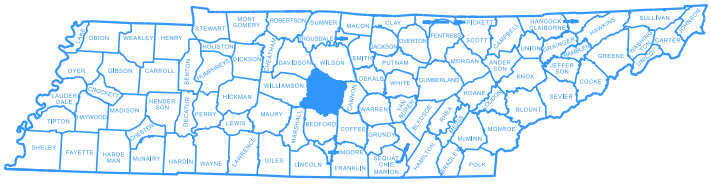

AREA MAP

RUTHERFORD COUNTY

EPPS MILL ROAD (LR-01044)

L.M. 0.00 TO L.M. 0.86

SCALE: 1"=600'

SOURCE: BING MAPS

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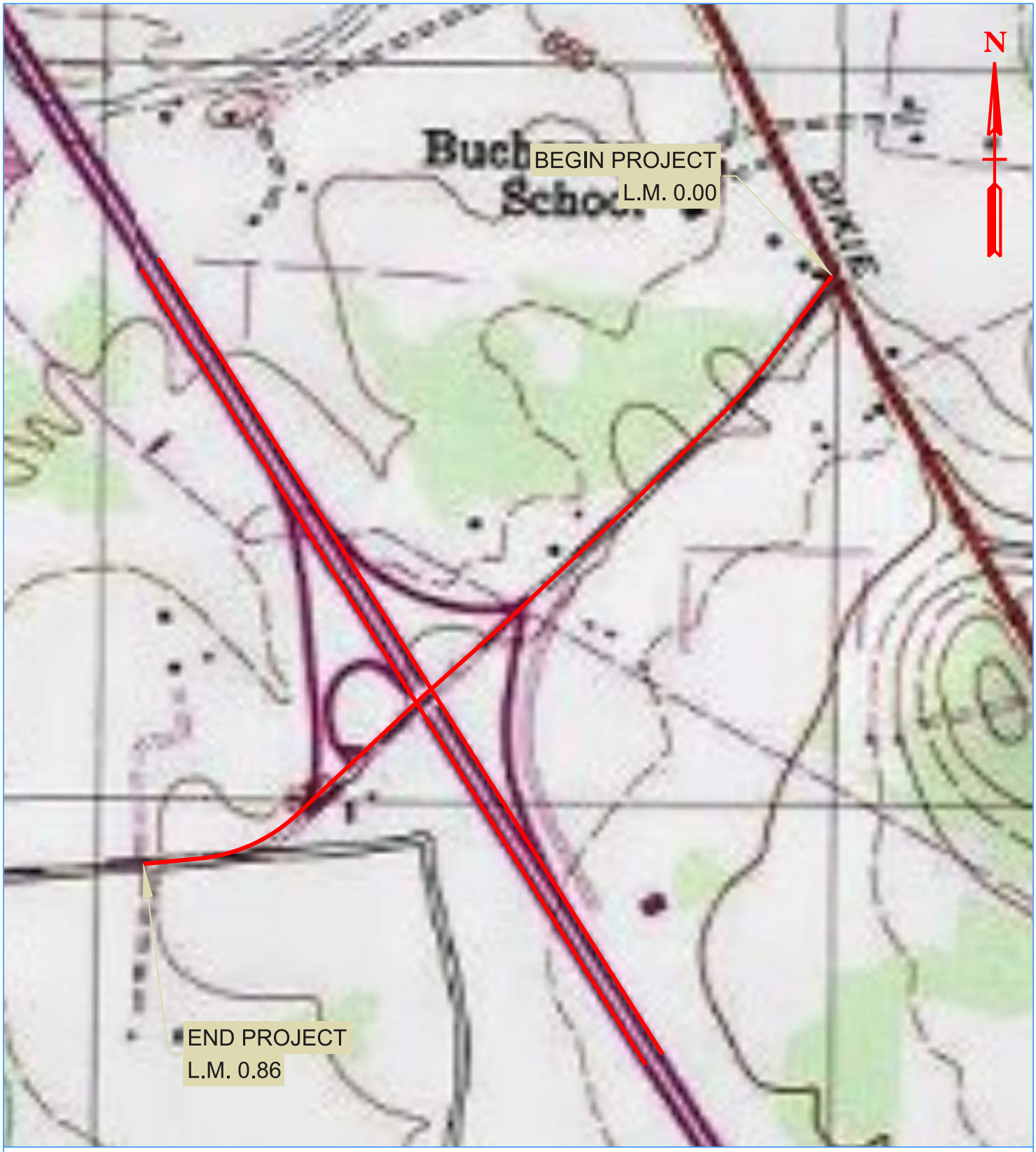
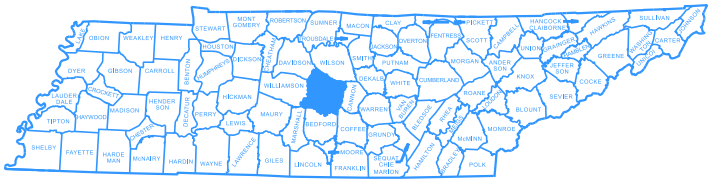
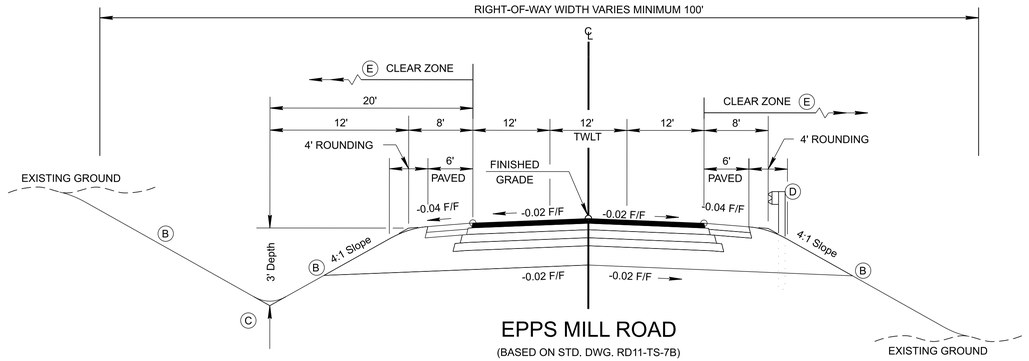




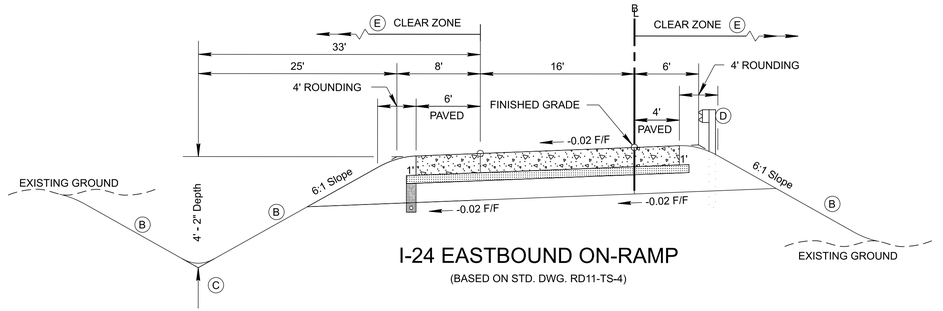
TOPOGRAPHIC MAP
RUTHERFORD COUNTY
EPPS MILL ROAD (LR-01044)
L.M. 0.00 TO L.M. 0.86
SCALE: 1"=600'
SOURCE: USGS

TYPE	YEAR	COUNTY	FIGURE NO.
CR	2023	RUTHERFORD	1



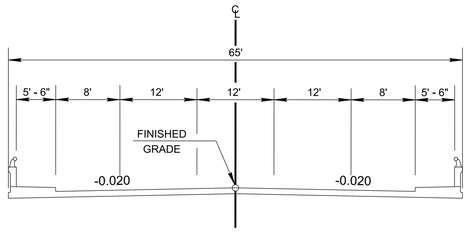
EPPS MILL ROAD

(BASED ON STD. DWG. RD11-TS-7B)



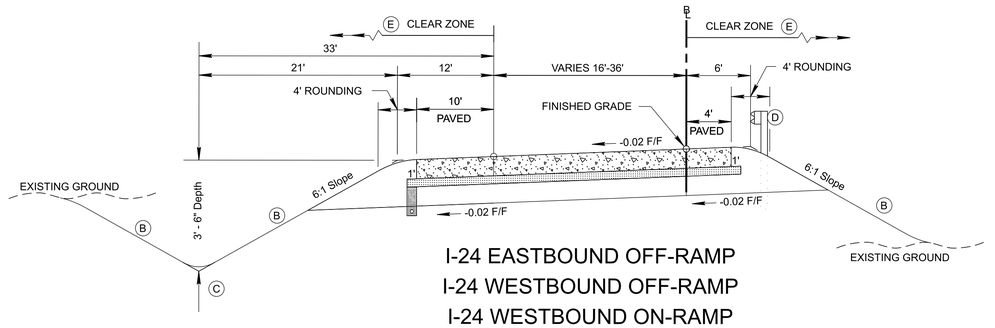
I-24 EASTBOUND ON-RAMP

(BASED ON STD. DWG. RD11-TS-4)



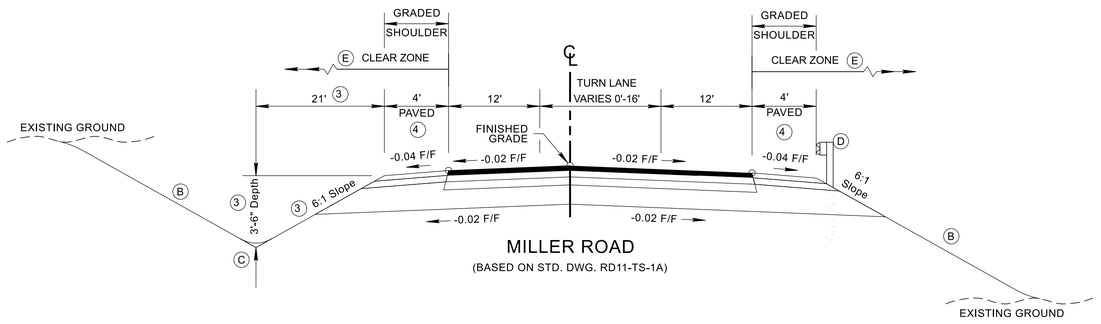
EPPS MILL ROAD BRIDGE OVER I-24

(BASED ON STD. DWG. RD11-TS-7)



I-24 EASTBOUND OFF-RAMP
I-24 WESTBOUND OFF-RAMP
I-24 WESTBOUND ON-RAMP

(BASED ON STD. DWG. RD11-TS-4)



MILLER ROAD

(BASED ON STD. DWG. RD11-TS-1A)

(A) THE SLOPE OF THE SHOULDER AND THE ROADWAY PAVEMENT SHALL NOT EXCEED AN ALGEBRAIC DIFFERENCE OF 7%.

(B) SEE STANDARD DRAWINGS RD11-S-11 AND RD11-S-11B FOR FILL AND CUT SLOPE TABLES, ROUNDING ON TOP OF CUT SLOPES AND TOE OF FILL SLOPES, SPECIAL ROCK TREATMENT AND SUB GRADE ROUNDING IF APPLICABLE.

(C) SEE STANDARD DRAWING RD11-S-11A FOR ROUNDING OF ROADSIDE DITCH SLOPES.

(D) SEE STANDARD DRAWING S-PL-6 FOR TYPICAL GUARDRAIL PLACEMENT.

(E) SEE STANDARD DRAWING S-CZ-1 FOR CLEAR ZONE CRITERIA. SEE THE "ROADSIDE DESIGN GUIDE", AASHTO, 2011, FOR FURTHER INFORMATION REGARDING CLEAR ZONES.

(1) MEDIAN CURBS WILL BE SLOPING CURBS. VERTICAL CURBS WILL NOT BE PERMITTED.

(2) 3:1 SLOPES OR FLATTER ARE DESIRABLE AND ARE THE MAXIMUM IN REGION IV. 2:1 SLOPES ARE APPLICABLE IN AREAS WHERE RIGHT-OF-WAY RESTRICTIONS, ENVIRONMENTAL CONSIDERATIONS, OR COST WARRANTS A STEEPER THAN 3:1 SLOPE.

(3) ADTS OVER 400 AND DESIGN SPEEDS OF 50 MILES PER HOUR AND GREATER SHALL REQUIRE 6:1 SLOPES.
6:1 Slope Require A 21' Ditch Width And A Depth of 3'-6".
4:1 Slope Require A 12' Ditch Width And A Depth of 3'-0".

(4) WHEN THE PROPOSED SHOULDER WIDTH IS 2' OR 4' THE SHOULDER SLOPE CAN MATCH THE ROADWAY PAVEMENT CROSS SLOPE.

N.T.S.

CONCEPT REPORT

I-24 INTERCHANGE AT EPPS MILL ROAD (EXIT 89)
LOG MILE 0.00 TO LOG MILE 0.86
RUTHERFORD COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 1
I-24 INTERCHANGE AT EPPS MILL ROAD (EXIT 89)
TYPICAL SECTIONS

5/2/2024 3:48:19 PM
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TYPE	YEAR	COUNTY	FIGURE NO.
CR	2023	RUTHERFORD	2

MATCHLINE SEE FIGURE 4

EPPS MILL ROAD

150' TAPER

70'

CAPITAL WAY

60'

250'

160'

150'

INTERCHANGE LIGHTING
LOCATIONS TBD

I-24 EB

I-24 WB

FUTURE 4 LANE WIDENING LIMITS
FUTURE 4 LANE WIDENING LIMITS

500'

MATCHLINE SEE FIGURE 3

PROPOSED BRIDGE
REPLACEMENT
SPAN LENGTH: 250'
GIRDER TYPE: BT-72

265'

185'

MILLER ROAD

1450' ACCELERATION LENGTH

I-24 EB

I-24 WB

TO BE CONSTRUCTED
BY OTHERS

MILLER LANE

LEGEND
- ASPHALT PAVEMENT
- CONCRETE PAVEMENT
- BRIDGE
- EDGE OF TRAVELED WAY
- CUT LINE
- FILL LINE
- PRESENT RIGHT OF WAY
- PROPOPSED RIGHT OF WAY
- SCARIFY AND REMOVE

MATCHLINE SEE FIGURE 5

0 200' 400' 600'

CONCEPT REPORT

I-24 INTERCHANGE AT EPPS MILL ROAD (EXIT 89)
LOG MILE 0.00 TO LOG MILE 0.86
RUTHERFORD COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 2
I-24 INTERCHANGE AT
EPPS MILL ROAD (EXIT 89)
CONCEPTUAL PLAN

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TYPE	YEAR	COUNTY	FIGURE NO.
CR	2023	RUTHERFORD	3

MATCHLINE SEE FIGURE 2

FORBUS DRIVE

EPPS MILL ROAD

MILLER LANE

S.R. 2

FUTURE GAS STATION

215'

200'

100'

500'

330' TAPER

150'

150'

330' TAPER

LEGEND

- ASPHALT PAVEMENT
- CONCRETE PAVEMENT
- BRIDGE
- EDGE OF TRAVELED WAY
- CUT LINE
- FILL LINE
- PRESENT RIGHT OF WAY
- PROPOPSED RIGHT OF WAY
- SCARIFY AND REMOVE

0 200' 400' 600'

CONCEPT REPORT

I-24 INTERCHANGE AT EPPS MILL ROAD (EXIT 89)
LOG MILE 0.00 TO LOG MILE 0.86
RUTHERFORD COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 3
I-24 INTERCHANGE AT
EPPS MILL ROAD (EXIT 89)
CONCEPTUAL PLAN

3/28/2024 9:45:41 AM
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TYPE	YEAR	COUNTY	FIGURE NO.
CR	2023	RUTHERFORD	4

I-24 EB

I-24 WB

FUTURE 4 LANE WIDENING LIMITS
FUTURE 4 LANE WIDENING LIMITS

300' TAPER

300' TAPER

550' DECELERATION LENGTH

850' ACCELERATION LENGTH

CAPITAL WAY

FORBUS DRIVE

MATCHLINE SEE FIGURE 2

LEGEND
- ASPHALT PAVEMENT
- CONCRETE PAVEMENT
- BRIDGE
- EDGE OF TRAVELED WAY
- CUT LINE
- FILL LINE
- PRESENT RIGHT OF WAY
- PROPOPSED RIGHT OF WAY
- SCARIFY AND REMOVE

0 200' 400' 600'

CONCEPT REPORT

I-24 INTERCHANGE AT EPPS MILL ROAD (EXIT 89)
LOG MILE 0.00 TO LOG MILE 0.86
RUTHERFORD COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 4
I-24 INTERCHANGE AT
EPPS MILL ROAD (EXIT 89)
CONCEPTUAL PLAN

3/28/2024 9:45:54 AM
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TYPE	YEAR	COUNTY	FIGURE NO.
CR	2023	RUTHERFORD	5

MATCHLINE SEE FIGURE 2

MILLER ROAD

I-24 EB

FUTURE 4 LANE WIDENING LIMITS

FUTURE 4 LANE WIDENING LIMITS

I-24 WB

450' DECELERATION LENGTH

300' TAPER

300' TAPER

MILLER LANE

LEGEND

- ASPHALT PAVEMENT
- CONCRETE PAVEMENT
- BRIDGE
- EDGE OF TRAVELED WAY
- CUT LINE
- FILL LINE
- PRESENT RIGHT OF WAY
- PROPOPSED RIGHT OF WAY
- SCARIFY AND REMOVE

0 200' 400' 600'

CONCEPT REPORT

I-24 INTERCHANGE AT EPPS MILL ROAD (EXIT 89)
LOG MILE 0.00 TO LOG MILE 0.86
RUTHERFORD COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 5
I-24 INTERCHANGE AT
EPPS MILL ROAD (EXIT 89)
CONCEPTUAL PLAN

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TYPE	YEAR	COUNTY	FIGURE NO.
CR	2023	RUTHERFORD	6

STUDY AREA BEGINS 300 FEET BEFORE BEGIN PROJECT

APPROX. 150 FEET FROM END OF SIDE ROAD

APPROX. 50 FEET FROM PROP. R.O.W

BEGIN PROJECT

EPPS MILL ROAD

CAPITAL WAY

APPROX. 50 FEET FROM PROP. R.O.W

MATCHLINE SEE FIGURE 8

I-24 EB

I-24 WB

APPROX. 50 FEET FROM PROP. R.O.W

MATCHLINE SEE FIGURE 7

APPROX. 50 FEET FROM PROP. R.O.W

CEMETARY

MILLER ROAD

APPROX. 150 FEET FROM SIDE ROAD TIE

I-24 EB

I-24 WB

MILLER LANE

APPROX. 50 FEET FROM PROP. R.O.W

MATCHLINE SEE FIGURE 9

LEGEND

- ASPHALT PAVEMENT
- CONCRETE PAVEMENT
- BRIDGE
- EDGE OF TRAVELED WAY
- CUT LINE
- FILL LINE
- PRESENT RIGHT OF WAY
- PROPOPSED RIGHT OF WAY
- ETSA BOUNDARY

0 200' 400' 600'

ENVIRONMENTAL TECHNICAL STUDY AREA

I-24 INTERCHANGE AT EPPS MILL ROAD (EXIT 89)
LOG MILE 0.00 TO LOG MILE 0.86
RUTHERFORD COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 6
I-24 INTERCHANGE AT EPPS MILL ROAD (EXIT 89)
ETSA

3/28/2024 9:46:18 AM
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TYPE	YEAR	COUNTY	FIGURE NO.
CR	2023	RUTHERFORD	7

BEGIN PROJECT

APPROX. 50 FEET
FROM PROP. R.O.W

STUDY AREA BEGINS 300 FEET
BEFORE BEGIN PROJECT

APPROX. 50 FEET
FROM PROP. R.O.W

APPROX. 150 FEET
FROM END OF SIDE ROAD

APPROX. 50 FEET
FROM EX. R.O.W

FORBUS DRIVE

EPPS MILL ROAD

MATCHLINE SEE FIGURE 6

APPROX. 50 FEET
FROM PROP. R.O.W

APPROX. 50 FEET
FROM PROP. R.O.W

APPROX. 50 FEET
FROM PROP. R.O.W

MILLER LANE

APPROX. 50 FEET
FROM EX. R.O.W

S.R. 2

END PROJECT

STUDY AREA ENDS 300 FEET
AFTER END PROJECT

APPROX. 300 FEET
FROM END OF SIDE ROAD

LEGEND
- ASPHALT PAVEMENT
- CONCRETE PAVEMENT
- BRIDGE
- EDGE OF TRAVELED WAY
- CUT LINE
- FILL LINE
- PRESENT RIGHT OF WAY
- PROPOPSED RIGHT OF WAY
- ETSA BOUNDARY

0 200' 400' 600'

N

ENVIRONMENTAL TECHNICAL STUDY AREA

I-24 INTERCHANGE AT EPPS MILL ROAD (EXIT 89)
LOG MILE 0.00 TO LOG MILE 0.86
RUTHERFORD COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 7
I-24 INTERCHANGE AT
EPPS MILL ROAD (EXIT 89)
ETSA

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TYPE	YEAR	COUNTY	FIGURE NO.
CR	2023	RUTHERFORD	8

STUDY AREA BEGINS 300 FEET BEFORE BEGIN PROJECT

BEGIN PROJECT

EXISTING R.O.W.

EXISTING R.O.W.

I-24 EB

I-24 WB

FORBUS DRIVE

CAPITAL WAY

APPROX. 50 FEET FROM PROP. R.O.W.

APPROX. 50 FEET FROM PROP. R.O.W.

MATCHLINE SEE FIGURE 6

LEGEND
- ASPHALT PAVEMENT
- CONCRETE PAVEMENT
- BRIDGE
- EDGE OF TRAVELED WAY
- CUT LINE
- FILL LINE
- PRESENT RIGHT OF WAY
- PROPOPSED RIGHT OF WAY
- ETSA BOUNDARY

0 200' 400' 600'

ENVIRONMENTAL TECHNICAL STUDY AREA

I-24 INTERCHANGE AT EPPS MILL ROAD (EXIT 89)
LOG MILE 0.00 TO LOG MILE 0.86
RUTHERFORD COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 8
I-24 INTERCHANGE AT EPPS MILL ROAD (EXIT 89)
ETSA

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TYPE	YEAR	COUNTY	FIGURE NO.
CR	2023	RUTHERFORD	9

MATCHLINE SEE FIGURE 6

EXISTING R.O.W

MILLER ROAD

I-24 EB

I-24 WB

MILLER LANE

EXISTING R.O.W

END PROJECT

STUDY AREA BEGINS 300 FEET
AFTER END PROJECT

LEGEND
- ASPHALT PAVEMENT
- CONCRETE PAVEMENT
- BRIDGE
- EDGE OF TRAVELED WAY
- CUT LINE
- FILL LINE
- PRESENT RIGHT OF WAY
- PROPOPSED RIGHT OF WAY
- ETSA BOUNDARY

0 200' 400' 600'

ENVIRONMENTAL TECHNICAL STUDY AREA

I-24 INTERCHANGE AT EPPS MILL ROAD (EXIT 89)
LOG MILE 0.00 TO LOG MILE 0.86
RUTHERFORD COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 9
I-24 INTERCHANGE AT
EPPS MILL ROAD (EXIT 89)
ETSA

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COST ESTIMATE SUMMARY

COST ESTIMATE SUMMARY

Route:	I-24 Interchange at Epps Mill Road (LR-01044)
Termini:	SR-2 (L.M. 0.00 and Capital Way (L.M. 0.86)
Scope of Work:	Interchange Improvements and Widening
Project Type of Work:	Modify Interchange
County:	Rutherford
Length:	0.86 Miles
Date:	May 7, 2024
Estimate Type:	Design-Build
Years Inflated:	0

TN TDOT Department of Transportation

Estimate Developed By
Initial/Organization
STV Inc.

DESCRIPTION		LOCAL	STATE	FEDERAL	TOTAL
		0%	0%	0%	
Construction Items					
Removal Items		$0	$0	$0	$268,000
Asphalt Paving		$0	$0	$0	$4,470,000
Concrete Pavement		$0	$0	$0	$3,780,000
Drainage		$0	$0	$0	$809,000
Appurtenances		$0	$0	$0	$0
Structures & Contingency		$0	$0	$0	$4,380,000
Fencing		$0	$0	$0	$32,500
Signalization & Lighting		$0	$0	$0	$2,790,000
Railroad Crossing		$0	$0	$0	$0
Earthwork		$0	$0	$0	$4,010,000
Clearing and Grubbing		$0	$0	$0	$365,000
Seeding & Sodding		$0	$0	$0	$147,000
Rip-Rap or Slope Protection		$0	$0	$0	$0
Guardrail		$0	$0	$0	$132,000
Signing		$0	$0	$0	$21,200
Pavement Markings		$0	$0	$0	$182,000
Maintenance of Traffic		$0	$0	$0	$263,000
Construction Lines and Stakes		$0	$0	$0	$465,000
DESIGN-BID-BUILD & DESIGN-BUILD PERCENTAGES					
Mobilization	10%	$0	$0	$0	$2,160,000
Additional Items	20%	$0	$0	$0	$4,330,000
Const. Contingency (Structures Not Included)	50%	$0	$0	$0	$11,900,000
Const. Eng. & Inspec.	15%	$0	$0	$0	$6,010,000
Construction Estimate - DBB & DB		$0	$0	$0	$46,500,000
Right-of-Way & Utilties		**LOCAL**	**STATE**	**FEDERAL**	**TOTAL**
		0%	0%	0%	
Right-of-Way		$0	$0	$0	$8,700,000
Utilities		$0	$0	$0	$0
Preliminary Engineering		**LOCAL**	**STATE**	**FEDERAL**	**TOTAL**
		0%	0%	0%	
Prelim. Eng. (Design-Build)	20.0%	$0	$0	$0	$9,300,000
Design-Build Project Cost		$0	$0	$0	$ 64,500,000

ESTIMATE REVIEW TEAM

Review Process Applies to Bridge, Legislative, and Economic Development Projects

ROLE	NAME/ORGANIZATION	DATE COMPLETED
Primary Cost Estimate (Before Draft Report):		
Independent Cost Estimate:		
Manager Review:		
QA/QC peformed by:		

PAY ITEM SUMMARY

TDOT PAY ITEM	TDOT DESCRIPTION	UNIT	TOOL QUANTITIES	ADDITIONAL QUANTITIES	TOOL QUANTITIES + ADDITIONAL	Unit Price	TOTAL COST
Pavment Removal							
202-03.01	REMOVAL OF ASPHALT PAVEMENT	SY	587		587	$ 16.37	$ 9,603.73
202-03	REMOVAL OF RIGID PAVEMENT	CY	884		884	$ 28.33	$ 25,041.20
415-01.02	COLD PLANING BITUMINOUS PAVEMENT	SY	23419		23419	$ 9.94	$ 232,788.17
						PAVEMENT REMOVAL TOTAL (ROUNDED)	$ 267,500
Asphalt Roads							
303-01	MINERAL AGGREGATE, TYPE A BASE, GRADING D	TON	60416		60416	$ 37.18	$ 2,246,249.11
307-(01, 02, 03).01	ASPHALT CONCRETE MIX (All Grades) (BPMB-HM) GRADING A	TON	4771		4771	$ 112.37	$ 536,104.24
307-01.(20 & 21 & 22)	AGGREGATE (BPMB-HM) GRADING A-S MIX	TON	2623		2623	$ 122.73	$ 321,866.83
307-(01 & 02 & 03).08	ASPHALT CONCRETE MIX (ALL GRADES) (BPMB-HM) GRADING B-M2	TON	5011		5011	$ 113.17	$ 567,118.55
402-01	BITUMINOUS MATERIAL FOR PRIME COAT (PC)	TON	61		61	$ 1,163.24	$ 71,459.99
402-02	AGGREGATE FOR COVER MATERIAL (PC)	TON	222		222	$ 89.00	$ 19,733.97
403-01	BITUMINOUS MATERIAL FOR TACK COAT (TC)	TON	33		33	$ 924.09	$ 30,876.06
411-01.07	ACS MIX (PG64-22) GRADING E SHOULDER	TON	1862		1862	$ 130.59	$ 243,199.62
411-(01 & 02 & 03).10	ACS MIX(ALL GRADES) GRADING D	TON	3210		3210	$ 135.17	$ 433,953.33
						PAVING TOTAL (ROUNDED)	$ 4,470,600
Concrete Roads							
313-03	TREATED PERMEABLE BASE	SY	17988		17988	$ 37.15	$ 668,268.07
501-01.03	PORTLAND CEMENT CONCRETE PAVEMENT (PLAIN) 10"	SY	17988		17988	$ 168.77	$ 3,035,897.77
604-01.01	CLASS A CONCRETE (ROADWAY)	CY	65		65	$ 1,148.02	$ 74,685.10
						CONCRETE RAMPS AND ROADWAYS TOTAL (ROUNDED)	$ 3,778,900
Drainage							
607-05.02	24" CONCRETE PIPE CULVERT (CLASS III)	LF	1928		1928	$ 172.02	$ 331,706.43
611-07.01	CLASS A CONCRETE (PIPE ENDWALLS)	CY	91		91	$ 2,034.76	$ 184,601.74
611-07.02	STEEL BAR REINFORCEMENT (PIPE ENDWALLS)	LB	8622		8622	$ 3.96	$ 34,141.52
710-02	Aggregate Underdrains (with pipe)	LF	19164		19164	$ 13.48	$ 258,324.79
						DRAINAGE TOTAL (ROUNDED)	$ 808,800
Appurtenances							
						ROADWAY AND PAVEMENT APPURTENANCES TOTAL (ROUNDED)	$ -
Earthwork & Mineral							
203-01	ROAD & DRAINAGE EXCAVATION (UNCLASSIFIED)	CY	137737		137737	$ 14.81	$ 2,039,885.69
203-02.01	BORROW EXCAVATION (GRADED SOLID ROCK)	TON	30364		30364	$ 32.33	$ 981,672.40
203-03	BORROW EXCAVATION (UNCLASSIFIED)	CY	68869		68869	$ 14.37	$ 989,751.57
						EARTHWORK & MINERAL TOTAL (ROUNDED)	$ 4,011,400
Construction Lines and Stakes							
105-01	Construction Lines and Stakes	LS	1		1		$ 465,000.00
							$ 465,000
Structures							
N/A	Removal of Bridge	SF	10500		10500	$ 30.00	$ 315,000.00
N/A	New Bridge (Concrete I-Beam & Bulb-T):	SF	16250		16250	$ 200.00	$ 3,250,000.00
N/A	Contingency - New Bridge (Concrete I-Beam & Bulb-T):	%	25.0%		25.0%	25.0%	$ 812,500.00
						STRUCTURES TOTAL (ROUNDED)	$ 4,377,500
Interchanges and Unique Intersections							
						INTERCHANGES AND UNIQUE INTERSECTIONS TOTAL (ROUNDED)	$ -
Lighting & Signalization							
N/A	Traffic Signal	EA	3		3	$ 312,500.00	$ 937,500.00
N/A	HIGH MAST INTERCHANGE LIGHTING	LS		1	1	$ 1,500,000.00	$ 1,500,000.00
N/A	ITS Installation	LS		1	1	$ 350,000.00	$ 350,000.00

PAY ITEM SUMMARY

					LIGHTING & SIGNALIZATION TOTAL (ROUNDED)	$	2,787,500
Guardrail							
705-01.01	GUARDRAIL AT BRIDGE ENDS	LF	100	100	$ 108.51	$	10,850.94
705-06.01	W Beam GR (Type 2) Mash TL3	LF	1817	1817	$ 34.98	$	63,558.66
705-06.20	Tangent Energy Absorbing Term Mash TL-3	EA	16	16	$ 3,607.19	$	57,715.09
					GUARDRAIL TOTAL (ROUNDED)	$	132,200
Seeding and Sodding							
801-01	SEEDING (WITH MULCH)	UNIT	1302	1302	$ 54.58	$	71,046.35
801-01.07	TEMPORARY SEEDING (WITH MULCH)	UNIT	976	976	$ 35.33	$	34,491.58
801-02	SEEDING (WITHOUT MULCH)	UNIT	976	976	$ 42.37	$	41,364.52
					SODDING TOTAL (ROUNDED)	$	147,000
Maintenace of Traffic							
N/A	Traffic Control	LS	1	1		$	226,816.26
712-02.02	INTERCONNECTED PORTABLE BARRIER RAIL	LF	744	744	$ 48.61	$	36,155.66
					MAINTENANCE OF TRAFFIC TOTAL (ROUNDED)	$	263,000
Signs							
Not Listed	Signs (Construction)	LS	1	1	$ -	$	21,200
					SIGNING TOTAL (ROUNDED)	$	21,200
Pavement Markings							
716-12.02	ENHANCED FLAT THERMO P.M. (6IN)	LM	24.48	24.47845455	$ 7,419.17	$	181,609.82
					PAVEMENT MARKINGS TOTAL (ROUNDED)	$	181,700
Fencing							
707-01.11	Chain Link Fence (6 Foot)	LF		2800	2800	$ 10.03	$ 28,084.00
707-07.01	Chain-Link Fence (Bridges)	LF		250	250	$ 17.49	$ 4,372.50
					FENCE TOTAL (ROUNDED)	$	32,500.00
Rip-Rap							
					RIP-RAP & SLOPE PROTECTION TOTAL (ROUNDED)	$	-
Clearing and Grubing							
201-01	Clearing and Grubbing	LS			1	$ 364,559.66	$ 364,559.66
					CLEAR AND GRUBBING TOTAL (ROUNDED)	$	364,600.00
Railroad At-Grade Crossing							
					RAILROAD CROSSING OR SEPARATION TOTAL (ROUNDED)	$	-
Utilties							
					UTILITIES TOTAL (ROUNDED)	$	-
Right-of-Way							
N/A	Right-of-Way	LS	1	1	$8,702,000	$	8,702,000.00
					RIGHT-OF-WAY TOTAL (ROUNDED)	$	8,702,000.00

INFLATED COST ESTIMATE

COST ESTIMATE SUMMARY (2024) - DESIGN-BID-BUILD						
PIN	**Project Type of Work**	**Preliminary Engineering:**	**Right-of-Way:**	**Utilities:**	**Construction:**	**Total Project Cost (2023):**
124683.06	Interchange Improvements and Widening	$ 4,650,000	$ 8,700,000	$ -	$ 46,500,000	$ 59,900,000

COST ESTIMATE SUMMARY (2024) - DESIGN-BUILD						
PIN	**Project Type of Work**	**Preliminary Engineering:**	**Right-of-Way:**	**Utilities:**	**Construction:**	**Total Project Cost (2023):**
124683.06	Interchange Improvements and Widening	$ 9,300,000	$ 8,700,000	$ -	$ 46,500,000	$ 64,500,000

COST ESTIMATE SUMMARY (2024) - CMGC & HIGH RISK SCENARIOS						
PIN	**Project Type of Work**	**Preliminary Engineering:**	**Right-of-Way:**	**Utilities:**	**Construction:**	**Total Project Cost (2023):**
124683.06	Interchange Improvements and Widening	$ 15,700,000	$ 8,700,000	$ -	$ 62,700,000	$ 87,100,000

DESIGN-BID-BUILD - INFLATED COST						
No. of Years	**Year**	**Preliminary Engineering:**	**Right-of-Way:**	**Utilities:**	**Construction:**	**Total Inflated Project Cost**
5	2029	$ 6,520,000	$ 12,200,000	$ -	$ 65,200,000	$ 84,000,000
10	2034	$ 9,150,000	$ 17,100,000	$ -	$ 91,500,000	$ 118,000,000

DESIGN-BUILD - INFLATED COST						
No. of Years	**Year**	**Preliminary Engineering:**	**Right-of-Way:**	**Utilities:**	**Construction:**	**Total Inflated Project Cost**
1	2025	$ 9,950,000	$ 9,310,000	$ -	$ 49,800,000	$ 69,000,000
2	2026	$ 10,600,000	$ 9,960,000	$ -	$ 53,200,000	$ 73,800,000
3	2027	$ 11,400,000	$ 10,700,000	$ -	$ 57,000,000	$ 79,000,000
4	2028	$ 12,200,000	$ 11,400,000	$ -	$ 61,000,000	$ 84,500,000
5	2029	$ 13,000,000	$ 12,200,000	$ -	$ 65,200,000	$ 90,500,000
10	2034	$ 18,300,000	$ 17,100,000	$ -	$ 91,500,000	$ 127,000,000

CMGC (HIGH RISK) - INFLATED COST						
No. of Years	**Year**	**Preliminary Engineering:**	**Right-of-Way:**	**Utilities:**	**Construction:**	**Total Inflated Project Cost**
5	2029	$ 22,000,000	$ 12,200,000	$ -	$ 87,900,000	$ 122,000,000
10	2034	$ 30,900,000	$ 17,100,000	$ -	$ 123,000,000	$ 171,000,000

INFLATION INPUTS	
Inflation Rate:	7.00%

TDOT Department of Transportation

Traffic Operations Division

0TO1 and 0TO2 TDOT Project Delivery Network Review

Project Information

PIN	124683.06
Project Number (if available)	N/A
County	Rutherford
Route	I-24 at Epps Mill Road Interchange
Termini	I-24 at Epps Mill Road Interchange
Compiled by	Jon Storey/ Greg Dyer/ Amin Salman
Date	May 17, 2023

General Access Management Statement:

All new projects are subject to HSAM geometric and access design criteria (HSAM Vol. 3) if they fall into our Policy rules, including new alignment, roadway widening, and major reconstruction projects. There may be dedicated cost for damages in the ROW acquisition. Uncontrolled open frontage should not be allowed. Deviations are often needed to prevent ROW takes. The deviation request form is online. Goal is to make the best and safest access possible.

TDOT Policy 385-01 concerning HSAM:
https://www.teamtn.gov/content/dam/teamtn/tdot/hr/policies/385-01.pdf

HSAM: https://www.tn.gov/tdot/traffic-operations-division/traffic-engineering-office/operations-and-safety/access-manual.html)

0TO1: Conduct Initial Traffic Ops/TSMO Review

Deliverable	Task	Responsible Party	
		Activity Leader	Additional Support
TSMO Alignment/Operations Review ITS Project Identification Form	▪ *TSMO Alignment & Operations Review*	TSMO Coordinator	Cross discipline team as listed below

Topic	Comments

TSMO Alignment & Operations Review	Please follow HSAM Volume 2 IIE Policy in high-level reconfiguration options (if applicable) and Volume 3 access management standards for driveway and sideroad spacing.
Attend Site Visit	Not yet scheduled
Review the Concept Report	Not yet developed
Other	None

OTO2: Develop TSMO Scope Items

Deliverable	Task	Responsible Party	
		Activity Leader	Additional Support
Signal Warrant (and Final Engineering Study)	▪ *Analyze Signal Warrants*	Signal Design Engineer	Signal Design Manager
Lighting Warrant	▪ *Analyze Lighting Warrants*	Lighting Design Engineer	Lighting Design Manager
TSMO & ITS Scope and Budget	▪ *Prepare TSMO & ITS Scope and Budget*	ITS/TSMO Design Engineer	ITS/TSMO Design Manager
SSEAF or SEAR	▪ *Complete SSEA Form or SEA Report*		

Topic	Comments
Analyze Signal Warrants	n/a
Analyze Lighting Warrants	Our Signals and Lighting Team recommends lighting at this interchange, dependent upon the City of Murfreesboro signing a maintenance agreement.
Prepare TSMO & ITS Scope and Budget	The ITS scope includes conduit, pull boxes, power & comm. cables., 1 CCTV, 1 RDS, and 1 demarcation with all required items. The estimated cost for the above equipment would be $323,890 and includes Construction, PE, and CEI costs.
Complete SSEA Form or SEA Report	N/A
Other	None

I24 Interchange Modification at Epps Mill Roadd, From west of Capital Way to SR-2 (US-41)

Rutherford County

124683.06

Proposed Project Area		
Total Project Length, **Miles**	**0.3**	1584
Fiber Trunk w/ 2" Conduit, **%**	**100%**	1584
Approx. Bored, **%**	**20%**	317
Approx. Structural, **%**	**0.0%**	0
Approx. Rock, **%**	**15%**	238

Proposed Project Devices			
CCTV	**1**	**RSU**	**0**
RDS	**1**	**RWIS**	**0**
HAR	**0**	**1 ESS**	**0**
DMS	**0**	**2 ESS**	**0**
TTMS	**0**	**3 ESS**	**0**
LCS Gantry	**0**	**Field Junction**	**0**
Ramp Meter	**0**	**HUB**	**0**

Relocated Project Devices			
CCTV	**0**	**RSU**	**0**
RDS	**0**	**RWIS**	**0**
HAR	**0**	**1 ESS**	**0**
DMS	**0**	**2 ESS**	**0**
TTMS	**0**	**3 ESS**	**0**
LCS Gantry	**0**	**Field Junction**	**0**
Ramp Meter	**0**	**HUB**	**0**

Item	Unit	Average Price	Total Cost
Fiber Optic Trunk	0.30	$ 182,800	$ 54,840
2" Conduit w/ Fiber Trunk	0.30	$ 44,900	$ 13,470
Single Run Guardrail	0	$ 40,530	$ -
80' CCTV Site	1	$ 101,010	$ 101,010
RDS at CCTV/DMS Site	1	$ 10,600	$ 10,600
HAR Site	0	$ 75,810	$ -
Truss-Mounted DMS Site	0	$ 313,085	$ -
Travel Time Message Sign Site	0	$ 77,270	$ -
Lane Control Signal Gantry Site	0	$ 237,910	$ -
Ramp Meter Site	0	$ 135,210	$ -
RSU (Bluetooth/CV2X/DSRC) at CCTV/DMS	0	$ 6,600	$ -
RWIS (Full) Site	0	$ 88,410	$ -
1 ESS at CCTV/DMS Site	0	$ 11,975	$ -
2 ESS at CCTV/DMS Site	0	$ 23,950	$ -
3 ESS at CCTV/DMS Site	0	$ 35,925	$ -
Field Junction Hub Site	0	$ 91,030	$ -
Communications Hub Building Site	0	$ 431,860	$ -
Relocated 80' CCTV Site	0	$ 38,510	$ -
Relocated RDS at CCTV/DMS Site	0	$ 3,500	$ -
Relocated HAR Site	0	$ 28,250	$ -
Relocated Truss-Mounted DMS Site	0	$ 138,085	$ -
Relocated Travel Time Message Sign Site	0	$ 45,770	$ -
Relocated Lane Control Signal Gantry Site	0	$ 151,410	$ -
Relocated Ramp Meter Site	0	$ 37,610	$ -
Relocated RSU (Bluetooth/CV2X/DSRC) at CCT	0	$ 2,500	$ -
Relocated RWIS (Full) Site	0	$ 34,510	$ -
Relocated 1 ESS at CCTV/DMS Site	0	$ 3,500	$ -
Relocated 2 ESS at CCTV/DMS Site	0	$ 7,000	$ -
Relocated 3 ESS at CCTV/DMS Site	0	$ 10,500	$ -
Relocated Field Junction Hub Site	0	$ 51,030	$ -
Relocated Communications Hub Building Site	0	$ 131,860	$ -
Device Grid Power Connection	1	$ 45,004	$ 45,004

MOBILIZATION	5%	of Construction	$ 11,246
MAINTENANCE OF TRAFFIC	5%	of Construction	$ 11,246
CONTINGENCY	10%	of Construction	$ 22,492
CONSTRUCTION			**$ 269,908**
PRELIMINARY ENGINEERING	10.0%	of Construction	**$ 26,991**
CE&I	10.0%	of Construction	**$ 26,991**
			$ 323,890

Crash Summary Report

County: RUTHERFORD **Route:** 01044 **Spcl Cse:** 0-NONE **Cnty Seq:** 1

Log Miles: 0.000 to 0.860 - Crash Dates: 3/1/2020 to 3/2/2023
Vehicle Filter: None - Other Factors Filter: None

Statistics

Fatal Crashes:	0
Total Killed:	0
Suspected Serious Injury Crashes:	2
Total Suspected Serious Injuries:	3
Other Injury Crashes:	5
Total Other Injuries:	8
Prop Damage Crashes:	41
Total Crashes:	**48**

Crash Location

Along Roadway:	25
At Intersection:	13
Railroad Crossing:	0
Bridge:	0
Underpass:	0
Ramp:	10
Private Property:	0
Other:	0

Crashes Involving

Pedestrians:	0
Hazardous Cargo:	0
Work / Constr Zones:	0
Fixed Objects:	2
Single Unit Trucks	4
Tractor - Trailer Trucks:	13
Bicycles:	0
Motorcycles:	0
Lane Departures:	8
Distracted Drivers:	1

Road Conditions

Ice:	0
Snow or Slush:	0
Sand, Mud, Dirt or Oil:	0
Wet:	10
Dry:	37

First Harmful Event

Pedestrian:	0
Pedalcycle:	0
Railway Train:	0
Deer (Animal):	0
Other Animal:	1
Motor Vehicle in Transport:	41
Motor Vehicle in Transport in Other Roadway:	0
Parked Motor Vehicle:	1
Other Type Non-Motorist:	0
Fixed Object:	2
Other Object (Not Fixed):	0
Non Collision:	0
Overturn:	1
Jackknife:	0
Cross Median:	0
Ran Off Road:	0

Manner of Collision

Rear End:	13
Head On:	2
Rear-to-Side / Rear:	1
Angle:	18
Sideswipe Same Dir:	5
Sideswipe Opp Dir:	2
Unknown:	2

Light Conditions

Dawn:	1
Daylight:	35
Dusk:	0
Dark / Lighted:	3
Dark / Not Lighted:	8
Not Indicated:	0

Weather Conditions

No Adverse Conditions:	39
Rain:	8
Sleet and Hail:	0
Snow:	0
Foggy:	0
Smog, Smoke:	0
Crosswind:	0

Fixed Objects

Boulder:	0	Other Barrier:	0	Ditch:	0
Building:	0	Highway Traffic Sign Post	0	Embankment:	0
Impact Attenuator:	0	Overhead Sign Support:	0	Fence:	0
Overhead Structure:	0	Luminaire/Light Support:	0	Wall:	0
Bridge Pier/Abutment/End:	0	Traffic Signal Support:	0	Mail Box:	0
Bridge Rail:	0	Utility Pole:	0	Shrubbery:	0
Guardrail:	0	Other Post, Pole Supports:	0	Tree:	1
Cable Barrier:	0	Culvert:	1	Fire Hydrant:	0
		Curb:	0	Other Fixed Object:	0

Crash Summary Report

County: RUTHERFORD **Route:** I0024 **Spcl Cse:** 0-NONE **Cnty Seq:** 1

Log Miles: 25.330 to 26.070 - Crash Dates: 3/1/2020 to 3/2/2023
Vehicle Filter: None - Other Factors Filter: None

Statistics

Fatal Crashes:	0
Total Killed:	0
Suspected Serious Injury Crashes:	2
Total Suspected Serious Injuries:	2
Other Injury Crashes:	12
Total Other Injuries:	13
Prop Damage Crashes:	49
Total Crashes:	**63**

Crash Location

Along Roadway:	53
At Intersection:	1
Railroad Crossing:	0
Bridge:	0
Underpass:	0
Ramp:	9
Private Property:	0
Other:	0

Crashes Involving

Pedestrians:	1
Hazardous Cargo:	0
Work / Constr Zones:	0
Fixed Objects:	8
Single Unit Trucks	3
Tractor - Trailer Trucks:	13
Bicycles:	0
Motorcycles:	0
Lane Departures:	19
Distracted Drivers:	0

Road Conditions

Ice:	1
Snow or Slush:	0
Sand, Mud, Dirt or Oil:	0
Wet:	6
Dry:	54

First Harmful Event

Pedestrian:	0
Pedalcycle:	0
Railway Train:	0
Deer (Animal):	3
Other Animal:	0
Motor Vehicle in Transport:	40
Motor Vehicle in Transport in Other Roadway:	0
Parked Motor Vehicle:	3
Other Type Non-Motorist:	0
Fixed Object:	8
Other Object (Not Fixed):	2
Non Collision:	1
Overturn:	4
Jackknife:	0
Cross Median:	0
Ran Off Road:	0

Manner of Collision

Rear End:	23
Head On:	0
Rear-to-Side / Rear:	0
Angle:	3
Sideswipe Same Dir:	17
Sideswipe Opp Dir:	0
Unknown:	0

Light Conditions

Dawn:	2
Daylight:	44
Dusk:	1
Dark / Lighted:	0
Dark / Not Lighted:	14
Not Indicated:	0

Weather Conditions

No Adverse Conditions:	57
Rain:	2
Sleet and Hail:	0
Snow:	0
Foggy:	1
Smog, Smoke:	0
Crosswind:	0

Fixed Objects

Boulder:	0	Other Barrier:	0	Ditch:	3
Building:	0	Highway Traffic Sign Post	0	Embankment:	2
Impact Attenuator:	0	Overhead Sign Support:	0	Fence:	0
Overhead Structure:	0	Luminaire/Light Support:	0	Wall:	0
Bridge Pier/Abutment/End:	0	Traffic Signal Support:	0	Mail Box:	0
Bridge Rail:	0	Utility Pole:	0	Shrubbery:	0
Guardrail:	2	Other Post, Pole Supports:	0	Tree:	1
Cable Barrier:	0	Culvert:	0	Fire Hydrant:	0
		Curb:	0	Other Fixed Object:	0

This report was generated by E-TRIMS

Crash Detail Report - Epps Mill Road

BLM	County	Route	Date of Crash	Time of Crash	Location	Type of Crash	Total Killed	Total Incap Injuries	Total Other Injuries	Total Veh	Vehicle Number	Most Harmful Event	Manner of First Collision	Driver Actions	Vehicle Going Direction	Relation to First Roadway	Roadway Surface Conditions	Case Number	Weather Cond	Light Conditions
0	RUTHERFORD	01044	1/20/2021	2025	Along Roadway	Suspected Serious Injury	0	1	1	2	1	Vehicle in Transport	ANGLE	No Contributing Actions	N	On Roadway	Dry	102880658	Clear	Dark-Not Lighted
0	RUTHERFORD	01044	1/20/2021	2025	Along Roadway	Suspected Serious Injury	0	1	1	2	2	Vehicle in Transport	ANGLE	No Contributing Actions	E	On Roadway	Dry	102880658	Clear	Dark-Not Lighted
0.02	RUTHERFORD	01044	9/22/2022	1430	Along Roadway	Suspected Serious Injury	0	2	0	2	1	Vehicle in Transport	HEAD-ON	Failure to Yield Right of Way	N	On Roadway	Dry	103430069	Clear	Daylight
0.02	RUTHERFORD	01044	9/22/2022	1430	Along Roadway	Suspected Serious Injury	0	2	0	2	2	Vehicle in Transport	HEAD-ON	No Contributing Actions	N	On Roadway	Dry	103430069	Clear	Daylight
0.26	RUTHERFORD	01044	5/13/2022	46	Along Roadway	Prop Damage (over)	0	0	0	2	1	Parked Motor Vehicle	SIDESWIPE, SAME DIR	Lane Departure	E	On Roadway	Dry	103300200	Clear	Dark-Lighted
0.26	RUTHERFORD	01044	5/13/2022	46	Along Roadway	Prop Damage (over)	0	0	0	2	2	Vehicle in Transport	SIDESWIPE, SAME DIR	No Contributing Actions	E	On Roadway	Dry	103300200	Clear	Dark-Lighted
0.33	RUTHERFORD	01044	6/18/2021	1105	Along Roadway	Prop Damage (over)	0	0	0	2	1	Vehicle in Transport	REAR-END	Following Improperly	W	On Roadway	Dry	103010877	Clear	Daylight
0.33	RUTHERFORD	01044	6/18/2021	1105	Along Roadway	Prop Damage (over)	0	0	0	2	2	Vehicle in Transport	REAR-END	No Contributing Actions	W	On Roadway	Dry	103010877	Clear	Daylight
0.67	RUTHERFORD	01044	2/26/2022	1428	Along Roadway	Prop Damage (over)	0	0	0	2	1	Vehicle in Transport	REAR-END	Improper Turn	W	On Roadway	Dry	103228482	Clear	Daylight
0.67	RUTHERFORD	01044	2/26/2022	1428	Along Roadway	Prop Damage (over)	0	0	0	2	2	Vehicle in Transport	REAR-END	No Contributing Actions	E	On Roadway	Dry	103228482	Clear	Daylight
0.73	RUTHERFORD	01044	5/2/2021	2145	Along Roadway	Prop Damage (over)	0	0	0	1	1	Overturn	NO COLLISION W/ VEHICLE	Speed too Fast for Conditions	N	Roadside - - Left	Wet	102978071	Rain	Dark-Not Lighted
0.01	RUTHERFORD	01044	1/10/2021	1002	Along Roadway	Prop Damage (under)	0	0	0	1	1	Standing Tree	NO COLLISION W/ VEHICLE	Swerved or Avoided	S	Roadside - - Right	Dry	102874168	Cloudy	Daylight
0.6	RUTHERFORD	01044	7/10/2022	459	Along	Prop	0	0	0	1	1	Unknown	UNKNOWN	Unknown	E	Unknown	Dry	103357714	Clear	Dark-Not
0	RUTHERFORD	01044	8/21/2020	1351	Along Roadway	Prop Damage (over)	0	0	0	2	1	Vehicle in Transport	REAR-END	No Contributing Actions	W	--	Wet	102765603	Rain	Daylight
0	RUTHERFORD	01044	8/21/2020	1351	Along Roadway	Prop Damage (over)	0	0	0	2	2	Vehicle in Transport	REAR-END	Following Improperly	W	--	Wet	102765603	Rain	Daylight
0	RUTHERFORD	01044	9/24/2021	650	Along Roadway	Prop Damage (over)	0	0	0	2	1	Vehicle in Transport	ANGLE	Lane Departure	W	--	Dry	103099364	Clear	Daylight
0	RUTHERFORD	01044	9/24/2021	650	Along Roadway	Prop Damage (over)	0	0	0	2	2	Vehicle in Transport	ANGLE	No Contributing Actions	E	--	Dry	103099364	Clear	Daylight
0.01	RUTHERFORD	01044	7/24/2020	1114	Along Roadway	Prop Damage (over)	0	0	0	2	1	Vehicle in Transport	ANGLE	Failure to Yield Right of Way	N	--	Dry	102747435	Clear	Daylight
0.01	RUTHERFORD	01044	7/24/2020	1114	Along Roadway	Prop Damage (over)	0	0	0	2	2	Vehicle in Transport	ANGLE	No Contributing Actions	N	--	Dry	102747435	Clear	Daylight
0.19	RUTHERFORD	01044	12/7/2020	1422	Along Roadway	Prop Damage (over)	0	0	0	2	1	Vehicle in Transport	OTHER	No Contributing Actions	E	--	Dry	102851471	Cloudy	Daylight
0.19	RUTHERFORD	01044	12/7/2020	1422	Along Roadway	Prop Damage (over)	0	0	0	2	2	Vehicle in Transport	OTHER	Improper Backing	S	--	Dry	102851471	Cloudy	Daylight
0.25	RUTHERFORD	01044	9/13/2020	1420	Along Roadway	Prop Damage (over)	0	0	0	2	1	Vehicle in Transport	REAR-END	No Contributing Actions	E	--	Wet	102784539	Rain	Daylight
0.25	RUTHERFORD	01044	9/13/2020	1420	Along Roadway	Prop Damage (over)	0	0	0	2	2	Vehicle in Transport	REAR-END	Following Improperly	E	--	Wet	102784539	Rain	Daylight
0.31	RUTHERFORD	01044	12/14/2021	2049	Along Roadway	Prop Damage (over)	0	0	0	2	1	Vehicle in Transport	SIDESWIPE, SAME DIR	Failure to Yield Right of Way	S	--	Dry	103169725	Clear	Dark-Not Lighted
0.31	RUTHERFORD	01044	12/14/2021	2049	Along Roadway	Prop Damage (over)	0	0	0	2	2	Vehicle in Transport	SIDESWIPE, SAME DIR	No Contributing Actions	S	--	Dry	103169725	Clear	Dark-Not Lighted
0.35	RUTHERFORD	01044	3/20/2020	1039	Along Roadway	Prop Damage (under)	0	0	0	2	1	Vehicle in Transport	REAR-END	Improper Backing	E	--	Wet	102685684	Cloudy	Daylight
0.35	RUTHERFORD	01044	3/20/2020	1039	Along Roadway	Prop Damage (under)	0	0	0	2	2	Vehicle in Transport	REAR-END	No Contributing Actions	E	--	Wet	102685684	Cloudy	Daylight
0.35	RUTHERFORD	01044	7/1/2022	2241	Along Roadway	Prop Damage (over)	0	0	0	2	1	Parked Motor Vehicle	ANGLE	Improper Backing	S	--	Dry	103351229	Clear	Dark-Lighted
0.35	RUTHERFORD	01044	7/1/2022	2241	Along Roadway	Prop Damage (over)	0	0	0	2	2	Parked Motor Vehicle	ANGLE	No Contributing Actions	W	--	Dry	103351229	Clear	Dark-Lighted
0.59	RUTHERFORD	01044	10/20/2022	1600	Along Roadway	Prop Damage (over)	0	0	0	2	1	Vehicle in Transport	HEAD-ON	Improper Turn	E	--	Dry	103454244	Clear	Daylight
0.59	RUTHERFORD	01044	10/20/2022	1600	Along Roadway	Prop Damage (over)	0	0	0	2	2	Vehicle in Transport	HEAD-ON	No Contributing Actions	S	--	Dry	103454244	Clear	Daylight

Crash Detail Report - Epps Mill Road

0.6	RUTHERFORD	01044	9/14/2021	1100	Along Roadway	Prop Damage (over)	0	0	0	2	1	Vehicle in Transport	REAR-END	Improper Backing	W	--	Dry	103089307	Clear	Daylight
0.6	RUTHERFORD	01044	9/14/2021	1100	Along Roadway	Prop Damage (over)	0	0	0	2	2	Vehicle in Transport	REAR-END	No Contributing Actions	W	--	Dry	103089307	Clear	Daylight
0.61	RUTHERFORD	01044	3/21/2020	1813	Along Roadway	Prop Damage (over)	0	0	0	2	1	Vehicle in Transport	ANGLE	No Contributing Actions	S	--	Dry	102685341	Clear	Daylight
0.61	RUTHERFORD	01044	3/21/2020	1813	Along Roadway	Prop Damage (over)	0	0	0	2	2	Vehicle in Transport	ANGLE	Unknown Action	N	--	Dry	102685341	Clear	Daylight
0.61	RUTHERFORD	01044	3/8/2022	1626	Along Roadway	Prop Damage (over)	0	0	0	2	1	Vehicle in Transport	ANGLE	No Contributing Actions	S	--	Dry	103241838	Clear	Daylight
0.61	RUTHERFORD	01044	3/8/2022	1626	Along Roadway	Prop Damage (over)	0	0	0	2	2	Vehicle in Transport	ANGLE	Failure to Yield Right of Way	N	--	Dry	103241838	Clear	Daylight
0.68	RUTHERFORD	01044	10/9/2020	1623	Along Roadway	Prop Damage (over)	0	0	0	2	1	Vehicle in Transport	REAR-END	No Contributing Actions	N	--	Wet	102804462	Rain	Daylight
0.68	RUTHERFORD	01044	10/9/2020	1623	Along Roadway	Prop Damage (over)	0	0	0	2	2	Vehicle in Transport	REAR-END	Lane Departure	S	--	Wet	102804462	Rain	Daylight
0.83	RUTHERFORD	01044	4/28/2022	900	Along Roadway	Prop Damage (over)	0	0	0	1	1	Other Animal	NO COLLISION W/ VEHICLE	No Contributing Actions	E	--	Dry	103289871	Clear	Daylight
0.33	RUTHERFORD	01044	11/4/2022	1203	At an Intersection	Prop Damage (over)	0	0	0	2	1	Vehicle in Transport	ANGLE	Improper Turn	E	On Roadway	Dry	103480078	Clear	Daylight
0.33	RUTHERFORD	01044	11/4/2022	1203	At an Intersection	Prop Damage (over)	0	0	0	2	2	Vehicle in Transport	ANGLE	No Contributing Actions	W	On Roadway	Dry	103480078	Clear	Daylight
0.67	RUTHERFORD	01044	4/30/2021	719	At an Intersection	Prop Damage (over)	0	0	0	2	1	Vehicle in Transport	ANGLE	Driver Distracted	E	On Roadway	Dry	102966423	Clear	Daylight
0.67	RUTHERFORD	01044	4/30/2021	719	At an Intersection	Prop Damage (over)	0	0	0	2	2	Vehicle in Transport	ANGLE	Failure to Yield Right of Way	W	On Roadway	Dry	102966423	Clear	Daylight
0.67	RUTHERFORD	01044	2/13/2023	1444	At an Intersection	Prop Damage (over)	0	0	0	1	1	Overturn	NO COLLISION W/ VEHICLE	Lane Departure	W	On Roadway	Dry	103573353	Clear	Daylight
0.31	RUTHERFORD	01044	12/12/2020	613	At an Intersection	Prop Damage (over)	0	0	0	2	1	Vehicle in Transport	REAR-END	Following Improperly	S	--	Wet	102855512	Rain	Dawn
0.31	RUTHERFORD	01044	12/12/2020	613	At an Intersection	Prop Damage (over)	0	0	0	2	2	Vehicle in Transport	REAR-END	No Contributing Actions	S	--	Wet	102855512	Rain	Dawn
0.33	RUTHERFORD	01044	11/14/2020	1705	At an Intersection	Prop Damage (over)	0	0	0	2	1	Vehicle in Transport	ANGLE	No Contributing Actions	E	--	Dry	102832077	Clear	Dark-Not Lighted
0.33	RUTHERFORD	01044	11/14/2020	1705	At an Intersection	Prop Damage (over)	0	0	0	2	2	Vehicle in Transport	ANGLE	Unknown Action	E	--	Dry	102832077	Clear	Dark-Not Lighted
0.61	RUTHERFORD	01044	3/27/2021	1545	At an Intersection	Prop Damage (over)	0	0	0	2	1	Vehicle in Transport	ANGLE	Unknown Action	W	--	Wet	102935029	Cloudy	Daylight
0.61	RUTHERFORD	01044	3/27/2021	1545	At an Intersection	Prop Damage (over)	0	0	0	2	2	Vehicle in Transport	ANGLE	Unknown Action	E	--	Wet	102935029	Cloudy	Daylight
0.61	RUTHERFORD	01044	5/26/2021	946	At an Intersection	Prop Damage (over)	0	0	0	2	1	Vehicle in Transport	ANGLE	Failure to Obey Traffic Controls	E	--	Dry	102989249	Clear	Daylight
0.61	RUTHERFORD	01044	5/26/2021	946	At an Intersection	Prop Damage (over)	0	0	0	2	2	Vehicle in Transport	ANGLE	No Contributing Actions	S	--	Dry	102989249	Clear	Daylight
0.62	RUTHERFORD	01044	8/1/2020	1645	At an Intersection	Prop Damage (over)	0	0	0	2	1	Vehicle in Transport	REAR-END	No Contributing Actions	E	--	Wet	102752022	Rain	Daylight
0.62	RUTHERFORD	01044	8/1/2020	1645	At an Intersection	Prop Damage (over)	0	0	0	2	2	Vehicle in Transport	REAR-END	Following Improperly	E	--	Wet	102752022	Rain	Daylight
0.67	RUTHERFORD	01044	10/6/2020	1620	At an Intersection	Prop Damage (over)	0	0	0	2	1	Vehicle in Transport	ANGLE	No Contributing Actions	W	--	Dry	102802087	Clear	Daylight
0.67	RUTHERFORD	01044	10/6/2020	1620	At an Intersection	Prop Damage (over)	0	0	0	2	2	Vehicle in Transport	ANGLE	Failure to Yield Right of Way	W	--	Dry	102802087	Clear	Daylight
0.67	RUTHERFORD	01044	10/13/2020	1120	At an Intersection	Prop Damage (over)	0	0	0	2	1	Vehicle in Transport	ANGLE	Failure to Yield Right of Way	E	--	Dry	102807556	Clear	Daylight
0.67	RUTHERFORD	01044	10/13/2020	1120	At an Intersection	Prop Damage (over)	0	0	0	2	2	Vehicle in Transport	ANGLE	No Contributing Actions	S	--	Dry	102807556	Clear	Daylight
0.67	RUTHERFORD	01044	12/1/2020	729	At an Intersection	Prop Damage (over)	0	0	0	2	1	Vehicle in Transport	SIDESWIPE, SAME DIR	Lane Departure	W	--	Dry	102850405	Clear	Daylight
0.67	RUTHERFORD	01044	12/1/2020	729	At an Intersection	Prop Damage (over)	0	0	0	2	2	Vehicle in Transport	SIDESWIPE, SAME DIR	No Contributing Actions	W	--	Dry	102850405	Clear	Daylight
0.31	RUTHERFORD	01044	11/21/2020	1117	At an Intersection	Prop Damage (over)	0	0	0	2	1	Vehicle in Transport	REAR-END	Improper Backing	N	--	Dry	102838665	Clear	Daylight

Crash Detail Report - Epps Mill Road

0.31	RUTHERFORD	01044	11/21/2020	1117	At an Intersection	Prop Damage (over)	0	0	0	2	2	Vehicle in Transport	REAR-END	No Contributing Actions	S	--	Dry	102838665	Clear	Daylight
0.67	RUTHERFORD	01044	2/22/2021	1208	At an Intersection	Prop Damage (over)	0	0	0	2	1	Vehicle in Transport	REAR-END	Other (Narrative)	N	--	Dry	102906555	Clear	Daylight
0.67	RUTHERFORD	01044	2/22/2021	1208	At an Intersection	Prop Damage (over)	0	0	0	2	2	Vehicle in Transport	REAR-END	Failure to Obey Traffic Controls	N	--	Dry	102906555	Clear	Daylight
0.33	RUTHERFORD	01044	6/29/2021	909	Ramp	Prop Damage (over)	0	0	0	2	1	Vehicle in Transport	SIDESWIPE, SAME DIR	Failure to Yield Right of Way	W	On Roadway	Dry	103019527	Clear	Daylight
0.33	RUTHERFORD	01044	6/29/2021	909	Ramp	Prop Damage (over)	0	0	0	2	2	Vehicle in Transport	SIDESWIPE, SAME DIR	No Contributing Actions	S	On Roadway	Dry	103019527	Clear	Daylight
0.33	RUTHERFORD	01044	11/25/2021	1827	Ramp	Possible Injury	0	0	3	2	1	Vehicle in Transport	ANGLE	Failure to Yield Right of Way	E	On Roadway	Wet	103153338	Rain	Dark-Not Lighted
0.33	RUTHERFORD	01044	11/25/2021	1827	Ramp	Possible Injury	0	0	3	2	2	Vehicle in Transport	ANGLE	No Contributing Actions	E	On Roadway	Wet	103153338	Rain	Dark-Not Lighted
0.4	RUTHERFORD	01044	10/28/2021	800	Ramp	Suspected Minor Injury	0	0	1	2	1	Vehicle in Transport	ANGLE	No Contributing Actions	W	On Roadway	Wet	103137118	Rain	Daylight
0.4	RUTHERFORD	01044	10/28/2021	800	Ramp	Suspected Minor Injury	0	0	1	2	2	Vehicle in Transport	ANGLE	Failure to Yield Right of Way	E	On Roadway	Wet	103137118	Rain	Daylight
0.6	RUTHERFORD	01044	12/9/2022	1826	Ramp	Possible Injury	0	0	1	2	1	Vehicle in Transport	ANGLE	Failure to Yield Right of Way	S	On Roadway	Dry	103505564	Clear	Dark-Not Lighted
0.6	RUTHERFORD	01044	12/9/2022	1826	Ramp	Possible Injury	0	0	1	2	2	Vehicle in Transport	ANGLE	No Contributing Actions	W	On Roadway	Dry	103505564	Clear	Dark-Not Lighted
0.6	RUTHERFORD	01044	12/12/2020	1847	Ramp	Possible Injury	0	0	1	2	1	Vehicle in Transport	SIDESWIPE, OPP DIR	Unknown Action	W	On Roadway	Dry	102857188	Clear	Dark-Lighted
0.6	RUTHERFORD	01044	12/12/2020	1847	Ramp	Possible Injury	0	0	1	2	2	Vehicle in Transport	SIDESWIPE, OPP DIR	No Contributing Actions	S	On Roadway	Dry	102857188	Clear	Dark-Lighted
0.61	RUTHERFORD	01044	6/15/2021	1335	Ramp	Prop Damage (over)	0	0	0	2	1	Vehicle in Transport	SIDESWIPE, OPP DIR	Failure to Yield Right of Way	N	On Roadway	Dry	103009349	Clear	Daylight
0.61	RUTHERFORD	01044	6/15/2021	1335	Ramp	Prop Damage (over)	0	0	0	2	2	Vehicle in Transport	SIDESWIPE, OPP DIR	No Contributing Actions	S	On Roadway	Dry	103009349	Clear	Daylight
0.37	RUTHERFORD	01044	11/15/2021	1454	Ramp	Prop Damage (over)	0	0	0	2	1	Vehicle in Transport	REAR-END	No Contributing Actions	W	--	Dry	103143818	Clear	Daylight
0.37	RUTHERFORD	01044	11/15/2021	1454	Ramp	Prop Damage (over)	0	0	0	2	2	Vehicle in Transport	REAR-END	Unknown Action	W	--	Dry	103143818	Clear	Daylight
0.55	RUTHERFORD	01044	3/22/2021	1750	Ramp	Prop Damage (over)	0	0	0	2	1	Vehicle in Transport	REAR-END	No Contributing Actions	S	--	Dry	102930002	Clear	Daylight
0.55	RUTHERFORD	01044	3/22/2021	1750	Ramp	Prop Damage (over)	0	0	0	2	2	Vehicle in Transport	REAR-END	Following Improperly	S	--	Dry	102930002	Clear	Daylight
0.61	RUTHERFORD	01044	2/26/2023	1924	Ramp	Prop Damage (over)	0	0	0	2	1	Vehicle in Transport	ANGLE	Failure to Yield Right of Way	E	--	Dry	103581576	Cloudy	Dark-Not Lighted
0.61	RUTHERFORD	01044	2/26/2023	1924	Ramp	Prop Damage (over)	0	0	0	2	2	Vehicle in Transport	ANGLE	Other (Narrative)	N	--	Dry	103581576	Cloudy	Dark-Not Lighted
0.62	RUTHERFORD	01044	9/14/2021	950	Ramp	Prop Damage (over)	0	0	0	2	1	Vehicle in Transport	SIDESWIPE, SAME DIR	No Contributing Actions	E	--	Dry	103089281	Clear	Daylight
0.62	RUTHERFORD	01044	9/14/2021	950	Ramp	Prop Damage (over)	0	0	0	2	2	Vehicle in Transport	SIDESWIPE, SAME DIR	Improper Passing	E	--	Dry	103089281	Clear	Daylight
0.31	RUTHERFORD	01044	4/2/2021	1748	Along Roadway	Possible Injury	0	0	1	2	1	Vehicle in Transport	ANGLE	Improper Turn	E	On Roadway	Dry	102941360	Clear	Daylight
0.31	RUTHERFORD	01044	4/2/2021	1748	Along Roadway	Possible Injury	0	0	1	2	2	Vehicle in Transport	ANGLE	No Contributing Actions	W	On Roadway	Dry	102941360	Clear	Daylight
0.35	RUTHERFORD	01044	7/1/2021	1229	Along Roadway	Prop Damage (over)	0	0	0	2	1	Vehicle in Transport	REAR TO SIDE	Improper Backing	W	--	Dry	103022611	Clear	Daylight
0.35	RUTHERFORD	01044	7/1/2021	1229	Along Roadway	Prop Damage (over)	0	0	0	2	2	Vehicle in Transport	REAR TO SIDE	No Contributing Actions	N	--	Dry	103022611	Clear	Daylight
0.67	RUTHERFORD	01044	3/10/2022	755	Along Roadway	Prop Damage (under)	0	0	0	2	1	--	--	No Contributing Actions	--	--	--	103242000	--	--
0.67	RUTHERFORD	01044	3/10/2022	755	Along Roadway	Prop Damage (under)	0	0	0	2	2	--	--	Improper Passing	--	--	--	103242000	--	--

Crash Detail Report - Interstate 24

NOTE: Property Damage Only crashes excluded

BLM	County	Route	Date of Crash	Time of Crash	Location	Type of Crash	Total Killed	Total Incap Injuries	Total Other Injuries	Total Veh	Vehicle Number	Most Harmful Event	Manner of First Collision	Driver Actions	Vehicle Going Direction	Relation to First Roadway	Roadway Surface Conditions	Case Number	Weather Cond	Light Conditions
25.43	RUTHERFORD	I0024	9/6/2020	2213	Along Roadway	Suspected Serious Injury	0	1	0	2	1	Vehicle in Transport	REAR-END	Reckless Negligent Driving	W	On Roadway	Dry	102779861	Clear	Dark-Not Lighted
25.43	RUTHERFORD	I0024	9/6/2020	2213	Along Roadway	Suspected Serious Injury	0	1	0	2	2	Vehicle in Transport	REAR-END	No Contributing Actions	W	On Roadway	Dry	102779861	Clear	Dark-Not Lighted
25.43	RUTHERFORD	I0024	9/6/2020	2213	Along Roadway	Suspected Serious Injury	0	1	0	2	3	--	REAR-END	--	--	On Roadway	Unknown	102779861	Clear	Dark-Not Lighted
25.5	RUTHERFORD	I0024	2/10/2021	915	Along Roadway	Suspected Minor Injury	0	0	1	2	1	Vehicle in Transport	REAR-END	Swerved or Avoided	W	On Roadway	Dry	102897985	Cloudy	Daylight
25.5	RUTHERFORD	I0024	2/10/2021	915	Along Roadway	Suspected Minor Injury	0	0	1	2	2	Vehicle in Transport	REAR-END	No Contributing Actions	W	On Roadway	Dry	102897985	Cloudy	Daylight
25.64	RUTHERFORD	I0024	1/22/2022	1307	Along Roadway	Suspected Minor Injury	0	0	1	2	1	Vehicle in Transport	SIDESWIPE, SAME DIR	Failure to Yield Right of Way	E	On Roadway	Dry	103198448	Clear	Daylight
25.64	RUTHERFORD	I0024	1/22/2022	1307	Along Roadway	Suspected Minor Injury	0	0	1	2	2	Vehicle in Transport	SIDESWIPE, SAME DIR	No Contributing Actions	E	On Roadway	Dry	103198448	Clear	Daylight
25.72	RUTHERFORD	I0024	6/20/2022	2054	Along Roadway	Suspected Serious Injury	0	1	0	2	1	Vehicle in Transport	REAR-END	Following Improperly	W	On Roadway	Dry	103335637	Clear	Dark-Not Lighted
25.72	RUTHERFORD	I0024	6/20/2022	2054	Along Roadway	Suspected Serious Injury	0	1	0	2	2	Vehicle in Transport	REAR-END	No Contributing Actions	W	On Roadway	Dry	103335637	Clear	Dark-Not Lighted
25.91	RUTHERFORD	I0024	6/7/2021	759	Along Roadway	Suspected Minor Injury	0	0	2	2	1	Vehicle in Transport	REAR-END	Following Improperly	E	On Roadway	Dry	103000530	Cloudy	Daylight
25.91	RUTHERFORD	I0024	6/7/2021	759	Along Roadway	Suspected Minor Injury	0	0	2	2	2	Vehicle in Transport	REAR-END	No Contributing Actions	E	On Roadway	Dry	103000530	Cloudy	Daylight
25.47	RUTHERFORD	I0024	2/24/2022	1944	Along Roadway	Possible Injury	0	0	1	1	1	Standing Tree	NO COLLISION W/ VEHICLE	Lane Departure	W	Shoulder	Wet	103227125	Clear	Dark-Not Lighted
25.94	RUTHERFORD	I0024	3/9/2021	2121	Along Roadway	Suspected Minor Injury	0	0	1	1	1	Other Non-Collision	NO COLLISION W/ VEHICLE	Driving Wrong Way on One-Way Roadway	W	Median Barrier	Dry	102920567	Clear	Dark-Not Lighted
25.65	RUTHERFOR	I0024	3/28/2021	548	Along	Suspected	0	0	1	1	1	Overturn	NO COLLISION	Speed too	E	Roadside -	Wet	102934712	Cloudy	Dawn
26.06	RUTHERFORD	I0024	4/8/2020	1952	Along Roadway	Suspected Minor Injury	0	0	1	1	1	Ditch	NO COLLISION W/ VEHICLE	Lane Departure	E	Roadside - Left	Dry	102692801	Clear	Dark-Not Lighted
25.59	RUTHERFORD	I0024	10/15/2022	618	Along Roadway	Possible Injury	0	0	1	1	1	Guardrail End	NO COLLISION W/ VEHICLE	Lane Departure	E	Roadside - Right	Dry	103449575	Clear	Dark-Not Lighted
25.4	RUTHERFORD	I0024	12/19/2022	605	Along Roadway	Suspected Minor Injury	0	0	1	1	1	Shrubbery	NO COLLISION W/ VEHICLE	Swerved or Avoided	W	Outside Trafficway	Dry	103515505	Cloudy	Dark-Not Lighted
25.72	RUTHERFORD	I0024	5/21/2022	1620	Ramp	Suspected Minor Injury	0	0	1	1	1	Overturn	NO COLLISION W/ VEHICLE	Speed too Fast for Conditions	E	On Roadway	Dry	103312319	Clear	Daylight
25.75	RUTHERFORD	I0024	10/28/2020	2103	Ramp	Suspected Minor Injury	0	0	1	2	1	Earth Embankment	REAR-END	Failure to Yield Right of Way	S	On Roadway	Wet	102818906	Cloudy	Dark-Not Lighted
25.75	RUTHERFORD	I0024	10/28/2020	2103	Ramp	Suspected Minor Injury	0	0	1	2	2	Vehicle in Transport	REAR-END	No Contributing Actions	S	On Roadway	Wet	102818906	Cloudy	Dark-Not Lighted
25.59	RUTHERFORD	I0024	2/27/2022	1222	Ramp	Suspected Minor Injury	0	0	1	1	1	Overturn	NO COLLISION W/ VEHICLE	Speed too Fast for Conditions	E	Roadside - Left	Dry	103229643	Cloudy	Daylight
25.59	RUTHERFORD	I0024	2/27/2022	1222	Ramp	Suspected Minor Injury	0	0	1	1	2	--	NO COLLISION W/ VEHICLE	--	--	Roadside - Left	Unknown	103229643	Cloudy	Daylight

TENNESSEE DEPARTMENT OF TRANSPORTATION

COUNTY	= Rutherford	Date:	3/29/2024
Route	= Epps Mill Road		
Location	= Murfreesboro		
Highway Type	= 2 or 3 Ln		
FUNCTIONAL CLAS	Urban Major Collector		
DATA YEARS	= 2020 to 2023		
ADT YEARS USED=	2023 eTrims		
COMMENTS	=		
ANALYZED BY	= TWP		

SECTION = MORE THAN 0.10 MILE / SPOT = LESS THAN OR EQUAL TO 0.10 MILE

BLM	ELM	Length	Average AADT	VMT
0.000	0.500	0.500	3,543	1,772
0.500	0.860	0.360	3,924	1,413
0.000	0.000	0.000	0	0
0.000	0.000	0.000	0	0
0.000	0.000	0.000	0	0
0.000	0.000	0.000	0	0
0.000	0.000	0.000	0	0
		0.860	3,702	3,184

INTERSECTION

Log Mile =

PRODUCED PURSUANT TO
PUBLIC RECORDS REQUEST
This document is covered by 23 USC §409
and its production pursuant to a public
document records request does not
waive the provisions of §409

Leg		Traffic AADT
North	=	
East	=	
South	=	
West	=	
Entering AADT	=	0

2023 Etrims

2 Or 3 Ln
2020 To 2023

		Total	Fatal	Incap. Injury	*Severe Crashes	Other Injury
No. of Crashes	=	48	0	2	2	5
No. of Years	=	3				
SW avg. rate	=	3.137	0.160	0.070	0.230	0.289
21-23 S/W Rates						
Exposure (E)	=	3.4866				
Crash Rate (A)	=	13.767	0.000	0.574	0.574	1.434
Critical Rate (C)	=	5.488				
Severity Index (SI)	=	0.1875				
Actual Rate/SW Average	=	4.39	0.00	8.19	2.49	4.96
Ratio of A/C	=	2.51				

* Severe Crashes are the sum of fatal and incapacitating injury crashes

Revised 4/8/15

TENNESSEE DEPARTMENT OF TRANSPORTATION

COUNTY	= Rutherford	Date:	3/29/2024
Route	= I-24		
Location	= Murfreesboro		
Highway Type	= 4 Lane Divided Section		
FUNCTIONAL CLAS	Urban Interstate		
DATA YEARS	= 2020 to 2023		
ADT YEARS USED=	2023 eTrims		
COMMENTS	=		
ANALYZED BY	= TWP		

SECTION = MORE THAN 0.10 MILE / SPOT = LESS THAN OR EQUAL TO 0.10 MILE

BLM	ELM	Length	Average AADT	VMT
25.330	25.730	0.400	61,026	24,410
25.730	26.070	0.340	56,869	19,335
0.000		0.000		0
0.000	0.000	0.000	0	0
0.000	0.000	0.000	0	0
0.000	0.000	0.000	0	0
0.000	0.000	0.000	0	0
		0.740	59,116	43,746

INTERSECTION
Log Mile =

PRODUCED PURSUANT TO
PUBLIC RECORDS REQUEST
This document is covered by 23 USC §409
and its production pursuant to a public
document records request does not
waive the provisions of §409

Leg	Traffic AADT
North =	
East =	
South =	
West =	
Entering AADT =	0

2023 Etrims
4 Lane Divided Section
2020 To 2023

		Total	Fatal	Incap. Injury	*Severe Crashes	Other Injury
No. of Crashes	=	63	0	2	2	12
No. of Years	=	3				
SW avg. rate	=	1.126	0.007	0.020	0.027	0.123
21-23 S/W Rates						
Exposure (E)	=	47.9017				
Crash Rate (A)	=	1.315	0.000	0.042	0.042	0.251
Critical Rate (C)	=	1.493				
Severity Index (SI)	=	0.2540				
Actual Rate/SW Average	=	1.17	0.00	2.09	1.55	2.04
Ratio of A/C	=	0.88				

* Severe Crashes are the sum of fatal and incapacitating injury crashes

Revised 4/8/15

Route Feature Description Listing

Rutherford County (75) - Route: 01044, Special Case: 0-None , Log Mile 0 to 0.86

COUNTY: RUTHERFORD **COUNTY NO:** 75

ROUTE: 01044 **SPECIAL CASE:** 0-NONE **CTY SEQ:** 1

LOG MILE	ITEM CODE	ROUTE FEATURE	DESC CODE
0.000	3	SR-2 MANCHESTER HWY. RT. & LT.	310
0.000	0	BEGIN EPPS MILL RD.	920
0.000	9	1-WAY STOP	901
0.000	9	BEGIN 30 MPH	932
0.213	9	TRAFFIC COUNT STATION 111	959
0.310	5	A189 FORBUS DR. RT.	520
0.310	5	A194 MILLER LN. LT.	530
0.334	5	A514 MILLER LN. LT.	530
0.380	7	RAMP TO I-24 WB LNS. RT. & RAMP FROM I-24 WB LNS. LT.	701
0.410	7	RAMP TO I-24 WB LNS. RT. & RAMP FROM I-24 WB LNS. LT.	701
0.480	2	OVERHEAD [75I00240041]: I-24	241
0.500	3	I-24 / CENTER OF OVERHEAD	360
0.560	7	RAMP TO I-24 EB LNS. RT.	702
0.560	9	PEARSON CEMETERY LT.	913
0.580	7	RAMP TO I-24 EB LNS. RT.	702
0.610	7	RAMP FROM I-24 EB LNS. RT.	705
0.630	7	RAMP FROM I-24 EB LNS. RT.	705
0.672	5	A515 MILLER RD. LT.	530
0.784	5	D611 CAPITAL WAY RT.	520

Route Feature Description Listing

Rutherford County (75) - Route: I0024, Special Case: 0-None , Log Mile 25.33 to 26.07

COUNTY: RUTHERFORD **COUNTY NO:** 75

ROUTE: I0024 **SPECIAL CASE:** 0-NONE **CTY SEQ:** 1

LOG MILE	ITEM CODE	ROUTE FEATURE	DESC CODE
25.550	7	RAMP 89-D FROM 1044 EPPS MILL RD. LT.	725
25.570	0	EXIT 89: BUCHANAN RD.	990
25.570	7	RAMP 89-A TO 1044 EPPS MILL RD. RT.	721
25.710	7	RAMP 89-B FROM 1044 EPPS MILL RD. RT.	724
25.730	2	UNDERPASS [75I00240041]: 1044 EPPS MILL RD.	242
25.730	4	1044 EPPS MILL RD. / CENTER OF UNDERPASS	480
25.730	0	INTERCHANGE 0089	939
25.900	7	RAMP 89-C TO 1044 EPPS MILL RD. LT.	722
25.940	0	MILE POST # 89	963
25.970	9	CULVERT: DRAINAGE	980

Road Segment Report

Rutherford County (75) - Route: 01044, Special Case: 0-None

COUNTY: RUTHERFORD **COUNTY NO: 75**

ROUTE NBR	SPEC CASE	CTY SEQ	BEG LOG MILE	END LOG MILE	SP SY	SP SY2	SP SY3	US RTE	US RTE2	FUNCTIONAL CLASS	ADM SYS	URB AREA	INC AREA	GOV CON	ROAD NAME	HPMS SEC_ID
01044	0	1	0.000	2.788	22					U / MAJ COL	18-STP URBAN, NON-STATE SYS	210		CO. HWAY AGENCY	EPPS MILL RD.	
01044	0	1	2.788	4.270	22					U / MAJ COL	18-STP URBAN, NON-STATE SYS	210		CO. HWAY AGENCY	WAYSIDE RD.	750110440278
01044	0	1	4.270	4.620	22					U / MAJ COL	18-STP URBAN, NON-STATE SYS.	210		CO. HWAY AGENCY	CHRISTIANA-HOOVERS GAP RD	

Road Segment Report

Rutherford County (75) - Route: I0024, Special Case: 0-None

COUNTY: RUTHERFORD **COUNTY NO: 75**

ROUTE NBR	SPEC CASE	CTY SEQ	BEG LOG MILE	END LOG MILE	SP SY	SP SY2	SP SY3	US RTE	US RTE2	FUNCTIONAL CLASS	ADM SYS	URB AREA	INC AREA	GOV CON	ROAD NAME	HPMS SEC_ID
I0024	0	1	0.000	1.235	08	11	26			U / INTERSTATE	02-INTERSTATE URBAN	210	159	STATE HWAY AGENCY	I-24	7501I0240000
I0024	0	1	1.235	2.420	08	11	26			U / INTERSTATE	02-INTERSTATE URBAN	210	159	STATE HWAY AGENCY	I-24	7501I0240124
I0024	0	1	2.420	2.630	08	11	26			U / INTERSTATE	02-INTERSTATE URBAN	210	159	STATE HWAY AGENCY	I-24	
I0024	0	1	2.630	2.740	08	11	26			U / INTERSTATE	02-INTERSTATE URBAN	210	159	STATE HWAY AGENCY	I-24	7501I0240263
I0024	0	1	2.740	2.785	08	11	26			U / INTERSTATE	02-INTERSTATE URBAN	210	159	STATE HWAY AGENCY	I-24	7501I0240274
I0024	0	1	2.785	2.890	08	11	26			U / INTERSTATE	02-INTERSTATE URBAN	210	270	STATE HWAY AGENCY	I-24	7501I0240274
I0024	0	1	2.890	3.230	08	11	26			U / INTERSTATE	02-INTERSTATE URBAN	210	270	STATE HWAY AGENCY	I-24	
I0024	0	1	3.230	3.620	08	11	26			U / INTERSTATE	02-INTERSTATE URBAN	210	270	STATE HWAY AGENCY	I-24	7501I0240321
I0024	0	1	3.620	3.810	08	11	26			U / INTERSTATE	02-INTERSTATE URBAN	210	270	STATE HWAY AGENCY	I-24	
I0024	0	1	3.810	4.070	08	11	26			U / INTERSTATE	02-INTERSTATE URBAN	210	270	STATE HWAY AGENCY	I-24	7501I0240381
I0024	0	1	4.070	4.200	08	11	26			U / INTERSTATE	02-INTERSTATE URBAN	210	270	STATE HWAY AGENCY	I-24	
I0024	0	1	4.200	4.310	08	11	26			U / INTERSTATE	02-INTERSTATE URBAN	210	270	STATE HWAY AGENCY	I-24	7501I0240420
I0024	0	1	4.310	6.730	08	11	26			U / INTERSTATE	02-INTERSTATE URBAN	210		STATE HWAY AGENCY	I-24	7501I0240420
I0024	0	1	6.730	6.784	08	11	26			U / INTERSTATE	02-INTERSTATE URBAN	210		STATE HWAY AGENCY	I-24	
I0024	0	1	6.784	6.818	08	11	26			U / INTERSTATE	02-INTERSTATE URBAN	210	270	STATE HWAY AGENCY	I-24	
I0024	0	1	6.818	11.270	08	11	26			U / INTERSTATE	02-INTERSTATE URBAN	210		STATE HWAY AGENCY	I-24	
I0024	0	1	11.270	11.470	08	11	31			U / INTERSTATE	02-INTERSTATE URBAN	210		STATE HWAY AGENCY	I-24	
I0024	0	1	11.470	12.117	08	11				U / INTERSTATE	02-INTERSTATE URBAN	210		STATE HWAY AGENCY	I-24	
I0024	0	1	12.117	13.030	08	11				U / INTERSTATE	02-INTERSTATE URBAN	210	209	STATE HWAY AGENCY	I-24	
I0024	0	1	13.030	14.370	08	11				U / INTERSTATE	02-INTERSTATE URBAN	210	209	STATE HWAY AGENCY	I-24	7501I0241230
I0024	0	1	14.370	14.564	08	11				U / INTERSTATE	02-INTERSTATE URBAN	210	209	STATE HWAY AGENCY	I-24	
I0024	0	1	14.564	14.880	08	11				U / INTERSTATE	02-INTERSTATE URBAN	210	209	STATE HWAY AGENCY	I-24	7501I0241433
I0024	0	1	14.880	15.300	08	11				U / INTERSTATE	02-INTERSTATE URBAN	210	209	STATE HWAY AGENCY	I-24	7501I0241465
I0024	0	1	15.300	16.710	08	11				U / INTERSTATE	02-INTERSTATE URBAN	210	209	STATE HWAY AGENCY	I-24	

Road Segment Report

Rutherford County (75) - Route: I0024, Special Case: 0-None

COUNTY: RUTHERFORD **COUNTY NO: 75**

ROUTE NBR	SPEC CASE	CTY SEQ	BEG LOG MILE	END LOG MILE	SP SY	SP SY2	SP SY3	US RTE	US RTE2	FUNCTIONAL CLASS	ADM SYS	URB AREA	INC AREA	GOV CON	ROAD NAME	HPMS SEC_ID
I0024	0	1	16.710	17.680	08	11				U / INTERSTATE	02-INTERSTATE URBAN	210	209	STATE HWAY AGENCY	I-24	7501I0241648
I0024	0	1	17.680	17.810	08	11				U / INTERSTATE	02-INTERSTATE URBAN	210	209	STATE HWAY AGENCY	I-24	
I0024	0	1	17.810	18.170	08	11				U / INTERSTATE	02-INTERSTATE URBAN	210	209	STATE HWAY AGENCY	I-24	7501I0241768
I0024	0	1	18.170	18.280	08	11				U / INTERSTATE	02-INTERSTATE URBAN	210	209	STATE HWAY AGENCY	I-24	
I0024	0	1	18.280	18.730	08	11				U / INTERSTATE	02-INTERSTATE URBAN	210	209	STATE HWAY AGENCY	I-24	7501I0241817
I0024	0	1	18.730	18.739	08	11				U / INTERSTATE	02-INTERSTATE URBAN	210	209	STATE HWAY AGENCY	I-24	
I0024	0	1	18.739	19.020	08	11				U / INTERSTATE	02-INTERSTATE URBAN	210		STATE HWAY AGENCY	I-24	
I0024	0	1	19.020	20.490	08	11				U / INTERSTATE	02-INTERSTATE URBAN	210		STATE HWAY AGENCY	I-24	7501I0241848
I0024	0	1	20.490	21.500	08	11				U / INTERSTATE	02-INTERSTATE URBAN	210		STATE HWAY AGENCY	I-24	7501I0242088
I0024	0	1	21.500	27.718	08	11				U / INTERSTATE	02-INTERSTATE URBAN	210		STATE HWAY AGENCY	I-24	
I0024	0	1	27.718	33.290	08	11				R / INTERSTATE	01-INTERSTATE RURAL			STATE HWAY AGENCY	I-24	

Traffic Report

Rutherford County (75) - Route: 01044, Special Case: 0-None , Log Mile 0 to 0.86

COUNTY: RUTHERFORD

ROUTE	SC	CO SQ	BEG LOG MILE	END LOG MILE	YR OF TRAFFIC	ANNUAL AVERAGE DAILY TRAFFIC	PEAK HOUR %	DESIGN HOUR VOLUME	DIRECT DIST %	% PASS CARS	% SINGLE UNIT TRUCKS	% MULTI UNIT TRUCKS	CYCLE COUNTS STATION NBR	CYCLE COUNTS STATION COUNTY	CLASS COUNTS STATION NBR	CLASS COUNTS STATION COUNTY	IS CLASS COUNT?
01044	0	1	0.000	0.500	2023	3543	10	10	51	93	4	3	111	75	111C	75	YES
01044	0	1	0.500	4.620	2023	3924	11	11	65	97	2	1	110	75	111C	75	NO

Traffic Report

Rutherford County (75) - Route: I0024, Special Case: 0-None , Log Mile 25.33 to 26.07

COUNTY: RUTHERFORD

ROUTE	SC	CO SQ	BEG LOG MILE	END LOG MILE	YR OF TRAFFIC	ANNUAL AVERAGE DAILY TRAFFIC	PEAK HOUR %	DESIGN HOUR VOLUME	DIRECT DIST %	% PASS CARS	% SINGLE UNIT TRUCKS	% MULTI UNIT TRUCKS	CYCLE COUNTS STATION NBR	CYCLE COUNTS STATION COUNTY	CLASS COUNTS STATION NBR	CLASS COUNTS STATION COUNTY	IS CLASS COUNT?
I0024	0	1	20.490	25.730	2023	61026	9	9	53	72	4	24	109	75	287C	75	NO
I0024	0	1	25.730	33.290	2023	56869	9	9	60	72	4	24	112	75	287C	75	NO

CONDITION CODES LEGEND

X - X - X - # ← NUMBER OF VEHICLES

WEATHER	ROAD SURFACE	LIGHTING
C=Clear	D=Dry	D=Daylight
R=Rain	W=Wet	DKN=Dark Not Lighted
CLD=Cloudy	I=Icy	DKL=Dark Lighted
F=Fog	O=Other	DN=Dawn
S=Snow	U=Uknown	DS=Dusk
U=Uknown		U=Unknown

TYPE OF CRASH

NUMBER OF FATALITIES OR INJURIES
- # FATAL CRASH
- # INCAPACITATING/SUSPECT SERIOUS INJURY CRASH

NUMBER OF CRASHES
- # NON-INCAPCAITATING/SUSPECTED MINOR INJURY CRASH
- # PROPERTY DAMAGE CRASH

Time: A=AM P=PM

[X] Parked Vehicle

[X] Object (Specify)

TYPE	YEAR	COUNTY	FIGURE NO.
CONCEPT	2023	RUTHERFORD	1

CRASH LEGEND

- Vehicle Path (Direction of Travel)
- Backing Vehicle
- Rear End
- Head On
- Side Swipe (Same Direction)
- Side Swipe (Opposite Direction)
- Right Angle
- Left Turn
- Overturn
- Out of Control
- Pedestrian/Bicycle
- Pedestrian/Motorcycle (Specify Road User)
- Heavy Truck / Bus

1 01/20/21 8:25P C - D - DKN - 2
L.M. 0.003

BEGIN PROJECT
L.M. 0.000

1 09/22/22 2:30P C - D - D - 2
L.M. 0.024

1 06/20/22 8:54P C - D - DKN - 2
L.M. 25.720

1 09/06/20 6:13P C - D - DKN - 3
L.M. 25.430

END PROJECT
L.M. 0.86

FORBUS DRIVE
MILLER LANE
I-24 WESTBOUND
MILLER ROAD
EPPS MILL ROAD
STATE ROUTE 2
I-24 EASTBOUND
CAPITAL WAY

0 400' 800' 1200'

CONCEPT REPORT

EPPS MILL ROAD
LOCAL ROUTE 01044
LOG MILE 0.00 TO LOG MILE 0.86
RUTHERFORD COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 1
LOCAL ROUTE 01044
L.M. 0.00 TO
L.M. 0.86

3/29/2024 2:25:36 PM
C:\BMS\STV-PW-01\TRAVIS.PHY\DMS53950\CRASH DIAGRAMS.DGN

Crash Prediction Analysis

The most prominent countermeasures applied throughout the corridor are the installation of signals with left turn lanes and the widening of existing shoulders to 8 feet. Using the CMF Clearinghouse database, crash modification factors (CMFs) for each of these countermeasures were retrieved and applied to existing crash data to determine a reduced yearly crash rate. A total of 48 crashes happened during a 3-year period for an average of 16 crashes/year.

CMF x Yearly Crash Rate = Reduced Yearly Crash Rate

Since there are two different CMFs that will be applied, the following method published in the Highway Safety Manual (HSM) will be used for combining multiple CMFs.

$$N = N_{base}(CMF_1 * CMF_2 * CMF_n)$$

N_{Base} = 16 crashes/year

CMF_1

CMF ID: 7966 - INSTALL A TRAFFIC SIGNAL AND LEFT TURN LANES
Value: 0.541

CMF_2

CMF ID: 4817 - CHANGE SHOULDER WIDTH FROM X TO Y (IN FEET)
X = 4ft; Y = 8ft
Function: $CMF = e^{(-0.02990(Y-X))}$
Value: 0.887

Using the information above, the blended CMF is 0.480 and the predicted crash frequency (N) is equal to 7.678 crashes/year. In addition to the reduced crash frequency determined by CMF, additional benefits are expected due to the reconfiguration of the I-24 ramps. Departure speeds are improved on both EB and WB off-ramps and deceleration lengths are improved to meet current standards. Additionally, widening both off-ramps will provide more storage length and improve queueing issues seen in the design year, reducing the likelihood of rear-end collisions as vehicles exit the interstate. The larger parclo on-ramp has an improved design speed with an entrance curve onto I-24 that meets current recommendations of greater than 1000' radius and length of more than 200'. This, along with longer acceleration lanes, will allow drivers to match the speed of traffic more easily before merging, reducing the risk of crashes as vehicles transition onto I-24.

Site Visit Attendee List - Epps Mill Road Interchange Improvements and Widening
PIN 124683.06
Date: 6/2/2023

Name	Company	Email/Phone
Brad Thompson	STV	Brad.Thompson@STVinc.com
Amin Amin	STV	Amin.Amin@STVinc.com
Jacob Bastien	STV	Jacob.Bastien@STVinc.com
Abby Fox	STV	Abby.Fox@STVinc.com
Joseph Robertson	STV	Joseph.Robertson@STVinc.com
Jonathan Vogel	TDOT	Jonathan.Vogel@tn.gov
Miller Bernhardt	TDOT	Miller.Berhnardt@tn.gov
Emily Burgess	TDOT	Emily.Burgess@tn.gov
Konner Spradlin	TDOT	Konner.Spradlin@tn.gov
Michelle Nickerson	TDOT	Michelle.Nickerson@tn.gov
Steve Bryan	TDOT	Steve.Bryan@tn.gov
Colin Williams	STV	Colin.Williams@STVinc.com
Ty Tucker	TDOT	Ty.Tucker@tn.gov
Scott Stepp	TDOT	Scott.Stepp@tn.gov
Travis Phy	STV	Travis.Phy@STVinc.com
Scott Johnson	TDOT	Scott.Johnson@tn.gov
Caleb Smith	TDOT	Caleb.Smith@tn.gov
Clint Carpenter	TDOT	Clinton.Carpenter@tn.gov
Pawan Mohamad-Ali	STV	Pawan.Mohamad-Ali@STVinc.com
Jordan Burress	TDOT	Jordan.Burress@tn.gov

TDOT Department of Transportation

Environmental Division

0SD1 Environmental Desktop Review Form

Part 1 – Project Information

PIN	124683.06
Project Number (if available)	
County	Rutherford
Route	I-24
Termini	Interchange at Epps Mill Road/Buchanan Road; Epps Mill Road, From west of Capital Way to SR-2 (US-41) (IA)
Type of Document	
Date ENV DIV Comments are Due	May 22, 2023 @ noon

Part 2: Provide information identifying known Environmental Resources within the proposed project area using the attached information. If no known resources are identified, each study area should note that none were identified.

Air & Noise

AIR QUALITY

Transportation Conformity

This project is in Rutherford County which is in attainment for all regulated criteria pollutants. Therefore, conformity does not apply to this project.

Mobile Source Air Toxics (MSATs)

This project qualifies as a categorical exclusion under 23 CFR 771.117 and, therefore, does not require an evaluation of MSATs per FHWA's *"Interim Guidance Update on Air Toxic Analysis in NEPA Documents"* dated January 2023.

NOISE

This proposed project is not likely to halve the distance between the center of the near travel lane and adjacent noise-sensitive land use. As such, the project is likely to be a Type 3 project and additional noise studies would not be needed. However, the extent of the interchange modification will determine if the proposed project would be considered a Type 1 project or a Type 3 project. More design information is needed to determine the project type.

Cultural Resources

For Archaeology: If we stay in the existing ROW we can use the PA, but if new ROW is added a survey may be necessary. There are 3 previous sites around a 1 mile radius with the nearest being a cemetery and the two North of project are prehistoric sites dating from Archaic to Woodland periods.

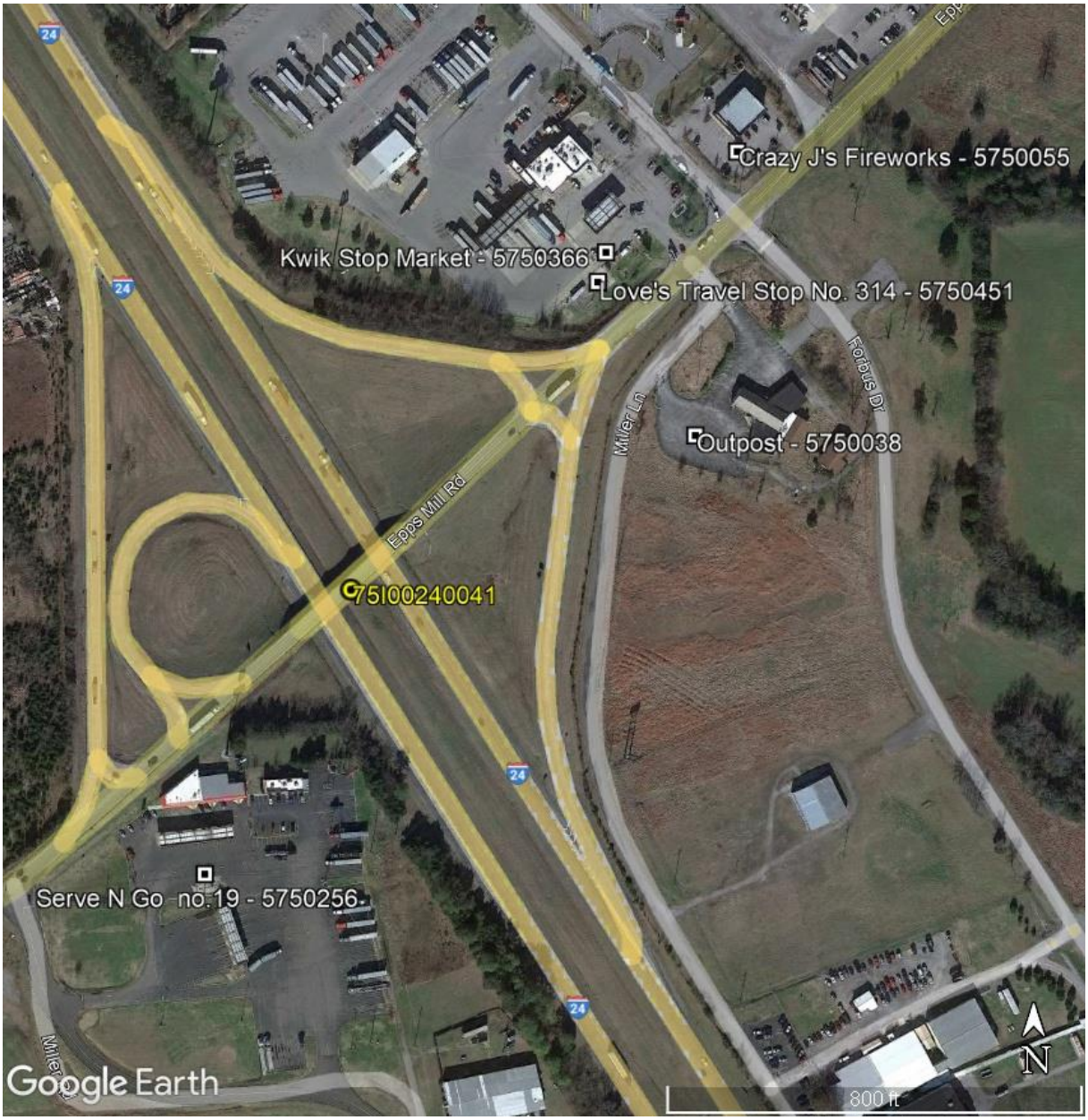
Ecology

HazMat

Based on the information provided, the project has five known hazardous materials sites located adjacent to the project corridor as follows. Avoidance and minimization of these properties is recommended at this time.

1. TDEC UST Facility #5750366, Kwik Stop Market, 6137 Epps Mill Road, Christiana, 37037. This is an inactive facility with three permanently out of use tanks.
2. TDEC UST Facility #5750451, Love's Travel Stop No. 314, 6137 Epps Mill Road, Christiana, 37037. This is an active facility with seven currently in use tanks.
3. TDEC UST Facility #5750055, Crazy J's Fireworks, 6177 Epps Mill Road, Murfeesboro, 37130. This is an inactive facility with three permanently out of use tanks. This site is listed by TDEC as a facility with an environmental related activity that occurred due to a tank closure, a suspected release, or a confirmed release. The case is closed.
4. TDEC UST Facility #5750038, Outpost, 5435 Miller Lane, Christiana, 37037. This is an inactive facility with three permanently out of use tanks. This site is listed twice by TDEC as a facility with an environmental related activity that occurred due to a tank closure, a suspected release, or a confirmed release. Both cases are closed.
5. TDEC UST Facility #5750256, Serve N Go No.19, 5965 Miller Road, Christiana, 37037. This is an active facility with four currently in use and eight permanently out of use tanks. This site is listed twice by TDEC as a facility with an environmental related activity that occurred due to a tank closure, a suspected release, or a confirmed release. Both cases are closed.

Barrett Firearms Manufacturing, 5926 Miller Lane, Christiana, 37037 is listed in the EPA EnviroFacts Hazardous Waste database, but is not within the project footprint. Bridge 75I00240041 Epps Mill Road over I-24 (75-01044-00.48) will require an asbestos survey since it will be replaced.



NEPA

PPRM indicates State funding for this project, which will be a TEER evaluation. NEPA evaluation may change if Federal funding is added, which will most likely be a C-List Categorical Exclusion.

ROW Acquistion

The location and amount of additional ROW will be necessary for NEPA evaluation. Will this project result in neighboring land-use displacement and relocation?

Traffic Control

Any proposed traffic detours utilizing I-24 will need to be coordinated with FHWA. Will changes in access control impact the functional utility of any adjacent parcels?

Section 4(f)

There does not appear to be any Section 4(f) resources adjacent to the project footprint.

Section 6(f)

There does not appear to be any Section 6(f) resources adjacent to the project footprint.

Floodplain Info.

The project area is not in a FEMA floodway, floodplain, or study area. It is in Zone X—area determined to be outside 500-yr. Floodplain.

Multimodal Considerations & Recommendations

The proposed bridge will include 5' sidewalks on both sides that will connect to future sidewalk installation due to current budget constraints.

Existing Structure Summary

Bridge ID: 75i000240041 is twenty-eight (28) feet wide over I-24 and is a two-span 300’ long haunched steel welded plate girder bridge that is approaching 60 years of service life. Widening this type of structure is not recommended by TDOT Structures Division. A March 2022 inspection and appraisal report determined the sufficiency rating to be 75.0 for the existing structure and indicated bridge deck repairs.

NATIONAL BRIDGE INVENTORY
TENNESSEE INVENTORY AND APPRAISAL REPORT

TN TDOT Department of Transportation

BRIDGE ID NUMBER: **75I00240041**
BRIDGE OWNER: **STATE OF TENNESSEE**
FIPS CODE: **00000**
ROAD NAME: **EPPS MILL RD.**
CROSSING: **EPPS MILL RD / I24**
LOCATION: **5.2 MI NE JCT SR10&SR269**

COUNTY: **RUTHERFORD**
ROUTE: **01044**
SPECIAL CASE: **0**
COUNTY SEQUENCE: **1**
LOG MILE: **0.48**
SUFFICIENCY RATING: **75.0**

IDENTIFICATION

(16a,b) LATITUDE:	N	35.72240	DEGREES
(17a,b) LONGITUDE:	W	86.32037	DEGREES
(98a) BORDER BRIDGE STATE CODE:			N/A
(98b) PERCENT SHARE:			N/A
(99) BORDER BRIDGE NUMBER:			NOT APPLICABLE

BRIDGE TYPE AND MATERIAL

(43a) MAIN SPAN MATERIAL: **STEEL CONTINUOUS**
(44a) APPR SPAN MATERIAL: **NOT APPLICABLE**

(45) NUMBER OF MAIN SPANS: **2**
(46) NUMBER OF APPROACH SPANS: **0**
(107) TYPE OF DECK: **CONCRETE CAST-IN-PLACE**
(108) TYPE OF WEARING SURFACE AND DECK PROTECTION:
A) TYPE OF SURFACE: **ASPHALT**
B) TYPE MEMBRANE: **NONE**
C) TYPE PROTECTION: **NONE**

AGE AND SERVICE

(27) YEAR THE BRIDGE WAS BUILT: **1968**
(106) YEAR THE BRIDGE WAS REHABILITATED: **N/A**
(42a) SERVICE ON BRIDGE: **HIGHWAY**
(42b) UNDER BRIDGE: **HIGHWAY**
(28a) NUMBER OF LANES CARRIED BY BRIDGE: **2**
(28b) NUMBER OF LANES UNDER THE BRIDGE: **4**

GEOMETRIC DATA

(48) MAXIMUM SPAN LENGTH: **149.9 FT**
(49) TOTAL BRIDGE LENGTH: **299.9 FT**
(50a) LEFT SIDEWALK WIDTH: **0.0 FT**
(50b) RIGHT SIDEWALK WIDTH: **0.0 FT**
(51) BRIDGE CURB TO CURB WIDTH: **27.9 FT**
(52) BRIDGE OUT TO OUT WIDTH: **32.5 FT**
(32) APPROACH ROADWAY (W/ SHLDS) WIDTH: **31.8 FT**
(33) BRIDGE MEDIAN: **NO MEDIAN**
(34) BRIDGE SKEW: **10 DEGREES**
(35) BRIDGE FLARE: **NO FLARE**
(520) MIN VERTICAL CLEARANCE OVER RD: **NO RESTRICTION**
(47) MIN HORIZONTAL CLEARANCE ON ROADWAY: **27.9 FT**
(54a) VERT UNDERCLR: **HIGHWAY BENEATH BRIDGE**
(54b) MIN VERTICAL UNDERCLEARANCE: **16.17 FT**
(55a) HORZ UNDERCLR: **HIGHWAY BENEATH BRIDGE**
(55b) MIN HORZ UNDERCLR ON RIGHT: **36.09 FT**
(56) MIN HORZ UNDERCLR ON LEFT: **52.17 FT**

NAVIGATION DATA

(38) NAV CONTROL: **NOT APPLICABLE**
(39) NAVIGATION VERTICAL CLEARANCE: **N/A**
(116) LIFT BRIDGE VERT CLEARANCE: **N/A**
(40) NAVIGATION HORZ CLEARANCE: **N/A**

PUBLICATION DATE
08-Mar-22

CLASSIFICATION

(112) MEETS NBIS BRIDGE LENGTH: **YES**
(104) NATIONAL HIGHWAY SYSTEM: **NOT A NHS ROUTE**
(26) FUNCTIONAL CLASS: **URBAN COLLECTOR**
(101) PARALLEL BRIDGE: **NO PARALLEL BRIDGE**
(102) TRAFFIC DIR: **2-WAY TRAFFIC**
(103) TEMPORARY BRIDGE: **NOT APPLICABLE**
(110) NATIONAL TRUCK ROUTE: **NOT ON TRUCK NETWORK**
(37) HISTORICAL CLASS: **HISTORICAL SIGNIFICANCE HAS NOT BEEN DETERMINED**

CONDITION RATINGS

(58) DECK: **6**
(59) SUPERSTRUCTURE: **6**
(60) SUBSTRUCTURE: **7**
(61) STREAM CHANNEL AND CHANNEL PROTECTION: **N**
(62) CULVERT CONDITION (IF APPLICABLE): **N**

DESIGN LOAD AND WEIGHT POSTING

(31) DESIGN LOADING: **H-20-44**
WEIGHT POSTING (2 AXLE VEHICLES): **ALL LEGAL LOADS**
WEIGHT POSTING (3 OR MORE AXLES): **ALL LEGAL LOADS**
(70) BRIDGE POSTING CODE: **5**
(41) WT POSTING STATUS: **OPEN**

APPRAISAL

(67) STRUCTURAL EVALUATION: **6**
(68) DECK GEOMETRY: **4**
(69) UNDERCLEARANCE RATING: **5**
(71) WATERWAY ADEQUACY: **N**
(72) APPROACH ROADWAY ALIGNMENT: **8**
(36) TRAFFIC SAFETY FEATURES: **011N**
(113) SCOUR CONDITION RATING: **N**

RECOMMENDED IMPROVEMENTS

(75) TYPE OF WORK: **BRIDGE DECK REPAIR**
(76) LENGTH OF BRIDGE IMPROVEMENT: **299.9 FT**
(94) BRIDGE IMPROVEMENT COST: **$443,000.00**
(95) ROADWAY IMPROVEMENT COST: **$45,000.00**
(96) TOTAL PROJECT COST: **$665,000.00**
(97) YEAR OF IMPROVEMENT COST ESTIMATE: **2020**

INSPECTION DATES

(90) DATE OF LAST REGULAR INSPECTION: **6/8/2020**
(91) REGULAR INSPECTION FREQUENCY (MONTHS): **24**
(93b) DATE OF LAST UNDERWATER INSP (MO/YR): **N/A**
(92b) UNDERWATER INSP FREQUENCY (MONTHS): **N**
(93c) DATE OF SPECIAL INSPECTION (MO/YR): **N/A**
(92c) SPECIAL INSP FREQUENCY (MONTHS): **N**

PRODUCED PURSUANT TO PUBLIC RECORDS REQUEST
This document is covered by 23 USC §409 and its production pursuant to a public document records request does not waive the provisions of §409

Phy, Travis

From: Ted Kniazewycz
Sent: Friday, May 5, 2023 4:32 PM
To: Scott Stepp; Konner Spradlin
Cc: Eric Slayton; Kathleen McLaughlin
Subject: RE: Early Coordination (0SD1) - PIN 124683.06 Rutherford County I-24 and Epps Mill Rd/ Buchanan Rd

It should be replaced as future widening of I-24 would be a problem with that steel beam design.

Thanks,

Ted A. Kniazewycz, P.E.,F.ASCE | Director
Structures Division
p. 615-741-3351
c. 615-574-1220
ted.kniazewycz@tn.gov

From: Scott Stepp <Scott.Stepp@tn.gov>
Sent: Friday, May 5, 2023 3:54 PM
To: Konner Spradlin <Konner.Spradlin@tn.gov>
Cc: Ted Kniazewycz <Ted.Kniazewycz@tn.gov>; Eric Slayton <Eric.Slayton@tn.gov>; Kathleen McLaughlin <Kathleen.McLaughlin@tn.gov>
Subject: RE: Early Coordination (0SD1) - PIN 124683.06 Rutherford County I-24 and Epps Mill Rd/ Buchanan Rd

Konner,

The existing bridge on Epps Mill Road over I-24 is only 28’ wide. If more than two traffic lanes will be needed across this bridge, an improvement will be necessary. The existing bridge is a two-span, 300’ long (150’ – 150’) haunched steel welded plate girder bridge. I’m not sure how difficult it is to widen one of these structures. With the bridge approaching 60 years of service life by the time the project is constructed, it may be more prudent to phase replace the bridge with a new two-span concrete bulb-tee beam bridge. Ted might be able to weigh on these two options.

If only two lanes are needed, I would assume the existing bridge is satisfactory as-is.

That concludes my early coordination comments.

Thanks,

Scott A. Stepp, P.E. | Civil Engineering Manager 1
Structures Division
James K. Polk Building, Suite 1100
505 Deaderick Street, Nashville, TN 37243

p. 615-741-3353 f. 615-532-7745
scott.stepp@tn.gov

From: Wesley Peck <Wesley.Peck@tn.gov>
Sent: Friday, May 5, 2023 1:32 PM
To: Konner Spradlin <Konner.Spradlin@tn.gov>
Cc: Ted Kniazewycz <Ted.Kniazewycz@tn.gov>; Scott Stepp <Scott.Stepp@tn.gov>
Subject: RE: Early Coordination (0SD1) - PIN 124683.06 Rutherford County I-24 and Epps Mill Rd/ Buchanan Rd

Konner,

There don't appear to be any hydraulic structures or floodplain encroachments within the project limits shown. Note, there is a significant floodplain crossing immediately northwest of this project where I-24 crosses Hurricane Creek just above its confluence with the Middle Fork Stones River. This is a FEMA Zone AE floodplain and further coordination may be required if the project limits extend that far to the north. Impacts to the floodplain seem unlikely considering the distance, but I wanted to call it to your attention just in case. A partial flood map is attached.

Structures Division may have other comments regarding the bridge.

TN TDOT Department of Transportation

Wesley Peck, PE, MS | Civil Engineering Manager 2
Hydraulic Design Section | Structures Division
James K Polk Building, 11th Floor
505 Deaderick St, Nashville, TN 37243-0338
p. 615-532-5660
Wesley.Peck@tn.gov
tn.gov/tdot

From: Konner Spradlin <Konner.Spradlin@tn.gov>
Sent: Friday, May 5, 2023 12:40 PM
To: K.Brandon Chance <K.Brandon.Chance@tn.gov>; TDOT.ENV SpecialProjects <TDOT.ENV.SpecialProjects@tn.gov>; Travis W. Smith <Travis.W.Smith@tn.gov>; Lisa Dunn <Lisa.Dunn@tn.gov>; TDOT MultimodalPlanning <TDOT.MultimodalPlanning@tn.gov>; Daniel Pallme <Daniel.Pallme@tn.gov>; Stacy Morrison <Stacy.Morrison@tn.gov>; Brian Hurst <Brian.Hurst@tn.gov>; Jay Lanius <Jay.Lanius@tn.gov>; Konner Spradlin <Konner.Spradlin@tn.gov>; Gregory Dyer <Greg.Dyer@tn.gov>; TDOT.TrafficOps TSMO-Reviews <TDOT.TrafficOps.TSMO-Reviews@tn.gov>; TDOT ADA <TDOT.ADA@tn.gov>; Jonathan Russell <Jonathan.Russell@tn.gov>; Aso Hawrami <Aso.Hawrami@tn.gov>; Brad Abel <Brad.Abel@tn.gov>; Bradley Martin <Bradley.Martin@tn.gov>; Jon Zirkle <Jon.Zirkle@tn.gov>; Shane Hester <Shane.Hester@tn.gov>; Jordan Burress <Jordan.Burress@tn.gov>
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Subject: Early Coordination (0SD1) - PIN 124683.06 Rutherford County I-24 and Epps Mill Rd/ Buchanan Rd

All,

As a part of the Project Delivery Network (PDN) Stage 0SD1 Early Coordination process, please see the attached map for details regarding the project location. The purpose of receiving comments is to have initial input compiled from the different functional areas prior to the site visit to identify areas of interests. We will compile all the comments we receive and discuss at the site visit which will be coordinated in the upcoming months. Below is the project information, rough scope, and a Google Maps link to the project location:

- PIN 124683.06
- Rutherford Counties
- Interchange at Epps Mill Road/Buchanan Road; Epps Mill Road, From west of Capital Way to SR-2 (US-41) (IA)
- Project Location: https://goo.gl/maps/o1MbU6MdnMkXqDJ29
- Project Type: Widening and interchange improvements
- Scope: Interchange at Epps Mill Road/Buchanan Road; Epps Mill Road, From west of Capital Way to SR-2 (US-41) (IA)
- Federal Funding: GFT project. Federal funding unknown

We request that each division identified within the PDN process provide their comments or confirmation of no comments by COB Monday, May 22nd. If your office has no comments at this time, please reply "no comments at this time" for documentation purposes.

Thank you for your input on this project,

Konner Spradlin, P.E. | C.E. Manager 1
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Intersection and Interchange Evaluation (IIE) Forms

TDOT IIE Form - Data Inputs

Version: 09142020

Project Information

Project and Location Data

Project Name:	Epps Mill Rd		
Major Road Name:	SR-2	**Minor Road Name:**	Epps Mill Rd
PIN:	124683.06	**County:**	Rutherford
Date:	5/30/2024	**Analyst/Firm:**	Trent Moody/ STV Inc
Existing Control Type:	Other (provide description)	**No. of Legs:**	3
Major Road Direction:	N-S	**Opening Year:** 2028	**Design Year:** 2048
Funct. Class of Major Road:	Minor Arterial	**Land Use Context:**	Suburban
Project Type of Work:	Intersection Improvements and Signals		

Traffic Data

Opening Year 2028	**Major Road AADT:**	6,270	
Design Year 2048	**Major Road AADT:**	16,300	
Major Road T % (AADT):	7%	**Minor Road T % (AADT):**	6%
Major Road T % (DHV):	5%	**Minor Road T % (DHV):**	4%

Multimodal Activity

Within a 1/2 mile of the project location are there:

Bus stop:	No	**School:**	No	**Library:**	No
Retail Center:	No	**Other Civic Institution:**	No	**Context to Support Multimodal Activity:**	No

Existing or Future Estimated Multimodal Activity Level: Low

Crash History and Intersection Crash Rate

Crash Data Year(s):		**No. of Years:**	
		No. of Crashes:	

Leg	**Current AADT**		
North:		**SW Avg. Rate:**	
East:		**Crash Rate (A):**	######
South:		**Critical Rate (C):**	######
West:		**A/SW:**	######
Entering AADT:	0	**A/C:**	####

Turning Movement Volumes (TMV)

2028 **=Opening Year Design Hourly Volumes (DHV)**

				SR-2						
			0	162	347	0				
			(0)	(124)	(88)	(0)	SB			
	EB	PEDS	↕	←	↓	→	PEDS	↔	(0)	0
147	(125)	↑					↑		(0)	0
0	(0)	→		Entering Hourly Volumes			←		(0)	0
147	(51)	↓					↓		(0)	0
0	(0)	PEDS	↔	←	↑	→	PEDS	↕	WB	
		NB		(177)	(258)	(0)	(0)			
				79	120	0	0			

Epps Mill Rd

(AM) = AM Peak Hour Approach

PM = PM Peak Hour Approach

Blue = Pedestrian Volumes

N / W / E / S

2048 **= Design Year Design Hourly Volumes (DHV)**

				SR-2						
			0	421	902	0				
			(0)	(322)	(229)	(0)	SB			
	EB	PEDS	↕	←	↓	→	PEDS	↔	(0)	0
382	(325)	↑					↑		(0)	0
0	(0)	→		Entering Hourly Volumes			←		(0)	0
382	(133)	↓					↓		(0)	0
0	(0)	PEDS	↔	←	↑	→	PEDS	↕	WB	
		NB		(330)	(671)	(0)	(0)			
				205	312	0	0			

Epps Mill Rd

Intersection Location:	SR-2 at Epps Mill Rd in Rutherford County				
Number of Intersection Legs:	3	**PIN:**	124683.06	**Date:**	5/30/24
Existing Control Type:	Other (provide description)	**Analyst:**	Trent Moody/ STV Inc	Version: 09142020	

TDOT IIE Stage I Form - Scoping

Control Type	Conflict Point Score (lower # is better)	Is the option feasible and reasonable?	Is the option likely to improve or maintain safety?	Is the option likely to improve operations?	Is the Optoin likely to improve or maintain multimodal access?	AM V/C Ratio (CAP X)	PM V/C Ratio (CAP X)	Should the Option proceed to Stage II?	
At-Grade Intersection	Safety	Q1	Q2	Q3	Q4	Capacity		Decision	Screening Decision Justification
Traffic Signal	12	Yes	Yes	Yes	Yes	0.80	2.26	No	Signal Warranted Not selected for Budget
Two-Way Stop Control	12	No	-	-	-			No	N/A
All-Way Stop Control	12	No	-	-	-	2.04	7.35	No	Poor V/C
Continuous Green T	12	No	-	-	-	0.58	2.53	No	Poor V/C
Quadrant Roadway	n/a	No	-	-	-	0.50	2.88	No	Poor V/C
Partial Displaced Left Turn	12	No	-	-	-	0.61	2.37	No	Poor V/C
Displaced Left Turn	n/a	No	-	-	-	0.30	2.11	No	Poor V/C
Signalized RCUT	12	No	-	-	-	0.82	2.62	No	Poor V/C
J-Turn (Unsignalized RCUT)	12	No	-	-	-	0.75	7.79	No	Poor V/C
Median U-Turn	8	No	-	-	-	0.53	2.58	No	Poor V/C
Partial Median U -Turn	16	No	-	-	-	0.40	2.58	No	Poor V/C
Bowtie	n/a	No	-	-	-	0.83	4.19	No	Poor V/C
Split Intersection	n/a	No	-	-	-	0.61	2.34	No	Poor V/C
Roundabout	6	No	-	-	-	1.08	25.00	No	Poor V/C
Other (provide description)	12	Yes	Yes	No	Yes			**Yes**	1-Way Stop Control - See Memo
Grade-Separated Intersection	Safety	Q1	Q2	Q3	Q4	CAP-X		Decision	Screening Decision Justification
Echelon	n/a	No	-	-	-			-	Geometric Const. due to prox. to other intersections
Center Turn Overpass	n/a	No	-	-	-			-	Geometric Const. due to prox. to other intersections
Interchange	Safety	Q1	Q2	Q3	Q4	CAP-X		Decision	Screening Decision Justification
Diamond	n/a	No	-	-	-			-	N/A
Partial Cloverleaf	n/a	No	-	-	-			-	N/A
Displaced Left Turn Interchange	n/a	No	-	-	-			-	N/A
Contraflow Left Interchange	n/a	No	-	-	-			-	N/A
DDI	n/a	No	-	-	-			-	N/A
Single Point	n/a	No	-	-	-			-	N/A
Single Point with Roundabout	n/a	No	-	-	-			-	N/A
Other (provide description)	n/a	No	-	-	-			-	N/A

TDOT Department of Transportation	Intersection Location:	SR-2 at Epps Mill Rd in Rutherford County									
	Number of Intersection Legs:	3		PIN:	124683.06				Date:	5/30/24	
	TDOT IIE Stage II Form - Selection			Analyst:	Trent Moody/ STV Inc				Version: 09142020		
	Existing Control	Option 1		Option 2		Option 3			Option 4		
TDOT IIE Stage II Form - Selection	Other (provide description)	Other (provide description)		Traffic Signal		None			None		
Project Cost											
Tool Used	Not Applicable	-		-		-			-		
Total Project Cost	Not Applicable	-		-		-			-		
Life Cycle Cost											
Tool Used	-	-		-		-			-		
Analysis Period	2028 to 2048	2028 to 2048		2028 to 2048		2028 to 2048			2028 to 2048		
Total Life Cycle NPV Cost	-	-		-		-			-		
Traffic Operations											
Traffic Analysis Software Used	Synchro	Synchro		Synchro		-			-		
2028 Opening Year	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	
LOS	C	C	C	C		-	-	-	-	-	
Delay (s/veh)	19.2	20.5	20.8	7.7							
v/c	0.19	0.18	0.58	0.57							
Queues Accommodated?	-	-	-	-	-	-	-	-	-	-	
2048 Design Year	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	
LOS	F	F	F	F	B	C	-	-	-	-	
Delay (s/veh)	1675.7	2413.8	1416.3	2198.4	17.7	30.8					
v/c	4.54	6.21	3.92	5.62	0.73	0.95					
Queues Accommodated?	-	-	-	-	-	-	-	-	-	-	
Predictive Crash Analysis											
Tool Used	-	-		-		-			-		
Analysis Period	2028 to 2048	2028 to 2048		2028 to 2048		2028 to 2048			2028 to 2048		
Total Crashes											
Fatal & Injury Crashes											
Multimodal											
Are peds, bicyclists, and transit riders accommodated?	-	-		-		-			-		
Stakeholder Posture											
Local Community Support	Not Applicable	-		-		-			-		
TDOT Support	Not Applicable	-		-		-			-		
TDOT Approval											
Preferred Option?	Not Applicable	-		-		-			-		
Comments											
TDOT Reviewer Name and Title			Signature					Date			

Stage I Scoping Conflict Point Score (Default Crossing weight = 2, Merging, Diverging =1)

Weights:		Default values
Crossing	2	2
Merging	1	1
Diverging	1	1

		Conflict Point Count		Weighted Score	
	Conflict Type	4 Legs	3 Legs	4 Legs	3 Legs
At-Grade Intersections					
Traffic Signal	Crossing	16	3	32	6
	Merging	8	3	8	3
	Diverging	8	3	8	3
	Total	**32**	**9**	**48**	**12**
Stop Control	Crossing	16	3	32	6
	Merging	8	3	8	3
	Diverging	8	3	8	3
	Total	**32**	**9**	**48**	**12**
Continuous Green T	Crossing		3		6
	Merging		3		3
	Diverging		3		3
	Total	**n/a**	**9**	**n/a**	**12**
Quadrant	Crossing	10		20	
	Merging	10		10	
	Diverging	10		10	
	Total	**30**	**n/a**	**40**	**n/a**
Partial Displaced Left Turn	Crossing	14	3	28	6
	Merging	8	3	8	3
	Diverging	8	3	8	3
	Total	**30**	**9**	**44**	**12**
Displaced Left Turn	Crossing	12		24	
	Merging	8		8	
	Diverging	8		8	
	Total	**28**	**n/a**	**40**	**n/a**
Signalized RCUT	Crossing	2	1	4	2
	Merging	8	5	8	5
	Diverging	8	5	8	5
	Total	**18**	**11**	**20**	**12**
J-Turn (Unsignalized RCUT)	Crossing	2	1	4	2
	Merging	8	5	8	5
	Diverging	8	5	8	5
	Total	**18**	**11**	**20**	**12**
Median U-Turn	Crossing	4	0	8	0
	Merging	6	4	6	4
	Diverging	6	4	6	4
	Total	**16**	**8**	**20**	**8**
Partial Median U-Turn	Crossing	6	2	12	4
	Merging	8	6	8	6
	Diverging	8	6	8	6
	Total	**22**	**14**	**28**	**16**
Bowtie	Crossing	4		8	
	Merging	8		8	
	Diverging	8		8	
	Total	**20**	**n/a**	**24**	**n/a**
Split Intersection	Crossing	10		20	
	Merging	8		8	
	Diverging	8		8	
	Total	**26**	**n/a**	**36**	**n/a**
Roundabout	Crossing	0	0	0	0
	Merging	4	3	4	3
	Diverging	4	3	4	3
	Total	**8**	**6**	**8**	**6**
Grade-Separated Intersections					
Echelon	Crossing	6		12	
	Merging	8		8	
	Diverging	8		8	
	Total	**22**	**n/a**	**28**	**n/a**
Center Turn Overpass	Crossing	8		16	
	Merging	8		8	
	Diverging	8		8	
	Total	**24**	**n/a**	**32**	**n/a**
Interchanges					
Diamond	Crossing	6		12	
	Merging	8		8	
	Diverging	8		8	
	Total	**22**	**n/a**	**28**	**n/a**
Partial Cloverleaf	Crossing	2		4	
	Merging	8		8	
	Diverging	8		8	
	Total	**18**	**n/a**	**20**	**n/a**
Displaced Left Turn Interchange	Crossing	6		12	
	Merging	8		8	
	Diverging	8		8	
	Total	**22**	**n/a**	**28**	**n/a**
Contraflow Left Interchange	Crossing	8		16	
	Merging	8		8	
	Diverging	8		8	
	Total	**24**	**n/a**	**32**	**n/a**
DDI	Crossing	2		4	
	Merging	8		8	
	Diverging	8		8	
	Total	**18**	**n/a**	**20**	**n/a**
Single Point	Crossing	8		16	
	Merging	8		8	
	Diverging	8		8	
	Total	**24**	**n/a**	**32**	**n/a**
Single Point with Roundabout	Crossing	0		0	
	Merging	6		6	
	Diverging	6		6	
	Total	**12**	**n/a**	**12**	**n/a**

Intersection and Interchange Evaluation (IIE) Forms

TDOT IIE Form - Data Inputs

Version: 09142020

Project Information

Project and Location Data

Project Name:	Epps Mill Rd		
Major Road Name:	Epps Mill Rd	**Minor Road Name:**	Forbus Dr
PIN:	124683.06	**County:**	Rutherford
Date:	4/26/2024	**Analyst/Firm:**	Trent Moody/STV Inc
Existing Control Type:	Two-Way Stop Control	**No. of Legs:**	4
Major Road Direction:	E-W	**Opening Year:** 2028	**Design Year:** 2048
Funct. Class of Major Road:	Minor Arterial	**Land Use Context:**	Suburban
Project Type of Work:	Intersection Improvements and Signals		

Traffic Data

Opening Year 2028	**Major Road AADT:**	6,270	
Design Year 2048	**Major Road AADT:**	16,300	
Major Road T % (AADT):	19%	**Minor Road T % (AADT):**	30%
Major Road T % (DHV):	13%	**Minor Road T % (DHV):**	20%

Multimodal Activity

Within a 1/2 mile of the project location are there:

Bus stop:	No	**School:**	No	**Library:**	No
Retail Center:	No	**Other Civic Institution:**	No	**Context to Support Multimodal Activity:**	No

Existing or Future Estimated Multimodal Activity Level: Low

Crash History and Intersection Crash Rate

Crash Data Year(s):		**No. of Years:**	
		No. of Crashes:	

Leg	**Current AADT**		
North:		**SW Avg. Rate:**	
East:		**Crash Rate (A):**	######
South:		**Critical Rate (C):**	######
West:		**A/SW:**	######
Entering AADT:	0	**A/C:**	####

Turning Movement Volumes (TMV)

2028 =Opening Year Design Hourly Volumes (DHV)

			Forbus Dr							
			0	203	0	35				
			(197)	(197)	(0)	(37)	SB			
	EB	PEDS	↑	←	↓	→	PEDS		(0)	0
222	(183)	↑					↑		(37)	23
249	(151)	→		Entering Hourly Volumes			←		(201)	253
5	(15)	↓					↓		(7)	6
0	(0)	PEDS	←	↑	→		PEDS	WB		
		NB	(2)	(0)	(2)		(0)			
			21	0	20		0			

Epps Mill Rd

(AM) = AM Peak Hour Approach

PM = PM Peak Hour Approach

Blue = Pedestrian Volumes

N W E S

2048 = Design Year Design Hourly Volumes (DHV)

			Forbus Dr							
			0	305	0	53				
			(0)	(296)	(0)	(56)	SB			
	EB	PEDS	↑	←	↓	→	PEDS			
334	(275)	↑					↑		(56)	31
665	(411)	→		Entering Hourly Volumes			←		(556)	676
13	(39)	↓					↓		(18)	16
0	(0)	PEDS	←	↑	→		PEDS	WB		
		NB	(5)	(0)	(5)					
			55	0	52					

Epps Mill Rd

Intersection Location:	Epps Mill Rd at Forbus Dr in Rutherford County				
Number of Intersection Legs:	4	**PIN:**	124683.06	**Date:**	4/26/24
Existing Control Type:	Two-Way Stop Control	**Analyst:**	Trent Moody/STV Inc	Version: 09142020	

TDOT IIE Stage I Form - Scoping

Control Type	Conflict Point Score (lower # is better)	Is the option feasible and reasonable?	Is the option likely to improve or maintain safety?	Is the option likely to improve operations?	Is the Optoin likely to improve or maintain multimodal access?	AM V/C Ratio (CAP X)	PM V/C Ratio (CAP X)	Should the Option proceed to Stage II?	
At-Grade Intersection	Safety	Q1	Q2	Q3	Q4	Capacity		Decision	Screening Decision Justification
Traffic Signal	48	Yes	Yes	Yes	Yes	0.93	0.99	**Yes**	Signal warranted
Two-Way Stop Control	48	No	-	-	-	3.58	12.59	No	Existing condition. Poor V/C
All-Way Stop Control	48	No	-	-	-	1.80	2.20	No	Poor V/C
Continuous Green T	n/a	No	-	-	-	N/A	N/A	No	N/A
Quadrant Roadway	40	No	-	-	-	0.71	0.99	No	Geometric const. due to prox. to other intersections
Partial Displaced Left Turn	44	No	-	-	-	0.60	0.66	No	Geometric const. due to prox. to other intersections
Displaced Left Turn	40	No	-	-	-	0.57	0.66	No	Geometric const. due to prox. to other intersections
Signalized RCUT	20	No	-	-	-	0.81	0.79	No	Geometric const. due to prox. to other intersections
J-Turn (Unsignalized RCUT)	20	No	-	-	-	1.74	1.64	No	Poor V/C
Median U-Turn	20	No	-	-	-	0.82	1.05	No	Poor V/C
Partial Median U -Turn	28	No	-	-	-	0.79	1.06	No	Poor V/C
Bowtie	24	No	-	-	-	0.80	0.11	No	Geometric constraints/ out of project scope
Split Intersection	36	No	-	-	-	0.73	0.74	No	Geometric/ R.O.W. constraints
Roundabout	8	No	-	-	-	0.89	#####	No	Poor V/C
Other (provide description)		No	-	-	-			-	
Grade-Separated Intersection	Safety	Q1	Q2	Q3	Q4	CAP-X		Decision	Screening Decision Justification
Echelon	28	No	-	-	-	0.76	0.71	No	Geometric constr. due to prox. of other intersections
Center Turn Overpass	32	No	-	-	-	0.76	0.77	No	Geometric constr. due to prox. of other intersections
Interchange	Safety	Q1	Q2	Q3	Q4	CAP-X		Decision	Screening Decision Justification
Diamond	28	No	-	-	-	0.53	0.56	-	N/A
Partial Cloverleaf	20	No	-	-	-	0.09	0.14	-	N/A
Displaced Left Turn Interchange	28	No	-	-	-	0.52	0.53	-	N/A
Contraflow Left Interchange	32	No	-	-	-	0.37	0.37	-	N/A
DDI	20	No	-	-	-	0.17	0.26	-	N/A
Single Point	32	No	-	-	-	0.15	0.18	-	N/A
Single Point with Roundabout	12	No	-	-	-	0.34	0.35	-	N/A
Other (provide description)		No	-	-	-			-	

TDOT IIE Stage II Form - Selection	Intersection Location:		Epps Mill Rd at Forbus Dr in Rutherford County							
	Number of Intersection Legs:		4		PIN:	124683.06			Date:	4/26/24
	TDOT IIE Stage II Form - Selection				Analyst:	Trent Moody/STV Inc			Version: 09142020	
	Existing Control		**Option 1**		**Option 2**		**Option 3**		**Option 4**	
	Two-Way Stop Control		Traffic Signal		None		None		None	
Project Cost										
Tool Used	Not Applicable		-		-		-		-	
Total Project Cost	Not Applicable		-		-		-		-	
Life Cycle Cost										
Tool Used	-		-		-		-		-	
Analysis Period	2028 to 2048		2028 to 2048		2028 to 2048		2028 to 2048		2028 to 2048	
Total Life Cycle NPV Cost	-		-		-		-		-	
Traffic Operations										
Traffic Analysis Software Used	Synchro		Synchro		-		-		-	
2028 Opening Year	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
LOS	B	B	A	A	-	-	-	-	-	-
Delay (s/veh)	11.3	12.1	8.3	7.7						
v/c	0.19	0.18	0.58	0.57						
Queues Accommodated?	-	-	-	-	-	-	-	-	-	-
2048 Design Year	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
LOS	F	F	B	B	-	-	-	-	-	-
Delay (s/veh)	57.9	156.3	13.4	15.3						
v/c	0.57	0.81	0.68	0.72						
Queues Accommodated?	-	-			-	-	-	-	-	-
Predictive Crash Analysis										
Tool Used	-		-		-		-		-	
Analysis Period	2028 to 2048		2028 to 2048		2028 to 2048		2028 to 2048		2028 to 2048	
Total Crashes										
Fatal & Injury Crashes										
Multimodal										
Are peds, bicyclists, and transit riders accommodated?	-		-		-		-		-	
Stakeholder Posture										
Local Community Support	Not Applicable		-		-		-		-	
TDOT Support	Not Applicable		-		-		-		-	
TDOT Approval										
Preferred Option?	Not Applicable		-		-		-		-	
Comments										
TDOT Reviewer Name and Title			Signature				Date			

Stage I Scoping Conflict Point Score (Default Crossing weight = 2, Merging, Diverging =1)

Weights:		Default values
Crossing	2	2
Merging	1	1
Diverging	1	1

		Conflict Point Count		Weighted Score	
	Conflict Type	4 Legs	3 Legs	4 Legs	3 Legs
At-Grade Intersections					
Traffic Signal	Crossing	16	3	32	6
	Merging	8	3	8	3
	Diverging	8	3	8	3
	Total	**32**	**9**	**48**	**12**
Stop Control	Crossing	16	3	32	6
	Merging	8	3	8	3
	Diverging	8	3	8	3
	Total	**32**	**9**	**48**	**12**
Continuous Green T	Crossing		3		6
	Merging		3		3
	Diverging		3		3
	Total	**n/a**	**9**	**n/a**	**12**
Quadrant	Crossing	10		20	
	Merging	10		10	
	Diverging	10		10	
	Total	**30**	**n/a**	**40**	**n/a**
Partial Displaced Left Turn	Crossing	14	3	28	6
	Merging	8	3	8	3
	Diverging	8	3	8	3
	Total	**30**	**9**	**44**	**12**
Displaced Left Turn	Crossing	12		24	
	Merging	8		8	
	Diverging	8		8	
	Total	**28**	**n/a**	**40**	**n/a**
Signalized RCUT	Crossing	2	1	4	2
	Merging	8	5	8	5
	Diverging	8	5	8	5
	Total	**18**	**11**	**20**	**12**
J-Turn (Unsignalized RCUT)	Crossing	2	1	4	2
	Merging	8	5	8	5
	Diverging	8	5	8	5
	Total	**18**	**11**	**20**	**12**
Median U-Turn	Crossing	4	0	8	0
	Merging	6	4	6	4
	Diverging	6	4	6	4
	Total	**16**	**8**	**20**	**8**
Partial Median U-Turn	Crossing	6	2	12	4
	Merging	8	6	8	6
	Diverging	8	6	8	6
	Total	**22**	**14**	**28**	**16**
Bowtie	Crossing	4		8	
	Merging	8		8	
	Diverging	8		8	
	Total	**20**	**n/a**	**24**	**n/a**
Split Intersection	Crossing	10		20	
	Merging	8		8	
	Diverging	8		8	
	Total	**26**	**n/a**	**36**	**n/a**
Roundabout	Crossing	0	0	0	0
	Merging	4	3	4	3
	Diverging	4	3	4	3
	Total	**8**	**6**	**8**	**6**
Grade-Separated Intersections					
Echelon	Crossing	6		12	
	Merging	8		8	
	Diverging	8		8	
	Total	**22**	**n/a**	**28**	**n/a**
Center Turn Overpass	Crossing	8		16	
	Merging	8		8	
	Diverging	8		8	
	Total	**24**	**n/a**	**32**	**n/a**
Interchanges					
Diamond	Crossing	6		12	
	Merging	8		8	
	Diverging	8		8	
	Total	**22**	**n/a**	**28**	**n/a**
Partial Cloverleaf	Crossing	2		4	
	Merging	8		8	
	Diverging	8		8	
	Total	**18**	**n/a**	**20**	**n/a**
Displaced Left Turn Interchange	Crossing	6		12	
	Merging	8		8	
	Diverging	8		8	
	Total	**22**	**n/a**	**28**	**n/a**
Contraflow Left Interchange	Crossing	8		16	
	Merging	8		8	
	Diverging	8		8	
	Total	**24**	**n/a**	**32**	**n/a**
DDI	Crossing	2		4	
	Merging	8		8	
	Diverging	8		8	
	Total	**18**	**n/a**	**20**	**n/a**
Single Point	Crossing	8		16	
	Merging	8		8	
	Diverging	8		8	
	Total	**24**	**n/a**	**32**	**n/a**
Single Point with Roundabout	Crossing	0		0	
	Merging	6		6	
	Diverging	6		6	
	Total	**12**	**n/a**	**12**	**n/a**

Intersection and Interchange Evaluation (IIE) Forms

TDOT IIE Form - Data Inputs

Version: 09142020

Project Information

Project and Location Data

Project Name:	Epps Mill Rd		
Major Road Name:	Epps Mill Rd	**Minor Road Name:**	I-24 Ramps
PIN:	124683.06	**County:**	Rutherford
Date:	4/26/2024	**Analyst/Firm:**	Trent Moody/STV Inc
Existing Control Type:	Other (provide description)	**No. of Legs:**	3
Major Road Direction:	E-W	**Opening Year:**	2028
		Design Year:	2048
Funct. Class of Major Road:	Minor Arterial	**Land Use Context:**	Suburban
Project Type of Work:	Intersection Improvements and Signals		

Traffic Data

Opening Year	**2028**	**Major Road AADT:**	9,260
Design Year	**2048**	**Major Road AADT:**	24,080
Major Road T % (AADT):	23%	**Minor Road T % (AADT):**	10%
Major Road T % (DHV):	15%	**Minor Road T % (DHV):**	7%

Multimodal Activity

Within a 1/2 mile of the project location are there:

Bus stop:	No	**School:**	No	**Library:**	No
Retail Center:	No	**Other Civic Institution:**	No	**Context to Support Multimodal Activity:**	No

Existing or Future Estimated Multimodal Activity Level: Low

Crash History and Intersection Crash Rate

Crash Data Year(s):		**No. of Years:**	
		No. of Crashes:	

Leg	**Current AADT**		
North:		**SW Avg. Rate:**	
East:		**Crash Rate (A):**	######
South:		**Critical Rate (C):**	######
West:		**A/SW:**	######
Entering AADT:	0	**A/C:**	####

Turning Movement Volumes (TMV)

2028 =Opening Year Design Hourly Volumes (DHV)

				I-24 Ramps						
			0	0	0	0				
			(0)	(0)	(0)	(0)	SB			
	EB	PEDS	↑	↓	→	PEDS				
182	(349)	↑	Entering Hourly Volumes			↑	(222)	212	Epps Mill Rd	
326	(216)	→				←	(178)	265		
0	(0)	↓				↓	(0)	0		
0	(0)	PEDS	←	↑	→	PEDS	WB			
		NB	(22)	(0)	(133)	(0)				
			37	3	150	0				

(AM) = AM Peak Hour Approach

PM = PM Peak Hour Approach

Blue = Pedestrian Volumes

N W E S

2048 = Design Year Design Hourly Volumes (DHV)

				I-24 Ramps						
			0	0	0	0				
			(0)	(0)	(0)	(0)	SB			
	EB	PEDS	↑	↓	→	PEDS				
473	(907)	↑	Entering Hourly Volumes			↑	(577)	551	Epps Mill Rd	
622	(379)	→				←	(280)	485		
0	(0)	↓				↓	(0)	0		
0	(0)	PEDS	←	↑	→	PEDS	WB			
		NB	(57)	(0)	(346)					
			96	8	390					

Intersection Location:	Epps Mill Rd at I-24 Ramps in Rutherford County				
Number of Intersection Legs:	3	**PIN:**	124683.06	**Date:**	4/26/24
Existing Control Type:	Other (provide description)	**Analyst:**	Trent Moody/STV Inc	Version: 09142020	

TDOT IIE Stage I Form - Scoping

Control Type	Conflict Point Score (lower # is better)	Is the option feasible and reasonable?	Is the option likely to improve or maintain safety?	Is the option likely to improve operations?	Is the Optoin likely to improve or maintain multimodal access?	AM V/C Ratio (CAP X)	PM V/C Ratio (CAP X)	Should the Option proceed to Stage II?	
At-Grade Intersection	Safety	Q1	Q2	Q3	Q4	Capacity		Decision	Screening Decision Justification
Traffic Signal	12	Yes	Yes	Yes	Yes	1.40	1.02	**Yes**	Signal warranted
Two-Way Stop Control	12	No	-	-	-			No	Existing condition
All-Way Stop Control	12	No	-	-	-	1.84	1.89	No	Poor V/C
Continuous Green T	12	No	-	-	-	0.83	1.08	No	Poor V/C
Quadrant Roadway	n/a	No	-	-	-	N/A	N/A	No	N/A
Partial Displaced Left Turn	12	No	-	-	-	0.93	0.74	No	Geometric constr. due to prox. of other intersections
Displaced Left Turn	n/a	No	-	-	-	N/A	N/A	No	N/A
Signalized RCUT	12	No	-	-	-	0.88	0.79	No	Geometric constr. due to prox. of other intersections
J-Turn (Unsignalized RCUT)	12	No	-	-	-	2.01	1.39	No	Poor V/C
Median U-Turn	8	No	-	-	-	1.48	1.19	No	Poor V/C
Partial Median U -Turn	16	No	-	-	-	1.48	1.11	No	Poor V/C
Bowtie	n/a	No	-	-	-	N/A	N/A	No	N/A
Split Intersection	n/a	No	-	-	-	N/A	N/A	No	N/A
Roundabout	6	No	-	-	-	2.54	1.88	No	Poor V/C
Other (provide description)		No	-	-	-				
Grade-Separated Intersection	Safety	Q1	Q2	Q3	Q4	CAP-X		Decision	Screening Decision Justification
Echelon	n/a	No	-	-	-	0.90	0.78	No	Geometric constr. due to prox. of other intersections
Center Turn Overpass	n/a	No	-	-	-	0.71	1.06	No	Poor V/C
Interchange	Safety	Q1	Q2	Q3	Q4	CAP-X		Decision	Screening Decision Justification
Diamond	n/a	No	-	-	-	0.75	0.58	-	N/A
Partial Cloverleaf	n/a	No	-	-	-	0.20	0.13	-	N/A
Displaced Left Turn Interchange	n/a	No	-	-	-	0.79	0.61	-	N/A
Contraflow Left Interchange	n/a	No	-	-	-	0.80	0.63	-	N/A
DDI	n/a	No	-	-	-	0.73	0.56	-	N/A
Single Point	n/a	No	-	-	-	0.77	0.61	-	N/A
Single Point with Roundabout	n/a	No	-	-	-	1.46	0.90	-	N/A
Other (provide description)		No	-	-	-				

TDOT IIE Stage II Form - Selection	Intersection Location:	Epps Mill Rd at I-24 Ramps in Rutherford County									
	Number of Intersection Legs:	3		PIN:	124683.06			Date:	4/26/24		
	TDOT IIE Stage II Form - Selection			Analyst:	Trent Moody/STV Inc			Version: 09142020			
	Existing Control	**Option 1**		**Option 2**		**Option 3**		**Option 4**			
	Other (provide description)	Traffic Signal		None		None		None			
Project Cost											
Tool Used	Not Applicable	-		-		-		-			
Total Project Cost	Not Applicable	-		-		-		-			
Life Cycle Cost											
Tool Used	-	-		-		-		-			
Analysis Period	2028 to 2048	2028 to 2048		2028 to 2048		2028 to 2048		2028 to 2048			
Total Life Cycle NPV Cost	-	-		-		-		-			
Traffic Operations											
Traffic Analysis Software Used	Synchro	Synchro		-		-		-			
2028 Opening Year	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	
LOS	B	B	A	A	-	-	-	-	-	-	
Delay (s/veh)	12.9	13.9	5.6	8.9							
v/c	0.16	0.21	0.4	0.53							
Queues Accommodated?			-	-	-	-	-	-	-	-	
2048 Design Year	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	
LOS	F	F	C	B	-	-	-	-	-	-	
Delay (s/veh)	1487.4	508	24.2	11.4							
v/c	19	5.2	0.99	0.78							
Queues Accommodated?	-	-			-	-	-	-	-	-	
Predictive Crash Analysis											
Tool Used	-	-		-		-		-			
Analysis Period	2028 to 2048	2028 to 2048		2028 to 2048		2028 to 2048		2028 to 2048			
Total Crashes											
Fatal & Injury Crashes											
Multimodal											
Are peds, bicyclists, and transit riders accommodated?	-	-		-		-		-			
Stakeholder Posture											
Local Community Support	Not Applicable	-		-		-		-			
TDOT Support	Not Applicable	-		-		-		-			
TDOT Approval											
Preferred Option?	Not Applicable	-		-		-		-			
Comments											
TDOT Reviewer Name and Title		Signature				Date					

Stage I Scoping Conflict Point Score (Default Crossing weight = 2, Merging, Diverging =1)

Weights:		Default values
Crossing	2	2
Merging	1	1
Diverging	1	1

		Conflict Point Count		Weighted Score	
	Conflict Type	4 Legs	3 Legs	4 Legs	3 Legs
At-Grade Intersections					
Traffic Signal	Crossing	16	3	32	6
	Merging	8	3	8	3
	Diverging	8	3	8	3
	Total	**32**	**9**	**48**	**12**
Stop Control	Crossing	16	3	32	6
	Merging	8	3	8	3
	Diverging	8	3	8	3
	Total	**32**	**9**	**48**	**12**
Continuous Green T	Crossing		3		6
	Merging		3		3
	Diverging		3		3
	Total	**n/a**	**9**	**n/a**	**12**
Quadrant	Crossing	10		20	
	Merging	10		10	
	Diverging	10		10	
	Total	**30**	**n/a**	**40**	**n/a**
Partial Displaced Left Turn	Crossing	14	3	28	6
	Merging	8	3	8	3
	Diverging	8	3	8	3
	Total	**30**	**9**	**44**	**12**
Displaced Left Turn	Crossing	12		24	
	Merging	8		8	
	Diverging	8		8	
	Total	**28**	**n/a**	**40**	**n/a**
Signalized RCUT	Crossing	2	1	4	2
	Merging	8	5	8	5
	Diverging	8	5	8	5
	Total	**18**	**11**	**20**	**12**
J-Turn (Unsignalized RCUT)	Crossing	2	1	4	2
	Merging	8	5	8	5
	Diverging	8	5	8	5
	Total	**18**	**11**	**20**	**12**
Median U-Turn	Crossing	4	0	8	0
	Merging	6	4	6	4
	Diverging	6	4	6	4
	Total	**16**	**8**	**20**	**8**
Partial Median U-Turn	Crossing	6	2	12	4
	Merging	8	6	8	6
	Diverging	8	6	8	6
	Total	**22**	**14**	**28**	**16**
Bowtie	Crossing	4		8	
	Merging	8		8	
	Diverging	8		8	
	Total	**20**	**n/a**	**24**	**n/a**
Split Intersection	Crossing	10		20	
	Merging	8		8	
	Diverging	8		8	
	Total	**26**	**n/a**	**36**	**n/a**
Roundabout	Crossing	0	0	0	0
	Merging	4	3	4	3
	Diverging	4	3	4	3
	Total	**8**	**6**	**8**	**6**
Grade-Separated Intersections					
Echelon	Crossing	6		12	
	Merging	8		8	
	Diverging	8		8	
	Total	**22**	**n/a**	**28**	**n/a**
Center Turn Overpass	Crossing	8		16	
	Merging	8		8	
	Diverging	8		8	
	Total	**24**	**n/a**	**32**	**n/a**
Interchanges					
Diamond	Crossing	6		12	
	Merging	8		8	
	Diverging	8		8	
	Total	**22**	**n/a**	**28**	**n/a**
Partial Cloverleaf	Crossing	2		4	
	Merging	8		8	
	Diverging	8		8	
	Total	**18**	**n/a**	**20**	**n/a**
Displaced Left Turn Interchange	Crossing	6		12	
	Merging	8		8	
	Diverging	8		8	
	Total	**22**	**n/a**	**28**	**n/a**
Contraflow Left Interchange	Crossing	8		16	
	Merging	8		8	
	Diverging	8		8	
	Total	**24**	**n/a**	**32**	**n/a**
DDI	Crossing	2		4	
	Merging	8		8	
	Diverging	8		8	
	Total	**18**	**n/a**	**20**	**n/a**
Single Point	Crossing	8		16	
	Merging	8		8	
	Diverging	8		8	
	Total	**24**	**n/a**	**32**	**n/a**
Single Point with Roundabout	Crossing	0		0	
	Merging	6		6	
	Diverging	6		6	
	Total	**12**	**n/a**	**12**	**n/a**

Intersection and Interchange Evaluation (IIE) Forms

TDOT IIE Form - Data Inputs

Version: 09142020

Project Information

Project and Location Data

Project Name:	Epps Mill Rd		
Major Road Name:	Epps Mill Rd	**Minor Road Name:**	I-24 Ramps/Miller Rd
PIN:	124683.06	**County:**	Rutherford
Date:	4/26/2024	**Analyst/Firm:**	Trent Moody/STV Inc
Existing Control Type:	None	**No. of Legs:**	4
Major Road Direction:	E-W	**Opening Year:** 2028	**Design Year:** 2048
Funct. Class of Major Road:	Interstate	**Land Use Context:**	Suburban
Project Type of Work:	Intersection Improvements and Signals		

Traffic Data

Opening Year 2028	**Major Road AADT:**	10,000	
Design Year 2048	**Major Road AADT:**	22,550	
Major Road T % (AADT):	17%	**Minor Road T % (AADT):**	10%
Major Road T % (DHV):	11%	**Minor Road T % (DHV):**	7%

Multimodal Activity

Within a 1/2 mile of the project location are there:

Bus stop:	No	**School:**	No	**Library:**	No
Retail Center:	No	**Other Civic Institution:**	No	**Context to Support Multimodal Activity:**	No

Existing or Future Estimated Multimodal Activity Level: Low

Crash History and Intersection Crash Rate

Crash Data Year(s):		**No. of Years:**	
		No. of Crashes:	

Leg	**Current AADT**		
North:		**SW Avg. Rate:**	
East:		**Crash Rate (A):**	######
South:		**Critical Rate (C):**	######
West:		**A/SW:**	######
Entering AADT:	0	**A/C:**	####

Turning Movement Volumes (TMV)

2028 =Opening Year Design Hourly Volumes (DHV)

				I-24 Ramps/Miller Rd						
				0	223	97	218			
				(0)	(87)	(50)	(161)	SB		
		EB	PEDS	↑	↓	→	PEDS			
35	(40)		↑	Entering Hourly Volumes			↑	(96)	107	Epps Mill Rd
168	(268)		→				←	(66)	136	
42	(42)		↓				↓	(38)	159	
0	(0)	PEDS	←	↑	→	PEDS	WB			
		NB	(25)	(20)	(136)	(0)				
			22	25	122	0				

(AM) = AM Peak Hour Approach

PM = PM Peak Hour Approach

Blue = Pedestrian Volumes

N W E S

2048 = Design Year Design Hourly Volumes (DHV)

				I-24 Ramps/Miller Rd						
				0	534	298	567			
				(0)	(168)	(188)	(419)	SB		
		EB	PEDS	↑	↓	→	PEDS			
99	(117)		↑	Entering Hourly Volumes			↑	(255)	278	Epps Mill Rd
203	(500)		→				←	(36)	195	
109	(109)		↓				↓	(46)	108	
0	(0)	PEDS	←	↑	→	PEDS	WB			
		NB	(65)	(39)	(367)					
			57	57	325					

Intersection Location:	Epps Mill Rd at I-24 Ramps/Miller Rd in Rutherford County				
Number of Intersection Legs:	4	**PIN:**	124683.06	**Date:**	4/26/24
Existing Control Type:	None	**Analyst:**	Trent Moody/STV Inc	Version: 09142020	

TDOT IIE Stage I Form - Scoping

Control Type	Conflict Point Score (lower # is better)	Is the option feasible and reasonable?	Is the option likely to improve or maintain safety?	Is the option likely to improve operations?	Is the Optoin likely to improve or maintain multimodal access?	AM V/C Ratio (CAP X)	PM V/C Ratio (CAP X)	Should the Option proceed to Stage II?	
At-Grade Intersection	Safety	Q1	Q2	Q3	Q4	Capacity		Decision	Screening Decision Justification
Traffic Signal	48	Yes	Yes	Yes	Yes	0.92	0.83	**Yes**	Signal Warranted
Two-Way Stop Control	48	No	-	-	-	18.80	6.67	No	Poor V/C
All-Way Stop Control	48	No	-	-	-	1.90	2.17	No	Poor V/C
Continuous Green T	n/a	No	-	-	-	N/A	N/A	-	N/A
Quadrant Roadway	40	No	-	-	-	0.55	0.62	No	Not feasible with interstate ramp
Partial Displaced Left Turn	44	No	-	-	-	0.85	0.81	No	Not feasible with interstate ramp
Displaced Left Turn	40	No	-	-	-	0.61	0.51	No	Not feasible with interstate ramp
Signalized RCUT	20	No	-	-	-	0.94	1.30	No	Poor V/C
J-Turn (Unsignalized RCUT)	20	No	-	-	-	1.94	2.09	No	Poor V/C
Median U-Turn	20	No	-	-	-	0.83	1.01	No	Poor V/C
Partial Median U -Turn	28	No	-	-	-	0.96	0.87	No	Not feasible with interstate ramp
Bowtie	24	No	-	-	-	0.92	1.27	No	Poor V/C
Split Intersection	36	No	-	-	-	0.88	0.79	No	Not feasible with interstate ramp
Roundabout	8	No	-	-	-	1.29	1.32	No	Poor V/C
Other (provide description)		No	-	-	-				
Grade-Separated Intersection	Safety	Q1	Q2	Q3	Q4	CAP-X		Decision	Screening Decision Justification
Echelon	28	No	-	-	-	0.59	0.60	No	Not feasible with interstate ramp
Center Turn Overpass	32	No	-	-	-	0.59	0.60	No	Not feasible with interstate ramp
Interchange	Safety	Q1	Q2	Q3	Q4	CAP-X		Decision	Screening Decision Justification
Diamond	28	No	-	-	-	0.70	0.63	-	N/A
Partial Cloverleaf	20	No	-	-	-	0.30	0.40	-	N/A
Displaced Left Turn Interchange	28	No	-	-	-	0.32	0.42	-	N/A
Contraflow Left Interchange	32	No	-	-	-	0.64	0.73	-	N/A
DDI	20	No	-	-	-	0.24	0.31	-	N/A
Single Point	32	No	-	-	-	0.39	0.52	-	N/A
Single Point with Roundabout	12	No	-	-	-	0.53	0.75	-	N/A
Other (provide description)		No	-	-	-				

TDOT Department of Transportation	Intersection Location:	Epps Mill Rd at I-24 Ramps/Miller Rd in Rutherford County									
	Number of Intersection Legs:	4		PIN:	124683.06			Date:	4/26/24		
	TDOT IIE Stage II Form - Selection			Analyst:	Trent Moody/STV Inc			Version: 09142020			
	Existing Control		**Option 1**		**Option 2**		**Option 3**		**Option 4**		
TDOT IIE Stage II Form - Selection	None		Traffic Signal		None		None		None		
Project Cost											
Tool Used	Not Applicable		-		-		-		-		
Total Project Cost	Not Applicable		-		-		-		-		
Life Cycle Cost											
Tool Used	-		-		-		-		-		
Analysis Period	2028 to 2048		2028 to 2048		2028 to 2048		2028 to 2048		2028 to 2048		
Total Life Cycle NPV Cost	-		-		-		-		-		
Traffic Operations											
Traffic Analysis Software Used	Synchro		Synchro		-		-		-		
2028 Opening Year	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	
LOS			B	B	-	-	-	-	-	-	
Delay (s/veh)			16.1	17.4							
v/c			0.39	0.56							
Queues Accommodated?	-	-	-	-	-	-	-	-	-	-	
2048 Design Year	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	
LOS			D	C	-	-	-	-	-	-	
Delay (s/veh)			35.6	27.3							
v/c			0.94	0.97							
Queues Accommodated?	-	-			-	-	-	-	-	-	
Predictive Crash Analysis											
Tool Used	-		-		-		-		-		
Analysis Period	2028 to 2048		2028 to 2048		2028 to 2048		2028 to 2048		2028 to 2048		
Total Crashes											
Fatal & Injury Crashes											
Multimodal											
Are peds, bicyclists, and transit riders accommodated?	-		-		-		-		-		
Stakeholder Posture											
Local Community Support	Not Applicable		-		-		-		-		
TDOT Support	Not Applicable		-		-		-		-		
TDOT Approval											
Preferred Option?	Not Applicable		-		-		-		-		
Comments											
TDOT Reviewer Name and Title			Signature				Date				

Stage I Scoping Conflict Point Score (Default Crossing weight = 2, Merging, Diverging =1)

Weights:		Default values
Crossing	2	2
Merging	1	1
Diverging	1	1

		Conflict Point Count		Weighted Score	
	Conflict Type	4 Legs	3 Legs	4 Legs	3 Legs
At-Grade Intersections					
Traffic Signal	Crossing	16	3	32	6
	Merging	8	3	8	3
	Diverging	8	3	8	3
	Total	**32**	**9**	**48**	**12**
Stop Control	Crossing	16	3	32	6
	Merging	8	3	8	3
	Diverging	8	3	8	3
	Total	**32**	**9**	**48**	**12**
Continuous Green T	Crossing		3		6
	Merging		3		3
	Diverging		3		3
	Total	**n/a**	**9**	**n/a**	**12**
Quadrant	Crossing	10		20	
	Merging	10		10	
	Diverging	10		10	
	Total	**30**	**n/a**	**40**	**n/a**
Partial Displaced Left Turn	Crossing	14	3	28	6
	Merging	8	3	8	3
	Diverging	8	3	8	3
	Total	**30**	**9**	**44**	**12**
Displaced Left Turn	Crossing	12		24	
	Merging	8		8	
	Diverging	8		8	
	Total	**28**	**n/a**	**40**	**n/a**
Signalized RCUT	Crossing	2	1	4	2
	Merging	8	5	8	5
	Diverging	8	5	8	5
	Total	**18**	**11**	**20**	**12**
J-Turn (Unsignalized RCUT)	Crossing	2	1	4	2
	Merging	8	5	8	5
	Diverging	8	5	8	5
	Total	**18**	**11**	**20**	**12**
Median U-Turn	Crossing	4	0	8	0
	Merging	6	4	6	4
	Diverging	6	4	6	4
	Total	**16**	**8**	**20**	**8**
Partial Median U-Turn	Crossing	6	2	12	4
	Merging	8	6	8	6
	Diverging	8	6	8	6
	Total	**22**	**14**	**28**	**16**
Bowtie	Crossing	4		8	
	Merging	8		8	
	Diverging	8		8	
	Total	**20**	**n/a**	**24**	**n/a**
Split Intersection	Crossing	10		20	
	Merging	8		8	
	Diverging	8		8	
	Total	**26**	**n/a**	**36**	**n/a**
Roundabout	Crossing	0	0	0	0
	Merging	4	3	4	3
	Diverging	4	3	4	3
	Total	**8**	**6**	**8**	**6**
Grade-Separated Intersections					
Echelon	Crossing	6		12	
	Merging	8		8	
	Diverging	8		8	
	Total	**22**	**n/a**	**28**	**n/a**
Center Turn Overpass	Crossing	8		16	
	Merging	8		8	
	Diverging	8		8	
	Total	**24**	**n/a**	**32**	**n/a**
Interchanges					
Diamond	Crossing	6		12	
	Merging	8		8	
	Diverging	8		8	
	Total	**22**	**n/a**	**28**	**n/a**
Partial Cloverleaf	Crossing	2		4	
	Merging	8		8	
	Diverging	8		8	
	Total	**18**	**n/a**	**20**	**n/a**
Displaced Left Turn Interchange	Crossing	6		12	
	Merging	8		8	
	Diverging	8		8	
	Total	**22**	**n/a**	**28**	**n/a**
Contraflow Left Interchange	Crossing	8		16	
	Merging	8		8	
	Diverging	8		8	
	Total	**24**	**n/a**	**32**	**n/a**
DDI	Crossing	2		4	
	Merging	8		8	
	Diverging	8		8	
	Total	**18**	**n/a**	**20**	**n/a**
Single Point	Crossing	8		16	
	Merging	8		8	
	Diverging	8		8	
	Total	**24**	**n/a**	**32**	**n/a**
Single Point with Roundabout	Crossing	0		0	
	Merging	6		6	
	Diverging	6		6	
	Total	**12**	**n/a**	**12**	**n/a**

Intersection and Interchange Evaluation (IIE) Forms

TDOT IIE Form - Data Inputs

Version: 09142020

Project Information

Project and Location Data

Project Name:	Epps Mill Rd		
Major Road Name:	Epps Mill Rd	**Minor Road Name:**	Capital Way/DG
PIN:	124683.06	**County:**	Rutherford
Date:	4/26/2024	**Analyst/Firm:**	Trent Moody/STV Inc
Existing Control Type:	Two-Way Stop Control	**No. of Legs:**	4
Major Road Direction:	E-W	**Opening Year:** 2028	**Design Year:** 2048
Funct. Class of Major Road:	Principal Arterial	**Land Use Context:**	Suburban
Project Type of Work:	Intersection Improvements and Signals		

Traffic Data

Opening Year 2028	**Major Road AADT:**	5,765	
Design Year 2048	**Major Road AADT:**	15,000	
Major Road T % (AADT):	6%	**Minor Road T % (AADT):**	38%
Major Road T % (DHV):	4%	**Minor Road T % (DHV):**	25%

Multimodal Activity

Within a 1/2 mile of the project location are there:

Bus stop:	No	**School:**	No	**Library:**	No
Retail Center:	No	**Other Civic Institution:**	No	**Context to Support Multimodal Activity:**	No

Existing or Future Estimated Multimodal Activity Level: Low

Crash History and Intersection Crash Rate

Crash Data Year(s):		**No. of Years:**	
		No. of Crashes:	

Leg	**Current AADT**		
North:		**SW Avg. Rate:**	
East:		**Crash Rate (A):**	######
South:		**Critical Rate (C):**	######
West:		**A/SW:**	######
Entering AADT:	0	**A/C:**	####

Turning Movement Volumes (TMV)

2028 =Opening Year Design Hourly Volumes (DHV)

				Capital Way/DG						
				0	11	0	71			
				(0)	(2)	(0)	(25)	SB		
	EB	PEDS	↑	←	↓	→	PEDS			
3	(11)	↑	Entering Hourly Volumes				↑	(36)	23	Epps Mill Rd
146	(320)	→					←	(139)	330	
23	(6)	↓					↓	(3)	28	
0	(0)	PEDS	←	↑	→	PEDS	WB			
		NB	(0)	(2)	(5)	(0)				
			15	2	28	0				

(AM) = AM Peak Hour Approach

PM = PM Peak Hour Approach

Blue = Pedestrian Volumes

N W E S

2048 = Design Year Design Hourly Volumes (DHV)

				Capital Way/DG						
				0	29	0	185			
				(0)	(5)	(0)	(65)	SB		
	EB	PEDS	↑	←	↓	→	PEDS			
8	(29)	↑	Entering Hourly Volumes				↑	(94)	60	Epps Mill Rd
153	(648)	→					←	(167)	653	
60	(16)	↓					↓	(8)	73	
0	(0)	PEDS	←	↑	→	PEDS	WB			
		NB	(0)	(5)	(13)					
			39	5	73					

Intersection Location:	Epps Mill Rd at Capital Way/DG in Rutherford County		
Number of Intersection Legs:	4	**PIN:**	124683.06
Existing Control Type:	Two-Way Stop Control	**Analyst:**	Trent Moody/STV Inc

Date: 4/26/24

Version: 09142020

TDOT IIE Stage I Form - Scoping

Control Type	Conflict Point Score (lower # is better)	Is the option feasible and reasonable?	Is the option likely to improve or maintain safety?	Is the option likely to improve operations?	Is the Optoin likely to improve or maintain multimodal access?	AM V/C Ratio (CAP X)	PM V/C Ratio (CAP X)	Should the Option proceed to Stage II?	
At-Grade Intersection	Safety	Q1	Q2	Q3	Q4	Capacity		Decision	Screening Decision Justification
Traffic Signal	48	Yes	Yes	Yes	Yes	0.47	0.63	No	Not warranted
Two-Way Stop Control	48	No	-	-	-	0.52	2.01	**Yes**	Existing Condition
All-Way Stop Control	48	No	-	-	-	0.75	1.20	No	Poor V/C
Continuous Green T	n/a	No	-	-	-	N/A	N/A	-	N/A
Quadrant Roadway	40	No	-	-	-	0.30	0.42	No	Geometric const. due to prox. to other intersections
Partial Displaced Left Turn	44	No	-	-	-	0.46	0.59	No	Geometric const. due to prox. to other intersections
Displaced Left Turn	40	No	-	-	-	0.43	0.54	No	Geometric const. due to prox. to other intersections
Signalized RCUT	20	No	-	-	-	0.47	0.64	No	Geometric const. due to prox. to other intersections
J-Turn (Unsignalized RCUT)	20	No	-	-	-	0.13	0.85	No	Geometric const. due to prox. to other intersections
Median U-Turn	20	No	-	-	-	0.47	0.63	No	Geometric const. due to prox. to other intersections
Partial Median U -Turn	28	No	-	-	-	0.47	0.69	No	Geometric const. due to prox. to other intersections
Bowtie	24	No	-	-	-	0.49	0.74	No	Geometric const. due to prox. to other intersections
Split Intersection	36	No	-	-	-	0.45	0.57	No	Geometric const. due to prox. to other intersections
Roundabout	8	No	-	-	-	0.75	0.96	No	Geometric const. due to prox. to other intersections
Other (provide description)		No	-	-	-			-	
Grade-Separated Intersection	Safety	Q1	Q2	Q3	Q4	CAP-X		Decision	Screening Decision Justification
Echelon	28	No	-	-	-	0.39	0.58	No	Geometric const. due to prox. to other intersections
Center Turn Overpass	32	No	-	-	-	0.39	0.48	No	Geometric const. due to prox. to other intersections
Interchange	Safety	Q1	Q2	Q3	Q4	CAP-X		Decision	Screening Decision Justification
Diamond	28	No	-	-	-	0.47	0.56	-	
Partial Cloverleaf	20	No	-	-	-	0.04	0.14	-	
Displaced Left Turn Interchange	28	No	-	-	-	0.22	0.60	-	
Contraflow Left Interchange	32	No	-	-	-	0.12	0.25	-	
DDI	20	No	-	-	-	0.07	0.12	-	
Single Point	32	No	-	-	-	0.08	0.21	-	
Single Point with Roundabout	12	No	-	-	-	0.07	0.20	-	
Other (provide description)		No	-	-	-			-	

TDOT IIE Stage II Form - Selection	Intersection Location:	Epps Mill Rd at Capital Way/DG in Rutherford County									
	Number of Intersection Legs:	4		PIN:	124683.06			Date:	4/26/24		
	TDOT IIE Stage II Form - Selection			Analyst:	Trent Moody/STV Inc			Version: 09142020			
	Existing Control	**Option 1**		**Option 2**		**Option 3**		**Option 4**			
	Two-Way Stop Control	Two-Way Stop Control		None		None		None			
Project Cost											
Tool Used	Not Applicable	-		-		-		-			
Total Project Cost	Not Applicable	-		-		-		-			
Life Cycle Cost											
Tool Used	-	-		-		-		-			
Analysis Period	2028 to 2048	2028 to 2048		2028 to 2048		2028 to 2048		2028 to 2048			
Total Life Cycle NPV Cost	-	-		-		-		-			
Traffic Operations											
Traffic Analysis Software Used	Synchro	Synchro		-		-		-			
2028 Opening Year	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	
LOS	B	C	B	C	-	-	-	-	-	-	
Delay (s/veh)	12.8	15.5	14	15.8							
v/c	0.06	0.19	0.063	0.197							
Queues Accommodated?	-	-	-	-	-	-	-	-	-	-	
2048 Design Year	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	
LOS	D	F	D	F	-	-	-	-	-	-	
Delay (s/veh)	25.1	145.5	32	184.8							
v/c	0.28	1.1	0.347	1.202							
Queues Accommodated?	-	-			-	-	-	-	-	-	
Predictive Crash Analysis											
Tool Used	-	-		-		-		-			
Analysis Period	2028 to 2048	2028 to 2048		2028 to 2048		2028 to 2048		2028 to 2048			
Total Crashes											
Fatal & Injury Crashes											
Multimodal											
Are peds, bicyclists, and transit riders accommodated?	-	-		-		-		-			
Stakeholder Posture											
Local Community Support	Not Applicable	-		-		-		-			
TDOT Support	Not Applicable	-		-		-		-			
TDOT Approval											
Preferred Option?	Not Applicable	-		-		-		-			
Comments											
TDOT Reviewer Name and Title		Signature			Date						

Stage I Scoping Conflict Point Score (Default Crossing weight = 2, Merging, Diverging =1)

Weights:		Default values
Crossing	2	2
Merging	1	1
Diverging	1	1

		Conflict Point Count		Weighted Score	
	Conflict Type	4 Legs	3 Legs	4 Legs	3 Legs
At-Grade Intersections					
Traffic Signal	Crossing	16	3	32	6
	Merging	8	3	8	3
	Diverging	8	3	8	3
	Total	**32**	**9**	**48**	**12**
Stop Control	Crossing	16	3	32	6
	Merging	8	3	8	3
	Diverging	8	3	8	3
	Total	**32**	**9**	**48**	**12**
Continuous Green T	Crossing		3		6
	Merging		3		3
	Diverging		3		3
	Total	**n/a**	**9**	**n/a**	**12**
Quadrant	Crossing	10		20	
	Merging	10		10	
	Diverging	10		10	
	Total	**30**	**n/a**	**40**	**n/a**
Partial Displaced Left Turn	Crossing	14	3	28	6
	Merging	8	3	8	3
	Diverging	8	3	8	3
	Total	**30**	**9**	**44**	**12**
Displaced Left Turn	Crossing	12		24	
	Merging	8		8	
	Diverging	8		8	
	Total	**28**	**n/a**	**40**	**n/a**
Signalized RCUT	Crossing	2	1	4	2
	Merging	8	5	8	5
	Diverging	8	5	8	5
	Total	**18**	**11**	**20**	**12**
J-Turn (Unsignalized RCUT)	Crossing	2	1	4	2
	Merging	8	5	8	5
	Diverging	8	5	8	5
	Total	**18**	**11**	**20**	**12**
Median U-Turn	Crossing	4	0	8	0
	Merging	6	4	6	4
	Diverging	6	4	6	4
	Total	**16**	**8**	**20**	**8**
Partial Median U-Turn	Crossing	6	2	12	4
	Merging	8	6	8	6
	Diverging	8	6	8	6
	Total	**22**	**14**	**28**	**16**
Bowtie	Crossing	4		8	
	Merging	8		8	
	Diverging	8		8	
	Total	**20**	**n/a**	**24**	**n/a**
Split Intersection	Crossing	10		20	
	Merging	8		8	
	Diverging	8		8	
	Total	**26**	**n/a**	**36**	**n/a**
Roundabout	Crossing	0	0	0	0
	Merging	4	3	4	3
	Diverging	4	3	4	3
	Total	**8**	**6**	**8**	**6**
Grade-Separated Intersections					
Echelon	Crossing	6		12	
	Merging	8		8	
	Diverging	8		8	
	Total	**22**	**n/a**	**28**	**n/a**
Center Turn Overpass	Crossing	8		16	
	Merging	8		8	
	Diverging	8		8	
	Total	**24**	**n/a**	**32**	**n/a**
Interchanges					
Diamond	Crossing	6		12	
	Merging	8		8	
	Diverging	8		8	
	Total	**22**	**n/a**	**28**	**n/a**
Partial Cloverleaf	Crossing	2		4	
	Merging	8		8	
	Diverging	8		8	
	Total	**18**	**n/a**	**20**	**n/a**
Displaced Left Turn Interchange	Crossing	6		12	
	Merging	8		8	
	Diverging	8		8	
	Total	**22**	**n/a**	**28**	**n/a**
Contraflow Left Interchange	Crossing	8		16	
	Merging	8		8	
	Diverging	8		8	
	Total	**24**	**n/a**	**32**	**n/a**
DDI	Crossing	2		4	
	Merging	8		8	
	Diverging	8		8	
	Total	**18**	**n/a**	**20**	**n/a**
Single Point	Crossing	8		16	
	Merging	8		8	
	Diverging	8		8	
	Total	**24**	**n/a**	**32**	**n/a**
Single Point with Roundabout	Crossing	0		0	
	Merging	6		6	
	Diverging	6		6	
	Total	**12**	**n/a**	**12**	**n/a**

CAPACITY ANALYSIS MEMORANDUM

TO: FILE

FROM: Trent Moody, PE, STV Engineers, Inc.

DATE: June 2024

SUBJECT: I-24 at Exit 89 (Epps Mill Road) Traffic Analysis

An analysis was performed along Epps Mill Road for five intersections based on a proposed concept and with projected traffic volumes provided by TDOT, approved 7/12/2023. The intersections include:

- Epps Mill Road at TN-2/US 41
- Epps Mill Road at Forbus Drive/Miller Lane
- Epps Mill Road at I-24 WB Ramps
- Epps Mill Road at I-24 EB Ramps/Miller Lane
- Epps Mill Road at Capital Way/Dollar General Driveway

The following scenarios were analyzed for measures of effectiveness including level of service (LOS), delay, and queuing during the AM and PM peak hours:

- 2028 Base Year No Build Conditions (BY-NB)
- 2048 Future Year No Build Conditions (FY-NB)
- 2028 Base Year Build Conditions (BY-B)
- 2048 Future Build Conditions (FY-B)

Each intersection was assessed to determine if signal warrants based upon the 2023 edition of the Manual of Uniform Traffic Control Devices (MUTCD) were satisfied in build conditions.

Signal Warrants

For each intersection in the study area a signal warrant analysis was performed to determine if a traffic signal was warranted based upon MUTCD warrants. 13-hour (6:00 AM – 7:00 PM) turning movements counts (TMCs) were collected in May 2024. The volumes were projected into 2028, 2033, and 2048 with 4% growth rate similar to the TDOT projected traffic volumes approved 7/12/2023 and were assessed against MUTCD Warrants 1-3 (8-Hour Volume, 4-Hour Volume, and Peak-Hour Volume). 2033 was assessed as an interim year anticipated to be approximately 5-years beyond the opening year of the project. Due to the speed along Epps Mill Road being less than 40 MPH, 100 % volumes were used in 8-Hour Volume and 4-Hour Volume analyses.

Right turn reduction were also considered at each of the minor street approaches. Specifically, the intersection of Epps Mill Road with Forbus Drive and the I-24 Ramps. Forbus Drive connects to an existing truck stop along with other land uses that generate a large amount of heavy vehicle traffic (62% per TDOT projected traffic volumes). Due to the amount of heavy vehicles along Forbus Drive no right turn reduction was applied to this minor street approach as the heavy vehicles will require much larger gaps along Epps Mill Road to complete their turn. Due to the inclusion of all right turns the minor street was analyzed as a two-lane approach. At the I-24 Ramps it was determined that right turn were able to complete their movement with reduced conflict and

therefore a 60% right turn reduction was applied to the volumes at these locations based upon engineering judgement.

The signal warrant results summary is presented in Table 1 below.

Table 1: Signal Warrant Results Summary

		Signal Warrants				
		Warrant 1 (8 Hour)		Warrant 2 (4 Hour)	Warrant 3 (Peak Hour)	
Intersection	Analysis Year	Cond. A	Cond. B	Vehicular Volume	A - Peak Hour Delay	B - Peak Hour Volume
Epps Mill Road at TN-2 (US Hwy 41)	2028	No	No	No	No	No
	2033	No	No	No	No	Yes
	2048	Yes	Yes	Yes	No	Yes
Epps Mill Road at Forbus Drive	2028	No	No	No	No	No
	2033	Yes	No	Yes	No	No
	2048	Yes	Yes	Yes	No	Yes
Epps Mill Road at I-24 WB Ramp*	2028	No	No	No	No	No
	2033	No	No	No	No	No
	2048	No	Yes	Yes	No	Yes
Epps Mill Road at I-24 EB Ramp/Miller Road**	2028	No	No	No	No	No
	2033	Yes	No	Yes	No	Yes
	2048	Yes	Yes	Yes	No	Yes
Epps Mill Road at Capital Way/Dollar General Entrance	2028	No	No	No	No	No
	2033	No	No	No	No	No
	2048	No	No	No	No	No

*NBR turns reduced by 60% from analysis due to proposed dedicated channelized lane and yield condition
** Right turns were reduced by 60% based on engineering judgement

The resulting analysis revealed that all study intersections, with exception of Epps Mill Road at Capital Way/Dollar General Driveway, satisfied 8-Hour, 4-Hour, and Peak-Hour signal warrants by the design year in 2048. Further information of the signal warrant analysis is provided in the attachments.

Capacity Analysis

Each study intersection was analyzed using Synchro/SimTraffic analysis software. AM and PM design hourly volumes provided by TDOT were used in analysis of 2028 and 2048 No-Build & Build conditions. Due to the intersections of Epps Mill Road with Forbus Drive and the I-24 Ramps satisfying 8-Hour, 4-Hour, and Peak-Hour signal warrants, these intersections were modeled as signalized intersections in the build analysis. While the intersection of Epps Mill Road at TN-2/US 41 also satisfied 8-Hour, 4-Hour, and Peak-Hour signal warrants in the design year, coordination with TDOT determined to analyze this intersection as unsignalized in build analysis.

Figures 1-3 attached illustrate the study area/vicinity map, the existing lane geometry, and the proposed lane geometry, respectively.

It should be noted that the Synchro LOS results presented Epps Mill Road as the eastbound and westbound approaches throughout the study area. All intersecting roadways were presented as northbound and southbound approaches, while acknowledging that I-24 runs eastbound and westbound.

The LOS and delay for each intersection and approach are presented in the tables below (Tables 2-5).

Table 2: LOS for 2028 Base Year No Build Conditions

Intersection	2028 Base No Build Conditions					
	Overall / Approach		AM Peak		PM Peak	
			LOS	Delay	LOS	Delay
TN-2 (US-41) & Epps Mill Rd	**Unsignalized**					
	Eastbound (Epps Mill Rd)	Approach	C	19.2	C	20.5
	Northbound (TN-2/US-41)	Left-Turn	A	7.7	A	8.2
Forbus Drive & Epps Mill Rd	**Unsignalized**					
	Eastbound (Epps Mill Rd)	Left-Turn	A	7.9	A	8.0
	Westbound (Epps Mill Rd)	Left-Turn	A	7.6	A	7.8
	Northbound (Forbus Dr)	Approach	C	15.8	B	14.4
	Southbound (Forbus Dr)	Approach	B	11.3	B	12.1
Miller Ln/Driveway & Epps Mill Rd	**Unsignalized**					
	Eastbound (Epps Mill Rd)	Left-Turn	A	8.3	A	8.5
	Westbound (Epps Mill Rd)	Left-Turn	A	7.7	A	8.0
	Northbound (Miller Ln)	Approach	A	9.5	C	20.6
	Southbound (Driveway)	Approach	B	12.8	B	14.1
I-24 WB On Ramp/Off Ramp & Epps Mill Rd	**Unsignalized**					
	Eastbound (Epps Mill Rd)	Left-Turn	A	8.4	A	8.2
	Northbound (I-24 WB Off Ramp)	Approach	B	12.9	B	13.9
Epps Mill Rd & I-24 EB Off Ramp	**Unsignalized**					
	Southbound (I-24 EB Off Ramp)	Approach	B	13.0	B	14.2
Miller Rd & Epps Mill Rd	**Unsignalized**					
	Westbound (Epps Mill Rd)	Left-Turn	A	8.2	A	8.1
	Northbound (Miller Rd)	Approach	B	12.8	B	12.6
Dollar General Driveway/Capital Way & Epps Mill Rd	**Unsignalized**					
	Eastbound (Epps Mill Rd)	Left-Turn	A	7.6	A	8.0
	Westbound (Epps Mill Rd)	Left-Turn	A	7.9	A	7.6
	Northbound (DG Driveway)	Approach	B	10.9	B	11.1
	Southbound (Capital Way)	Approach	B	12.8	C	15.5

Table 3: LOS for 2048 Future No Build Conditions

Intersection	2048 Base No Build Conditions					
	Overall / Approach		AM Peak		PM Peak	
			LOS	Delay	LOS	Delay
TN-2 (US-41) & Epps Mill Rd	**Unsignalized**					
	Eastbound (Epps Mill Rd)	Approach	**F**	1675.7	**F**	2413.8
	Northbound (TN-2/US-41)	Left-Turn	A	8.6	B	11.6
Forbus Drive & Epps Mill Rd	**Unsignalized**					
	Eastbound (Epps Mill Rd)	Left-Turn	A	9.2	A	9.7
	Westbound (Epps Mill Rd)	Left-Turn	A	8.3	A	9.2
	Northbound (Forbus Dr)	Approach	**F**	57.9	**F**	85.1
	Southbound (Forbus Dr)	Approach	D	29	**F**	69.2
Miller Ln/Driveway & Epps Mill Rd	**Unsignalized**					
	Eastbound (Epps Mill Rd)	Left-Turn	B	10.5	B	11.4
	Westbound (Epps Mill Rd)	Left-Turn	A	8.6	A	9.4
	Northbound (Miller Ln)	Approach	B	11.7	**F**	714.3
	Southbound (Driveway)	Approach	**F**	55.9	**F**	272
I-24 WB On Ramp/Off Ramp & Epps Mill Rd	**Unsignalized**					
	Eastbound (Epps Mill Rd)	Left-Turn	B	14.4	B	11
	Northbound (I-24 WB Off Ramp)	Approach	**F**	1487.4	**F**	508
Epps Mill Rd & I-24 EB Off Ramp	**Unsignalized**					
	Southbound (I-24 EB Off Ramp)	Approach	**F**	231.4	**F**	272
Miller Rd & Epps Mill Rd	**Unsignalized**					
	Westbound (Epps Mill Rd)	Left-Turn	B	10.6	A	9.9
	Northbound (Miller Rd)	Approach	**F**	253.2	**F**	686.3
Dollar General Driveway/Capital Way & Epps Mill Rd	**Unsignalized**					
	Eastbound (Epps Mill Rd)	Left-Turn	A	7.8	A	9.1
	Westbound (Epps Mill Rd)	Left-Turn	A	8.9	A	7.8
	Northbound (DG Driveway)	Approach	C	15.2	C	17.2
	Southbound (Capital Way)	Approach	D	25.1	**F**	145.5

Table 4: LOS for 2028 Base Build Conditions

Intersection	2028 Base Year Build Conditions					
	Overall / Approach		AM Peak		PM Peak	
			LOS	Delay	LOS	Delay
TN-2 (US Hwy-41) & Epps Mill Rd	**Unsignalized**					
	Eastbound	Approach	C	20.8	C	18.4
	Northbound	Left-Turn	A	8.0	A	8.7
Forbus Drive & Epps Mill Rd	**Signalized**					
	Overall		A	8.3	A	7.7
	Eastbound	Approach	A	2.4	A	2.2
	Westbound	Approach	A	6.5	A	6.0
	Northbound	Approach	C	24.0	C	26.5
	Southbound	Approach	B	18.6	B	17.5
I-24 WB Off Ramp/I-24 WB On Ramp & Epps Mill Rd	**Signalized**					
	Overall		A	5.6	A	8.9
	Eastbound	Approach	A	4.9	A	6.1
	Westbound	Approach	A	6.4	A	6.0
	Northbound	Approach	A	6.0	C	23.6
Miller Rd/I-24 EB On/Off Ramp & Epps Mill Rd	**Signalized**					
	Overall		B	16.1	B	17.4
	Eastbound	Approach	C	24.6	B	13.8
	Westbound	Approach	A	8.3	B	10.9
	Northbound	Approach	B	11.6	C	24.8
	Southbound	Approach	B	14.1	C	20.3
Dollar General Driveway/Capital Way & Epps Mill Rd	**Unsignalized**					
	Eastbound	Left-Turn	A	7.6	A	8.0
	Westbound	Left-Turn	A	7.9	A	7.6
	Northbound	Approach	B	10.9	B	11.2
	Southbound	Approach	B	14.0	C	15.8

Table 5: LOS for 2048 Future Build Conditions

Intersection	2048 Future Year Build Conditions					
	Overall / Approach		AM Peak		PM Peak	
			LOS	Delay	LOS	Delay
TN-2 (US Hwy-41) & Epps Mill Rd	**Unsignalized**					
	Eastbound	Approach	**F**	**1416.3**	**F**	**2198.4**
	Northbound	Left-Turn	B	10.2	C	16.2
	Signalized					
	Overall		B	17.7	C	30.8
	Eastbound	Approach	D	38.4	D	42.4
	Northbound	Approach	B	12.7	C	26.5
	Southbound	Approach	A	9.6	C	25.8
Forbus Drive & Epps Mill Rd	**Signalized**					
	Overall		B	13.4	B	15.3
	Eastbound	Approach	A	5.0	A	8.1
	Westbound	Approach	B	18.5	C	20.3
	Northbound	Approach	C	21.2	C	23.3
	Southbound	Approach	C	21.6	C	23.3
I-24 W Off Ramp/I-24 W On Ramp & Epps Mill Rd	**Signalized**					
	Overall		C	24.2	B	11.4
	Eastbound	Approach	C	26.2	A	8.6
	Westbound	Approach	C	30.0	A	8.8
	Northbound	Approach	A	5.9	C	23.3
Miller Rd/I-24 EB On/Off Ramp & Epps Mill Rd	**Signalized**					
	Overall		D	35.6	C	27.3
	Eastbound	Approach	D	44.6	C	33.0
	Westbound	Approach	A	9.9	C	20.6
	Northbound	Approach	D	39.7	C	32.3
	Southbound	Approach	D	35.9	C	26.8
Dollar General Driveway/Capital Way & Epps Mill Rd	**Unsignalized**					
	Eastbound	Left-Turn	A	7.8	A	9.1
	Westbound	Left-Turn	A	8.9	A	7.8
	Northbound	Approach	C	15.2	C	19.3
	Southbound	Approach	D	32.0	**F**	**184.8**

The BY-NB scenario performs well with LOS C or better for each approach at all intersections. However, the FY-NB produces significant delays at multiple intersection approaches that resulted in LOS F. A design concept was developed for Epps Mill Rd to achieve improved LOS and reduce queueing at all intersections and approaches.

In the BY-B scenario, the project improvements result in all signals operating at LOS B or better overall. With the growth of future traffic analyzed in the FY-B scenario, all proposed signals operate at LOS D or better overall and nearly all approaches operate at LOS D or better as well. The one approaches that does not operate at LOS D or better include:

- LOS F is present along the southbound approach of Capital Way in the FY-B scenario. This intersection did not satisfy any signal warrants, and it is typical for minor street approaches to witness LOS F levels of delay during peak periods; therefore, no improvement is recommended at this intersection as a part of this project.

The intersection of Epps Mill Road at TN-2/US 41 was modeled as both an unsignalized intersection and signalized in the FY-B scenario. In the unsignalized scenario, queues from this stop-controlled approach queued back to the west into adjacent intersections, gridlocking a majority of the network in the simulations. This queueing and gridlock is observed in a screenshot from the simulation below.

Extensive congestion throughout the network in the FY-B scenario with a stop sign on Epps Mill Road at TN-2/US 41.

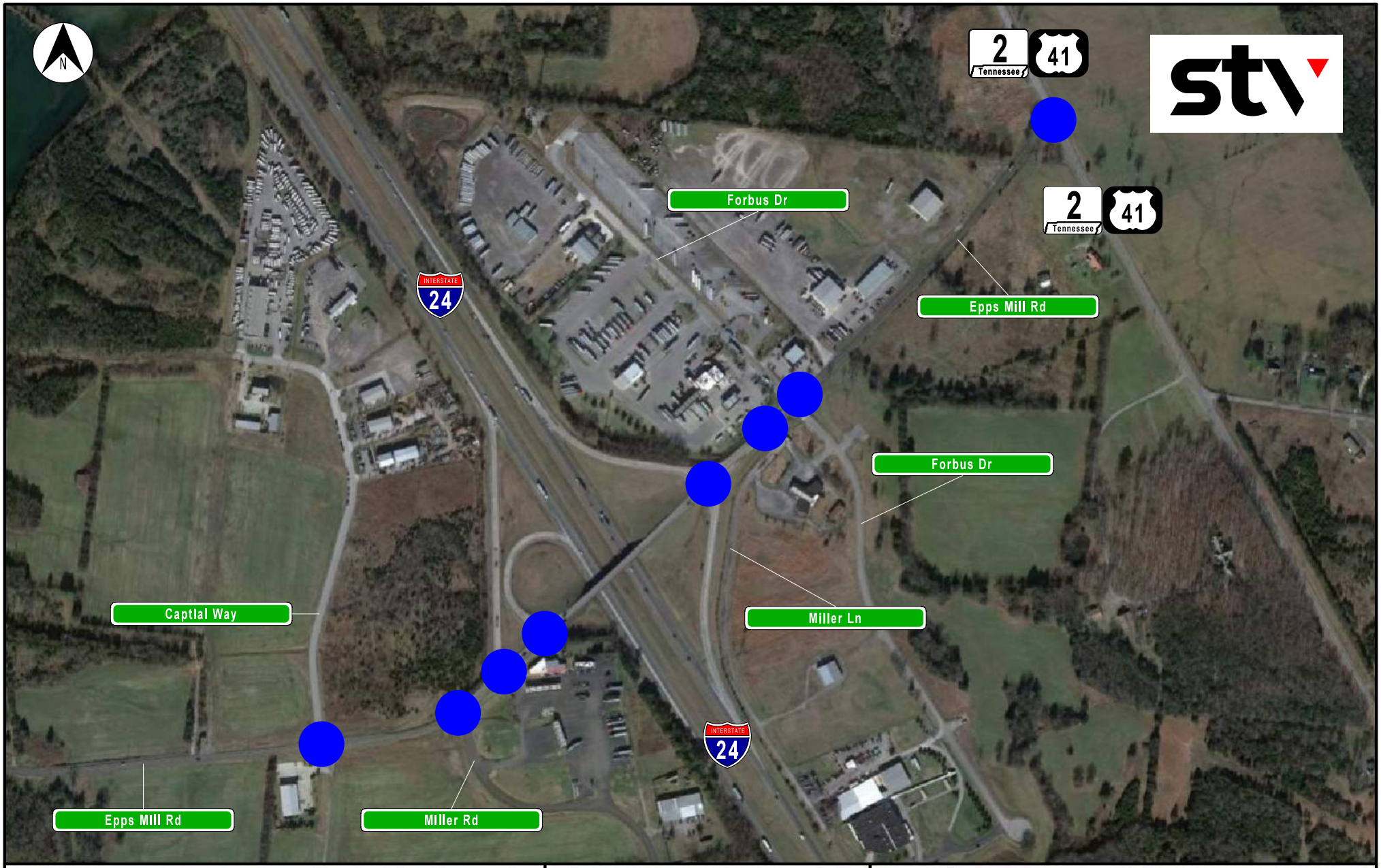
To alleviate these issues, a signal was modeled in the FY-B scenario; it is anticipated that the intersection will operate acceptably under signal control. Sometime between 2028 and 2048, a signal will likely be needed at this intersection. However, even with a traffic signal, it should be noted that extensive queuing was observed on the southbound approach of TN-2 in the FY-B PM scenario (with signal). This queuing is due to the projected increase in traffic along this approach in future conditions and is not anticipated to be mitigated as a part of this project.

The average and maximum queue lengths for each scenario analyzed during the AM and PM peak hours are found in Figures 4-35 attached.

Attachments

Figures 1-3 (Vicinity Map, Existing & Proposed Lane Geometry)
Figures 4-35 (Average and Maximum SimTraffic Queue Lengths)
TDOT Traffic Volume Projections
Synchro/SimTraffic Outputs
HCS Reports – Merge/Diverge
2028 Signal Warrants
2033 Signal Warrants
2048 Signal Warrants

FIGURES



Interchange at Epps Mill Rd (Exit 89)

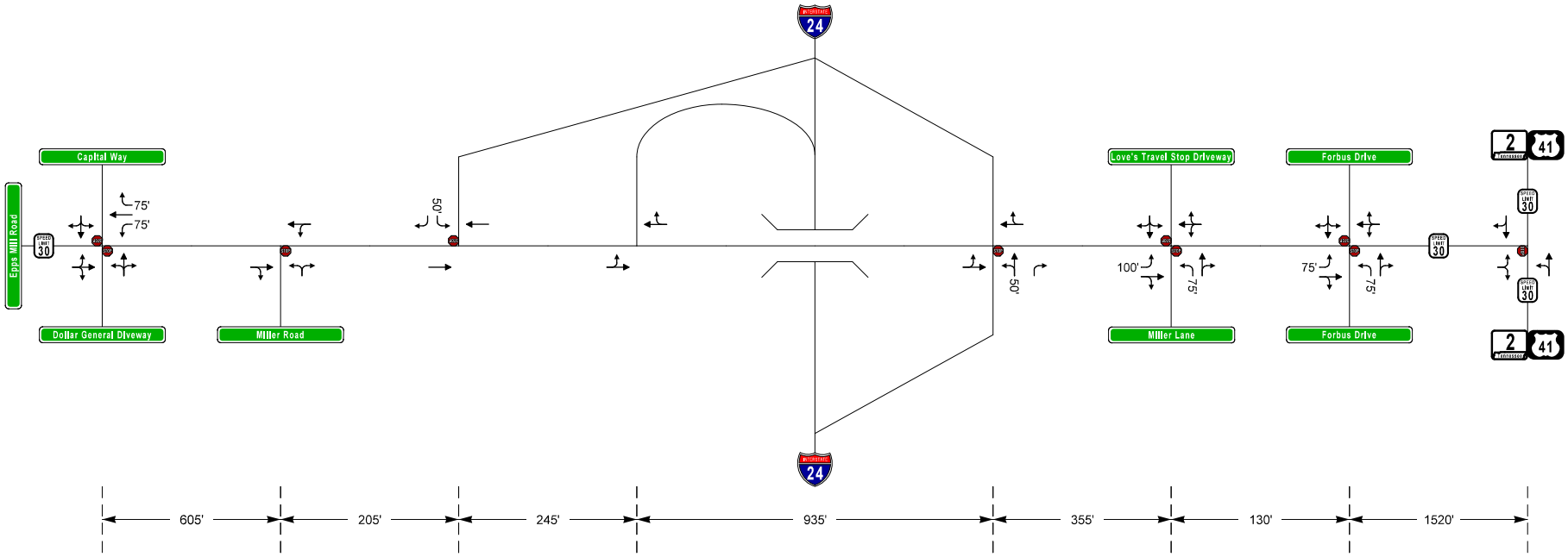
Christiana, Tennessee

Vicinity Map

Figure 1

Legend

Study Intersections



Interchange at Epps Mill Rd (Exit 89)

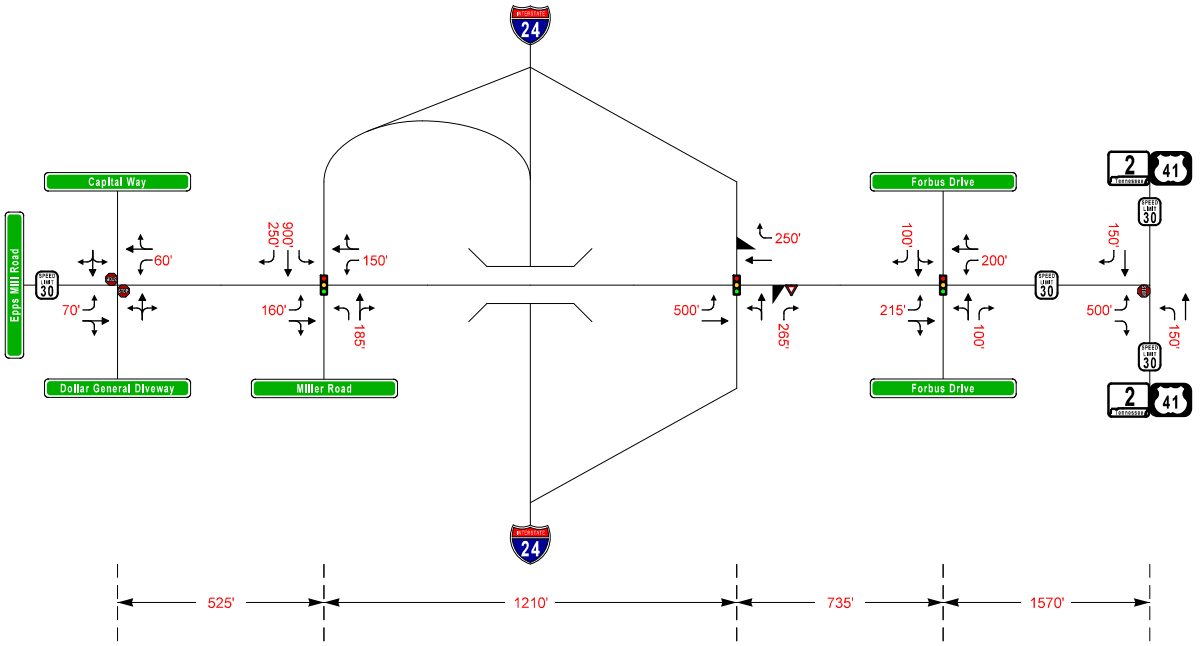
Christiana, Tennessee

Existing Lane Geometry

Figure 2

Legend

- Turning Movement
- Roadway
- Stop Sign
- XX' Storage Length



Interchange at Epps Mill Rd (Exit 89)

Christiana, Tennessee

Proposed Lane Geometry

Figure 3

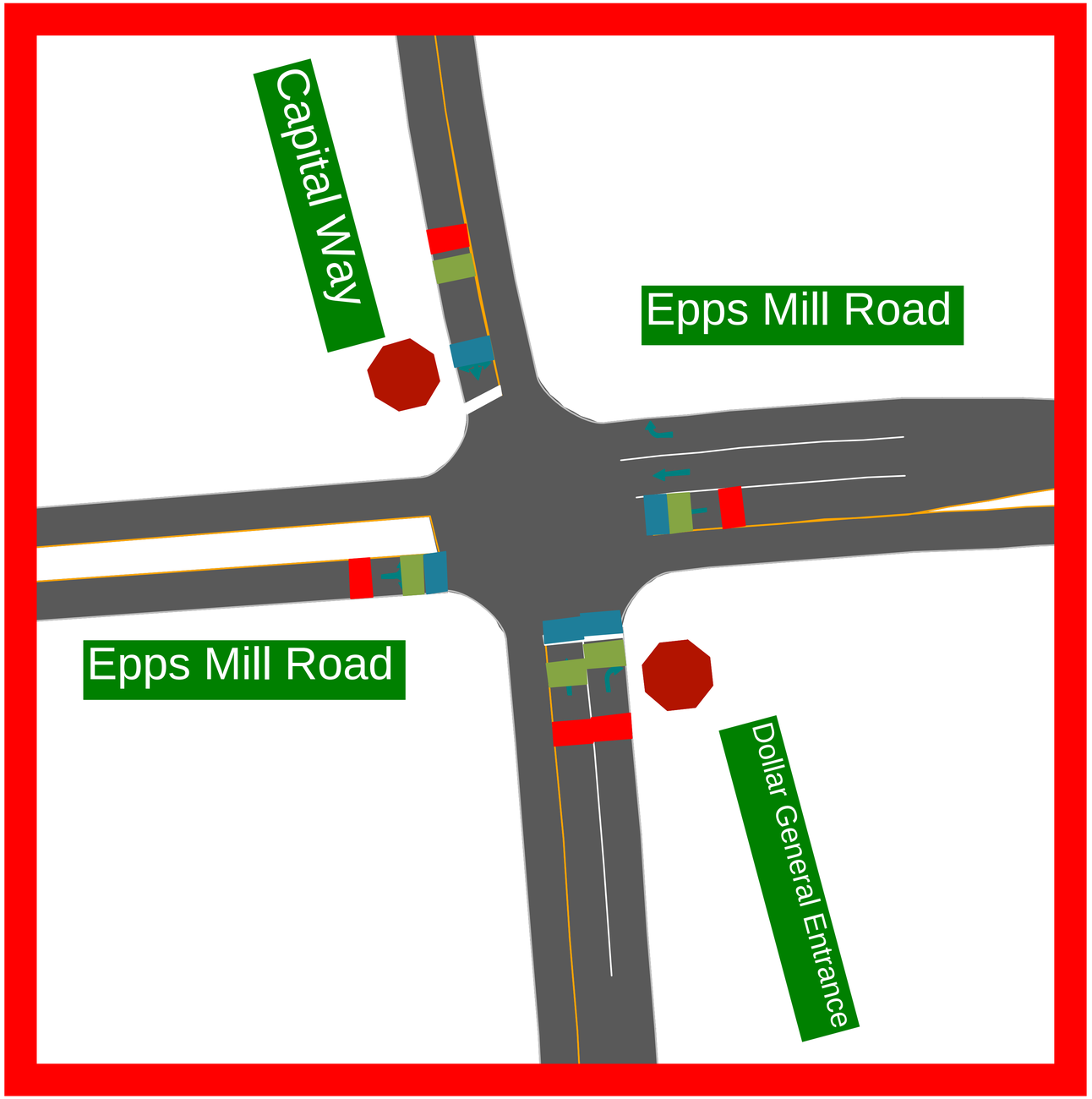
Legend

- Turning Movement
- Roadway
- Stop Sign
- XX Recommended Improvements
- Traffic Signal
- Yield
- Island

AVERAGE AND MAXIMUM

SIMTRAFFIC QUEUE LENGTH

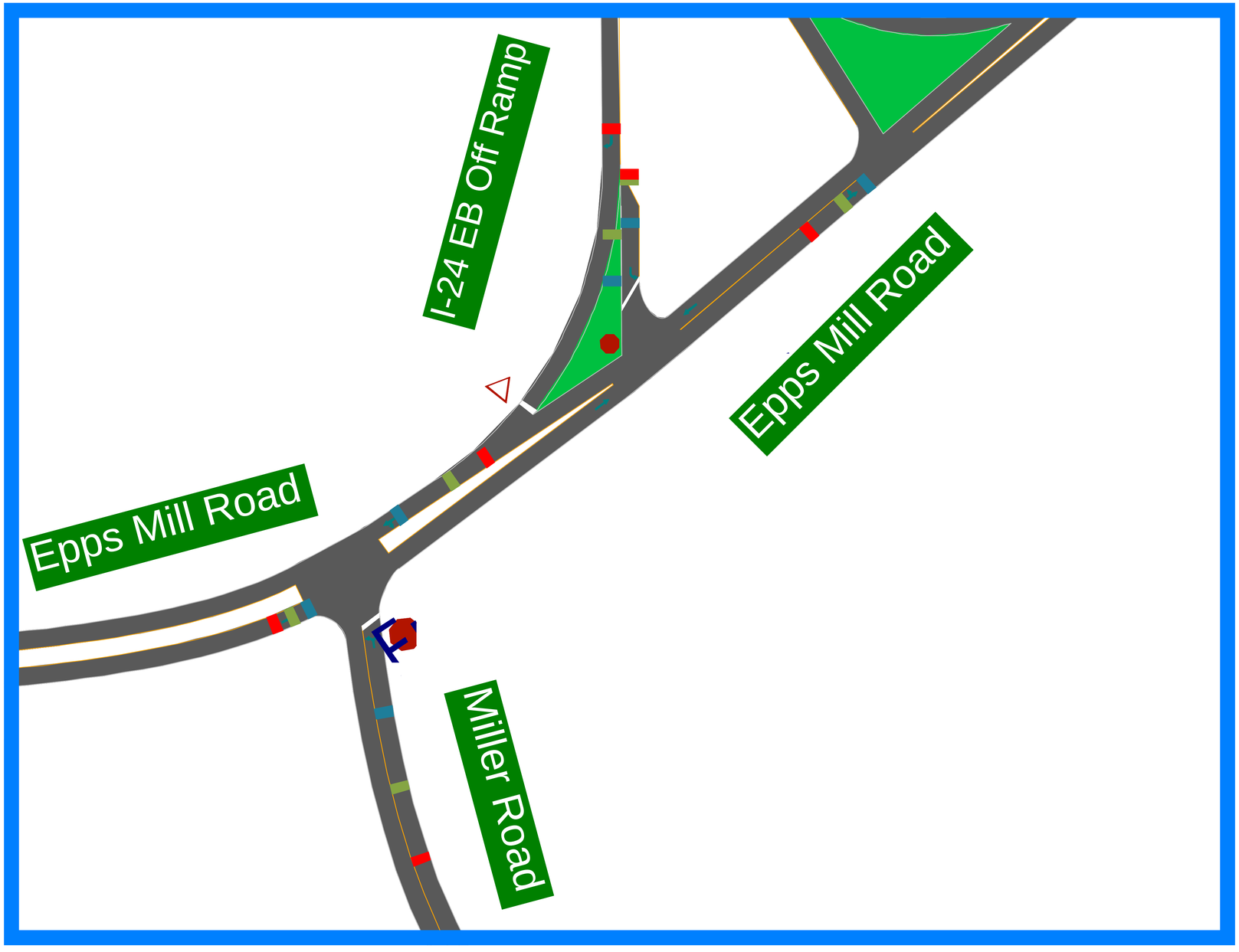
Figure 4: Queue Lengths for BY-NB AM



Queue Lengths
All Intervals

Color	Queue Type
	Average
	95th Percentile
	Max Observed

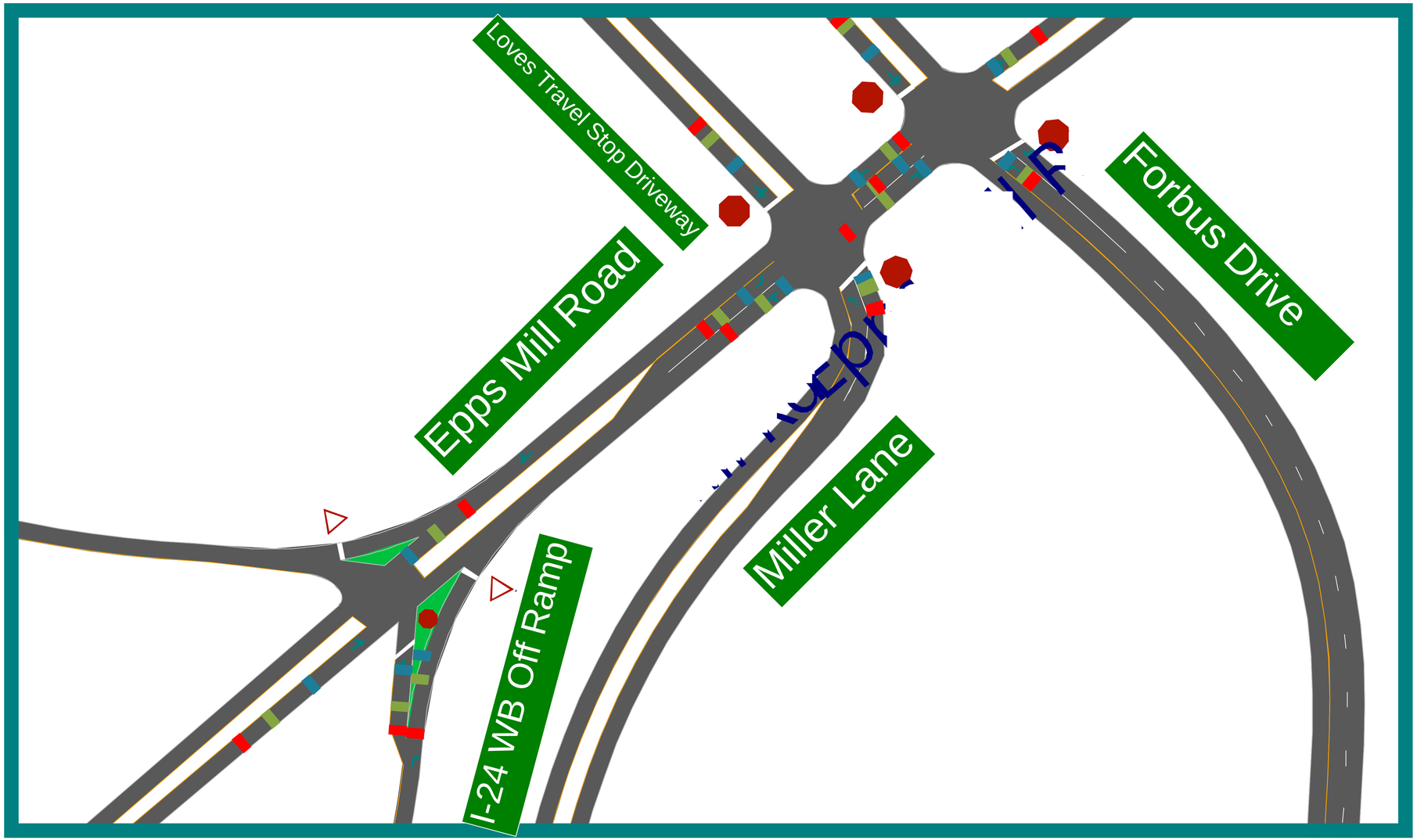
Figure 5: Queue Lengths for BY-NB AM



Queue Lengths
All Intervals

Color	Queue Type
	Average
	95th Percentile
	Max Observed

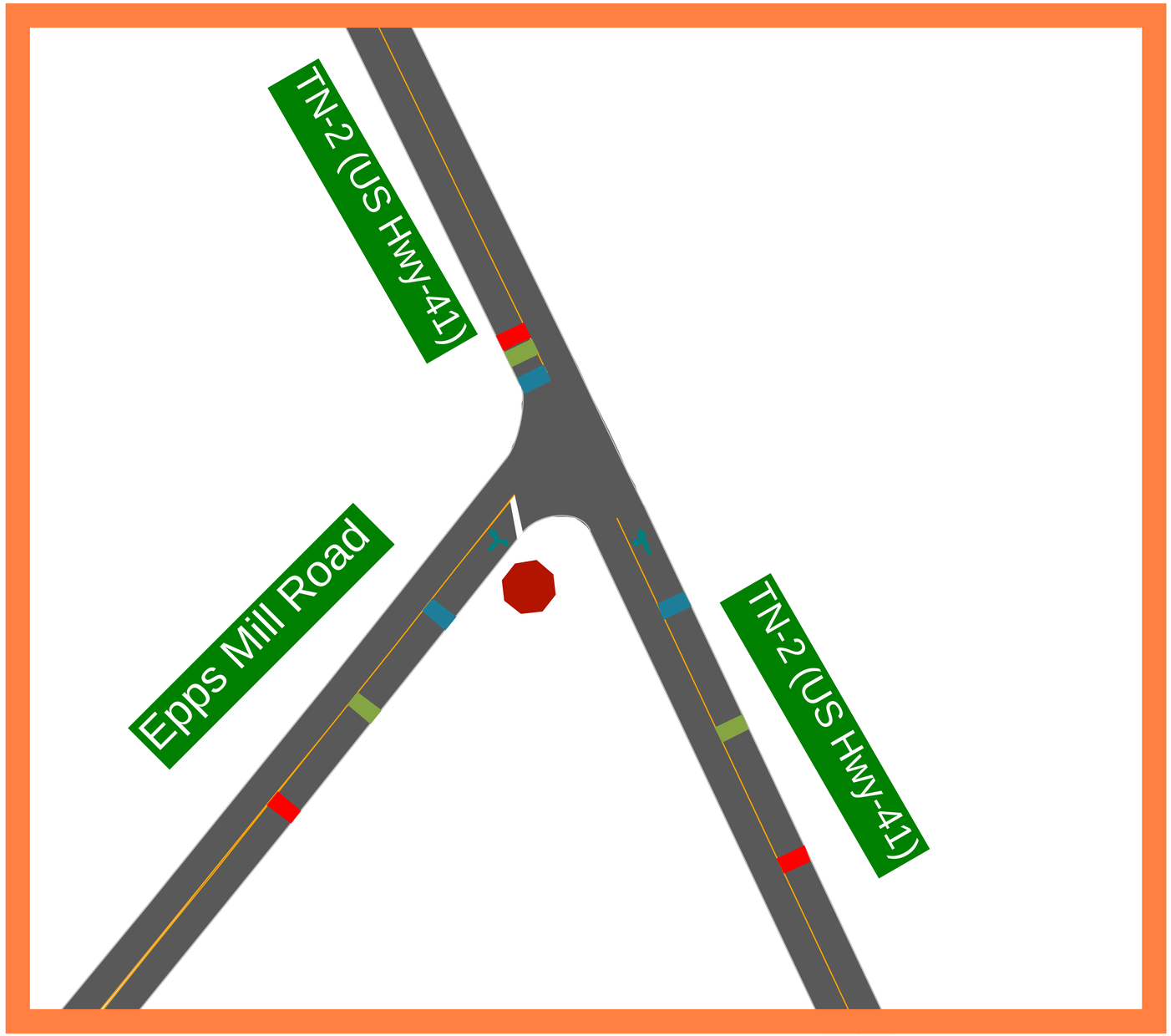
Figure 6: Queue Lengths for BY-NB AM



Queue Lengths
All Intervals

Color	Queue Type
	Average
	95th Percentile
	Max Observed

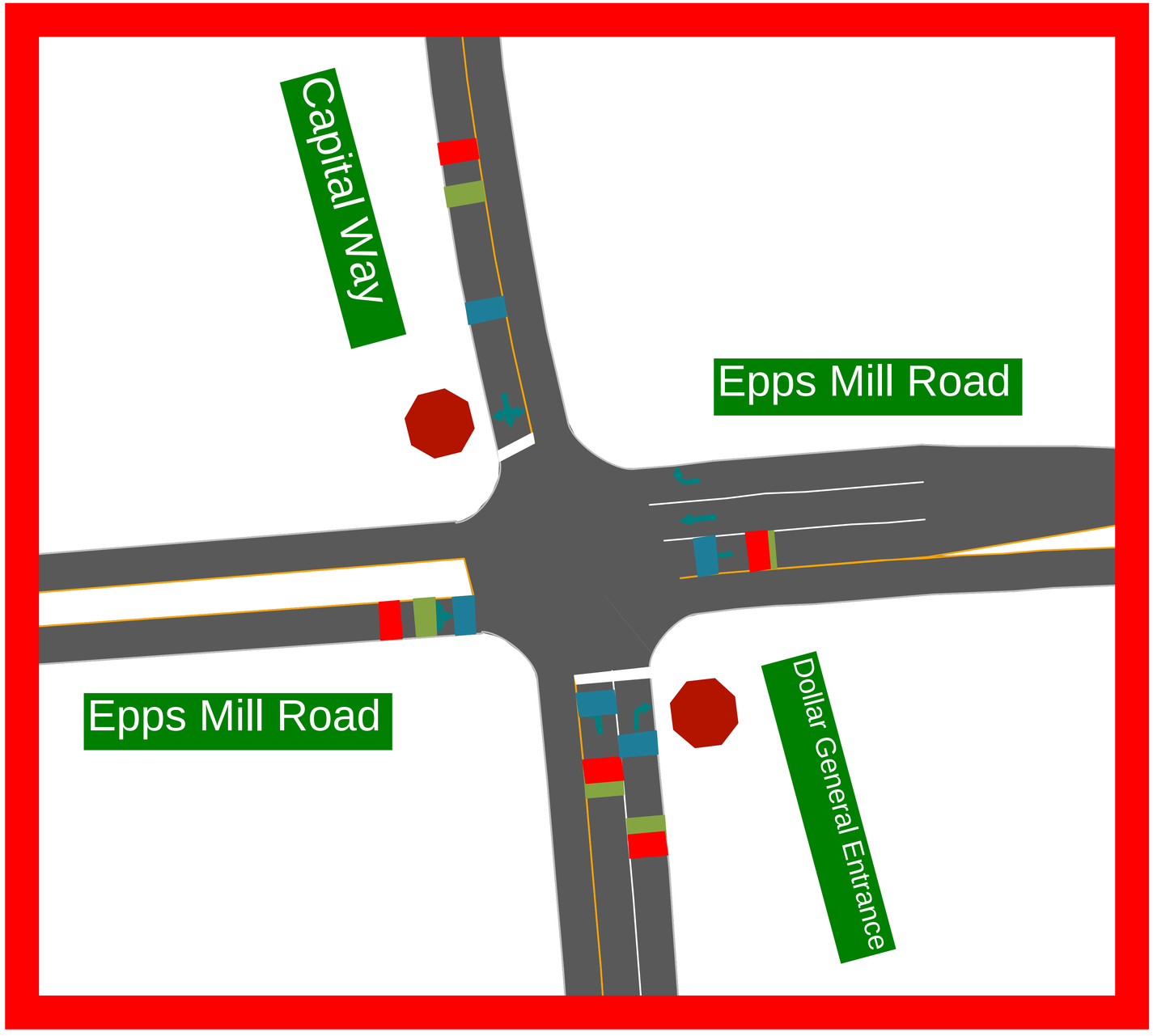
Figure 7: Queue Lengths for BY-NB AM



Queue Lengths
All Intervals

Color	Queue Type
	Average
	95th Percentile
	Max Observed

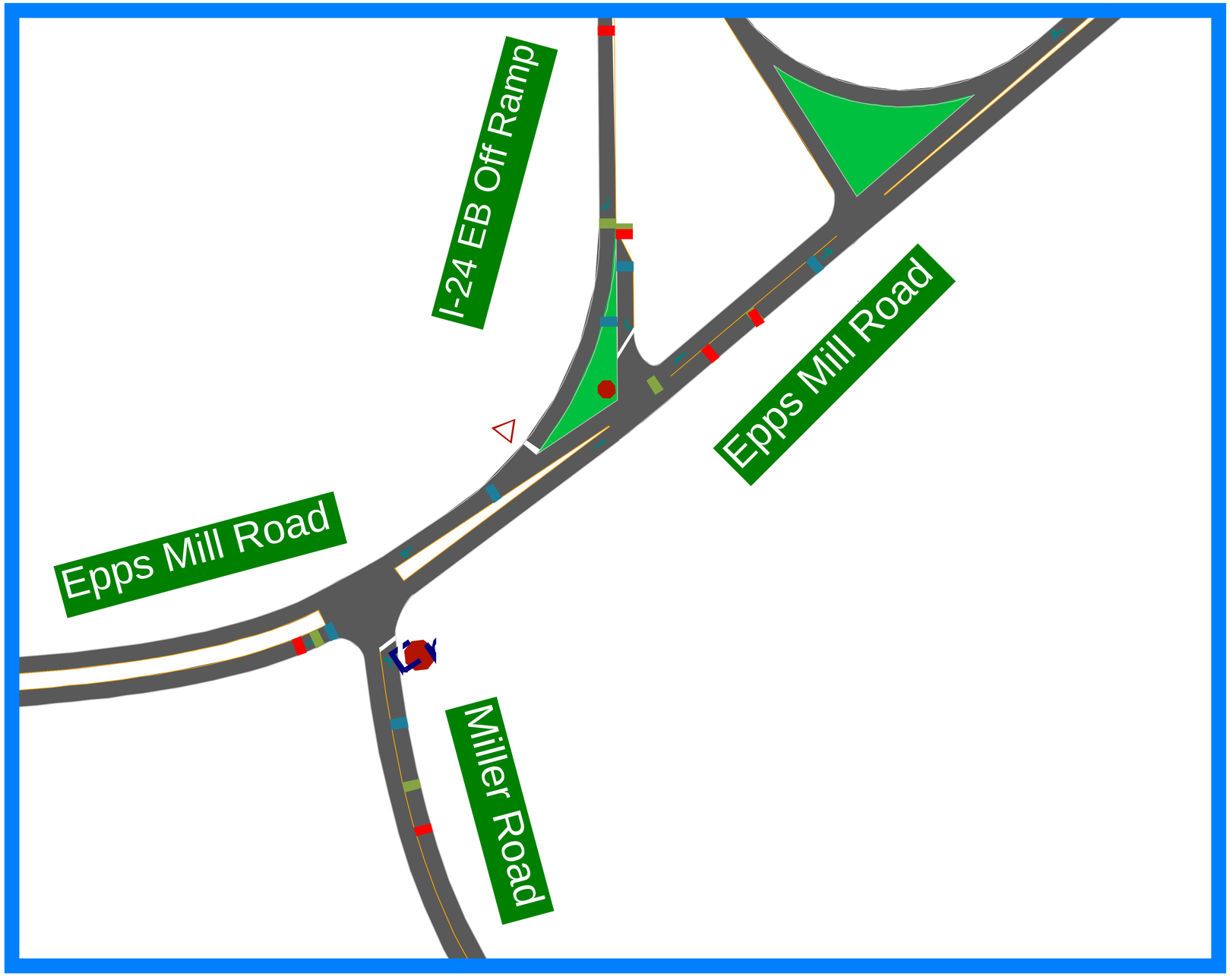
Figure 8: Queue Lengths for BY-NB PM



Queue Lengths
All Intervals

Color	Queue Type
	Average
	95th Percentile
	Max Observed

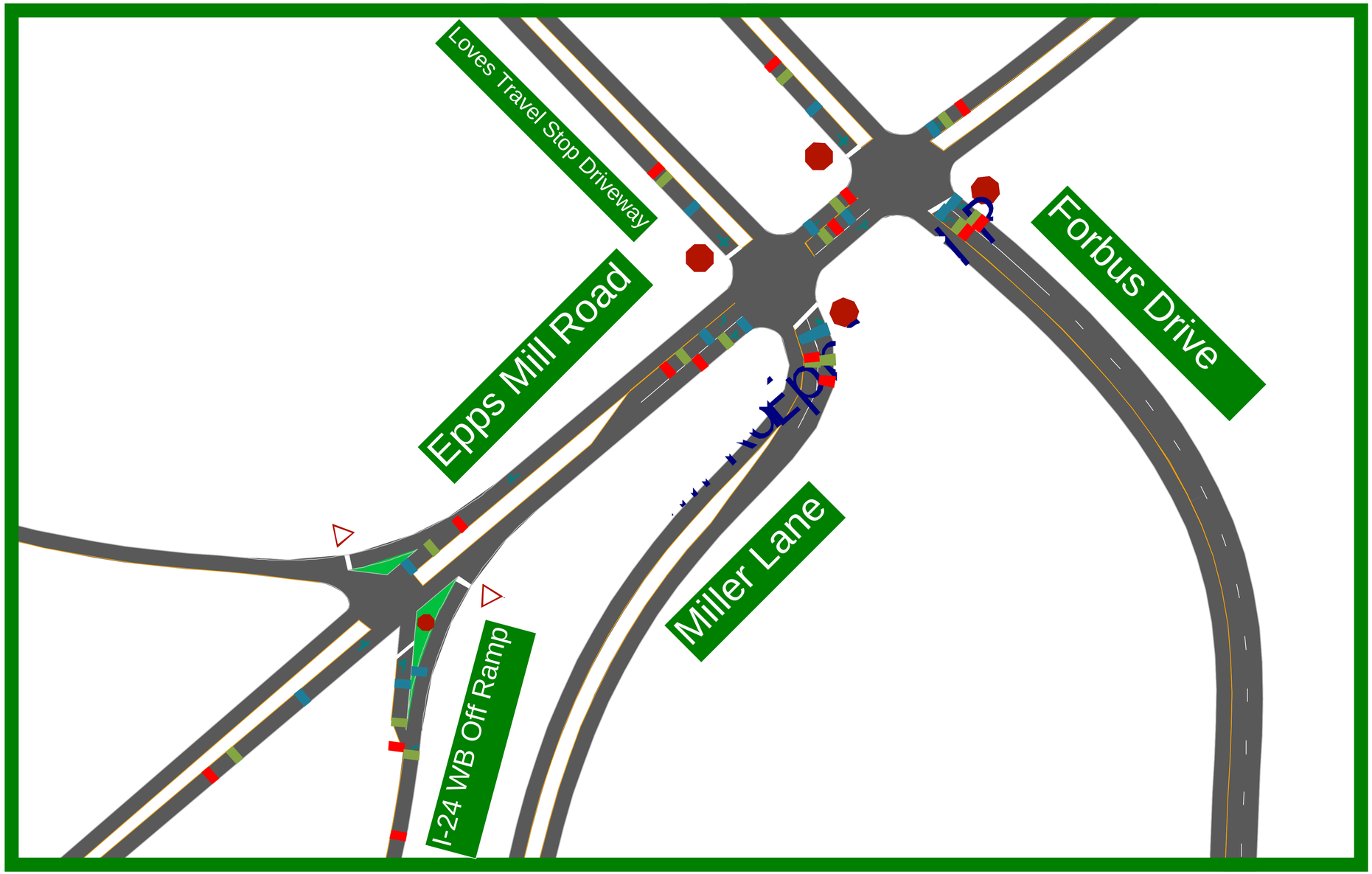
Figure 9: Queue Lengths for BY-NB PM



Queue Lengths
All Intervals

Color	Queue Type
	Average
	95th Percentile
	Max Observed

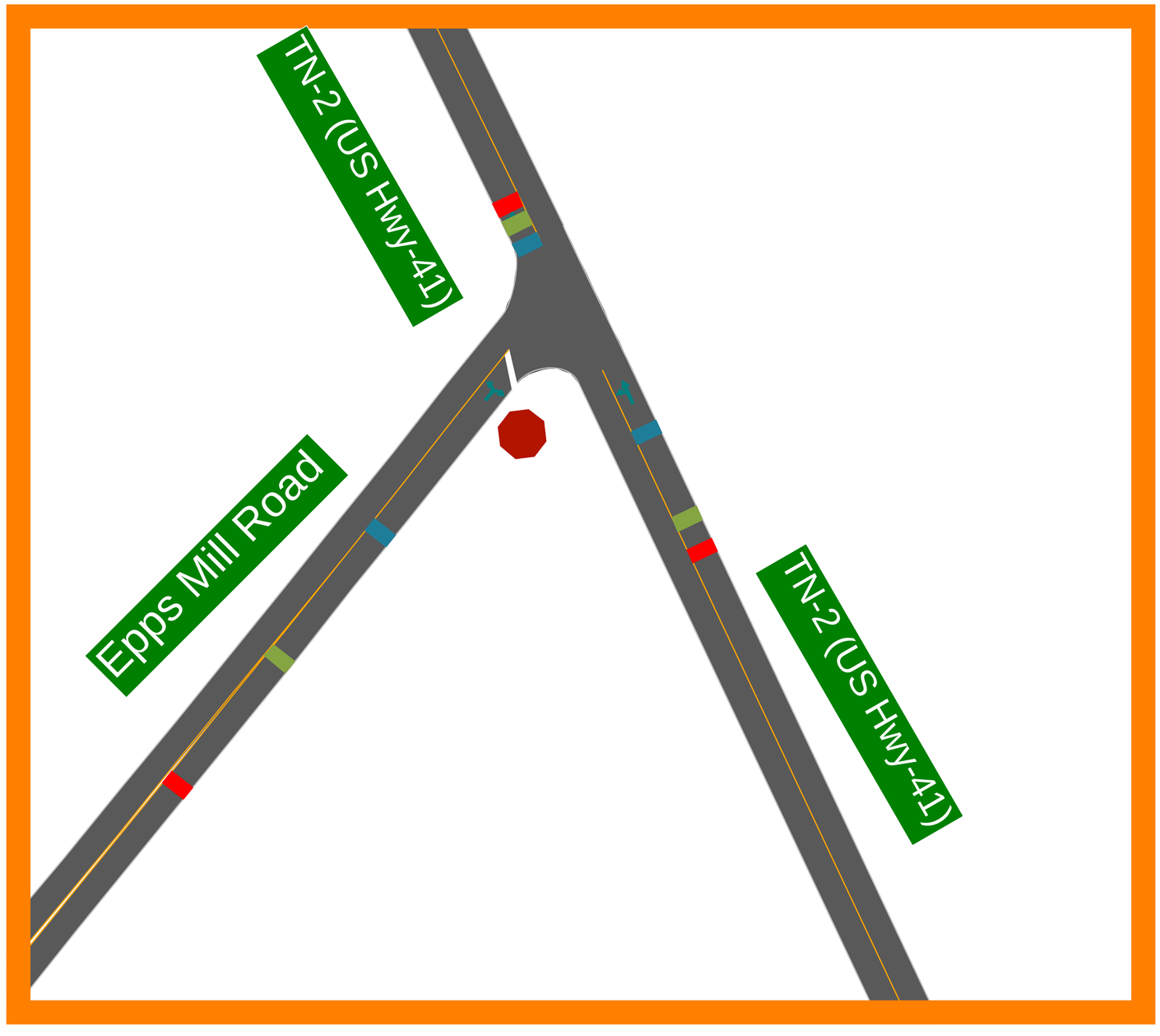
Figure 10: Queue Lengths for BY-NB PM



Queue Lengths
All Intervals

Color	Queue Type
	Average
	95th Percentile
	Max Observed

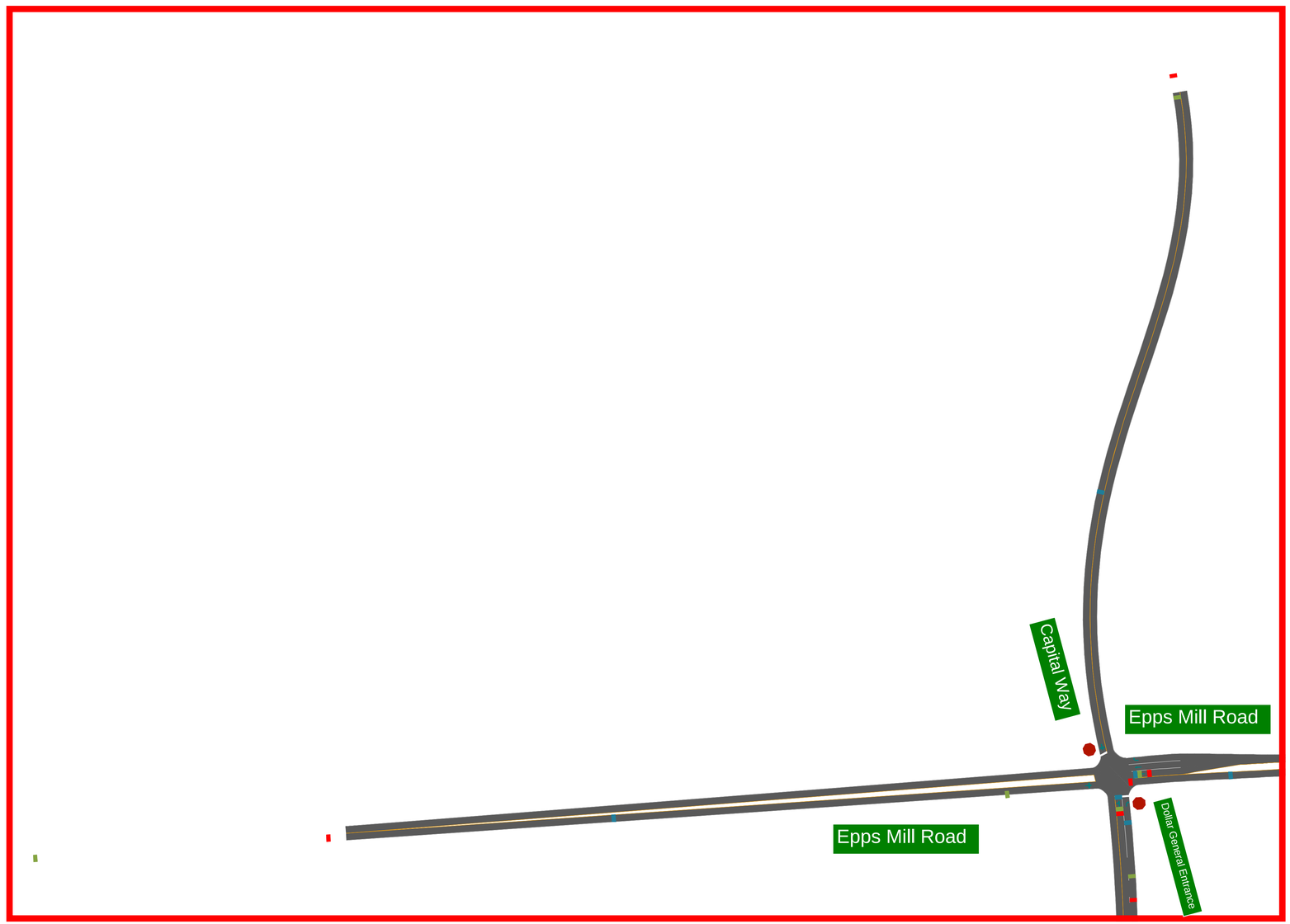
Figure 11: Queue Lengths for BY-NB PM



Queue Lengths
All Intervals

Color	Queue Type
	Average
	95th Percentile
	Max Observed

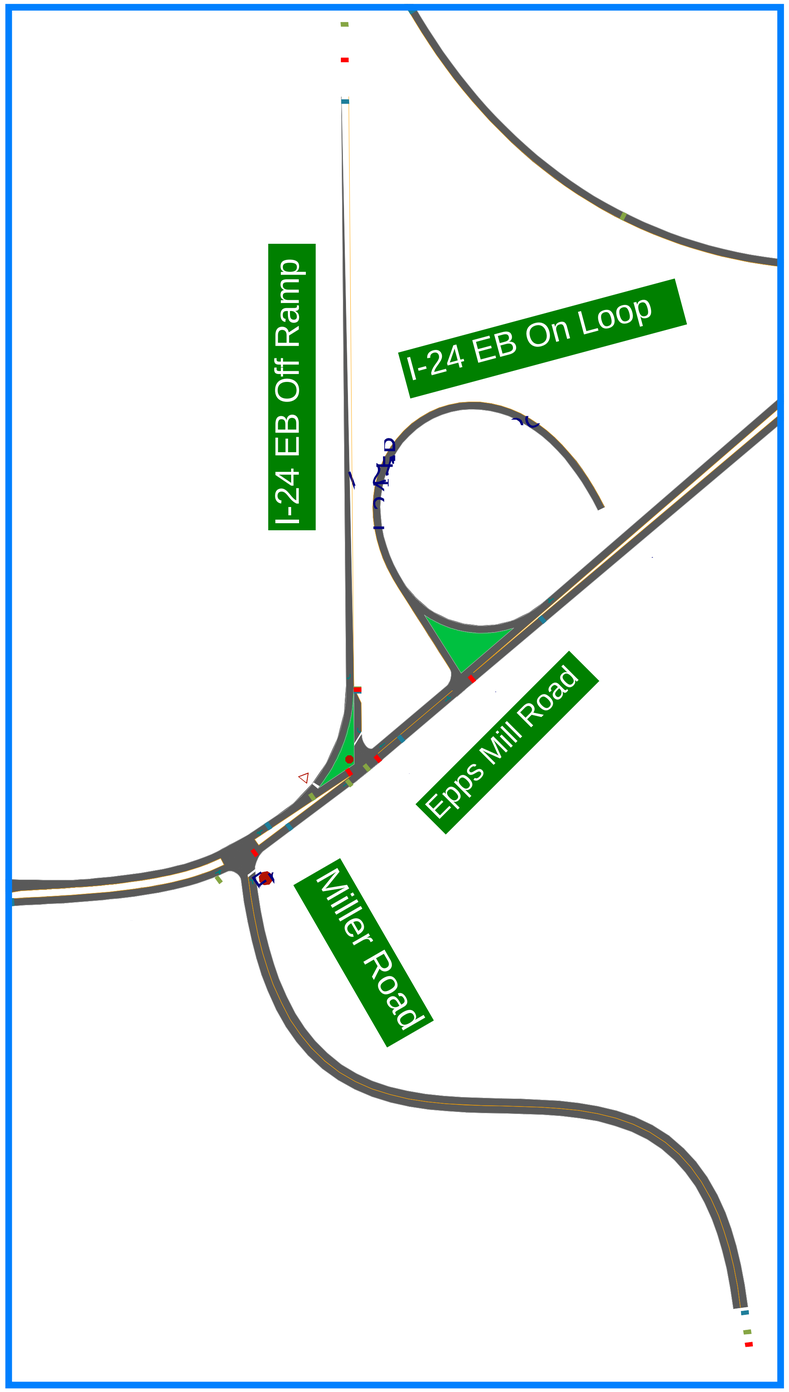
Figure 12: Queue Lengths for FY-NB AM



Queue Lengths
All Intervals

Color	Queue Type
	Average
	95th Percentile
	Max Observed

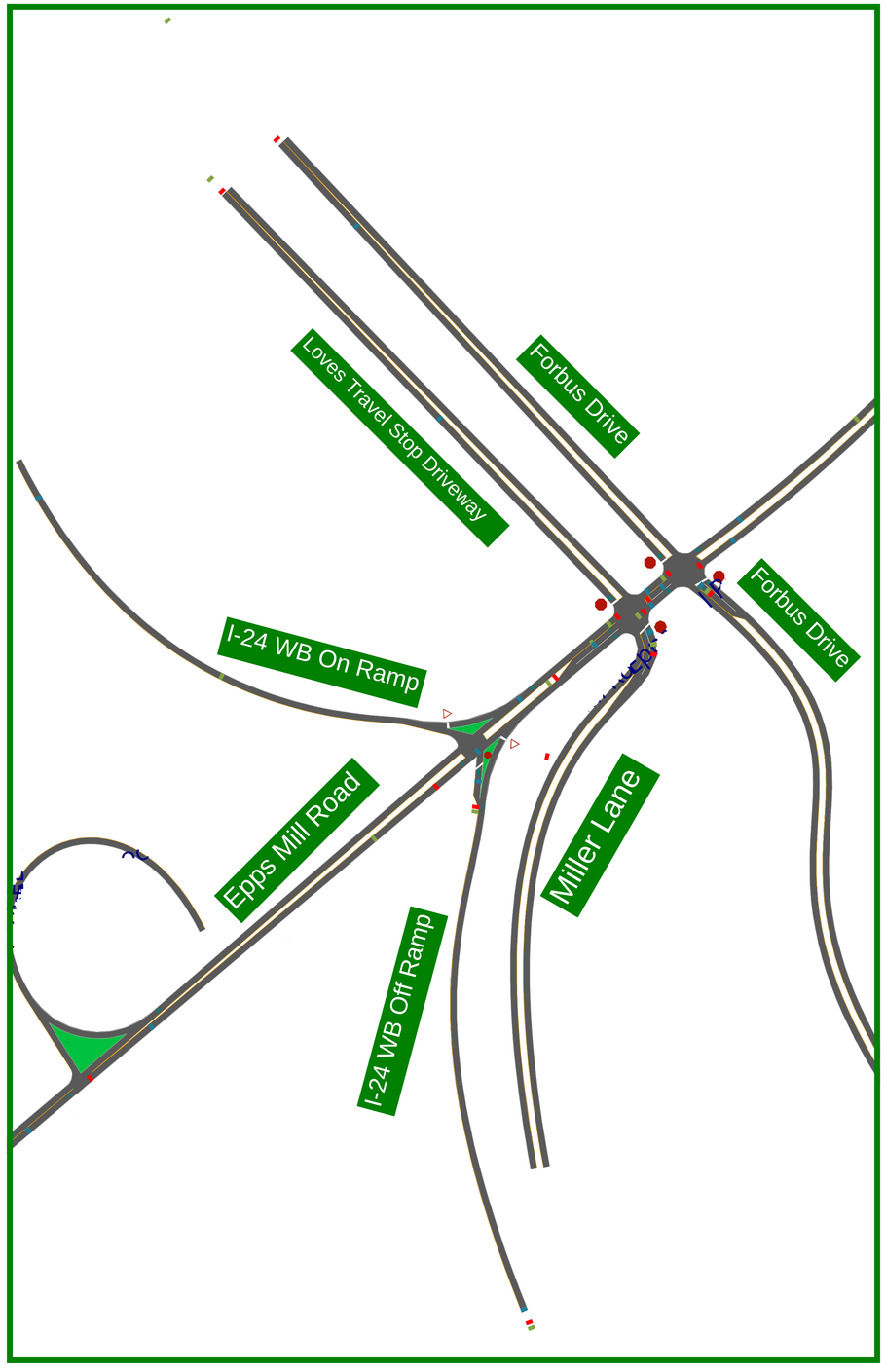
Figure 13: Queue Lengths for FY-NB AM



Queue Lengths
All Intervals

Color	Queue Type
	Average
	95th Percentile
	Max Observed

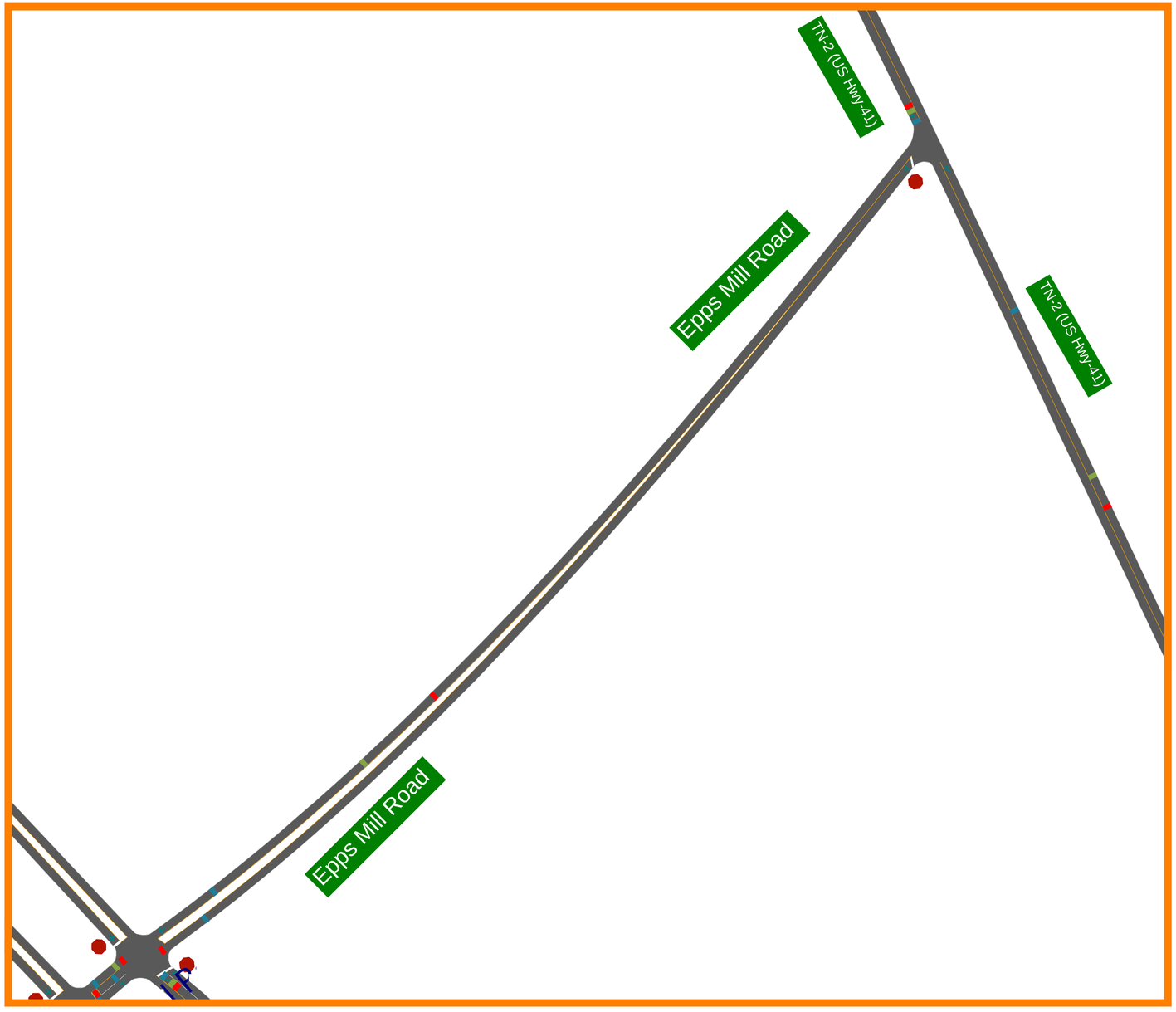
Figure 14: Queue Lengths for FY-NB AM



Queue Lengths
All Intervals

Color	Queue Type
	Average
	95th Percentile
	Max Observed

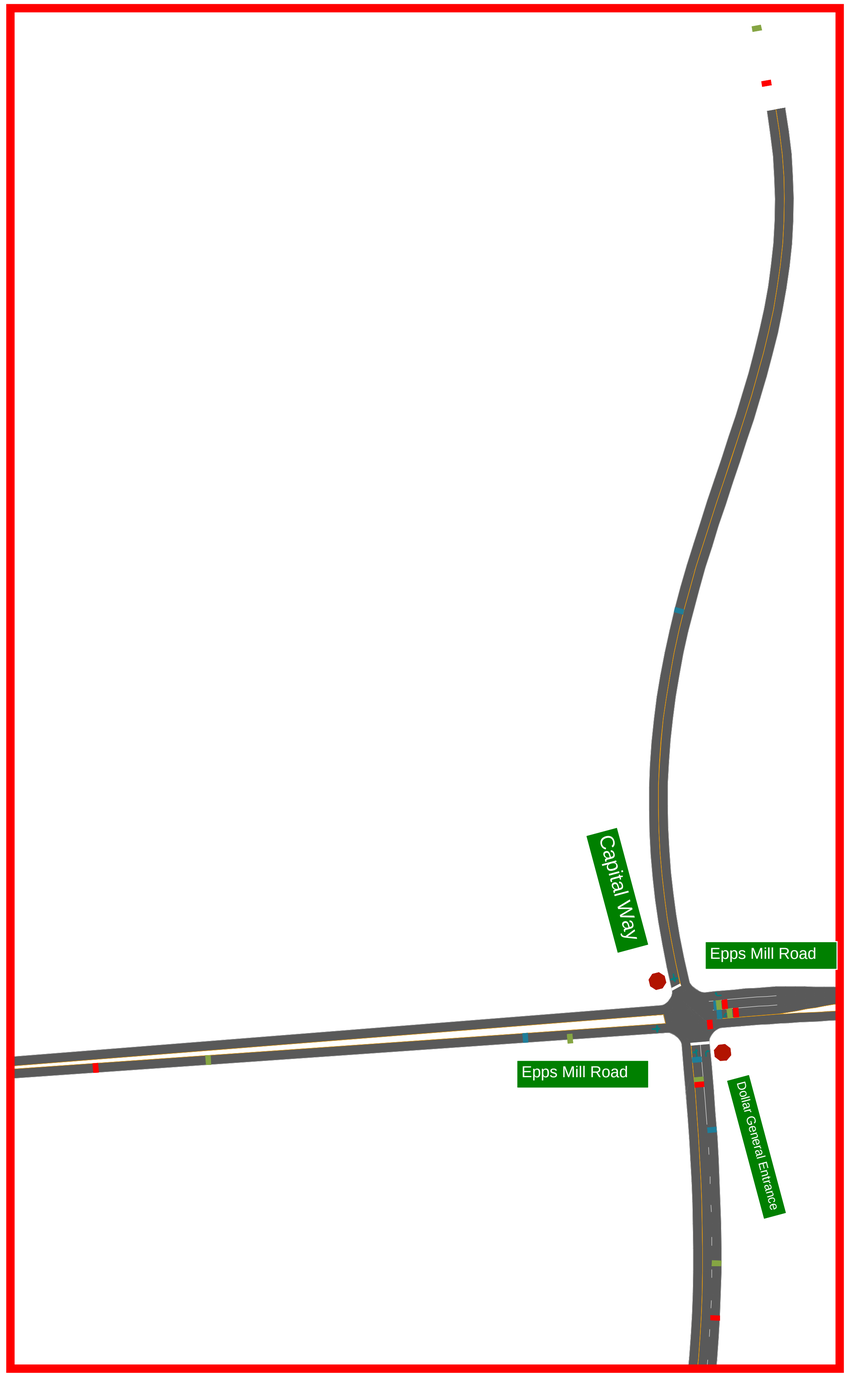
Figure 15: Queue Lengths for FY-NB AM



Queue Lengths
All Intervals

Color	Queue Type
	Average
	95th Percentile
	Max Observed

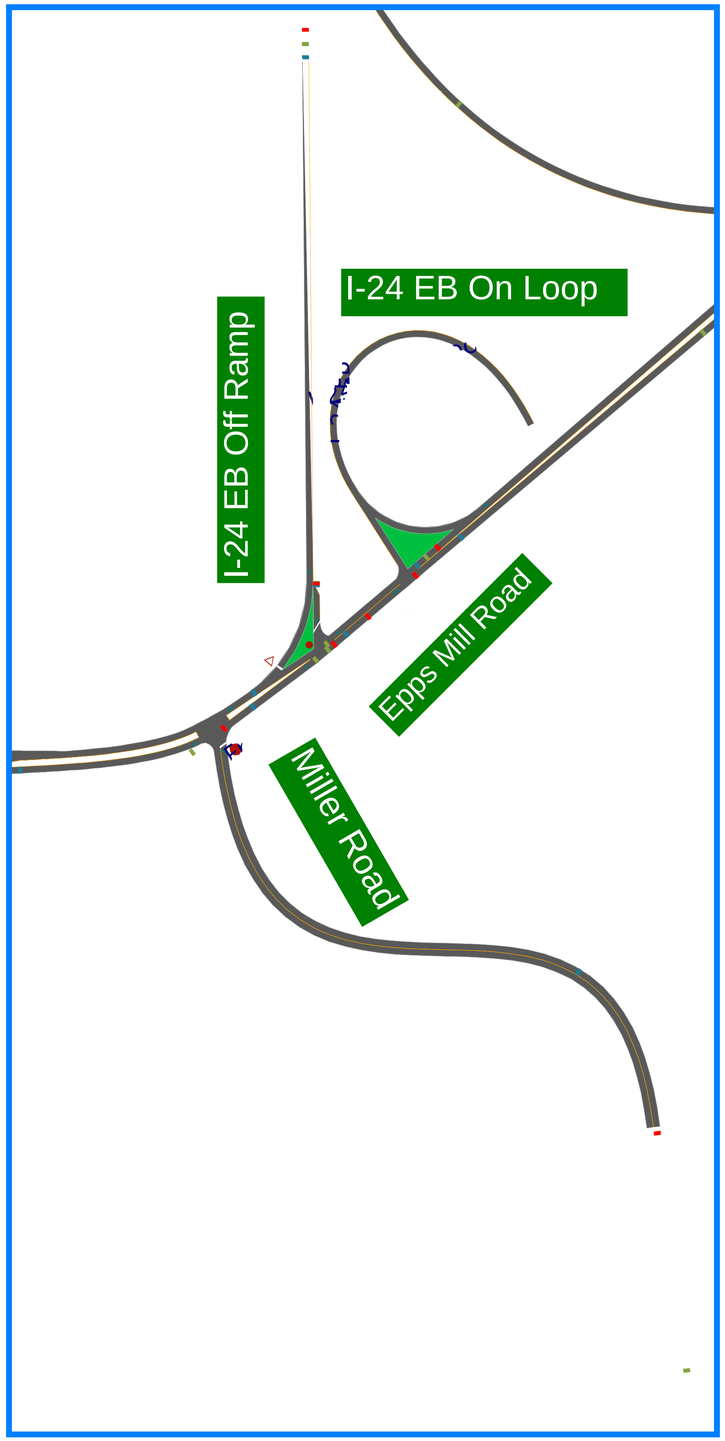
Figure 16: Queue Lengths for FY-NB PM



Queue Lengths
All Intervals

Color	Queue Type
	Average
	95th Percentile
	Max Observed

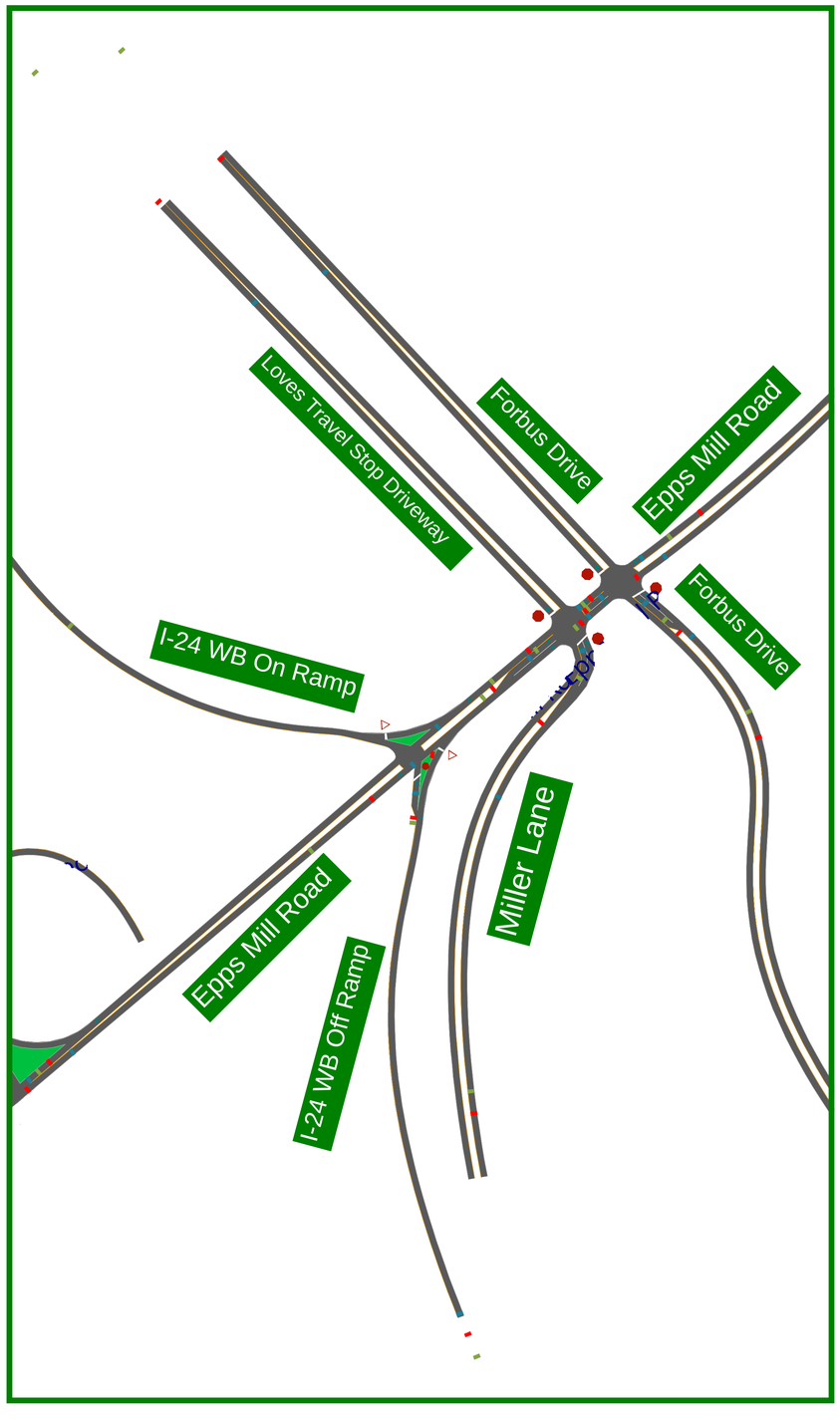
Figure 17: Queue Lengths for FY-NB PM



Queue Lengths
All Intervals

Color	Queue Type
	Average
	95th Percentile
	Max Observed

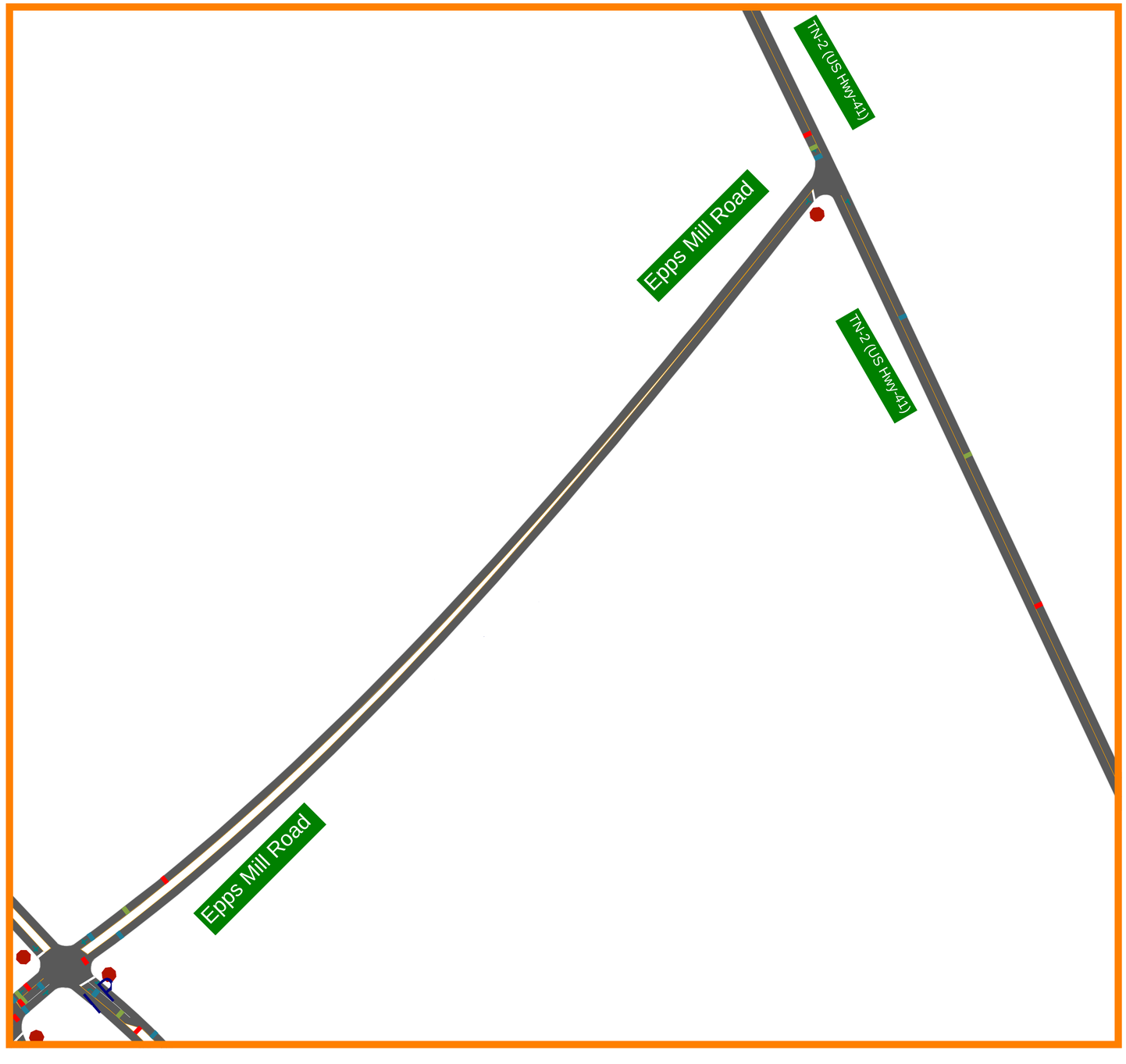
Figure 18: Queue Lengths for FY-NB PM



Queue Lengths
All Intervals

Color	Queue Type
	Average
	95th Percentile
	Max Observed

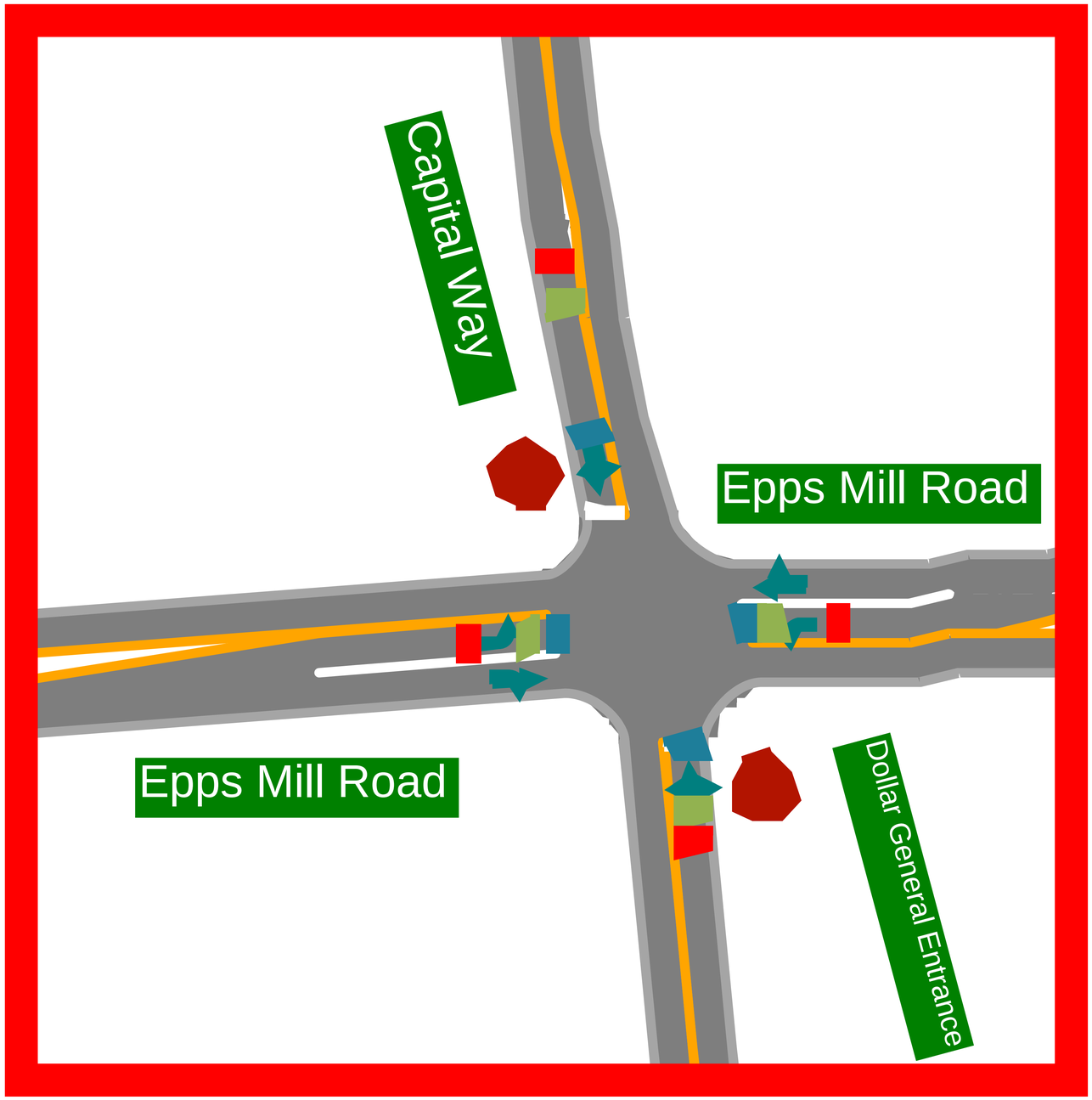
Figure 19: Queue Lengths for FY-NB PM



Queue Lengths
All Intervals

Color	Queue Type
	Average
	95th Percentile
	Max Observed

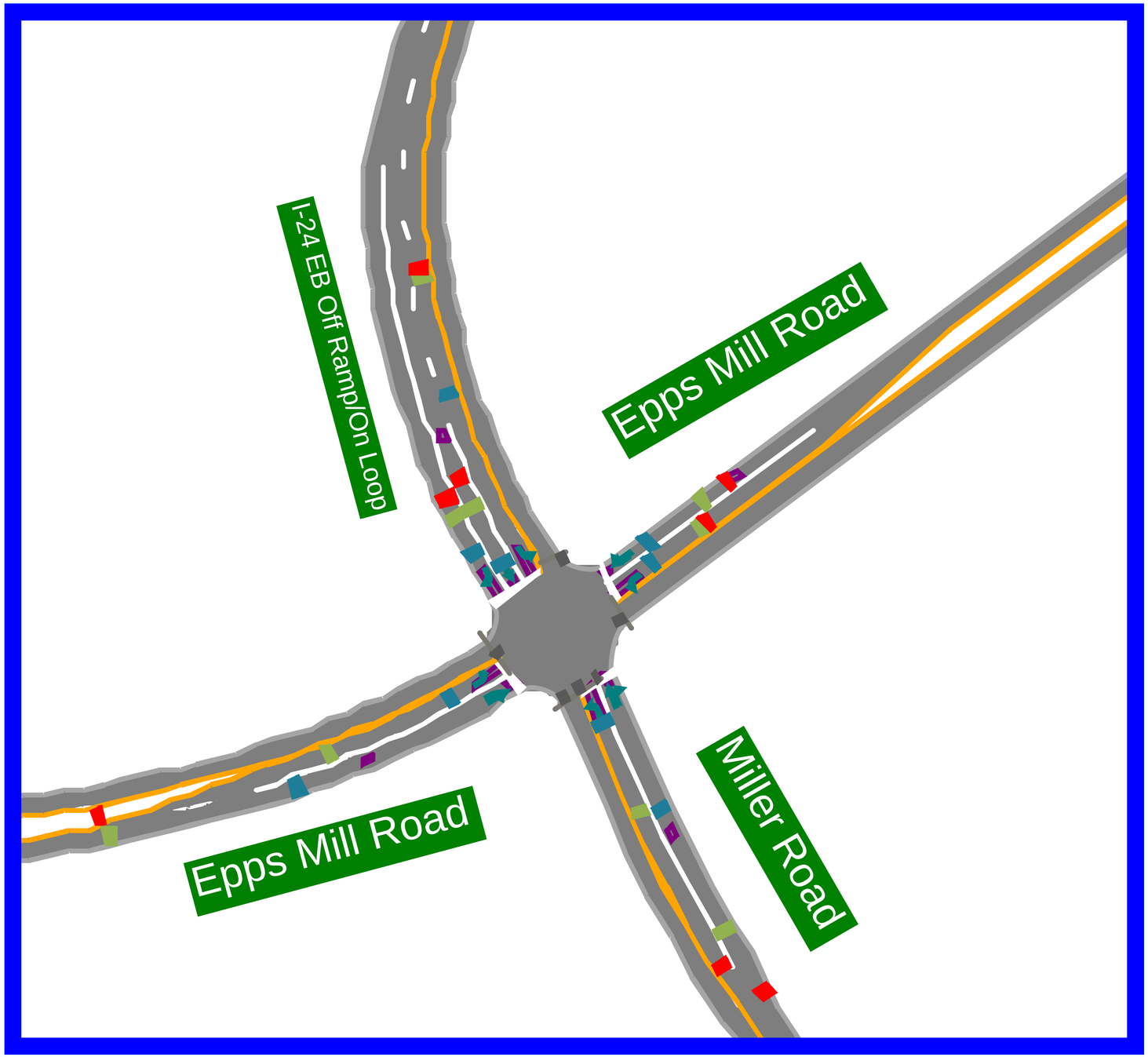
Figure 20: Queue Lengths for BY-B AM



Queue Lengths
All Intervals

Color	Queue Type
	Average
	95th Percentile
	Max Observed

Figure 21: Queue Lengths for BY-B AM



Queue Lengths
All Intervals

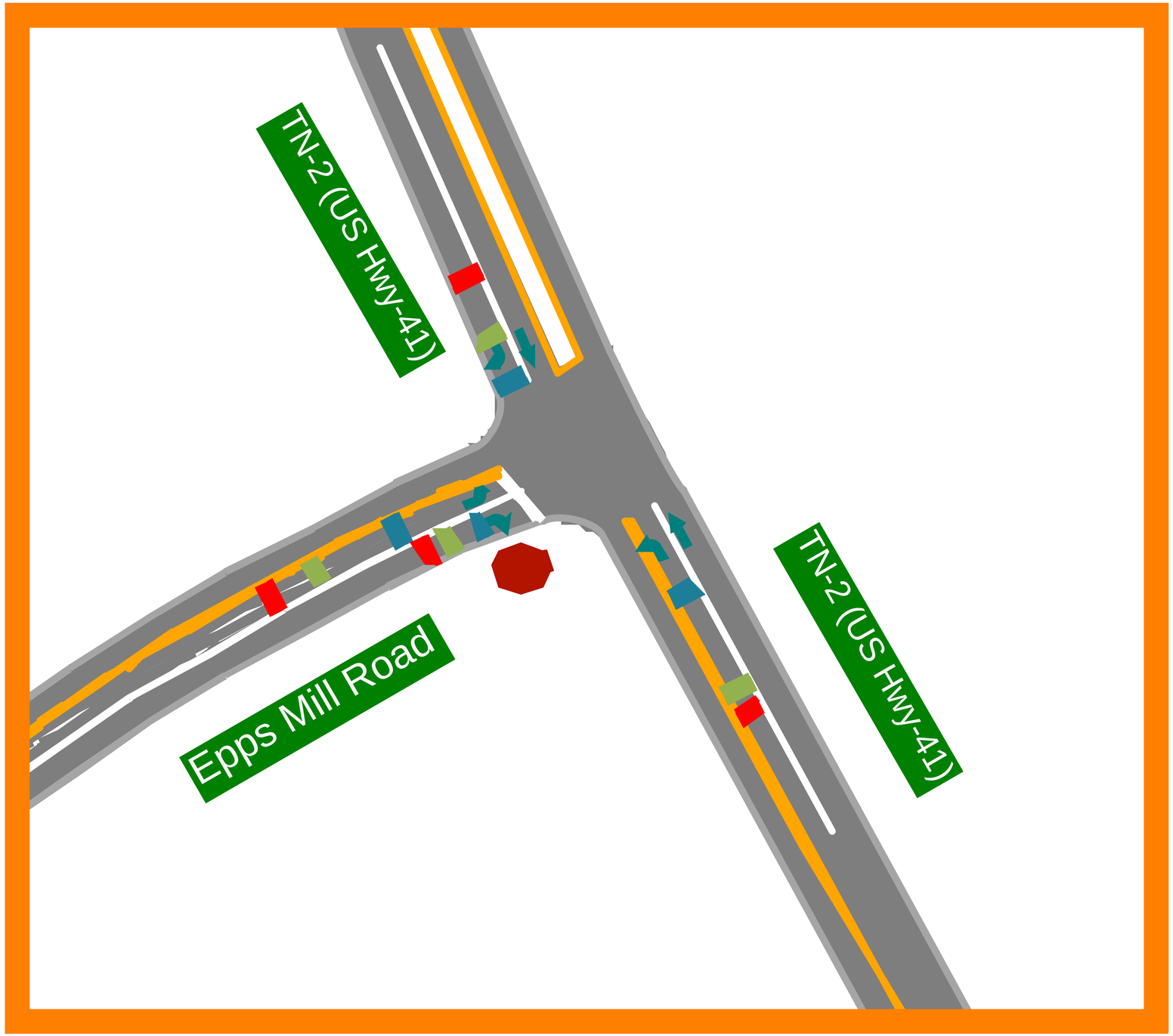
Color	Queue Type
	Average
	95th Percentile
	Max Observed

Figure 22: Queue Lengths for BY-B AM

Queue Lengths
All Intervals

Color	Queue Type
	Average
	95th Percentile
	Max Observed

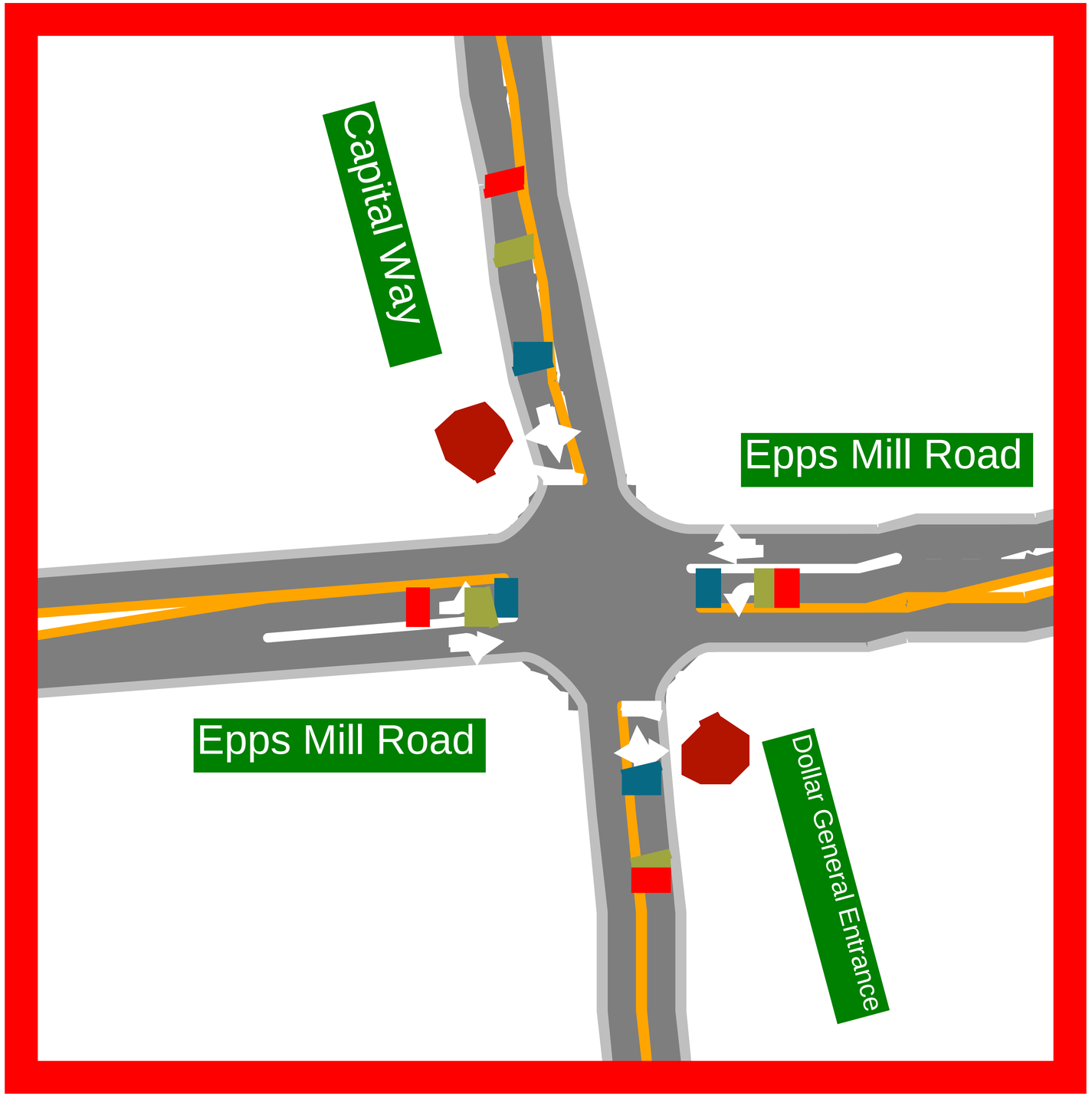
Figure 23: Queue Lengths for BY-B AM



Queue Lengths
All Intervals

Color	Queue Type
	Average
	95th Percentile
	Max Observed

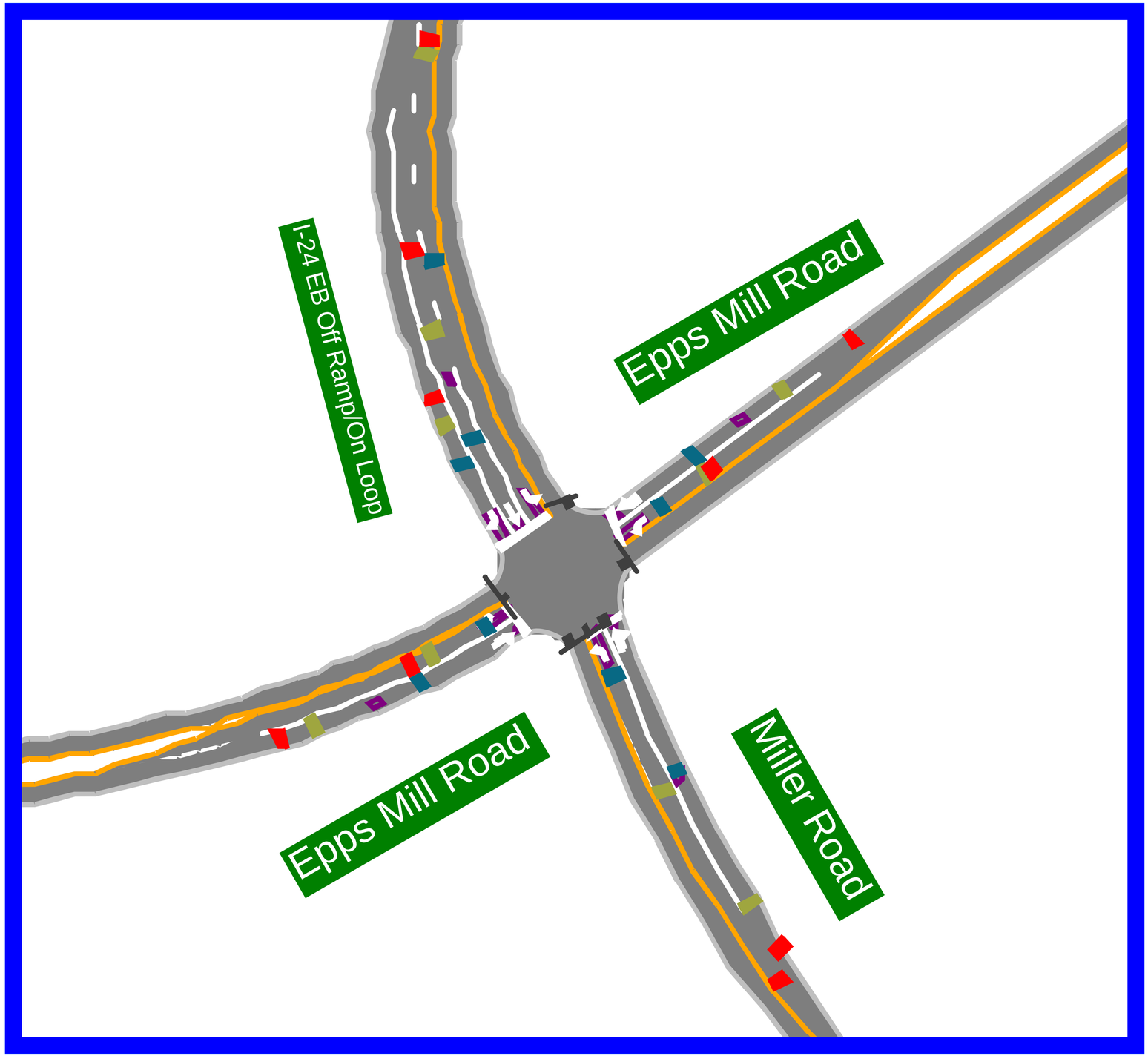
Figure 24: Queue Lengths for BY-B PM



Queue Lengths
All Intervals

Color	Queue Type
	Average
	95th Percentile
	Max Observed

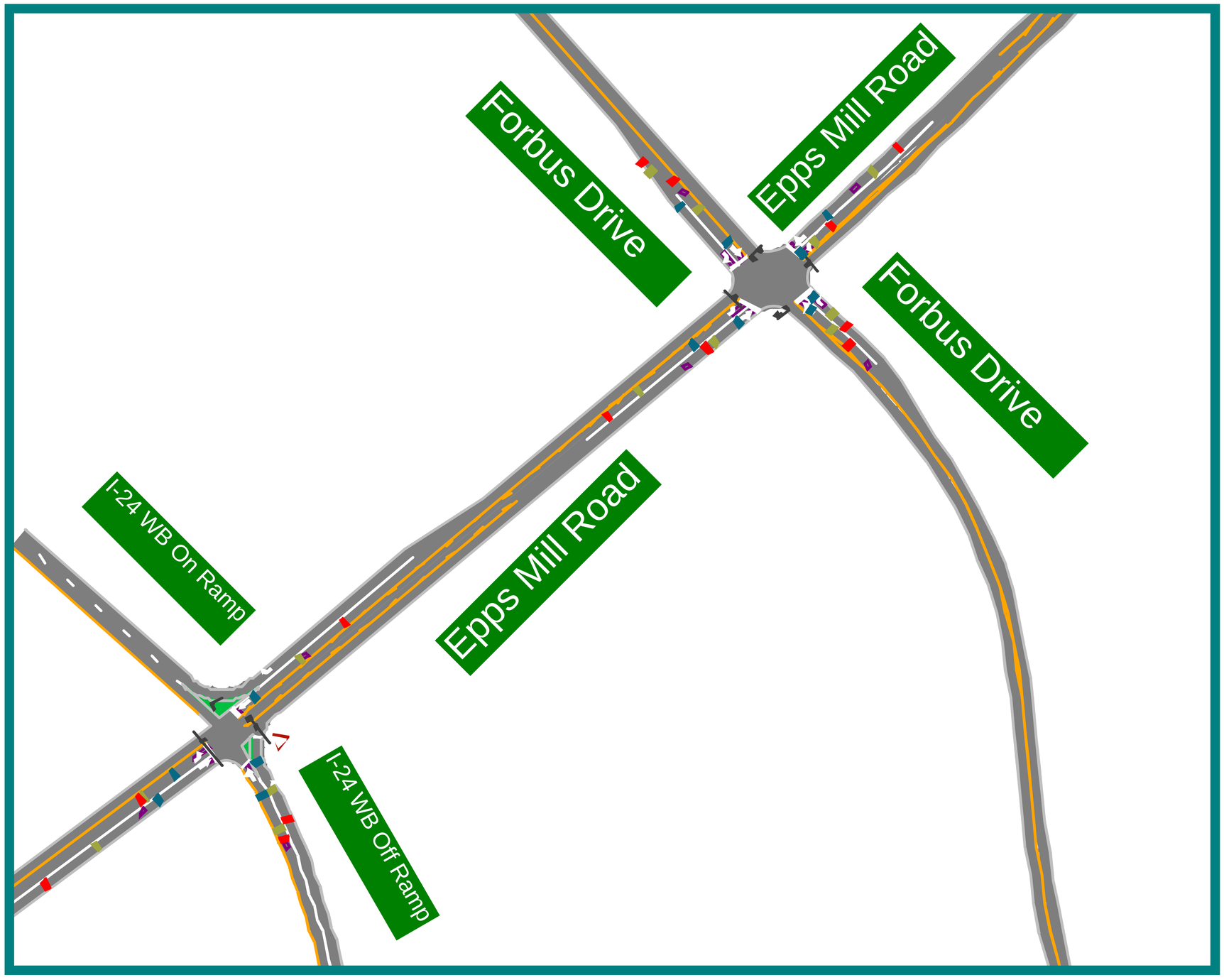
Figure 25: Queue Lengths for BY-B PM



Queue Lengths
All Intervals

Color	Queue Type
	Average
	95th Percentile
	Max Observed

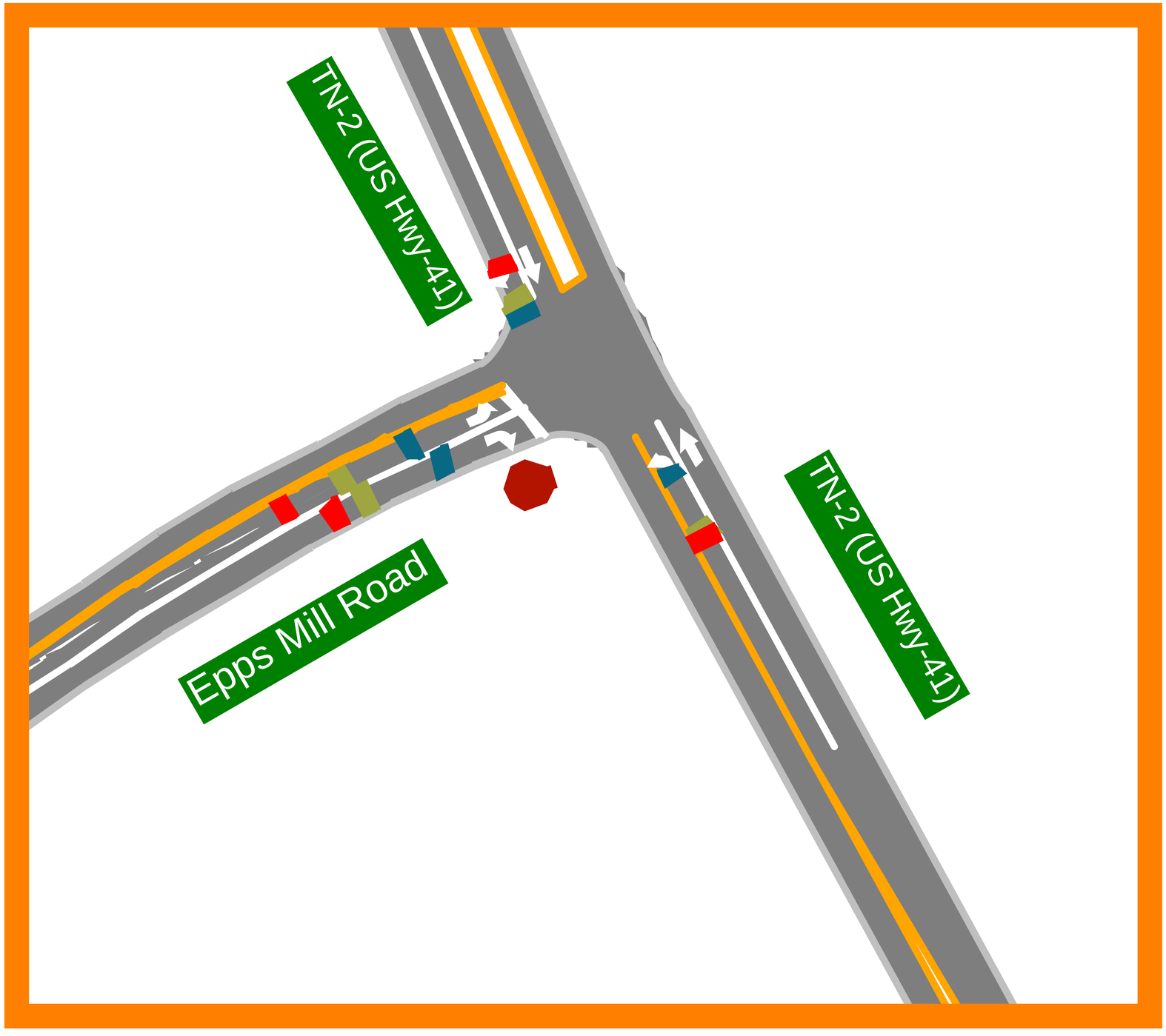
Figure 26: Queue Lengths for BY-B PM



Queue Lengths
All Intervals

Color	Queue Type
	Average
	95th Percentile
	Max Observed

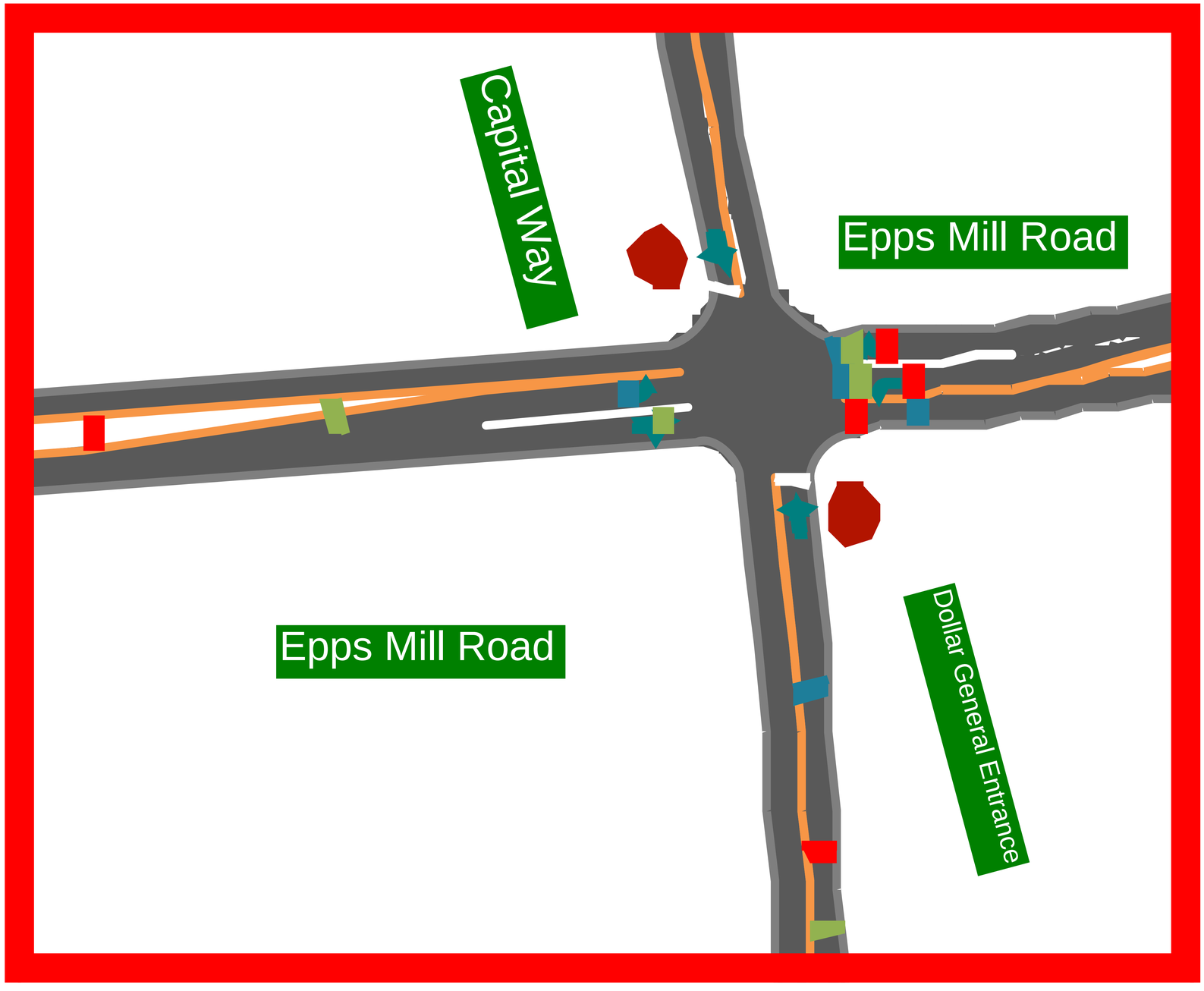
Figure 27: Queue Lengths for BY-B PM



Queue Lengths
All Intervals

Color	Queue Type
	Average
	95th Percentile
	Max Observed

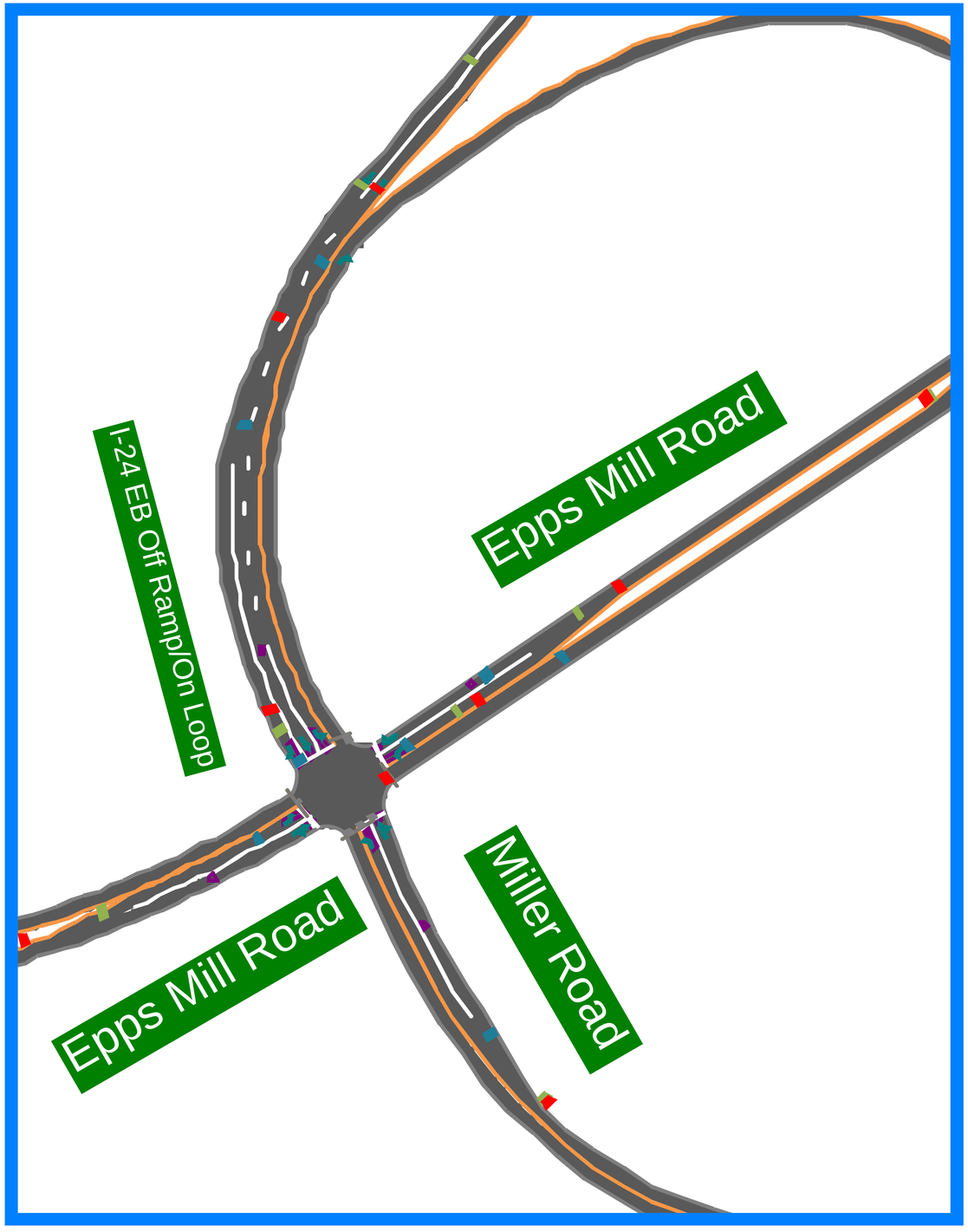
Figure 28: Queue Lengths for FY-B AM



Queue Lengths
All Intervals

Color	Queue Type
	Average
	95th Percentile
	Max Observed

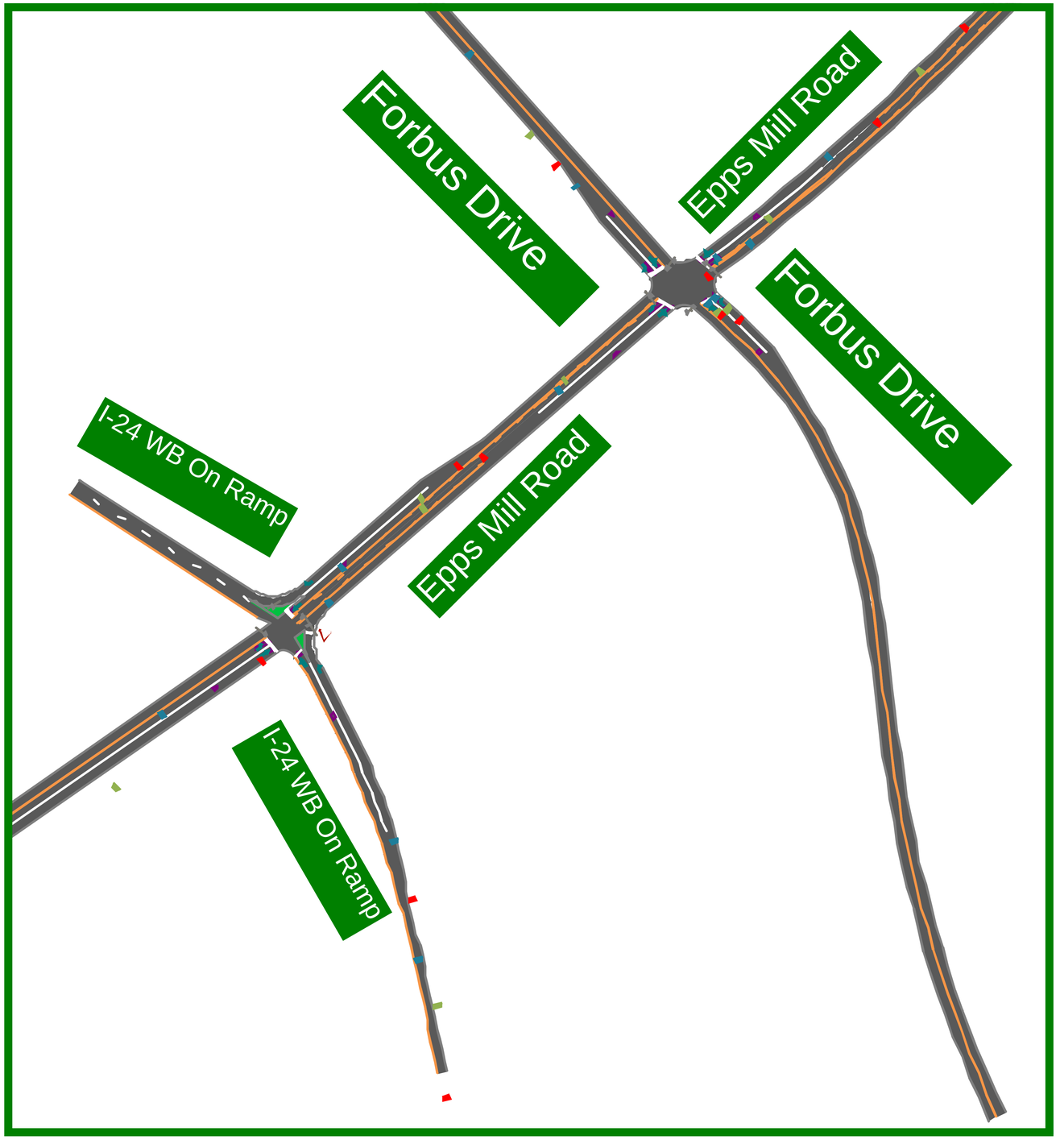
Figure 29: Queue Lengths for FY-B AM



Queue Lengths
All Intervals

Color	Queue Type
	Average
	95th Percentile
	Max Observed

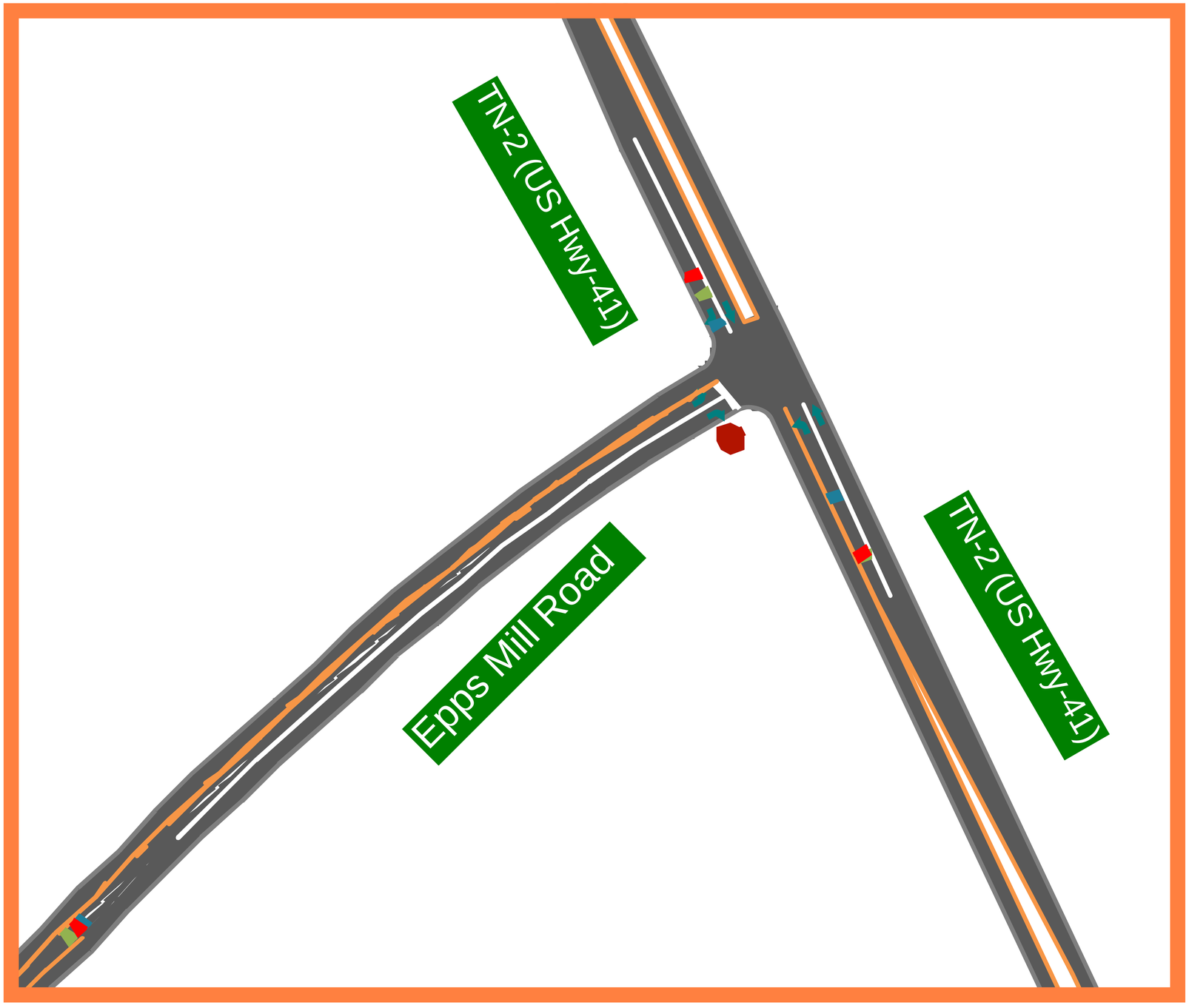
Figure 30: Queue Lengths for FY-B AM



Queue Lengths
All Intervals

Color	Queue Type
	Average
	95th Percentile
	Max Observed

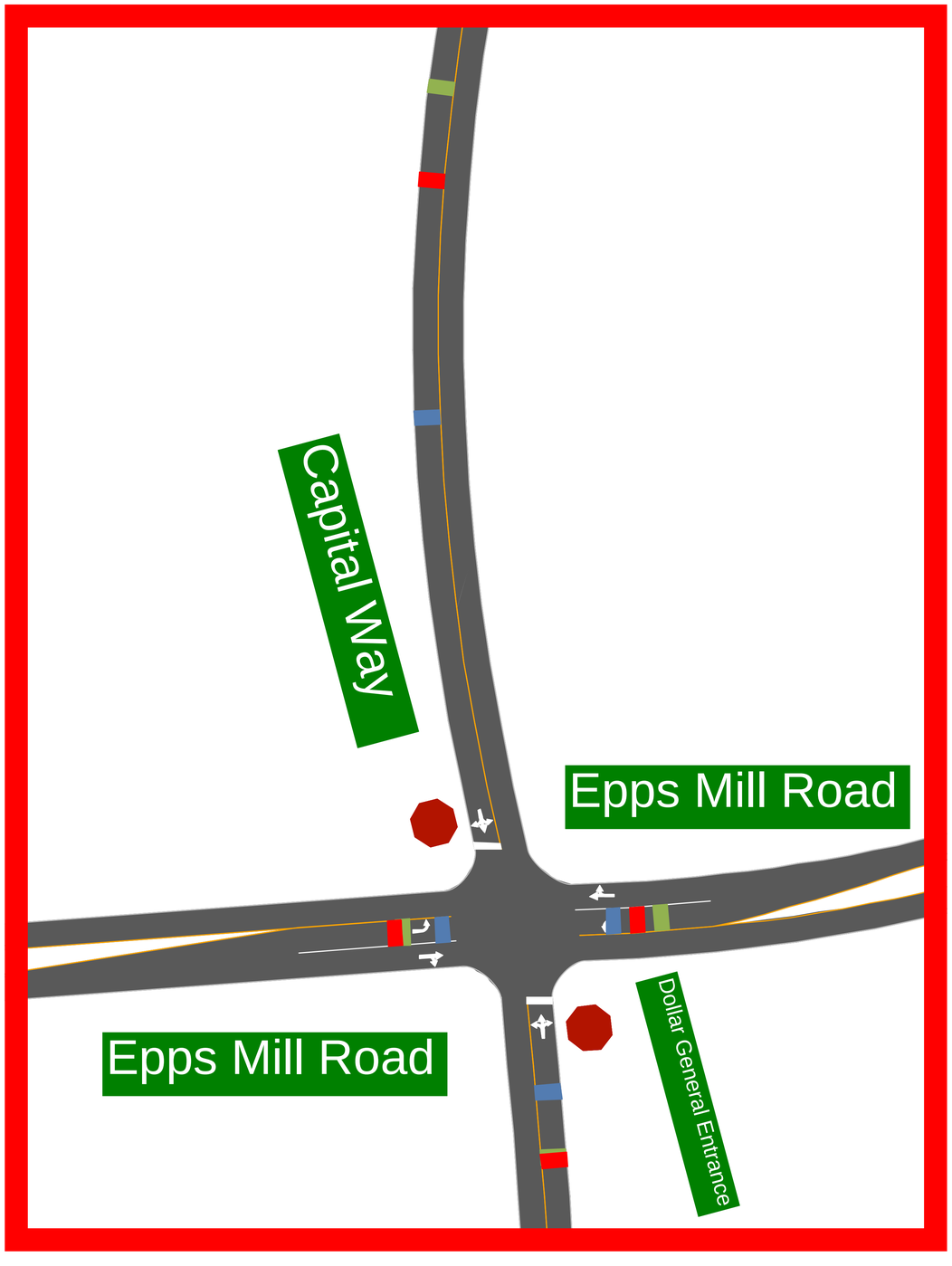
Figure 31: Queue Lengths for FY-B AM



Queue Lengths
All Intervals

Color	Queue Type
	Average
	95th Percentile
	Max Observed

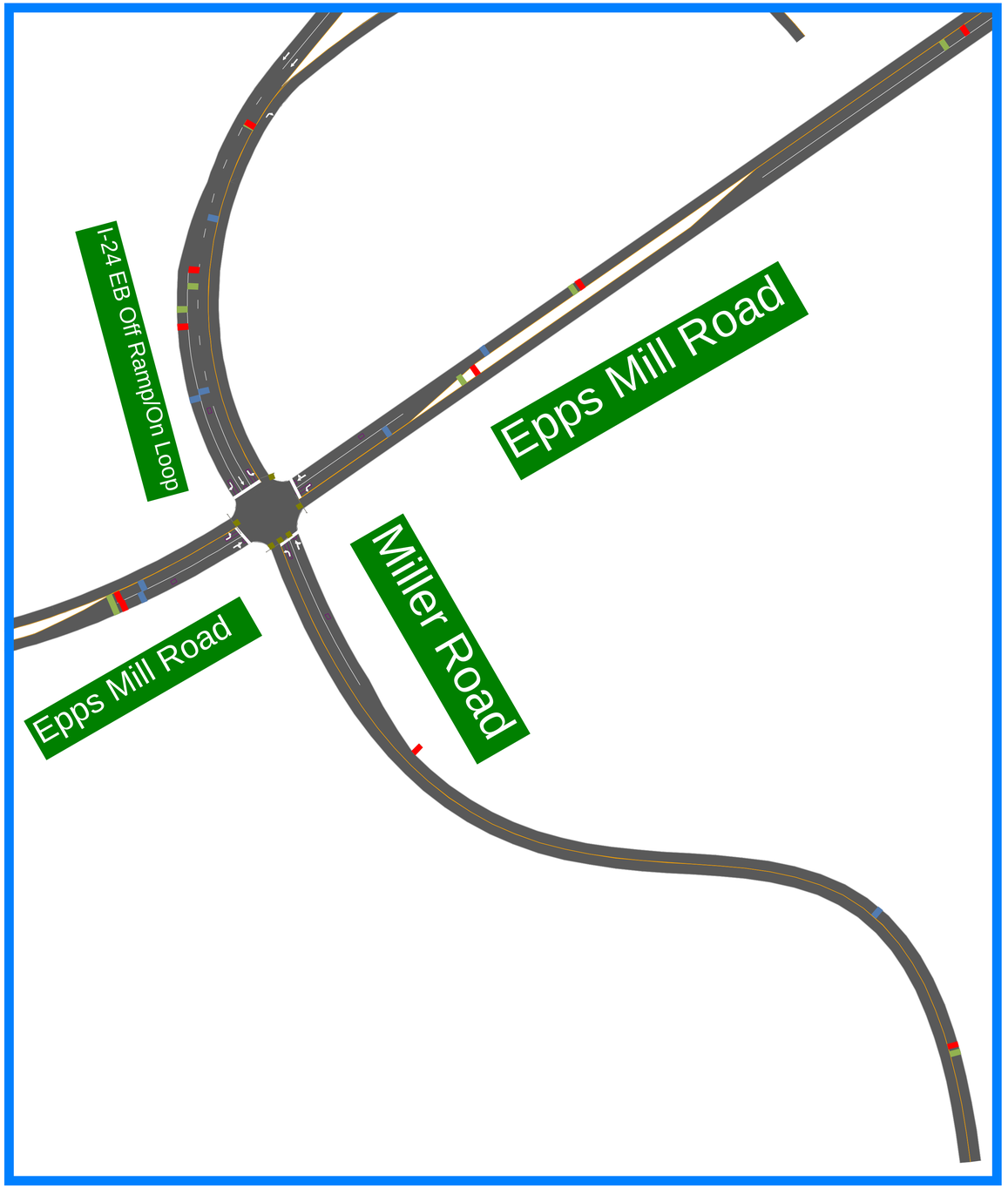
Figure 32: Queue Lengths for FY-B PM



Queue Lengths
All Intervals

Color	Queue Type
	Average
	95th Percentile
	Max Observed

Figure 33: Queue Lengths for FY-B PM



Queue Lengths
All Intervals

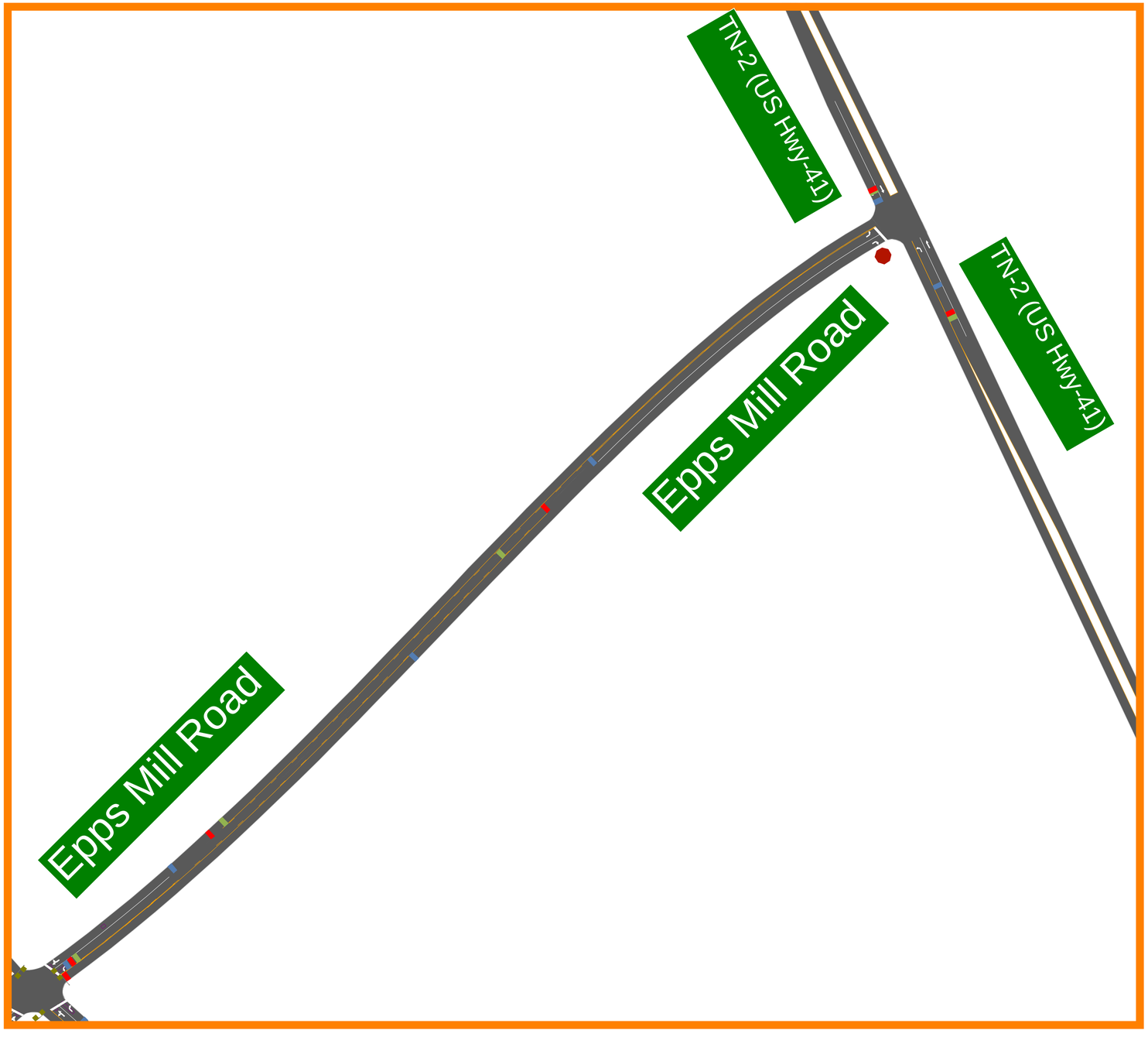
Color	Queue Type
	Average
	95th Percentile
	Max Observed

Figure 34: Queue Lengths for FY-B PM

Queue Lengths
All Intervals

Color	Queue Type
	Average
	95th Percentile
	Max Observed

Figure 35: Queue Lengths for FY-B PM



Queue Lengths
All Intervals

Color	Queue Type
	Average
	95th Percentile
	Max Observed

TDOT TRAFFIC VOLUME PROJECTIONS

TENNESSEE DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION

PROJECT NO.: 75I024-S0-009 ROUTE: EPPS MILL ROAD
COUNTY: RUTHERFORD CITY:
PROJECT PIN NUMBER: 124683.06
PROJECT DESCRIPTION: FROM S.R. 2 TO WEST OF CAPITAL WAY [INCLUDES I-24 INTERCHANGE]

[1] I-24 AVERAGE TRAFFIC DATA.
[2] EPPS MILL ROAD AVERAGE TRAFFIC DATA

DIVISION REQUESTING:

		PAVEMENT DESIGN	☐
MAINTENANCE	☐	STRUCTURES	☐
S.T.I.D.	☒	SURVEY & ROADWAY DESIGN	☐
PROG. DEVELOPMENT & ADM.	☐	TRAFFIC SIGNAL DESIGN	☐
PUBLIC TRANS. & AERO.	☐	OTHER	☐

YEAR PROJECT PROGRAMMED FOR CONSTRUCTION: 2028
PROJECTED LETTING DATE: 2028

TRAFFIC ASSIGNMENT:

	BASE YEAR		DESIGN YEAR					DESIGN ROADWAY % TRUCKS		DESIGN AVERAGE DAILY LOADS	
	AADT	YEAR	AADT	DHV	%	YEAR	DIR.DIST.	DHV	AADT	FLEX	RIGID
[1]	47,190	2028	64,600	5,584	8	2048	55-45	23	35		
[2]	6,630	2028	14,890	1,621	11	2048	55-45	9	14		

REQUESTED BY: NAME TY TUCKER DATE 5/8/23
DIVISION S.T.I.D.
ADDRESS 1000 J. K. POLK BUILDING
NASHVILLE TN 37243

REVIEWED BY: RANDY BOGUSKIE Randy Boguskie DATE 7/12/2023
TRANSPORTATION MANAGER 1
SUITE 1000, JAMES K. POLK BUILDING

APPROVED BY: TONY ARMSTRONG Tony Armstrong DATE 7/12/2023
TRANSPORTATION MANAGER 2
SUITE 1000, JAMES K. POLK BUILDING

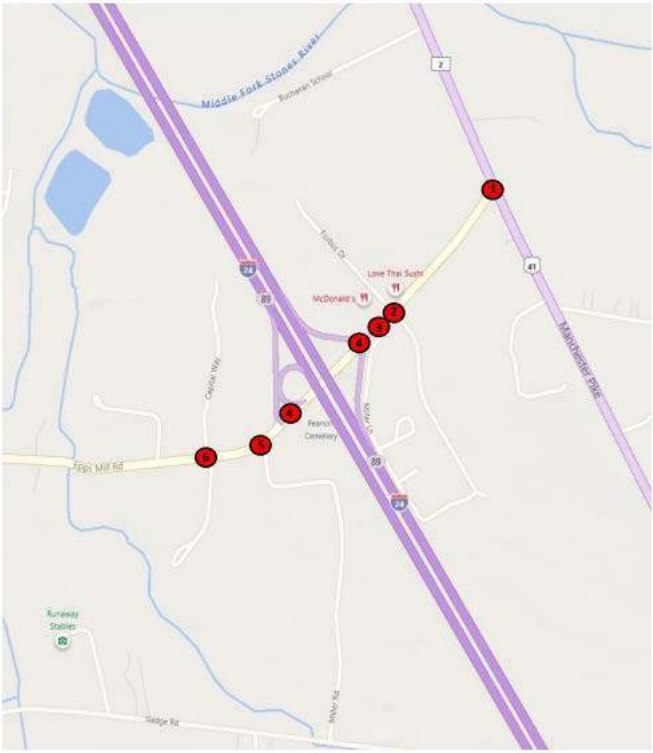
COMMENTS:

FURNISH THE 2028-2048 AADT's AND DHV's.

THIS TRAFFIC IS BASED ON 2022 CYCLE COUNTS AND [8] 8 HOUR TURNING MOVEMENT COUNTS [JUNE 2023]. THE DESIGN YEAR TRAFFIC IS BASED ON THE AVERAGE GROWTH RATE FROM THE NASHVILLE MPO COMPUTER ASSIGNMENT MODEL. AADT's AND BOTH YEAR DHV's ARE INCLUDED.
THIS TRAFFIC REVISES THE PREVIOUS PROJECT DATED JUNE 16, 2023.

DHV'S ARE NOT REQUIRED FOR SIDE ROADS LESS THAN 1000 AADT.

NOTE: FOR BRIDGE REPLACEMENT PROJECTS, ADLs ARE NOT REQUIRED FOR ADTs OF 1000 OR LESS AND PERCENTAGE OF TRUCKS OF 7% OR LESS.
SEE ATTACHMENTS FOR TURNING MOVEMENTS AND/OR OTHER DETAILS. (REV. 6/9/21)



Rutherford County

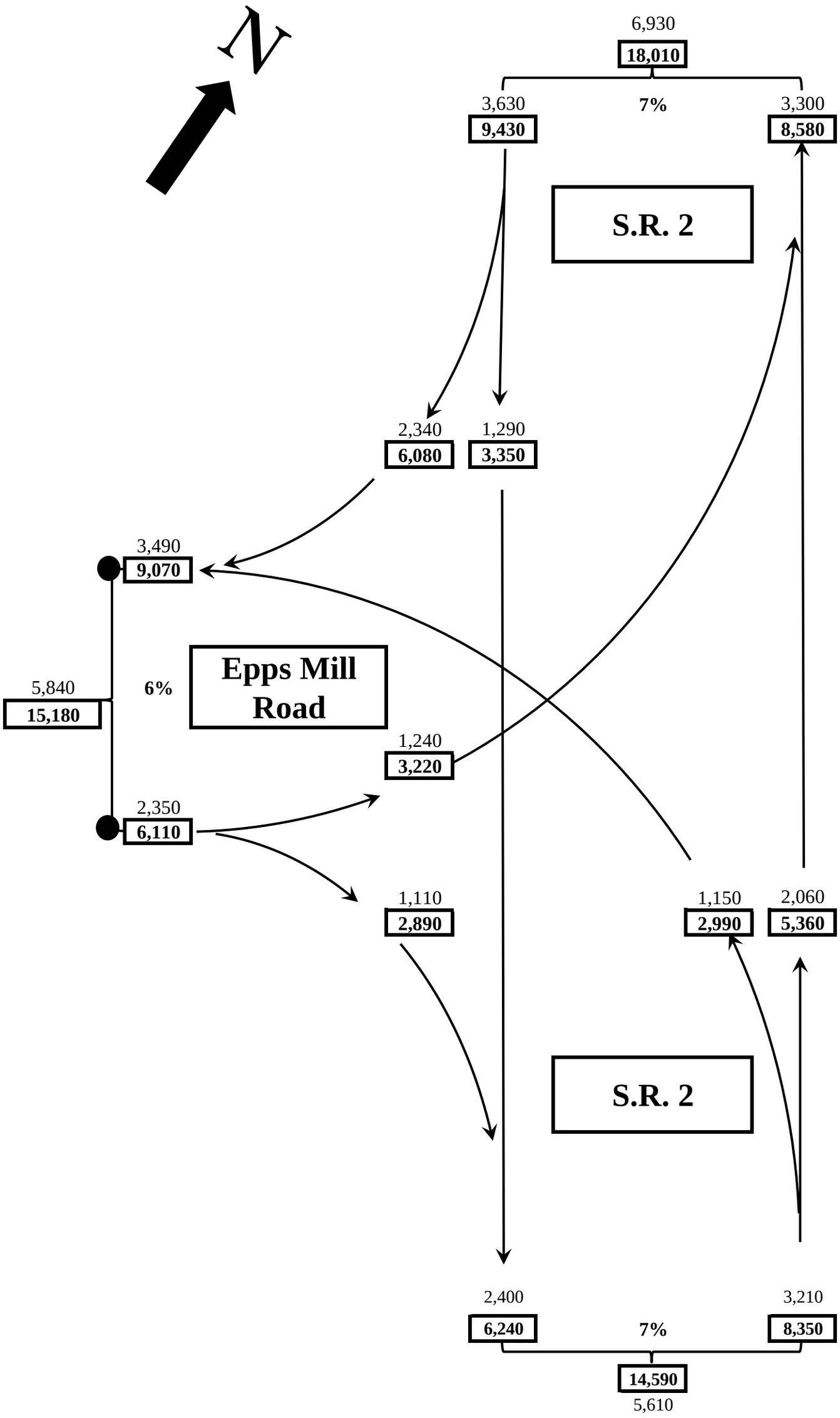
Epps Mill Road

From S.R. 2 to West of Capital Way

[Includes I-24 Interchange]

AADT

1



Rutherford County

Epps Mill Road @ S.R. 2

Legend:

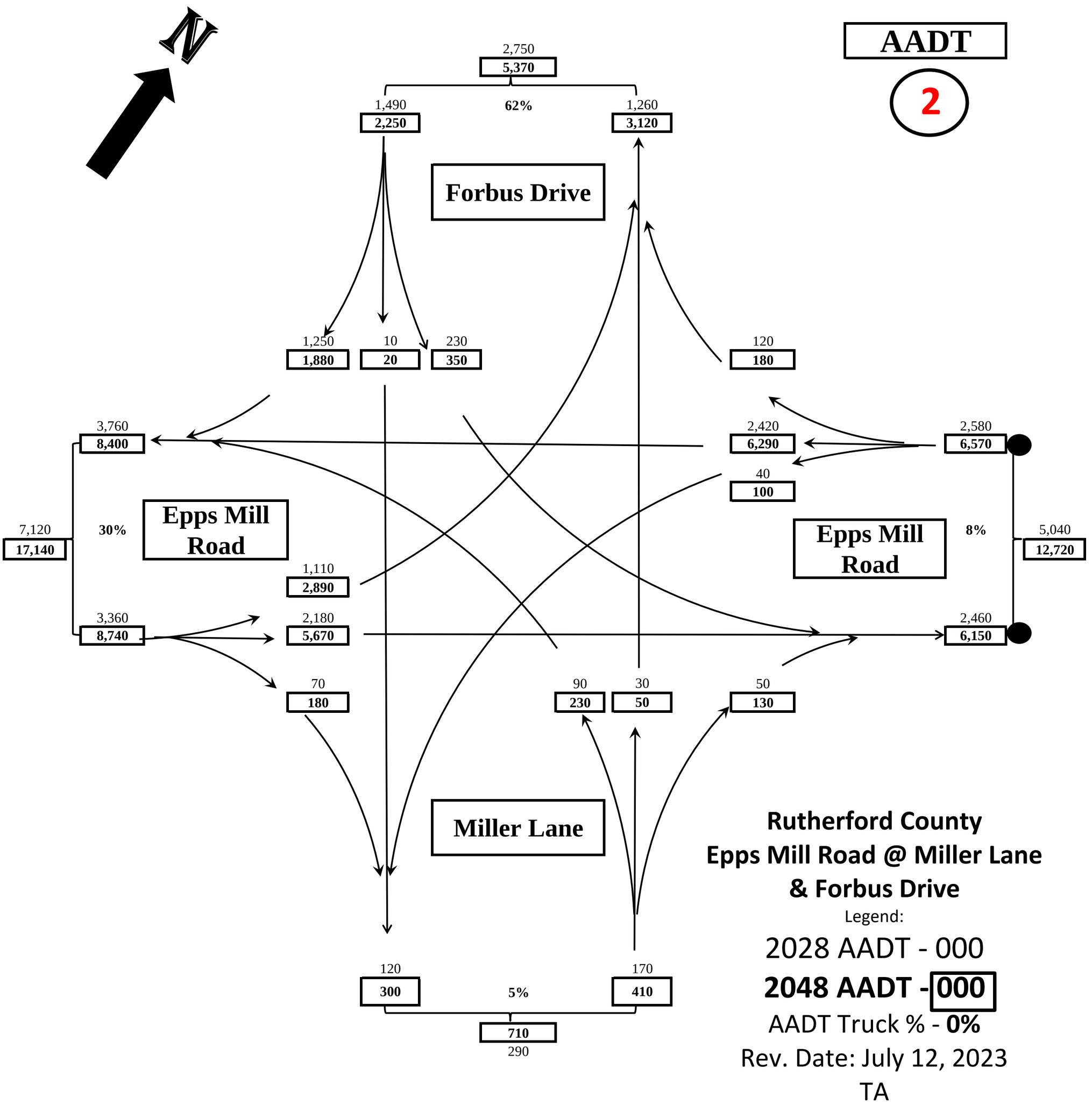
2028 AADT - 000

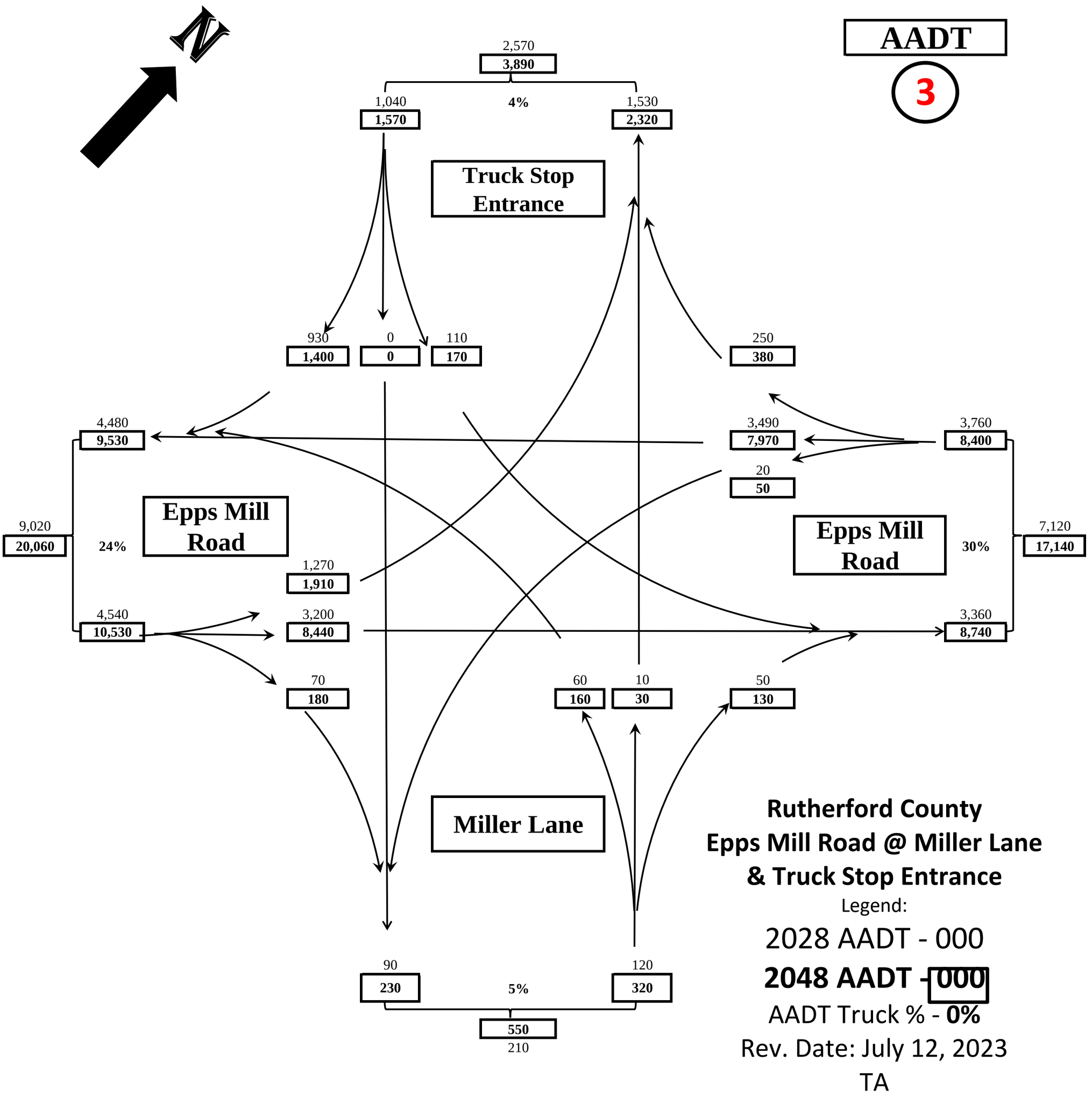
2048 AADT - 000

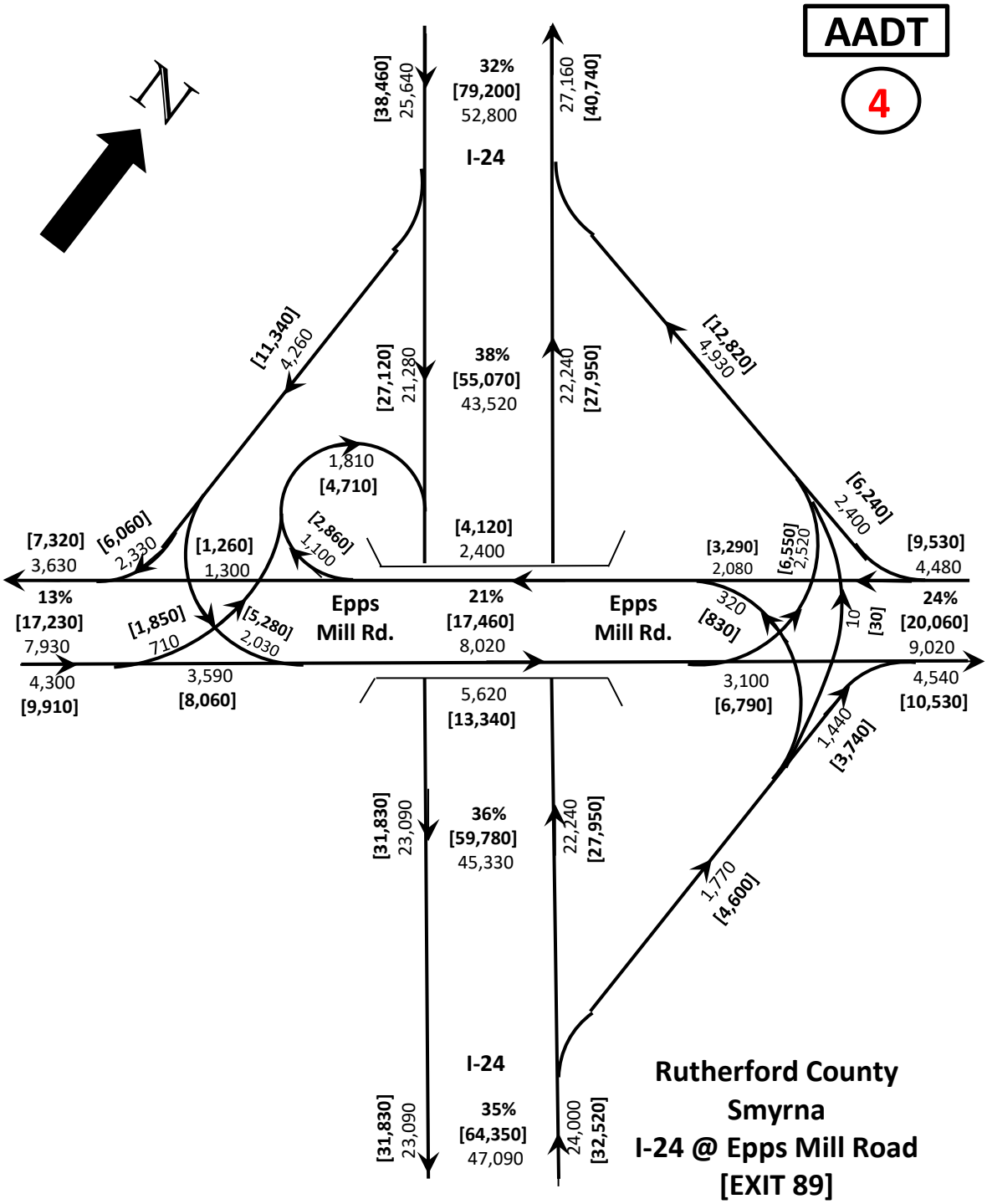
AADT Truck % - **0%**

Date: June 15, 2023

TA


N
AADT
2
2,750
5,370
1,490
2,250
62%
1,260
3,120
Forbus Drive
1,250
1,880
10
20
230
350
120
180
3,760
8,400
2,420
6,290
2,580
6,570
40
100
7,120
17,140
30%
Epps Mill Road
Epps Mill Road
8%
5,040
12,720
1,110
2,890
3,360
8,740
2,180
5,670
2,460
6,150
70
180
90
230
30
50
50
130
Miller Lane
120
300
5%
170
410
710
290
Rutherford County
Epps Mill Road @ Miller Lane
& Forbus Drive
Legend:
2028 AADT - 000
2048 AADT - 000
AADT Truck % - 0%
Rev. Date: July 12, 2023
TA


N
AADT
3
2,570
3,890
1,040
1,570
4%
1,530
2,320
Truck Stop Entrance
930
1,400
0
0
110
170
250
380
4,480
9,530
3,490
7,970
3,760
8,400
20
50
9,020
20,060
24%
Epps Mill Road
Epps Mill Road
30%
7,120
17,140
1,270
1,910
4,540
10,530
3,200
8,440
3,360
8,740
70
180
60
160
10
30
50
130
Miller Lane
90
230
5%
120
320
550
210
Rutherford County
Epps Mill Road @ Miller Lane
& Truck Stop Entrance
Legend:
2028 AADT - 000
2048 AADT - 000
AADT Truck % - 0%
Rev. Date: July 12, 2023
TA



Rutherford County
Smyrna
I-24 @ Epps Mill Road
[EXIT 89]

Legend:

2028 AADT - 000

2048 AADT - [000]

AADT Truck % - **0%**

Rev. Date: July 12, 2023

TA

N

AADT

5

2,400
4,120
3,420
2,130
7,320
3,630
1,500
3,900
Epps Mill Road
5,370
10,570
7%
Epps Mill Road
13%
7,930
17,230
2,970
6,450
2,570
5,410
4,300
9,910
400
1,040
270
700
1,730
4,500
Miller Lane
1,900
4,940
23%
2,000
5,200
10,140
3,900

Rutherford County
Epps Mill Road
@ Miller Lane

Legend:

2028 AADT - 000

2048 AADT - 000

AADT Truck % - **0%**

Rev. Date: July 12, 2023

TA

N

AADT

6

830
2,180

440
1,170

38%

390
1,010

Capital Way

60
160

10
50

370
960

320
830

2,070
3,270

1,890
2,800

2,400
4,120

190
490

4,680
8,790

5%

Epps Mill Road

Epps Mill Road

7%

5,370
10,570

50
130

2,610
5,520

2,450
5,100

2,970
6,450

110
290

120
310

20
50

150
390

Dollar General Entrance

310
830

4%

290
750

1,580

600

Rutherford County
Epps Mill Road @ Capital Way
& Dollar General Entrance

Legend:

2028 AADT - 000

2048 AADT - 000

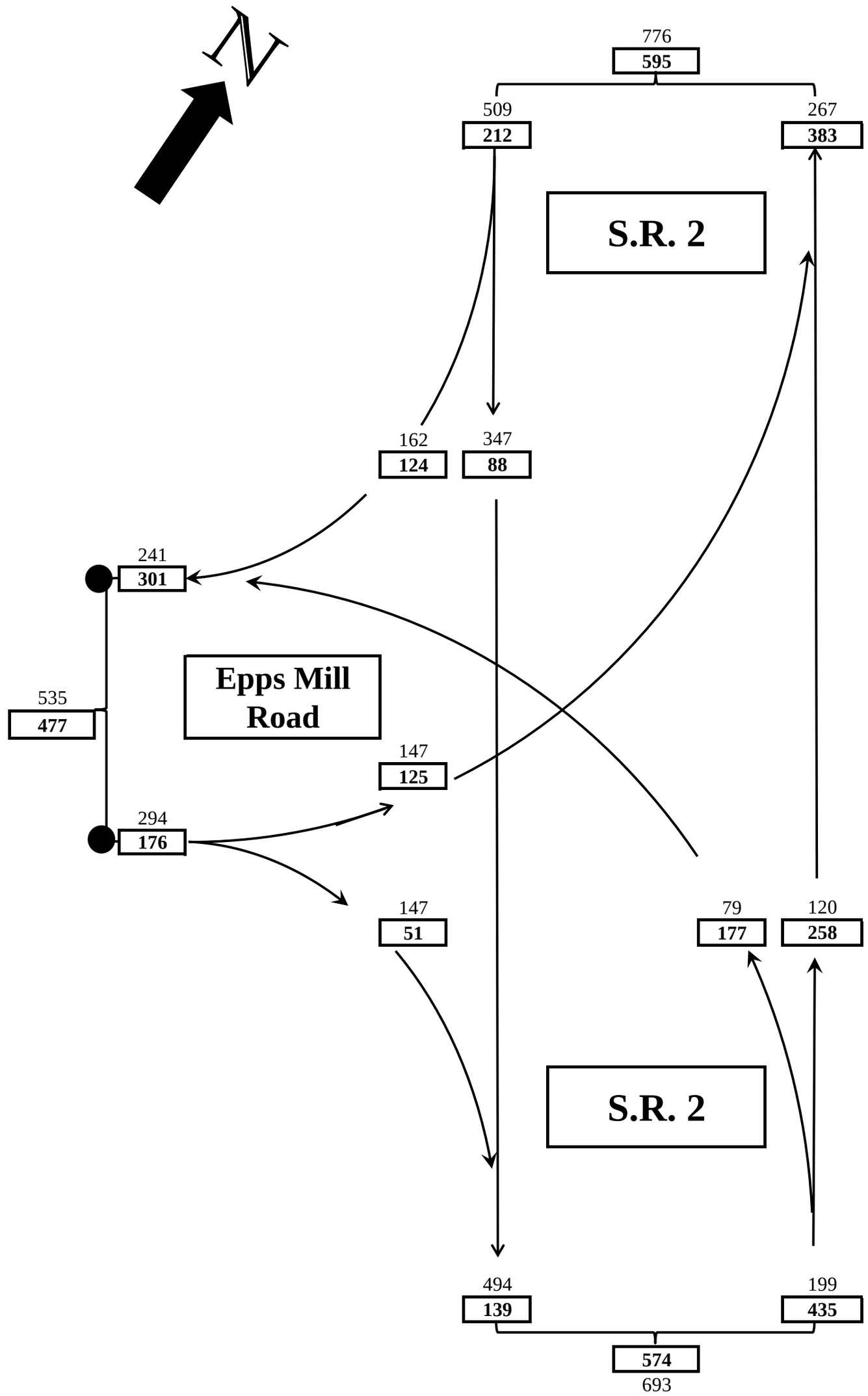
AADT Truck % - **0%**

Rev. Date: July 12, 2023

TA

2028 DHV

1



Rutherford County
Epps Mill Road @ S.R. 2

2028 DHV

PM

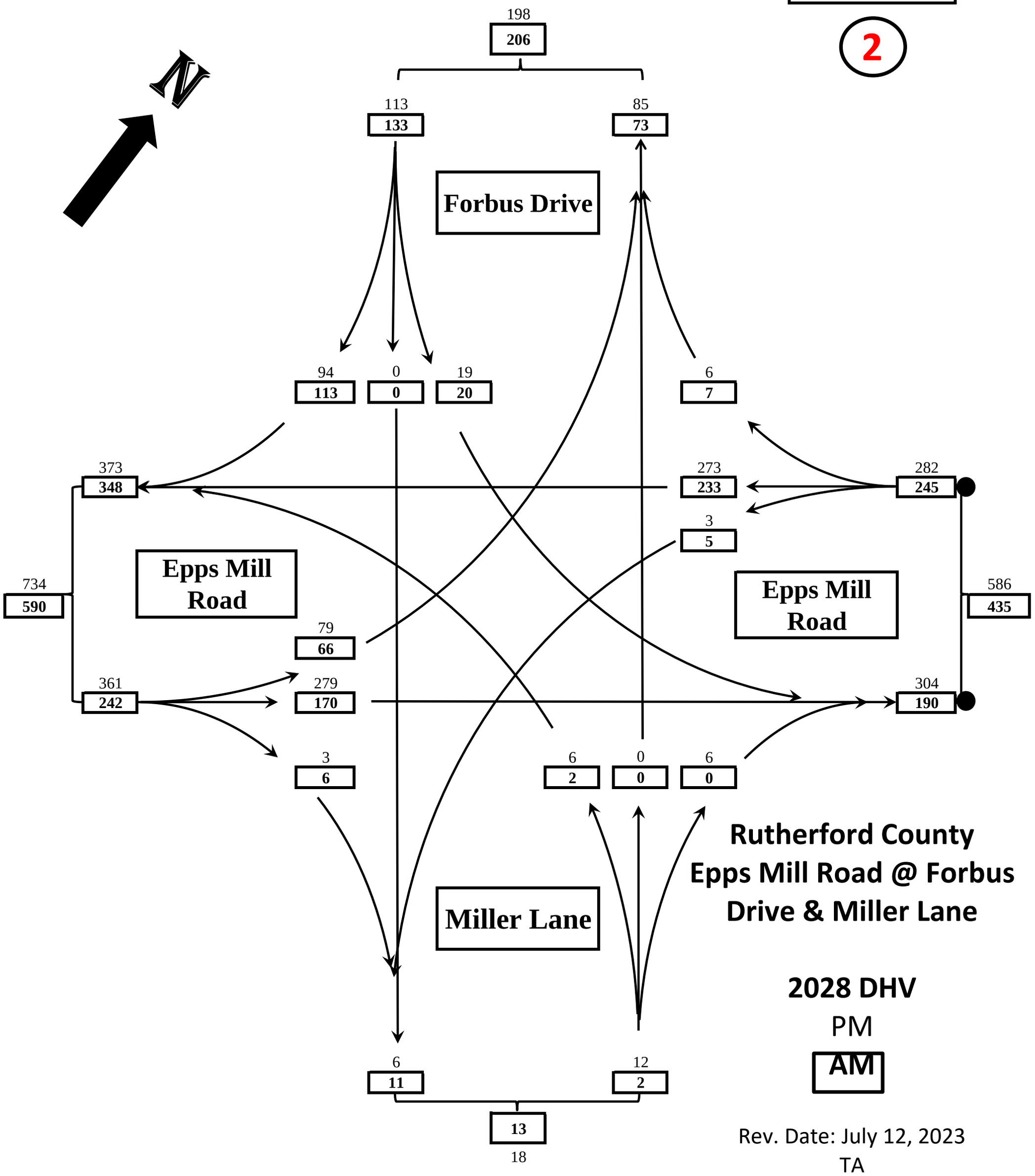
AM

Date: June 15, 2023

TA

2028 DHV

2



Rutherford County
Epps Mill Road @ Forbus Drive & Miller Lane

2028 DHV

PM

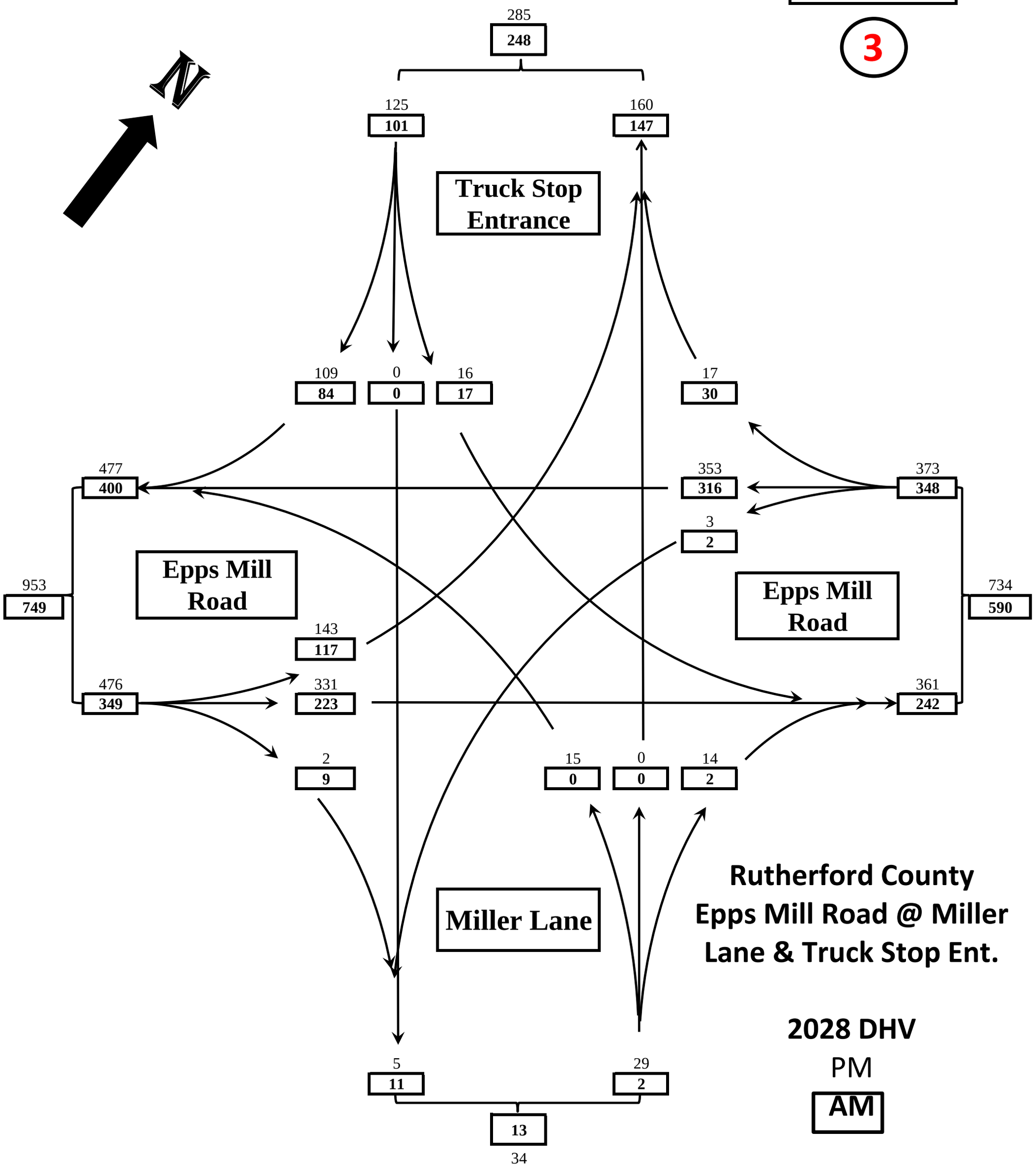
AM

Rev. Date: July 12, 2023

TA

2028 DHV

3



Rutherford County
Epps Mill Road @ Miller Lane & Truck Stop Ent.

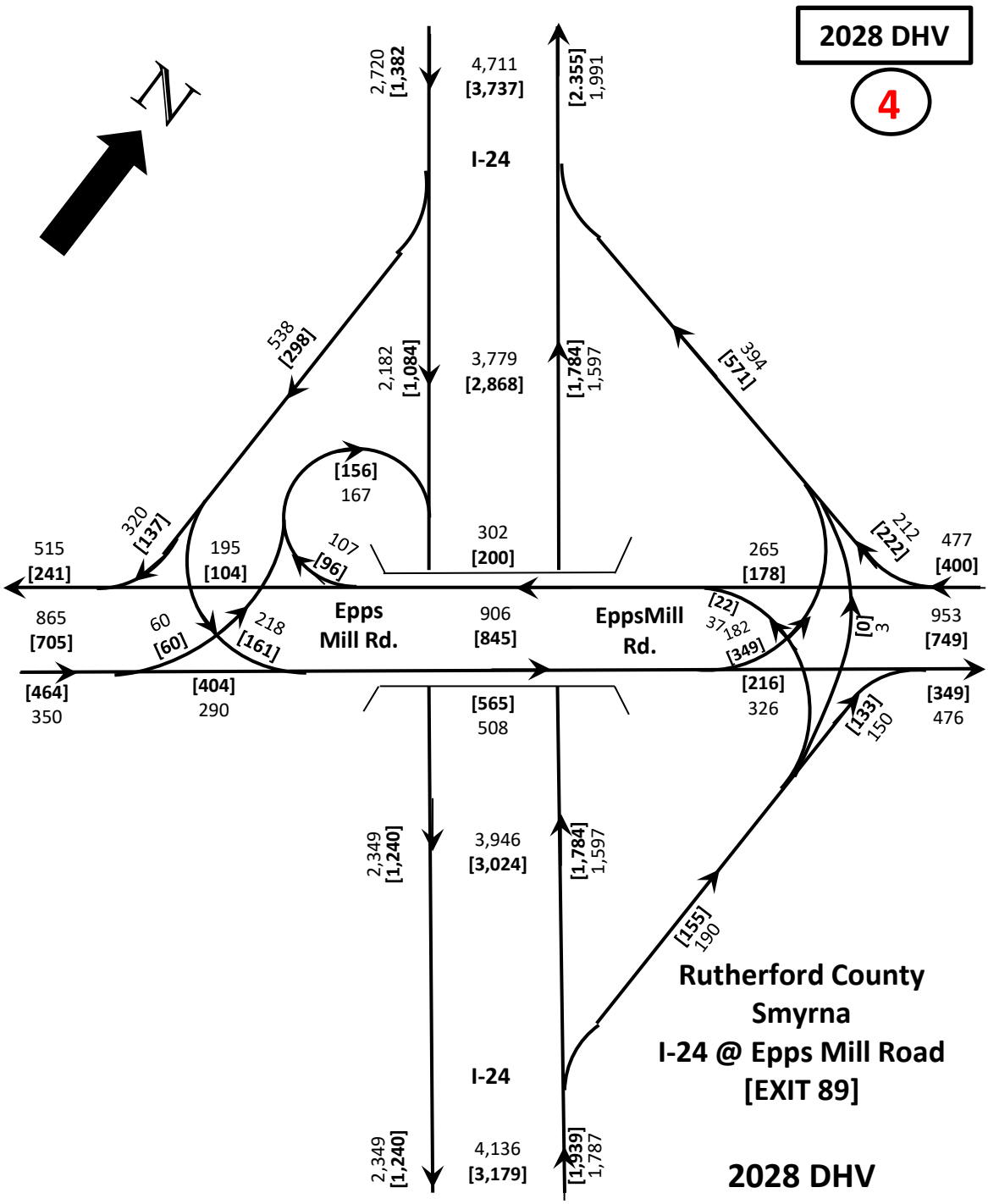
2028 DHV

PM

AM

Rev. Date: July 12, 2023

TA



Rutherford County
Smyrna
I-24 @ Epps Mill Road
[EXIT 89]

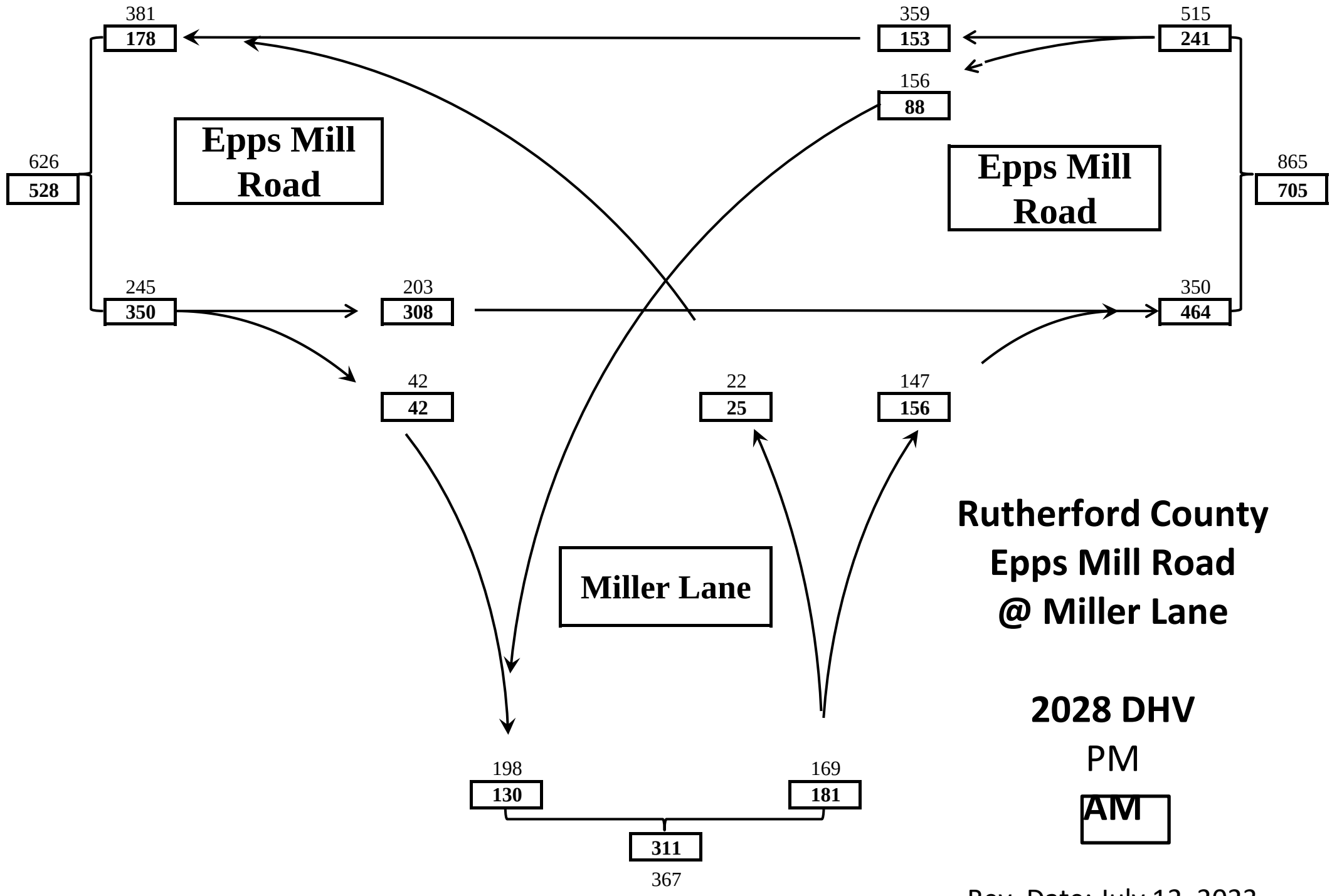
2028 DHV
PM
[AM]

Rev. Date: July 12, 2023
TA

N

2028 DHV

5



Rutherford County
Epps Mill Road
@ Miller Lane

2028 DHV

PM

AM

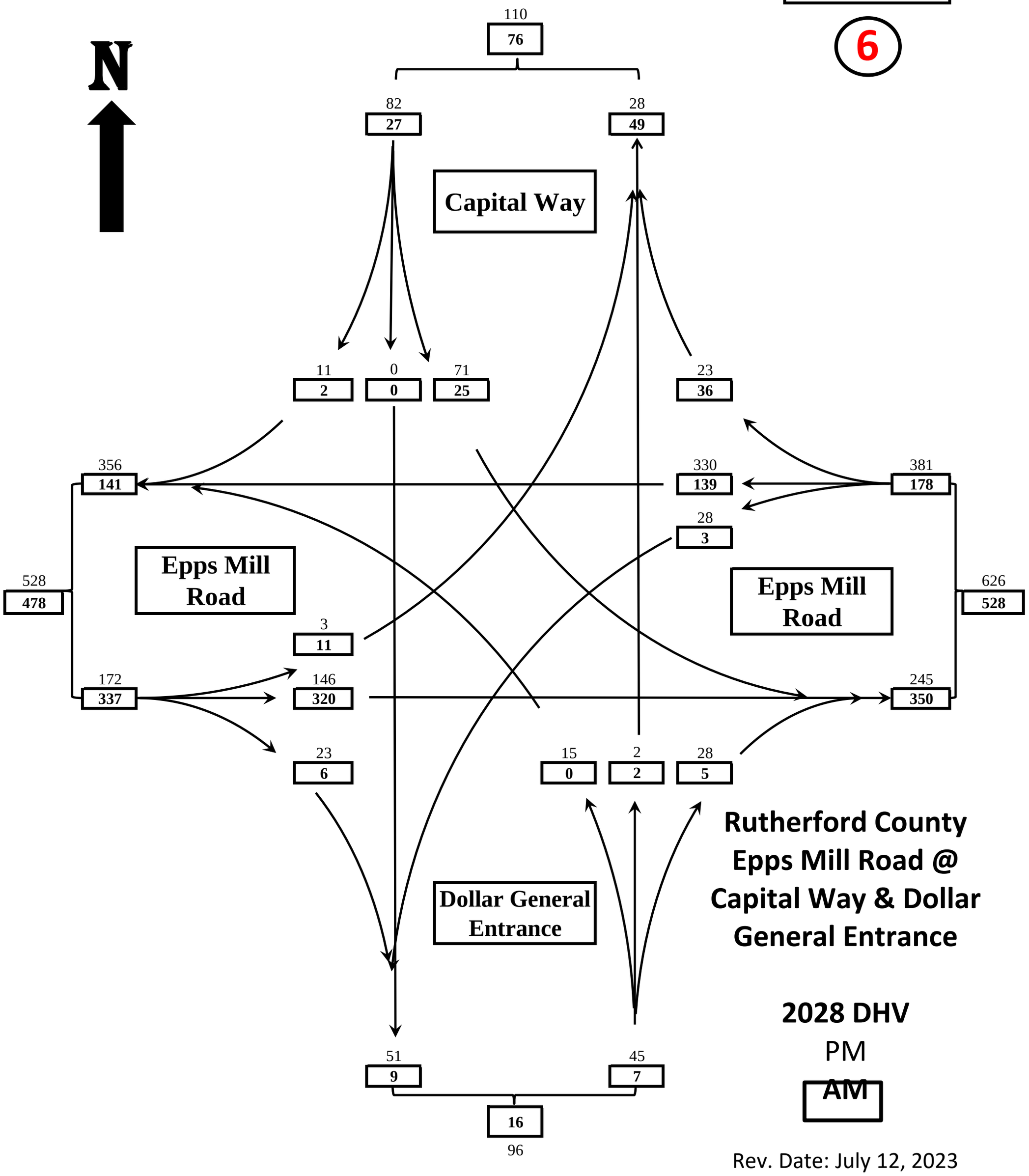
Rev. Date: July 12, 2023

TA

2028 DHV

6

N



2028 DHV

PM

AM

Rev. Date: July 12, 2023

TA

2048 DHV

1

N

2,017
1,547

1,323
551

694
996

S.R. 2

421
322

902
229

626
652

Epps Mill Road

1,390
1,110

382
325

764
458

382
133

205
330

312
671

S.R. 2

1,284
362

517
1,001

1,363
1,801

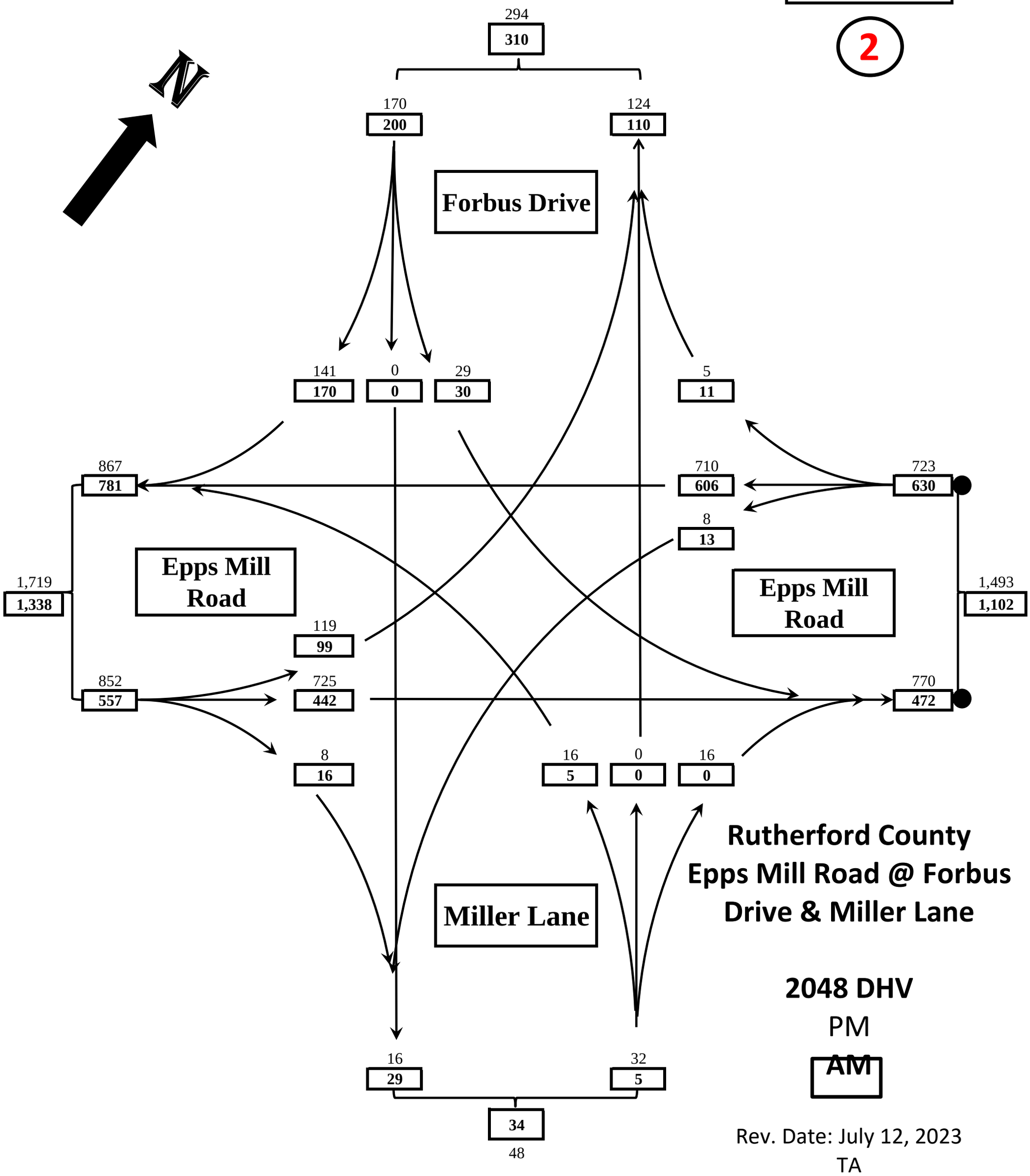
Rutherford County
Epps Mill Road @ S.R. 2

2048 DHV
PM
AM

Date: June 15, 2023
TA

2048 DHV

2

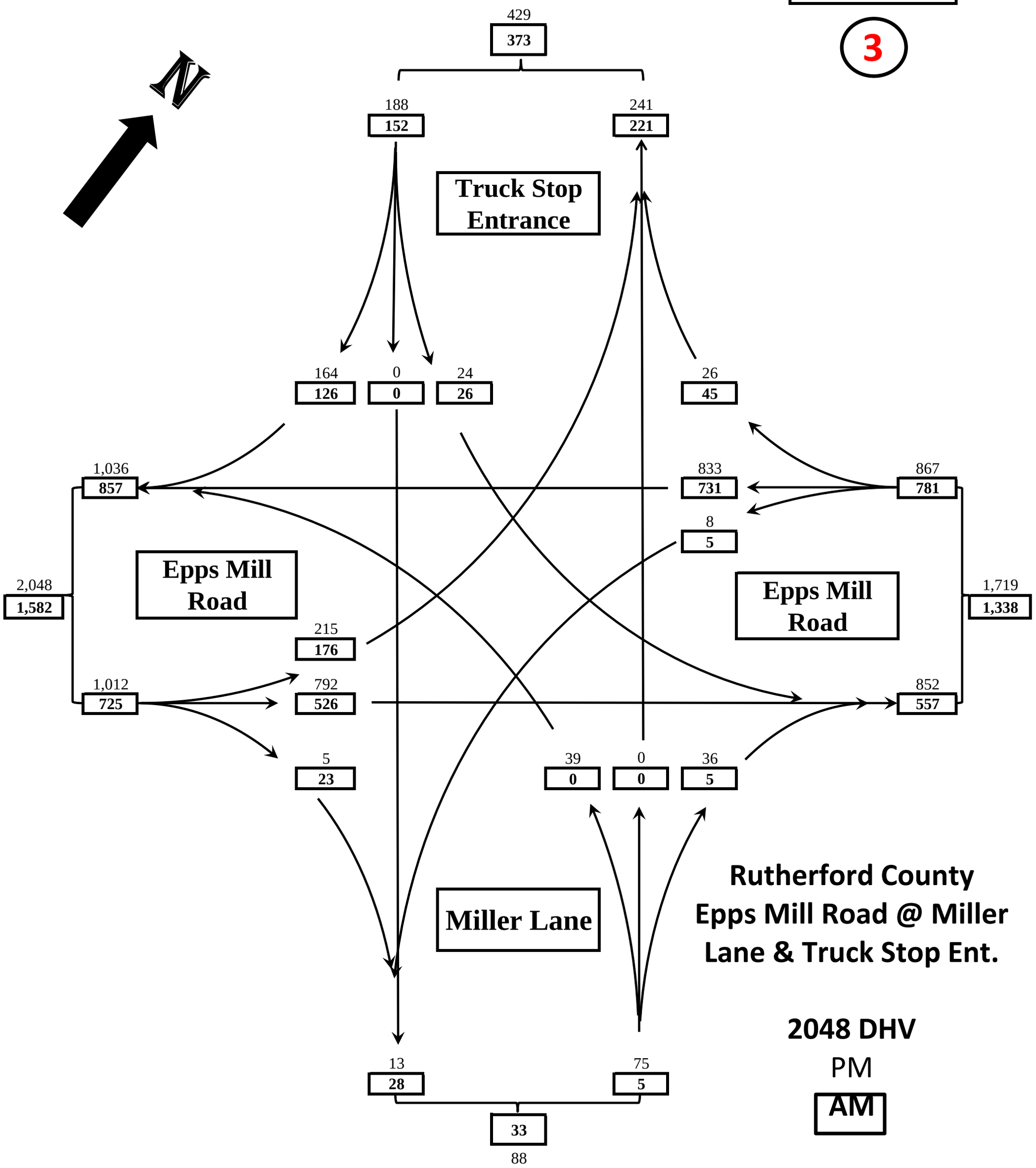


Rev. Date: July 12, 2023

TA

2048 DHV

3



Rutherford County
Epps Mill Road @ Miller Lane & Truck Stop Ent.

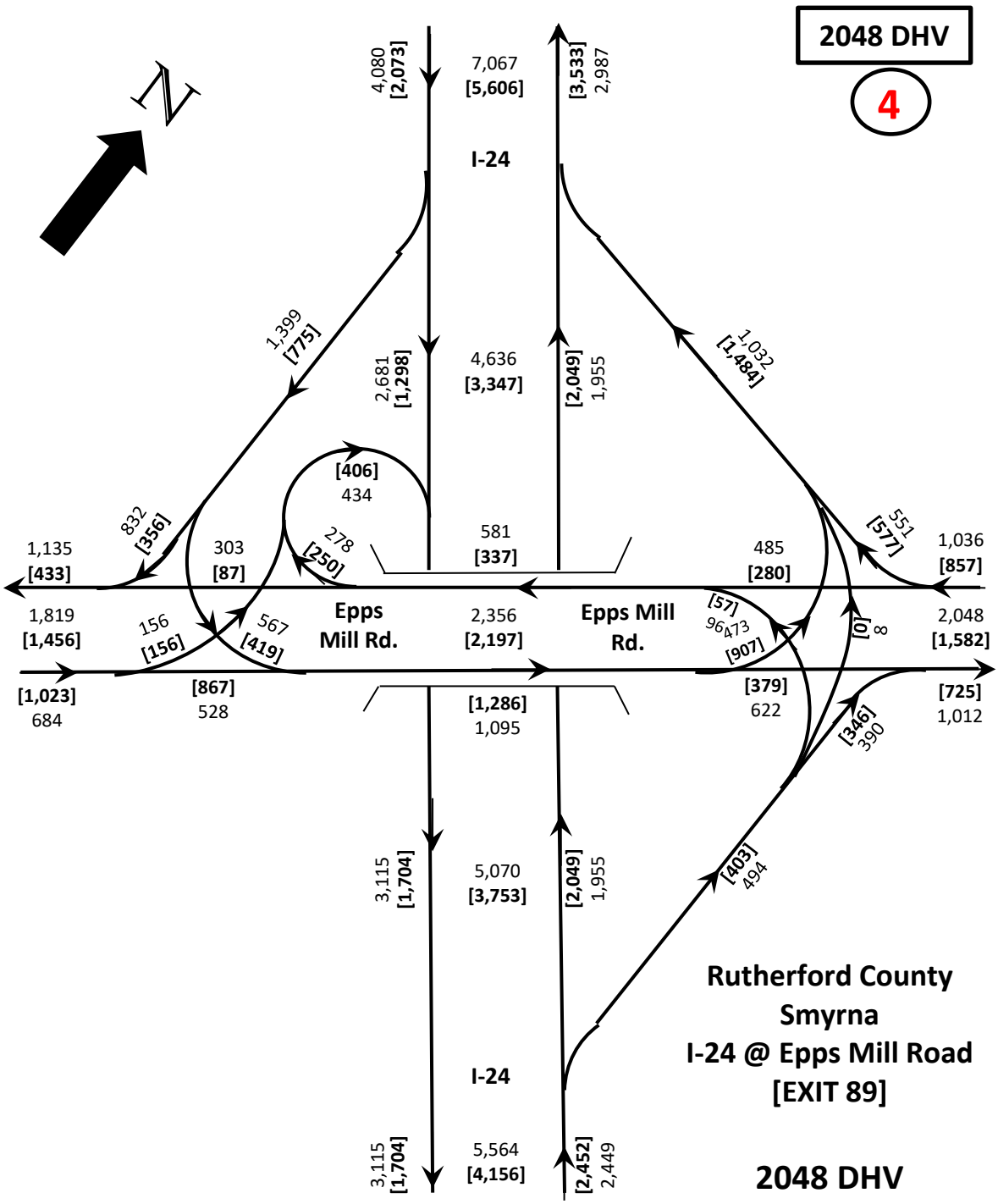
2048 DHV

PM

AM

Rev. Date: July 12, 2023

TA



Rutherford County
Smyrna
I-24 @ Epps Mill Road
[EXIT 89]

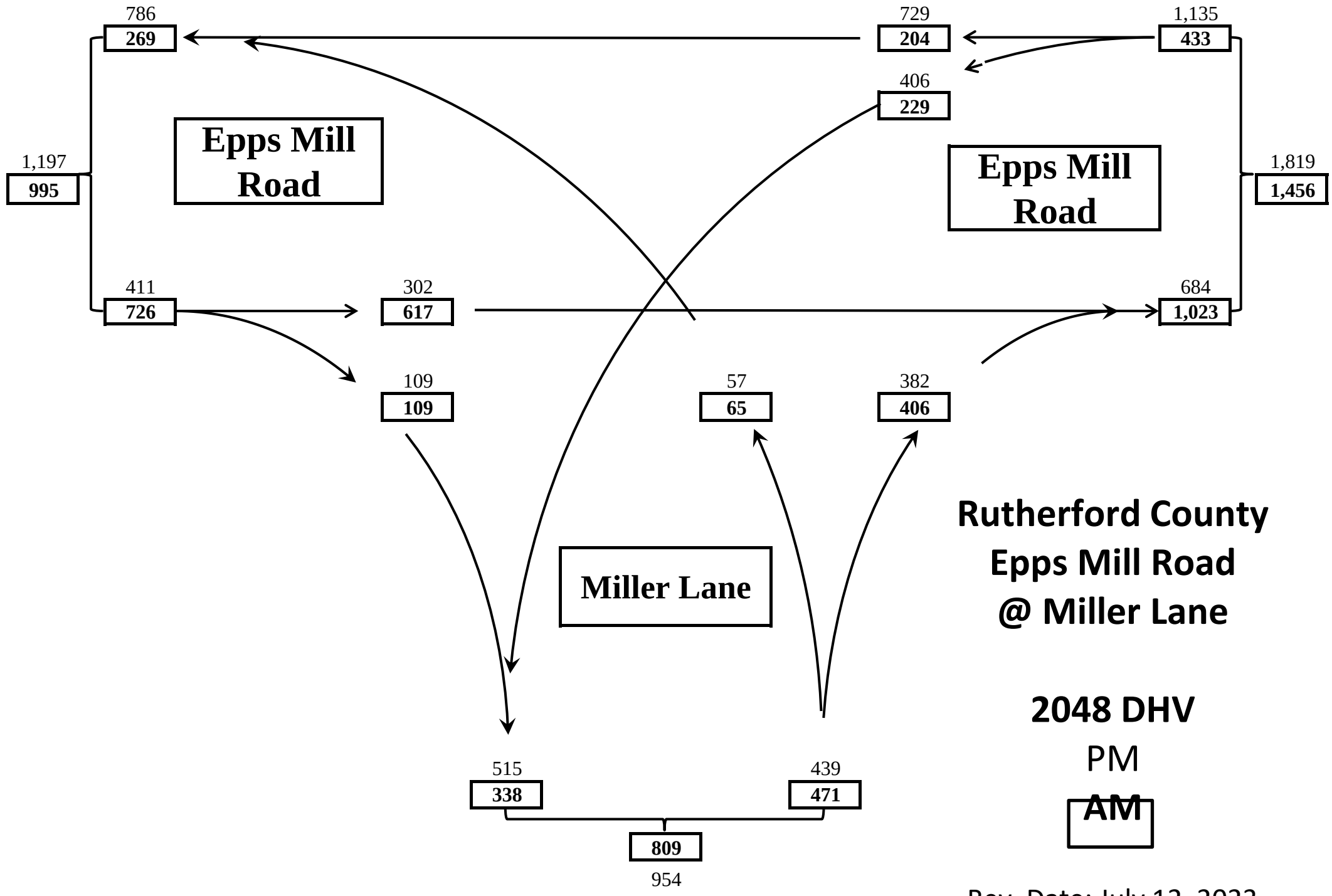
2048 DHV
PM
[AM]

Rev. Date: July 12, 2023
TA

N

2048 DHV

5



Rutherford County
Epps Mill Road
@ Miller Lane

2048 DHV

PM

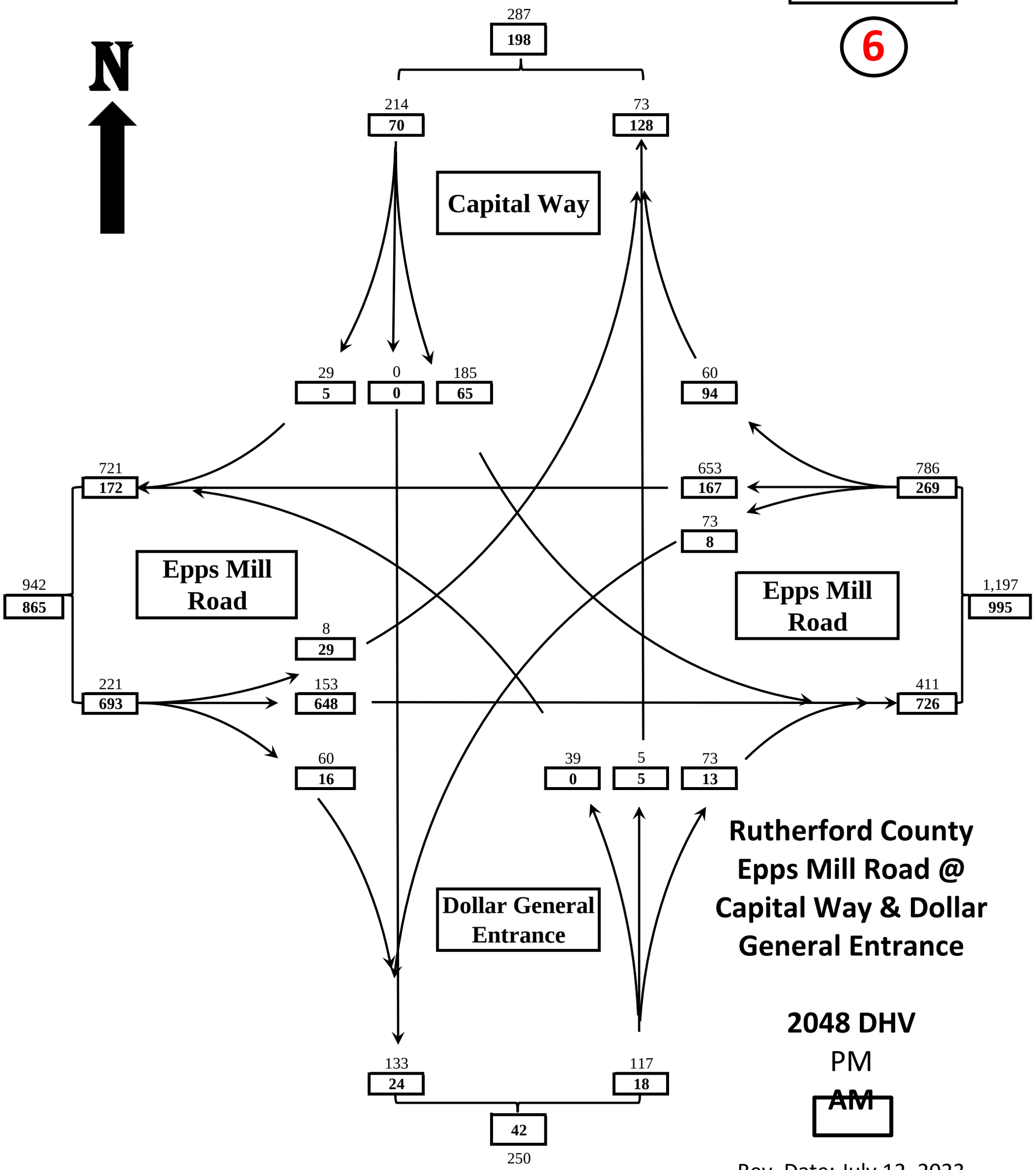
AM

Rev. Date: July 12, 2023
TA

2048 DHV

6

N



Rutherford County
Epps Mill Road @ Capital Way & Dollar General Entrance

2048 DHV

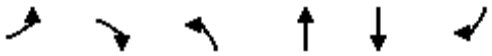
PM

~~AM~~

Rev. Date: July 12, 2023

TA

SYNCHRO/SIMTRAFFIC RESULTS



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	125	51	177	258	88	124
Future Volume (vph)	125	51	177	258	88	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.961				0.921	
Flt Protected	0.966			0.980		
Satd. Flow (prot)	1712	0	0	1808	1699	0
Flt Permitted	0.966			0.980		
Satd. Flow (perm)	1712	0	0	1808	1699	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	1662			3584	2221	
Travel Time (s)	37.8			81.5	50.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	125	51	177	258	88	124
Shared Lane Traffic (%)						
Lane Group Flow (vph)	176	0	0	435	212	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 55.6%		ICU Level of Service B	
Analysis Period (min) 15			

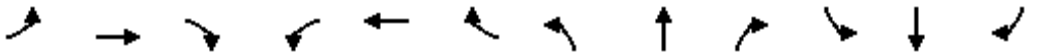
Intersection	
Int Delay, s/veh	6.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	125	51	177	258	88	124
Future Vol, veh/h	125	51	177	258	88	124
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	Free	-	Free
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	125	51	177	258	88	124

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	700	88	88	0	-	0
Stage 1	88	-	-	-	-	-
Stage 2	612	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	404	968	1501	-	-	0
Stage 1	933	-	-	-	-	0
Stage 2	539	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	348	968	1501	-	-	-
Mov Cap-2 Maneuver	348	-	-	-	-	-
Stage 1	804	-	-	-	-	-
Stage 2	539	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19.2	3.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT
Capacity (veh/h)	1501	-	427	-
HCM Lane V/C Ratio	0.118	-	0.412	-
HCM Control Delay (s)	7.7	0	19.2	-
HCM Lane LOS	A	A	C	-
HCM 95th %tile Q(veh)	0.4	-	2	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	170	6	5	233	7	2	0	0	20	0	113
Future Volume (vph)	66	170	6	5	233	7	2	0	0	20	0	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75		0	0		0	0		75	0		0
Storage Lanes	1		0	0		0	1		0	0		0
Taper Length (ft)	0			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995			0.996						0.885	
Flt Protected	0.950				0.999		0.950				0.993	
Satd. Flow (prot)	1752	1835	0	0	1835	0	1752	1845	0	0	1621	0
Flt Permitted	0.950				0.999		0.950				0.993	
Satd. Flow (perm)	1752	1835	0	0	1835	0	1752	1845	0	0	1621	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		120			1662			1121			1094	
Travel Time (s)		2.7			37.8			25.5			24.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	66	170	6	5	233	7	2	0	0	20	0	113
Shared Lane Traffic (%)												
Lane Group Flow (vph)	66	176	0	0	245	0	2	0	0	0	133	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	47.0%	ICU Level of Service	A
Analysis Period (min)	15		

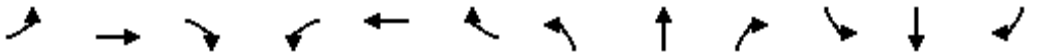
Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	66	170	6	5	233	7	2	0	0	20	0	113
Future Vol, veh/h	66	170	6	5	233	7	2	0	0	20	0	113
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	75	-	-	-	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	66	170	6	5	233	7	2	0	0	20	0	113

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	240	0	0	176	0	0	608	555	173	552	555	237
Stage 1	-	-	-	-	-	-	305	305	-	247	247	-
Stage 2	-	-	-	-	-	-	303	250	-	305	308	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1321	-	-	1394	-	-	406	439	868	443	439	800
Stage 1	-	-	-	-	-	-	702	660	-	755	700	-
Stage 2	-	-	-	-	-	-	704	698	-	702	658	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1321	-	-	1394	-	-	334	415	868	425	415	800
Mov Cap-2 Maneuver	-	-	-	-	-	-	334	415	-	425	415	-
Stage 1	-	-	-	-	-	-	667	627	-	717	697	-
Stage 2	-	-	-	-	-	-	602	695	-	667	625	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.1	0.2	15.8	11.3
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	334	-	1321	-	-	1394	-	-	706
HCM Lane V/C Ratio	0.006	-	0.05	-	-	0.004	-	-	0.188
HCM Control Delay (s)	15.8	0	7.9	-	-	7.6	0	-	11.3
HCM Lane LOS	C	A	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	0	-	0.2	-	-	0	-	-	0.7



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	117	223	9	2	316	30	0	0	2	17	0	84
Future Volume (vph)	117	223	9	2	316	30	0	0	2	17	0	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	75		0	0		0
Storage Lanes	1		0	0		0	1		0	0		0
Taper Length (ft)	50			25			100			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.994			0.988			0.850			0.888	
Flt Protected	0.950										0.992	
Satd. Flow (prot)	1752	1834	0	0	1823	0	1845	1568	0	0	1625	0
Flt Permitted	0.950										0.992	
Satd. Flow (perm)	1752	1834	0	0	1823	0	1845	1568	0	0	1625	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		379			120			1105			1093	
Travel Time (s)		8.6			2.7			25.1			24.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	117	223	9	2	316	30	0	0	2	17	0	84
Shared Lane Traffic (%)												
Lane Group Flow (vph)	117	232	0	0	348	0	0	2	0	0	101	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 53.6%		ICU Level of Service A	
Analysis Period (min) 15			

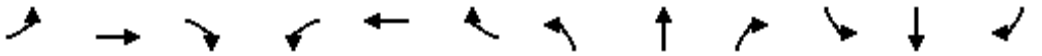
Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	117	223	9	2	316	30	0	0	2	17	0	84
Future Vol, veh/h	117	223	9	2	316	30	0	0	2	17	0	84
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	-	-	-	75	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	117	223	9	2	316	30	0	0	2	17	0	84

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	346	0	0	232	0	0	839	812	228	798	801	331
Stage 1	-	-	-	-	-	-	462	462	-	335	335	-
Stage 2	-	-	-	-	-	-	377	350	-	463	466	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1207	-	-	1330	-	-	284	312	809	303	317	708
Stage 1	-	-	-	-	-	-	578	563	-	677	641	-
Stage 2	-	-	-	-	-	-	642	631	-	577	561	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1207	-	-	1330	-	-	231	281	809	279	286	708
Mov Cap-2 Maneuver	-	-	-	-	-	-	231	281	-	279	286	-
Stage 1	-	-	-	-	-	-	522	508	-	611	640	-
Stage 2	-	-	-	-	-	-	565	630	-	520	507	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.8	0	9.5	12.8
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	809	1207	-	-	1330	-	-	562
HCM Lane V/C Ratio	-	0.002	0.097	-	-	0.002	-	-	0.18
HCM Control Delay (s)	0	9.5	8.3	-	-	7.7	0	-	12.8
HCM Lane LOS	A	A	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	-	0	0.3	-	-	0	-	-	0.7



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	349	216	0	0	178	222	22	0	133	0	0	0
Future Volume (vph)	349	216	0	0	178	222	22	0	133	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	50		0	0		0
Storage Lanes	0		0	0		0	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.925				0.850			
Flt Protected		0.970						0.950				
Satd. Flow (prot)	0	1789	0	0	1706	0	0	1752	1568	0	0	0
Flt Permitted		0.970						0.950				
Satd. Flow (perm)	0	1789	0	0	1706	0	0	1752	1568	0	0	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		980			379			1085			1070	
Travel Time (s)		22.3			8.6			24.7			24.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	349	216	0	0	178	222	22	0	133	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	565	0	0	400	0	0	22	133	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	67.0%	ICU Level of Service	C
Analysis Period (min)	15		

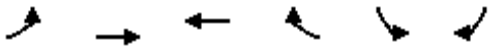
Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	349	216	0	0	178	222	22	0	133	0	0	0
Future Vol, veh/h	349	216	0	0	178	222	22	0	133	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	Yield	-	-	None
Storage Length	-	-	-	-	-	-	50	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	349	216	0	0	178	222	22	0	133	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	178	0	-	-	-	0	1092	1092	216
Stage 1	-	-	-	-	-	-	914	914	-
Stage 2	-	-	-	-	-	-	178	178	-
Critical Hdwy	4.13	-	-	-	-	-	6.43	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	5.43	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.43	5.53	-
Follow-up Hdwy	2.227	-	-	-	-	-	3.527	4.027	3.327
Pot Cap-1 Maneuver	1392	-	0	0	-	-	236	214	821
Stage 1	-	-	0	0	-	-	389	351	-
Stage 2	-	-	0	0	-	-	850	750	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1392	-	-	-	-	-	169	0	821
Mov Cap-2 Maneuver	-	-	-	-	-	-	169	0	-
Stage 1	-	-	-	-	-	-	278	0	-
Stage 2	-	-	-	-	-	-	850	0	-

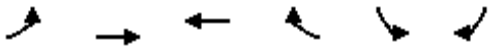
Approach	EB	WB	NB
HCM Control Delay, s	5.2	0	12.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT	WBR
Capacity (veh/h)	169	821	1392	-	-	-
HCM Lane V/C Ratio	0.13	0.162	0.251	-	-	-
HCM Control Delay (s)	29.5	10.2	8.4	0	-	-
HCM Lane LOS	D	B	A	A	-	-
HCM 95th %tile Q(veh)	0.4	0.6	1	-	-	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	60	565	104	96	0	0
Future Volume (vph)	60	565	104	96	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.935			
Flt Protected		0.995				
Satd. Flow (prot)	0	1835	1725	0	0	0
Flt Permitted		0.995				
Satd. Flow (perm)	0	1835	1725	0	0	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		216	980		814	
Travel Time (s)		4.9	22.3		18.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	60	565	104	96	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	625	200	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 51.1%		ICU Level of Service A	
Analysis Period (min) 15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	464	104	0	161	137
Future Volume (vph)	0	464	104	0	161	137
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			0	50	0
Storage Lanes	0			0	1	1
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	1845	1845	0	1752	1568
Flt Permitted					0.950	
Satd. Flow (perm)	0	1845	1845	0	1752	1568
Link Speed (mph)		30	30		30	
Link Distance (ft)		218	216		1094	
Travel Time (s)		5.0	4.9		24.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	464	104	0	161	137
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	464	104	0	161	137
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	40.0%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↰	↱
Traffic Vol, veh/h	0	464	104	0	161	137
Future Vol, veh/h	0	464	104	0	161	137
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	50	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	464	104	0	161	137

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	568	104
Stage 1	-	-	-	-	104	-
Stage 2	-	-	-	-	464	-
Critical Hdwy	-	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	0	-	-	0	483	948
Stage 1	0	-	-	0	918	-
Stage 2	0	-	-	0	631	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	483	948
Mov Cap-2 Maneuver	-	-	-	-	483	-
Stage 1	-	-	-	-	918	-
Stage 2	-	-	-	-	631	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	13
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	483	948
HCM Lane V/C Ratio	-	-	0.333	0.145
HCM Control Delay (s)	-	-	16.1	9.4
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	1.4	0.5

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	308	42	88	153	25	156
Future Volume (vph)	308	42	88	153	25	156
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.984				0.884	
Flt Protected				0.982	0.993	
Satd. Flow (prot)	1815	0	0	1811	1619	0
Flt Permitted				0.982	0.993	
Satd. Flow (perm)	1815	0	0	1811	1619	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	594			218	1252	
Travel Time (s)	13.5			5.0	28.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	308	42	88	153	25	156
Shared Lane Traffic (%)						
Lane Group Flow (vph)	350	0	0	241	181	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 52.7%		ICU Level of Service A	
Analysis Period (min) 15			

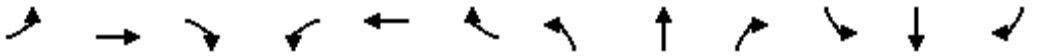
Intersection	
Int Delay, s/veh	3.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	308	42	88	153	25	156
Future Vol, veh/h	308	42	88	153	25	156
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	308	42	88	153	25	156

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	350	0	658	329
Stage 1	-	-	-	-	329	-
Stage 2	-	-	-	-	329	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1203	-	428	710
Stage 1	-	-	-	-	727	-
Stage 2	-	-	-	-	727	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1203	-	394	710
Mov Cap-2 Maneuver	-	-	-	-	394	-
Stage 1	-	-	-	-	727	-
Stage 2	-	-	-	-	669	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3	12.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	639	-	-	1203	-
HCM Lane V/C Ratio	0.283	-	-	0.073	-
HCM Control Delay (s)	12.8	-	-	8.2	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1.2	-	-	0.2	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	320	6	3	139	36	0	2	5	25	0	2
Future Volume (vph)	11	320	6	3	139	36	0	2	5	25	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	75		75	0		0	0		0
Storage Lanes	0		0	1		1	0		1	0		0
Taper Length (ft)	25			100			0			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998				0.850			0.850		0.990	
Flt Protected		0.998		0.950							0.956	
Satd. Flow (prot)	0	1837	0	1752	1845	1568	0	1845	1568	0	1746	0
Flt Permitted		0.998		0.950							0.956	
Satd. Flow (perm)	0	1837	0	1752	1845	1568	0	1845	1568	0	1746	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1306			594			1202			1203	
Travel Time (s)		29.7			13.5			27.3			27.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	11	320	6	3	139	36	0	2	5	25	0	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	337	0	3	139	36	0	2	5	0	27	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	41.0%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	320	6	3	139	36	0	2	5	25	0	2
Future Vol, veh/h	11	320	6	3	139	36	0	2	5	25	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	75	-	75	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	11	320	6	3	139	36	0	2	5	25	0	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	175	0	0	326	0	0	509	526	323	494	493	139
Stage 1	-	-	-	-	-	-	345	345	-	145	145	-
Stage 2	-	-	-	-	-	-	164	181	-	349	348	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1395	-	-	1228	-	-	473	455	716	484	476	907
Stage 1	-	-	-	-	-	-	668	634	-	855	775	-
Stage 2	-	-	-	-	-	-	836	748	-	665	632	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1395	-	-	1228	-	-	467	450	716	474	470	907
Mov Cap-2 Maneuver	-	-	-	-	-	-	467	450	-	474	470	-
Stage 1	-	-	-	-	-	-	661	628	-	846	773	-
Stage 2	-	-	-	-	-	-	832	747	-	652	626	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.1	10.9	12.8
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	450	716	1395	-	-	1228	-	-	491
HCM Lane V/C Ratio	0.004	0.007	0.008	-	-	0.002	-	-	0.055
HCM Control Delay (s)	13	10.1	7.6	0	-	7.9	-	-	12.8
HCM Lane LOS	B	B	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0	0	0	-	-	0	-	-	0.2

Intersection: 100: TN-2 (US Hwy-41) & Epps Mill Rd

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	154	161	22
Average Queue (ft)	52	43	3
95th Queue (ft)	102	96	15
Link Distance (ft)	1572	3548	2191
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 200: Forbus Drive & Epps Mill Rd

Movement	EB	EB	WB	NB	SB
Directions Served	L	TR	LTR	L	LTR
Maximum Queue (ft)	38	75	40	24	72
Average Queue (ft)	16	7	2	4	41
95th Queue (ft)	40	41	14	19	66
Link Distance (ft)		52	1572	1076	1059
Upstream Blk Time (%)	0	0			
Queuing Penalty (veh)	0	1			
Storage Bay Dist (ft)	75				
Storage Blk Time (%)	0	0			
Queuing Penalty (veh)	0	0			

Intersection: 300: Miller Ln/Driveway & Epps Mill Rd

Movement	EB	EB	WB	NB	SB
Directions Served	L	TR	LTR	TR	LTR
Maximum Queue (ft)	65	54	52	18	79
Average Queue (ft)	29	4	12	1	44
95th Queue (ft)	51	22	40	6	69
Link Distance (ft)		320	52	1061	1057
Upstream Blk Time (%)			0		
Queuing Penalty (veh)			0		
Storage Bay Dist (ft)	100				
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 400: I-24 WB On Ramp & Epps Mill Rd

Movement	EB	WB	NB	NB
Directions Served	LT	TR	LT	R
Maximum Queue (ft)	111	61	55	56
Average Queue (ft)	52	5	13	2
95th Queue (ft)	88	32	38	18
Link Distance (ft)	908	320		1037
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			50	
Storage Blk Time (%)			3	0
Queuing Penalty (veh)			4	0

Intersection: 500: Epps Mill Rd & I-24 EB On Loop

Movement	EB
Directions Served	LT
Maximum Queue (ft)	53
Average Queue (ft)	4
95th Queue (ft)	24
Link Distance (ft)	157
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 600: Epps Mill Rd & I-24 EB Off Ramp

Movement	SB	SB
Directions Served	L	R
Maximum Queue (ft)	75	127
Average Queue (ft)	42	4
95th Queue (ft)	71	42
Link Distance (ft)		1034
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	50	
Storage Blk Time (%)	5	
Queuing Penalty (veh)	7	

Intersection: 700: Miller Rd & Epps Mill Rd

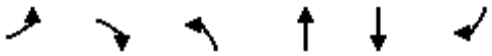
Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	27	93	152
Average Queue (ft)	2	24	49
95th Queue (ft)	15	65	98
Link Distance (ft)	506	186	1202
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 800: Dollar General Driveway/Capital Way & Epps Mill Rd

Movement	EB	WB	NB	NB	SB
Directions Served	LTR	L	LT	R	LTR
Maximum Queue (ft)	24	24	31	30	49
Average Queue (ft)	1	1	2	1	14
95th Queue (ft)	8	8	14	10	40
Link Distance (ft)	1272		1168	1168	1158
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		75			
Storage Blk Time (%)					
Queuing Penalty (veh)					

Network Summary

Network wide Queuing Penalty: 13



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	147	147	79	120	347	162
Future Volume (vph)	147	147	79	120	347	162
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.932				0.957	
Flt Protected	0.976			0.981		
Satd. Flow (prot)	1678	0	0	1810	1765	0
Flt Permitted	0.976			0.981		
Satd. Flow (perm)	1678	0	0	1810	1765	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	1662			3584	2221	
Travel Time (s)	37.8			81.5	50.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	147	147	79	120	347	162
Shared Lane Traffic (%)						
Lane Group Flow (vph)	294	0	0	199	509	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 66.0%		ICU Level of Service C	
Analysis Period (min) 15			

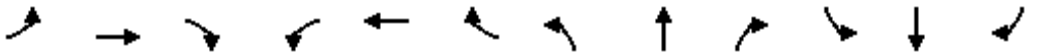
Intersection	
Int Delay, s/veh	8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	147	147	79	120	347	162
Future Vol, veh/h	147	147	79	120	347	162
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	Free	-	Free
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	147	147	79	120	347	162

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	625	347	347	0	-	0
Stage 1	347	-	-	-	-	-
Stage 2	278	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	447	694	1206	-	-	0
Stage 1	713	-	-	-	-	0
Stage 2	767	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	416	694	1206	-	-	-
Mov Cap-2 Maneuver	416	-	-	-	-	-
Stage 1	663	-	-	-	-	-
Stage 2	767	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	20.5	3.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT
Capacity (veh/h)	1206	-	520	-
HCM Lane V/C Ratio	0.066	-	0.565	-
HCM Control Delay (s)	8.2	0	20.5	-
HCM Lane LOS	A	A	C	-
HCM 95th %tile Q(veh)	0.2	-	3.5	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	279	3	3	273	6	6	0	6	19	0	94
Future Volume (vph)	79	279	3	3	273	6	6	0	6	19	0	94
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75		0	0		0	0		75	0		0
Storage Lanes	1		0	0		0	1		0	0		0
Taper Length (ft)	0			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.997			0.850			0.888	
Flt Protected	0.950				0.999		0.950				0.992	
Satd. Flow (prot)	1752	1841	0	0	1837	0	1752	1568	0	0	1625	0
Flt Permitted	0.950				0.999		0.950				0.992	
Satd. Flow (perm)	1752	1841	0	0	1837	0	1752	1568	0	0	1625	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		120			1662			1121			1094	
Travel Time (s)		2.7			37.8			25.5			24.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	79	279	3	3	273	6	6	0	6	19	0	94
Shared Lane Traffic (%)												
Lane Group Flow (vph)	79	282	0	0	282	0	6	6	0	0	113	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 53.3%		ICU Level of Service A	
Analysis Period (min) 15			

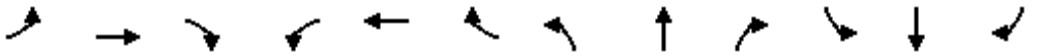
Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	79	279	3	3	273	6	6	0	6	19	0	94
Future Vol, veh/h	79	279	3	3	273	6	6	0	6	19	0	94
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	75	-	-	-	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	79	279	3	3	273	6	6	0	6	19	0	94

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	279	0	0	282	0	0	768	724	281	724	722	276
Stage 1	-	-	-	-	-	-	439	439	-	282	282	-
Stage 2	-	-	-	-	-	-	329	285	-	442	440	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1278	-	-	1275	-	-	317	351	755	340	352	760
Stage 1	-	-	-	-	-	-	595	576	-	723	676	-
Stage 2	-	-	-	-	-	-	682	674	-	592	576	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1278	-	-	1275	-	-	264	328	755	321	329	760
Mov Cap-2 Maneuver	-	-	-	-	-	-	264	328	-	321	329	-
Stage 1	-	-	-	-	-	-	558	540	-	678	674	-
Stage 2	-	-	-	-	-	-	596	672	-	551	540	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.8	0.1	14.4	12.1
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	264	755	1278	-	-	1275	-	-	618
HCM Lane V/C Ratio	0.023	0.008	0.062	-	-	0.002	-	-	0.183
HCM Control Delay (s)	19	9.8	8	-	-	7.8	0	-	12.1
HCM Lane LOS	C	A	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	0.2	-	-	0	-	-	0.7



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	143	331	2	3	353	17	15	0	14	16	0	109
Future Volume (vph)	143	331	2	3	353	17	15	0	14	16	0	109
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	75		0	0		0
Storage Lanes	1		0	0		0	1		0	0		0
Taper Length (ft)	50			25			100			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999			0.994			0.850			0.882	
Flt Protected	0.950						0.950				0.994	
Satd. Flow (prot)	1752	1843	0	0	1834	0	1752	1568	0	0	1617	0
Flt Permitted	0.950						0.950				0.994	
Satd. Flow (perm)	1752	1843	0	0	1834	0	1752	1568	0	0	1617	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		379			120			1105			1093	
Travel Time (s)		8.6			2.7			25.1			24.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	143	331	2	3	353	17	15	0	14	16	0	109
Shared Lane Traffic (%)												
Lane Group Flow (vph)	143	333	0	0	373	0	15	14	0	0	125	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 61.6%		ICU Level of Service B	
Analysis Period (min) 15			

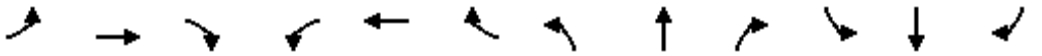
Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	143	331	2	3	353	17	15	0	14	16	0	109
Future Vol, veh/h	143	331	2	3	353	17	15	0	14	16	0	109
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	-	-	-	75	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	143	331	2	3	353	17	15	0	14	16	0	109

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	370	0	0	333	0	0	1040	994	332	993	987	362
Stage 1	-	-	-	-	-	-	618	618	-	368	368	-
Stage 2	-	-	-	-	-	-	422	376	-	625	619	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1183	-	-	1221	-	-	207	244	707	223	246	680
Stage 1	-	-	-	-	-	-	475	479	-	650	620	-
Stage 2	-	-	-	-	-	-	607	615	-	471	479	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1183	-	-	1221	-	-	157	214	707	198	215	680
Mov Cap-2 Maneuver	-	-	-	-	-	-	157	214	-	198	215	-
Stage 1	-	-	-	-	-	-	418	421	-	571	618	-
Stage 2	-	-	-	-	-	-	508	613	-	406	421	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.5	0.1	20.6	14.1
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	157	707	1183	-	-	1221	-	-	518
HCM Lane V/C Ratio	0.096	0.02	0.121	-	-	0.002	-	-	0.241
HCM Control Delay (s)	30.3	10.2	8.5	-	-	8	0	-	14.1
HCM Lane LOS	D	B	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	0.3	0.1	0.4	-	-	0	-	-	0.9



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	182	326	0	0	265	212	37	3	150	0	0	0
Future Volume (vph)	182	326	0	0	265	212	37	3	150	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	50		0	0		0
Storage Lanes	0		0	0		0	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.940				0.850			
Flt Protected		0.982						0.956				
Satd. Flow (prot)	0	1811	0	0	1734	0	0	1763	1568	0	0	0
Flt Permitted		0.982						0.956				
Satd. Flow (perm)	0	1811	0	0	1734	0	0	1763	1568	0	0	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		980			379			1085			1070	
Travel Time (s)		22.3			8.6			24.7			24.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	182	326	0	0	265	212	37	3	150	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	508	0	0	477	0	0	40	150	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 67.5%		ICU Level of Service C	
Analysis Period (min) 15			

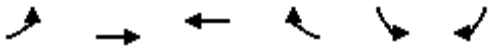
Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	182	326	0	0	265	212	37	3	150	0	0	0
Future Vol, veh/h	182	326	0	0	265	212	37	3	150	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	Yield	-	-	None
Storage Length	-	-	-	-	-	-	50	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	182	326	0	0	265	212	37	3	150	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	265	0	-	-	-	0	955	955	326
Stage 1	-	-	-	-	-	-	690	690	-
Stage 2	-	-	-	-	-	-	265	265	-
Critical Hdwy	4.13	-	-	-	-	-	6.43	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	5.43	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.43	5.53	-
Follow-up Hdwy	2.227	-	-	-	-	-	3.527	4.027	3.327
Pot Cap-1 Maneuver	1293	-	0	0	-	-	285	257	713
Stage 1	-	-	0	0	-	-	496	445	-
Stage 2	-	-	0	0	-	-	777	688	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1293	-	-	-	-	-	236	0	713
Mov Cap-2 Maneuver	-	-	-	-	-	-	236	0	-
Stage 1	-	-	-	-	-	-	411	0	-
Stage 2	-	-	-	-	-	-	777	0	-

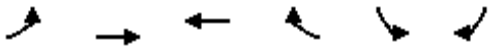
Approach	EB	WB	NB
HCM Control Delay, s	3	0	13.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT	WBR
Capacity (veh/h)	236	713	1293	-	-	-
HCM Lane V/C Ratio	0.169	0.21	0.141	-	-	-
HCM Control Delay (s)	23.3	11.4	8.2	0	-	-
HCM Lane LOS	C	B	A	A	-	-
HCM 95th %tile Q(veh)	0.6	0.8	0.5	-	-	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	60	508	195	107	0	0
Future Volume (vph)	60	508	195	107	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.952			
Flt Protected		0.995				
Satd. Flow (prot)	0	1835	1756	0	0	0
Flt Permitted		0.995				
Satd. Flow (perm)	0	1835	1756	0	0	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		216	980		814	
Travel Time (s)		4.9	22.3		18.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	60	508	195	107	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	568	302	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 53.5%		ICU Level of Service A	
Analysis Period (min) 15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	350	195	0	218	320
Future Volume (vph)	0	350	195	0	218	320
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			0	50	0
Storage Lanes	0			0	1	1
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	1845	1845	0	1752	1568
Flt Permitted					0.950	
Satd. Flow (perm)	0	1845	1845	0	1752	1568
Link Speed (mph)		30	30		30	
Link Distance (ft)		218	216		1094	
Travel Time (s)		5.0	4.9		24.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	350	195	0	218	320
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	350	195	0	218	320
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 37.2%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	7.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↰	↱
Traffic Vol, veh/h	0	350	195	0	218	320
Future Vol, veh/h	0	350	195	0	218	320
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	50	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	350	195	0	218	320

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	545	195
Stage 1	-	-	-	-	195	-
Stage 2	-	-	-	-	350	-
Critical Hdwy	-	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	0	-	-	0	498	844
Stage 1	0	-	-	0	836	-
Stage 2	0	-	-	0	711	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	498	844
Mov Cap-2 Maneuver	-	-	-	-	498	-
Stage 1	-	-	-	-	836	-
Stage 2	-	-	-	-	711	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	14.2
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	498	844
HCM Lane V/C Ratio	-	-	0.438	0.379
HCM Control Delay (s)	-	-	17.7	11.8
HCM Lane LOS	-	-	C	B
HCM 95th %tile Q(veh)	-	-	2.2	1.8

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	203	42	156	359	22	147
Future Volume (vph)	203	42	156	359	22	147
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.977				0.883	
Flt Protected				0.985	0.994	
Satd. Flow (prot)	1802	0	0	1817	1619	0
Flt Permitted				0.985	0.994	
Satd. Flow (perm)	1802	0	0	1817	1619	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	594			218	1252	
Travel Time (s)	13.5			5.0	28.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	203	42	156	359	22	147
Shared Lane Traffic (%)						
Lane Group Flow (vph)	245	0	0	515	169	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 61.1%		ICU Level of Service B	
Analysis Period (min) 15			

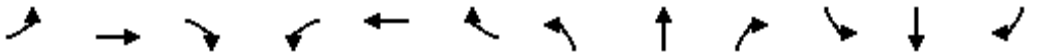
Intersection	
Int Delay, s/veh	3.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	203	42	156	359	22	147
Future Vol, veh/h	203	42	156	359	22	147
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	203	42	156	359	22	147

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	245	0	895	224
Stage 1	-	-	-	-	224	-
Stage 2	-	-	-	-	671	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1315	-	310	813
Stage 1	-	-	-	-	811	-
Stage 2	-	-	-	-	506	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1315	-	264	813
Mov Cap-2 Maneuver	-	-	-	-	264	-
Stage 1	-	-	-	-	811	-
Stage 2	-	-	-	-	431	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.5	12.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	640	-	-	1315	-
HCM Lane V/C Ratio	0.264	-	-	0.119	-
HCM Control Delay (s)	12.6	-	-	8.1	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1.1	-	-	0.4	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	146	23	28	330	23	15	2	28	71	0	11
Future Volume (vph)	11	146	23	28	330	23	15	2	28	71	0	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	75		75	0		0	0		0
Storage Lanes	0		0	1		1	0		1	0		0
Taper Length (ft)	25			100			0			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.983				0.850			0.850		0.982	
Flt Protected		0.997		0.950				0.958			0.959	
Satd. Flow (prot)	0	1808	0	1752	1845	1568	0	1767	1568	0	1737	0
Flt Permitted		0.997		0.950				0.958			0.959	
Satd. Flow (perm)	0	1808	0	1752	1845	1568	0	1767	1568	0	1737	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1306			594			1202			1203	
Travel Time (s)		29.7			13.5			27.3			27.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	11	146	23	28	330	23	15	2	28	71	0	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	180	0	28	330	23	0	17	28	0	82	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 36.2%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	146	23	28	330	23	15	2	28	71	0	11
Future Vol, veh/h	11	146	23	28	330	23	15	2	28	71	0	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	75	-	75	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	11	146	23	28	330	23	15	2	28	71	0	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	353	0	0	169	0	0	583	589	158	581	577	330
Stage 1	-	-	-	-	-	-	180	180	-	386	386	-
Stage 2	-	-	-	-	-	-	403	409	-	195	191	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1200	-	-	1402	-	-	422	419	885	424	426	709
Stage 1	-	-	-	-	-	-	819	749	-	635	608	-
Stage 2	-	-	-	-	-	-	622	594	-	804	740	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1200	-	-	1402	-	-	406	406	885	400	413	709
Mov Cap-2 Maneuver	-	-	-	-	-	-	406	406	-	400	413	-
Stage 1	-	-	-	-	-	-	811	742	-	629	596	-
Stage 2	-	-	-	-	-	-	600	582	-	769	733	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.6	11.1	15.5
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	406	885	1200	-	-	1402	-	-	425
HCM Lane V/C Ratio	0.042	0.032	0.009	-	-	0.02	-	-	0.193
HCM Control Delay (s)	14.3	9.2	8	0	-	7.6	-	-	15.5
HCM Lane LOS	B	A	A	A	-	A	-	-	C
HCM 95th %tile Q(veh)	0.1	0.1	0	-	-	0.1	-	-	0.7

Intersection: 100: TN-2 (US Hwy-41) & Epps Mill Rd

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	189	136	55
Average Queue (ft)	85	31	4
95th Queue (ft)	155	77	23
Link Distance (ft)	1572	3548	2191
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 200: Forbus Drive & Epps Mill Rd

Movement	EB	EB	WB	NB	NB	SB
Directions Served	L	TR	LTR	L	TR	LTR
Maximum Queue (ft)	38	28	30	25	48	111
Average Queue (ft)	13	1	1	8	9	42
95th Queue (ft)	37	9	11	26	32	71
Link Distance (ft)		52	1572	1076	1076	1059
Upstream Blk Time (%)	0					
Queuing Penalty (veh)	0					
Storage Bay Dist (ft)	75					
Storage Blk Time (%)	0					
Queuing Penalty (veh)	0					

Intersection: 300: Miller Ln/Driveway & Epps Mill Rd

Movement	EB	EB	WB	NB	NB	SB
Directions Served	L	TR	LTR	L	TR	LTR
Maximum Queue (ft)	64	24	55	24	20	79
Average Queue (ft)	24	2	10	10	7	49
95th Queue (ft)	48	11	37	30	23	76
Link Distance (ft)		320	52		1061	1057
Upstream Blk Time (%)			0			
Queuing Penalty (veh)			0			
Storage Bay Dist (ft)	100			75		
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 400: I-24 WB On Ramp & Epps Mill Rd

Movement	EB	WB	NB	NB
Directions Served	LT	TR	LT	R
Maximum Queue (ft)	157	141	62	31
Average Queue (ft)	54	6	24	2
95th Queue (ft)	116	48	48	12
Link Distance (ft)	908	320		1037
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			50	
Storage Blk Time (%)			2	0
Queuing Penalty (veh)			3	0

Intersection: 500: Epps Mill Rd & I-24 EB On Loop

Movement	EB
Directions Served	LT
Maximum Queue (ft)	118
Average Queue (ft)	26
95th Queue (ft)	76
Link Distance (ft)	157
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 600: Epps Mill Rd & I-24 EB Off Ramp

Movement	SB	SB
Directions Served	L	R
Maximum Queue (ft)	74	99
Average Queue (ft)	48	6
95th Queue (ft)	73	42
Link Distance (ft)		1034
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	50	
Storage Blk Time (%)	7	0
Queuing Penalty (veh)	23	0

Intersection: 700: Miller Rd & Epps Mill Rd

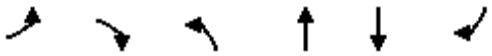
Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	22	226	127
Average Queue (ft)	2	52	48
95th Queue (ft)	13	138	100
Link Distance (ft)	506	186	1202
Upstream Blk Time (%)		1	
Queuing Penalty (veh)		4	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 800: Dollar General Driveway/Capital Way & Epps Mill Rd

Movement	EB	WB	NB	NB	SB
Directions Served	LTR	L	LT	R	LTR
Maximum Queue (ft)	26	47	31	48	74
Average Queue (ft)	6	7	19	20	31
95th Queue (ft)	24	28	43	45	55
Link Distance (ft)	1272		1168	1168	1158
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		75			
Storage Blk Time (%)					
Queuing Penalty (veh)					

Network Summary

Network wide Queuing Penalty: 32



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	325	133	330	671	229	124
Future Volume (vph)	325	133	330	671	229	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.961				0.953	
Flt Protected	0.966			0.984		
Satd. Flow (prot)	1712	0	0	1815	1758	0
Flt Permitted	0.966			0.984		
Satd. Flow (perm)	1712	0	0	1815	1758	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	1662			3584	2221	
Travel Time (s)	37.8			81.5	50.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	325	133	330	671	229	124
Shared Lane Traffic (%)						
Lane Group Flow (vph)	458	0	0	1001	353	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 109.3%		ICU Level of Service H	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	456.3

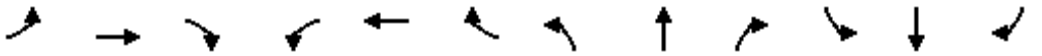
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	325	133	330	671	229	124
Future Vol, veh/h	325	133	330	671	229	124
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	Free	-	Free
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	325	133	330	671	229	124

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1560	229	229	0	-	0
Stage 1	229	-	-	-	-	-
Stage 2	1331	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	~ 123	808	1333	-	-	0
Stage 1	807	-	-	-	-	0
Stage 2	~ 245	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	~ 74	808	1333	-	-	-
Mov Cap-2 Maneuver	~ 74	-	-	-	-	-
Stage 1	488	-	-	-	-	-
Stage 2	~ 245	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, $	1675.7	2.8	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT
Capacity (veh/h)	1333	-	101	-
HCM Lane V/C Ratio	0.248	-	4.535	-
HCM Control Delay (s)	8.6	$	1675.7	-
HCM Lane LOS	A	A	F	-
HCM 95th %tile Q(veh)	1	-	48.2	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	99	442	16	13	606	11	5	0	0	30	0	170
Future Volume (vph)	99	442	16	13	606	11	5	0	0	30	0	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75		0	0		0	0		75	0		0
Storage Lanes	1		0	0		0	1		0	0		0
Taper Length (ft)	0			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995			0.998						0.885	
Flt Protected	0.950				0.999		0.950				0.993	
Satd. Flow (prot)	1752	1835	0	0	1839	0	1752	1845	0	0	1621	0
Flt Permitted	0.950				0.999		0.950				0.993	
Satd. Flow (perm)	1752	1835	0	0	1839	0	1752	1845	0	0	1621	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		120			1662			1121			1094	
Travel Time (s)		2.7			37.8			25.5			24.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	99	442	16	13	606	11	5	0	0	30	0	170
Shared Lane Traffic (%)												
Lane Group Flow (vph)	99	458	0	0	630	0	5	0	0	0	200	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 86.3%		ICU Level of Service E	
Analysis Period (min) 15			

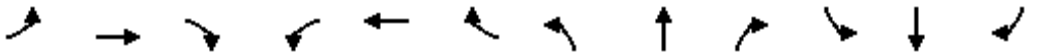
Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	99	442	16	13	606	11	5	0	0	30	0	170
Future Vol, veh/h	99	442	16	13	606	11	5	0	0	30	0	170
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	75	-	-	-	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	99	442	16	13	606	11	5	0	0	30	0	170

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	617	0	0	458	0	0	1371	1291	450	1286	1294	612
Stage 1	-	-	-	-	-	-	648	648	-	638	638	-
Stage 2	-	-	-	-	-	-	723	643	-	648	656	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	958	-	-	1098	-	-	123	162	607	141	162	491
Stage 1	-	-	-	-	-	-	457	464	-	463	469	-
Stage 2	-	-	-	-	-	-	416	467	-	457	461	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	958	-	-	1098	-	-	73	143	607	128	143	491
Mov Cap-2 Maneuver	-	-	-	-	-	-	73	143	-	128	143	-
Stage 1	-	-	-	-	-	-	410	416	-	415	461	-
Stage 2	-	-	-	-	-	-	267	459	-	410	414	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.6	0.2	57.9	29
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	73	-	958	-	-	1098	-	-	344
HCM Lane V/C Ratio	0.068	-	0.103	-	-	0.012	-	-	0.581
HCM Control Delay (s)	57.9	0	9.2	-	-	8.3	0	-	29
HCM Lane LOS	F	A	A	-	-	A	A	-	D
HCM 95th %tile Q(veh)	0.2	-	0.3	-	-	0	-	-	3.5



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	176	526	23	5	731	45	0	0	5	26	0	126
Future Volume (vph)	176	526	23	5	731	45	0	0	5	26	0	126
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	75		0	0		0
Storage Lanes	1		0	0		0	1		0	0		0
Taper Length (ft)	50			25			100			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.994			0.992			0.850			0.888	
Flt Protected	0.950										0.992	
Satd. Flow (prot)	1752	1834	0	0	1830	0	1845	1568	0	0	1625	0
Flt Permitted	0.950										0.992	
Satd. Flow (perm)	1752	1834	0	0	1830	0	1845	1568	0	0	1625	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		379			120			1105			1093	
Travel Time (s)		8.6			2.7			25.1			24.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	176	526	23	5	731	45	0	0	5	26	0	126
Shared Lane Traffic (%)												
Lane Group Flow (vph)	176	549	0	0	781	0	0	5	0	0	152	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 96.4%		ICU Level of Service F	
Analysis Period (min) 15			

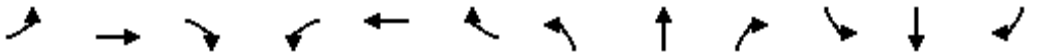
Intersection	
Int Delay, s/veh	6.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	176	526	23	5	731	45	0	0	5	26	0	126
Future Vol, veh/h	176	526	23	5	731	45	0	0	5	26	0	126
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	-	-	-	75	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	176	526	23	5	731	45	0	0	5	26	0	126

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	776	0	0	549	0	0	1717	1676	538	1656	1665	754
Stage 1	-	-	-	-	-	-	890	890	-	764	764	-
Stage 2	-	-	-	-	-	-	827	786	-	892	901	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	836	-	-	1016	-	-	70	95	541	78	96	407
Stage 1	-	-	-	-	-	-	336	360	-	395	411	-
Stage 2	-	-	-	-	-	-	364	402	-	335	356	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	836	-	-	1016	-	-	40	74	541	64	75	407
Mov Cap-2 Maneuver	-	-	-	-	-	-	40	74	-	64	75	-
Stage 1	-	-	-	-	-	-	265	284	-	312	407	-
Stage 2	-	-	-	-	-	-	249	398	-	262	281	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.5	0.1	11.7	55.9
HCM LOS			B	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	541	836	-	-	1016	-	-	212
HCM Lane V/C Ratio	-	0.009	0.211	-	-	0.005	-	-	0.717
HCM Control Delay (s)	0	11.7	10.5	-	-	8.6	0	-	55.9
HCM Lane LOS	A	B	B	-	-	A	A	-	F
HCM 95th %tile Q(veh)	-	0	0.8	-	-	0	-	-	4.7



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	907	379	0	0	280	577	57	0	346	0	0	0
Future Volume (vph)	907	379	0	0	280	577	57	0	346	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	50		0	0		0
Storage Lanes	0		0	0		0	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.909				0.850			
Flt Protected		0.966						0.950				
Satd. Flow (prot)	0	1782	0	0	1677	0	0	1752	1568	0	0	0
Flt Permitted		0.966						0.950				
Satd. Flow (perm)	0	1782	0	0	1677	0	0	1752	1568	0	0	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		980			379			1085			1066	
Travel Time (s)		22.3			8.6			24.7			24.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	907	379	0	0	280	577	57	0	346	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1286	0	0	857	0	0	57	346	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 133.7%		ICU Level of Service H	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	240.6

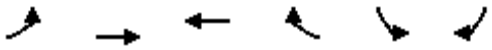
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	907	379	0	0	280	577	57	0	346	0	0	0
Future Vol, veh/h	907	379	0	0	280	577	57	0	346	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	Yield	-	-	None
Storage Length	-	-	-	-	-	-	50	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	907	379	0	0	280	577	57	0	346	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	280	0	-	-	-	0	2473	2473	379
Stage 1	-	-	-	-	-	-	2193	2193	-
Stage 2	-	-	-	-	-	-	280	280	-
Critical Hdwy	4.13	-	-	-	-	-	6.43	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	5.43	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.43	5.53	-
Follow-up Hdwy	2.227	-	-	-	-	-	3.527	4.027	3.327
Pot Cap-1 Maneuver	1277	-	0	0	-	-	~ 33	30	666
Stage 1	-	-	0	0	-	-	91	83	-
Stage 2	-	-	0	0	-	-	765	677	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1277	-	-	-	-	-	~ 3	0	666
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 3	0	-
Stage 1	-	-	-	-	-	-	~ 9	0	-
Stage 2	-	-	-	-	-	-	765	0	-

Approach	EB	WB	NB
HCM Control Delay, s	10.2	0	$ 1487.4
HCM LOS			F

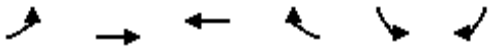
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT	WBR
Capacity (veh/h)	3	666	1277	-	-	-
HCM Lane V/C Ratio	19	0.52	0.71	-	-	-
HCM Control Delay (s)	$ 10418.6	16.1	14.4	0	-	-
HCM Lane LOS	F	C	B	A	-	-
HCM 95th %tile Q(veh)	9.1	3	6.5	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	156	1286	87	250	0	0
Future Volume (vph)	156	1286	87	250	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.900			
Flt Protected		0.995				
Satd. Flow (prot)	0	1835	1660	0	0	0
Flt Permitted		0.995				
Satd. Flow (perm)	0	1835	1660	0	0	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		216	980		814	
Travel Time (s)		4.9	22.3		18.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	156	1286	87	250	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1442	337	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 102.9%		ICU Level of Service G	
Analysis Period (min) 15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1023	87	0	419	356
Future Volume (vph)	0	1023	87	0	419	356
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			0	50	0
Storage Lanes	0			0	1	1
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	1845	1845	0	1752	1568
Flt Permitted					0.950	
Satd. Flow (perm)	0	1845	1845	0	1752	1568
Link Speed (mph)		30	30		30	
Link Distance (ft)		218	216		1094	
Travel Time (s)		5.0	4.9		24.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1023	87	0	419	356
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1023	87	0	419	356
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	83.7%	ICU Level of Service	E
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	95.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↰	↱
Traffic Vol, veh/h	0	1023	87	0	419	356
Future Vol, veh/h	0	1023	87	0	419	356
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	50	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	1023	87	0	419	356

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	1110	87
Stage 1	-	-	-	-	87	-
Stage 2	-	-	-	-	1023	-
Critical Hdwy	-	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	0	-	-	0	~ 231	969
Stage 1	0	-	-	0	934	-
Stage 2	0	-	-	0	~ 345	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	~ 231	969
Mov Cap-2 Maneuver	-	-	-	-	~ 231	-
Stage 1	-	-	-	-	934	-
Stage 2	-	-	-	-	~ 345	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	231.4
HCM LOS			F

Minor Lane/Major Mvmt	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	231	969
HCM Lane V/C Ratio	-	-	1.814	0.367
HCM Control Delay (s)	-	-	-$ 418.8	10.9
HCM Lane LOS	-	-	F	B
HCM 95th %tile Q(veh)	-	-	28.9	1.7

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	617	109	234	209	65	406
Future Volume (vph)	617	109	234	209	65	406
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.980				0.884	
Flt Protected				0.974	0.993	
Satd. Flow (prot)	1808	0	0	1797	1619	0
Flt Permitted				0.974	0.993	
Satd. Flow (perm)	1808	0	0	1797	1619	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	594			218	1252	
Travel Time (s)	13.5			5.0	28.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	617	109	234	209	65	406
Shared Lane Traffic (%)						
Lane Group Flow (vph)	726	0	0	443	471	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	101.7%	ICU Level of Service	G
Analysis Period (min)	15		

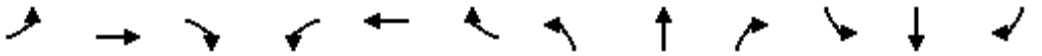
Intersection	
Int Delay, s/veh	74.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	617	109	234	209	65	406
Future Vol, veh/h	617	109	234	209	65	406
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	617	109	234	209	65	406

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	726	0	1349	672
Stage 1	-	-	-	-	672	-
Stage 2	-	-	-	-	677	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	872	-	165	454
Stage 1	-	-	-	-	506	-
Stage 2	-	-	-	-	503	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	872	-	115	454
Mov Cap-2 Maneuver	-	-	-	-	115	-
Stage 1	-	-	-	-	506	-
Stage 2	-	-	-	-	350	-

Approach	EB	WB	NB
HCM Control Delay, s	0	5.6	253.2
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	323	-	-	872	-
HCM Lane V/C Ratio	1.458	-	-	0.268	-
HCM Control Delay (s)	253.2	-	-	10.6	0
HCM Lane LOS	F	-	-	B	A
HCM 95th %tile Q(veh)	25.4	-	-	1.1	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	648	16	8	172	94	0	5	13	65	0	5
Future Volume (vph)	29	648	16	8	172	94	0	5	13	65	0	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	75		75	0		0	0		0
Storage Lanes	0		0	1		1	0		1	0		0
Taper Length (ft)	25			100			0			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997				0.850			0.850		0.990	
Flt Protected		0.998		0.950							0.956	
Satd. Flow (prot)	0	1835	0	1752	1845	1568	0	1845	1568	0	1746	0
Flt Permitted		0.998		0.950							0.956	
Satd. Flow (perm)	0	1835	0	1752	1845	1568	0	1845	1568	0	1746	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1306			594			1202			1203	
Travel Time (s)		29.7			13.5			27.3			27.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	29	648	16	8	172	94	0	5	13	65	0	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	693	0	8	172	94	0	5	13	0	70	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 66.3%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	29	648	16	8	172	94	0	5	13	65	0	5
Future Vol, veh/h	29	648	16	8	172	94	0	5	13	65	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	75	-	75	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	29	648	16	8	172	94	0	5	13	65	0	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	266	0	0	664	0	0	952	996	656	911	910	172
Stage 1	-	-	-	-	-	-	714	714	-	188	188	-
Stage 2	-	-	-	-	-	-	238	282	-	723	722	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1292	-	-	920	-	-	238	243	464	254	273	869
Stage 1	-	-	-	-	-	-	421	433	-	811	743	-
Stage 2	-	-	-	-	-	-	763	676	-	416	430	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1292	-	-	920	-	-	229	232	464	235	261	869
Mov Cap-2 Maneuver	-	-	-	-	-	-	229	232	-	235	261	-
Stage 1	-	-	-	-	-	-	406	417	-	782	736	-
Stage 2	-	-	-	-	-	-	752	670	-	385	415	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.3	15.2	25.1
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	232	464	1292	-	-	920	-	-	248
HCM Lane V/C Ratio	0.022	0.028	0.022	-	-	0.009	-	-	0.282
HCM Control Delay (s)	20.9	13	7.8	0	-	8.9	-	-	25.1
HCM Lane LOS	C	B	A	A	-	A	-	-	D
HCM 95th %tile Q(veh)	0.1	0.1	0.1	-	-	0	-	-	1.1

Intersection: 100: TN-2 (US Hwy-41) & Epps Mill Rd

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	1587	561	31
Average Queue (ft)	1534	245	5
95th Queue (ft)	1786	513	21
Link Distance (ft)	1572	3548	2191
Upstream Blk Time (%)	75		
Queuing Penalty (veh)	355		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 200: Forbus Drive & Epps Mill Rd

Movement	EB	EB	WB	NB	SB
Directions Served	L	TR	LTR	L	LTR
Maximum Queue (ft)	51	70	503	25	1074
Average Queue (ft)	17	52	58	3	824
95th Queue (ft)	54	84	280	17	1396
Link Distance (ft)		52	1572		1059
Upstream Blk Time (%)	0	76			60
Queuing Penalty (veh)	0	422			0
Storage Bay Dist (ft)	75			75	
Storage Blk Time (%)	0	76			
Queuing Penalty (veh)	1	75			

Intersection: 300: Miller Ln/Driveway & Epps Mill Rd

Movement	EB	EB	WB	NB	SB
Directions Served	L	TR	LTR	TR	LTR
Maximum Queue (ft)	150	452	56	40	1062
Average Queue (ft)	69	384	9	4	555
95th Queue (ft)	187	597	40	20	1219
Link Distance (ft)		318	52	1061	1057
Upstream Blk Time (%)		87	3		30
Queuing Penalty (veh)		627	21		0
Storage Bay Dist (ft)	100				
Storage Blk Time (%)		86			
Queuing Penalty (veh)		152			

Intersection: 400: I-24 WB On Ramp & Epps Mill Rd

Movement	EB	WB	NB	NB
Directions Served	LT	TR	LT	R
Maximum Queue (ft)	927	328	75	1052
Average Queue (ft)	841	76	18	979
95th Queue (ft)	1143	283	70	1225
Link Distance (ft)	912	318		1037
Upstream Blk Time (%)	52	3		82
Queuing Penalty (veh)	671	22		0
Storage Bay Dist (ft)			50	
Storage Blk Time (%)			14	
Queuing Penalty (veh)			48	

Intersection: 500: Epps Mill Rd & I-24 EB On Loop

Movement	EB	WB
Directions Served	LT	TR
Maximum Queue (ft)	170	79
Average Queue (ft)	136	4
95th Queue (ft)	225	33
Link Distance (ft)	157	912
Upstream Blk Time (%)	51	
Queuing Penalty (veh)	737	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 600: Epps Mill Rd & I-24 EB Off Ramp

Movement	EB	SB	SB
Directions Served	T	L	R
Maximum Queue (ft)	204	75	1049
Average Queue (ft)	152	71	1011
95th Queue (ft)	273	75	1193
Link Distance (ft)	186		1034
Upstream Blk Time (%)	51		92
Queuing Penalty (veh)	518		0
Storage Bay Dist (ft)		50	
Storage Blk Time (%)		99	1
Queuing Penalty (veh)		353	3

Intersection: 700: Miller Rd & Epps Mill Rd

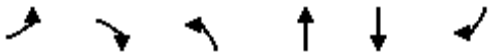
Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	518	147	1265
Average Queue (ft)	377	25	1214
95th Queue (ft)	725	85	1245
Link Distance (ft)	506	186	1202
Upstream Blk Time (%)	46		100
Queuing Penalty (veh)	337		0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 800: Dollar General Driveway/Capital Way & Epps Mill Rd

Movement	EB	WB	NB	NB	SB
Directions Served	LTR	L	LT	R	LTR
Maximum Queue (ft)	1306	25	31	179	1016
Average Queue (ft)	858	1	5	46	349
95th Queue (ft)	1827	8	23	136	908
Link Distance (ft)	1272		1168	1168	1158
Upstream Blk Time (%)	57				
Queuing Penalty (veh)	0				
Storage Bay Dist (ft)		75			
Storage Blk Time (%)					
Queuing Penalty (veh)					

Network Summary

Network wide Queuing Penalty: 4344



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	382	382	205	312	902	421
Future Volume (vph)	382	382	205	312	902	421
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.932				0.957	
Flt Protected	0.976			0.981		
Satd. Flow (prot)	1678	0	0	1810	1765	0
Flt Permitted	0.976			0.981		
Satd. Flow (perm)	1678	0	0	1810	1765	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	1662			3584	2221	
Travel Time (s)	37.8			81.5	50.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	382	382	205	312	902	421
Shared Lane Traffic (%)						
Lane Group Flow (vph)	764	0	0	517	1323	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 155.5%		ICU Level of Service H	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	845.9

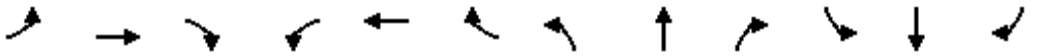
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	382	382	205	312	902	421
Future Vol, veh/h	382	382	205	312	902	421
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	Free	-	Free
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	382	382	205	312	902	421

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1624	902	902	0	-	0
Stage 1	902	-	-	-	-	-
Stage 2	722	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	~ 112	~ 335	749	-	-	0
Stage 1	394	-	-	-	-	0
Stage 2	479	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	~ 75	~ 335	749	-	-	-
Mov Cap-2 Maneuver	~ 75	-	-	-	-	-
Stage 1	~ 264	-	-	-	-	-
Stage 2	479	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, $	2413.8	4.6	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT
Capacity (veh/h)	749	-	123	-
HCM Lane V/C Ratio	0.274	-	6.211	-
HCM Control Delay (s)	11.6	$	2413.8	-
HCM Lane LOS	B	A	F	-
HCM 95th %tile Q(veh)	1.1	-	83.6	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	119	725	8	13	710	5	16	0	16	29	0	141
Future Volume (vph)	119	725	8	13	710	5	16	0	16	29	0	141
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75		0	0		0	0		75	0		0
Storage Lanes	1		0	0		0	1		0	0		0
Taper Length (ft)	0			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.999			0.850			0.888	
Flt Protected	0.950				0.999		0.950				0.992	
Satd. Flow (prot)	1752	1841	0	0	1841	0	1752	1568	0	0	1625	0
Flt Permitted	0.950				0.999		0.950				0.992	
Satd. Flow (perm)	1752	1841	0	0	1841	0	1752	1568	0	0	1625	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		120			1662			1121			1094	
Travel Time (s)		2.7			37.8			25.5			24.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	119	725	8	13	710	5	16	0	16	29	0	141
Shared Lane Traffic (%)												
Lane Group Flow (vph)	119	733	0	0	728	0	16	16	0	0	170	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	101.6%	ICU Level of Service	G
Analysis Period (min)	15		

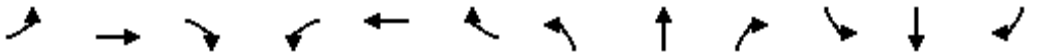
Intersection	
Int Delay, s/veh	8.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	119	725	8	13	710	5	16	0	16	29	0	141
Future Vol, veh/h	119	725	8	13	710	5	16	0	16	29	0	141
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	75	-	-	-	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	119	725	8	13	710	5	16	0	16	29	0	141

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	715	0	0	733	0	0	1776	1708	729	1714	1710	713
Stage 1	-	-	-	-	-	-	967	967	-	739	739	-
Stage 2	-	-	-	-	-	-	809	741	-	975	971	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	881	-	-	867	-	-	64	90	421	71	90	430
Stage 1	-	-	-	-	-	-	304	331	-	408	422	-
Stage 2	-	-	-	-	-	-	373	421	-	301	330	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	881	-	-	867	-	-	38	76	421	60	76	430
Mov Cap-2 Maneuver	-	-	-	-	-	-	38	76	-	60	76	-
Stage 1	-	-	-	-	-	-	263	286	-	353	411	-
Stage 2	-	-	-	-	-	-	244	410	-	250	285	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.4	0.2	85.1	69.2
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	38	421	881	-	-	867	-	-	210
HCM Lane V/C Ratio	0.421	0.038	0.135	-	-	0.015	-	-	0.81
HCM Control Delay (s)	156.3	13.9	9.7	-	-	9.2	0	-	69.2
HCM Lane LOS	F	B	A	-	-	A	A	-	F
HCM 95th %tile Q(veh)	1.4	0.1	0.5	-	-	0	-	-	5.9



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	215	792	5	8	833	26	39	0	36	24	0	164
Future Volume (vph)	215	792	5	8	833	26	39	0	36	24	0	164
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	75		0	0		0
Storage Lanes	1		0	0		0	1		0	0		0
Taper Length (ft)	50			25			100			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999			0.996			0.850			0.882	
Flt Protected	0.950						0.950				0.994	
Satd. Flow (prot)	1752	1843	0	0	1837	0	1752	1568	0	0	1617	0
Flt Permitted	0.950						0.950				0.994	
Satd. Flow (perm)	1752	1843	0	0	1837	0	1752	1568	0	0	1617	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		379			120			1105			1093	
Travel Time (s)		8.6			2.7			25.1			24.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	215	792	5	8	833	26	39	0	36	24	0	164
Shared Lane Traffic (%)												
Lane Group Flow (vph)	215	797	0	0	867	0	39	36	0	0	188	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	116.0%	ICU Level of Service	H
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	50.1

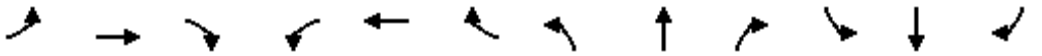
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	215	792	5	8	833	26	39	0	36	24	0	164
Future Vol, veh/h	215	792	5	8	833	26	39	0	36	24	0	164
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	-	-	-	75	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	215	792	5	8	833	26	39	0	36	24	0	164

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	859	0	0	797	0	0	2169	2100	795	2105	2089	846
Stage 1	-	-	-	-	-	-	1225	1225	-	862	862	-
Stage 2	-	-	-	-	-	-	944	875	-	1243	1227	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	778	-	-	821	-	-	~ 34	51	386	37	52	361
Stage 1	-	-	-	-	-	-	218	250	-	348	371	-
Stage 2	-	-	-	-	-	-	314	366	-	213	250	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	778	-	-	821	-	-	~ 14	36	386	26	37	361
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 14	36	-	26	37	-
Stage 1	-	-	-	-	-	-	158	181	-	252	364	-
Stage 2	-	-	-	-	-	-	168	359	-	140	181	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.4	0.1	$ 714.3	272
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	14	386	778	-	-	821	-	-	136
HCM Lane V/C Ratio	2.786	0.093	0.276	-	-	0.01	-	-	1.382
HCM Control Delay (s)	$ 1359.5	15.3	11.4	-	-	9.4	0	-	272
HCM Lane LOS	F	C	B	-	-	A	A	-	F
HCM 95th %tile Q(veh)	5.7	0.3	1.1	-	-	0	-	-	12.3

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	473	622	0	0	485	551	96	8	390	0	0	0
Future Volume (vph)	473	622	0	0	485	551	96	8	390	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	50		0	0		0
Storage Lanes	0		0	0		0	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.928				0.850			
Flt Protected		0.979						0.956				
Satd. Flow (prot)	0	1806	0	0	1712	0	0	1763	1568	0	0	0
Flt Permitted		0.979						0.956				
Satd. Flow (perm)	0	1806	0	0	1712	0	0	1763	1568	0	0	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		980			379			1085			1066	
Travel Time (s)		22.3			8.6			24.7			24.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	473	622	0	0	485	551	96	8	390	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1095	0	0	1036	0	0	104	390	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 133.9%		ICU Level of Service H	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	97.6

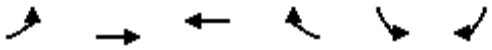
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	473	622	0	0	485	551	96	8	390	0	0	0
Future Vol, veh/h	473	622	0	0	485	551	96	8	390	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	Yield	-	-	None
Storage Length	-	-	-	-	-	-	50	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	473	622	0	0	485	551	96	8	390	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	485	0	-	-	-	0	2053	2053	622
Stage 1	-	-	-	-	-	-	1568	1568	-
Stage 2	-	-	-	-	-	-	485	485	-
Critical Hdwy	4.13	-	-	-	-	-	6.43	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	5.43	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.43	5.53	-
Follow-up Hdwy	2.227	-	-	-	-	-	3.527	4.027	3.327
Pot Cap-1 Maneuver	1073	-	0	0	-	-	~ 61	55	485
Stage 1	-	-	0	0	-	-	188	171	-
Stage 2	-	-	0	0	-	-	617	550	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1073	-	-	-	-	-	~ 20	0	485
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 20	0	-
Stage 1	-	-	-	-	-	-	~ 61	0	-
Stage 2	-	-	-	-	-	-	617	0	-

Approach	EB	WB	NB
HCM Control Delay, s	4.7	0	$ 508
HCM LOS			F

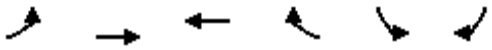
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT	WBR
Capacity (veh/h)	20	485	1073	-	-	-
HCM Lane V/C Ratio	5.2	0.804	0.441	-	-	-
HCM Control Delay (s)	$ 2276.4	36.4	11	0	-	-
HCM Lane LOS	F	E	B	A	-	-
HCM 95th %tile Q(veh)	13.4	7.5	2.3	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	156	1095	303	278	0	0
Future Volume (vph)	156	1095	303	278	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.935			
Flt Protected		0.994				
Satd. Flow (prot)	0	1834	1725	0	0	0
Flt Permitted		0.994				
Satd. Flow (perm)	0	1834	1725	0	0	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		216	980		814	
Travel Time (s)		4.9	22.3		18.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	156	1095	303	278	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1251	581	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 105.9%		ICU Level of Service G	
Analysis Period (min) 15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	684	303	0	567	832
Future Volume (vph)	0	684	303	0	567	832
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			0	50	0
Storage Lanes	0			0	1	1
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	1845	1845	0	1752	1568
Flt Permitted					0.950	
Satd. Flow (perm)	0	1845	1845	0	1752	1568
Link Speed (mph)		30	30		30	
Link Distance (ft)		218	216		1094	
Travel Time (s)		5.0	4.9		24.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	684	303	0	567	832
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	684	303	0	567	832
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 74.1%		ICU Level of Service D	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	159.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↰	↱
Traffic Vol, veh/h	0	684	303	0	567	832
Future Vol, veh/h	0	684	303	0	567	832
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	50	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	684	303	0	567	832

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	987	303
Stage 1	-	-	-	-	303	-
Stage 2	-	-	-	-	684	-
Critical Hdwy	-	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	0	-	-	0	~ 273	~ 734
Stage 1	0	-	-	0	747	-
Stage 2	0	-	-	0	~ 499	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	~ 273	~ 734
Mov Cap-2 Maneuver	-	-	-	-	~ 273	-
Stage 1	-	-	-	-	747	-
Stage 2	-	-	-	-	~ 499	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	272
HCM LOS			F

Minor Lane/Major Mvmt	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	273	734
HCM Lane V/C Ratio	-	-	2.077	1.134
HCM Control Delay (s)	-	-	$ 527	98.3
HCM Lane LOS	-	-	F	F
HCM 95th %tile Q(veh)	-	-	41.8	24.8

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	302	109	406	729	57	382
Future Volume (vph)	302	109	406	729	57	382
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.964				0.883	
Flt Protected				0.982	0.994	
Satd. Flow (prot)	1778	0	0	1811	1619	0
Flt Permitted				0.982	0.994	
Satd. Flow (perm)	1778	0	0	1811	1619	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	594			218	1252	
Travel Time (s)	13.5			5.0	28.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	302	109	406	729	57	382
Shared Lane Traffic (%)						
Lane Group Flow (vph)	411	0	0	1135	439	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 120.1%		ICU Level of Service H	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	153.8

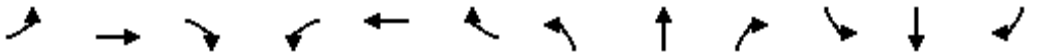
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	302	109	406	729	57	382
Future Vol, veh/h	302	109	406	729	57	382
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	302	109	406	729	57	382

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	411	0	1898	357
Stage 1	-	-	-	-	357	-
Stage 2	-	-	-	-	1541	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1142	-	76	685
Stage 1	-	-	-	-	706	-
Stage 2	-	-	-	-	194	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1142	-	~ 31	685
Mov Cap-2 Maneuver	-	-	-	-	~ 31	-
Stage 1	-	-	-	-	706	-
Stage 2	-	-	-	-	78	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.5	$ 686.3
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	183	-	-	1142	-
HCM Lane V/C Ratio	2.399	-	-	0.356	-
HCM Control Delay (s)	$ 686.3	-	-	9.9	0
HCM Lane LOS	F	-	-	A	A
HCM 95th %tile Q(veh)	36.5	-	-	1.6	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	153	60	73	653	60	39	5	73	185	0	29
Future Volume (vph)	8	153	60	73	653	60	39	5	73	185	0	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	75		75	0		0	0		0
Storage Lanes	0		0	1		1	0		1	0		0
Taper Length (ft)	25			100			0			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.963				0.850			0.850		0.982	
Flt Protected		0.998		0.950				0.958			0.959	
Satd. Flow (prot)	0	1773	0	1752	1845	1568	0	1767	1568	0	1737	0
Flt Permitted		0.998		0.950				0.958			0.959	
Satd. Flow (perm)	0	1773	0	1752	1845	1568	0	1767	1568	0	1737	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1306			594			1202			1203	
Travel Time (s)		29.7			13.5			27.3			27.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	8	153	60	73	653	60	39	5	73	185	0	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	221	0	73	653	60	0	44	73	0	214	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	64.7%	ICU Level of Service	C
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	25.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	153	60	73	653	60	39	5	73	185	0	29
Future Vol, veh/h	8	153	60	73	653	60	39	5	73	185	0	29
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	75	-	75	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	8	153	60	73	653	60	39	5	73	185	0	29

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	713	0	0	213	0	0	1043	1058	183	1037	1028	653
Stage 1	-	-	-	-	-	-	199	199	-	799	799	-
Stage 2	-	-	-	-	-	-	844	859	-	238	229	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	882	-	-	1351	-	-	207	224	857	208	233	466
Stage 1	-	-	-	-	-	-	801	735	-	378	396	-
Stage 2	-	-	-	-	-	-	356	372	-	763	713	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	882	-	-	1351	-	-	185	210	857	~ 178	218	466
Mov Cap-2 Maneuver	-	-	-	-	-	-	185	210	-	~ 178	218	-
Stage 1	-	-	-	-	-	-	793	728	-	374	375	-
Stage 2	-	-	-	-	-	-	316	352	-	686	706	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.7	17.2	145.5
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	188	857	882	-	-	1351	-	-	194
HCM Lane V/C Ratio	0.234	0.085	0.009	-	-	0.054	-	-	1.103
HCM Control Delay (s)	29.9	9.6	9.1	0	-	7.8	-	-	145.5
HCM Lane LOS	D	A	A	A	-	A	-	-	F
HCM 95th %tile Q(veh)	0.9	0.3	0	-	-	0.2	-	-	10.3

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection: 100: TN-2 (US Hwy-41) & Epps Mill Rd

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	1572	3582	90
Average Queue (ft)	1572	3290	14
95th Queue (ft)	1572	4307	55
Link Distance (ft)	1572	3548	2191
Upstream Blk Time (%)	100	77	
Queuing Penalty (veh)	770	0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 200: Forbus Drive & Epps Mill Rd

Movement	EB	WB	NB	NB	SB
Directions Served	TR	LTR	L	TR	LTR
Maximum Queue (ft)	52	21	23	634	1062
Average Queue (ft)	52	1	1	331	903
95th Queue (ft)	52	7	7	634	1334
Link Distance (ft)	52	1572		1076	1059
Upstream Blk Time (%)	100				67
Queuing Penalty (veh)	852				0
Storage Bay Dist (ft)			75		
Storage Blk Time (%)	100			98	
Queuing Penalty (veh)	119			16	

Intersection: 300: Miller Ln/Driveway & Epps Mill Rd

Movement	EB	WB	NB	NB	SB
Directions Served	TR	LTR	L	TR	LTR
Maximum Queue (ft)	432	54	63	1056	1072
Average Queue (ft)	418	2	4	783	936
95th Queue (ft)	422	18	28	1336	1397
Link Distance (ft)	318	52		1061	1057
Upstream Blk Time (%)	98	0		44	76
Queuing Penalty (veh)	994	0		0	0
Storage Bay Dist (ft)			75		
Storage Blk Time (%)	100		0	97	
Queuing Penalty (veh)	215		0	38	

Intersection: 400: I-24 WB On Ramp & Epps Mill Rd

Movement	EB	WB	NB	NB
Directions Served	LT	TR	LT	R
Maximum Queue (ft)	912	322	74	1040
Average Queue (ft)	893	13	2	1024
95th Queue (ft)	1061	109	25	1056
Link Distance (ft)	912	318		1037
Upstream Blk Time (%)	94	0		95
Queuing Penalty (veh)	1027	2		0
Storage Bay Dist (ft)			50	
Storage Blk Time (%)			3	
Queuing Penalty (veh)			12	

Intersection: 500: Epps Mill Rd & I-24 EB On Loop

Movement	EB
Directions Served	LT
Maximum Queue (ft)	159
Average Queue (ft)	150
95th Queue (ft)	198
Link Distance (ft)	157
Upstream Blk Time (%)	93
Queuing Penalty (veh)	1162
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 600: Epps Mill Rd & I-24 EB Off Ramp

Movement	EB	SB	SB
Directions Served	T	L	R
Maximum Queue (ft)	186	75	1086
Average Queue (ft)	174	67	1037
95th Queue (ft)	251	71	1056
Link Distance (ft)	186		1034
Upstream Blk Time (%)	91		100
Queuing Penalty (veh)	623		0
Storage Bay Dist (ft)		50	
Storage Blk Time (%)		100	0
Queuing Penalty (veh)		830	0

Intersection: 700: Miller Rd & Epps Mill Rd

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	524	322	1213
Average Queue (ft)	463	24	1113
95th Queue (ft)	685	157	1521
Link Distance (ft)	506	186	1202
Upstream Blk Time (%)	86	3	85
Queuing Penalty (veh)	355	31	0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 800: Dollar General Driveway/Capital Way & Epps Mill Rd

Movement	EB	WB	NB	NB	SB
Directions Served	LTR	L	LT	R	LTR
Maximum Queue (ft)	1286	25	1163	1175	1158
Average Queue (ft)	989	2	352	714	901
95th Queue (ft)	1777	12	1090	1410	1574
Link Distance (ft)	1272		1168	1168	1158
Upstream Blk Time (%)	65		15	30	65
Queuing Penalty (veh)	0		0	0	0
Storage Bay Dist (ft)		75			
Storage Blk Time (%)					
Queuing Penalty (veh)					

Network Summary

Network wide Queuing Penalty: 7046

Lane Group	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	SWL	SWR
Lane Configurations										
Traffic Volume (vph)	0	0	0	0	156	0	298	0	0	0
Future Volume (vph)	0	0	0	0	156	0	298	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	0		250	0		400	0	0
Storage Lanes	0	0	0		0	0		1	0	0
Taper Length (ft)	100		100			100			100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00
Frt					0.865					
Flt Protected										
Satd. Flow (prot)	0	0	0	0	1596	0	3505	0	0	0
Flt Permitted										
Satd. Flow (perm)	0	0	0	0	1596	0	3505	0	0	0
Link Speed (mph)	30			30			30		30	
Link Distance (ft)	223			492			1603		744	
Travel Time (s)	5.1			11.2			36.4		16.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	0	156	0	298	0	0	0
Shared Lane Traffic (%)										
Lane Group Flow (vph)	0	0	0	0	156	0	298	0	0	0
Enter Blocked Intersection	No	No	No	No	Yes	No	Yes	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	Left	Left	Right	Left	Right
Median Width(ft)	0			0			0		0	
Link Offset(ft)	0			0			0		0	
Crosswalk Width(ft)	16			16			16		16	
Two way Left Turn Lane										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60	60	60		9	15		60	15	60
Sign Control	Stop			Free			Free		Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 13.0%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	5.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	125	51	177	258	88	124
Future Vol, veh/h	125	51	177	258	88	124
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	500	0	150	-	-	150
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	3	1	1	2	2	1
Mvmt Flow	125	51	177	258	88	124

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	700	88	212	0	-	0
Stage 1	88	-	-	-	-	-
Stage 2	612	-	-	-	-	-
Critical Hdwy	6.43	6.21	4.11	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.309	2.209	-	-	-
Pot Cap-1 Maneuver	404	973	1364	-	-	-
Stage 1	933	-	-	-	-	-
Stage 2	539	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	351	973	1364	-	-	-
Mov Cap-2 Maneuver	351	-	-	-	-	-
Stage 1	812	-	-	-	-	-
Stage 2	539	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	17.4	3.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1364	-	351	973	-	-
HCM Lane V/C Ratio	0.13	-	0.356	0.052	-	-
HCM Control Delay (s/veh)	8	-	20.8	8.9	-	-
HCM Lane LOS	A	-	C	A	-	-
HCM 95th %tile Q (veh)	0.4	-	1.6	0.2	-	-

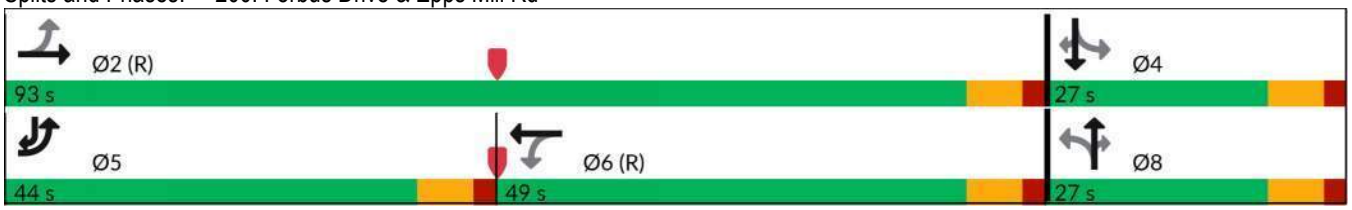
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	183	151	15	7	201	37	2	0	2	37	0	197
Future Volume (vph)	183	151	15	7	201	37	2	0	2	37	0	197
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	215		0	200		0	100		100	100		100
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.986			0.977				0.850			0.850
Flt Protected	0.950			0.950				0.950			0.950	
Satd. Flow (prot)	1410	1808	0	1805	1778	0	0	1805	1615	0	1787	1016
Flt Permitted	0.576			0.652				0.733			0.757	
Satd. Flow (perm)	855	1808	0	1239	1778	0	0	1393	1615	0	1424	1016
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11			9				100			197
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		760			1553			1296			992	
Travel Time (s)		17.3			35.3			29.5			22.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	28%	4%	0%	0%	5%	1%	0%	0%	0%	1%	0%	59%
Adj. Flow (vph)	183	151	15	7	201	37	2	0	2	37	0	197
Shared Lane Traffic (%)												
Lane Group Flow (vph)	183	166	0	7	238	0	0	2	2	0	37	197
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA	Perm	Perm	NA	pm+ov
Protected Phases	5	2			6			8			4	5

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2			6			8		8	4		4
Detector Phase	5	2		6	6		8	8	8	4	4	5
Switch Phase												
Minimum Initial (s)	7.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	7.0
Minimum Split (s)	14.0	17.0		25.0	25.0		25.0	25.0	25.0	17.0	17.0	14.0
Total Split (s)	44.0	93.0		49.0	49.0		27.0	27.0	27.0	27.0	27.0	44.0
Total Split (%)	36.7%	77.5%		40.8%	40.8%		22.5%	22.5%	22.5%	22.5%	22.5%	36.7%
Maximum Green (s)	37.0	86.0		42.0	42.0		20.0	20.0	20.0	20.0	20.0	37.0
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0			-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	5.0
Lead/Lag	Lead			Lag	Lag							Lead
Lead-Lag Optimize?	Yes			Yes	Yes							Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		C-Max	C-Max		None	None	None	None	None	None
Walk Time (s)				7.0	7.0		7.0	7.0	7.0			
Flash Dont Walk (s)				11.0	11.0		11.0	11.0	11.0			
Pedestrian Calls (#/hr)				0	0		0	0	0			
Act Effct Green (s)	104.4	106.4		88.6	88.6			12.4	12.4		12.4	21.4
Actuated g/C Ratio	0.87	0.89		0.74	0.74			0.10	0.10		0.10	0.18
v/c Ratio	0.23	0.10		0.00	0.18			0.01	0.00		0.25	0.57
Control Delay (s/veh)	2.8	1.9		6.8	6.5			48.0	0.0		53.8	12.0
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay (s/veh)	2.8	1.9		6.8	6.5			48.0	0.0		53.8	12.0
LOS	A	A		A	A			D	A		D	B
Approach Delay (s/veh)		2.4			6.5			24.0			18.6	
Approach LOS		A			A			C			B	
90th %ile Green (s)	11.4	93.9		75.5	75.5		12.1	12.1	12.1	12.1	12.1	11.4
90th %ile Term Code	Gap	Coord		Coord	Coord		Hold	Hold	Hold	Gap	Gap	Gap
70th %ile Green (s)	9.6	96.0		79.4	79.4		10.0	10.0	10.0	10.0	10.0	9.6
70th %ile Term Code	Gap	Coord		Coord	Coord		Hold	Hold	Hold	Min	Min	Gap
50th %ile Green (s)	8.7	96.0		80.3	80.3		10.0	10.0	10.0	10.0	10.0	8.7
50th %ile Term Code	Gap	Coord		Coord	Coord		Hold	Hold	Hold	Min	Min	Gap
30th %ile Green (s)	7.0	113.0		99.0	99.0		0.0	0.0	0.0	0.0	0.0	7.0
30th %ile Term Code	Min	Coord		Coord	Coord		Skip	Skip	Skip	Skip	Skip	Min
10th %ile Green (s)	7.0	113.0		99.0	99.0		0.0	0.0	0.0	0.0	0.0	7.0
10th %ile Term Code	Min	Coord		Coord	Coord		Skip	Skip	Skip	Skip	Skip	Min
Stops (vph)	38	31		3	82			3	0		36	26
Fuel Used(gal)	1	1		0	4			0	0		1	2
CO Emissions (g/hr)	98	85		8	255			4	1		62	150
NOx Emissions (g/hr)	19	17		2	50			1	0		12	29
VOC Emissions (g/hr)	23	20		2	59			1	0		14	35
Dilemma Vehicles (#)	0	0		0	0			0	0		0	0
Queue Length 50th (ft)	29	24		2	70			1	0		27	0
Queue Length 95th (ft)	62	49		8	121			10	0		61	63
Internal Link Dist (ft)		680			1473			1216			912	
Turn Bay Length (ft)	215			200					100			100
Base Capacity (vph)	923	1604		915	1315			255	377		261	535

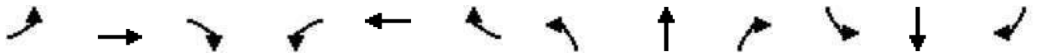
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn	0	0		0	0			0	0		0	0
Spillback Cap Reductn	0	0		0	0			0	0		0	0
Storage Cap Reductn	0	0		0	0			0	0		0	0
Reduced v/c Ratio	0.20	0.10		0.01	0.18			0.01	0.01		0.14	0.37

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 35 (29%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.58			
Intersection Signal Delay (s/veh): 8.3		Intersection LOS: A	
Intersection Capacity Utilization 45.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 200: Forbus Drive & Epps Mill Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	349	216	0	0	178	222	22	0	133	0	0	0
Future Volume (vph)	349	216	0	0	178	222	22	0	133	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	500		0	0		250	0		265	0		0
Storage Lanes	1		0	0		1	0		1	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950							0.950				
Satd. Flow (prot)	1736	1667	0	0	1667	1442	0	1752	1568	0	0	0
Flt Permitted	0.593							0.950				
Satd. Flow (perm)	1083	1667	0	0	1667	1442	0	1752	1568	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						222			164			
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1165			760			632			307	
Travel Time (s)		26.5			17.3			14.4			7.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	4%	14%	0%	0%	14%	12%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	349	216	0	0	178	222	22	0	133	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	349	216	0	0	178	222	0	22	133	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane					Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2	1	1	2	1			
Detector Template	Left	Thru			Thru	Right	Left	Thru	Right			
Leading Detector (ft)	20	100			100	20	20	100	20			
Trailing Detector (ft)	0	0			0	0	0	0	0			
Detector 1 Position(ft)	0	0			0	0	0	0	0			
Detector 1 Size(ft)	20	6			6	20	20	6	20			
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 1 Queue (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 1 Delay (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	pm+pt	NA			NA	Perm	Perm	NA	Free			
Protected Phases	5	2			6			8				

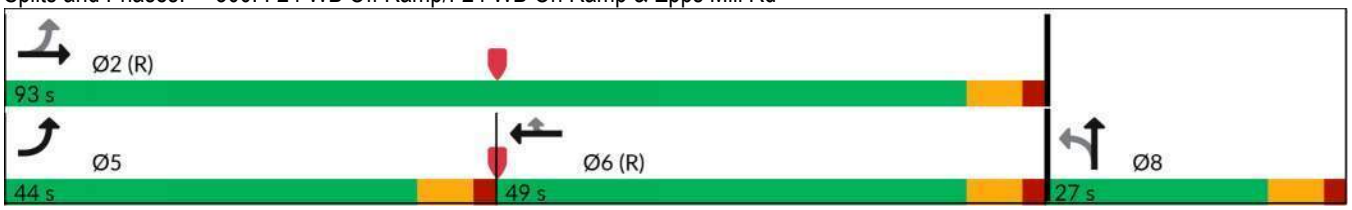


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2					6	8		Free			
Detector Phase	5	2			6	6	8	8				
Switch Phase												
Minimum Initial (s)	7.0	10.0			10.0	10.0	10.0	10.0				
Minimum Split (s)	14.0	25.0			25.0	25.0	25.0	25.0				
Total Split (s)	44.0	93.0			49.0	49.0	27.0	27.0				
Total Split (%)	36.7%	77.5%			40.8%	40.8%	22.5%	22.5%				
Maximum Green (s)	37.0	86.0			42.0	42.0	20.0	20.0				
Yellow Time (s)	5.0	5.0			5.0	5.0	5.0	5.0				
All-Red Time (s)	2.0	2.0			2.0	2.0	2.0	2.0				
Lost Time Adjust (s)	-2.0	-2.0			-2.0	-2.0		-2.0				
Total Lost Time (s)	5.0	5.0			5.0	5.0		5.0				
Lead/Lag	Lead				Lag	Lag						
Lead-Lag Optimize?	Yes				Yes	Yes						
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0				
Recall Mode	None	C-Max			C-Max	C-Max	Max	Max				
Walk Time (s)					7.0	7.0	7.0	7.0				
Flash Dont Walk (s)					11.0	11.0	11.0	11.0				
Pedestrian Calls (#/hr)					0	0	0	0				
Act Effct Green (s)	88.0	88.0			67.3	67.3		22.0	120.0			
Actuated g/C Ratio	0.73	0.73			0.56	0.56		0.18	1.00			
v/c Ratio	0.39	0.17			0.19	0.24		0.06	0.08			
Control Delay (s/veh)	5.3	4.2			12.6	1.4		41.3	0.1			
Queue Delay	0.0	0.0			0.0	0.0		0.0	0.0			
Total Delay (s/veh)	5.3	4.2			12.6	1.4		41.3	0.1			
LOS	A	A			B	A		D	A			
Approach Delay (s/veh)		4.9			6.4			6.0				
Approach LOS		A			A			A				
90th %ile Green (s)	17.7	86.0			61.3	61.3	20.0	20.0				
90th %ile Term Code	Gap	Coord			Coord	Coord	MaxR	MaxR				
70th %ile Green (s)	15.1	86.0			63.9	63.9	20.0	20.0				
70th %ile Term Code	Gap	Coord			Coord	Coord	MaxR	MaxR				
50th %ile Green (s)	13.5	86.0			65.5	65.5	20.0	20.0				
50th %ile Term Code	Gap	Coord			Coord	Coord	MaxR	MaxR				
30th %ile Green (s)	12.0	86.0			67.0	67.0	20.0	20.0				
30th %ile Term Code	Gap	Coord			Coord	Coord	MaxR	MaxR				
10th %ile Green (s)	10.0	86.0			69.0	69.0	20.0	20.0				
10th %ile Term Code	Gap	Coord			Coord	Coord	MaxR	MaxR				
Stops (vph)	73	44			73	6		20	0			
Fuel Used(gal)	4	2			2	1		0	1			
CO Emissions (g/hr)	276	167			134	99		28	46			
NOx Emissions (g/hr)	54	33			26	19		5	9			
VOC Emissions (g/hr)	64	39			31	23		7	11			
Dilemma Vehicles (#)	0	0			0	0		0	0			
Queue Length 50th (ft)	51	30			61	0		14	0			
Queue Length 95th (ft)	92	59			81	13		38	0			
Internal Link Dist (ft)		1085			680			552			227	
Turn Bay Length (ft)	500					250			265			
Base Capacity (vph)	1006	1222			935	906		321	1568			

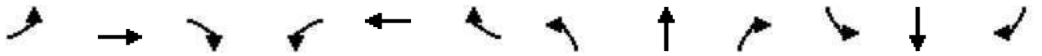
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn	0	0			0	0		0	0			
Spillback Cap Reductn	0	0			0	0		0	0			
Storage Cap Reductn	0	0			0	0		0	0			
Reduced v/c Ratio	0.35	0.18			0.19	0.25		0.07	0.08			

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 118 (98%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.40			
Intersection Signal Delay (s/veh): 5.6		Intersection LOS: A	
Intersection Capacity Utilization 53.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 300: I-24 WB Off Ramp/I-24 WB On Ramp & Epps Mill Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	268	42	38	66	96	25	20	136	161	50	87
Future Volume (vph)	40	268	42	38	66	96	25	20	136	161	50	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	160		160	150		0	185		185	0		250
Storage Lanes	1		0	1		0	0		1	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.980			0.911			0.869				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1854	0	1752	1513	0	1805	1396	0	1570	1845	1538
Flt Permitted	0.631			0.467			0.724			0.545		
Satd. Flow (perm)	1164	1854	0	861	1513	0	1376	1396	0	900	1845	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			76			136				87
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		559			1165			1215			492	
Travel Time (s)		12.7			26.5			27.6			11.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	0%	3%	3%	12%	16%	0%	0%	21%	15%	3%	5%
Adj. Flow (vph)	40	268	42	38	66	96	25	20	136	161	50	87
Shared Lane Traffic (%)												
Lane Group Flow (vph)	40	310	0	38	162	0	25	156	0	161	50	87
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100		20	100	20
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases		2			6			4		3	8	

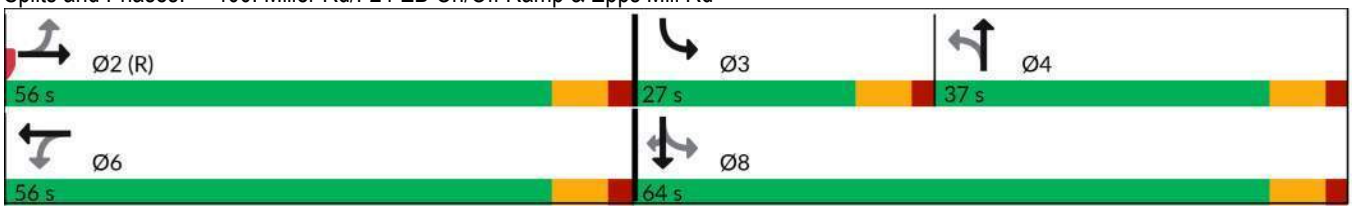


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2			6			4			8		8
Detector Phase	2	2		6	6		4	4		3	8	8
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		7.0	10.0	10.0
Minimum Split (s)	17.0	17.0		17.0	17.0		25.0	25.0		14.0	17.0	17.0
Total Split (s)	56.0	56.0		56.0	56.0		37.0	37.0		27.0	64.0	64.0
Total Split (%)	46.7%	46.7%		46.7%	46.7%		30.8%	30.8%		22.5%	53.3%	53.3%
Maximum Green (s)	49.0	49.0		49.0	49.0		30.0	30.0		20.0	57.0	57.0
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	C-Max	C-Max		Max	Max		Max	Max		None	Max	Max
Walk Time (s)							7.0	7.0				
Flash Dont Walk (s)							11.0	11.0				
Pedestrian Calls (#/hr)							0	0				
Act Effct Green (s)	51.0	51.0		51.0	51.0		39.5	39.5		59.0	59.0	59.0
Actuated g/C Ratio	0.43	0.43		0.43	0.43		0.33	0.33		0.49	0.49	0.49
v/c Ratio	0.08	0.39		0.10	0.23		0.05	0.28		0.30	0.05	0.10
Control Delay (s/veh)	21.2	24.9		15.4	6.5		29.7	8.6		19.0	16.2	3.6
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay (s/veh)	21.2	24.9		15.4	6.5		29.7	8.6		19.0	16.2	3.6
LOS	C	C		B	A		C	A		B	B	A
Approach Delay (s/veh)		24.6			8.3			11.6			14.1	
Approach LOS		C			A			B			B	
90th %ile Green (s)	49.0	49.0		49.0	49.0		33.0	33.0		17.0	57.0	57.0
90th %ile Term Code	Coord	Coord		Coord	Coord		MaxR	MaxR		Gap	MaxR	MaxR
70th %ile Green (s)	49.0	49.0		49.0	49.0		35.8	35.8		14.2	57.0	57.0
70th %ile Term Code	Coord	Coord		Coord	Coord		MaxR	MaxR		Gap	MaxR	MaxR
50th %ile Green (s)	49.0	49.0		49.0	49.0		37.6	37.6		12.4	57.0	57.0
50th %ile Term Code	Coord	Coord		Coord	Coord		MaxR	MaxR		Gap	MaxR	MaxR
30th %ile Green (s)	49.0	49.0		49.0	49.0		39.3	39.3		10.7	57.0	57.0
30th %ile Term Code	Coord	Coord		Coord	Coord		MaxR	MaxR		Gap	MaxR	MaxR
10th %ile Green (s)	49.0	49.0		49.0	49.0		41.6	41.6		8.4	57.0	57.0
10th %ile Term Code	Coord	Coord		Coord	Coord		MaxR	MaxR		Gap	MaxR	MaxR
Stops (vph)	24	203		11	27		18	28		88	25	10
Fuel Used(gal)	0	4		1	2		0	2		2	0	0
CO Emissions (g/hr)	34	283		37	128		34	133		121	35	32
NOx Emissions (g/hr)	7	55		7	25		7	26		24	7	6
VOC Emissions (g/hr)	8	66		9	30		8	31		28	8	7
Dilemma Vehicles (#)	0	0		0	0		0	0		0	0	0
Queue Length 50th (ft)	18	158		8	6		13	11		68	20	0
Queue Length 95th (ft)	41	234		22	29		36	64		113	42	27
Internal Link Dist (ft)		479			1085			1135			412	
Turn Bay Length (ft)	160			150			185					250
Base Capacity (vph)	494	792		365	686		452	550		565	907	800

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.08	0.39		0.10	0.24		0.06	0.28		0.28	0.06	0.11

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.39			
Intersection Signal Delay (s/veh): 16.1		Intersection LOS: B	
Intersection Capacity Utilization 60.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 400: Miller Rd/I-24 EB On/Off Ramp & Epps Mill Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	320	6	3	139	36	0	2	5	25	0	2
Future Volume (vph)	11	320	6	3	139	36	0	2	5	25	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	70		0	60		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	150			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997			0.969			0.904			0.990	
Flt Protected	0.950			0.950							0.956	
Satd. Flow (prot)	1787	1823	0	1805	1737	0	0	1718	0	0	1303	0
Flt Permitted	0.950			0.950							0.956	
Satd. Flow (perm)	1787	1823	0	1805	1737	0	0	1718	0	0	1303	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1306			559			1202			1203	
Travel Time (s)		29.7			12.7			27.3			27.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	4%	0%	0%	7%	2%	0%	0%	0%	41%	0%	0%
Adj. Flow (vph)	11	320	6	3	139	36	0	2	5	25	0	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	11	326	0	3	175	0	0	7	0	0	27	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 32.0%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	320	6	3	139	36	0	2	5	25	0	2
Future Vol, veh/h	11	320	6	3	139	36	0	2	5	25	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	70	-	-	60	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	1	4	0	0	7	2	0	0	0	41	0	0
Mvmt Flow	11	320	6	3	139	36	0	2	5	25	0	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	175	0	0	326	0	0	509	526	323	512	511	157
Stage 1	-	-	-	-	-	-	345	345	-	163	163	-
Stage 2	-	-	-	-	-	-	164	181	-	349	348	-
Critical Hdwy	4.11	-	-	4.1	-	-	7.1	6.5	6.2	7.51	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.51	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.51	5.5	-
Follow-up Hdwy	2.209	-	-	2.2	-	-	3.5	4	3.3	3.869	4	3.3
Pot Cap-1 Maneuver	1407	-	-	1245	-	-	478	460	723	416	469	894
Stage 1	-	-	-	-	-	-	675	640	-	755	767	-
Stage 2	-	-	-	-	-	-	843	754	-	594	638	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1407	-	-	1245	-	-	473	455	723	409	464	894
Mov Cap-2 Maneuver	-	-	-	-	-	-	473	455	-	409	464	-
Stage 1	-	-	-	-	-	-	670	635	-	749	765	-
Stage 2	-	-	-	-	-	-	839	752	-	583	633	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0.2	0.1	10.9	14
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	619	1407	-	-	1245	-	-	426
HCM Lane V/C Ratio	0.011	0.008	-	-	0.002	-	-	0.063
HCM Control Delay (s/veh)	10.9	7.6	-	-	7.9	-	-	14
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q (veh)	0	0	-	-	0	-	-	0.2

Intersection: 2: I-24 EB On/Off Ramp/I-24 EB Off Ramp & I-24 EB On Loop

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 100: TN-2 (US Hwy-41) & Epps Mill Rd

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	R
Maximum Queue (ft)	197	41	118	139	54	54
Average Queue (ft)	84	14	49	71	24	15
95th Queue (ft)	147	31	95	125	55	41
Link Distance (ft)		1460		3604	2195	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	500		150			150
Storage Blk Time (%)				0		
Queuing Penalty (veh)				0		

Intersection: 200: Forbus Drive & Epps Mill Rd

Movement	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	TR	R	LT	R
Maximum Queue (ft)	154	103	27	151	29	74	166
Average Queue (ft)	53	15	2	47	4	32	89
95th Queue (ft)	111	54	12	109	19	58	140
Link Distance (ft)		692		1460		957	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	215		200		100		100
Storage Blk Time (%)							4
Queuing Penalty (veh)							2

Intersection: 300: I-24 WB Off Ramp/I-24 WB On Ramp & Epps Mill Rd

Movement	EB	EB	WB	NB
Directions Served	L	T	T	LT
Maximum Queue (ft)	228	164	230	50
Average Queue (ft)	134	55	99	17
95th Queue (ft)	212	112	198	50
Link Distance (ft)		1107	692	595
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	500			
Storage Blk Time (%)			0	
Queuing Penalty (veh)			0	

Intersection: 400: Miller Rd/I-24 EB On/Off Ramp & Epps Mill Rd

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	T	R
Maximum Queue (ft)	260	326	102	95	183	200	196	73	65
Average Queue (ft)	39	141	29	36	20	76	121	19	32
95th Queue (ft)	117	254	69	74	73	161	192	56	55
Link Distance (ft)		482		1107	1173		434	434	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	160		150			185			250
Storage Blk Time (%)		8			0	1			
Queuing Penalty (veh)		3			0	0			

Intersection: 500: Dollar General Driveway/Capital Way & Epps Mill Rd

Movement	EB	WB	NB	SB
Directions Served	L	L	LTR	LTR
Maximum Queue (ft)	28	28	31	78
Average Queue (ft)	2	1	5	26
95th Queue (ft)	13	9	23	65
Link Distance (ft)			1166	1164
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	70	60		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 5

Lane Group	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	SWL	SWR
Lane Configurations										
Traffic Volume (vph)	0	0	0	0	167	0	538	0	0	0
Future Volume (vph)	0	0	0	0	167	0	538	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	0		250	0		400	0	0
Storage Lanes	0	0	0		0	0		1	0	0
Taper Length (ft)	100		100			100			100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00
Frt					0.865					
Flt Protected										
Satd. Flow (prot)	0	0	0	0	1596	0	3505	0	0	0
Flt Permitted										
Satd. Flow (perm)	0	0	0	0	1596	0	3505	0	0	0
Link Speed (mph)	30			30			30		30	
Link Distance (ft)	223			492			1603		744	
Travel Time (s)	5.1			11.2			36.4		16.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	0	167	0	538	0	0	0
Shared Lane Traffic (%)										
Lane Group Flow (vph)	0	0	0	0	167	0	538	0	0	0
Enter Blocked Intersection	No	No	No	No	Yes	No	Yes	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	Left	Left	Right	Left	Right
Median Width(ft)	0			0			0		0	
Link Offset(ft)	0			0			0		0	
Crosswalk Width(ft)	16			16			16		16	
Two way Left Turn Lane										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15		60	60		9	60	9
Sign Control	Stop			Free			Free		Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 18.2%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	147	147	79	120	347	162
Future Vol, veh/h	147	147	79	120	347	162
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	500	0	150	-	-	150
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	3	1	1	2	2	1
Mvmt Flow	147	147	79	120	347	162

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	625	347	509	0	-	0
Stage 1	347	-	-	-	-	-
Stage 2	278	-	-	-	-	-
Critical Hdwy	6.43	6.21	4.11	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.309	2.209	-	-	-
Pot Cap-1 Maneuver	447	698	1061	-	-	-
Stage 1	713	-	-	-	-	-
Stage 2	767	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	414	698	1061	-	-	-
Mov Cap-2 Maneuver	414	-	-	-	-	-
Stage 1	660	-	-	-	-	-
Stage 2	767	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	14.9	3.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1061	-	414	698	-	-
HCM Lane V/C Ratio	0.074	-	0.355	0.211	-	-
HCM Control Delay (s/veh)	8.7	-	18.4	11.5	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q (veh)	0.2	-	1.6	0.8	-	-

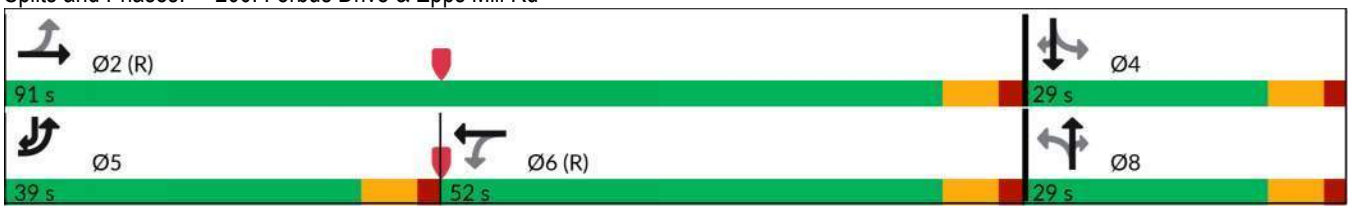
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	222	249	5	6	253	23	21	0	20	35	0	203
Future Volume (vph)	222	249	5	6	253	23	21	0	20	35	0	203
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	215		0	200		0	100		100	100		100
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997			0.987				0.850			0.850
Flt Protected	0.950			0.950				0.950			0.950	
Satd. Flow (prot)	1467	1858	0	1805	1824	0	0	1805	1615	0	1752	1062
Flt Permitted	0.549			0.602				0.734			0.744	
Satd. Flow (perm)	848	1858	0	1144	1824	0	0	1395	1615	0	1372	1062
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			4				100			203
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		760			1553			1296			992	
Travel Time (s)		17.3			35.3			29.5			22.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	23%	2%	0%	0%	3%	1%	0%	0%	0%	3%	0%	52%
Adj. Flow (vph)	222	249	5	6	253	23	21	0	20	35	0	203
Shared Lane Traffic (%)												
Lane Group Flow (vph)	222	254	0	6	276	0	0	21	20	0	35	203
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA	Perm	Perm	NA	pm+ov
Protected Phases	5	2			6			8			4	5

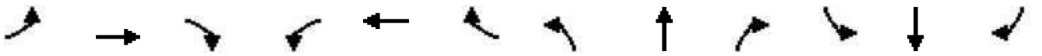
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2			6			8		8	4		4
Detector Phase	5	2		6	6		8	8	8	4	4	5
Switch Phase												
Minimum Initial (s)	7.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	7.0
Minimum Split (s)	14.0	17.0		25.0	25.0		17.0	17.0	17.0	25.0	25.0	14.0
Total Split (s)	39.0	91.0		52.0	52.0		29.0	29.0	29.0	29.0	29.0	39.0
Total Split (%)	32.5%	75.8%		43.3%	43.3%		24.2%	24.2%	24.2%	24.2%	24.2%	32.5%
Maximum Green (s)	32.0	84.0		45.0	45.0		22.0	22.0	22.0	22.0	22.0	32.0
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0			-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	5.0
Lead/Lag	Lead			Lag	Lag							Lead
Lead-Lag Optimize?	Yes			Yes	Yes							Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		C-Max	C-Max		None	None	None	None	None	None
Walk Time (s)				7.0	7.0					7.0	7.0	
Flash Dont Walk (s)				11.0	11.0					11.0	11.0	
Pedestrian Calls (#/hr)				0	0					0	0	
Act Effct Green (s)	104.4	106.4		88.2	88.2			12.4	12.4		12.4	21.8
Actuated g/C Ratio	0.87	0.89		0.74	0.74			0.10	0.10		0.10	0.18
v/c Ratio	0.27	0.15		0.00	0.20			0.14	0.07		0.24	0.56
Control Delay (s/veh)	2.6	1.7		6.8	6.0			51.1	0.6		53.9	11.2
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay (s/veh)	2.6	1.7		6.8	6.0			51.1	0.6		53.9	11.2
LOS	A	A		A	A			D	A		D	B
Approach Delay (s/veh)		2.2			6.0			26.5			17.5	
Approach LOS		A			A			C			B	
90th %ile Green (s)	12.4	93.9		74.5	74.5		12.1	12.1	12.1	12.1	12.1	12.4
90th %ile Term Code	Gap	Coord		Coord	Coord		Hold	Hold	Hold	Gap	Gap	Gap
70th %ile Green (s)	10.3	96.0		78.7	78.7		10.0	10.0	10.0	10.0	10.0	10.3
70th %ile Term Code	Gap	Coord		Coord	Coord		Min	Min	Min	Min	Min	Gap
50th %ile Green (s)	9.4	96.0		79.6	79.6		10.0	10.0	10.0	10.0	10.0	9.4
50th %ile Term Code	Gap	Coord		Coord	Coord		Min	Min	Min	Min	Min	Gap
30th %ile Green (s)	7.0	113.0		99.0	99.0		0.0	0.0	0.0	0.0	0.0	7.0
30th %ile Term Code	Min	Coord		Coord	Coord		Skip	Skip	Skip	Skip	Skip	Min
10th %ile Green (s)	7.0	113.0		99.0	99.0		0.0	0.0	0.0	0.0	0.0	7.0
10th %ile Term Code	Min	Coord		Coord	Coord		Skip	Skip	Skip	Skip	Skip	Min
Stops (vph)	37	35		2	75			20	0		32	25
Fuel Used(gal)	2	2		0	4			1	0		1	2
CO Emissions (g/hr)	115	125		6	286			38	14		58	152
NOx Emissions (g/hr)	22	24		1	56			7	3		11	30
VOC Emissions (g/hr)	27	29		1	66			9	3		13	35
Dilemma Vehicles (#)	0	0		0	0			0	0		0	0
Queue Length 50th (ft)	8	9		1	63			15	0		25	0
Queue Length 95th (ft)	40	45		6	103			41	0		58	62
Internal Link Dist (ft)		680			1473			1216			912	
Turn Bay Length (ft)	215			200					100			100
Base Capacity (vph)	913	1647		840	1340			279	403		274	522

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn	0	0		0	0			0	0		0	0
Spillback Cap Reductn	0	0		0	0			0	0		0	0
Storage Cap Reductn	0	0		0	0			0	0		0	0
Reduced v/c Ratio	0.24	0.15		0.01	0.21			0.08	0.05		0.13	0.39

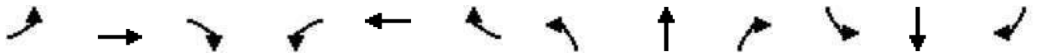
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 45 (38%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.57			
Intersection Signal Delay (s/veh): 7.7		Intersection LOS: A	
Intersection Capacity Utilization 48.1%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 200: Forbus Drive & Epps Mill Rd





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	182	326	0	0	265	212	37	8	150	0	0	0
Future Volume (vph)	182	326	0	0	265	212	37	8	150	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	500		0	0		250	0		265	0		0
Storage Lanes	1		0	0		1	0		1	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950							0.961				
Satd. Flow (prot)	1752	1845	0	0	1727	1429	0	1754	1392	0	0	0
Flt Permitted	0.572							0.961				
Satd. Flow (perm)	1055	1845	0	0	1727	1429	0	1754	1392	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						212			150			
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1165			760			632			307	
Travel Time (s)		26.5			17.3			14.4			7.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	3%	3%	0%	10%	13%	5%	0%	16%	3%	3%	3%
Adj. Flow (vph)	182	326	0	0	265	212	37	8	150	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	182	326	0	0	265	212	0	45	150	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane					Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60		60	60		60	60		60	60		60
Number of Detectors	1	2			2	1	1	2	1			
Detector Template	Left	Thru			Thru	Right	Left	Thru	Right			
Leading Detector (ft)	20	100			100	20	20	100	20			
Trailing Detector (ft)	0	0			0	0	0	0	0			
Detector 1 Position(ft)	0	0			0	0	0	0	0			
Detector 1 Size(ft)	20	6			6	20	20	6	20			
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 1 Queue (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 1 Delay (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	pm+pt	NA			NA	Free	Perm	NA	Perm			
Protected Phases	5	2			6			8				

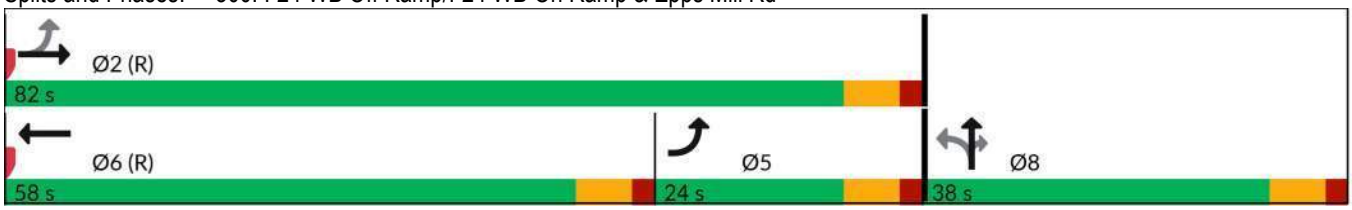


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2					Free	8		8			
Detector Phase	5	2			6		8	8	8			
Switch Phase												
Minimum Initial (s)	7.0	10.0			10.0		10.0	10.0	10.0			
Minimum Split (s)	14.0	25.0			25.0		25.0	25.0	25.0			
Total Split (s)	24.0	82.0			58.0		38.0	38.0	38.0			
Total Split (%)	20.0%	68.3%			48.3%		31.7%	31.7%	31.7%			
Maximum Green (s)	17.0	75.0			51.0		31.0	31.0	31.0			
Yellow Time (s)	5.0	5.0			5.0		5.0	5.0	5.0			
All-Red Time (s)	2.0	2.0			2.0		2.0	2.0	2.0			
Lost Time Adjust (s)	-2.0	-2.0			-2.0			-2.0	-2.0			
Total Lost Time (s)	5.0	5.0			5.0			5.0	5.0			
Lead/Lag	Lag				Lead							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0			
Recall Mode	None	C-Max			C-Max		None	None	None			
Walk Time (s)					7.0		7.0	7.0	7.0			
Flash Dont Walk (s)					11.0		11.0	11.0	11.0			
Pedestrian Calls (#/hr)					0		0	0	0			
Act Effct Green (s)	97.3	97.3			73.3	120.0		12.7	12.7			
Actuated g/C Ratio	0.81	0.81			0.61	1.00		0.11	0.11			
v/c Ratio	0.18	0.21			0.25	0.14		0.24	0.53			
Control Delay (s/veh)	6.1	6.0			10.5	0.2		52.2	14.9			
Queue Delay	0.0	0.0			0.0	0.0		0.0	0.0			
Total Delay (s/veh)	6.1	6.0			10.5	0.2		52.2	14.9			
LOS	A	A			B	A		D	B			
Approach Delay (s/veh)		6.1			6.0			23.6				
Approach LOS		A			A			C				
90th %ile Green (s)	17.0	92.4			68.4		13.6	13.6	13.6			
90th %ile Term Code	Hold	Coord			Coord		Gap	Gap	Gap			
70th %ile Green (s)	17.0	96.0			72.0		10.0	10.0	10.0			
70th %ile Term Code	Hold	Coord			Coord		Min	Min	Min			
50th %ile Green (s)	17.0	96.0			72.0		10.0	10.0	10.0			
50th %ile Term Code	Hold	Coord			Coord		Min	Min	Min			
30th %ile Green (s)	17.0	96.0			72.0		10.0	10.0	10.0			
30th %ile Term Code	Hold	Coord			Coord		Min	Min	Min			
10th %ile Green (s)	17.0	96.0			72.0		10.0	10.0	10.0			
10th %ile Term Code	Hold	Coord			Coord		Min	Min	Min			
Stops (vph)	70	135			104	0		41	24			
Fuel Used(gal)	2	4			3	1		1	1			
CO Emissions (g/hr)	159	287			190	88		65	93			
NOx Emissions (g/hr)	31	56			37	17		13	18			
VOC Emissions (g/hr)	37	67			44	20		15	22			
Dilemma Vehicles (#)	0	0			0	0		0	0			
Queue Length 50th (ft)	57	107			83	0		33	0			
Queue Length 95th (ft)	82	138			116	0		69	61			
Internal Link Dist (ft)		1085			680			552			227	
Turn Bay Length (ft)	500					250			265			
Base Capacity (vph)	965	1495			1054	1429		482	491			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn	0	0			0	0		0	0			
Spillback Cap Reductn	0	0			0	0		0	0			
Storage Cap Reductn	0	0			0	0		0	0			
Reduced v/c Ratio	0.19	0.22			0.25	0.15		0.09	0.31			

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 116 (97%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.53			
Intersection Signal Delay (s/veh): 8.9		Intersection LOS: A	
Intersection Capacity Utilization 44.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 300: I-24 WB Off Ramp/I-24 WB On Ramp & Epps Mill Rd



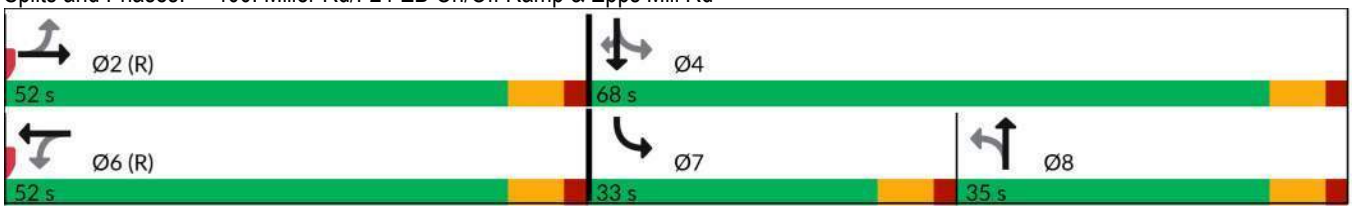
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	168	42	59	136	107	22	25	122	218	97	223
Future Volume (vph)	35	168	42	59	136	107	22	25	122	218	97	223
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	160		160	150		0	185		185	0		250
Storage Lanes	1		0	1		0	0		1	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.970			0.934			0.876				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1832	0	1752	1560	0	1805	1417	0	1570	1845	1538
Flt Permitted	0.580			0.609			0.694			0.319		
Satd. Flow (perm)	1070	1832	0	1123	1560	0	1319	1417	0	527	1845	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12			39			122				223
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		559			1165			1215			492	
Travel Time (s)		12.7			26.5			27.6			11.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	0%	3%	3%	12%	16%	0%	0%	21%	15%	3%	5%
Adj. Flow (vph)	35	168	42	59	136	107	22	25	122	218	97	223
Shared Lane Traffic (%)												
Lane Group Flow (vph)	35	210	0	59	243	0	22	147	0	218	97	223
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60		9	15		60	15		9	60		60
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100		20	100	20
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases		2			6			8		7	4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2			6			8			4		4
Detector Phase	2	2		6	6		8	8		7	4	4
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		7.0	10.0	10.0
Minimum Split (s)	17.0	17.0		17.0	17.0		25.0	25.0		14.0	17.0	17.0
Total Split (s)	52.0	52.0		52.0	52.0		35.0	35.0		33.0	68.0	68.0
Total Split (%)	43.3%	43.3%		43.3%	43.3%		29.2%	29.2%		27.5%	56.7%	56.7%
Maximum Green (s)	45.0	45.0		45.0	45.0		28.0	28.0		26.0	61.0	61.0
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	None
Walk Time (s)							7.0	7.0				
Flash Dont Walk (s)							11.0	11.0				
Pedestrian Calls (#/hr)							0	0				
Act Effct Green (s)	68.2	68.2		68.2	68.2		13.3	13.3		41.8	41.8	41.8
Actuated g/C Ratio	0.57	0.57		0.57	0.57		0.11	0.11		0.35	0.35	0.35
v/c Ratio	0.05	0.20		0.09	0.26		0.15	0.55		0.56	0.15	0.32
Control Delay (s/veh)	14.2	13.7		12.4	10.5		49.7	21.0		34.3	25.7	4.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay (s/veh)	14.2	13.7		12.4	10.5		49.7	21.0		34.3	25.7	4.2
LOS	B	B		B	B		D	C		C	C	A
Approach Delay (s/veh)		13.8			10.9			24.8			20.3	
Approach LOS		B			B			C			C	
90th %ile Green (s)	57.5	57.5		57.5	57.5		15.5	15.5		26.0	48.5	48.5
90th %ile Term Code	Coord	Coord		Coord	Coord		Gap	Gap		Max	Hold	Hold
70th %ile Green (s)	62.1	62.1		62.1	62.1		10.9	10.9		26.0	43.9	43.9
70th %ile Term Code	Coord	Coord		Coord	Coord		Gap	Gap		Max	Hold	Hold
50th %ile Green (s)	66.2	66.2		66.2	66.2		10.0	10.0		22.8	39.8	39.8
50th %ile Term Code	Coord	Coord		Coord	Coord		Min	Min		Gap	Hold	Hold
30th %ile Green (s)	69.9	69.9		69.9	69.9		10.0	10.0		19.1	36.1	36.1
30th %ile Term Code	Coord	Coord		Coord	Coord		Min	Min		Gap	Hold	Hold
10th %ile Green (s)	75.1	75.1		75.1	75.1		10.0	10.0		13.9	30.9	30.9
10th %ile Term Code	Coord	Coord		Coord	Coord		Min	Min		Gap	Hold	Hold
Stops (vph)	17	97		20	80		22	37		157	62	19
Fuel Used(gal)	0	2		1	3		1	2		3	1	1
CO Emissions (g/hr)	24	143		56	222		39	156		226	85	81
NOx Emissions (g/hr)	5	28		11	43		8	30		44	17	16
VOC Emissions (g/hr)	6	33		13	51		9	36		52	20	19
Dilemma Vehicles (#)	0	0		0	0		0	0		0	0	0
Queue Length 50th (ft)	12	71		16	56		16	18		127	51	0
Queue Length 95th (ft)	32	134		29	99		41	80		175	81	47
Internal Link Dist (ft)		479			1085			1135			412	
Turn Bay Length (ft)	160			150			185					250
Base Capacity (vph)	607	1045		637	903		329	445		426	968	913

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.06	0.20		0.09	0.27		0.07	0.33		0.51	0.10	0.24

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.56			
Intersection Signal Delay (s/veh): 17.4		Intersection LOS: B	
Intersection Capacity Utilization 59.6%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 400: Miller Rd/I-24 EB On/Off Ramp & Epps Mill Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	146	23	28	330	23	15	2	28	71	0	11
Future Volume (vph)	3	146	23	28	330	23	15	2	28	71	0	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	70		0	60		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	150			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.980			0.990			0.916			0.982	
Flt Protected	0.950			0.950				0.984			0.959	
Satd. Flow (prot)	1805	1830	0	1805	1841	0	0	1713	0	0	1604	0
Flt Permitted	0.950			0.950				0.984			0.959	
Satd. Flow (perm)	1805	1830	0	1805	1841	0	0	1713	0	0	1604	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1306			559			1202			1203	
Travel Time (s)		29.7			12.7			27.3			27.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	2%	0%	0%	2%	5%	0%	0%	0%	13%	0%	2%
Adj. Flow (vph)	3	146	23	28	330	23	15	2	28	71	0	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	3	169	0	28	353	0	0	45	0	0	82	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 40.3%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	146	23	28	330	23	15	2	28	71	0	11
Future Vol, veh/h	3	146	23	28	330	23	15	2	28	71	0	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	70	-	-	60	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	2	0	0	2	5	0	0	0	13	0	2
Mvmt Flow	3	146	23	28	330	23	15	2	28	71	0	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	353	0	0	169	0	0	567	573	158	577	573	342
Stage 1	-	-	-	-	-	-	164	164	-	398	398	-
Stage 2	-	-	-	-	-	-	403	409	-	179	175	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.23	6.5	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.23	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.23	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.617	4	3.318
Pot Cap-1 Maneuver	1217	-	-	1421	-	-	437	432	893	412	432	701
Stage 1	-	-	-	-	-	-	843	766	-	606	606	-
Stage 2	-	-	-	-	-	-	628	600	-	798	758	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1217	-	-	1421	-	-	423	422	893	391	422	701
Mov Cap-2 Maneuver	-	-	-	-	-	-	423	422	-	391	422	-
Stage 1	-	-	-	-	-	-	841	764	-	605	594	-
Stage 2	-	-	-	-	-	-	606	588	-	769	756	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0.1	0.6	11.2	15.8
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	629	1217	-	-	1421	-	-	416
HCM Lane V/C Ratio	0.072	0.002	-	-	0.02	-	-	0.197
HCM Control Delay (s/veh)	11.2	8	-	-	7.6	-	-	15.8
HCM Lane LOS	B	A	-	-	A	-	-	C
HCM 95th %tile Q (veh)	0.2	0	-	-	0.1	-	-	0.7

Intersection: 2: I-24 EB On/Off Ramp/I-24 EB Off Ramp & I-24 EB On Loop

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 100: TN-2 (US Hwy-41) & Epps Mill Rd

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	R
Maximum Queue (ft)	198	106	75	55	231	54
Average Queue (ft)	124	43	34	19	89	15
95th Queue (ft)	187	81	67	56	191	45
Link Distance (ft)		1460		3604	2195	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	500		150			150
Storage Blk Time (%)					2	
Queuing Penalty (veh)					4	

Intersection: 200: Forbus Drive & Epps Mill Rd

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	LT	R	LT	R
Maximum Queue (ft)	160	59	49	135	69	53	117	154
Average Queue (ft)	61	15	4	49	16	10	30	92
95th Queue (ft)	134	49	24	111	45	34	77	141
Link Distance (ft)		692		1460	1257		957	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	215		200			100		100
Storage Blk Time (%)							1	3
Queuing Penalty (veh)							3	1

Intersection: 300: I-24 WB Off Ramp/I-24 WB On Ramp & Epps Mill Rd

Movement	EB	EB	WB	NB	NB
Directions Served	L	T	T	LT	R
Maximum Queue (ft)	96	231	156	92	75
Average Queue (ft)	49	80	34	41	7
95th Queue (ft)	92	162	103	80	40
Link Distance (ft)		1107	692	595	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	500				265
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 400: Miller Rd/I-24 EB On/Off Ramp & Epps Mill Rd

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	T	R
Maximum Queue (ft)	69	156	69	182	232	218	296	176	92
Average Queue (ft)	20	68	31	64	25	88	168	63	53
95th Queue (ft)	55	135	63	131	96	187	289	129	77
Link Distance (ft)		482		1107	1173		434	434	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	160		150			185			250
Storage Blk Time (%)		0		2	0	1			
Queuing Penalty (veh)		0		1	0	0			

Intersection: 500: Dollar General Driveway/Capital Way & Epps Mill Rd

Movement	EB	WB	NB	SB
Directions Served	L	L	LTR	LTR
Maximum Queue (ft)	28	28	52	92
Average Queue (ft)	1	6	23	39
95th Queue (ft)	9	24	48	70
Link Distance (ft)			1166	1164
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	70	60		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 9

Lane Group	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	SWL	SWR
Lane Configurations										
Traffic Volume (vph)	0	0	0	0	411	0	775	0	0	0
Future Volume (vph)	0	0	0	0	411	0	775	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	0		0	0		400	0	0
Storage Lanes	0	0	0		1	0		1	0	0
Taper Length (ft)	100		100			100			100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00
Frt					0.865					
Flt Protected										
Satd. Flow (prot)	0	0	0	0	1596	0	3505	0	0	0
Flt Permitted										
Satd. Flow (perm)	0	0	0	0	1596	0	3505	0	0	0
Link Speed (mph)	30			30			30		30	
Link Distance (ft)	223			518			1608		690	
Travel Time (s)	5.1			11.8			36.5		15.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	0	411	0	775	0	0	0
Shared Lane Traffic (%)										
Lane Group Flow (vph)	0	0	0	0	411	0	775	0	0	0
Enter Blocked Intersection	No	No	No	No	Yes	No	Yes	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	Left	Left	Right	Left	Right
Median Width(ft)	0			0			0		0	
Link Offset(ft)	0			0			0		0	
Crosswalk Width(ft)	16			16			16		16	
Two way Left Turn Lane										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60	60	60		9	15		60	15	60
Sign Control	Stop			Free			Free		Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 28.8%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	231.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	325	133	330	671	229	322
Future Vol, veh/h	325	133	330	671	229	322
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	500	0	150	-	-	150
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	3	1	1	2	2	1
Mvmt Flow	325	133	330	671	229	322

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1560	229	551	0	-	0
Stage 1	229	-	-	-	-	-
Stage 2	1331	-	-	-	-	-
Critical Hdwy	6.43	6.21	4.11	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.309	2.209	-	-	-
Pot Cap-1 Maneuver	~ 123	813	1024	-	-	-
Stage 1	807	-	-	-	-	-
Stage 2	~ 245	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 83	813	1024	-	-	-
Mov Cap-2 Maneuver	~ 83	-	-	-	-	-
Stage 1	547	-	-	-	-	-
Stage 2	~ 245	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/$	1008	3.4	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1024	-	83	813	-	-
HCM Lane V/C Ratio	0.322	-	3.916	0.164	-	-
HCM Control Delay (s/veh)	10.2	-	$ 1416.3	10.3	-	-
HCM Lane LOS	B	-	F	B	-	-
HCM 95th %tile Q (veh)	1.4	-	33.9	0.6	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

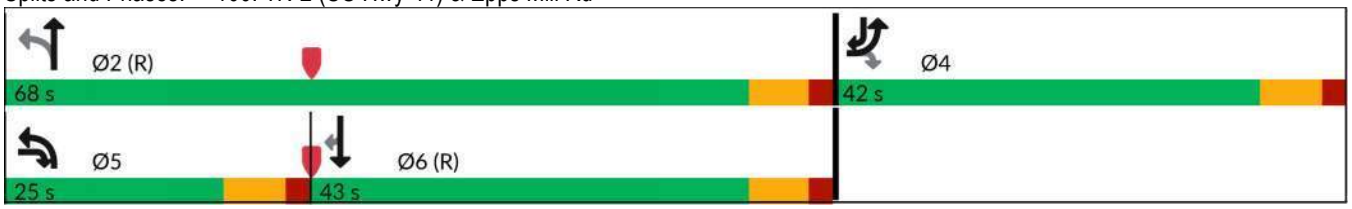
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	325	133	330	671	229	322
Future Volume (vph)	325	133	330	671	229	322
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	500	0	150			150
Storage Lanes	1	1	1			1
Taper Length (ft)	100		300			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1752	1599	1787	1863	1863	1599
Flt Permitted	0.950		0.521			
Satd. Flow (perm)	1752	1599	980	1863	1863	1599
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		133				322
Link Speed (mph)	30			30	30	
Link Distance (ft)	1613			3584	2221	
Travel Time (s)	36.7			81.5	50.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	1%	1%	2%	2%	1%
Adj. Flow (vph)	325	133	330	671	229	322
Shared Lane Traffic (%)						
Lane Group Flow (vph)	325	133	330	671	229	322
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane	Yes					
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (ft)	20	20	20	100	100	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	20	20	20	6	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)				94	94	
Detector 2 Size(ft)				6	6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	5	5	2	6	4

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases		4	2			6
Detector Phase	4	5	5	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	10.0	10.0	7.0
Minimum Split (s)	14.0	14.0	14.0	17.0	17.0	14.0
Total Split (s)	42.0	25.0	25.0	68.0	43.0	42.0
Total Split (%)	38.2%	22.7%	22.7%	61.8%	39.1%	38.2%
Maximum Green (s)	35.0	18.0	18.0	61.0	36.0	35.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	C-Max	C-Max	None
Act Effct Green (s)	27.9	49.0	72.1	72.1	51.0	83.9
Actuated g/C Ratio	0.25	0.45	0.66	0.66	0.46	0.76
v/c Ratio	0.73	0.16	0.43	0.55	0.26	0.24
Control Delay (s/veh)	51.7	5.6	11.0	13.5	21.7	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	51.7	5.6	11.0	13.5	21.7	0.9
LOS	D	A	B	B	C	A
Approach Delay (s/veh)	38.4			12.7	9.6	
Approach LOS	D			B	A	
90th %ile Green (s)	34.2	18.8	18.8	61.8	36.0	34.2
90th %ile Term Code	Gap	Max	Max	Coord	Coord	Gap
70th %ile Green (s)	29.8	16.9	16.9	66.2	42.3	29.8
70th %ile Term Code	Gap	Gap	Gap	Coord	Coord	Gap
50th %ile Green (s)	25.8	14.0	14.0	70.2	49.2	25.8
50th %ile Term Code	Gap	Gap	Gap	Coord	Coord	Gap
30th %ile Green (s)	22.4	11.7	11.7	73.6	54.9	22.4
30th %ile Term Code	Gap	Gap	Gap	Coord	Coord	Gap
10th %ile Green (s)	17.5	9.1	9.1	78.5	62.4	17.5
10th %ile Term Code	Gap	Gap	Gap	Coord	Coord	Gap
Stops (vph)	301	33	140	362	145	11
Fuel Used(gal)	9	2	11	23	6	6
CO Emissions (g/hr)	641	140	750	1580	404	399
NOx Emissions (g/hr)	125	27	146	307	79	78
VOC Emissions (g/hr)	149	33	174	366	94	92
Dilemma Vehicles (#)	0	0	0	0	0	0
Queue Length 50th (ft)	218	10	90	232	96	0
Queue Length 95th (ft)	314	32	168	413	187	22
Internal Link Dist (ft)	1533			3504	2141	
Turn Bay Length (ft)	500		150			150
Base Capacity (vph)	589	840	789	1220	863	1401
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Reduced v/c Ratio	0.55	0.16	0.42	0.55	0.27	0.23

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay (s/veh): 17.7		Intersection LOS: B	
Intersection Capacity Utilization 61.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 100: TN-2 (US Hwy-41) & Epps Mill Rd



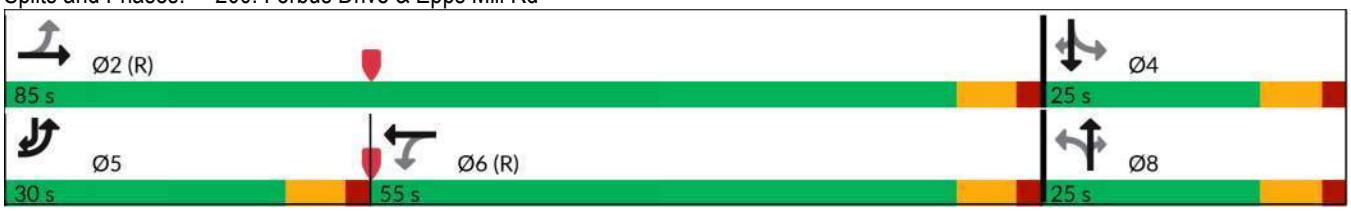
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	275	411	39	18	556	56	5	0	5	56	0	296
Future Volume (vph)	275	411	39	18	556	56	5	0	5	56	0	296
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	215		0	200		0	100		100	100		100
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987			0.986				0.850			0.850
Flt Protected	0.950			0.950				0.950			0.950	
Satd. Flow (prot)	1410	1809	0	1805	1790	0	0	1805	1615	0	1787	1016
Flt Permitted	0.307			0.503				0.720			0.754	
Satd. Flow (perm)	456	1809	0	956	1790	0	0	1368	1615	0	1418	1016
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11			6				109			220
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		710			1613			1227			992	
Travel Time (s)		16.1			36.7			27.9			22.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	28%	4%	0%	0%	5%	1%	0%	0%	0%	1%	0%	59%
Adj. Flow (vph)	275	411	39	18	556	56	5	0	5	56	0	296
Shared Lane Traffic (%)												
Lane Group Flow (vph)	275	450	0	18	612	0	0	5	5	0	56	296
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA	Perm	Perm	NA	pm+ov
Protected Phases	5	2			6			8			4	5

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2			6			8		8	4		4
Detector Phase	5	2		6	6		8	8	8	4	4	5
Switch Phase												
Minimum Initial (s)	7.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	7.0
Minimum Split (s)	14.0	17.0		25.0	25.0		25.0	25.0	25.0	17.0	17.0	14.0
Total Split (s)	30.0	85.0		55.0	55.0		25.0	25.0	25.0	25.0	25.0	30.0
Total Split (%)	27.3%	77.3%		50.0%	50.0%		22.7%	22.7%	22.7%	22.7%	22.7%	27.3%
Maximum Green (s)	23.0	78.0		48.0	48.0		18.0	18.0	18.0	18.0	18.0	23.0
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0			-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	5.0
Lead/Lag	Lead			Lag	Lag							Lead
Lead-Lag Optimize?	Yes			Yes	Yes							Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		C-Max	C-Max		None	None	None	None	None	None
Walk Time (s)				7.0	7.0		7.0	7.0	7.0			
Flash Dont Walk (s)				11.0	11.0		11.0	11.0	11.0			
Pedestrian Calls (#/hr)				0	0		0	0	0			
Act Effct Green (s)	90.3	91.3		70.0	70.0			13.1	13.1		13.1	30.0
Actuated g/C Ratio	0.82	0.83		0.64	0.64			0.12	0.12		0.12	0.27
v/c Ratio	0.54	0.29		0.02	0.53			0.03	0.01		0.33	0.67
Control Delay (s/veh)	8.2	3.0		15.9	18.5			42.2	0.2		49.7	16.3
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay (s/veh)	8.2	3.0		15.9	18.5			42.2	0.2		49.7	16.3
LOS	A	A		B	B			D	A		D	B
Approach Delay (s/veh)		5.0			18.5			21.2			21.6	
Approach LOS		A			B			C			C	
90th %ile Green (s)	23.7	82.1		51.4	51.4		13.9	13.9	13.9	13.9	13.9	23.7
90th %ile Term Code	Gap	Coord		Coord	Coord		Hold	Hold	Hold	Gap	Gap	Gap
70th %ile Green (s)	15.4	84.6		62.2	62.2		11.4	11.4	11.4	11.4	11.4	15.4
70th %ile Term Code	Gap	Coord		Coord	Coord		Hold	Hold	Hold	Gap	Gap	Gap
50th %ile Green (s)	10.8	86.0		68.2	68.2		10.0	10.0	10.0	10.0	10.0	10.8
50th %ile Term Code	Gap	Coord		Coord	Coord		Hold	Hold	Hold	Min	Min	Gap
30th %ile Green (s)	9.6	86.0		69.4	69.4		10.0	10.0	10.0	10.0	10.0	9.6
30th %ile Term Code	Gap	Coord		Coord	Coord		Hold	Hold	Hold	Min	Min	Gap
10th %ile Green (s)	7.0	103.0		89.0	89.0		0.0	0.0	0.0	0.0	0.0	7.0
10th %ile Term Code	Min	Coord		Coord	Coord		Skip	Skip	Skip	Skip	Skip	Min
Stops (vph)	68	72		10	345			7	0		50	78
Fuel Used(gal)	2	3		0	12			0	0		1	4
CO Emissions (g/hr)	165	221		24	833			9	3		89	259
NOx Emissions (g/hr)	32	43		5	162			2	1		17	50
VOC Emissions (g/hr)	38	51		6	193			2	1		21	60
Dilemma Vehicles (#)	0	0		0	0			0	0		0	0
Queue Length 50th (ft)	34	56		4	217			3	0		37	42
Queue Length 95th (ft)	56	84		m23	456			14	0		75	114
Internal Link Dist (ft)		630			1533			1147			912	
Turn Bay Length (ft)	215			200					100			100
Base Capacity (vph)	592	1504		608	1141			248	382		257	507

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn	0	0		0	0			0	0		0	0
Spillback Cap Reductn	0	0		0	0			0	0		0	0
Storage Cap Reductn	0	0		0	0			0	0		0	0
Reduced v/c Ratio	0.46	0.30		0.03	0.54			0.02	0.01		0.22	0.58

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 78 (71%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay (s/veh): 13.4		Intersection LOS: B	
Intersection Capacity Utilization 71.8%		ICU Level of Service C	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 200: Forbus Drive & Epps Mill Rd



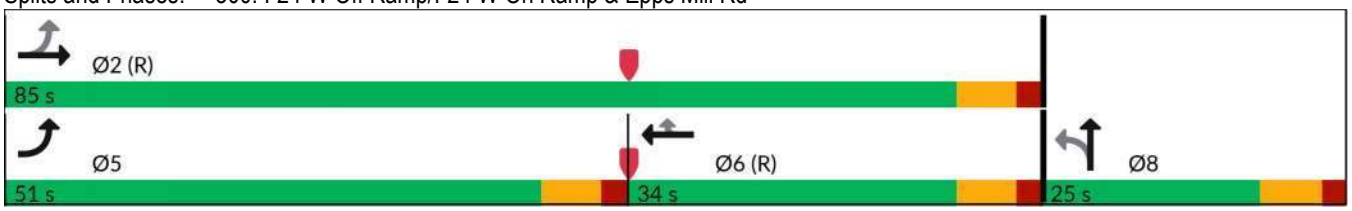
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	907	379	0	0	280	577	57	0	346	0	0	0
Future Volume (vph)	907	379	0	0	280	577	57	0	346	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	500		0	0		250	0		265	0		0
Storage Lanes	1		0	0		1	0		1	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950							0.950				
Satd. Flow (prot)	1736	1667	0	0	1667	1442	0	1752	1568	0	0	0
Flt Permitted	0.330							0.950				
Satd. Flow (perm)	603	1667	0	0	1667	1442	0	1752	1568	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						396			346			
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1201			710			632			300	
Travel Time (s)		27.3			16.1			14.4			6.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	4%	14%	0%	0%	14%	12%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	907	379	0	0	280	577	57	0	346	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	907	379	0	0	280	577	0	57	346	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane					Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2	1	1	2	1			
Detector Template	Left	Thru			Thru	Right	Left	Thru	Right			
Leading Detector (ft)	20	100			100	20	20	100	20			
Trailing Detector (ft)	0	0			0	0	0	0	0			
Detector 1 Position(ft)	0	0			0	0	0	0	0			
Detector 1 Size(ft)	20	6			6	20	20	6	20			
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 1 Queue (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 1 Delay (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	pm+pt	NA			NA	Perm	Perm	NA	Free			
Protected Phases	5	2			6			8				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2					6	8		Free			
Detector Phase	5	2			6	6	8	8				
Switch Phase												
Minimum Initial (s)	7.0	10.0			10.0	10.0	10.0	10.0				
Minimum Split (s)	14.0	25.0			25.0	25.0	25.0	25.0				
Total Split (s)	51.0	85.0			34.0	34.0	25.0	25.0				
Total Split (%)	46.4%	77.3%			30.9%	30.9%	22.7%	22.7%				
Maximum Green (s)	44.0	78.0			27.0	27.0	18.0	18.0				
Yellow Time (s)	5.0	5.0			5.0	5.0	5.0	5.0				
All-Red Time (s)	2.0	2.0			2.0	2.0	2.0	2.0				
Lost Time Adjust (s)	-2.0	-2.0			-2.0	-2.0		-2.0				
Total Lost Time (s)	5.0	5.0			5.0	5.0		5.0				
Lead/Lag	Lead				Lag	Lag						
Lead-Lag Optimize?	Yes				Yes	Yes						
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0				
Recall Mode	None	C-Max			C-Max	C-Max	Max	Max				
Walk Time (s)					7.0	7.0	7.0	7.0				
Flash Dont Walk (s)					11.0	11.0	11.0	11.0				
Pedestrian Calls (#/hr)					0	0	0	0				
Act Effct Green (s)	80.0	80.0			29.0	29.0		20.0	110.0			
Actuated g/C Ratio	0.73	0.73			0.26	0.26		0.18	1.00			
v/c Ratio	0.99	0.31			0.63	0.85		0.17	0.22			
Control Delay (s/veh)	34.8	5.2			41.1	24.6		39.8	0.3			
Queue Delay	0.0	0.0			0.0	0.0		0.0	0.0			
Total Delay (s/veh)	34.8	5.2			41.1	24.6		39.8	0.3			
LOS	C	A			D	C		D	A			
Approach Delay (s/veh)		26.2			30.0			5.9				
Approach LOS		C			C			A				
90th %ile Green (s)	44.0	78.0			27.0	27.0	18.0	18.0				
90th %ile Term Code	Max	Coord			Coord	Coord	MaxR	MaxR				
70th %ile Green (s)	44.0	78.0			27.0	27.0	18.0	18.0				
70th %ile Term Code	Max	Coord			Coord	Coord	MaxR	MaxR				
50th %ile Green (s)	44.0	78.0			27.0	27.0	18.0	18.0				
50th %ile Term Code	Max	Coord			Coord	Coord	MaxR	MaxR				
30th %ile Green (s)	44.0	78.0			27.0	27.0	18.0	18.0				
30th %ile Term Code	Max	Coord			Coord	Coord	MaxR	MaxR				
10th %ile Green (s)	44.0	78.0			27.0	27.0	18.0	18.0				
10th %ile Term Code	Max	Coord			Coord	Coord	MaxR	MaxR				
Stops (vph)	587	134			247	344		46	0			
Fuel Used(gal)	18	5			5	8		1	2			
CO Emissions (g/hr)	1271	328			368	558		70	121			
NOx Emissions (g/hr)	247	64			72	109		14	23			
VOC Emissions (g/hr)	295	76			85	129		16	28			
Dilemma Vehicles (#)	0	0			0	0		0	0			
Queue Length 50th (ft)	376	82			194	181		34	0			
Queue Length 95th (ft)	m#688	m91			234	#336		72	0			
Internal Link Dist (ft)		1121			630			552			220	
Turn Bay Length (ft)	500					250			265			
Base Capacity (vph)	912	1212			439	671		318	1568			

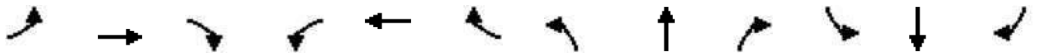
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn	0	0			0	0		0	0			
Spillback Cap Reductn	0	0			0	0		0	0			
Storage Cap Reductn	0	0			0	0		0	0			
Reduced v/c Ratio	0.99	0.31			0.64	0.86		0.18	0.22			

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 99 (90%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.99			
Intersection Signal Delay (s/veh): 24.2		Intersection LOS: C	
Intersection Capacity Utilization 106.8%		ICU Level of Service G	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 300: I-24 W Off Ramp/I-24 W On Ramp & Epps Mill Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	117	500	109	46	36	255	65	39	367	419	188	168
Future Volume (vph)	117	500	109	46	36	255	65	39	367	419	188	168
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	160		160	150		0	185		185	250		250
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.973			0.869			0.864				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1839	0	1752	1429	0	1805	1380	0	1570	1845	1538
Flt Permitted	0.464			0.113			0.639			0.135		
Satd. Flow (perm)	856	1839	0	208	1429	0	1214	1380	0	223	1845	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11			255			177				168
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		559			1201			1215			518	
Travel Time (s)		12.7			27.3			27.6			11.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	0%	3%	3%	12%	16%	0%	0%	21%	15%	3%	5%
Adj. Flow (vph)	117	500	109	46	36	255	65	39	367	419	188	168
Shared Lane Traffic (%)												
Lane Group Flow (vph)	117	609	0	46	291	0	65	406	0	419	188	168
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100		20	100	20
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases		2			6			4		3	8	

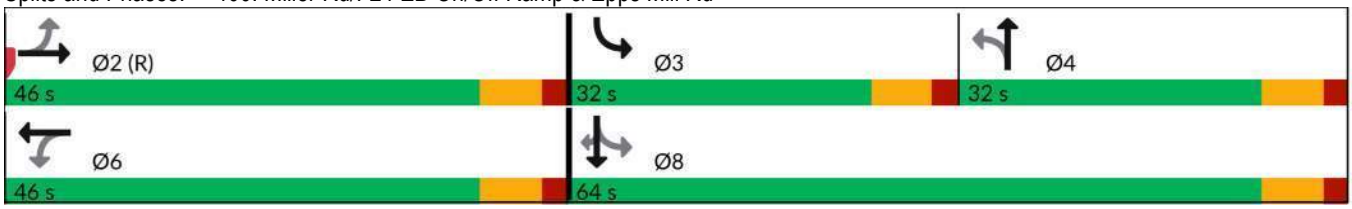


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2			6			4			8		8
Detector Phase	2	2		6	6		4	4		3	8	8
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		7.0	10.0	10.0
Minimum Split (s)	17.0	17.0		17.0	17.0		25.0	25.0		14.0	17.0	17.0
Total Split (s)	46.0	46.0		46.0	46.0		32.0	32.0		32.0	64.0	64.0
Total Split (%)	41.8%	41.8%		41.8%	41.8%		29.1%	29.1%		29.1%	58.2%	58.2%
Maximum Green (s)	39.0	39.0		39.0	39.0		25.0	25.0		25.0	57.0	57.0
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	C-Max	C-Max		Max	Max		Max	Max		None	Max	Max
Walk Time (s)							7.0	7.0				
Flash Dont Walk (s)							11.0	11.0				
Pedestrian Calls (#/hr)							0	0				
Act Effct Green (s)	41.0	41.0		41.0	41.0		27.4	27.4		59.0	59.0	59.0
Actuated g/C Ratio	0.37	0.37		0.37	0.37		0.25	0.25		0.54	0.54	0.54
v/c Ratio	0.36	0.88		0.59	0.42		0.21	0.85		0.93	0.19	0.18
Control Delay (s/veh)	29.2	47.5		50.4	3.4		35.4	40.4		59.3	13.8	2.4
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay (s/veh)	29.2	47.5		50.4	3.4		35.4	40.4		59.3	13.8	2.4
LOS	C	D		D	A		D	D		E	B	A
Approach Delay (s/veh)		44.6			9.9			39.7			35.9	
Approach LOS		D			A			D			D	
90th %ile Green (s)	39.0	39.0		39.0	39.0		25.0	25.0		25.0	57.0	57.0
90th %ile Term Code	Coord	Coord		Coord	Coord		MaxR	MaxR		Max	MaxR	MaxR
70th %ile Green (s)	39.0	39.0		39.0	39.0		25.0	25.0		25.0	57.0	57.0
70th %ile Term Code	Coord	Coord		Coord	Coord		MaxR	MaxR		Max	MaxR	MaxR
50th %ile Green (s)	39.0	39.0		39.0	39.0		25.0	25.0		25.0	57.0	57.0
50th %ile Term Code	Coord	Coord		Coord	Coord		MaxR	MaxR		Max	MaxR	MaxR
30th %ile Green (s)	39.0	39.0		39.0	39.0		25.0	25.0		25.0	57.0	57.0
30th %ile Term Code	Coord	Coord		Coord	Coord		MaxR	MaxR		Max	MaxR	MaxR
10th %ile Green (s)	39.0	39.0		39.0	39.0		26.8	26.8		23.2	57.0	57.0
10th %ile Term Code	Coord	Coord		Coord	Coord		MaxR	MaxR		Gap	MaxR	MaxR
Stops (vph)	85	524		16	27		51	219		302	93	13
Fuel Used(gal)	2	11		1	3		1	8		8	2	1
CO Emissions (g/hr)	117	800		69	215		96	587		589	126	58
NOx Emissions (g/hr)	23	156		13	42		19	114		115	25	11
VOC Emissions (g/hr)	27	185		16	50		22	136		136	29	14
Dilemma Vehicles (#)	0	0		0	0		0	0		0	0	0
Queue Length 50th (ft)	59	391		7	1		37	163		238	65	0
Queue Length 95th (ft)	112	#602		m23	3		76	#341		#433	105	31
Internal Link Dist (ft)		479			1121			1135			438	
Turn Bay Length (ft)	160			150			185			250		250
Base Capacity (vph)	319	692		77	692		301	476		450	989	902

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.37	0.88		0.60	0.42		0.22	0.85		0.93	0.19	0.19

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.94			
Intersection Signal Delay (s/veh): 35.6		Intersection LOS: D	
Intersection Capacity Utilization 105.9%		ICU Level of Service G	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 400: Miller Rd/I-24 EB On/Off Ramp & Epps Mill Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	648	16	8	167	94	0	5	13	65	0	5
Future Volume (vph)	29	648	16	8	167	94	0	5	13	65	0	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	70		0	60		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	150			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996			0.946			0.902			0.990	
Flt Protected	0.950			0.950							0.956	
Satd. Flow (prot)	1787	1821	0	1805	1709	0	0	1714	0	0	1302	0
Flt Permitted	0.950			0.950							0.956	
Satd. Flow (perm)	1787	1821	0	1805	1709	0	0	1714	0	0	1302	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1306			559			1202			1203	
Travel Time (s)		29.7			12.7			27.3			27.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	4%	0%	0%	7%	2%	0%	0%	0%	41%	0%	0%
Adj. Flow (vph)	29	648	16	8	167	94	0	5	13	65	0	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	29	664	0	8	261	0	0	18	0	0	70	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 52.3%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	29	648	16	8	167	94	0	5	13	65	0	5
Future Vol, veh/h	29	648	16	8	167	94	0	5	13	65	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	70	-	-	60	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	1	4	0	0	7	2	0	0	0	41	0	0
Mvmt Flow	29	648	16	8	167	94	0	5	13	65	0	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	261	0	0	664	0	0	947	991	656	953	952	214
Stage 1	-	-	-	-	-	-	714	714	-	230	230	-
Stage 2	-	-	-	-	-	-	233	277	-	723	722	-
Critical Hdwy	4.11	-	-	4.1	-	-	7.1	6.5	6.2	7.51	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.51	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.51	5.5	-
Follow-up Hdwy	2.209	-	-	2.2	-	-	3.5	4	3.3	3.869	4	3.3
Pot Cap-1 Maneuver	1309	-	-	935	-	-	243	248	469	204	261	831
Stage 1	-	-	-	-	-	-	425	438	-	693	718	-
Stage 2	-	-	-	-	-	-	775	685	-	362	434	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1309	-	-	935	-	-	236	240	469	191	253	831
Mov Cap-2 Maneuver	-	-	-	-	-	-	236	240	-	191	253	-
Stage 1	-	-	-	-	-	-	416	428	-	678	712	-
Stage 2	-	-	-	-	-	-	764	679	-	340	424	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0.3	0.3	15.2	32
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	371	1309	-	-	935	-	-	202
HCM Lane V/C Ratio	0.049	0.022	-	-	0.009	-	-	0.347
HCM Control Delay (s/veh)	15.2	7.8	-	-	8.9	-	-	32
HCM Lane LOS	C	A	-	-	A	-	-	D
HCM 95th %tile Q (veh)	0.2	0.1	-	-	0	-	-	1.5

Intersection: 2: I-24 EB On/Off Ramp/I-24 EB Off Ramp & I-24 EB On Loop

Movement	SB
Directions Served	T
Maximum Queue (ft)	38
Average Queue (ft)	2
95th Queue (ft)	15
Link Distance (ft)	1592
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 100: TN-2 (US Hwy-41) & Epps Mill Rd

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	R
Maximum Queue (ft)	358	382	186	351	267	119
Average Queue (ft)	212	61	100	174	118	53
95th Queue (ft)	341	206	175	324	218	94
Link Distance (ft)		1518		3547	2189	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	500		150			150
Storage Blk Time (%)			2	11	4	
Queuing Penalty (veh)			13	38	14	

Intersection: 200: Forbus Drive & Epps Mill Rd

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	LT	R	LT	R
Maximum Queue (ft)	273	107	300	405	26	28	398	200
Average Queue (ft)	110	40	28	255	4	3	153	159
95th Queue (ft)	213	96	149	411	18	18	359	234
Link Distance (ft)		644		1518	1183		957	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	215		200			100		100
Storage Blk Time (%)	1			17			1	29
Queuing Penalty (veh)	6			3			3	16

Intersection: 300: I-24 W Off Ramp/I-24 W On Ramp & Epps Mill Rd

Movement	EB	EB	WB	WB	NB	NB
Directions Served	L	T	T	R	LT	R
Maximum Queue (ft)	600	1148	404	350	111	215
Average Queue (ft)	571	703	218	57	37	68
95th Queue (ft)	674	1290	376	269	85	156
Link Distance (ft)		1142	644		595	
Upstream Blk Time (%)		0				
Queuing Penalty (veh)		6				
Storage Bay Dist (ft)	500			250		265
Storage Blk Time (%)	38	9	7			
Queuing Penalty (veh)	143	85	43			

Intersection: 400: Miller Rd/I-24 EB On/Off Ramp & Epps Mill Rd

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	T	R
Maximum Queue (ft)	260	498	249	844	1236	285	515	282	75
Average Queue (ft)	168	463	73	184	811	280	316	92	40
95th Queue (ft)	324	563	160	468	1531	301	502	204	67
Link Distance (ft)		481		1142	1173		462	462	
Upstream Blk Time (%)		38			41		3		
Queuing Penalty (veh)		276			0		10		
Storage Bay Dist (ft)	160		150			185			250
Storage Blk Time (%)	1	61	1	16	2	75		3	
Queuing Penalty (veh)	8	72	2	7	8	49		5	

Intersection: 500: Dollar General Driveway/Capital Way & Epps Mill Rd

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	LTR	LTR
Maximum Queue (ft)	220	1287	28	70	76	1172
Average Queue (ft)	38	664	1	2	19	749
95th Queue (ft)	170	1311	9	23	62	1482
Link Distance (ft)		1272		481	1166	1164
Upstream Blk Time (%)		1				41
Queuing Penalty (veh)		0				0
Storage Bay Dist (ft)	70		60			
Storage Blk Time (%)		53		1		
Queuing Penalty (veh)		15		0		

Network Summary

Network wide Queuing Penalty: 822

Lane Group	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	SWL	SWR
Lane Configurations										
Traffic Volume (vph)	0	0	0	0	434	0	1399	0	0	0
Future Volume (vph)	0	0	0	0	434	0	1399	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	0		0	0		400	0	0
Storage Lanes	0	0	0		1	0		1	0	0
Taper Length (ft)	100		100			100			100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00
Frt					0.865					
Flt Protected										
Satd. Flow (prot)	0	0	0	0	1596	0	3505	0	0	0
Flt Permitted										
Satd. Flow (perm)	0	0	0	0	1596	0	3505	0	0	0
Link Speed (mph)	30			30			30		30	
Link Distance (ft)	223			518			1608		690	
Travel Time (s)	5.1			11.8			36.5		15.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	0	434	0	1399	0	0	0
Shared Lane Traffic (%)										
Lane Group Flow (vph)	0	0	0	0	434	0	1399	0	0	0
Enter Blocked Intersection	No	No	No	No	Yes	No	Yes	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	Left	Left	Right	Left	Right
Median Width(ft)	0			0			0		0	
Link Offset(ft)	0			0			0		0	
Crosswalk Width(ft)	16			16			16		16	
Two way Left Turn Lane										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15		60	60		9	60	9
Sign Control	Stop			Free			Free		Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	42.0%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	342

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	382	382	205	312	902	421
Future Vol, veh/h	382	382	205	312	902	421
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	500	0	150	-	-	150
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	3	1	1	2	2	1
Mvmt Flow	382	382	205	312	902	421

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1624	902	1323	0	-	0
Stage 1	902	-	-	-	-	-
Stage 2	722	-	-	-	-	-
Critical Hdwy	6.43	6.21	4.11	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.309	2.209	-	-	-
Pot Cap-1 Maneuver	~ 112	~ 338	525	-	-	-
Stage 1	394	-	-	-	-	-
Stage 2	479	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 68	~ 338	525	-	-	-
Mov Cap-2 Maneuver	~ 68	-	-	-	-	-
Stage 1	~ 240	-	-	-	-	-
Stage 2	479	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, $/v	161.3	6.4	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	525	-	68	338	-	-
HCM Lane V/C Ratio	0.39	-	5.618	1.13	-	-
HCM Control Delay (s/veh)	16.2	-	$ 2198.4	124.2	-	-
HCM Lane LOS	C	-	F	F	-	-
HCM 95th %tile Q (veh)	1.8	-	42.6	15	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	382	382	205	312	902	421
Future Volume (vph)	382	382	205	312	902	421
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	500	0	150			150
Storage Lanes	1	1	1			1
Taper Length (ft)	100		300			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1752	1599	1787	1863	1863	1599
Flt Permitted	0.950		0.069			
Satd. Flow (perm)	1752	1599	130	1863	1863	1599
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		115				141
Link Speed (mph)	30			30	30	
Link Distance (ft)	1613			3584	2221	
Travel Time (s)	36.7			81.5	50.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	1%	1%	2%	2%	1%
Adj. Flow (vph)	382	382	205	312	902	421
Shared Lane Traffic (%)						
Lane Group Flow (vph)	382	382	205	312	902	421
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane	Yes					
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (ft)	20	20	20	100	100	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	20	20	20	6	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)				94	94	
Detector 2 Size(ft)				6	6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	5	5	2	6	4

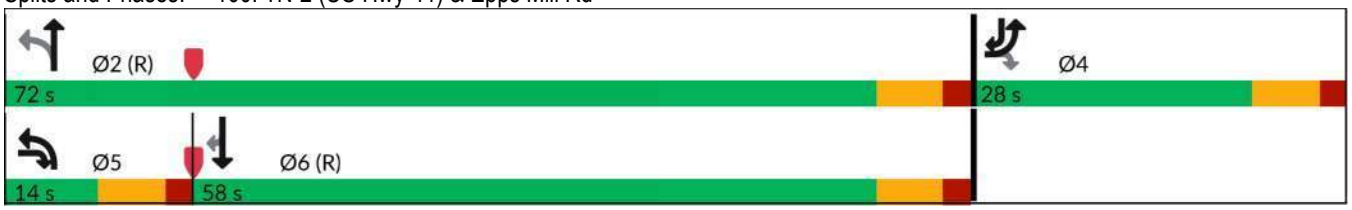
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases		4	2			6
Detector Phase	4	5	5	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	10.0	10.0	7.0
Minimum Split (s)	14.0	14.0	14.0	17.0	17.0	14.0
Total Split (s)	28.0	14.0	14.0	72.0	58.0	28.0
Total Split (%)	28.0%	14.0%	14.0%	72.0%	58.0%	28.0%
Maximum Green (s)	21.0	7.0	7.0	65.0	51.0	21.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	C-Max	C-Max	None
Act Effct Green (s)	23.0	37.0	67.0	67.0	53.0	81.0
Actuated g/C Ratio	0.23	0.37	0.67	0.67	0.53	0.81
v/c Ratio	0.95	0.57	0.86	0.25	0.91	0.31
Control Delay (s/veh)	68.9	15.7	55.8	7.1	36.8	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	68.9	15.7	55.8	7.1	36.8	2.1
LOS	E	B	E	A	D	A
Approach Delay (s/veh)	42.4			26.5	25.8	
Approach LOS	D			C	C	
90th %ile Green (s)	21.0	7.0	7.0	65.0	51.0	21.0
90th %ile Term Code	Max	Max	Max	Coord	Coord	Max
70th %ile Green (s)	21.0	7.0	7.0	65.0	51.0	21.0
70th %ile Term Code	Max	Max	Max	Coord	Coord	Max
50th %ile Green (s)	21.0	7.0	7.0	65.0	51.0	21.0
50th %ile Term Code	Max	Max	Max	Coord	Coord	Max
30th %ile Green (s)	21.0	7.0	7.0	65.0	51.0	21.0
30th %ile Term Code	Max	Max	Max	Coord	Coord	Max
10th %ile Green (s)	21.0	7.0	7.0	65.0	51.0	21.0
10th %ile Term Code	Max	Max	Max	Coord	Coord	Max
Stops (vph)	315	228	109	116	748	59
Fuel Used(gal)	12	7	9	10	27	8
CO Emissions (g/hr)	833	509	605	686	1854	545
NOx Emissions (g/hr)	162	99	118	133	361	106
VOC Emissions (g/hr)	193	118	140	159	430	126
Dilemma Vehicles (#)	0	0	0	0	0	0
Queue Length 50th (ft)	234	101	78	70	498	31
Queue Length 95th (ft)	#419	164	#207	107	#780	52
Internal Link Dist (ft)	1533			3504	2141	
Turn Bay Length (ft)	500		150			150
Base Capacity (vph)	402	664	236	1248	987	1321
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Reduced v/c Ratio	0.95	0.58	0.87	0.25	0.91	0.32

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 64 (64%), Referenced to phase 2:NBTL and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.95			
Intersection Signal Delay (s/veh): 30.8		Intersection LOS: C	
Intersection Capacity Utilization 92.5%		ICU Level of Service F	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 100: TN-2 (US Hwy-41) & Epps Mill Rd



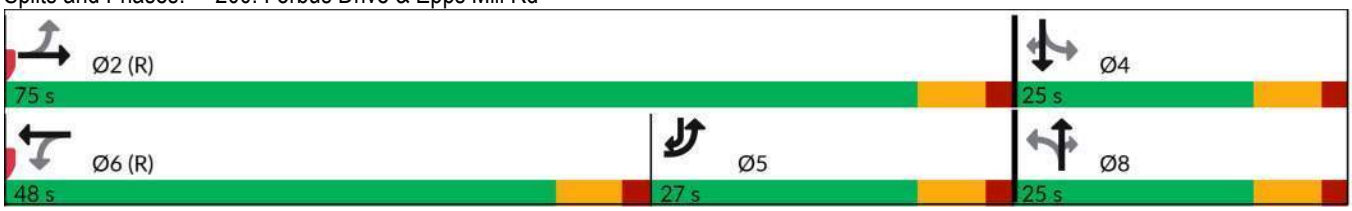
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	334	665	13	16	676	31	55	0	52	53	0	305
Future Volume (vph)	334	665	13	16	676	31	55	0	52	53	0	305
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	215		0	200		0	100		100	100		100
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997			0.993				0.850			0.850
Flt Protected	0.950			0.950				0.950			0.950	
Satd. Flow (prot)	1467	1858	0	1805	1833	0	0	1805	1615	0	1752	1062
Flt Permitted	0.216			0.348				0.722			0.721	
Satd. Flow (perm)	334	1858	0	661	1833	0	0	1372	1615	0	1330	1062
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			3				120			137
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		710			1613			1227			992	
Travel Time (s)		16.1			36.7			27.9			22.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	23%	2%	0%	0%	3%	1%	0%	0%	0%	3%	0%	52%
Adj. Flow (vph)	334	665	13	16	676	31	55	0	52	53	0	305
Shared Lane Traffic (%)												
Lane Group Flow (vph)	334	678	0	16	707	0	0	55	52	0	53	305
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA	Perm	Perm	NA	pm+ov
Protected Phases	5	2			6			8			4	5

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2			6			8		8	4		4
Detector Phase	5	2		6	6		8	8	8	4	4	5
Switch Phase												
Minimum Initial (s)	7.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	7.0
Minimum Split (s)	14.0	17.0		25.0	25.0		17.0	17.0	17.0	25.0	25.0	14.0
Total Split (s)	27.0	75.0		48.0	48.0		25.0	25.0	25.0	25.0	25.0	27.0
Total Split (%)	27.0%	75.0%		48.0%	48.0%		25.0%	25.0%	25.0%	25.0%	25.0%	27.0%
Maximum Green (s)	20.0	68.0		41.0	41.0		18.0	18.0	18.0	18.0	18.0	20.0
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0			-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	5.0
Lead/Lag	Lag			Lead	Lead							Lag
Lead-Lag Optimize?	Yes			Yes	Yes							Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		C-Max	C-Max		None	None	None	None	None	None
Walk Time (s)				7.0	7.0					7.0	7.0	
Flash Dont Walk (s)				11.0	11.0					11.0	11.0	
Pedestrian Calls (#/hr)				0	0					0	0	
Act Effct Green (s)	80.5	81.5		53.5	53.5			12.9	12.9		12.9	36.5
Actuated g/C Ratio	0.81	0.82		0.54	0.54			0.13	0.13		0.13	0.37
v/c Ratio	0.64	0.44		0.04	0.71			0.31	0.16		0.30	0.64
Control Delay (s/veh)	17.4	3.4		12.3	20.4			44.2	1.1		44.3	19.7
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay (s/veh)	17.4	3.5		12.3	20.4			44.2	1.1		44.3	19.7
LOS	B	A		B	C			D	A		D	B
Approach Delay (s/veh)		8.1			20.3			23.3			23.3	
Approach LOS		A			C			C			C	
90th %ile Green (s)	20.0	72.6		45.6	45.6		13.4	13.4	13.4	13.4	13.4	20.0
90th %ile Term Code	Max	Coord		Coord	Coord		Gap	Gap	Gap	Gap	Gap	Max
70th %ile Green (s)	20.0	75.0		48.0	48.0		11.0	11.0	11.0	11.0	11.0	20.0
70th %ile Term Code	Max	Coord		Coord	Coord		Gap	Gap	Gap	Gap	Gap	Max
50th %ile Green (s)	20.0	76.0		49.0	49.0		10.0	10.0	10.0	10.0	10.0	20.0
50th %ile Term Code	Max	Coord		Coord	Coord		Min	Min	Min	Min	Min	Max
30th %ile Green (s)	20.0	76.0		49.0	49.0		10.0	10.0	10.0	10.0	10.0	20.0
30th %ile Term Code	Hold	Coord		Coord	Coord		Min	Min	Min	Min	Min	Hold
10th %ile Green (s)	20.0	93.0		66.0	66.0		0.0	0.0	0.0	0.0	0.0	20.0
10th %ile Term Code	Hold	Coord		Coord	Coord		Skip	Skip	Skip	Skip	Skip	Hold
Stops (vph)	220	134		7	431			50	0		47	140
Fuel Used(gal)	4	5		0	14			1	1		1	4
CO Emissions (g/hr)	297	348		20	994			91	36		80	304
NOx Emissions (g/hr)	58	68		4	193			18	7		16	59
VOC Emissions (g/hr)	69	81		5	230			21	8		19	71
Dilemma Vehicles (#)	0	0		0	0			0	0		0	0
Queue Length 50th (ft)	48	84		4	263			33	0		31	82
Queue Length 95th (ft)	168	123		m12	m353			69	0		68	166
Internal Link Dist (ft)		630			1533			1147			912	
Turn Bay Length (ft)	215			200					100			100
Base Capacity (vph)	518	1515		353	982			274	419		266	474

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn	0	143		0	0			0	0		0	0
Spillback Cap Reductn	0	0		0	0			0	0		0	0
Storage Cap Reductn	0	0		0	0			0	0		0	0
Reduced v/c Ratio	0.64	0.49		0.05	0.72			0.20	0.12		0.20	0.64

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 66 (66%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay (s/veh): 15.3		Intersection LOS: B	
Intersection Capacity Utilization 78.2%		ICU Level of Service D	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 200: Forbus Drive & Epps Mill Rd



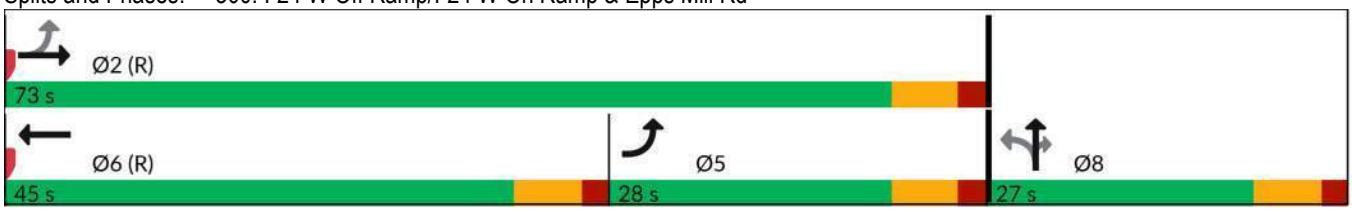
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	473	622	0	0	485	551	96	8	390	0	0	0
Future Volume (vph)	473	622	0	0	485	551	96	8	390	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	500		0	0		250	0		265	0		0
Storage Lanes	1		0	0		1	0		1	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950							0.956				
Satd. Flow (prot)	1752	1845	0	0	1727	1429	0	1736	1392	0	0	0
Flt Permitted	0.345							0.956				
Satd. Flow (perm)	636	1845	0	0	1727	1429	0	1736	1392	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						450			333			
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1201			710			632			300	
Travel Time (s)		27.3			16.1			14.4			6.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	3%	3%	0%	10%	13%	5%	0%	16%	3%	3%	3%
Adj. Flow (vph)	473	622	0	0	485	551	96	8	390	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	473	622	0	0	485	551	0	104	390	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane					Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60		60	60		60	60		60	60		60
Number of Detectors	1	2			2	1	1	2	1			
Detector Template	Left	Thru			Thru	Right	Left	Thru	Right			
Leading Detector (ft)	20	100			100	20	20	100	20			
Trailing Detector (ft)	0	0			0	0	0	0	0			
Detector 1 Position(ft)	0	0			0	0	0	0	0			
Detector 1 Size(ft)	20	6			6	20	20	6	20			
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 1 Queue (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 1 Delay (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	pm+pt	NA			NA	Free	Perm	NA	Perm			
Protected Phases	5	2			6			8				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2					Free	8		8			
Detector Phase	5	2			6		8	8	8			
Switch Phase												
Minimum Initial (s)	7.0	10.0			10.0		10.0	10.0	10.0			
Minimum Split (s)	14.0	25.0			25.0		25.0	25.0	25.0			
Total Split (s)	28.0	73.0			45.0		27.0	27.0	27.0			
Total Split (%)	28.0%	73.0%			45.0%		27.0%	27.0%	27.0%			
Maximum Green (s)	21.0	66.0			38.0		20.0	20.0	20.0			
Yellow Time (s)	5.0	5.0			5.0		5.0	5.0	5.0			
All-Red Time (s)	2.0	2.0			2.0		2.0	2.0	2.0			
Lost Time Adjust (s)	-2.0	-2.0			-2.0			-2.0	-2.0			
Total Lost Time (s)	5.0	5.0			5.0			5.0	5.0			
Lead/Lag	Lag				Lead							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0			
Recall Mode	None	C-Max			C-Max		None	None	None			
Walk Time (s)					7.0		7.0	7.0	7.0			
Flash Dont Walk (s)					11.0		11.0	11.0	11.0			
Pedestrian Calls (#/hr)					0		0	0	0			
Act Effct Green (s)	74.1	74.1			46.1	100.0		15.9	15.9			
Actuated g/C Ratio	0.74	0.74			0.46	1.00		0.16	0.16			
v/c Ratio	0.65	0.45			0.60	0.38		0.37	0.77			
Control Delay (s/veh)	14.6	3.9			18.1	0.5		40.4	18.7			
Queue Delay	0.0	0.0			0.0	0.0		0.0	0.0			
Total Delay (s/veh)	14.6	3.9			18.1	0.5		40.4	18.7			
LOS	B	A			B	A		D	B			
Approach Delay (s/veh)		8.6			8.8			23.3				
Approach LOS		A			A			C				
90th %ile Green (s)	21.0	66.0			38.0		20.0	20.0	20.0			
90th %ile Term Code	Max	Coord			Coord		Max	Max	Max			
70th %ile Green (s)	21.0	68.7			40.7		17.3	17.3	17.3			
70th %ile Term Code	Hold	Coord			Coord		Gap	Gap	Gap			
50th %ile Green (s)	21.0	73.8			45.8		12.2	12.2	12.2			
50th %ile Term Code	Hold	Coord			Coord		Gap	Gap	Gap			
30th %ile Green (s)	21.0	76.0			48.0		10.0	10.0	10.0			
30th %ile Term Code	Hold	Coord			Coord		Min	Min	Min			
10th %ile Green (s)	21.0	76.0			48.0		10.0	10.0	10.0			
10th %ile Term Code	Hold	Coord			Coord		Min	Min	Min			
Stops (vph)	207	171			304	0		89	86			
Fuel Used(gal)	7	7			6	3		2	4			
CO Emissions (g/hr)	488	508			430	218		130	272			
NOx Emissions (g/hr)	95	99			84	42		25	53			
VOC Emissions (g/hr)	113	118			100	50		30	63			
Dilemma Vehicles (#)	0	0			0	0		0	0			
Queue Length 50th (ft)	53	35			130	0		61	33			
Queue Length 95th (ft)	m135	m172			310	0		104	134			
Internal Link Dist (ft)		1121			630			552			220	
Turn Bay Length (ft)	500					250			265			
Base Capacity (vph)	727	1367			796	1429		381	565			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn	0	0			0	0		0	0			
Spillback Cap Reductn	0	0			0	0		0	0			
Storage Cap Reductn	0	0			0	0		0	0			
Reduced v/c Ratio	0.65	0.46			0.61	0.39		0.27	0.69			

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 79 (79%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay (s/veh): 11.4		Intersection LOS: B	
Intersection Capacity Utilization 72.6%		ICU Level of Service C	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 300: I-24 W Off Ramp/I-24 W On Ramp & Epps Mill Rd



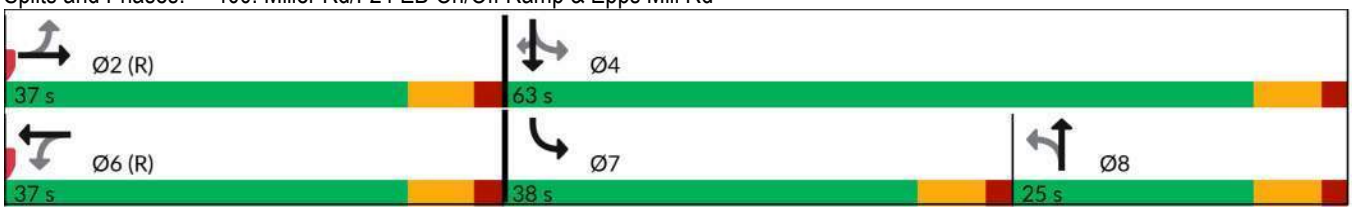
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	99	203	109	108	195	278	57	57	325	567	298	534
Future Volume (vph)	99	203	109	108	195	278	57	57	325	567	298	534
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	160		160	150		0	185		185	250		250
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.948			0.912			0.872				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1783	0	1752	1515	0	1805	1406	0	1570	1845	1538
Flt Permitted	0.237			0.430			0.578			0.182		
Satd. Flow (perm)	437	1783	0	793	1515	0	1098	1406	0	301	1845	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		28			75			257				498
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		559			1201			1215			518	
Travel Time (s)		12.7			27.3			27.6			11.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	0%	3%	3%	12%	16%	0%	0%	21%	15%	3%	5%
Adj. Flow (vph)	99	203	109	108	195	278	57	57	325	567	298	534
Shared Lane Traffic (%)												
Lane Group Flow (vph)	99	312	0	108	473	0	57	382	0	567	298	534
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60		9	15		60	15		9	60		60
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100		20	100	20
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases		2			6			8		7	4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2			6			8			4		4
Detector Phase	2	2		6	6		8	8		7	4	4
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		7.0	10.0	10.0
Minimum Split (s)	17.0	17.0		17.0	17.0		25.0	25.0		14.0	17.0	17.0
Total Split (s)	37.0	37.0		37.0	37.0		25.0	25.0		38.0	63.0	63.0
Total Split (%)	37.0%	37.0%		37.0%	37.0%		25.0%	25.0%		38.0%	63.0%	63.0%
Maximum Green (s)	30.0	30.0		30.0	30.0		18.0	18.0		31.0	56.0	56.0
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	None
Walk Time (s)							7.0	7.0				
Flash Dont Walk (s)							11.0	11.0				
Pedestrian Calls (#/hr)							0	0				
Act Effct Green (s)	35.0	35.0		35.0	35.0		17.0	17.0		55.0	55.0	55.0
Actuated g/C Ratio	0.35	0.35		0.35	0.35		0.17	0.17		0.55	0.55	0.55
v/c Ratio	0.65	0.48		0.38	0.81		0.30	0.84		0.97	0.29	0.49
Control Delay (s/veh)	51.8	26.9		13.5	22.1		39.6	31.2		56.7	12.5	3.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay (s/veh)	51.8	26.9		13.5	22.1		39.6	31.2		56.7	12.5	3.0
LOS	D	C		B	C		D	C		E	B	A
Approach Delay (s/veh)		33.0			20.6			32.3			26.8	
Approach LOS		C			C			C			C	
90th %ile Green (s)	30.0	30.0		30.0	30.0		18.0	18.0		31.0	56.0	56.0
90th %ile Term Code	Coord	Coord		Coord	Coord		Max	Max		Max	Hold	Hold
70th %ile Green (s)	30.0	30.0		30.0	30.0		18.0	18.0		31.0	56.0	56.0
70th %ile Term Code	Coord	Coord		Coord	Coord		Max	Max		Max	Hold	Hold
50th %ile Green (s)	31.0	31.0		31.0	31.0		17.0	17.0		31.0	55.0	55.0
50th %ile Term Code	Coord	Coord		Coord	Coord		Gap	Gap		Max	Hold	Hold
30th %ile Green (s)	36.2	36.2		36.2	36.2		11.8	11.8		31.0	49.8	49.8
30th %ile Term Code	Coord	Coord		Coord	Coord		Gap	Gap		Max	Hold	Hold
10th %ile Green (s)	38.0	38.0		38.0	38.0		10.0	10.0		31.0	48.0	48.0
10th %ile Term Code	Coord	Coord		Coord	Coord		Min	Min		Max	Hold	Hold
Stops (vph)	80	223		58	316		48	132		422	148	40
Fuel Used(gal)	2	4		2	8		1	7		11	3	3
CO Emissions (g/hr)	134	301		114	581		88	474		781	195	190
NOx Emissions (g/hr)	26	59		22	113		17	92		152	38	37
VOC Emissions (g/hr)	31	70		26	135		21	110		181	45	44
Dilemma Vehicles (#)	0	0		0	0		0	0		0	0	0
Queue Length 50th (ft)	54	144		37	252		31	75		298	91	10
Queue Length 95th (ft)	#143	232		m41	#420		69	#224		#519	136	54
Internal Link Dist (ft)		479			1121			1135			438	
Turn Bay Length (ft)	160			150			185			250		250
Base Capacity (vph)	152	643		277	579		219	486		584	1070	1101

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.65	0.49		0.39	0.82		0.26	0.79		0.97	0.28	0.49

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 8 (8%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.97			
Intersection Signal Delay (s/veh): 27.3		Intersection LOS: C	
Intersection Capacity Utilization 106.8%		ICU Level of Service G	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 400: Miller Rd/I-24 EB On/Off Ramp & Epps Mill Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	153	60	73	653	60	39	5	73	185	0	29
Future Volume (vph)	8	153	60	73	653	60	39	5	73	185	0	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	70		0	60		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	150			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.958			0.987			0.916			0.982	
Flt Protected	0.950			0.950				0.984			0.959	
Satd. Flow (prot)	1805	1794	0	1805	1834	0	0	1713	0	0	1605	0
Flt Permitted	0.950			0.950				0.984			0.959	
Satd. Flow (perm)	1805	1794	0	1805	1834	0	0	1713	0	0	1605	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1306			559			1202			1203	
Travel Time (s)		29.7			12.7			27.3			27.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	2%	0%	0%	2%	5%	0%	0%	0%	13%	0%	2%
Adj. Flow (vph)	8	153	60	73	653	60	39	5	73	185	0	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	8	213	0	73	713	0	0	117	0	0	214	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	70.0%	ICU Level of Service	C
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	31.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	153	60	73	653	60	39	5	73	185	0	29
Future Vol, veh/h	8	153	60	73	653	60	39	5	73	185	0	29
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	70	-	-	60	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	2	0	0	2	5	0	0	0	13	0	2
Mvmt Flow	8	153	60	73	653	60	39	5	73	185	0	29

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	713	0	0	213	0	0	1043	1058	183	1067	1058	683
Stage 1	-	-	-	-	-	-	199	199	-	829	829	-
Stage 2	-	-	-	-	-	-	844	859	-	238	229	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.23	6.5	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.23	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.23	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.617	4	3.318
Pot Cap-1 Maneuver	896	-	-	1369	-	-	209	227	865	190	227	449
Stage 1	-	-	-	-	-	-	807	740	-	349	388	-
Stage 2	-	-	-	-	-	-	361	376	-	741	718	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	896	-	-	1369	-	-	186	213	865	~ 163	213	449
Mov Cap-2 Maneuver	-	-	-	-	-	-	186	213	-	~ 163	213	-
Stage 1	-	-	-	-	-	-	800	733	-	346	367	-
Stage 2	-	-	-	-	-	-	320	356	-	668	712	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0.3	0.7	19.3	184.8
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	368	896	-	-	1369	-	-	178
HCM Lane V/C Ratio	0.318	0.009	-	-	0.053	-	-	1.202
HCM Control Delay (s/veh)	19.3	9.1	-	-	7.8	-	-	184.8
HCM Lane LOS	C	A	-	-	A	-	-	F
HCM 95th %tile Q (veh)	1.3	0	-	-	0.2	-	-	11.5

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection: 2: I-24 EB On/Off Ramp/I-24 EB Off Ramp & I-24 EB On Loop

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 100: TN-2 (US Hwy-41) & Epps Mill Rd

Movement	EB	EB	NB	SB
Directions Served	L	R	L	R
Maximum Queue (ft)	599	1518	115	22
Average Queue (ft)	509	872	74	4
95th Queue (ft)	687	1779	123	19
Link Distance (ft)		1518		
Upstream Blk Time (%)		13		
Queuing Penalty (veh)		103		
Storage Bay Dist (ft)	500		150	150
Storage Blk Time (%)	55	54		
Queuing Penalty (veh)	209	205		

Intersection: 200: Forbus Drive & Epps Mill Rd

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	LT	R	LT	R
Maximum Queue (ft)	235	427	25	285	154	56	279	199
Average Queue (ft)	132	161	17	215	41	38	135	154
95th Queue (ft)	239	422	34	310	136	60	321	242
Link Distance (ft)		644		1518	1183		957	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	215		200			100		100
Storage Blk Time (%)	3	8		10	9		0	31
Queuing Penalty (veh)	23	26		2	5		1	16

Intersection: 300: I-24 W Off Ramp/I-24 W On Ramp & Epps Mill Rd

Movement	EB	EB	WB	NB	NB
Directions Served	L	T	T	LT	R
Maximum Queue (ft)	217	136	265	109	158
Average Queue (ft)	138	90	128	68	102
95th Queue (ft)	245	174	263	122	165
Link Distance (ft)		1142	644	595	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	500				265
Storage Blk Time (%)			1		
Queuing Penalty (veh)			7		

Intersection: 400: Miller Rd/I-24 EB On/Off Ramp & Epps Mill Rd

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	T	R
Maximum Queue (ft)	160	158	249	404	1047	285	430	256	194
Average Queue (ft)	129	135	127	271	868	285	316	122	116
95th Queue (ft)	169	169	230	394	1057	285	428	238	213
Link Distance (ft)		481		1142	1173		462	462	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	160		150			185			250
Storage Blk Time (%)	6	1		16		87		1	
Queuing Penalty (veh)	18	1		17		50		5	

Intersection: 500: Dollar General Driveway/Capital Way & Epps Mill Rd

Movement	EB	WB	NB	SB
Directions Served	L	L	LTR	LTR
Maximum Queue (ft)	28	28	74	316
Average Queue (ft)	6	17	43	204
95th Queue (ft)	24	39	72	360
Link Distance (ft)			1166	1164
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	70	60		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 687

HCS REPORTS – MERGE/DIVERGE

HCS7 Freeway Diverge Report

Project Information			
Analyst	STV Inc.	Date	7/17/2023
Agency	TDOT	Analysis Year	2028
Jurisdiction		Time Analyzed	AM peak
Project Description	BY NB - I 24 EB off ramp	Units	U.S. Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	260
Terrain Type	Level	Specific Grade
Percent Grade, %	-	4.00
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors		
Driver Population	Mostly Familiar	Mostly Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.975	0.975
Final Capacity Adjustment Factor (CAF)	0.968	0.968
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	1382	298
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	32.00	32.00
Single-Unit Trucks (SUT), %	-	30
Tractor-Trailers (TT), %	-	70
Heavy Vehicle Adjustment Factor (fHV)	0.758	0.753
Flow Rate (vi),pc/h	1823	396
Capacity (c), pc/h	4646	1936
Volume-to-Capacity Ratio (v/c)	0.39	0.20

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.475
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	58.5
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	80.6
Flow in Lanes 1 and 2 (v12), pc/h	1823	Ramp Junction Speed (S), mi/h	58.5
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	15.6
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	17.6

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HCS7 Freeway Diverge Report

Project Information			
Analyst	STV Inc.	Date	7/17/2023
Agency	TDOT	Analysis Year	2028
Jurisdiction		Time Analyzed	PM peak
Project Description	BY NB - I 24 EB off ramp	Units	U.S. Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	773
Terrain Type	Level	Specific Grade
Percent Grade, %	-	4.00
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors		
Driver Population	Mostly Familiar	Mostly Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.975	0.975
Final Capacity Adjustment Factor (CAF)	0.968	0.968
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	2720	538
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	32.00	32.00
Single-Unit Trucks (SUT), %	-	30
Tractor-Trailers (TT), %	-	70
Heavy Vehicle Adjustment Factor (fHV)	0.758	0.753
Flow Rate (vi),pc/h	3588	714
Capacity (c), pc/h	4646	1936
Volume-to-Capacity Ratio (v/c)	0.77	0.37

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.504
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	57.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	80.6
Flow in Lanes 1 and 2 (v12), pc/h	3588	Ramp Junction Speed (S), mi/h	57.6
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	31.1
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	28.2

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HCS7 Freeway Diverge Report

Project Information			
Analyst	STV Inc.	Date	7/17/2023
Agency	TDOT	Analysis Year	2048
Jurisdiction		Time Analyzed	AM peak
Project Description	FY NB - I 24 EB off ramp	Units	U.S. Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	260
Terrain Type	Level	Specific Grade
Percent Grade, %	-	4.00
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors		
Driver Population	Mostly Familiar	Mostly Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.975	0.975
Final Capacity Adjustment Factor (CAF)	0.968	0.968
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	2073	775
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	32.00	32.00
Single-Unit Trucks (SUT), %	-	30
Tractor-Trailers (TT), %	-	70
Heavy Vehicle Adjustment Factor (fHV)	0.758	0.753
Flow Rate (vi),pc/h	2735	1029
Capacity (c), pc/h	4646	1936
Volume-to-Capacity Ratio (v/c)	0.59	0.53

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.532
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	56.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	80.6
Flow in Lanes 1 and 2 (v12), pc/h	2735	Ramp Junction Speed (S), mi/h	56.7
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	24.1
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	25.4

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HCS7 Freeway Diverge Report

Project Information			
Analyst	STV Inc.	Date	7/17/2023
Agency	TDOT	Analysis Year	2048
Jurisdiction		Time Analyzed	PM peak
Project Description	FY NB - I 24 EB off ramp	Units	U.S. Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	260
Terrain Type	Level	Specific Grade
Percent Grade, %	-	4.00
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors		
Driver Population	Mostly Familiar	Mostly Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.975	0.975
Final Capacity Adjustment Factor (CAF)	0.968	0.968
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	4080	1399
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	32.00	32.00
Single-Unit Trucks (SUT), %	-	30
Tractor-Trailers (TT), %	-	70
Heavy Vehicle Adjustment Factor (fHV)	0.758	0.753
Flow Rate (vi),pc/h	5383	1858
Capacity (c), pc/h	4646	1936
Volume-to-Capacity Ratio (v/c)	1.16	0.96

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	0.0	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	-
Downstream Equilibrium Distance (LEQ), ft	0.0	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	-
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	5383	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	5383	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	-

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HCS7 Freeway Diverge Report

Project Information			
Analyst	STV Inc.	Date	7/17/2023
Agency	TDOT	Analysis Year	2028
Jurisdiction		Time Analyzed	AM peak
Project Description	BY B - I 24 EB off ramp	Units	U.S. Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	773
Terrain Type	Level	Specific Grade
Percent Grade, %	-	3.27
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors		
Driver Population	Mostly Familiar	Mostly Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.975	0.975
Final Capacity Adjustment Factor (CAF)	0.968	0.968
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	1382	298
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	32.00	32.00
Single-Unit Trucks (SUT), %	-	30
Tractor-Trailers (TT), %	-	70
Heavy Vehicle Adjustment Factor (fHV)	0.758	0.746
Flow Rate (vi),pc/h	1823	399
Capacity (c), pc/h	4646	1936
Volume-to-Capacity Ratio (v/c)	0.39	0.21

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.476
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	58.5
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	80.6
Flow in Lanes 1 and 2 (v12), pc/h	1823	Ramp Junction Speed (S), mi/h	58.5
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	15.6
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	13.0

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HCS7 Freeway Diverge Report

Project Information			
Analyst	STV Inc.	Date	7/17/2023
Agency	TDOT	Analysis Year	2028
Jurisdiction		Time Analyzed	PM peak
Project Description	BY B - I 24 EB off ramp	Units	U.S. Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	773
Terrain Type	Level	Specific Grade
Percent Grade, %	-	3.27
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors		
Driver Population	Mostly Familiar	Mostly Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.975	0.975
Final Capacity Adjustment Factor (CAF)	0.968	0.968
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	2720	538
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	32.00	32.00
Single-Unit Trucks (SUT), %	-	30
Tractor-Trailers (TT), %	-	70
Heavy Vehicle Adjustment Factor (fHV)	0.758	0.746
Flow Rate (vi),pc/h	3588	721
Capacity (c), pc/h	4646	1936
Volume-to-Capacity Ratio (v/c)	0.77	0.37

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.505
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	57.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	80.6
Flow in Lanes 1 and 2 (v12), pc/h	3588	Ramp Junction Speed (S), mi/h	57.6
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	31.1
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	28.2

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HCS7 Freeway Diverge Report

Project Information			
Analyst	STV Inc.	Date	7/17/2023
Agency	TDOT	Analysis Year	2048
Jurisdiction		Time Analyzed	AM peak
Project Description	FY B - I 24 EB off ramp	Units	U.S. Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	773
Terrain Type	Level	Specific Grade
Percent Grade, %	-	3.27
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors		
Driver Population	Mostly Familiar	Mostly Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.975	0.975
Final Capacity Adjustment Factor (CAF)	0.968	0.968
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	2073	775
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	32.00	32.00
Single-Unit Trucks (SUT), %	-	30
Tractor-Trailers (TT), %	-	70
Heavy Vehicle Adjustment Factor (fHV)	0.758	0.746
Flow Rate (vi),pc/h	2735	1039
Capacity (c), pc/h	4646	1936
Volume-to-Capacity Ratio (v/c)	0.59	0.54

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.533
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	56.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	80.6
Flow in Lanes 1 and 2 (v12), pc/h	2735	Ramp Junction Speed (S), mi/h	56.7
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	24.1
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	20.8

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HCS7 Freeway Diverge Report

Project Information			
Analyst	STV Inc.	Date	7/17/2023
Agency	TDOT	Analysis Year	2048
Jurisdiction		Time Analyzed	PM peak
Project Description	FY B - I 24 EB off ramp	Units	U.S. Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	773
Terrain Type	Level	Specific Grade
Percent Grade, %	-	3.27
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors		
Driver Population	Mostly Familiar	Mostly Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.975	0.975
Final Capacity Adjustment Factor (CAF)	0.968	0.968
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	4080	1399
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	32.00	32.00
Single-Unit Trucks (SUT), %	-	30
Tractor-Trailers (TT), %	-	70
Heavy Vehicle Adjustment Factor (fHV)	0.758	0.746
Flow Rate (vi),pc/h	5383	1875
Capacity (c), pc/h	4646	1936
Volume-to-Capacity Ratio (v/c)	1.16	0.97

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	0.0	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	-
Downstream Equilibrium Distance (LEQ), ft	0.0	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	-
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	5383	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	5383	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	-

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HCS7 Freeway Merge Report

Project Information			
Analyst	STV Inc.	Date	7/17/2023
Agency	TDOT	Analysis Year	2028
Jurisdiction		Time Analyzed	AM Peak
Project Description	BY NB - I 24 EB on loop	Units	U.S. Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	938
Terrain Type	Level	Specific Grade
Percent Grade, %	-	-5.60
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors		
Driver Population	Mostly Familiar	Mostly Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.975	0.975
Final Capacity Adjustment Factor (CAF)	0.968	0.968
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	1240	156
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	35.00	35.00
Single-Unit Trucks (SUT), %	-	30
Tractor-Trailers (TT), %	-	70
Heavy Vehicle Adjustment Factor (fHV)	0.741	0.747
Flow Rate (vi),pc/h	1673	209
Capacity (c), pc/h	4646	1936
Volume-to-Capacity Ratio (v/c)	0.41	0.11

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.283
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	64.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	73.5
Flow in Lanes 1 and 2 (v12), pc/h	1673	Ramp Junction Speed (S), mi/h	64.6
Flow Entering Ramp-Infl. Area (vR12), pc/h	1882	Average Density (D), pc/mi/ln	14.6
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	14.2

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HCS7 Freeway Merge Report

Project Information			
Analyst	STV Inc.	Date	7/17/2023
Agency	TDOT	Analysis Year	2028
Jurisdiction		Time Analyzed	PM Peak
Project Description	BY NB - I 24 EB on loop	Units	U.S. Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	938
Terrain Type	Level	Specific Grade
Percent Grade, %	-	-5.60
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors		
Driver Population	Mostly Familiar	Mostly Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.975	0.975
Final Capacity Adjustment Factor (CAF)	0.968	0.968
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	2349	167
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	35.00	35.00
Single-Unit Trucks (SUT), %	-	30
Tractor-Trailers (TT), %	-	70
Heavy Vehicle Adjustment Factor (fHV)	0.741	0.747
Flow Rate (vi),pc/h	3170	224
Capacity (c), pc/h	4646	1936
Volume-to-Capacity Ratio (v/c)	0.73	0.12

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.373
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	61.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	73.5
Flow in Lanes 1 and 2 (v12), pc/h	3170	Ramp Junction Speed (S), mi/h	61.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	3394	Average Density (D), pc/mi/ln	27.5
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	26.0

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HCS7 Freeway Merge Report

Project Information			
Analyst	STV Inc.	Date	7/17/2023
Agency	TDOT	Analysis Year	2048
Jurisdiction		Time Analyzed	AM Peak
Project Description	FY NB - I 24 EB on loop	Units	U.S. Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	938
Terrain Type	Level	Specific Grade
Percent Grade, %	-	-5.60
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors		
Driver Population	Mostly Familiar	Mostly Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.975	0.975
Final Capacity Adjustment Factor (CAF)	0.968	0.968
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	1704	406
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	35.00	35.00
Single-Unit Trucks (SUT), %	-	30
Tractor-Trailers (TT), %	-	70
Heavy Vehicle Adjustment Factor (fHV)	0.741	0.747
Flow Rate (vi),pc/h	2300	544
Capacity (c), pc/h	4646	1936
Volume-to-Capacity Ratio (v/c)	0.61	0.28

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.324
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	63.3
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	73.5
Flow in Lanes 1 and 2 (v12), pc/h	2300	Ramp Junction Speed (S), mi/h	63.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	2844	Average Density (D), pc/mi/ln	22.5
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	21.6

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HCS7 Freeway Merge Report

Project Information			
Analyst	STV Inc.	Date	7/17/2023
Agency	TDOT	Analysis Year	2048
Jurisdiction		Time Analyzed	PM Peak
Project Description	FY NB - I 24 EB on loop	Units	U.S. Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	938
Terrain Type	Level	Specific Grade
Percent Grade, %	-	-5.60
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors		
Driver Population	Mostly Familiar	Mostly Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.975	0.975
Final Capacity Adjustment Factor (CAF)	0.968	0.968
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	3115	434
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	35.00	35.00
Single-Unit Trucks (SUT), %	-	30
Tractor-Trailers (TT), %	-	70
Heavy Vehicle Adjustment Factor (fHV)	0.741	0.747
Flow Rate (vi),pc/h	4204	581
Capacity (c), pc/h	4646	1936
Volume-to-Capacity Ratio (v/c)	1.03	0.30

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	821.6	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	-
Downstream Equilibrium Distance (LEQ), ft	0.0	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	-
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	4204	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	4785	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	-

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HCS7 Freeway Merge Report

Project Information			
Analyst	STV Inc.	Date	7/17/2023
Agency	TDOT	Analysis Year	2028
Jurisdiction		Time Analyzed	AM Peak
Project Description	BY B - I 24 EB on loop	Units	U.S. Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1500
Terrain Type	Level	Specific Grade
Percent Grade, %	-	-1.50
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors		
Driver Population	Mostly Familiar	Mostly Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.975	0.975
Final Capacity Adjustment Factor (CAF)	0.968	0.968
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	1240	156
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	35.00	35.00
Single-Unit Trucks (SUT), %	-	30
Tractor-Trailers (TT), %	-	70
Heavy Vehicle Adjustment Factor (fHV)	0.741	0.747
Flow Rate (vi),pc/h	1673	209
Capacity (c), pc/h	4646	1936
Volume-to-Capacity Ratio (v/c)	0.41	0.11

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.244
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	65.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	73.5
Flow in Lanes 1 and 2 (v12), pc/h	1673	Ramp Junction Speed (S), mi/h	65.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	1882	Average Density (D), pc/mi/ln	14.3
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	10.7

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HCS7 Freeway Merge Report

Project Information			
Analyst	STV Inc.	Date	7/17/2023
Agency	TDOT	Analysis Year	2028
Jurisdiction		Time Analyzed	PM Peak
Project Description	BY B - I 24 EB on loop	Units	U.S. Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1500
Terrain Type	Level	Specific Grade
Percent Grade, %	-	-1.50
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors		
Driver Population	Mostly Familiar	Mostly Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.975	0.975
Final Capacity Adjustment Factor (CAF)	0.968	0.968
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	2349	167
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	35.00	35.00
Single-Unit Trucks (SUT), %	-	30
Tractor-Trailers (TT), %	-	70
Heavy Vehicle Adjustment Factor (fHV)	0.741	0.747
Flow Rate (vi),pc/h	3170	224
Capacity (c), pc/h	4646	1936
Volume-to-Capacity Ratio (v/c)	0.73	0.12

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.335
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	62.9
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	73.5
Flow in Lanes 1 and 2 (v12), pc/h	3170	Ramp Junction Speed (S), mi/h	62.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	3394	Average Density (D), pc/mi/ln	27.0
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	22.5

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HCS7 Freeway Merge Report

Project Information			
Analyst	STV Inc.	Date	7/17/2023
Agency	TDOT	Analysis Year	2048
Jurisdiction		Time Analyzed	AM Peak
Project Description	FY B - I 24 EB on loop	Units	U.S. Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1500
Terrain Type	Level	Specific Grade
Percent Grade, %	-	-1.50
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors		
Driver Population	Mostly Familiar	Mostly Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.975	0.975
Final Capacity Adjustment Factor (CAF)	0.968	0.968
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	1704	406
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	35.00	35.00
Single-Unit Trucks (SUT), %	-	30
Tractor-Trailers (TT), %	-	70
Heavy Vehicle Adjustment Factor (fHV)	0.741	0.747
Flow Rate (vi),pc/h	2300	544
Capacity (c), pc/h	4646	1936
Volume-to-Capacity Ratio (v/c)	0.61	0.28

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.286
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	64.5
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	73.5
Flow in Lanes 1 and 2 (v12), pc/h	2300	Ramp Junction Speed (S), mi/h	64.5
Flow Entering Ramp-Infl. Area (vR12), pc/h	2844	Average Density (D), pc/mi/ln	22.0
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	18.1

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HCS7 Freeway Merge Report

Project Information			
Analyst	STV Inc.	Date	7/17/2023
Agency	TDOT	Analysis Year	2048
Jurisdiction		Time Analyzed	PM Peak
Project Description	FY B - I 24 EB on loop	Units	U.S. Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1500
Terrain Type	Level	Specific Grade
Percent Grade, %	-	-1.50
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors		
Driver Population	Mostly Familiar	Mostly Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.975	0.975
Final Capacity Adjustment Factor (CAF)	0.968	0.968
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	3115	434
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	35.00	35.00
Single-Unit Trucks (SUT), %	-	30
Tractor-Trailers (TT), %	-	70
Heavy Vehicle Adjustment Factor (fHV)	0.741	0.747
Flow Rate (vi),pc/h	4204	581
Capacity (c), pc/h	4646	1936
Volume-to-Capacity Ratio (v/c)	1.03	0.30

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	1071.1	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	-
Downstream Equilibrium Distance (LEQ), ft	0.0	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	-
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	4204	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	4785	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	-

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HCS7 Freeway Diverge Report

Project Information			
Analyst	STV Inc.	Date	7/17/2023
Agency	TDOT	Analysis Year	2028
Jurisdiction		Time Analyzed	AM peak
Project Description	BY NB - I 24 WB off ramp	Units	U.S. Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	217
Terrain Type	Level	Specific Grade
Percent Grade, %	-	2.60
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors		
Driver Population	Mostly Familiar	Mostly Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.975	0.975
Final Capacity Adjustment Factor (CAF)	0.968	0.968
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	1939	155
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	35.00	35.00
Single-Unit Trucks (SUT), %	-	30
Tractor-Trailers (TT), %	-	70
Heavy Vehicle Adjustment Factor (fHV)	0.741	0.746
Flow Rate (vi),pc/h	2617	208
Capacity (c), pc/h	4646	1936
Volume-to-Capacity Ratio (v/c)	0.56	0.11

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.458
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	59.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	80.6
Flow in Lanes 1 and 2 (v12), pc/h	2617	Ramp Junction Speed (S), mi/h	59.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	22.1
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	24.8

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HCS7 Freeway Diverge Report

Project Information			
Analyst	STV Inc.	Date	7/17/2023
Agency	TDOT	Analysis Year	2028
Jurisdiction		Time Analyzed	PM peak
Project Description	BY NB - I 24 WB off ramp	Units	U.S. Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	217
Terrain Type	Level	Specific Grade
Percent Grade, %	-	2.60
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors		
Driver Population	Mostly Familiar	Mostly Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.975	0.975
Final Capacity Adjustment Factor (CAF)	0.968	0.968
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	1787	190
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	35.00	35.00
Single-Unit Trucks (SUT), %	-	30
Tractor-Trailers (TT), %	-	70
Heavy Vehicle Adjustment Factor (fHV)	0.741	0.746
Flow Rate (vi),pc/h	2412	255
Capacity (c), pc/h	4646	1936
Volume-to-Capacity Ratio (v/c)	0.52	0.13

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.463
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	58.9
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	80.6
Flow in Lanes 1 and 2 (v12), pc/h	2412	Ramp Junction Speed (S), mi/h	58.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	20.5
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	23.0

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HCS7 Freeway Diverge Report

Project Information			
Analyst	STV Inc.	Date	7/17/2023
Agency	TDOT	Analysis Year	2048
Jurisdiction		Time Analyzed	AM peak
Project Description	FY NB - I 24 WB off ramp	Units	U.S. Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	217
Terrain Type	Level	Specific Grade
Percent Grade, %	-	2.60
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors		
Driver Population	Mostly Familiar	Mostly Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.975	0.975
Final Capacity Adjustment Factor (CAF)	0.968	0.968
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	2452	403
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	35.00	35.00
Single-Unit Trucks (SUT), %	-	30
Tractor-Trailers (TT), %	-	70
Heavy Vehicle Adjustment Factor (fHV)	0.741	0.746
Flow Rate (vi),pc/h	3309	540
Capacity (c), pc/h	4646	1936
Volume-to-Capacity Ratio (v/c)	0.71	0.28

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.488
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	58.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	80.6
Flow in Lanes 1 and 2 (v12), pc/h	3309	Ramp Junction Speed (S), mi/h	58.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	28.5
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	30.8

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HCS7 Freeway Diverge Report

Project Information			
Analyst	STV Inc.	Date	7/17/2023
Agency	TDOT	Analysis Year	2048
Jurisdiction		Time Analyzed	PM peak
Project Description	FY NB - I 24 WB off ramp	Units	U.S. Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	217
Terrain Type	Level	Specific Grade
Percent Grade, %	-	2.60
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors		
Driver Population	Mostly Familiar	Mostly Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.975	0.975
Final Capacity Adjustment Factor (CAF)	0.968	0.968
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	2449	494
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	35.00	35.00
Single-Unit Trucks (SUT), %	-	30
Tractor-Trailers (TT), %	-	70
Heavy Vehicle Adjustment Factor (fHV)	0.741	0.746
Flow Rate (vi),pc/h	3305	662
Capacity (c), pc/h	4646	1936
Volume-to-Capacity Ratio (v/c)	0.71	0.34

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.499
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	57.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	80.6
Flow in Lanes 1 and 2 (v12), pc/h	3305	Ramp Junction Speed (S), mi/h	57.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	28.6
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	30.7

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HCS7 Freeway Diverge Report

Project Information			
Analyst	STV Inc.	Date	7/17/2023
Agency	TDOT	Analysis Year	2028
Jurisdiction		Time Analyzed	AM peak
Project Description	BY B - I 24 WB off ramp	Units	U.S. Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	740
Terrain Type	Level	Specific Grade
Percent Grade, %	-	2.78
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors		
Driver Population	Mostly Familiar	Mostly Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.975	0.975
Final Capacity Adjustment Factor (CAF)	0.968	0.968
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	1939	155
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	35.00	35.00
Single-Unit Trucks (SUT), %	-	30
Tractor-Trailers (TT), %	-	70
Heavy Vehicle Adjustment Factor (fHV)	0.741	0.746
Flow Rate (vi),pc/h	2617	208
Capacity (c), pc/h	4646	1936
Volume-to-Capacity Ratio (v/c)	0.56	0.11

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.458
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	59.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	80.6
Flow in Lanes 1 and 2 (v12), pc/h	2617	Ramp Junction Speed (S), mi/h	59.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	22.1
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	20.1

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HCS7 Freeway Diverge Report

Project Information			
Analyst	STV Inc.	Date	7/17/2023
Agency	TDOT	Analysis Year	2028
Jurisdiction		Time Analyzed	PM peak
Project Description	BY B - I 24 WB off ramp	Units	U.S. Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	740
Terrain Type	Level	Specific Grade
Percent Grade, %	-	2.78
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors		
Driver Population	Mostly Familiar	Mostly Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.975	0.975
Final Capacity Adjustment Factor (CAF)	0.968	0.968
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	1787	190
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	35.00	35.00
Single-Unit Trucks (SUT), %	-	30
Tractor-Trailers (TT), %	-	70
Heavy Vehicle Adjustment Factor (fHV)	0.741	0.746
Flow Rate (vi),pc/h	2412	255
Capacity (c), pc/h	4646	1936
Volume-to-Capacity Ratio (v/c)	0.52	0.13

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.463
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	58.9
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	80.6
Flow in Lanes 1 and 2 (v12), pc/h	2412	Ramp Junction Speed (S), mi/h	58.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	20.5
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	18.3

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HCS7 Freeway Diverge Report

Project Information			
Analyst	STV Inc.	Date	7/17/2023
Agency	TDOT	Analysis Year	2048
Jurisdiction		Time Analyzed	AM peak
Project Description	FY B - I 24 WB off ramp	Units	U.S. Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	740
Terrain Type	Level	Specific Grade
Percent Grade, %	-	2.78
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors		
Driver Population	Mostly Familiar	Mostly Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.975	0.975
Final Capacity Adjustment Factor (CAF)	0.968	0.968
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	2452	403
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	35.00	35.00
Single-Unit Trucks (SUT), %	-	30
Tractor-Trailers (TT), %	-	70
Heavy Vehicle Adjustment Factor (fHV)	0.741	0.746
Flow Rate (vi),pc/h	3309	540
Capacity (c), pc/h	4646	1936
Volume-to-Capacity Ratio (v/c)	0.71	0.28

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.488
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	58.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	80.6
Flow in Lanes 1 and 2 (v12), pc/h	3309	Ramp Junction Speed (S), mi/h	58.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	28.5
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	26.0

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HCS7 Freeway Diverge Report

Project Information			
Analyst	STV Inc.	Date	7/17/2023
Agency	TDOT	Analysis Year	2048
Jurisdiction		Time Analyzed	PM peak
Project Description	FY B - I 24 WB off ramp	Units	U.S. Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	740
Terrain Type	Level	Specific Grade
Percent Grade, %	-	2.78
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors		
Driver Population	Mostly Familiar	Mostly Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.975	0.975
Final Capacity Adjustment Factor (CAF)	0.968	0.968
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	2449	494
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	35.00	35.00
Single-Unit Trucks (SUT), %	-	30
Tractor-Trailers (TT), %	-	70
Heavy Vehicle Adjustment Factor (fHV)	0.741	0.746
Flow Rate (vi),pc/h	3305	662
Capacity (c), pc/h	4646	1936
Volume-to-Capacity Ratio (v/c)	0.71	0.34

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.499
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	57.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	80.6
Flow in Lanes 1 and 2 (v12), pc/h	3305	Ramp Junction Speed (S), mi/h	57.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	28.6
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	26.0

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HCS7 Freeway Merge Report

Project Information			
Analyst	STV Inc.	Date	7/18/2023
Agency	TDOT	Analysis Year	2028
Jurisdiction		Time Analyzed	AM Peak
Project Description	BY NB - I 24 WB on ramp	Units	U.S. Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1087
Terrain Type	Level	Specific Grade
Percent Grade, %	-	-5.10
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors		
Driver Population	Mostly Familiar	Mostly Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.975	0.975
Final Capacity Adjustment Factor (CAF)	0.968	0.968
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	2355	571
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	32.00	32.00
Single-Unit Trucks (SUT), %	-	30
Tractor-Trailers (TT), %	-	70
Heavy Vehicle Adjustment Factor (fHV)	0.758	0.763
Flow Rate (vi),pc/h	3107	748
Capacity (c), pc/h	4646	1936
Volume-to-Capacity Ratio (v/c)	0.83	0.39

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.431
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	59.9
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	73.5
Flow in Lanes 1 and 2 (v12), pc/h	3107	Ramp Junction Speed (S), mi/h	59.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	3855	Average Density (D), pc/mi/ln	32.2
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	28.5

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HCS7 Freeway Merge Report

Project Information			
Analyst	STV Inc.	Date	7/18/2023
Agency	TDOT	Analysis Year	2028
Jurisdiction		Time Analyzed	PM Peak
Project Description	BY NB - I 24 WB on ramp	Units	U.S. Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1087
Terrain Type	Level	Specific Grade
Percent Grade, %	-	-5.10
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors		
Driver Population	Mostly Familiar	Mostly Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.975	0.975
Final Capacity Adjustment Factor (CAF)	0.968	0.968
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	1991	394
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	32.00	32.00
Single-Unit Trucks (SUT), %	-	30
Tractor-Trailers (TT), %	-	70
Heavy Vehicle Adjustment Factor (fHV)	0.758	0.763
Flow Rate (vi),pc/h	2627	516
Capacity (c), pc/h	4646	1936
Volume-to-Capacity Ratio (v/c)	0.68	0.27

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.337
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	62.9
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	73.5
Flow in Lanes 1 and 2 (v12), pc/h	2627	Ramp Junction Speed (S), mi/h	62.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	3143	Average Density (D), pc/mi/ln	25.0
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	23.0

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HCS7 Freeway Merge Report

Project Information			
Analyst	STV Inc.	Date	7/18/2023
Agency	TDOT	Analysis Year	2048
Jurisdiction		Time Analyzed	AM Peak
Project Description	FY NB - I 24 WB on ramp	Units	U.S. Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1087
Terrain Type	Level	Specific Grade
Percent Grade, %	-	-5.10
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors		
Driver Population	Mostly Familiar	Mostly Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.975	0.975
Final Capacity Adjustment Factor (CAF)	0.968	0.968
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	3533	1484
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	32.00	32.00
Single-Unit Trucks (SUT), %	-	30
Tractor-Trailers (TT), %	-	70
Heavy Vehicle Adjustment Factor (fHV)	0.758	0.763
Flow Rate (vi),pc/h	4661	1936
Capacity (c), pc/h	4646	1936
Volume-to-Capacity Ratio (v/c)	1.42	1.00

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	1275.5	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	-
Downstream Equilibrium Distance (LEQ), ft	0.0	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	-
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	4661	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	6597	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	-

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HCS7 Freeway Merge Report

Project Information			
Analyst	STV Inc.	Date	7/18/2023
Agency	TDOT	Analysis Year	2048
Jurisdiction		Time Analyzed	PM Peak
Project Description	FY NB - I 24 WB on ramp	Units	U.S. Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1087
Terrain Type	Level	Specific Grade
Percent Grade, %	-	-5.10
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors		
Driver Population	Mostly Familiar	Mostly Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.975	0.975
Final Capacity Adjustment Factor (CAF)	0.968	0.968
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	2987	1032
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	32.00	32.00
Single-Unit Trucks (SUT), %	-	30
Tractor-Trailers (TT), %	-	70
Heavy Vehicle Adjustment Factor (fHV)	0.758	0.763
Flow Rate (vi),pc/h	3941	1353
Capacity (c), pc/h	4646	1936
Volume-to-Capacity Ratio (v/c)	1.14	0.70

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	996.7	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	-
Downstream Equilibrium Distance (LEQ), ft	0.0	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	-
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	3941	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	5294	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	-

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HCS7 Freeway Merge Report

Project Information			
Analyst	STV Inc.	Date	7/18/2023
Agency	TDOT	Analysis Year	2028
Jurisdiction		Time Analyzed	AM Peak
Project Description	BY B - I 24 WB on ramp	Units	U.S. Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1150
Terrain Type	Level	Specific Grade
Percent Grade, %	-	-4.86
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors		
Driver Population	Mostly Familiar	Mostly Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.975	0.975
Final Capacity Adjustment Factor (CAF)	0.968	0.968
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	2355	571
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	32.00	32.00
Single-Unit Trucks (SUT), %	-	30
Tractor-Trailers (TT), %	-	70
Heavy Vehicle Adjustment Factor (fHV)	0.758	0.763
Flow Rate (vi),pc/h	3107	748
Capacity (c), pc/h	4646	1936
Volume-to-Capacity Ratio (v/c)	0.83	0.39

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.427
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	60.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	73.5
Flow in Lanes 1 and 2 (v12), pc/h	3107	Ramp Junction Speed (S), mi/h	60.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	3855	Average Density (D), pc/mi/ln	32.1
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	28.1

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HCS7 Freeway Merge Report

Project Information			
Analyst	STV Inc.	Date	7/18/2023
Agency	TDOT	Analysis Year	2028
Jurisdiction		Time Analyzed	PM Peak
Project Description	BY B - I 24 WB on ramp	Units	U.S. Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1150
Terrain Type	Level	Specific Grade
Percent Grade, %	-	-4.86
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors		
Driver Population	Mostly Familiar	Mostly Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.975	0.975
Final Capacity Adjustment Factor (CAF)	0.968	0.968
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	1991	394
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	32.00	32.00
Single-Unit Trucks (SUT), %	-	30
Tractor-Trailers (TT), %	-	70
Heavy Vehicle Adjustment Factor (fHV)	0.758	0.763
Flow Rate (vi),pc/h	2627	516
Capacity (c), pc/h	4646	1936
Volume-to-Capacity Ratio (v/c)	0.68	0.27

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.333
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	63.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	73.5
Flow in Lanes 1 and 2 (v12), pc/h	2627	Ramp Junction Speed (S), mi/h	63.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	3143	Average Density (D), pc/mi/ln	24.9
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	22.6

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HCS7 Freeway Merge Report

Project Information			
Analyst	STV Inc.	Date	7/18/2023
Agency	TDOT	Analysis Year	2048
Jurisdiction		Time Analyzed	AM Peak
Project Description	FY B - I 24 WB on ramp	Units	U.S. Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1150
Terrain Type	Level	Specific Grade
Percent Grade, %	-	-4.86
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors		
Driver Population	Mostly Familiar	Mostly Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.975	0.975
Final Capacity Adjustment Factor (CAF)	0.968	0.968
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	3533	1484
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	32.00	32.00
Single-Unit Trucks (SUT), %	-	30
Tractor-Trailers (TT), %	-	70
Heavy Vehicle Adjustment Factor (fHV)	0.758	0.763
Flow Rate (vi),pc/h	4661	1936
Capacity (c), pc/h	4646	1936
Volume-to-Capacity Ratio (v/c)	1.42	1.00

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	1303.5	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	-
Downstream Equilibrium Distance (LEQ), ft	0.0	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	-
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	4661	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	6597	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	-

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HCS7 Freeway Merge Report

Project Information			
Analyst	STV Inc.	Date	7/18/2023
Agency	TDOT	Analysis Year	2048
Jurisdiction		Time Analyzed	PM Peak
Project Description	FY B - I 24 WB on ramp	Units	U.S. Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1150
Terrain Type	Level	Specific Grade
Percent Grade, %	-	-4.86
Segment Type / Ramp Type	Freeway	Right-Sided One-Lane

Adjustment Factors		
Driver Population	Mostly Familiar	Mostly Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.975	0.975
Final Capacity Adjustment Factor (CAF)	0.968	0.968
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	2987	1032
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	32.00	32.00
Single-Unit Trucks (SUT), %	-	30
Tractor-Trailers (TT), %	-	70
Heavy Vehicle Adjustment Factor (fHV)	0.758	0.763
Flow Rate (vi),pc/h	3941	1353
Capacity (c), pc/h	4646	1936
Volume-to-Capacity Ratio (v/c)	1.14	0.70

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	1024.6	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	-
Downstream Equilibrium Distance (LEQ), ft	0.0	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	-
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	3941	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	5294	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	-

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2028 SIGNAL WARRANTS

Traffic Signal Warrant Summary

TN-2 US Hwy 41 and Epps Mill Rd

Date: 22-May-24

Analyst: STV Inc.

Warrant 1	Condition A	NO
	Condition B	NO
Warrant 2	Four Hour Vehicular Volume	NO
Warrant 3	A - Peak Hour Delay	NO
	B - Peak Hour Volume	NO
Warrant 4	Pedestrian Volume	NO
Warrant 5	School Crossing	N/A
Warrant 6	Coordinated Signal System	NO
Warrant 7	Crash Experience	NO
Warrant 8	Roadway network	N/A
Warrant 9	Intersection Near a grade Crossing	N/A

MUTCD Reference:

http://mutcd.fhwa.dot.gov/htm/2009/part4/part4c.htm#section4C02

TIME PERIOD		TN-2 US Hwy 41					TN-2 US Hwy 41					Epps Mill Rd					Epps Mill Rd				
		RTR:	1	DIRECTION:		NB	RTR:	1	DIRECTION:		SB	RTR:	1	DIRECTION:		EB	RTR:	1	DIRECTION:		WB
START	END	Major Street					Major Street					Minor Street					Minor Street				
		L	T	R	PED	B	L	T	R	PED	B	L	T	R	PED	B	L	T	R	PED	B
6:00 AM	6:15 AM	32	43	0	0	0	0	12	11	0	0	13	0	5	0	0	0	0	0	0	0
6:15 AM	6:30 AM	33	53	0	0	0	0	6	12	0	0	30	0	7	0	0	0	0	0	0	0
6:30 AM	6:45 AM	29	51	0	0	0	0	11	25	0	0	30	0	4	0	0	0	0	0	0	0
6:45 AM	7:00 AM	26	41	0	0	0	0	14	40	0	0	32	0	14	0	0	0	0	0	0	0
7:00 AM	7:15 AM	29	49	0	0	0	0	12	35	0	0	21	0	16	0	0	0	0	0	0	0
7:15 AM	7:30 AM	42	40	0	0	0	0	11	33	0	0	40	0	4	0	0	0	0	0	0	0
7:30 AM	7:45 AM	36	23	0	0	0	0	19	34	0	0	26	0	14	0	0	0	0	0	0	0
7:45 AM	8:00 AM	23	29	0	0	0	0	21	39	0	0	23	0	6	0	0	0	0	0	0	0
8:00 AM	8:15 AM	27	36	0	0	0	0	11	19	0	0	26	0	12	0	0	0	0	0	0	0
8:15 AM	8:30 AM	27	30	0	0	0	0	18	15	0	0	18	0	12	0	0	0	0	0	0	0
8:30 AM	8:45 AM	22	37	0	0	0	0	18	13	0	0	8	0	12	0	0	0	0	0	0	0
8:45 AM	9:00 AM	16	42	0	0	0	0	18	12	0	0	12	0	13	0	0	0	0	0	0	0
9:00 AM	9:15 AM	7	28	0	0	0	0	13	9	0	0	12	0	6	0	0	0	0	0	0	0
9:15 AM	9:30 AM	7	33	0	0	0	0	20	15	0	0	18	0	9	0	0	0	0	0	0	0
9:30 AM	9:45 AM	19	32	0	0	0	0	35	14	0	0	18	0	7	0	0	0	0	0	0	0
9:45 AM	10:00 AM	9	39	0	0	0	0	33	11	0	0	16	0	9	0	0	0	0	0	0	0
10:00 AM	10:15 AM	13	29	0	0	0	0	15	18	0	0	12	0	19	0	0	0	0	0	0	0
10:15 AM	10:30 AM	15	32	0	0	0	0	19	11	0	0	8	0	12	0	0	0	0	0	0	0
10:30 AM	10:45 AM	11	30	0	0	0	0	26	15	0	0	20	0	16	0	0	0	0	0	0	0
10:45 AM	11:00 AM	16	22	0	0	0	0	27	16	0	0	12	0	6	0	0	0	0	0	0	0
11:00 AM	11:15 AM	9	28	0	0	0	0	34	16	0	0	14	0	15	0	0	0	0	0	0	0
11:15 AM	11:30 AM	14	14	0	0	0	0	37	20	0	0	14	0	13	0	0	0	0	0	0	0
11:30 AM	11:45 AM	12	34	0	0	0	0	23	18	0	0	14	0	12	0	0	0	0	0	0	0
11:45 AM	12:00 PM	7	26	0	0	0	0	30	27	0	0	19	0	15	0	0	0	0	0	0	0
12:00 PM	12:15 PM	19	32	0	0	0	0	27	16	0	0	18	0	16	0	0	0	0	0	0	0
12:15 PM	12:30 PM	14	32	0	0	0	0	34	20	0	0	21	0	14	0	0	0	0	0	0	0
12:30 PM	12:45 PM	11	23	0	0	0	0	41	14	0	0	12	0	20	0	0	0	0	0	0	0
12:45 PM	1:00 PM	27	27	0	0	0	0	32	15	0	0	15	0	9	0	0	0	0	0	0	0
1:00 PM	1:15 PM	16	25	0	0	0	0	40	21	0	0	9	0	19	0	0	0	0	0	0	0
1:15 PM	1:30 PM	15	25	0	0	0	0	39	22	0	0	21	0	14	0	0	0	0	0	0	0
1:30 PM	1:45 PM	15	29	0	0	0	0	28	27	0	0	18	0	13	0	0	0	0	0	0	0
1:45 PM	2:00 PM	12	23	0	0	0	0	26	19	0	0	28	0	21	0	0	0	0	0	0	0
2:00 PM	2:15 PM	14	32	0	0	0	0	34	28	0	0	20	0	15	0	0	0	0	0	0	0
2:15 PM	2:30 PM	18	30	0	0	0	0	29	21	0	0	18	0	18	0	0	0	0	0	0	0
2:30 PM	2:45 PM	21	23	0	0	0	0	25	29	0	0	32	0	13	0	0	0	0	0	0	0
2:45 PM	3:00 PM	11	14	0	0	0	0	41	19	0	0	27	0	16	0	0	0	0	0	0	0
3:00 PM	3:15 PM	18	20	0	0	0	0	64	21	0	0	18	0	16	0	0	0	0	0	0	0
3:15 PM	3:30 PM	11	28	0	0	0	0	46	20	0	0	22	0	36	0	0	0	0	0	0	0
3:30 PM	3:45 PM	40	46	0	0	0	0	69	27	0	0	35	0	34	0	0	0	0	0	0	0
3:45 PM	4:00 PM	46	42	0	0	0	0	67	21	0	0	28	0	32	0	0	0	0	0	0	0
4:00 PM	4:15 PM	33	34	0	0	0	0	76	28	0	0	29	0	37	0	0	0	0	0	0	0
4:15 PM	4:30 PM	20	13	0	0	0	0	53	34	0	0	20	0	33	0	0	0	0	0	0	0
4:30 PM	4:45 PM	13	22	0	0	0	0	64	26	0	0	26	0	37	0	0	0	0	0	0	0
4:45 PM	5:00 PM	16	30	0	0	0	0	49	40	0	0	25	0	21	0	0	0	0	0	0	0
5:00 PM	5:15 PM	23	21	0	0	0	0	60	29	0	0	36	0	30	0	0	0	0	0	0	0
5:15 PM	5:30 PM	9	30	0	4	0	0	70	23	0	0	26	0	26	0	0	0	0	0	0	0
5:30 PM	5:45 PM	11	21	0	0	0	0	64	18	0	0	25	0	16	0	0	0	0	0	0	0
5:45 PM	6:00 PM	9	23	0	0	0	0	46	20	0	0	20	0	33	0	0	0	0	0	0	0
6:00 PM	6:15 PM	7	19	0	0	0	0	35	32	0	0	15	0	9	0	0	0	0	0	0	0
6:15 PM	6:30 PM	14	15	0	0	0	0	36	11	0	0	23	0	21	0	0	0	0	0	0	0
6:30 PM	6:45 PM	8	19	0	0	0	0	49	23	0	0	19	0	21	0	0	0	0	0	0	0

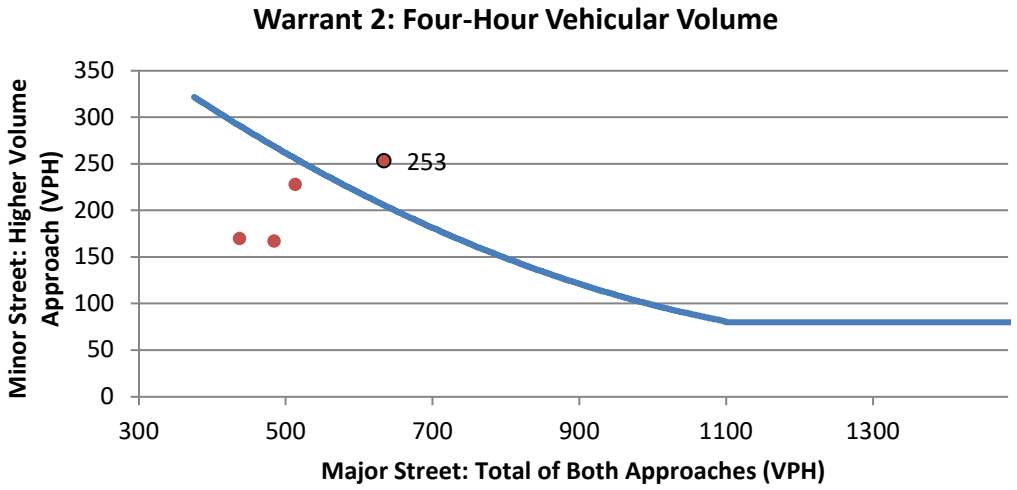
Warrant 1- Eight Hour Vehicular Volume

5/22/2024						
Time Period		Major Street		Minor Street		Meets
START	END	TN-2 US Hwy 41	>500	Epps Mill Rd	>150	Condition?
3:15 PM	4:15 PM	634	Y	253	Y	**Y**
4:15 PM	5:15 PM	513	Y	228	Y	**Y**
5:15 PM	6:15 PM	437	N	170	Y	N
6:45 AM	7:45 AM	484	N	167	Y	N
1:45 PM	2:45 PM	384	N	165	Y	N
11:45 AM	12:45 PM	373	N	135	N	N
12:45 PM	1:45 PM	403	N	118	N	N
7:45 AM	8:45 AM	385	N	117	N	N

Condition B - Interruption of Continuous Traffic						
Time Period		Major Street		Minor Street		Meets
START	END	TN-2 US Hwy 41	>750	Epps Mill Rd	>75	Condition?
3:15 PM	4:15 PM	634	N	253	Y	N
4:15 PM	5:15 PM	513	N	228	Y	N
5:15 PM	6:15 PM	437	N	170	Y	N
6:45 AM	7:45 AM	484	N	167	Y	N
1:45 PM	2:45 PM	384	N	165	Y	N
11:45 AM	12:45 PM	373	N	135	Y	N
12:45 PM	1:45 PM	403	N	118	Y	N
7:45 AM	8:45 AM	385	N	117	Y	N

Warrant 2 - Four Hour Vehicular Volume

1 Major & 1 Minor



Time Period		Major Street Vol.	Minor Street Vol.	Total Volume	Above
Start	End	(both approaches)	(higher approach)	(all approaches)	Curve?
6:45 AM	7:45 AM	484	167	651	NO
3:15 PM	**4:15 PM**	**634**	**253**	**887**	**YES**
4:15 PM	5:15 PM	513	228	741	NO
5:15 PM	6:15 PM	437	170	607	NO

Warrant 3 - Peak Hour Volume

PA

NOTE: Requirements 1 - 3 must ***ALL*** be met for the ***SAME*** hour for Part A of warrant to be met

1. Stopped Delay

1 Lane Approach	
Stopped Delay: (veh*hr)	**1**
Requirement Met:	**NO**

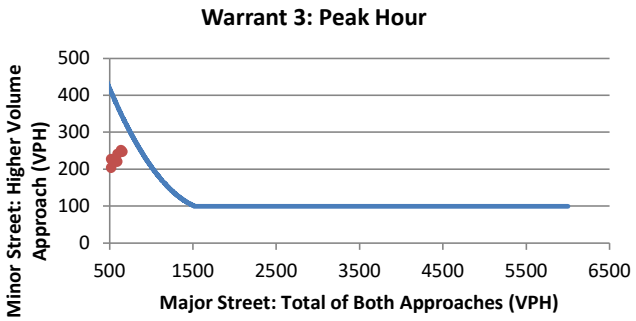
2. Minor Approach Volume

1 Moving Lane	
Approach Volume (veh/hr)	**10**
Requirement Met:	**NO**

3. Total Entering Volume Serviced

3 Approaches	
Intersection Volume (veh/hr)	**342**
Requirement Met:	**NO**

PART B: Peak Hour Volume



TIME PERIOD START	TIME PERIOD END	Major Street (both approaches)	Minor Street (higher approach)	Above Curve?
6:00 AM	7:00 AM	439	135	NO
6:15 AM	7:15 AM	466	154	NO
6:30 AM	7:30 AM	488	161	NO
6:45 AM	7:45 AM	484	167	NO
7:00 AM	8:00 AM	475	150	NO
7:15 AM	8:15 AM	443	151	NO
7:30 AM	8:30 AM	407	137	NO
7:45 AM	8:45 AM	385	117	NO
8:00 AM	9:00 AM	361	113	NO
8:15 AM	9:15 AM	325	93	NO
8:30 AM	9:30 AM	310	90	NO
8:45 AM	9:45 AM	320	95	NO
9:00 AM	10:00 AM	324	95	NO
9:15 AM	10:15 AM	342	108	NO
9:30 AM	10:30 AM	344	101	NO
9:45 AM	10:45 AM	326	112	NO
10:00 AM	11:00 AM	315	105	NO
10:15 AM	11:15 AM	327	103	NO
10:30 AM	11:30 AM	335	110	NO
10:45 AM	11:45 AM	340	100	NO
11:00 AM	12:00 PM	349	116	NO
11:15 AM	12:15 PM	356	121	NO
11:30 AM	12:30 PM	371	129	NO
11:45 AM	12:45 PM	373	135	NO
12:00 PM	1:00 PM	384	125	NO
12:15 PM	1:15 PM	392	119	NO
12:30 PM	1:30 PM	393	119	NO
12:45 PM	1:45 PM	403	118	NO
1:00 PM	2:00 PM	382	143	NO
1:15 PM	2:15 PM	388	150	NO
1:30 PM	2:30 PM	385	151	NO
1:45 PM	2:45 PM	384	165	NO

Traffic Signal Warrant Summary

Epps Mill Rd and Forbus Dr

Date: 24-May-24

Analyst: STV Inc.

Warrant 1	Condition A	NO
	Condition B	NO
Warrant 2	Four Hour Vehicular Volume	NO
Warrant 3	A - Peak Hour Delay	NO
	B - Peak Hour Volume	NO
Warrant 4	Pedestrian Volume	NO
Warrant 5	School Crossing	N/A
Warrant 6	Coordinated Signal System	NO
Warrant 7	Crash Experience	NO
Warrant 8	Roadway network	N/A
Warrant 9	Intersection Near a grade Crossing	N/A

MUTCD Reference:

http://mutcd.fhwa.dot.gov/htm/2009/part4/part4c.htm#section4C02

TIME PERIOD		Epps Mill Rd					Epps Mill Rd					Forbus Dr					Forbus Dr				
		RTR:	1	DIRECTION:		EB	RTR:	1	DIRECTION:		WB	RTR:	1	DIRECTION:		NB	RTR:	1	DIRECTION:		SB
START	END	Major Street					Major Street					Minor Street					Minor Street				
		L	T	R	PED	B	L	T	R	PED	B	L	T	R	PED	B	L	T	R	PED	B
6:00 AM	6:15 AM	35	32	2	0	0	4	40	8	0	0	0	0	0	0	0	2	0	35	0	0
6:15 AM	6:30 AM	34	51	5	0	0	5	40	4	0	0	1	0	0	0	0	5	0	36	0	0
6:30 AM	6:45 AM	36	44	5	0	0	1	53	12	0	0	0	0	0	0	0	4	0	30	0	0
6:45 AM	7:00 AM	32	63	16	0	0	5	63	9	0	0	0	0	0	0	0	8	0	39	0	0
7:00 AM	7:15 AM	33	53	9	0	0	4	61	6	0	0	2	1	1	0	0	4	0	49	0	0
7:15 AM	7:30 AM	43	58	7	0	0	2	76	8	0	0	0	0	0	0	0	7	0	41	0	0
7:30 AM	7:45 AM	51	58	13	0	0	4	69	8	0	0	2	0	0	0	0	2	2	50	0	0
7:45 AM	8:00 AM	39	53	9	0	0	0	57	6	0	0	4	0	1	0	0	6	2	50	0	0
8:00 AM	8:15 AM	34	61	7	0	0	0	46	6	0	0	8	0	0	0	0	4	0	43	0	0
8:15 AM	8:30 AM	33	44	4	0	0	1	42	8	0	0	0	0	0	0	0	6	0	51	0	0
8:30 AM	8:45 AM	47	42	6	0	0	0	29	7	0	0	2	0	0	0	0	0	0	35	0	0
8:45 AM	9:00 AM	44	39	1	0	0	1	27	4	0	0	4	0	0	0	0	2	0	42	0	0
9:00 AM	9:15 AM	41	30	4	0	0	0	18	4	0	0	1	1	0	0	0	5	2	54	0	0
9:15 AM	9:30 AM	36	37	4	0	0	1	23	5	0	0	2	1	1	0	0	4	0	46	0	0
9:30 AM	9:45 AM	36	47	1	0	0	0	33	11	0	0	2	1	0	0	0	1	0	43	0	0
9:45 AM	10:00 AM	51	42	2	0	0	0	16	6	0	0	4	0	0	0	0	6	0	42	0	0
10:00 AM	10:15 AM	37	42	0	0	0	0	32	7	0	0	1	0	0	0	0	6	0	40	0	0
10:15 AM	10:30 AM	30	41	2	0	0	0	29	2	0	0	0	0	0	0	0	4	0	49	0	0
10:30 AM	10:45 AM	35	50	4	0	0	0	26	7	0	0	5	2	2	0	0	4	0	36	0	0
10:45 AM	11:00 AM	40	30	2	0	0	4	28	7	0	0	0	5	0	0	0	4	1	39	0	0
11:00 AM	11:15 AM	39	43	6	0	0	4	26	6	0	0	7	2	5	0	0	6	2	41	0	0
11:15 AM	11:30 AM	40	43	2	0	0	2	37	8	0	0	4	0	0	0	0	4	1	39	0	0
11:30 AM	11:45 AM	46	44	8	0	0	0	23	7	0	0	9	1	4	0	0	5	0	36	0	0
11:45 AM	12:00 PM	41	40	1	0	0	0	28	4	0	0	7	2	4	0	0	13	2	33	0	0
12:00 PM	12:15 PM	44	47	2	0	0	1	35	13	0	0	5	0	4	0	0	9	0	50	0	0
12:15 PM	12:30 PM	42	41	7	0	0	4	29	6	0	0	2	1	4	0	4	9	0	53	0	0
12:30 PM	12:45 PM	32	41	7	0	0	0	29	5	0	0	2	0	0	0	0	6	1	43	0	0
12:45 PM	1:00 PM	41	50	6	4	0	4	43	8	0	0	2	0	0	0	0	5	0	48	0	0
1:00 PM	1:15 PM	36	42	5	0	0	1	35	6	0	0	5	0	1	0	0	5	0	40	0	0
1:15 PM	1:30 PM	33	51	4	0	0	2	40	4	0	0	5	0	2	0	0	2	0	39	0	0
1:30 PM	1:45 PM	51	54	1	0	0	0	39	9	0	0	2	0	1	0	0	7	0	34	0	0
1:45 PM	2:00 PM	50	64	2	0	0	0	34	8	0	0	2	0	0	0	0	8	0	51	0	0
2:00 PM	2:15 PM	40	53	2	0	0	0	42	11	0	0	1	0	1	0	0	2	0	40	0	0
2:15 PM	2:30 PM	49	41	4	0	0	0	36	9	0	0	4	0	0	0	0	7	0	43	0	0
2:30 PM	2:45 PM	56	64	8	0	0	1	50	7	0	0	2	1	0	0	0	7	0	55	0	0
2:45 PM	3:00 PM	42	67	4	0	0	2	27	6	0	0	2	0	0	0	0	6	1	48	0	0
3:00 PM	3:15 PM	41	53	7	0	0	1	37	6	0	0	2	1	1	0	0	4	0	46	0	0
3:15 PM	3:30 PM	42	61	1	0	0	1	32	5	0	0	4	0	0	0	0	6	0	39	0	0
3:30 PM	3:45 PM	34	48	0	0	0	0	61	15	0	0	36	0	28	0	0	6	0	43	0	0
3:45 PM	4:00 PM	48	75	1	0	0	0	61	11	0	0	8	0	1	0	0	4	0	42	0	0
4:00 PM	4:15 PM	51	81	0	0	0	0	64	6	0	0	5	1	6	0	0	9	0	54	0	0
4:15 PM	4:30 PM	44	67	2	0	0	1	58	11	0	0	5	4	2	0	0	1	0	53	0	0
4:30 PM	4:45 PM	41	73	0	0	0	0	44	6	0	0	18	4	6	0	0	5	0	51	0	0
4:45 PM	5:00 PM	33	50	0	4	0	0	53	12	0	0	7	0	2	0	0	7	0	41	0	0
5:00 PM	5:15 PM	46	69	1	0	0	0	63	7	0	0	15	0	2	0	0	6	0	32	0	0
5:15 PM	5:30 PM	47	68	0	0	0	0	35	6	0	0	6	0	5	0	0	1	0	32	0	0
5:30 PM	5:45 PM	26	46	0	0	0	0	27	5	0	0	4	0	0	0	0	6	0	40	0	0
5:45 PM	6:00 PM	47	69	0	0	0	0	35	7	0	0	0	0	0	0	0	5	0	32	0	0
6:00 PM	6:15 PM	33	48	0	0	0	0	33	8	0	0	5	0	0	0	0	2	0	42	0	0
6:15 PM	6:30 PM	39	58	0	0	0	0	28	6	0	0	0	0	0	0	0	7	0	34	0	0
6:30 PM	6:45 PM	32	49	5	0	0	0	35	8	0	0	0	0	0	0	0	6	0	30	0	0

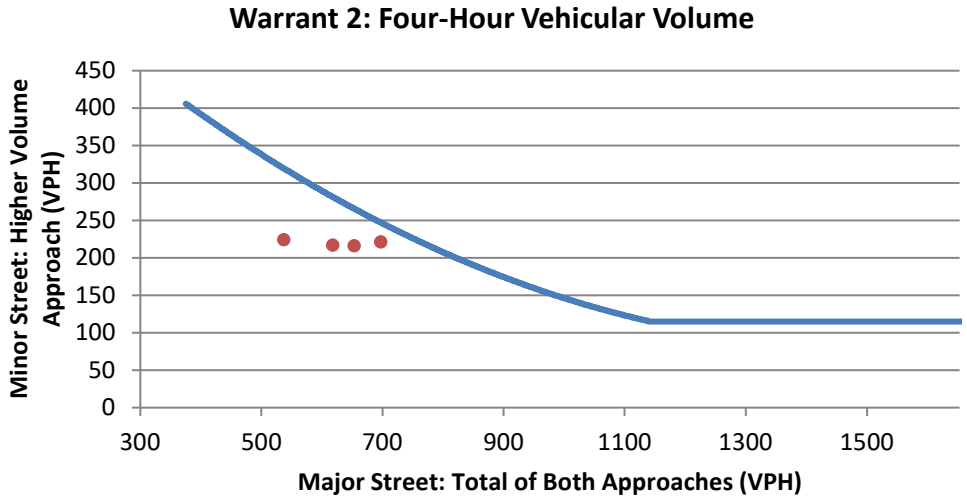
Warrant 1- Eight Hour Vehicular Volume

5/24/2024						
Time Period		Major Street		Minor Street		Meets
START	END	Epps Mill Rd	>500	Forbus Dr	>200	Condition?
12:00 PM	1:00 PM	537	Y	224	Y	**Y**
4:00 PM	5:00 PM	697	Y	221	Y	**Y**
2:15 PM	3:15 PM	618	Y	217	Y	**Y**
7:30 AM	8:30 AM	653	Y	216	Y	**Y**
9:00 AM	10:00 AM	448	N	203	Y	N
10:15 AM	11:15 AM	461	N	186	N	N
1:00 PM	2:00 PM	571	Y	186	N	N
6:30 AM	7:30 AM	699	Y	182	N	N

Condition B - Interruption of Continuous Traffic						
Time Period		Major Street		Minor Street		Meets
START	END	Epps Mill Rd	>750	Forbus Dr	>100	Condition?
12:00 PM	1:00 PM	537	N	224	Y	N
4:00 PM	5:00 PM	697	N	221	Y	N
2:15 PM	3:15 PM	618	N	217	Y	N
7:30 AM	8:30 AM	653	N	216	Y	N
9:00 AM	10:00 AM	448	N	203	Y	N
10:15 AM	11:15 AM	461	N	186	Y	N
1:00 PM	2:00 PM	571	N	186	Y	N
6:30 AM	7:30 AM	699	N	182	Y	N

Warrant 2 - Four Hour Vehicular Volume

1 Major & 2 Minor



Time Period		Major Street Vol.	Minor Street Vol.	Total Volume	Above
Start	End	(both approaches)	(higher approach)	(all approaches)	Curve?
7:30 AM	8:30 AM	653	216	869	NO
12:00 PM	1:00 PM	537	224	761	NO
2:15 PM	3:15 PM	618	217	835	NO
4:00 PM	5:00 PM	697	221	918	NO

Warrant 3 - Peak Hour Volume

PA

NOTE: Requirements 1 - 3 must ***ALL*** be met for the ***SAME*** hour for Part A of warrant to be met

1. Stopped Delay

1 Lane Approach	
Stopped Delay: (veh*hr)	**1**
Requirement Met:	**NO**

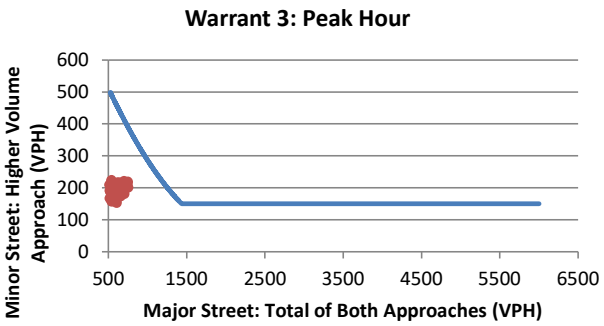
2. Minor Approach Volume

1 Moving Lane	
Approach Volume (veh/hr)	**10**
Requirement Met:	**NO**

3. Total Entering Volume Serviced

3 Approaches	
Intersection Volume (veh/hr)	**342**
Requirement Met:	**NO**

PART B: Peak Hour Volume



TIME PERIOD START	TIME PERIOD END	Major Street (both approaches)	Minor Street (higher approach)	Above Curve?
6:00 AM	7:00 AM	599	159	NO
6:15 AM	7:15 AM	644	175	NO
6:30 AM	7:30 AM	699	182	NO
6:45 AM	7:45 AM	751	202	NO
7:00 AM	8:00 AM	727	213	NO
7:15 AM	8:15 AM	715	207	NO
7:30 AM	8:30 AM	653	216	NO
7:45 AM	8:45 AM	581	197	NO
8:00 AM	9:00 AM	533	183	NO
8:15 AM	9:15 AM	476	197	NO
8:30 AM	9:30 AM	450	190	NO
8:45 AM	9:45 AM	447	199	NO
9:00 AM	10:00 AM	448	203	NO
9:15 AM	10:15 AM	469	188	NO
9:30 AM	10:30 AM	467	191	NO
9:45 AM	10:45 AM	461	187	NO
10:00 AM	11:00 AM	455	183	NO
10:15 AM	11:15 AM	461	186	NO
10:30 AM	11:30 AM	489	177	NO
10:45 AM	11:45 AM	495	178	NO
11:00 AM	12:00 PM	498	182	NO
11:15 AM	12:15 PM	516	192	NO
11:30 AM	12:30 PM	513	210	NO
11:45 AM	12:45 PM	499	219	NO
12:00 PM	1:00 PM	537	224	NO
12:15 PM	1:15 PM	520	210	NO
12:30 PM	1:30 PM	525	189	NO
12:45 PM	1:45 PM	565	180	NO
1:00 PM	2:00 PM	571	186	NO
1:15 PM	2:15 PM	594	183	NO
1:30 PM	2:30 PM	599	192	NO
1:45 PM	2:45 PM	631	213	NO

Traffic Signal Warrant Summary

Epps Mill Rd and I-24 WB Ramp

Date: 22-May-24

Analyst: STV Inc.

Warrant 1	Condition A	NO
	Condition B	NO
Warrant 2	Four Hour Vehicular Volume	NO
Warrant 3	A - Peak Hour Delay	NO
	B - Peak Hour Volume	NO
Warrant 4	Pedestrian Volume	NO
Warrant 5	School Crossing	N/A
Warrant 6	Coordinated Signal System	NO
Warrant 7	Crash Experience	NO
Warrant 8	Roadway network	N/A
Warrant 9	Intersection Near a grade Crossing	N/A

MUTCD Reference:

http://mutcd.fhwa.dot.gov/htm/2009/part4/part4c.htm#section4C02

TIME PERIOD		Epps Mill Rd					Epps Mill Rd					I-24 WB Off Ramp									
		RTR:	1	DIRECTION:		EB	RTR:	1	DIRECTION:		WB	RTR:	0.4	DIRECTION:		NB	RTR:	1	DIRECTION:		SB
START	END	Major Street					Major Street					Minor Street					Minor Street				
		L	T	R	PED	B	L	T	R	PED	B	L	T	R	PED	B	L	T	R	PED	B
6:00 AM	6:15 AM	64	35	0	0	0	0	22	46	0	0	4	0	20	0	0	0	0	0	0	0
6:15 AM	6:30 AM	71	47	0	0	0	0	26	46	0	0	2	0	28	0	0	0	0	0	0	0
6:30 AM	6:45 AM	58	47	0	0	0	0	29	43	0	0	7	1	22	0	0	0	0	0	0	0
6:45 AM	7:00 AM	84	69	0	0	0	0	41	50	0	0	9	1	22	0	0	0	0	0	0	0
7:00 AM	7:15 AM	58	50	0	0	0	0	36	67	0	0	7	2	22	0	0	0	0	0	0	0
7:15 AM	7:30 AM	138	61	0	0	0	0	36	70	0	0	5	0	27	0	0	0	0	0	0	0
7:30 AM	7:45 AM	136	63	0	0	0	0	36	78	0	0	4	1	35	0	0	0	0	0	0	0
7:45 AM	8:00 AM	54	58	0	0	0	0	36	68	0	0	7	0	19	0	0	0	0	0	0	0
8:00 AM	8:15 AM	62	60	0	0	0	0	33	58	0	0	1	1	22	0	4	0	0	0	0	0
8:15 AM	8:30 AM	54	43	0	0	0	0	35	50	0	0	6	0	20	0	0	0	0	0	0	0
8:30 AM	8:45 AM	60	42	0	0	0	0	30	33	0	0	5	0	28	0	0	0	0	0	0	0
8:45 AM	9:00 AM	27	39	0	0	0	0	27	42	0	0	4	0	28	0	0	0	0	0	0	4
9:00 AM	9:15 AM	29	36	0	0	0	0	26	42	0	0	2	0	23	0	0	0	0	0	0	0
9:15 AM	9:30 AM	34	47	0	0	0	0	32	35	0	0	6	2	12	0	0	0	0	0	0	0
9:30 AM	9:45 AM	36	46	0	0	0	0	40	35	0	0	6	0	21	0	0	0	0	0	0	0
9:45 AM	10:00 AM	27	46	0	0	0	0	35	25	0	0	2	0	27	0	0	0	0	0	0	0
10:00 AM	10:15 AM	23	48	0	0	0	0	32	34	0	0	2	1	19	0	0	0	0	0	0	0
10:15 AM	10:30 AM	28	40	0	0	0	0	33	43	0	0	4	1	13	0	0	0	0	0	0	0
10:30 AM	10:45 AM	30	58	0	0	0	0	35	26	0	0	2	0	18	0	0	0	0	0	0	0
10:45 AM	11:00 AM	16	35	0	0	0	0	37	28	0	0	2	1	19	0	0	0	0	0	0	0
11:00 AM	11:15 AM	23	54	0	4	0	0	37	30	0	0	4	0	19	0	0	0	0	0	0	0
11:15 AM	11:30 AM	27	46	0	0	0	0	42	27	0	0	0	0	20	0	0	0	0	0	0	0
11:30 AM	11:45 AM	26	51	0	0	0	0	29	37	0	0	4	4	20	0	0	0	0	0	0	0
11:45 AM	12:00 PM	20	37	0	0	0	0	40	28	0	0	4	1	25	0	0	0	0	0	0	0
12:00 PM	12:15 PM	26	50	0	0	0	0	36	42	0	0	7	0	21	0	0	0	0	0	0	0
12:15 PM	12:30 PM	33	55	0	0	0	0	47	29	0	0	1	1	15	0	0	0	0	0	0	0
12:30 PM	12:45 PM	18	46	0	0	0	0	43	30	0	0	6	0	15	0	0	0	0	0	0	0
12:45 PM	1:00 PM	30	48	0	0	0	0	39	44	0	0	2	0	22	0	0	0	0	0	0	0
1:00 PM	1:15 PM	32	48	0	0	0	0	37	39	0	0	2	1	15	0	0	0	0	0	0	0
1:15 PM	1:30 PM	22	53	0	0	0	0	48	28	0	0	2	1	16	0	0	0	0	0	0	0
1:30 PM	1:45 PM	29	57	0	0	0	0	42	28	0	0	6	2	27	0	0	0	0	0	0	0
1:45 PM	2:00 PM	37	75	0	0	0	0	47	34	0	0	7	0	22	0	0	0	0	0	0	0
2:00 PM	2:15 PM	28	53	0	0	0	0	43	33	0	0	5	0	16	0	0	0	0	0	0	0
2:15 PM	2:30 PM	34	50	0	0	0	0	44	34	0	0	4	0	26	0	0	0	0	0	0	0
2:30 PM	2:45 PM	54	80	0	0	0	0	47	53	0	0	5	0	22	0	0	0	0	0	0	0
2:45 PM	3:00 PM	41	63	0	0	0	0	33	36	0	0	6	1	22	0	0	0	0	0	0	0
3:00 PM	3:15 PM	32	56	0	0	0	0	36	42	0	0	7	0	25	0	0	0	0	0	0	0
3:15 PM	3:30 PM	42	64	0	0	0	0	43	26	0	0	1	0	25	0	0	0	0	0	0	0
3:30 PM	3:45 PM	16	56	0	0	0	0	61	68	4	0	6	2	15	0	0	0	0	0	0	0
3:45 PM	4:00 PM	25	84	0	0	0	0	47	55	0	0	4	0	18	0	0	0	0	0	0	0
4:00 PM	4:15 PM	32	83	0	0	0	0	57	66	0	0	9	2	28	0	0	0	0	0	0	4
4:15 PM	4:30 PM	36	66	0	0	0	0	56	47	0	0	11	0	28	0	0	0	0	0	0	0
4:30 PM	4:45 PM	32	63	0	0	0	0	68	41	0	0	13	0	29	0	0	0	0	0	0	0
4:45 PM	5:00 PM	36	50	0	0	0	0	46	46	0	0	6	0	19	0	0	0	0	0	0	0
5:00 PM	5:15 PM	36	71	0	0	0	0	60	48	0	0	8	1	29	0	0	0	0	0	0	0
5:15 PM	5:30 PM	28	64	0	0	0	0	41	28	0	0	11	0	29	0	0	0	0	0	0	0
5:30 PM	5:45 PM	35	46	0	0	0	0	41	22	0	0	7	0	18	0	0	0	0	0	0	0
5:45 PM	6:00 PM	29	68	0	0	0	0	34	26	0	0	6	0	23	0	0	0	0	0	0	0
6:00 PM	6:15 PM	39	47	0	0	0	0	46	27	0	0	6	0	15	0	0	0	0	0	0	0
6:15 PM	6:30 PM	26	67	0	0	0	0	39	20	0	0	8	0	14	0	0	0	0	0	0	0
6:30 PM	6:45 PM	26	51	0	0	0	0	42	18	0	0	4	0	18	0	0	0	0	0	0	0

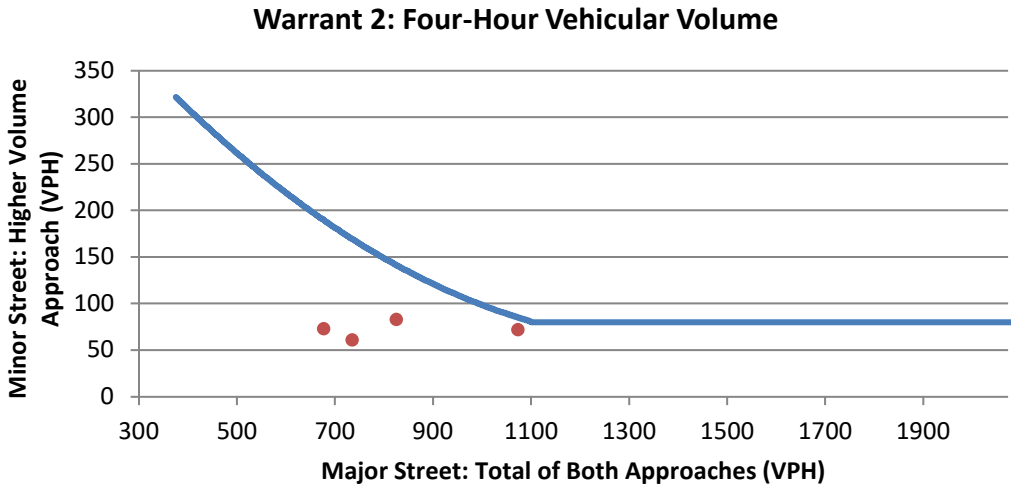
Warrant 1- Eight Hour Vehicular Volume

5/22/2024						
Time Period		Major Street		Minor Street		Meets
START	END	Epps Mill Rd	>500	I-24 N Ramp	>150	Condition?
4:00 PM	5:00 PM	825	Y	83	N	N
5:00 PM	6:00 PM	677	Y	73	N	N
6:45 AM	7:45 AM	1073	Y	72	N	N
2:15 PM	3:15 PM	735	Y	61	N	N
7:45 AM	8:45 AM	776	Y	56	N	N
1:15 PM	2:15 PM	657	Y	55	N	N
11:15 AM	12:15 PM	564	Y	54	N	N
8:45 AM	9:45 AM	573	Y	53	N	N

Condition B - Interruption of Continuous Traffic						
Time Period		Major Street		Minor Street		Meets
START	END	Epps Mill Rd	>750	I-24 N Ramp	>75	Condition?
4:00 PM	5:00 PM	825	Y	83	Y	**Y**
5:00 PM	6:00 PM	677	N	73	N	N
6:45 AM	7:45 AM	1073	Y	72	N	N
2:15 PM	3:15 PM	735	N	61	N	N
7:45 AM	8:45 AM	776	Y	56	N	N
1:15 PM	2:15 PM	657	N	55	N	N
11:15 AM	12:15 PM	564	N	54	N	N
8:45 AM	9:45 AM	573	N	53	N	N

Warrant 2 - Four Hour Vehicular Volume

1 Major & 1 Minor



Time Period		Major Street Vol.	Minor Street Vol.	Total Volume	Above
Start	End	(both approaches)	(higher approach)	(all approaches)	Curve?
6:45 AM	7:45 AM	1073	72	1145	NO
2:15 PM	3:15 PM	735	61	796	NO
4:00 PM	5:00 PM	825	83	908	NO
5:00 PM	6:00 PM	677	73	750	NO

Warrant 3 - Peak Hour Volume

PA

NOTE: Requirements 1 - 3 must ***ALL*** be met for the ***SAME*** hour for Part A of warrant to be met

1. Stopped Delay

1 Lane Approach	
Stopped Delay: (veh*hr)	**1**
Requirement Met:	**NO**

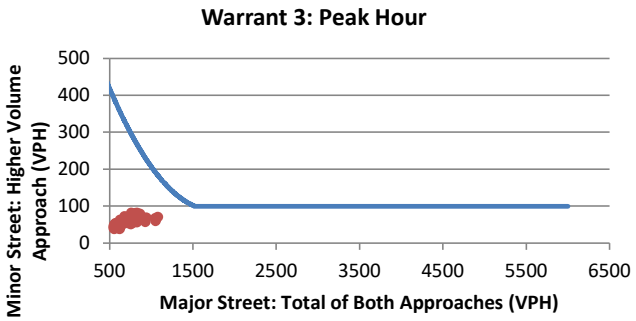
2. Minor Approach Volume

1 Moving Lane	
Approach Volume (veh/hr)	**10**
Requirement Met:	**NO**

3. Total Entering Volume Serviced

3 Approaches	
Intersection Volume (veh/hr)	**342**
Requirement Met:	**NO**

PART B: Peak Hour Volume



TIME PERIOD START	TIME PERIOD END	Major Street (both approaches)	Minor Street (higher approach)	Above Curve?
6:00 AM	7:00 AM	778	61	NO
6:15 AM	7:15 AM	822	67	NO
6:30 AM	7:30 AM	937	70	NO
6:45 AM	7:45 AM	1073	72	NO
7:00 AM	8:00 AM	1045	68	NO
7:15 AM	8:15 AM	1047	61	NO
7:30 AM	8:30 AM	924	59	NO
7:45 AM	8:45 AM	776	56	NO
8:00 AM	9:00 AM	695	56	NO
8:15 AM	9:15 AM	615	56	NO
8:30 AM	9:30 AM	581	55	NO
8:45 AM	9:45 AM	573	53	NO
9:00 AM	10:00 AM	571	51	NO
9:15 AM	10:15 AM	575	51	NO
9:30 AM	10:30 AM	571	48	NO
9:45 AM	10:45 AM	563	43	NO
10:00 AM	11:00 AM	546	41	NO
10:15 AM	11:15 AM	553	42	NO
10:30 AM	11:30 AM	551	40	NO
10:45 AM	11:45 AM	545	47	NO
11:00 AM	12:00 PM	554	51	NO
11:15 AM	12:15 PM	564	54	NO
11:30 AM	12:30 PM	586	54	NO
11:45 AM	12:45 PM	580	50	NO
12:00 PM	1:00 PM	616	46	NO
12:15 PM	1:15 PM	618	40	NO
12:30 PM	1:30 PM	605	41	NO
12:45 PM	1:45 PM	624	48	NO
1:00 PM	2:00 PM	656	53	NO
1:15 PM	2:15 PM	657	55	NO
1:30 PM	2:30 PM	668	60	NO
1:45 PM	2:45 PM	746	55	NO

Traffic Signal Warrant Summary

Epps Mill Rd and I-24 EB Off Ramp

Date: 24-May-24

Analyst: STV Inc.

Warrant 1	Condition A	NO
	Condition B	NO
Warrant 2	Four Hour Vehicular Volume	NO
Warrant 3	A - Peak Hour Delay	NO
	B - Peak Hour Volume	NO
Warrant 4	Pedestrian Volume	
Warrant 5	School Crossing	N/A
Warrant 6	Coordinated Signal System	NO
Warrant 7	Crash Experience	NO
Warrant 8	Roadway network	N/A
Warrant 9	Intersection Near a grade Crossing	N/A

MUTCD Reference:

http://mutcd.fhwa.dot.gov/htm/2009/part4/part4c.htm#section4C02

TIME PERIOD		Epps Mill Rd					Epps Mill Rd					Miller Road					I-24 EB Off Ramp				
		RTR:	1	DIRECTION:		EB	RTR:	1	DIRECTION:		WB	RTR:	0.4	DIRECTION:		NB	RTR:	0.4	DIRECTION:		SB
START	END	Major Street					Major Street					Minor Street					Minor Street				
		L	T	R	PED	B	L	T	R	PED	B	L	T	R	PED	B	L	T	R	PED	B
6:00 AM	6:15 AM	9	76	8	0	0	11	12	23	0	0	2	7	27	0	0	15	6	9	0	0
6:15 AM	6:30 AM	8	103	11	0	0	14	13	20	0	0	0	6	23	0	0	13	5	8	0	0
6:30 AM	6:45 AM	18	84	11	0	0	28	20	19	0	0	4	6	24	0	0	18	7	11	0	0
6:45 AM	7:00 AM	11	96	5	0	0	39	27	14	0	0	5	7	26	0	0	22	9	13	0	0
7:00 AM	7:15 AM	7	116	7	0	0	61	19	26	0	0	4	10	41	0	0	24	10	14	0	0
7:15 AM	7:30 AM	13	167	12	0	0	36	34	29	0	0	4	20	80	0	0	23	9	14	0	0
7:30 AM	7:45 AM	9	152	9	0	0	29	37	22	0	0	9	15	58	0	0	31	12	19	0	0
7:45 AM	8:00 AM	7	102	8	0	0	33	35	26	0	0	6	10	40	0	0	24	10	14	0	0
8:00 AM	8:15 AM	6	87	8	0	0	15	39	20	0	0	7	7	29	0	0	19	7	11	0	0
8:15 AM	8:30 AM	9	61	12	0	0	19	43	16	0	0	4	6	23	0	0	27	11	16	0	0
8:30 AM	8:45 AM	6	68	6	0	0	15	28	21	0	0	4	7	27	0	0	22	9	13	0	0
8:45 AM	9:00 AM	16	53	1	0	3	19	16	28	0	0	1	5	22	0	0	26	10	15	0	0
9:00 AM	9:15 AM	1	51	5	0	0	15	29	27	0	0	4	4	16	0	0	25	10	15	0	0
9:15 AM	9:30 AM	8	53	6	0	0	12	29	26	0	0	1	4	18	0	0	30	12	18	0	0
9:30 AM	9:45 AM	8	53	8	0	0	21	20	18	0	0	2	6	22	0	0	25	10	15	0	0
9:45 AM	10:00 AM	9	43	1	0	0	30	28	30	0	0	2	2	9	0	0	23	9	14	0	0
10:00 AM	10:15 AM	9	35	1	0	0	16	32	27	0	0	0	4	17	0	0	29	11	17	0	0
10:15 AM	10:30 AM	13	48	5	0	0	19	35	21	0	0	4	5	20	0	0	25	10	15	0	0
10:30 AM	10:45 AM	11	47	7	0	0	18	22	26	0	0	6	7	28	0	0	27	11	16	0	0
10:45 AM	11:00 AM	11	35	5	0	0	18	28	26	0	0	4	4	18	0	0	36	14	21	0	0
11:00 AM	11:15 AM	20	44	6	0	0	23	27	26	0	0	1	6	23	0	0	25	10	15	0	0
11:15 AM	11:30 AM	6	44	1	0	0	12	29	23	0	0	4	5	19	0	0	23	9	14	0	0
11:30 AM	11:45 AM	9	44	4	0	0	25	26	20	0	0	2	5	20	0	0	22	9	13	0	0
11:45 AM	12:00 PM	2	35	1	0	0	21	39	20	0	0	1	3	10	0	0	26	10	15	0	0
12:00 PM	12:15 PM	14	35	5	0	0	20	46	21	0	3	5	4	18	0	0	26	11	16	0	0
12:15 PM	12:30 PM	9	33	9	0	0	15	29	15	0	0	6	3	13	0	0	28	11	17	0	0
12:30 PM	12:45 PM	5	29	7	0	0	21	32	22	0	0	2	2	9	0	0	29	12	18	0	0
12:45 PM	1:00 PM	8	49	6	0	0	19	41	27	0	3	4	5	21	0	0	33	13	20	0	0
1:00 PM	1:15 PM	7	64	11	0	0	20	39	27	0	0	5	5	21	0	0	28	11	17	0	0
1:15 PM	1:30 PM	7	49	5	0	0	49	21	20	0	0	4	3	12	0	0	29	11	17	0	0
1:30 PM	1:45 PM	11	46	5	0	0	48	44	33	0	0	6	5	21	0	0	27	11	16	0	0
1:45 PM	2:00 PM	13	68	2	0	0	37	40	35	0	0	8	9	36	0	0	32	13	19	0	0
2:00 PM	2:15 PM	7	57	11	0	0	27	36	19	0	0	7	6	23	0	0	30	12	18	0	0
2:15 PM	2:30 PM	8	43	6	0	0	49	46	28	0	0	8	4	16	0	0	34	14	20	0	0
2:30 PM	2:45 PM	9	95	4	0	0	23	35	28	0	0	11	15	58	0	0	33	13	20	0	0
2:45 PM	3:00 PM	11	66	2	0	0	26	64	25	0	0	5	7	26	0	0	37	15	22	0	0
3:00 PM	3:15 PM	19	56	4	0	0	30	61	23	0	0	2	7	27	0	0	39	16	24	0	0
3:15 PM	3:30 PM	15	55	0	0	0	49	57	16	0	0	8	7	27	0	0	44	18	27	0	0
3:30 PM	3:45 PM	7	66	4	0	0	43	68	25	0	0	6	7	26	0	0	45	18	27	0	0
3:45 PM	4:00 PM	20	54	5	0	0	40	69	15	0	0	7	6	25	0	0	54	22	33	0	3
4:00 PM	4:15 PM	11	68	8	0	0	27	77	25	0	0	7	6	24	0	0	33	13	20	0	0
4:15 PM	4:30 PM	14	51	8	0	0	26	62	19	0	0	2	5	21	0	0	39	16	24	0	0
4:30 PM	4:45 PM	18	53	6	0	0	40	88	18	0	0	4	6	22	0	0	45	18	27	0	0
4:45 PM	5:00 PM	13	57	8	0	0	33	62	29	0	0	11	7	30	0	0	45	18	27	0	0
5:00 PM	5:15 PM	14	66	11	0	0	37	68	22	0	0	7	7	26	0	0	43	17	26	0	0
5:15 PM	5:30 PM	5	101	6	0	0	28	69	33	0	0	2	7	28	0	0	50	20	30	0	0
5:30 PM	5:45 PM	15	74	7	0	0	37	77	22	0	0	7	8	31	0	0	44	18	26	0	0
5:45 PM	6:00 PM	14	57	8	0	0	30	71	18	0	0	8	6	22	0	0	47	19	28	0	0
6:00 PM	6:15 PM	9	54	8	0	0	15	63	25	0	0	5	4	17	0	0	44	18	26	0	0
6:15 PM	6:30 PM	7	49	5	0	0	28	42	28	0	0	5	3	13	0	0	47	19	28	0	0
6:30 PM	6:45 PM	12	42	6	0	0	25	39	18	0	0	4	5	20	0	0	36	15	22	0	0

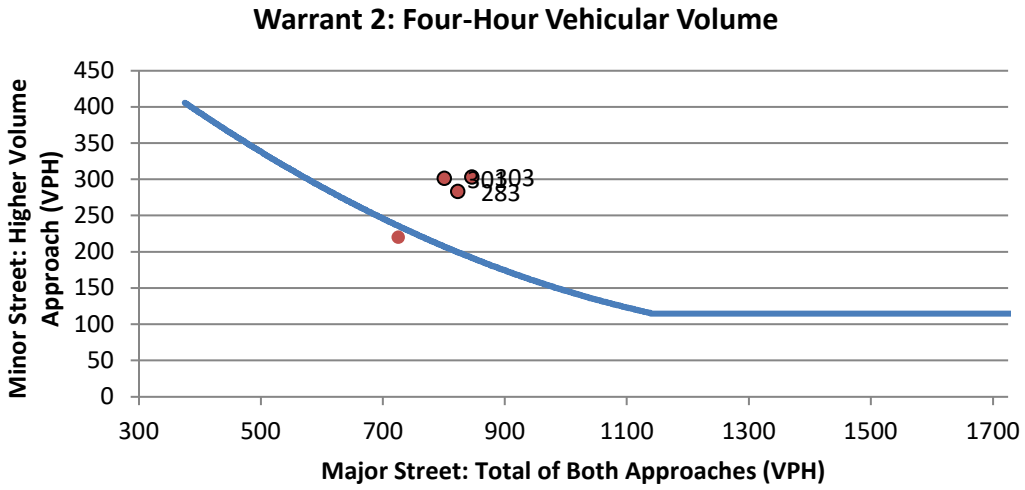
Warrant 1- Eight Hour Vehicular Volume

5/24/2024						
Time Period		Major Street		Minor Street		Meets
START	END	Epps Mill Rd	>500	I-24 S Ramp	>200	Condition?
5:15 PM	6:15 PM	846	Y	303	Y	**Y**
3:00 PM	4:00 PM	801	Y	301	Y	**Y**
4:15 PM	5:15 PM	823	Y	283	Y	**Y**
2:00 PM	3:00 PM	725	Y	220	Y	**Y**
12:30 PM	1:30 PM	585	Y	195	N	N
6:15 PM	7:15 PM	402	N	195	N	N
10:00 AM	11:00 AM	515	Y	190	N	N
8:45 AM	9:45 AM	523	Y	173	N	N

Condition B - Interruption of Continuous Traffic						
Time Period		Major Street		Minor Street		Meets
START	END	Epps Mill Rd	>750	I-24 S Ramp	>100	Condition?
5:15 PM	6:15 PM	846	Y	303	Y	**Y**
3:00 PM	4:00 PM	801	Y	301	Y	**Y**
4:15 PM	5:15 PM	823	Y	283	Y	**Y**
2:00 PM	3:00 PM	725	N	220	Y	N
12:30 PM	1:30 PM	585	N	195	Y	N
6:15 PM	7:15 PM	402	N	195	Y	N
10:00 AM	11:00 AM	515	N	190	Y	N
8:45 AM	9:45 AM	523	N	173	Y	N

Warrant 2 - Four Hour Vehicular Volume

1 Major & 2 Minor



Time Period		Major Street Vol.	Minor Street Vol.	Total Volume	Above
Start	End	(both approaches)	(higher approach)	(all approaches)	Curve?
2:00 PM	3:00 PM	725	220	945	NO
3:00 PM	**4:00 PM**	**801**	**301**	**1102**	**YES**
4:15 PM	**5:15 PM**	**823**	**283**	**1106**	**YES**
5:15 PM	**6:15 PM**	**846**	**303**	**1149**	**YES**

Warrant 3 - Peak Hour Volume

PA

NOTE: Requirements 1 - 3 must ***ALL*** be met for the ***SAME*** hour for Part A of warrant to be met

1. Stopped Delay

1 Lane Approach	
Stopped Delay: (veh*hr)	**1**
Requirement Met:	**NO**

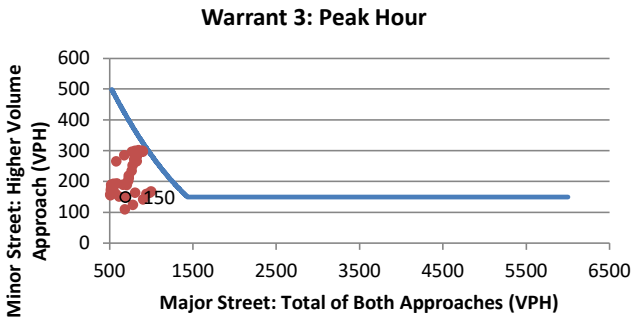
2. Minor Approach Volume

1 Moving Lane	
Approach Volume (veh/hr)	**10**
Requirement Met:	**NO**

3. Total Entering Volume Serviced

3 Approaches	
Intersection Volume (veh/hr)	**342**
Requirement Met:	**NO**

PART B: Peak Hour Volume



TIME PERIOD START	TIME PERIOD END	Major Street (both approaches)	Minor Street (higher approach)	Above Curve?
6:00 AM	7:00 AM	680	111	NO
6:15 AM	7:15 AM	777	126	NO
6:30 AM	7:30 AM	899	143	NO
6:45 AM	7:45 AM	977	165	NO
7:00 AM	8:00 AM	996	169	NO
7:15 AM	8:15 AM	935	161	NO
7:30 AM	8:30 AM	804	165	NO
7:45 AM	8:45 AM	690	150	NO
8:00 AM	9:00 AM	612	152	NO
8:15 AM	9:15 AM	565	163	NO
8:30 AM	9:30 AM	539	168	NO
8:45 AM	9:45 AM	523	173	NO
9:00 AM	10:00 AM	531	169	NO
9:15 AM	10:15 AM	523	175	NO
9:30 AM	10:30 AM	530	167	NO
9:45 AM	10:45 AM	533	170	NO
10:00 AM	11:00 AM	515	190	NO
10:15 AM	11:15 AM	541	184	NO
10:30 AM	11:30 AM	515	181	NO
10:45 AM	11:45 AM	512	173	NO
11:00 AM	12:00 PM	507	157	NO
11:15 AM	12:15 PM	502	159	NO
11:30 AM	12:30 PM	497	167	NO
11:45 AM	12:45 PM	485	179	NO
12:00 PM	1:00 PM	517	191	NO
12:15 PM	1:15 PM	544	194	NO
12:30 PM	1:30 PM	585	195	NO
12:45 PM	1:45 PM	656	191	NO
1:00 PM	2:00 PM	701	190	NO
1:15 PM	2:15 PM	690	193	NO
1:30 PM	2:30 PM	719	202	NO
1:45 PM	2:45 PM	726	212	NO

Traffic Signal Warrant Summary

Epps Mill Rd and Capital Way

Date: 24-May-24

Analyst: STV Inc.

Warrant 1	Condition A	NO
	Condition B	NO
Warrant 2	Four Hour Vehicular Volume	NO
Warrant 3	A - Peak Hour Delay	NO
	B - Peak Hour Volume	NO
Warrant 4	Pedestrian Volume	NO
Warrant 5	School Crossing	N/A
Warrant 6	Coordinated Signal System	NO
Warrant 7	Crash Experience	NO
Warrant 8	Roadway network	N/A
Warrant 9	Intersection Near a grade Crossing	N/A

MUTCD Reference:

http://mutcd.fhwa.dot.gov/htm/2009/part4/part4c.htm#section4C02

TIME PERIOD		Epps Mill Rd					Epps Mill Rd					Dollar General Driveway					Capital Way				
		RTR:	1	DIRECTION:		EB	RTR:	1	DIRECTION:		WB	RTR:	1	DIRECTION:		NB	RTR:	1	DIRECTION:		SB
START	END	Major Street					Major Street					Minor Street					Minor Street				
		L	T	R	PED	B	L	T	R	PED	B	L	T	R	PED	B	L	T	R	PED	B
6:00 AM	6:15 AM	0	7	0	0	0	0	7	2	0	0	0	0	0	0	0	1	0	0	0	0
6:15 AM	6:30 AM	0	9	0	0	0	0	5	4	0	0	0	0	0	0	0	2	0	0	0	0
6:30 AM	6:45 AM	0	13	0	0	0	0	8	5	0	0	0	0	0	0	0	1	0	2	0	0
6:45 AM	7:00 AM	0	9	0	0	0	4	5	4	0	0	0	1	2	0	0	1	0	1	0	0
7:00 AM	7:15 AM	0	7	0	0	0	0	1	6	0	0	0	0	1	0	0	2	1	0	0	0
7:15 AM	7:30 AM	1	13	1	0	0	1	11	9	0	0	1	0	4	0	0	4	0	0	0	0
7:30 AM	7:45 AM	1	9	2	0	0	5	7	14	0	0	1	0	6	0	0	5	0	0	0	0
7:45 AM	8:00 AM	0	9	1	0	0	2	15	7	0	0	0	0	5	0	0	2	0	0	0	0
8:00 AM	8:15 AM	1	8	1	0	0	5	11	8	0	0	4	0	4	0	0	4	1	1	0	0
8:15 AM	8:30 AM	1	12	1	0	0	1	11	5	0	0	1	0	2	0	0	5	0	1	0	0
8:30 AM	8:45 AM	0	6	0	0	0	1	6	7	0	0	0	0	2	0	0	6	0	0	0	0
8:45 AM	9:00 AM	1	6	0	0	0	1	9	5	0	0	0	0	1	0	0	0	1	0	0	0
9:00 AM	9:15 AM	1	8	1	0	0	1	19	5	0	0	1	0	2	0	0	6	0	0	0	0
9:15 AM	9:30 AM	0	21	1	0	0	1	9	8	0	0	0	1	0	0	0	5	1	1	0	0
9:30 AM	9:45 AM	0	16	1	0	0	4	12	8	0	0	0	1	2	0	0	4	0	1	0	0
9:45 AM	10:00 AM	0	19	0	0	0	1	19	4	0	0	1	0	2	0	0	2	0	1	0	0
10:00 AM	10:15 AM	0	23	0	0	0	4	13	6	0	0	0	0	2	0	0	7	0	0	0	0
10:15 AM	10:30 AM	0	18	0	0	0	9	9	11	0	0	2	0	6	0	0	5	0	0	0	0
10:30 AM	10:45 AM	2	19	4	0	0	6	15	6	0	0	7	0	5	0	0	5	1	4	0	0
10:45 AM	11:00 AM	0	28	2	0	0	6	15	5	0	0	2	0	5	0	0	5	1	1	0	0
11:00 AM	11:15 AM	1	23	1	0	0	2	18	7	0	0	4	0	2	0	0	7	0	1	0	0
11:15 AM	11:30 AM	0	33	2	0	0	2	16	1	0	0	0	0	2	0	0	8	0	0	0	0
11:30 AM	11:45 AM	1	21	1	0	0	5	25	2	0	0	1	0	4	0	0	1	0	0	0	0
11:45 AM	12:00 PM	0	29	1	0	0	4	28	4	0	0	2	1	6	0	0	6	0	0	0	0
12:00 PM	12:15 PM	0	35	1	0	0	4	25	5	0	0	0	0	4	0	0	1	0	1	0	0
12:15 PM	12:30 PM	0	26	0	0	0	8	16	8	0	0	7	0	1	0	0	7	0	1	0	0
12:30 PM	12:45 PM	0	30	4	0	0	4	28	12	0	0	5	0	5	0	0	9	0	0	0	0
12:45 PM	1:00 PM	0	25	1	0	0	2	25	4	0	0	1	0	4	0	0	9	0	0	0	0
1:00 PM	1:15 PM	2	33	2	0	0	4	25	6	0	0	2	1	4	0	0	6	0	2	0	0
1:15 PM	1:30 PM	1	28	2	0	0	5	33	7	0	0	2	0	1	0	0	8	1	0	0	0
1:30 PM	1:45 PM	0	33	1	0	0	1	27	4	0	0	5	0	4	0	0	2	0	0	0	0
1:45 PM	2:00 PM	1	30	4	0	0	1	25	4	0	0	4	0	2	0	0	4	0	0	0	0
2:00 PM	2:15 PM	0	41	7	0	0	2	37	5	0	0	2	0	4	0	0	5	1	1	0	0
2:15 PM	2:30 PM	0	42	2	0	0	2	29	6	0	0	4	0	5	0	0	5	0	1	0	0
2:30 PM	2:45 PM	0	23	5	0	0	2	26	4	0	0	2	0	6	0	0	4	0	1	0	0
2:45 PM	3:00 PM	1	30	2	0	0	6	36	5	0	0	7	0	2	0	0	5	0	0	0	0
3:00 PM	3:15 PM	4	29	1	0	0	5	44	6	0	0	1	0	4	0	0	5	0	1	0	0
3:15 PM	3:30 PM	1	26	7	0	0	1	51	2	0	0	4	1	2	0	0	6	0	1	0	0
3:30 PM	3:45 PM	1	34	4	0	0	7	58	4	0	0	2	0	6	0	0	4	0	1	0	0
3:45 PM	4:00 PM	1	34	2	0	0	8	68	2	0	0	1	0	9	0	0	6	0	1	0	0
4:00 PM	4:15 PM	0	42	1	0	0	2	42	0	0	0	2	0	5	0	0	8	0	0	0	0
4:15 PM	4:30 PM	2	46	5	0	0	5	55	6	0	0	4	0	2	0	0	7	0	1	0	0
4:30 PM	4:45 PM	1	39	1	0	0	8	63	5	5	0	4	0	6	0	0	7	1	0	0	0
4:45 PM	5:00 PM	0	37	4	0	0	6	63	5	0	0	7	1	4	0	0	5	0	1	0	0
5:00 PM	5:15 PM	0	55	5	0	0	7	64	1	0	0	6	0	5	0	0	13	0	4	0	0
5:15 PM	5:30 PM	0	23	2	0	0	11	62	6	0	0	4	0	7	0	0	7	0	5	0	0
5:30 PM	5:45 PM	1	34	4	0	0	6	58	8	0	0	5	0	6	0	0	7	1	0	0	0
5:45 PM	6:00 PM	0	40	4	0	0	4	51	2	0	0	7	0	4	0	0	2	0	0	0	0
6:00 PM	6:15 PM	0	26	2	0	0	11	58	5	0	0	4	0	4	0	0	8	1	0	0	0
6:15 PM	6:30 PM	0	28	2	0	0	11	49	6	0	0	9	0	5	0	0	4	0	0	0	0
6:30 PM	6:45 PM	0	29	6	0	0	4	40	1	0	0	5	0	8	0	0	11	0	5	0	0

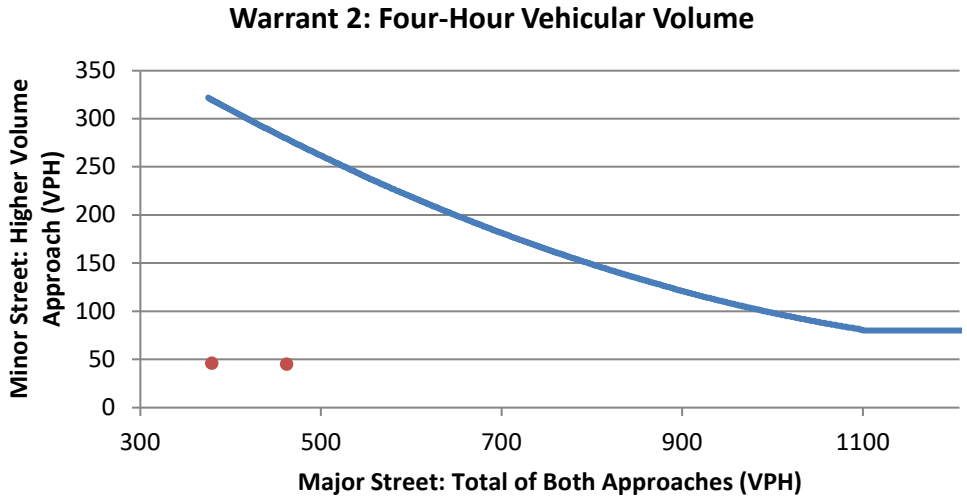
Warrant 1- Eight Hour Vehicular Volume

Condition A - Minimum Vehicular Volume						
Time Period		Major Street		Minor Street		Meets
START	END	Epps Mill Rd	>500	Capital Way	>150	Condition?
5:45 PM	6:45 PM	379	N	46	N	N
4:45 PM	5:45 PM	462	N	45	N	N
12:30 PM	1:30 PM	283	N	35	N	N
10:15 AM	11:15 AM	207	N	33	N	N
3:45 PM	4:45 PM	438	N	33	N	N
2:00 PM	3:00 PM	313	N	32	N	N
11:30 AM	12:30 PM	249	N	26	N	N
7:15 AM	8:15 AM	142	N	25	N	N

Condition B - Interruption of Continuous Traffic						
Time Period		Major Street		Minor Street		Meets
START	END	Epps Mill Rd	>750	Capital Way	>75	Condition?
5:45 PM	6:45 PM	379	N	46	N	N
4:45 PM	5:45 PM	462	N	45	N	N
12:30 PM	1:30 PM	283	N	35	N	N
10:15 AM	11:15 AM	207	N	33	N	N
3:45 PM	4:45 PM	438	N	33	N	N
2:00 PM	3:00 PM	313	N	32	N	N
11:30 AM	12:30 PM	249	N	26	N	N
7:15 AM	8:15 AM	142	N	25	N	N

Warrant 2 - Four Hour Vehicular Volume

1 Major & 1 Minor



Time Period		Major Street Vol.	Minor Street Vol.	Total Volume	Above
Start	End	(both approaches)	(higher approach)	(all approaches)	Curve?
10:15 AM	11:15 AM	207	33	240	NO
12:30 PM	1:30 PM	283	35	318	NO
4:45 PM	5:45 PM	462	45	507	NO
5:45 PM	6:45 PM	379	46	425	NO

Warrant 3 - Peak Hour Volume

PART A: Peak Hour Delay

NOTE: Requirements 1 - 3 must ***ALL*** be met for the ***SAME*** hour for Part A of warrant to be met

1. Stopped Delay

1 Lane Approach	
Stopped Delay: (veh*hr)	**1**
Requirement Met:	**NO**

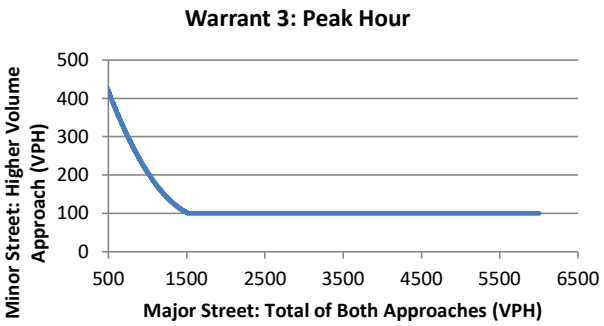
2. Minor Approach Volume

1 Moving Lane	
Approach Volume (veh/hr)	**10**
Requirement Met:	**NO**

3. Total Entering Volume Serviced

3 Approaches	
Intersection Volume (veh/hr)	**342**
Requirement Met:	**NO**

PART B: Peak Hour Volume



TIME PERIOD START	TIME PERIOD END	Major Street (both approaches)	Minor Street (higher approach)	Above Curve?
6:00 AM	7:00 AM	82	8	NO
6:15 AM	7:15 AM	80	10	NO
6:30 AM	7:30 AM	98	12	NO
6:45 AM	7:45 AM	110	16	NO
7:00 AM	8:00 AM	122	18	NO
7:15 AM	8:15 AM	142	25	NO
7:30 AM	8:30 AM	137	23	NO
7:45 AM	8:45 AM	119	20	NO
8:00 AM	9:00 AM	107	19	NO
8:15 AM	9:15 AM	108	19	NO
8:30 AM	9:30 AM	117	20	NO
8:45 AM	9:45 AM	138	19	NO
9:00 AM	10:00 AM	159	21	NO
9:15 AM	10:15 AM	170	22	NO
9:30 AM	10:30 AM	177	20	NO
9:45 AM	10:45 AM	188	25	NO
10:00 AM	11:00 AM	201	29	NO
10:15 AM	11:15 AM	207	33	NO
10:30 AM	11:30 AM	214	33	NO
10:45 AM	11:45 AM	217	24	NO
11:00 AM	12:00 PM	227	23	NO
11:15 AM	12:15 PM	245	20	NO
11:30 AM	12:30 PM	249	26	NO
11:45 AM	12:45 PM	272	31	NO
12:00 PM	1:00 PM	263	28	NO
12:15 PM	1:15 PM	265	34	NO
12:30 PM	1:30 PM	283	35	NO
12:45 PM	1:45 PM	271	28	NO
1:00 PM	2:00 PM	279	25	NO
1:15 PM	2:15 PM	299	24	NO
1:30 PM	2:30 PM	304	30	NO
1:45 PM	2:45 PM	298	29	NO

2033 SIGNAL WAARANTS

Traffic Signal Warrant Summary

TN-2 US Hwy 41 and Epps Mill Rd

Date: 22-May-24

Analyst: STV Inc.

Warrant 1	Condition A	NO
	Condition B	NO
Warrant 2	Four Hour Vehicular Volume	NO
Warrant 3	A - Peak Hour Delay	NO
	B - Peak Hour Volume	**YES**
Warrant 4	Pedestrian Volume	NO
Warrant 5	School Crossing	N/A
Warrant 6	Coordinated Signal System	NO
Warrant 7	Crash Experience	NO
Warrant 8	Roadway network	N/A
Warrant 9	Intersection Near a grade Crossing	N/A

MUTCD Reference:

http://mutcd.fhwa.dot.gov/htm/2009/part4/part4c.htm#section4C02

TIME PERIOD		TN-2 US Hwy 41					TN-2 US Hwy 41					Epps Mill Rd					Epps Mill Rd				
		RTR:	1	DIRECTION:		NB	RTR:	1	DIRECTION:		SB	RTR:	1	DIRECTION:		EB	RTR:	1	DIRECTION:		WB
START	END	Major Street					Major Street					Minor Street					Minor Street				
		L	T	R	PED	B	L	T	R	PED	B	L	T	R	PED	B	L	T	R	PED	B
6:00 AM	6:15 AM	38	53	0	0	0	0	14	13	0	0	16	0	6	0	0	0	0	0	0	0
6:15 AM	6:30 AM	40	64	0	0	0	0	7	14	0	0	37	0	9	0	0	0	0	0	0	0
6:30 AM	6:45 AM	36	63	0	0	0	0	13	30	0	0	37	0	4	0	0	0	0	0	0	0
6:45 AM	7:00 AM	31	50	0	0	0	0	17	48	0	0	38	0	17	0	0	0	0	0	0	0
7:00 AM	7:15 AM	36	60	0	0	0	0	14	43	0	0	26	0	20	0	0	0	0	0	0	0
7:15 AM	7:30 AM	51	48	0	0	0	0	13	40	0	0	48	0	4	0	0	0	0	0	0	0
7:30 AM	7:45 AM	44	28	0	0	0	0	23	41	0	0	31	0	17	0	0	0	0	0	0	0
7:45 AM	8:00 AM	28	36	0	0	0	0	26	47	0	0	28	0	7	0	0	0	0	0	0	0
8:00 AM	8:15 AM	33	44	0	0	0	0	13	23	0	0	31	0	14	0	0	0	0	0	0	0
8:15 AM	8:30 AM	33	37	0	0	0	0	21	19	0	0	21	0	14	0	0	0	0	0	0	0
8:30 AM	8:45 AM	27	46	0	0	0	0	21	16	0	0	10	0	14	0	0	0	0	0	0	0
8:45 AM	9:00 AM	20	51	0	0	0	0	21	14	0	0	14	0	16	0	0	0	0	0	0	0
9:00 AM	9:15 AM	9	34	0	0	0	0	16	11	0	0	14	0	7	0	0	0	0	0	0	0
9:15 AM	9:30 AM	9	40	0	0	0	0	24	19	0	0	21	0	11	0	0	0	0	0	0	0
9:30 AM	9:45 AM	23	38	0	0	0	0	43	17	0	0	21	0	9	0	0	0	0	0	0	0
9:45 AM	10:00 AM	11	47	0	0	0	0	40	13	0	0	20	0	11	0	0	0	0	0	0	0
10:00 AM	10:15 AM	16	36	0	0	0	0	19	21	0	0	14	0	23	0	0	0	0	0	0	0
10:15 AM	10:30 AM	19	38	0	0	0	0	23	13	0	0	10	0	14	0	0	0	0	0	0	0
10:30 AM	10:45 AM	13	37	0	0	0	0	31	19	0	0	24	0	20	0	0	0	0	0	0	0
10:45 AM	11:00 AM	20	27	0	0	0	0	33	20	0	0	14	0	7	0	0	0	0	0	0	0
11:00 AM	11:15 AM	11	34	0	0	0	0	41	20	0	0	17	0	19	0	0	0	0	0	0	0
11:15 AM	11:30 AM	17	17	0	0	0	0	46	24	0	0	17	0	16	0	0	0	0	0	0	0
11:30 AM	11:45 AM	14	41	0	0	0	0	28	21	0	0	17	0	14	0	0	0	0	0	0	0
11:45 AM	12:00 PM	9	31	0	0	0	0	37	33	0	0	23	0	19	0	0	0	0	0	0	0
12:00 PM	12:15 PM	23	38	0	0	0	0	33	20	0	0	21	0	20	0	0	0	0	0	0	0
12:15 PM	12:30 PM	17	38	0	0	0	0	41	24	0	0	26	0	17	0	0	0	0	0	0	0
12:30 PM	12:45 PM	13	28	0	0	0	0	50	17	0	0	14	0	24	0	0	0	0	0	0	0
12:45 PM	1:00 PM	33	33	0	0	0	0	38	19	0	0	19	0	11	0	0	0	0	0	0	0
1:00 PM	1:15 PM	20	30	0	0	0	0	48	26	0	0	11	0	23	0	0	0	0	0	0	0
1:15 PM	1:30 PM	19	30	0	0	0	0	47	27	0	0	26	0	17	0	0	0	0	0	0	0
1:30 PM	1:45 PM	19	36	0	0	0	0	34	33	0	0	21	0	16	0	0	0	0	0	0	0
1:45 PM	2:00 PM	14	28	0	0	0	0	31	23	0	0	34	0	26	0	0	0	0	0	0	0
2:00 PM	2:15 PM	17	38	0	0	0	0	41	34	0	0	24	0	19	0	0	0	0	0	0	0
2:15 PM	2:30 PM	21	37	0	0	0	0	36	26	0	0	21	0	21	0	0	0	0	0	0	0
2:30 PM	2:45 PM	26	28	0	0	0	0	30	36	0	0	38	0	16	0	0	0	0	0	0	0
2:45 PM	3:00 PM	13	17	0	0	0	0	50	23	0	0	33	0	20	0	0	0	0	0	0	0
3:00 PM	3:15 PM	21	24	0	0	0	0	78	26	0	0	21	0	20	0	0	0	0	0	0	0
3:15 PM	3:30 PM	13	34	0	0	0	0	56	24	0	0	27	0	44	0	0	0	0	0	0	0
3:30 PM	3:45 PM	48	56	0	0	0	0	84	33	0	0	43	0	41	0	0	0	0	0	0	0
3:45 PM	4:00 PM	56	51	0	0	0	0	81	26	0	0	34	0	38	0	0	0	0	0	0	0
4:00 PM	4:15 PM	40	41	0	0	0	0	93	34	0	0	36	0	46	0	0	0	0	0	0	0
4:15 PM	4:30 PM	24	16	0	0	0	0	64	41	0	0	24	0	40	0	0	0	0	0	0	0
4:30 PM	4:45 PM	16	27	0	0	0	0	78	31	0	0	31	0	46	0	0	0	0	0	0	0
4:45 PM	5:00 PM	20	37	0	0	0	0	60	48	0	0	30	0	26	0	0	0	0	0	0	0
5:00 PM	5:15 PM	28	26	0	0	0	0	73	36	0	0	44	0	37	0	0	0	0	0	0	0
5:15 PM	5:30 PM	11	37	0	4	0	0	85	28	0	0	31	0	31	0	0	0	0	0	0	0
5:30 PM	5:45 PM	13	26	0	0	0	0	78	21	0	0	30	0	20	0	0	0	0	0	0	0
5:45 PM	6:00 PM	11	28	0	0	0	0	56	24	0	0	24	0	40	0	0	0	0	0	0	0
6:00 PM	6:15 PM	9	23	0	0	0	0	43	38	0	0	19	0	11	0	0	0	0	0	0	0
6:15 PM	6:30 PM	17	19	0	0	0	0	44	13	0	0	28	0	26	0	0	0	0	0	0	0
6:30 PM	6:45 PM	10	23	0	0	0	0	60	28	0	0	23	0	26	0	0	0	0	0	0	0

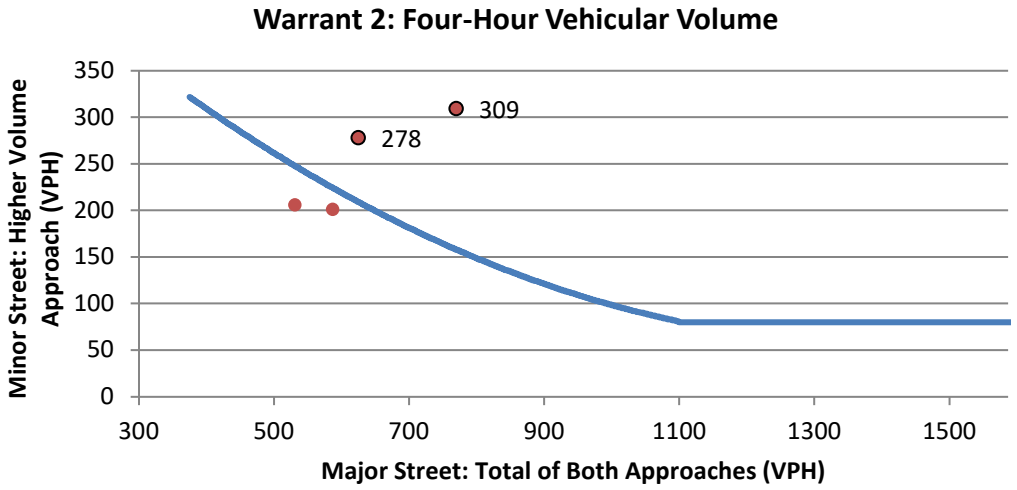
Warrant 1- Eight Hour Vehicular Volume

5/22/2024						
Time Period		Major Street		Minor Street		Meets
START	END	TN-2 US Hwy 41	>500	Epps Mill Rd	>150	Condition?
3:15 PM	4:15 PM	770	Y	309	Y	**Y**
4:15 PM	5:15 PM	625	Y	278	Y	**Y**
5:15 PM	6:15 PM	531	Y	206	Y	**Y**
6:45 AM	7:45 AM	587	Y	201	Y	**Y**
1:45 PM	2:45 PM	466	N	199	Y	N
11:45 AM	12:45 PM	452	N	164	Y	N
12:45 PM	1:45 PM	492	N	144	N	N
7:45 AM	8:45 AM	470	N	139	N	N

Condition B - Interruption of Continuous Traffic						
Time Period		Major Street		Minor Street		Meets
START	END	TN-2 US Hwy 41	>750	Epps Mill Rd	>75	Condition?
3:15 PM	4:15 PM	770	Y	309	Y	**Y**
4:15 PM	5:15 PM	625	N	278	Y	N
5:15 PM	6:15 PM	531	N	206	Y	N
6:45 AM	7:45 AM	587	N	201	Y	N
1:45 PM	2:45 PM	466	N	199	Y	N
11:45 AM	12:45 PM	452	N	164	Y	N
12:45 PM	1:45 PM	492	N	144	Y	N
7:45 AM	8:45 AM	470	N	139	Y	N

Warrant 2 - Four Hour Vehicular Volume

1 Major & 1 Minor



Time Period		Major Street Vol.	Minor Street Vol.	Total Volume	Above
Start	End	(both approaches)	(higher approach)	(all approaches)	Curve?
6:45 AM	7:45 AM	587	201	788	NO
3:15 PM	**4:15 PM**	**770**	**309**	**1079**	**YES**
4:15 PM	**5:15 PM**	**625**	**278**	**903**	**YES**
5:15 PM	6:15 PM	531	206	737	NO

Warrant 3 - Peak Hour Volume

PA

NOTE: Requirements 1 - 3 must ***ALL*** be met for the ***SAME*** hour for Part A of warrant to be met

1. Stopped Delay

1 Lane Approach	
Stopped Delay: (veh*hr)	**1**
Requirement Met:	**NO**

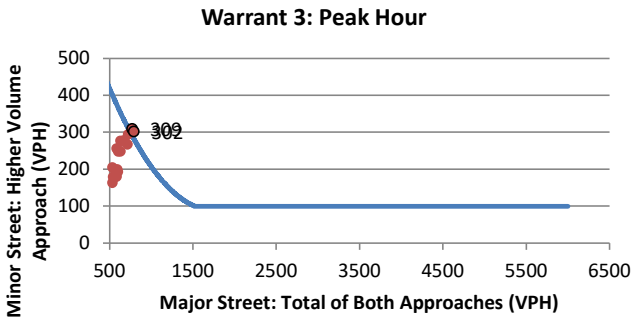
2. Minor Approach Volume

1 Moving Lane	
Approach Volume (veh/hr)	**10**
Requirement Met:	**NO**

3. Total Entering Volume Serviced

3 Approaches	
Intersection Volume (veh/hr)	**342**
Requirement Met:	**NO**

PART B: Peak Hour Volume



Warrant 3 is met based on the requirements of PART B

TIME PERIOD START	TIME PERIOD END	Major Street (both approaches)	Minor Street (higher approach)	Above Curve?
6:00 AM	7:00 AM	531	164	NO
6:15 AM	7:15 AM	566	188	NO
6:30 AM	7:30 AM	593	194	NO
6:45 AM	7:45 AM	587	201	NO
7:00 AM	8:00 AM	578	181	NO
7:15 AM	8:15 AM	538	180	NO
7:30 AM	8:30 AM	496	163	NO
7:45 AM	8:45 AM	470	139	NO
8:00 AM	9:00 AM	439	134	NO
8:15 AM	9:15 AM	396	110	NO
8:30 AM	9:30 AM	378	107	NO
8:45 AM	9:45 AM	389	113	NO
9:00 AM	10:00 AM	394	114	NO
9:15 AM	10:15 AM	416	130	NO
9:30 AM	10:30 AM	417	122	NO
9:45 AM	10:45 AM	396	136	NO
10:00 AM	11:00 AM	385	126	NO
10:15 AM	11:15 AM	399	125	NO
10:30 AM	11:30 AM	410	134	NO
10:45 AM	11:45 AM	414	121	NO
11:00 AM	12:00 PM	424	142	NO
11:15 AM	12:15 PM	432	147	NO
11:30 AM	12:30 PM	448	157	NO
11:45 AM	12:45 PM	452	164	NO
12:00 PM	1:00 PM	465	152	NO
12:15 PM	1:15 PM	475	145	NO
12:30 PM	1:30 PM	478	145	NO
12:45 PM	1:45 PM	492	144	NO
1:00 PM	2:00 PM	465	174	NO
1:15 PM	2:15 PM	471	183	NO
1:30 PM	2:30 PM	468	182	NO
1:45 PM	2:45 PM	466	199	NO

Traffic Signal Warrant Summary

Epps Mill Rd and Forbus Dr

Date: 24-May-24

Analyst: STV Inc.

Warrant 1	Condition A	**YES**
	Condition B	NO
Warrant 2	Four Hour Vehicular Volume	**YES**
Warrant 3	A - Peak Hour Delay	NO
	B - Peak Hour Volume	NO
Warrant 4	Pedestrian Volume	NO
Warrant 5	School Crossing	N/A
Warrant 6	Coordinated Signal System	NO
Warrant 7	Crash Experience	NO
Warrant 8	Roadway network	N/A
Warrant 9	Intersection Near a grade Crossing	N/A

MUTCD Reference:

http://mutcd.fhwa.dot.gov/htm/2009/part4/part4c.htm#section4C02

TIME PERIOD		Epps Mill Rd					Epps Mill Rd					Forbus Dr					Forbus Dr				
		RTR:	1	DIRECTION:		EB	RTR:	1	DIRECTION:		WB	RTR:	1	DIRECTION:		NB	RTR:	1	DIRECTION:		SB
START	END	Major Street					Major Street					Minor Street					Minor Street				
		L	T	R	PED	B	L	T	R	PED	B	L	T	R	PED	B	L	T	R	PED	B
6:00 AM	6:15 AM	43	38	3	0	0	4	48	10	0	0	0	0	0	0	0	3	0	43	0	0
6:15 AM	6:30 AM	41	63	6	0	0	6	48	4	0	0	1	0	0	0	0	6	0	44	0	0
6:30 AM	6:45 AM	44	54	6	0	0	1	64	14	0	0	0	0	0	0	0	4	0	37	0	0
6:45 AM	7:00 AM	38	77	20	0	0	6	77	11	0	0	0	0	0	0	0	10	0	47	0	0
7:00 AM	7:15 AM	40	64	11	0	0	4	74	7	0	0	3	1	1	0	0	4	0	60	0	0
7:15 AM	7:30 AM	53	71	9	0	0	3	93	10	0	0	0	0	0	0	0	9	0	50	0	0
7:30 AM	7:45 AM	63	71	16	0	0	4	84	10	0	0	3	0	0	0	0	3	3	61	0	0
7:45 AM	8:00 AM	47	64	11	0	0	0	70	7	0	0	4	0	1	0	0	7	3	61	0	0
8:00 AM	8:15 AM	41	74	9	0	0	0	56	7	0	0	10	0	0	0	0	4	0	53	0	0
8:15 AM	8:30 AM	40	54	4	0	0	1	51	10	0	0	0	0	0	0	0	7	0	63	0	0
8:30 AM	8:45 AM	57	51	7	0	0	0	36	9	0	0	3	0	0	0	0	0	0	43	0	0
8:45 AM	9:00 AM	54	47	1	0	0	1	33	4	0	0	4	0	0	0	0	3	0	51	0	0
9:00 AM	9:15 AM	50	37	4	0	0	0	21	4	0	0	1	1	0	0	0	6	3	65	0	0
9:15 AM	9:30 AM	44	46	4	0	0	1	28	6	0	0	3	1	1	0	0	4	0	56	0	0
9:30 AM	9:45 AM	44	57	1	0	0	0	40	13	0	0	3	1	0	0	0	1	0	53	0	0
9:45 AM	10:00 AM	63	51	3	0	0	0	20	7	0	0	4	0	0	0	0	7	0	51	0	0
10:00 AM	10:15 AM	46	51	0	0	0	0	38	9	0	0	1	0	0	0	0	7	0	48	0	0
10:15 AM	10:30 AM	37	50	3	0	0	0	36	3	0	0	0	0	0	0	0	4	0	60	0	0
10:30 AM	10:45 AM	43	61	4	0	0	0	31	9	0	0	6	3	3	0	0	4	0	44	0	0
10:45 AM	11:00 AM	48	37	3	0	0	4	34	9	0	0	0	6	0	0	0	4	1	47	0	0
11:00 AM	11:15 AM	47	53	7	0	0	4	31	7	0	0	9	3	6	0	0	7	3	50	0	0
11:15 AM	11:30 AM	48	53	3	0	0	3	46	10	0	0	4	0	0	0	0	4	1	47	0	0
11:30 AM	11:45 AM	56	54	10	0	0	0	28	9	0	0	11	1	4	0	0	6	0	44	0	0
11:45 AM	12:00 PM	50	48	1	0	0	0	34	4	0	0	9	3	4	0	0	16	3	40	0	0
12:00 PM	12:15 PM	54	57	3	0	0	1	43	16	0	0	6	0	4	0	0	11	0	61	0	0
12:15 PM	12:30 PM	51	50	9	0	0	4	36	7	0	0	3	1	4	0	4	11	0	64	0	0
12:30 PM	12:45 PM	38	50	9	0	0	0	36	6	0	0	3	0	0	0	0	7	1	53	0	0
12:45 PM	1:00 PM	50	61	7	4	0	4	53	10	0	0	3	0	0	0	0	6	0	58	0	0
1:00 PM	1:15 PM	44	51	6	0	0	1	43	7	0	0	6	0	1	0	0	6	0	48	0	0
1:15 PM	1:30 PM	40	63	4	0	0	3	48	4	0	0	6	0	3	0	0	3	0	47	0	0
1:30 PM	1:45 PM	63	65	1	0	0	0	47	11	0	0	3	0	1	0	0	9	0	41	0	0
1:45 PM	2:00 PM	61	78	3	0	0	0	41	10	0	0	3	0	0	0	0	10	0	63	0	0
2:00 PM	2:15 PM	48	64	3	0	0	0	51	13	0	0	1	0	1	0	0	3	0	48	0	0
2:15 PM	2:30 PM	60	50	4	0	0	0	44	11	0	0	4	0	0	0	0	9	0	53	0	0
2:30 PM	2:45 PM	68	78	10	0	0	1	61	9	0	0	3	1	0	0	0	9	0	67	0	0
2:45 PM	3:00 PM	51	81	4	0	0	3	33	7	0	0	3	0	0	0	0	7	1	58	0	0
3:00 PM	3:15 PM	50	64	9	0	0	1	46	7	0	0	3	1	1	0	0	4	0	56	0	0
3:15 PM	3:30 PM	51	74	1	0	0	1	38	6	0	0	4	0	0	0	0	7	0	47	0	0
3:30 PM	3:45 PM	41	58	0	0	0	0	74	19	0	0	44	0	34	0	0	7	0	53	0	0
3:45 PM	4:00 PM	58	91	1	0	0	0	74	13	0	0	10	0	1	0	0	4	0	51	0	0
4:00 PM	4:15 PM	63	98	0	0	0	0	78	7	0	0	6	1	7	0	0	11	0	65	0	0
4:15 PM	4:30 PM	54	81	3	0	0	1	71	13	0	0	6	4	3	0	0	1	0	64	0	0
4:30 PM	4:45 PM	50	88	0	0	0	0	54	7	0	0	21	4	7	0	0	6	0	63	0	0
4:45 PM	5:00 PM	40	61	0	4	0	0	64	14	0	0	9	0	3	0	0	9	0	50	0	0
5:00 PM	5:15 PM	56	84	1	0	0	0	77	9	0	0	19	0	3	0	0	7	0	38	0	0
5:15 PM	5:30 PM	57	83	0	0	0	0	43	7	0	0	7	0	6	0	0	1	0	38	0	0
5:30 PM	5:45 PM	31	56	0	0	0	0	33	6	0	0	4	0	0	0	0	7	0	48	0	0
5:45 PM	6:00 PM	57	84	0	0	0	0	43	9	0	0	0	0	0	0	0	6	0	38	0	0
6:00 PM	6:15 PM	40	58	0	0	0	0	40	10	0	0	6	0	0	0	0	3	0	51	0	0
6:15 PM	6:30 PM	47	71	0	0	0	0	34	7	0	0	0	0	0	0	0	9	0	41	0	0
6:30 PM	6:45 PM	38	60	6	0	0	0	43	10	0	0	0	0	0	0	0	7	0	37	0	0

Warrant 1- Eight Hour Vehicular Volume

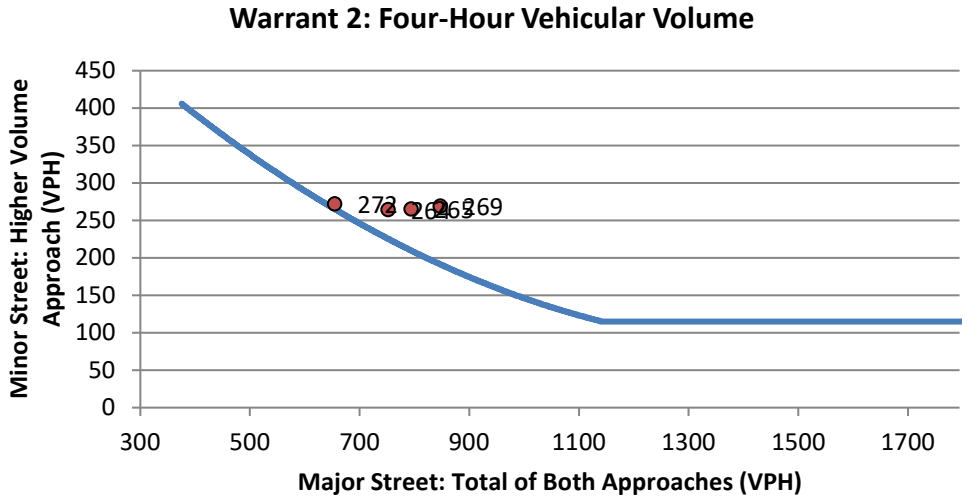
5/24/2024						
Time Period		Major Street		Minor Street		Meets
START	END	Epps Mill Rd	>500	Forbus Dr	>200	Condition?
12:00 PM	1:00 PM	655	Y	272	Y	**Y**
4:00 PM	5:00 PM	847	Y	269	Y	**Y**
7:30 AM	8:30 AM	794	Y	265	Y	**Y**
2:15 PM	3:15 PM	752	Y	264	Y	**Y**
9:00 AM	10:00 AM	544	Y	246	Y	**Y**
1:00 PM	2:00 PM	694	Y	227	Y	**Y**
10:15 AM	11:15 AM	561	Y	224	Y	**Y**
6:30 AM	7:30 AM	851	Y	221	Y	**Y**

Condition B - Interruption of Continuous Traffic						
Time Period		Major Street		Minor Street		Meets
START	END	Epps Mill Rd	>750	Forbus Dr	>100	Condition?
12:00 PM	1:00 PM	655	N	272	Y	N
4:00 PM	5:00 PM	847	Y	269	Y	**Y**
7:30 AM	8:30 AM	794	Y	265	Y	**Y**
2:15 PM	3:15 PM	752	Y	264	Y	**Y**
9:00 AM	10:00 AM	544	N	246	Y	N
1:00 PM	2:00 PM	694	N	227	Y	N
10:15 AM	11:15 AM	561	N	224	Y	N
6:30 AM	7:30 AM	851	Y	221	Y	**Y**

Warrant 1 is met by satisfying the requirements of Condition A.

Warrant 2 - Four Hour Vehicular Volume

1 Major & 2 Minor



Time Period		Major Street Vol.	Minor Street Vol.	Total Volume	Above
Start	End	(both approaches)	(higher approach)	(all approaches)	Curve?
7:30 AM	8:30 AM	794	265	1059	YES
12:00 PM	1:00 PM	655	272	927	YES
2:15 PM	3:15 PM	752	264	1016	YES
4:00 PM	5:00 PM	847	269	1116	YES

Warrant 3 - Peak Hour Volume

PA

NOTE: Requirements 1 - 3 must ***ALL*** be met for the ***SAME*** hour for Part A of warrant to be met

1. Stopped Delay

1 Lane Approach	
Stopped Delay: (veh*hr)	**1**
Requirement Met:	**NO**

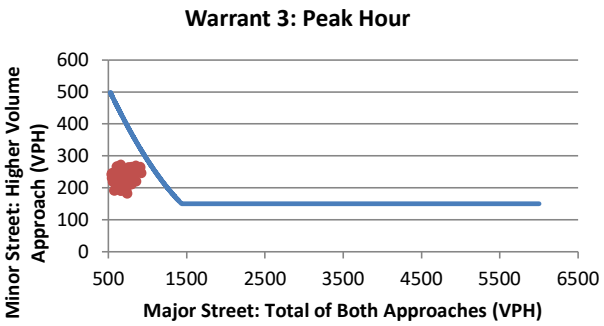
2. Minor Approach Volume

1 Moving Lane	
Approach Volume (veh/hr)	**10**
Requirement Met:	**NO**

3. Total Entering Volume Serviced

3 Approaches	
Intersection Volume (veh/hr)	**342**
Requirement Met:	**NO**

PART B: Peak Hour Volume



TIME PERIOD START	TIME PERIOD END	Major Street (both approaches)	Minor Street (higher approach)	Above Curve?
6:00 AM	7:00 AM	726	194	NO
6:15 AM	7:15 AM	780	212	NO
6:30 AM	7:30 AM	851	221	NO
6:45 AM	7:45 AM	916	247	NO
7:00 AM	8:00 AM	886	261	NO
7:15 AM	8:15 AM	873	254	NO
7:30 AM	8:30 AM	794	265	NO
7:45 AM	8:45 AM	706	241	NO
8:00 AM	9:00 AM	647	224	NO
8:15 AM	9:15 AM	576	241	NO
8:30 AM	9:30 AM	545	231	NO
8:45 AM	9:45 AM	540	242	NO
9:00 AM	10:00 AM	544	246	NO
9:15 AM	10:15 AM	572	227	NO
9:30 AM	10:30 AM	572	231	NO
9:45 AM	10:45 AM	565	225	NO
10:00 AM	11:00 AM	556	219	NO
10:15 AM	11:15 AM	561	224	NO
10:30 AM	11:30 AM	595	212	NO
10:45 AM	11:45 AM	604	214	NO
11:00 AM	12:00 PM	606	221	NO
11:15 AM	12:15 PM	631	233	NO
11:30 AM	12:30 PM	625	256	NO
11:45 AM	12:45 PM	607	267	NO
12:00 PM	1:00 PM	655	272	NO
12:15 PM	1:15 PM	633	254	NO
12:30 PM	1:30 PM	638	229	NO
12:45 PM	1:45 PM	686	218	NO
1:00 PM	2:00 PM	694	227	NO
1:15 PM	2:15 PM	721	224	NO
1:30 PM	2:30 PM	728	236	NO
1:45 PM	2:45 PM	768	262	NO

Traffic Signal Warrant Summary

Epps Mill Rd and I-24 WB Ramp

Date: 22-May-24

Analyst: STV Inc.

Warrant 1	Condition A	NO
	Condition B	NO
Warrant 2	Four Hour Vehicular Volume	NO
Warrant 3	A - Peak Hour Delay	NO
	B - Peak Hour Volume	NO
Warrant 4	Pedestrian Volume	NO
Warrant 5	School Crossing	N/A
Warrant 6	Coordinated Signal System	NO
Warrant 7	Crash Experience	NO
Warrant 8	Roadway network	N/A
Warrant 9	Intersection Near a grade Crossing	N/A

MUTCD Reference:

http://mutcd.fhwa.dot.gov/htm/2009/part4/part4c.htm#section4C02

TIME PERIOD		Epps Mill Rd					Epps Mill Rd					I-24 WB Off Ramp									
		RTR:	1	DIRECTION:		EB	RTR:	1	DIRECTION:		WB	RTR:	0.4	DIRECTION:		NB	RTR:	1	DIRECTION:		SB
START	END	Major Street					Major Street					Minor Street					Minor Street				
		L	T	R	PED	B	L	T	R	PED	B	L	T	R	PED	B	L	T	R	PED	B
6:00 AM	6:15 AM	78	43	0	0	0	0	27	56	0	0	4	0	24	0	0	0	0	0	0	0
6:15 AM	6:30 AM	87	57	0	0	0	0	31	56	0	0	3	0	34	0	0	0	0	0	0	0
6:30 AM	6:45 AM	71	57	0	0	0	0	36	53	0	0	9	1	27	0	0	0	0	0	0	0
6:45 AM	7:00 AM	102	84	0	0	0	0	50	61	0	0	11	1	27	0	0	0	0	0	0	0
7:00 AM	7:15 AM	71	61	0	0	0	0	44	81	0	0	9	3	27	0	0	0	0	0	0	0
7:15 AM	7:30 AM	168	74	0	0	0	0	44	85	0	0	6	0	33	0	0	0	0	0	0	0
7:30 AM	7:45 AM	165	77	0	0	0	0	44	95	0	0	4	1	43	0	0	0	0	0	0	0
7:45 AM	8:00 AM	65	71	0	0	0	0	44	83	0	0	9	0	23	0	0	0	0	0	0	0
8:00 AM	8:15 AM	75	73	0	0	0	0	40	71	0	0	1	1	27	0	4	0	0	0	0	0
8:15 AM	8:30 AM	65	53	0	0	0	0	43	61	0	0	7	0	24	0	0	0	0	0	0	0
8:30 AM	8:45 AM	73	51	0	0	0	0	37	40	0	0	6	0	34	0	0	0	0	0	0	0
8:45 AM	9:00 AM	33	47	0	0	0	0	33	51	0	0	4	0	34	0	0	0	0	0	0	4
9:00 AM	9:15 AM	36	44	0	0	0	0	31	51	0	0	3	0	28	0	0	0	0	0	0	0
9:15 AM	9:30 AM	41	57	0	0	0	0	38	43	0	0	7	3	14	0	0	0	0	0	0	0
9:30 AM	9:45 AM	44	56	0	0	0	0	48	43	0	0	7	0	26	0	0	0	0	0	0	0
9:45 AM	10:00 AM	33	56	0	0	0	0	43	30	0	0	3	0	33	0	0	0	0	0	0	0
10:00 AM	10:15 AM	28	58	0	0	0	0	38	41	0	0	3	1	23	0	0	0	0	0	0	0
10:15 AM	10:30 AM	34	48	0	0	0	0	40	53	0	0	4	1	16	0	0	0	0	0	0	0
10:30 AM	10:45 AM	37	71	0	0	0	0	43	31	0	0	3	0	21	0	0	0	0	0	0	0
10:45 AM	11:00 AM	20	43	0	0	0	0	46	34	0	0	3	1	23	0	0	0	0	0	0	0
11:00 AM	11:15 AM	28	65	0	4	0	0	46	37	0	0	4	0	23	0	0	0	0	0	0	0
11:15 AM	11:30 AM	33	56	0	0	0	0	51	33	0	0	0	0	24	0	0	0	0	0	0	0
11:30 AM	11:45 AM	31	63	0	0	0	0	36	46	0	0	4	4	24	0	0	0	0	0	0	0
11:45 AM	12:00 PM	24	46	0	0	0	0	48	34	0	0	4	1	30	0	0	0	0	0	0	0
12:00 PM	12:15 PM	31	61	0	0	0	0	44	51	0	0	9	0	26	0	0	0	0	0	0	0
12:15 PM	12:30 PM	40	67	0	0	0	0	57	36	0	0	1	1	19	0	0	0	0	0	0	0
12:30 PM	12:45 PM	21	56	0	0	0	0	53	37	0	0	7	0	19	0	0	0	0	0	0	0
12:45 PM	1:00 PM	37	58	0	0	0	0	47	54	0	0	3	0	27	0	0	0	0	0	0	0
1:00 PM	1:15 PM	38	58	0	0	0	0	46	47	0	0	3	1	19	0	0	0	0	0	0	0
1:15 PM	1:30 PM	27	64	0	0	0	0	58	34	0	0	3	1	20	0	0	0	0	0	0	0
1:30 PM	1:45 PM	36	70	0	0	0	0	51	34	0	0	7	3	33	0	0	0	0	0	0	0
1:45 PM	2:00 PM	46	91	0	0	0	0	57	41	0	0	9	0	27	0	0	0	0	0	0	0
2:00 PM	2:15 PM	34	64	0	0	0	0	53	40	0	0	6	0	20	0	0	0	0	0	0	0
2:15 PM	2:30 PM	41	61	0	0	0	0	54	41	0	0	4	0	31	0	0	0	0	0	0	0
2:30 PM	2:45 PM	65	97	0	0	0	0	57	64	0	0	6	0	27	0	0	0	0	0	0	0
2:45 PM	3:00 PM	50	77	0	0	0	0	40	44	0	0	7	1	27	0	0	0	0	0	0	0
3:00 PM	3:15 PM	38	68	0	0	0	0	44	51	0	0	9	0	30	0	0	0	0	0	0	0
3:15 PM	3:30 PM	51	78	0	0	0	0	53	31	0	0	1	0	30	0	0	0	0	0	0	0
3:30 PM	3:45 PM	20	68	0	0	0	0	74	83	4	0	7	3	19	0	0	0	0	0	0	0
3:45 PM	4:00 PM	30	102	0	0	0	0	57	67	0	0	4	0	21	0	0	0	0	0	0	0
4:00 PM	4:15 PM	38	101	0	0	0	0	70	80	0	0	11	3	34	0	0	0	0	0	0	4
4:15 PM	4:30 PM	44	80	0	0	0	0	68	57	0	0	13	0	34	0	0	0	0	0	0	0
4:30 PM	4:45 PM	38	77	0	0	0	0	83	50	0	0	16	0	36	0	0	0	0	0	0	0
4:45 PM	5:00 PM	44	61	0	0	0	0	56	56	0	0	7	0	23	0	0	0	0	0	0	0
5:00 PM	5:15 PM	44	87	0	0	0	0	73	58	0	0	10	1	36	0	0	0	0	0	0	0
5:15 PM	5:30 PM	34	78	0	0	0	0	50	34	0	0	13	0	36	0	0	0	0	0	0	0
5:30 PM	5:45 PM	43	56	0	0	0	0	50	27	0	0	9	0	21	0	0	0	0	0	0	0
5:45 PM	6:00 PM	36	83	0	0	0	0	41	31	0	0	7	0	28	0	0	0	0	0	0	0
6:00 PM	6:15 PM	47	57	0	0	0	0	56	33	0	0	7	0	19	0	0	0	0	0	0	0
6:15 PM	6:30 PM	31	81	0	0	0	0	47	24	0	0	10	0	17	0	0	0	0	0	0	0
6:30 PM	6:45 PM	31	63	0	0	0	0	51	21	0	0	4	0	21	0	0	0	0	0	0	0

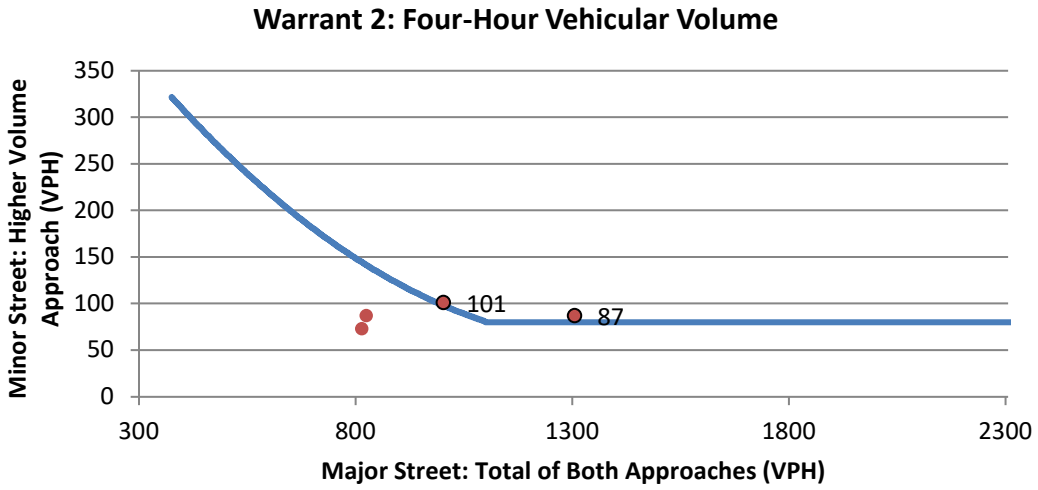
Warrant 1- Eight Hour Vehicular Volume

5/22/2024						
Time Period		Major Street		Minor Street		Meets
START	END	Epps Mill Rd	>500	I-24 N Ramp	>150	Condition?
4:00 PM	5:00 PM	1003	Y	101	N	N
6:45 AM	7:45 AM	1306	Y	87	N	N
5:00 PM	6:00 PM	825	Y	87	N	N
1:30 PM	2:30 PM	814	Y	73	N	N
2:45 PM	3:45 PM	870	Y	71	N	N
8:15 AM	9:15 AM	749	Y	69	N	N
11:15 AM	12:15 PM	688	Y	64	N	N
9:15 AM	10:15 AM	697	Y	62	N	N

Condition B - Interruption of Continuous Traffic						
Time Period		Major Street		Minor Street		Meets
START	END	Epps Mill Rd	>750	I-24 N Ramp	>75	Condition?
4:00 PM	5:00 PM	1003	Y	101	Y	**Y**
6:45 AM	7:45 AM	1306	Y	87	Y	**Y**
5:00 PM	6:00 PM	825	Y	87	Y	**Y**
1:30 PM	2:30 PM	814	Y	73	N	N
2:45 PM	3:45 PM	870	Y	71	N	N
8:15 AM	9:15 AM	749	N	69	N	N
11:15 AM	12:15 PM	688	N	64	N	N
9:15 AM	10:15 AM	697	N	62	N	N

Warrant 2 - Four Hour Vehicular Volume

1 Major & 1 Minor



Time Period		Major Street Vol.	Minor Street Vol.	Total Volume	Above
Start	End	(both approaches)	(higher approach)	(all approaches)	Curve?
6:45 AM	**7:45 AM**	**1306**	**87**	**1393**	**YES**
1:30 PM	2:30 PM	814	73	887	NO
4:00 PM	**5:00 PM**	**1003**	**101**	**1104**	**YES**
5:00 PM	6:00 PM	825	87	912	NO

Warrant 3 - Peak Hour Volume

PA

NOTE: Requirements 1 - 3 must ***ALL*** be met for the ***SAME*** hour for Part A of warrant to be met

1. Stopped Delay

1 Lane Approach	
Stopped Delay: (veh*hr)	**1**
Requirement Met:	**NO**

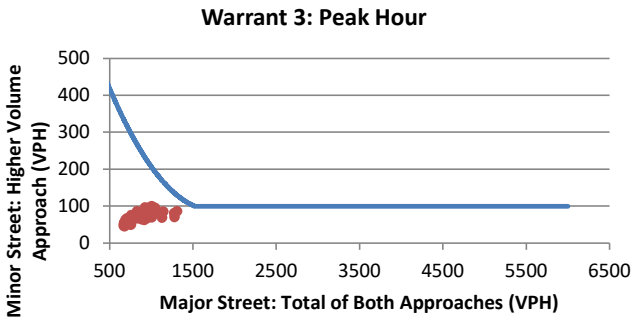
2. Minor Approach Volume

1 Moving Lane	
Approach Volume (veh/hr)	**10**
Requirement Met:	**NO**

3. Total Entering Volume Serviced

3 Approaches	
Intersection Volume (veh/hr)	**342**
Requirement Met:	**NO**

PART B: Peak Hour Volume



TIME PERIOD START	TIME PERIOD END	Major Street (both approaches)	Minor Street (higher approach)	Above Curve?
6:00 AM	7:00 AM	949	75	NO
6:15 AM	7:15 AM	1002	84	NO
6:30 AM	7:30 AM	1142	86	NO
6:45 AM	7:45 AM	1306	87	NO
7:00 AM	8:00 AM	1272	82	NO
7:15 AM	8:15 AM	1274	72	NO
7:30 AM	8:30 AM	1125	70	NO
7:45 AM	8:45 AM	945	68	NO
8:00 AM	9:00 AM	846	68	NO
8:15 AM	9:15 AM	749	69	NO
8:30 AM	9:30 AM	706	68	NO
8:45 AM	9:45 AM	696	65	NO
9:00 AM	10:00 AM	694	63	NO
9:15 AM	10:15 AM	697	62	NO
9:30 AM	10:30 AM	693	57	NO
9:45 AM	10:45 AM	684	51	NO
10:00 AM	11:00 AM	665	48	NO
10:15 AM	11:15 AM	676	48	NO
10:30 AM	11:30 AM	674	47	NO
10:45 AM	11:45 AM	668	54	NO
11:00 AM	12:00 PM	677	58	NO
11:15 AM	12:15 PM	688	64	NO
11:30 AM	12:30 PM	715	64	NO
11:45 AM	12:45 PM	706	61	NO
12:00 PM	1:00 PM	750	58	NO
12:15 PM	1:15 PM	752	51	NO
12:30 PM	1:30 PM	735	53	NO
12:45 PM	1:45 PM	759	61	NO
1:00 PM	2:00 PM	798	67	NO
1:15 PM	2:15 PM	800	69	NO
1:30 PM	2:30 PM	814	73	NO
1:45 PM	2:45 PM	906	67	NO

Traffic Signal Warrant Summary

Epps Mill Rd and I-24 EB Off Ramp

Date: 22-May-24

Analyst: STV Inc.

Warrant 1	Condition A	**YES**
	Condition B	NO
Warrant 2	Four Hour Vehicular Volume	**YES**
Warrant 3	A - Peak Hour Delay	NO
	B - Peak Hour Volume	**YES**
Warrant 4	Pedestrian Volume	
Warrant 5	School Crossing	N/A
Warrant 6	Coordinated Signal System	NO
Warrant 7	Crash Experience	NO
Warrant 8	Roadway network	N/A
Warrant 9	Intersection Near a grade Crossing	N/A

MUTCD Reference:

http://mutcd.fhwa.dot.gov/htm/2009/part4/part4c.htm#section4C02

TIME PERIOD		Epps Mill Rd					Epps Mill Rd					Miller Road					I-24 EB Off Ramp				
		RTR:	1	DIRECTION:		EB	RTR:	1	DIRECTION:		WB	RTR:	0.4	DIRECTION:		NB	RTR:	0.4	DIRECTION:		SB
START	END	Major Street					Major Street					Minor Street					Minor Street				
		L	T	R	PED	B	L	T	R	PED	B	L	T	R	PED	B	L	T	R	PED	B
6:00 AM	6:15 AM	11	93	10	0	0	13	14	28	0	0	3	8	33	0	0	18	7	11	0	0
6:15 AM	6:30 AM	10	125	13	0	0	17	16	24	0	0	0	7	28	0	0	16	7	10	0	0
6:30 AM	6:45 AM	21	102	13	0	0	34	24	23	0	0	4	7	30	0	0	22	9	13	0	0
6:45 AM	7:00 AM	13	117	6	0	0	47	33	17	0	0	6	8	32	0	0	27	11	16	0	0
7:00 AM	7:15 AM	9	141	9	0	0	74	23	31	0	0	4	13	50	0	0	29	12	18	0	0
7:15 AM	7:30 AM	16	204	14	0	0	44	41	36	0	0	4	24	98	0	0	28	11	17	0	0
7:30 AM	7:45 AM	11	185	11	0	0	36	46	27	0	0	11	18	71	0	0	38	15	23	0	0
7:45 AM	8:00 AM	9	124	10	0	0	40	43	31	0	0	7	12	49	0	0	29	12	18	0	0
8:00 AM	8:15 AM	7	105	10	0	0	19	47	24	0	0	9	9	35	0	0	23	9	14	0	0
8:15 AM	8:30 AM	11	74	14	0	0	23	53	20	0	0	4	7	28	0	0	33	13	20	0	0
8:30 AM	8:45 AM	7	83	7	0	0	19	34	26	0	0	4	8	33	0	0	27	11	16	0	0
8:45 AM	9:00 AM	20	64	1	0	3	23	20	34	0	0	1	7	26	0	0	31	13	19	0	0
9:00 AM	9:15 AM	1	63	6	0	0	19	36	33	0	0	4	5	19	0	0	31	12	18	0	0
9:15 AM	9:30 AM	10	64	7	0	0	14	36	31	0	0	1	5	22	0	0	37	15	22	0	0
9:30 AM	9:45 AM	10	64	10	0	0	26	24	21	0	0	3	7	27	0	0	30	12	18	0	0
9:45 AM	10:00 AM	11	53	1	0	0	37	34	37	0	0	3	3	11	0	0	28	11	17	0	0
10:00 AM	10:15 AM	11	43	1	0	0	20	38	33	0	0	0	5	20	0	0	35	14	21	0	0
10:15 AM	10:30 AM	16	58	6	0	0	23	43	26	0	0	4	6	24	0	0	30	12	18	0	0
10:30 AM	10:45 AM	13	57	9	0	0	21	27	31	0	0	7	9	34	0	0	33	13	20	0	0
10:45 AM	11:00 AM	13	43	6	0	0	21	34	31	0	0	4	5	22	0	0	43	17	26	0	0
11:00 AM	11:15 AM	24	54	7	0	0	28	33	31	0	0	1	7	28	0	0	30	12	18	0	0
11:15 AM	11:30 AM	7	54	1	0	0	14	36	28	0	0	4	6	23	0	0	28	11	17	0	0
11:30 AM	11:45 AM	11	54	4	0	0	30	31	24	0	0	3	6	24	0	0	27	11	16	0	0
11:45 AM	12:00 PM	3	43	1	0	0	26	47	24	0	0	1	3	13	0	0	31	13	19	0	0
12:00 PM	12:15 PM	17	43	6	0	0	24	56	26	0	3	6	5	22	0	0	32	13	19	0	0
12:15 PM	12:30 PM	11	40	11	0	0	19	36	19	0	0	7	4	16	0	0	34	14	20	0	0
12:30 PM	12:45 PM	6	36	9	0	0	26	38	27	0	0	3	3	11	0	0	36	14	21	0	0
12:45 PM	1:00 PM	10	60	7	0	0	23	50	33	0	3	4	6	25	0	0	40	16	24	0	0
1:00 PM	1:15 PM	9	78	13	0	0	24	47	33	0	0	6	6	25	0	0	34	14	20	0	0
1:15 PM	1:30 PM	9	60	6	0	0	60	26	24	0	0	4	4	15	0	0	35	14	21	0	0
1:30 PM	1:45 PM	13	56	6	0	0	58	54	40	0	0	7	6	25	0	0	33	13	20	0	0
1:45 PM	2:00 PM	16	83	3	0	0	46	48	43	0	0	10	11	43	0	0	38	15	23	0	0
2:00 PM	2:15 PM	9	70	13	0	0	33	44	23	0	0	9	7	28	0	0	37	15	22	0	0
2:15 PM	2:30 PM	10	53	7	0	0	60	56	34	0	0	10	5	19	0	0	41	17	25	0	0
2:30 PM	2:45 PM	11	115	4	0	0	28	43	34	0	0	13	18	71	0	0	41	16	24	0	0
2:45 PM	3:00 PM	13	80	3	0	0	31	78	30	0	0	6	8	32	0	0	46	18	27	0	0
3:00 PM	3:15 PM	23	68	4	0	0	37	74	28	0	0	3	8	33	0	0	48	19	29	0	0
3:15 PM	3:30 PM	19	67	0	0	0	60	70	20	0	0	10	8	33	0	0	54	22	32	0	0
3:30 PM	3:45 PM	9	80	4	0	0	53	83	30	0	0	7	8	32	0	0	55	22	33	0	0
3:45 PM	4:00 PM	24	65	6	0	0	48	84	19	0	0	9	8	31	0	0	66	26	40	0	3
4:00 PM	4:15 PM	13	83	10	0	0	33	94	30	0	0	9	7	30	0	0	41	16	24	0	0
4:15 PM	4:30 PM	17	63	10	0	0	31	75	23	0	0	3	6	25	0	0	48	19	29	0	0
4:30 PM	4:45 PM	21	64	7	0	0	48	107	21	0	0	4	7	27	0	0	55	22	33	0	0
4:45 PM	5:00 PM	16	70	10	0	0	40	75	36	0	0	13	9	36	0	0	55	22	33	0	0
5:00 PM	5:15 PM	17	80	13	0	0	46	83	27	0	0	9	8	32	0	0	52	21	31	0	0
5:15 PM	5:30 PM	6	122	7	0	0	34	84	40	0	0	3	9	34	0	0	60	24	36	0	0
5:30 PM	5:45 PM	19	90	9	0	0	46	94	27	0	0	9	9	38	0	0	53	21	32	0	0
5:45 PM	6:00 PM	17	70	10	0	0	37	87	21	0	0	10	7	27	0	0	57	23	34	0	0
6:00 PM	6:15 PM	11	65	10	0	0	19	77	30	0	0	6	5	20	0	0	53	21	32	0	0
6:15 PM	6:30 PM	9	60	6	0	0	34	51	34	0	0	6	4	16	0	0	57	23	34	0	0
6:30 PM	6:45 PM	14	51	7	0	0	30	47	21	0	0	4	6	24	0	0	44	18	26	0	0

Warrant 1- Eight Hour Vehicular Volume

Condition A - Minimum Vehicular Volume

Time Period		Major Street		Minor Street		Meets
START	END	Epps Mill Rd	>500	I-24 S Ramp	>200	Condition?
3:00 PM	4:00 PM	975	Y	366	Y	**Y**
5:15 PM	6:15 PM	1032	Y	366	Y	**Y**
4:15 PM	5:15 PM	1000	Y	344	Y	**Y**
2:00 PM	3:00 PM	882	Y	271	Y	**Y**
12:30 PM	1:30 PM	714	Y	237	Y	**Y**
6:45 AM	7:45 AM	1191	Y	201	Y	**Y**
10:00 AM	11:00 AM	624	Y	230	Y	**Y**
8:45 AM	9:45 AM	637	Y	212	Y	**Y**

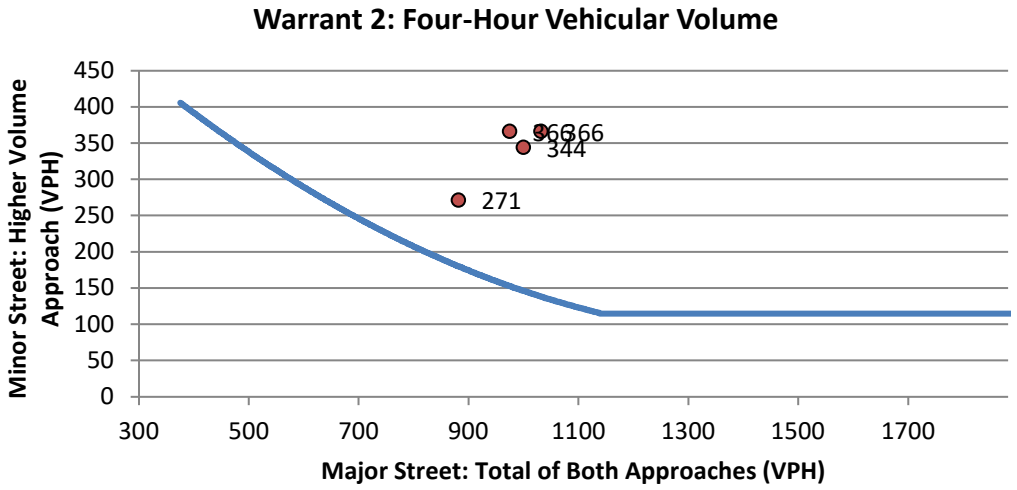
Condition B - Interruption of Continuous Traffic

Time Period		Major Street		Minor Street		Meets
START	END	Epps Mill Rd	>750	I-24 S Ramp	>100	Condition?
3:00 PM	4:00 PM	975	Y	366	Y	**Y**
5:15 PM	6:15 PM	1032	Y	366	Y	**Y**
4:15 PM	5:15 PM	1000	Y	344	Y	**Y**
2:00 PM	3:00 PM	882	Y	271	Y	**Y**
12:30 PM	1:30 PM	714	N	237	Y	N
6:15 PM	7:15 PM	486	N	236	Y	N
10:00 AM	11:00 AM	624	N	230	Y	N
8:45 AM	9:45 AM	637	N	212	Y	N

Warrant 1 is met by satisfying the requirements of Condition A.

Warrant 2 - Four Hour Vehicular Volume

1 Major & 2 Minor



Time Period		Major Street Vol.	Minor Street Vol.	Total Volume	Above
Start	End	(both approaches)	(higher approach)	(all approaches)	Curve?
2:00 PM	3:00 PM	882	271	1153	YES
3:00 PM	4:00 PM	975	366	1341	YES
4:15 PM	5:15 PM	1000	344	1344	YES
5:15 PM	6:15 PM	1032	366	1398	YES

Warrant 3 - Peak Hour Volume

PART A: Peak Hour Delay

NOTE: Requirements 1 - 3 must ***ALL*** be met for the ***SAME*** hour for Part A of warrant to be met

1. Stopped Delay

1 Lane Approach	
Stopped Delay: (veh*hr)	**1**
Requirement Met:	**NO**

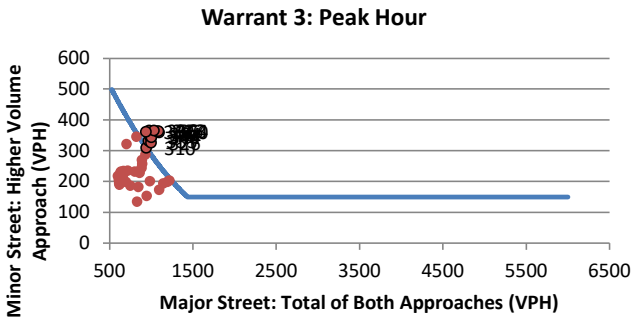
2. Minor Approach Volume

1 Moving Lane	
Approach Volume (veh/hr)	**10**
Requirement Met:	**NO**

3. Total Entering Volume Serviced

3 Approaches	
Intersection Volume (veh/hr)	**342**
Requirement Met:	**NO**

PART B: Peak Hour Volume



Warrant 3 is met based on the requirements of PART B

TIME PERIOD START	TIME PERIOD END	Major Street (both approaches)	Minor Street (higher approach)	Above Curve?
6:00 AM	7:00 AM	824	136	NO
6:15 AM	7:15 AM	942	155	NO
6:30 AM	7:30 AM	1092	174	NO
6:45 AM	7:45 AM	1191	200	NO
7:00 AM	8:00 AM	1215	204	NO
7:15 AM	8:15 AM	1140	195	NO
7:30 AM	8:30 AM	980	202	NO
7:45 AM	8:45 AM	840	184	NO
8:00 AM	9:00 AM	745	188	NO
8:15 AM	9:15 AM	691	200	NO
8:30 AM	9:30 AM	658	207	NO
8:45 AM	9:45 AM	637	212	NO
9:00 AM	10:00 AM	648	206	NO
9:15 AM	10:15 AM	636	213	NO
9:30 AM	10:30 AM	646	201	NO
9:45 AM	10:45 AM	649	206	NO
10:00 AM	11:00 AM	624	230	NO
10:15 AM	11:15 AM	655	222	NO
10:30 AM	11:30 AM	623	219	NO
10:45 AM	11:45 AM	619	209	NO
11:00 AM	12:00 PM	615	191	NO
11:15 AM	12:15 PM	610	195	NO
11:30 AM	12:30 PM	606	205	NO
11:45 AM	12:45 PM	594	219	NO
12:00 PM	1:00 PM	633	233	NO
12:15 PM	1:15 PM	665	236	NO
12:30 PM	1:30 PM	714	237	NO
12:45 PM	1:45 PM	799	233	NO
1:00 PM	2:00 PM	855	229	NO
1:15 PM	2:15 PM	843	234	NO
1:30 PM	2:30 PM	878	245	NO
1:45 PM	2:45 PM	886	258	NO

Traffic Signal Warrant Summary

Epps Mill Rd and Capital Way

Date: 24-May-24

Analyst: STV Inc.

Warrant 1	Condition A	NO
	Condition B	NO
Warrant 2	Four Hour Vehicular Volume	NO
Warrant 3	A - Peak Hour Delay	NO
	B - Peak Hour Volume	NO
Warrant 4	Pedestrian Volume	NO
Warrant 5	School Crossing	N/A
Warrant 6	Coordinated Signal System	NO
Warrant 7	Crash Experience	NO
Warrant 8	Roadway network	N/A
Warrant 9	Intersection Near a grade Crossing	N/A

MUTCD Reference:

http://mutcd.fhwa.dot.gov/htm/2009/part4/part4c.htm#section4C02

TIME PERIOD		Epps Mill Rd					Epps Mill Rd					Dollar General Driveway					Capital Way				
		RTR:	1	DIRECTION:		EB	RTR:	1	DIRECTION:		WB	RTR:	1	DIRECTION:		NB	RTR:	1	DIRECTION:		SB
START	END	Major Street					Major Street					Minor Street					Minor Street				
		L	T	R	PED	B	L	T	R	PED	B	L	T	R	PED	B	L	T	R	PED	B
6:00 AM	6:15 AM	0	9	0	0	0	0	9	3	0	0	0	0	0	0	0	1	0	0	0	0
6:15 AM	6:30 AM	0	11	0	0	0	0	6	4	0	0	0	0	0	0	0	3	0	0	0	0
6:30 AM	6:45 AM	0	16	0	0	0	0	10	6	0	0	0	0	0	0	0	1	0	3	0	0
6:45 AM	7:00 AM	0	11	0	0	0	4	6	4	0	0	0	1	3	0	0	1	0	1	0	0
7:00 AM	7:15 AM	0	9	0	0	0	0	1	7	0	0	0	0	1	0	0	3	1	0	0	0
7:15 AM	7:30 AM	1	16	1	0	0	1	13	11	0	0	1	0	4	0	0	4	0	0	0	0
7:30 AM	7:45 AM	1	11	3	0	0	6	9	17	0	0	1	0	7	0	0	6	0	0	0	0
7:45 AM	8:00 AM	0	11	1	0	0	3	19	9	0	0	0	0	6	0	0	3	0	0	0	0
8:00 AM	8:15 AM	1	10	1	0	0	6	13	10	0	0	4	0	4	0	0	4	1	1	0	0
8:15 AM	8:30 AM	1	14	1	0	0	1	13	6	0	0	1	0	3	0	0	6	0	1	0	0
8:30 AM	8:45 AM	0	7	0	0	0	1	7	9	0	0	0	0	3	0	0	7	0	0	0	0
8:45 AM	9:00 AM	1	7	0	0	0	1	11	6	0	0	0	0	1	0	0	0	1	0	0	0
9:00 AM	9:15 AM	1	10	1	0	0	1	23	6	0	0	1	0	3	0	0	7	0	0	0	0
9:15 AM	9:30 AM	0	26	1	0	0	1	11	10	0	0	0	1	0	0	0	6	1	1	0	0
9:30 AM	9:45 AM	0	20	1	0	0	4	14	10	0	0	0	1	3	0	0	4	0	1	0	0
9:45 AM	10:00 AM	0	23	0	0	0	1	23	4	0	0	1	0	3	0	0	3	0	1	0	0
10:00 AM	10:15 AM	0	28	0	0	0	4	16	7	0	0	0	0	3	0	0	9	0	0	0	0
10:15 AM	10:30 AM	0	21	0	0	0	11	11	13	0	0	3	0	7	0	0	6	0	0	0	0
10:30 AM	10:45 AM	3	23	4	0	0	7	19	7	0	0	9	0	6	0	0	6	1	4	0	0
10:45 AM	11:00 AM	0	34	3	0	0	7	19	6	0	0	3	0	6	0	0	6	1	1	0	0
11:00 AM	11:15 AM	1	28	1	0	0	3	21	9	0	0	4	0	3	0	0	9	0	1	0	0
11:15 AM	11:30 AM	0	40	3	0	0	3	20	1	0	0	0	0	3	0	0	10	0	0	0	0
11:30 AM	11:45 AM	1	26	1	0	0	6	30	3	0	0	1	0	4	0	0	1	0	0	0	0
11:45 AM	12:00 PM	0	36	1	0	0	4	34	4	0	0	3	1	7	0	0	7	0	0	0	0
12:00 PM	12:15 PM	0	43	1	0	0	4	30	6	0	0	0	0	4	0	0	1	0	1	0	0
12:15 PM	12:30 PM	0	31	0	0	0	10	20	10	0	0	9	0	1	0	0	9	0	1	0	0
12:30 PM	12:45 PM	0	37	4	0	0	4	34	14	0	0	6	0	6	0	0	11	0	0	0	0
12:45 PM	1:00 PM	0	30	1	0	0	3	30	4	0	0	1	0	4	0	0	11	0	0	0	0
1:00 PM	1:15 PM	3	40	3	0	0	4	30	7	0	0	3	1	4	0	0	7	0	3	0	0
1:15 PM	1:30 PM	1	34	3	0	0	6	40	9	0	0	3	0	1	0	0	10	1	0	0	0
1:30 PM	1:45 PM	0	40	1	0	0	1	33	4	0	0	6	0	4	0	0	3	0	0	0	0
1:45 PM	2:00 PM	1	37	4	0	0	1	30	4	0	0	4	0	3	0	0	4	0	0	0	0
2:00 PM	2:15 PM	0	50	9	0	0	3	46	6	0	0	3	0	4	0	0	6	1	1	0	0
2:15 PM	2:30 PM	0	51	3	0	0	3	36	7	0	0	4	0	6	0	0	6	0	1	0	0
2:30 PM	2:45 PM	0	28	6	0	0	3	31	4	0	0	3	0	7	0	0	4	0	1	0	0
2:45 PM	3:00 PM	1	37	3	0	0	7	44	6	0	0	9	0	3	0	0	6	0	0	0	0
3:00 PM	3:15 PM	4	36	1	0	0	6	54	7	0	0	1	0	4	0	0	6	0	1	0	0
3:15 PM	3:30 PM	1	31	9	0	0	1	63	3	0	0	4	1	3	0	0	7	0	1	0	0
3:30 PM	3:45 PM	1	41	4	0	0	9	71	4	0	0	3	0	7	0	0	4	0	1	0	0
3:45 PM	4:00 PM	1	41	3	0	0	10	83	3	0	0	1	0	11	0	0	7	0	1	0	0
4:00 PM	4:15 PM	0	51	1	0	0	3	51	0	0	0	3	0	6	0	0	10	0	0	0	0
4:15 PM	4:30 PM	3	56	6	0	0	6	67	7	0	0	4	0	3	0	0	9	0	1	0	0
4:30 PM	4:45 PM	1	47	1	0	0	10	77	6	5	0	4	0	7	0	0	9	1	0	0	0
4:45 PM	5:00 PM	0	46	4	0	0	7	77	6	0	0	9	1	4	0	0	6	0	1	0	0
5:00 PM	5:15 PM	0	67	6	0	0	9	78	1	0	0	7	0	6	0	0	16	0	4	0	0
5:15 PM	5:30 PM	0	28	3	0	0	13	75	7	0	0	4	0	9	0	0	9	0	6	0	0
5:30 PM	5:45 PM	1	41	4	0	0	7	71	10	0	0	6	0	7	0	0	9	1	0	0	0
5:45 PM	6:00 PM	0	48	4	0	0	4	63	3	0	0	9	0	4	0	0	3	0	0	0	0
6:00 PM	6:15 PM	0	31	3	0	0	13	71	6	0	0	4	0	4	0	0	10	1	0	0	0
6:15 PM	6:30 PM	0	34	3	0	0	13	60	7	0	0	11	0	6	0	0	4	0	0	0	0
6:30 PM	6:45 PM	0	36	7	0	0	4	48	1	0	0	6	0	10	0	0	13	0	6	0	0

Warrant 1- Eight Hour Vehicular Volume

Condition A - Minimum Vehicular Volume

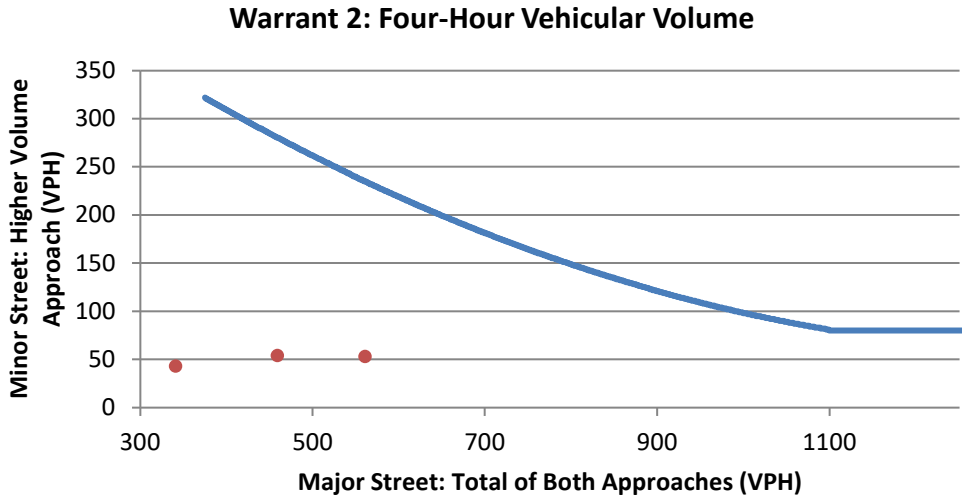
Time Period		Major Street		Minor Street		Meets
START	END	Epps Mill Rd	>500	Capital Way	>150	Condition?
5:45 PM	6:45 PM	459	N	54	N	N
4:45 PM	5:45 PM	561	Y	53	N	N
12:30 PM	1:30 PM	341	N	43	N	N
10:15 AM	11:15 AM	251	N	41	N	N
2:00 PM	3:00 PM	384	N	39	N	N
3:15 PM	4:15 PM	485	N	39	N	N
11:30 AM	12:30 PM	301	N	30	N	N
7:15 AM	8:15 AM	174	N	27	N	N

Condition B - Interruption of Continuous Traffic

Time Period		Major Street		Minor Street		Meets
START	END	Epps Mill Rd	>750	Capital Way	>75	Condition?
5:45 PM	6:45 PM	459	N	54	N	N
4:45 PM	5:45 PM	561	N	53	N	N
12:30 PM	1:30 PM	341	N	43	N	N
10:15 AM	11:15 AM	251	N	41	N	N
2:00 PM	3:00 PM	384	N	39	N	N
3:15 PM	4:15 PM	485	N	39	N	N
11:30 AM	12:30 PM	301	N	30	N	N
7:15 AM	8:15 AM	174	N	27	N	N

Warrant 2 - Four Hour Vehicular Volume

1 Major & 1 Minor



Time Period		Major Street Vol.	Minor Street Vol.	Total Volume	Above
Start	End	(both approaches)	(higher approach)	(all approaches)	Curve?
10:15 AM	11:15 AM	251	41	292	NO
12:30 PM	1:30 PM	341	43	384	NO
4:45 PM	5:45 PM	561	53	614	NO
5:45 PM	6:45 PM	459	54	513	NO

Warrant 3 - Peak Hour Volume

PART A: Peak Hour Delay

NOTE: Requirements 1 - 3 must ***ALL*** be met for the ***SAME*** hour for Part A of warrant to be met

1. Stopped Delay

1 Lane Approach	
Stopped Delay: (veh*hr)	**1**
Requirement Met:	**NO**

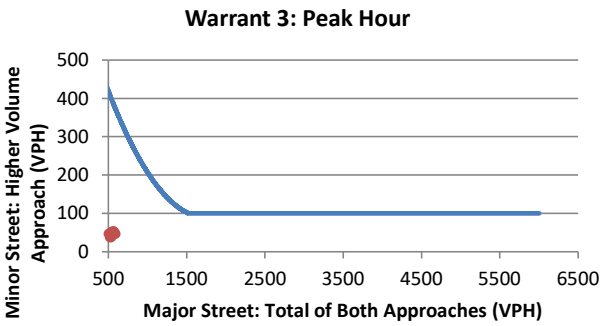
2. Minor Approach Volume

1 Moving Lane	
Approach Volume (veh/hr)	**10**
Requirement Met:	**NO**

3. Total Entering Volume Serviced

3 Approaches	
Intersection Volume (veh/hr)	**342**
Requirement Met:	**NO**

PART B: Peak Hour Volume



TIME PERIOD START	TIME PERIOD END	Major Street (both approaches)	Minor Street (higher approach)	Above Curve?
6:00 AM	7:00 AM	99	10	NO
6:15 AM	7:15 AM	95	13	NO
6:30 AM	7:30 AM	117	14	NO
6:45 AM	7:45 AM	132	18	NO
7:00 AM	8:00 AM	150	20	NO
7:15 AM	8:15 AM	174	27	NO
7:30 AM	8:30 AM	167	26	NO
7:45 AM	8:45 AM	144	23	NO
8:00 AM	9:00 AM	127	21	NO
8:15 AM	9:15 AM	128	22	NO
8:30 AM	9:30 AM	141	23	NO
8:45 AM	9:45 AM	166	21	NO
9:00 AM	10:00 AM	191	24	NO
9:15 AM	10:15 AM	204	26	NO
9:30 AM	10:30 AM	211	24	NO
9:45 AM	10:45 AM	225	32	NO
10:00 AM	11:00 AM	243	37	NO
10:15 AM	11:15 AM	251	41	NO
10:30 AM	11:30 AM	262	39	NO
10:45 AM	11:45 AM	266	29	NO
11:00 AM	12:00 PM	276	28	NO
11:15 AM	12:15 PM	297	23	NO
11:30 AM	12:30 PM	301	30	NO
11:45 AM	12:45 PM	327	37	NO
12:00 PM	1:00 PM	316	34	NO
12:15 PM	1:15 PM	319	42	NO
12:30 PM	1:30 PM	341	43	NO
12:45 PM	1:45 PM	327	35	NO
1:00 PM	2:00 PM	336	29	NO
1:15 PM	2:15 PM	363	28	NO
1:30 PM	2:30 PM	370	34	NO
1:45 PM	2:45 PM	363	34	NO

2048 SIGNAL WARRANTS

Traffic Signal Warrant Summary

TN-2 US Hwy 41 and Epps Mill Rd

Date: 22-May-24

Analyst: STV Inc.

Warrant 1	Condition A	**YES**
	Condition B	**YES**
Warrant 2	Four Hour Vehicular Volume	**YES**
Warrant 3	A - Peak Hour Delay	NO
	B - Peak Hour Volume	**YES**
Warrant 4	Pedestrian Volume	NO
Warrant 5	School Crossing	N/A
Warrant 6	Coordinated Signal System	NO
Warrant 7	Crash Experience	NO
Warrant 8	Roadway network	N/A
Warrant 9	Intersection Near a grade Crossing	N/A

MUTCD Reference:

http://mutcd.fhwa.dot.gov/htm/2009/part4/part4c.htm#section4C02

TIME PERIOD		TN-2 US Hwy 41					TN-2 US Hwy 41					Epps Mill Rd					Epps Mill Rd				
		RTR:	1	DIRECTION:		NB	RTR:	1	DIRECTION:		SB	RTR:	1	DIRECTION:		EB	RTR:	1	DIRECTION:		WB
START	END	Major Street					Major Street					Minor Street					Minor Street				
		L	T	R	PED	B	L	T	R	PED	B	L	T	R	PED	B	L	T	R	PED	B
6:00 AM	6:15 AM	69	95	0	0	0	0	26	23	0	0	28	0	10	0	0	0	0	0	0	0
6:15 AM	6:30 AM	72	115	0	0	0	0	13	26	0	0	67	0	15	0	0	0	0	0	0	0
6:30 AM	6:45 AM	64	113	0	0	0	0	23	54	0	0	67	0	8	0	0	0	0	0	0	0
6:45 AM	7:00 AM	56	90	0	0	0	0	31	87	0	0	69	0	31	0	0	0	0	0	0	0
7:00 AM	7:15 AM	64	108	0	0	0	0	26	77	0	0	46	0	36	0	0	0	0	0	0	0
7:15 AM	7:30 AM	92	87	0	0	0	0	23	72	0	0	87	0	8	0	0	0	0	0	0	0
7:30 AM	7:45 AM	79	51	0	0	0	0	41	74	0	0	56	0	31	0	0	0	0	0	0	0
7:45 AM	8:00 AM	51	64	0	0	0	0	46	85	0	0	51	0	13	0	0	0	0	0	0	0
8:00 AM	8:15 AM	59	79	0	0	0	0	23	41	0	0	56	0	26	0	0	0	0	0	0	0
8:15 AM	8:30 AM	59	67	0	0	0	0	38	33	0	0	38	0	26	0	0	0	0	0	0	0
8:30 AM	8:45 AM	49	82	0	0	0	0	38	28	0	0	18	0	26	0	0	0	0	0	0	0
8:45 AM	9:00 AM	36	92	0	0	0	0	38	26	0	0	26	0	28	0	0	0	0	0	0	0
9:00 AM	9:15 AM	15	62	0	0	0	0	28	21	0	0	26	0	13	0	0	0	0	0	0	0
9:15 AM	9:30 AM	15	72	0	0	0	0	44	33	0	0	38	0	21	0	0	0	0	0	0	0
9:30 AM	9:45 AM	41	69	0	0	0	0	77	31	0	0	38	0	15	0	0	0	0	0	0	0
9:45 AM	10:00 AM	21	85	0	0	0	0	72	23	0	0	36	0	21	0	0	0	0	0	0	0
10:00 AM	10:15 AM	28	64	0	0	0	0	33	38	0	0	26	0	41	0	0	0	0	0	0	0
10:15 AM	10:30 AM	33	69	0	0	0	0	41	23	0	0	18	0	26	0	0	0	0	0	0	0
10:30 AM	10:45 AM	23	67	0	0	0	0	56	33	0	0	44	0	36	0	0	0	0	0	0	0
10:45 AM	11:00 AM	36	49	0	0	0	0	59	36	0	0	26	0	13	0	0	0	0	0	0	0
11:00 AM	11:15 AM	21	62	0	0	0	0	74	36	0	0	31	0	33	0	0	0	0	0	0	0
11:15 AM	11:30 AM	31	31	0	0	0	0	82	44	0	0	31	0	28	0	0	0	0	0	0	0
11:30 AM	11:45 AM	26	74	0	0	0	0	51	38	0	0	31	0	26	0	0	0	0	0	0	0
11:45 AM	12:00 PM	15	56	0	0	0	0	67	59	0	0	41	0	33	0	0	0	0	0	0	0
12:00 PM	12:15 PM	41	69	0	0	0	0	59	36	0	0	38	0	36	0	0	0	0	0	0	0
12:15 PM	12:30 PM	31	69	0	0	0	0	74	44	0	0	46	0	31	0	0	0	0	0	0	0
12:30 PM	12:45 PM	23	51	0	0	0	0	90	31	0	0	26	0	44	0	0	0	0	0	0	0
12:45 PM	1:00 PM	59	59	0	0	0	0	69	33	0	0	33	0	21	0	0	0	0	0	0	0
1:00 PM	1:15 PM	36	54	0	0	0	0	87	46	0	0	21	0	41	0	0	0	0	0	0	0
1:15 PM	1:30 PM	33	54	0	0	0	0	85	49	0	0	46	0	31	0	0	0	0	0	0	0
1:30 PM	1:45 PM	33	64	0	0	0	0	62	59	0	0	38	0	28	0	0	0	0	0	0	0
1:45 PM	2:00 PM	26	51	0	0	0	0	56	41	0	0	62	0	46	0	0	0	0	0	0	0
2:00 PM	2:15 PM	31	69	0	0	0	0	74	62	0	0	44	0	33	0	0	0	0	0	0	0
2:15 PM	2:30 PM	38	67	0	0	0	0	64	46	0	0	38	0	38	0	0	0	0	0	0	0
2:30 PM	2:45 PM	46	51	0	0	0	0	54	64	0	0	69	0	28	0	0	0	0	0	0	0
2:45 PM	3:00 PM	23	31	0	0	0	0	90	41	0	0	59	0	36	0	0	0	0	0	0	0
3:00 PM	3:15 PM	38	44	0	0	0	0	141	46	0	0	38	0	36	0	0	0	0	0	0	0
3:15 PM	3:30 PM	23	62	0	0	0	0	100	44	0	0	49	0	79	0	0	0	0	0	0	0
3:30 PM	3:45 PM	87	100	0	0	0	0	151	59	0	0	77	0	74	0	0	0	0	0	0	0
3:45 PM	4:00 PM	100	92	0	0	0	0	146	46	0	0	62	0	69	0	0	0	0	0	0	0
4:00 PM	4:15 PM	72	74	0	0	0	0	167	62	0	0	64	0	82	0	0	0	0	0	0	0
4:15 PM	4:30 PM	44	28	0	0	0	0	115	74	0	0	44	0	72	0	0	0	0	0	0	0
4:30 PM	4:45 PM	28	49	0	0	0	0	141	56	0	0	56	0	82	0	0	0	0	0	0	0
4:45 PM	5:00 PM	36	67	0	0	0	0	108	87	0	0	54	0	46	0	0	0	0	0	0	0
5:00 PM	5:15 PM	51	46	0	0	0	0	131	64	0	0	79	0	67	0	0	0	0	0	0	0
5:15 PM	5:30 PM	21	67	0	4	0	0	154	51	0	0	56	0	56	0	0	0	0	0	0	0
5:30 PM	5:45 PM	23	46	0	0	0	0	141	38	0	0	54	0	36	0	0	0	0	0	0	0
5:45 PM	6:00 PM	21	51	0	0	0	0	100	44	0	0	44	0	72	0	0	0	0	0	0	0
6:00 PM	6:15 PM	15	41	0	0	0	0	77	69	0	0	33	0	21	0	0	0	0	0	0	0
6:15 PM	6:30 PM	31	33	0	0	0	0	79	23	0	0	51	0	46	0	0	0	0	0	0	0
6:30 PM	6:45 PM	18	41	0	0	0	0	108	51	0	0	41	0	46	0	0	0	0	0	0	0

Warrant 1- Eight Hour Vehicular Volume

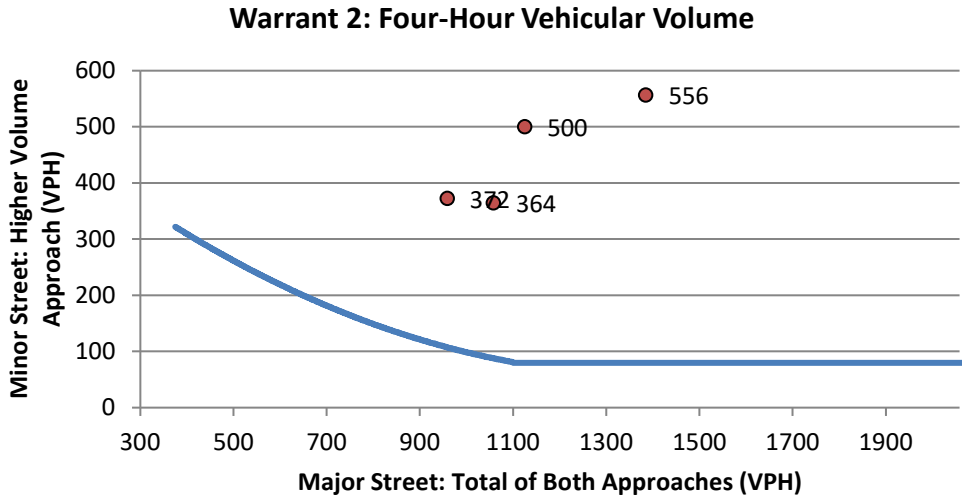
5/22/2024						
Time Period		Major Street		Minor Street		Meets
START	END	TN-2 US Hwy 41	>500	Epps Mill Rd	>150	Condition?
3:15 PM	4:15 PM	1385	Y	556	Y	**Y**
4:15 PM	5:15 PM	1125	Y	500	Y	**Y**
5:15 PM	6:15 PM	959	Y	372	Y	**Y**
6:45 AM	7:45 AM	1058	Y	364	Y	**Y**
1:45 PM	2:45 PM	840	Y	358	Y	**Y**
11:45 AM	12:45 PM	815	Y	295	Y	**Y**
12:45 PM	1:45 PM	882	Y	259	Y	**Y**
7:45 AM	8:45 AM	842	Y	254	Y	**Y**

Condition B - Interruption of Continuous Traffic						
Time Period		Major Street		Minor Street		Meets
START	END	TN-2 US Hwy 41	>750	Epps Mill Rd	>75	Condition?
3:15 PM	4:15 PM	1385	Y	556	Y	**Y**
4:15 PM	5:15 PM	1125	Y	500	Y	**Y**
5:15 PM	6:15 PM	959	Y	372	Y	**Y**
6:45 AM	7:45 AM	1058	Y	364	Y	**Y**
1:45 PM	2:45 PM	840	Y	358	Y	**Y**
11:45 AM	12:45 PM	815	Y	295	Y	**Y**
12:45 PM	1:45 PM	882	Y	259	Y	**Y**
7:45 AM	8:45 AM	842	Y	254	Y	**Y**

Warrant 1 is met by satisfying the requirements of Conidtions A & B.

Warrant 2 - Four Hour Vehicular Volume

1 Major & 1 Minor



Time Period		Major Street Vol.	Minor Street Vol.	Total Volume	Above
Start	End	(both approaches)	(higher approach)	(all approaches)	Curve?
6:45 AM	7:45 AM	1058	364	1422	YES
3:15 PM	4:15 PM	1385	556	1941	YES
4:15 PM	5:15 PM	1125	500	1625	YES
5:15 PM	6:15 PM	959	372	1331	YES

Warrant 3 - Peak Hour Volume

PA

NOTE: Requirements 1 - 3 must ***ALL*** be met for the ***SAME*** hour for Part A of warrant to be met

1. Stopped Delay

1 Lane Approach	
Stopped Delay: (veh*hr)	**1**
Requirement Met:	**NO**

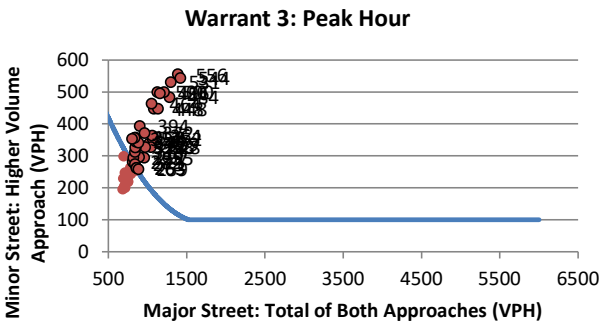
2. Minor Approach Volume

1 Moving Lane	
Approach Volume (veh/hr)	**10**
Requirement Met:	**NO**

3. Total Entering Volume Serviced

3 Approaches	
Intersection Volume (veh/hr)	**342**
Requirement Met:	**NO**

PART B: Peak Hour Volume



Warrant 3 is met based on the requirements of PART B

TIME PERIOD START	TIME PERIOD END	Major Street (both approaches)	Minor Street (higher approach)	Above Curve?
6:00 AM	**7:00 AM**	**957**	**295**	**YES**
6:15 AM	**7:15 AM**	**1019**	**339**	**YES**
6:30 AM	**7:30 AM**	**1067**	**352**	**YES**
6:45 AM	**7:45 AM**	**1058**	**364**	**YES**
7:00 AM	**8:00 AM**	**1040**	**328**	**YES**
7:15 AM	**8:15 AM**	**967**	**328**	**YES**
7:30 AM	**8:30 AM**	**890**	**297**	**YES**
7:45 AM	8:45 AM	842	254	NO
8:00 AM	9:00 AM	788	244	NO
8:15 AM	9:15 AM	712	201	NO
8:30 AM	9:30 AM	679	196	NO
8:45 AM	9:45 AM	700	205	NO
9:00 AM	10:00 AM	709	208	NO
9:15 AM	10:15 AM	746	236	NO
9:30 AM	10:30 AM	748	221	NO
9:45 AM	10:45 AM	709	248	NO
10:00 AM	11:00 AM	688	230	NO
10:15 AM	11:15 AM	718	227	NO
10:30 AM	11:30 AM	740	242	NO
10:45 AM	11:45 AM	750	219	NO
11:00 AM	12:00 PM	767	254	NO
11:15 AM	12:15 PM	779	264	NO
11:30 AM	**12:30 PM**	**809**	**282**	**YES**
11:45 AM	**12:45 PM**	**815**	**295**	**YES**
12:00 PM	**1:00 PM**	**838**	**275**	**YES**
12:15 PM	**1:15 PM**	**856**	**263**	**YES**
12:30 PM	**1:30 PM**	**859**	**263**	**YES**
12:45 PM	**1:45 PM**	**882**	**259**	**YES**
1:00 PM	**2:00 PM**	**836**	**313**	**YES**
1:15 PM	**2:15 PM**	**849**	**328**	**YES**
1:30 PM	**2:30 PM**	**843**	**327**	**YES**
1:45 PM	**2:45 PM**	**840**	**358**	**YES**

Traffic Signal Warrant Summary

Epps Mill Rd and Forbus Dr

Date: 24-May-24

Analyst: STV Inc.

Warrant 1	Condition A	**YES**
	Condition B	**YES**
Warrant 2	Four Hour Vehicular Volume	**YES**
Warrant 3	A - Peak Hour Delay	NO
	B - Peak Hour Volume	**YES**
Warrant 4	Pedestrian Volume	NO
Warrant 5	School Crossing	N/A
Warrant 6	Coordinated Signal System	NO
Warrant 7	Crash Experience	NO
Warrant 8	Roadway network	N/A
Warrant 9	Intersection Near a grade Crossing	N/A

MUTCD Reference:

http://mutcd.fhwa.dot.gov/htm/2009/part4/part4c.htm#section4C02

TIME PERIOD		Epps Mill Rd					Epps Mill Rd					Forbus Dr					Forbus Dr				
		RTR:	1	DIRECTION:		EB	RTR:	1	DIRECTION:		WB	RTR:	1	DIRECTION:		NB	RTR:	1	DIRECTION:		SB
START	END	Major Street					Major Street					Minor Street					Minor Street				
		L	T	R	PED	B	L	T	R	PED	B	L	T	R	PED	B	L	T	R	PED	B
6:00 AM	6:15 AM	77	69	5	0	0	8	87	18	0	0	0	0	0	0	0	5	0	77	0	0
6:15 AM	6:30 AM	74	113	10	0	0	10	87	8	0	0	3	0	0	0	0	10	0	79	0	0
6:30 AM	6:45 AM	79	97	10	0	0	3	115	26	0	0	0	0	0	0	0	8	0	67	0	0
6:45 AM	7:00 AM	69	138	36	0	0	10	138	21	0	0	0	0	0	0	0	18	0	85	0	0
7:00 AM	7:15 AM	299	417	61	0	0	31	427	73	0	0	3	0	0	0	0	41	0	308	0	0
7:15 AM	7:30 AM	72	115	21	0	0	8	133	13	0	0	5	3	3	0	0	8	0	108	0	0
7:30 AM	7:45 AM	95	128	15	0	0	5	167	18	0	0	0	0	0	0	0	15	0	90	0	0
7:45 AM	8:00 AM	113	128	28	0	0	8	151	18	0	0	5	0	0	0	0	5	5	110	0	0
8:00 AM	8:15 AM	85	115	21	0	0	0	126	13	0	0	8	0	3	0	0	13	5	110	0	0
8:15 AM	8:30 AM	74	133	15	0	0	0	100	13	0	0	18	0	0	0	0	8	0	95	0	0
8:30 AM	8:45 AM	72	97	8	0	0	3	92	18	0	0	0	0	0	0	0	13	0	113	0	0
8:45 AM	9:00 AM	103	92	13	0	0	0	64	15	0	0	5	0	0	0	0	0	0	77	0	0
9:00 AM	9:15 AM	97	85	3	0	0	3	59	8	0	0	8	0	0	0	0	5	0	92	0	0
9:15 AM	9:30 AM	90	67	8	0	0	0	38	8	0	0	3	3	0	0	0	10	5	118	0	0
9:30 AM	9:45 AM	79	82	8	0	0	3	51	10	0	0	5	3	3	0	0	8	0	100	0	0
9:45 AM	10:00 AM	79	103	3	0	0	0	72	23	0	0	5	3	0	0	0	3	0	95	0	0
10:00 AM	10:15 AM	113	92	5	0	0	0	36	13	0	0	8	0	0	0	0	13	0	92	0	0
10:15 AM	10:30 AM	82	92	0	0	0	0	69	15	0	0	3	0	0	0	0	13	0	87	0	0
10:30 AM	10:45 AM	67	90	5	0	0	0	64	5	0	0	0	0	0	0	0	8	0	108	0	0
10:45 AM	11:00 AM	77	110	8	0	0	0	56	15	0	0	10	5	5	0	0	8	0	79	0	0
11:00 AM	11:15 AM	87	67	5	0	0	8	62	15	0	0	0	10	0	0	0	8	3	85	0	0
11:15 AM	11:30 AM	85	95	13	0	0	8	56	13	0	0	15	5	10	0	0	13	5	90	0	0
11:30 AM	11:45 AM	87	95	5	0	0	5	82	18	0	0	8	0	0	0	0	8	3	85	0	0
11:45 AM	12:00 PM	100	97	18	0	0	0	51	15	0	0	21	3	8	0	0	10	0	79	0	0
12:00 PM	12:15 PM	90	87	3	0	0	0	62	8	0	0	15	5	8	0	0	28	5	72	0	0
12:15 PM	12:30 PM	97	103	5	0	0	3	77	28	0	0	10	0	8	0	4	21	0	110	0	0
12:30 PM	12:45 PM	92	90	15	0	0	8	64	13	0	0	5	3	8	0	0	21	0	115	0	0
12:45 PM	1:00 PM	69	90	15	4	0	0	64	10	0	0	5	0	0	0	0	13	3	95	0	0
1:00 PM	1:15 PM	90	110	13	0	0	8	95	18	0	0	5	0	0	0	0	10	0	105	0	0
1:15 PM	1:30 PM	79	92	10	0	0	3	77	13	0	0	10	0	3	0	0	10	0	87	0	0
1:30 PM	1:45 PM	72	113	8	0	0	5	87	8	0	0	10	0	5	0	0	5	0	85	0	0
1:45 PM	2:00 PM	113	118	3	0	0	0	85	21	0	0	5	0	3	0	0	15	0	74	0	0
2:00 PM	2:15 PM	110	141	5	0	0	0	74	18	0	0	5	0	0	0	0	18	0	113	0	0
2:15 PM	2:30 PM	87	115	5	0	0	0	92	23	0	0	3	0	3	0	0	5	0	87	0	0
2:30 PM	2:45 PM	108	90	8	0	0	0	79	21	0	0	8	0	0	0	0	15	0	95	0	0
2:45 PM	3:00 PM	123	141	18	0	0	3	110	15	0	0	5	3	0	0	0	15	0	120	0	0
3:00 PM	3:15 PM	92	146	8	0	0	5	59	13	0	0	5	0	0	0	0	13	3	105	0	0
3:15 PM	3:30 PM	90	115	15	0	0	3	82	13	0	0	5	3	3	0	0	8	0	100	0	0
3:30 PM	3:45 PM	92	133	3	0	0	3	69	10	0	0	8	0	0	0	0	13	0	85	0	0
3:45 PM	4:00 PM	74	105	0	0	0	0	133	33	0	0	79	0	62	0	0	13	0	95	0	0
4:00 PM	4:15 PM	105	164	3	0	0	0	133	23	0	0	18	0	3	0	0	8	0	92	0	0
4:15 PM	4:30 PM	113	177	0	0	0	0	141	13	0	0	10	3	13	0	0	21	0	118	0	0
4:30 PM	4:45 PM	97	146	5	0	0	3	128	23	0	0	10	8	5	0	0	3	0	115	0	0
4:45 PM	5:00 PM	90	159	0	4	0	0	97	13	0	0	38	8	13	0	0	10	0	113	0	0
5:00 PM	5:15 PM	72	110	0	0	0	0	115	26	0	0	15	0	5	0	0	15	0	90	0	0
5:15 PM	5:30 PM	100	151	3	0	0	0	138	15	0	0	33	0	5	0	0	13	0	69	0	0
5:30 PM	5:45 PM	103	149	0	0	0	0	77	13	0	0	13	0	10	0	0	3	0	69	0	0
5:45 PM	6:00 PM	56	100	0	0	0	0	59	10	0	0	8	0	0	0	0	13	0	87	0	0
6:00 PM	6:15 PM	103	151	0	0	0	0	77	15	0	0	0	0	0	0	0	10	0	69	0	0
6:15 PM	6:30 PM	72	105	0	0	0	0	72	18	0	0	10	0	0	0	0	5	0	92	0	0
6:30 PM	6:45 PM	85	128	0	0	0	0	62	13	0	0	0	0	0	0	0	15	0	74	0	0

Warrant 1- Eight Hour Vehicular Volume

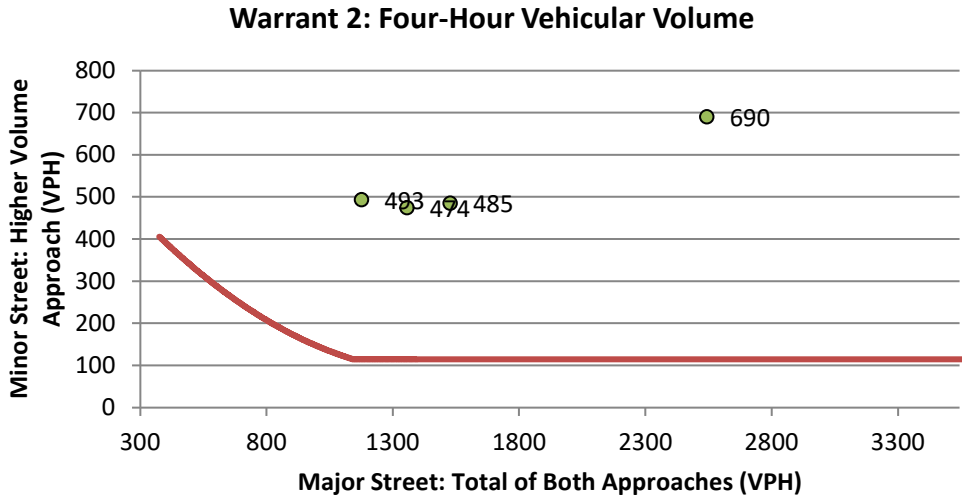
5/24/2024						
Time Period		Major Street		Minor Street		Meets
START	END	Epps Mill Rd	>500	Forbus Dr	>200	Condition?
7:00 AM	8:00 AM	2544	Y	690	Y	**Y**
12:15 PM	1:15 PM	1177	Y	493	Y	**Y**
4:15 PM	5:15 PM	1528	Y	485	Y	**Y**
2:30 PM	3:30 PM	1357	Y	474	Y	**Y**
9:15 AM	10:15 AM	983	Y	444	Y	**Y**
8:00 AM	9:00 AM	1272	Y	434	Y	**Y**
10:30 AM	11:30 AM	1011	Y	407	Y	**Y**
1:15 PM	2:15 PM	1255	Y	407	Y	**Y**

Condition B - Interruption of Continuous Traffic						
Time Period		Major Street		Minor Street		Meets
START	END	Epps Mill Rd	>750	Forbus Dr	>100	Condition?
7:00 AM	8:00 AM	2544	Y	690	Y	**Y**
12:15 PM	1:15 PM	1177	Y	493	Y	**Y**
4:15 PM	5:15 PM	1528	Y	485	Y	**Y**
2:30 PM	3:30 PM	1357	Y	474	Y	**Y**
9:15 AM	10:15 AM	983	Y	444	Y	**Y**
8:00 AM	9:00 AM	1272	Y	434	Y	**Y**
10:30 AM	11:30 AM	1011	Y	407	Y	**Y**
1:15 PM	2:15 PM	1255	Y	407	Y	**Y**

Warrant 1 is met by satisfying the requirements of Conidtions A & B.

Warrant 2 - Four Hour Vehicular Volume

1 Major & 2 Minor



Time Period		Major Street Vol.	Minor Street Vol.	Total Volume	Above
Start	End	(both approaches)	(higher approach)	(all approaches)	Curve?
7:00 AM	8:00 AM	2544	690	3234	YES
12:15 PM	1:15 PM	1177	493	1670	YES
2:30 PM	3:30 PM	1357	474	1831	YES
4:15 PM	5:15 PM	1528	485	2013	YES

Warrant 3 - Peak Hour Volume

PA

NOTE: Requirements 1 - 3 must ***ALL*** be met for the ***SAME*** hour for Part A of warrant to be met

1. Stopped Delay

1 Lane Approach	
Stopped Delay: (veh*hr)	**1**
Requirement Met:	**NO**

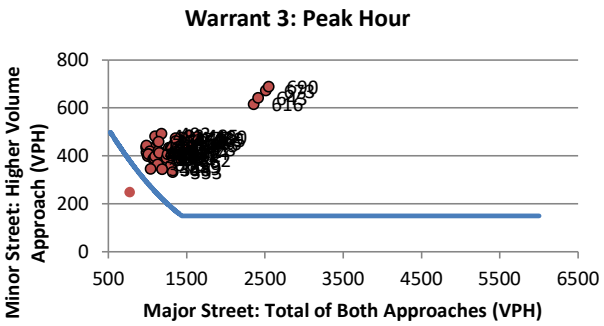
2. Minor Approach Volume

1 Moving Lane	
Approach Volume (veh/hr)	**10**
Requirement Met:	**NO**

3. Total Entering Volume Serviced

3 Approaches	
Intersection Volume (veh/hr)	**342**
Requirement Met:	**NO**

PART B: Peak Hour Volume



Warrant 3 is met based on the requirements of PART B

TIME PERIOD START	TIME PERIOD END	Major Street (both approaches)	Minor Street (higher approach)	Above Curve?
6:00 AM	7:00 AM	1308	349	YES
6:15 AM	7:15 AM	2352	616	YES
6:30 AM	7:30 AM	2412	643	YES
6:45 AM	7:45 AM	2510	673	YES
7:00 AM	8:00 AM	2544	690	YES
7:15 AM	8:15 AM	1596	469	YES
7:30 AM	8:30 AM	1569	456	YES
7:45 AM	8:45 AM	1431	477	YES
8:00 AM	9:00 AM	1272	434	YES
8:15 AM	9:15 AM	1167	403	YES
8:30 AM	9:30 AM	1043	433	YES
8:45 AM	9:45 AM	986	415	YES
9:00 AM	10:00 AM	979	436	YES
9:15 AM	10:15 AM	983	444	YES
9:30 AM	10:30 AM	1030	411	YES
9:45 AM	10:45 AM	1028	419	YES
10:00 AM	11:00 AM	1014	408	YES
10:15 AM	11:15 AM	999	399	YES
10:30 AM	11:30 AM	1011	407	YES
10:45 AM	11:45 AM	1072	387	YES
11:00 AM	12:00 PM	1087	389	YES
11:15 AM	12:15 PM	1093	398	YES
11:30 AM	12:30 PM	1136	421	YES
11:45 AM	12:45 PM	1126	461	YES
12:00 PM	1:00 PM	1093	483	YES
12:15 PM	1:15 PM	1177	493	YES
12:30 PM	1:30 PM	1138	459	YES
12:45 PM	1:45 PM	1149	413	YES
1:00 PM	2:00 PM	1241	391	YES
1:15 PM	2:15 PM	1255	407	YES
1:30 PM	2:30 PM	1303	402	YES
1:45 PM	2:45 PM	1316	422	YES

Traffic Signal Warrant Summary

Epps Mill Rd and I-24 WB Ramp

Date: 22-May-24

Analyst: STV Inc.

Warrant 1	Condition A	NO
	Condition B	**YES**
Warrant 2	Four Hour Vehicular Volume	**YES**
Warrant 3	A - Peak Hour Delay	NO
	B - Peak Hour Volume	**YES**
Warrant 4	Pedestrian Volume	NO
Warrant 5	School Crossing	N/A
Warrant 6	Coordinated Signal System	NO
Warrant 7	Crash Experience	NO
Warrant 8	Roadway network	N/A
Warrant 9	Intersection Near a grade Crossing	N/A

MUTCD Reference:

http://mutcd.fhwa.dot.gov/htm/2009/part4/part4c.htm#section4C02

TIME PERIOD		Epps Mill Rd					Epps Mill Rd					I-24 WB Off Ramp									
		RTR:	1	DIRECTION:		EB	RTR:	1	DIRECTION:		WB	RTR:	0.4	DIRECTION:		NB	RTR:	1	DIRECTION:		SB
START	END	Major Street					Major Street					Minor Street					Minor Street				
		L	T	R	PED	B	L	T	R	PED	B	L	T	R	PED	B	L	T	R	PED	B
6:00 AM	6:15 AM	141	77	0	0	0	0	49	100	0	0	8	0	44	0	0	0	0	0	0	0
6:15 AM	6:30 AM	156	103	0	0	0	0	56	100	0	0	5	0	62	0	0	0	0	0	0	0
6:30 AM	6:45 AM	128	103	0	0	0	0	64	95	0	0	15	3	49	0	0	0	0	0	0	0
6:45 AM	7:00 AM	185	151	0	0	0	0	90	110	0	0	21	3	49	0	0	0	0	0	0	0
7:00 AM	7:15 AM	128	110	0	0	0	0	79	146	0	0	15	5	49	0	0	0	0	0	0	0
7:15 AM	7:30 AM	302	133	0	0	0	0	79	154	0	0	10	0	59	0	0	0	0	0	0	0
7:30 AM	7:45 AM	297	138	0	0	0	0	79	172	0	0	8	3	77	0	0	0	0	0	0	0
7:45 AM	8:00 AM	118	128	0	0	0	0	79	149	0	0	15	0	41	0	0	0	0	0	0	0
8:00 AM	8:15 AM	136	131	0	0	0	0	72	128	0	0	3	3	49	0	4	0	0	0	0	0
8:15 AM	8:30 AM	118	95	0	0	0	0	77	110	0	0	13	0	44	0	0	0	0	0	0	0
8:30 AM	8:45 AM	131	92	0	0	0	0	67	72	0	0	10	0	62	0	0	0	0	0	0	0
8:45 AM	9:00 AM	59	85	0	0	0	0	59	92	0	0	8	0	62	0	0	0	0	0	0	4
9:00 AM	9:15 AM	64	79	0	0	0	0	56	92	0	0	5	0	51	0	0	0	0	0	0	0
9:15 AM	9:30 AM	74	103	0	0	0	0	69	77	0	0	13	5	26	0	0	0	0	0	0	0
9:30 AM	9:45 AM	79	100	0	0	0	0	87	77	0	0	13	0	46	0	0	0	0	0	0	0
9:45 AM	10:00 AM	59	100	0	0	0	0	77	54	0	0	5	0	59	0	0	0	0	0	0	0
10:00 AM	10:15 AM	51	105	0	0	0	0	69	74	0	0	5	3	41	0	0	0	0	0	0	0
10:15 AM	10:30 AM	62	87	0	0	0	0	72	95	0	0	8	3	28	0	0	0	0	0	0	0
10:30 AM	10:45 AM	67	128	0	0	0	0	77	56	0	0	5	0	38	0	0	0	0	0	0	0
10:45 AM	11:00 AM	36	77	0	0	0	0	82	62	0	0	5	3	41	0	0	0	0	0	0	0
11:00 AM	11:15 AM	51	118	0	4	0	0	82	67	0	0	8	0	41	0	0	0	0	0	0	0
11:15 AM	11:30 AM	59	100	0	0	0	0	92	59	0	0	0	0	44	0	0	0	0	0	0	0
11:30 AM	11:45 AM	56	113	0	0	0	0	64	82	0	0	8	8	44	0	0	0	0	0	0	0
11:45 AM	12:00 PM	44	82	0	0	0	0	87	62	0	0	8	3	54	0	0	0	0	0	0	0
12:00 PM	12:15 PM	56	110	0	0	0	0	79	92	0	0	15	0	46	0	0	0	0	0	0	0
12:15 PM	12:30 PM	72	120	0	0	0	0	103	64	0	0	3	3	33	0	0	0	0	0	0	0
12:30 PM	12:45 PM	38	100	0	0	0	0	95	67	0	0	13	0	33	0	0	0	0	0	0	0
12:45 PM	1:00 PM	67	105	0	0	0	0	85	97	0	0	5	0	49	0	0	0	0	0	0	0
1:00 PM	1:15 PM	69	105	0	0	0	0	82	85	0	0	5	3	33	0	0	0	0	0	0	0
1:15 PM	1:30 PM	49	115	0	0	0	0	105	62	0	0	5	3	36	0	0	0	0	0	0	0
1:30 PM	1:45 PM	64	126	0	0	0	0	92	62	0	0	13	5	59	0	0	0	0	0	0	0
1:45 PM	2:00 PM	82	164	0	0	0	0	103	74	0	0	15	0	49	0	0	0	0	0	0	0
2:00 PM	2:15 PM	62	115	0	0	0	0	95	72	0	0	10	0	36	0	0	0	0	0	0	0
2:15 PM	2:30 PM	74	110	0	0	0	0	97	74	0	0	8	0	56	0	0	0	0	0	0	0
2:30 PM	2:45 PM	118	174	0	0	0	0	103	115	0	0	10	0	49	0	0	0	0	0	0	0
2:45 PM	3:00 PM	90	138	0	0	0	0	72	79	0	0	13	3	49	0	0	0	0	0	0	0
3:00 PM	3:15 PM	69	123	0	0	0	0	79	92	0	0	15	0	54	0	0	0	0	0	0	0
3:15 PM	3:30 PM	92	141	0	0	0	0	95	56	0	0	3	0	54	0	0	0	0	0	0	0
3:30 PM	3:45 PM	36	123	0	0	0	0	133	149	4	0	13	5	33	0	0	0	0	0	0	0
3:45 PM	4:00 PM	54	185	0	0	0	0	103	120	0	0	8	0	38	0	0	0	0	0	0	0
4:00 PM	4:15 PM	69	182	0	0	0	0	126	144	0	0	21	5	62	0	0	0	0	0	0	4
4:15 PM	4:30 PM	79	144	0	0	0	0	123	103	0	0	23	0	62	0	0	0	0	0	0	0
4:30 PM	4:45 PM	69	138	0	0	0	0	149	90	0	0	28	0	64	0	0	0	0	0	0	0
4:45 PM	5:00 PM	79	110	0	0	0	0	100	100	0	0	13	0	41	0	0	0	0	0	0	0
5:00 PM	5:15 PM	79	156	0	0	0	0	131	105	0	0	18	3	64	0	0	0	0	0	0	0
5:15 PM	5:30 PM	62	141	0	0	0	0	90	62	0	0	23	0	64	0	0	0	0	0	0	0
5:30 PM	5:45 PM	77	100	0	0	0	0	90	49	0	0	15	0	38	0	0	0	0	0	0	0
5:45 PM	6:00 PM	64	149	0	0	0	0	74	56	0	0	13	0	51	0	0	0	0	0	0	0
6:00 PM	6:15 PM	85	103	0	0	0	0	100	59	0	0	13	0	33	0	0	0	0	0	0	0
6:15 PM	6:30 PM	56	146	0	0	0	0	85	44	0	0	18	0	31	0	0	0	0	0	0	0
6:30 PM	6:45 PM	56	113	0	0	0	0	92	38	0	0	8	0	38	0	0	0	0	0	0	0

Warrant 1- Eight Hour Vehicular Volume

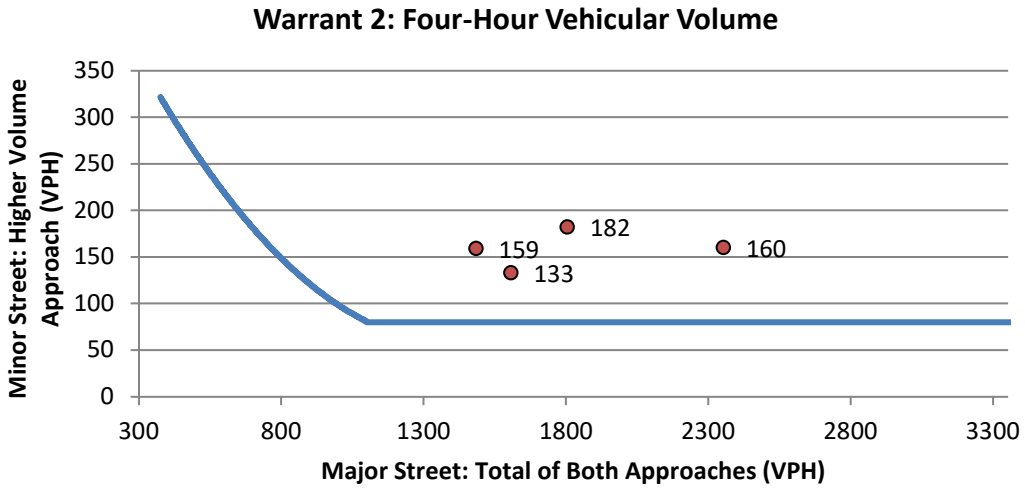
5/22/2024						
Time Period		Major Street		Minor Street		Meets
START	END	Epps Mill Rd	>500	I-24 N Ramp	>150	Condition?
4:00 PM	5:00 PM	1805	Y	182	Y	**Y**
6:45 AM	7:45 AM	2353	Y	160	Y	**Y**
5:00 PM	6:00 PM	1485	Y	159	Y	**Y**
2:15 PM	3:15 PM	1607	Y	133	N	N
8:00 AM	9:00 AM	1524	Y	125	N	N
1:15 PM	2:15 PM	1442	Y	123	N	N
11:30 AM	12:30 PM	1286	Y	119	N	N
9:00 AM	10:00 AM	1247	Y	113	N	N

Condition B - Interruption of Continuous Traffic						
Time Period		Major Street		Minor Street		Meets
START	END	Epps Mill Rd	>750	I-24 N Ramp	>75	Condition?
4:00 PM	5:00 PM	1805	Y	182	Y	**Y**
6:45 AM	7:45 AM	2353	Y	160	Y	**Y**
5:00 PM	6:00 PM	1485	Y	159	Y	**Y**
2:15 PM	3:15 PM	1607	Y	133	Y	**Y**
8:00 AM	9:00 AM	1524	Y	125	Y	**Y**
1:15 PM	2:15 PM	1442	Y	123	Y	**Y**
11:30 AM	12:30 PM	1286	Y	119	Y	**Y**
9:00 AM	10:00 AM	1247	Y	113	Y	**Y**

Warrant 1 is met by satisfying the requirements of Condition B.

Warrant 2 - Four Hour Vehicular Volume

1 Major & 1 Minor



Time Period		Major Street Vol.	Minor Street Vol.	Total Volume	Above
Start	End	(both approaches)	(higher approach)	(all approaches)	Curve?
6:45 AM	7:45 AM	2353	160	2513	YES
2:15 PM	3:15 PM	1607	133	1740	YES
4:00 PM	5:00 PM	1805	182	1987	YES
5:00 PM	6:00 PM	1485	159	1644	YES

Warrant 3 - Peak Hour Volume

PART A

NOTE: Requirements 1 - 3 must ***ALL*** be met for the ***SAME*** hour for Part A of warrant to be met

1. Stopped Delay

1 Lane Approach	
Stopped Delay: (veh*hr)	**1**
Requirement Met:	**NO**

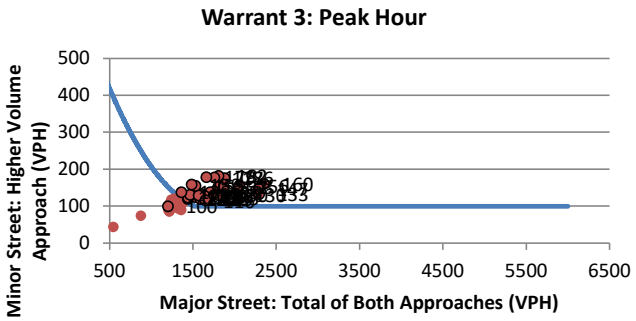
2. Minor Approach Volume

1 Moving Lane	
Approach Volume (veh/hr)	**10**
Requirement Met:	**NO**

3. Total Entering Volume Serviced

3 Approaches	
Intersection Volume (veh/hr)	**342**
Requirement Met:	**NO**

PART B: Peak Hour Volume



Warrant 3 is met based on the requirements of PART B

TIME PERIOD START	TIME PERIOD END	Major Street (both approaches)	Minor Street (higher approach)	Above Curve?
6:00 AM	**7:00 AM**	**1708**	**138**	**YES**
6:15 AM	**7:15 AM**	**1804**	**152**	**YES**
6:30 AM	**7:30 AM**	**2057**	**156**	**YES**
6:45 AM	**7:45 AM**	**2353**	**160**	**YES**
7:00 AM	**8:00 AM**	**2291**	**147**	**YES**
7:15 AM	**8:15 AM**	**2295**	**133**	**YES**
7:30 AM	**8:30 AM**	**2027**	**130**	**YES**
7:45 AM	**8:45 AM**	**1703**	**123**	**YES**
8:00 AM	**9:00 AM**	**1524**	**125**	**YES**
8:15 AM	**9:15 AM**	**1348**	**124**	**YES**
8:30 AM	9:30 AM	1271	121	NO
8:45 AM	9:45 AM	1252	117	NO
9:00 AM	10:00 AM	1247	113	NO
9:15 AM	10:15 AM	1255	112	NO
9:30 AM	10:30 AM	1248	106	NO
9:45 AM	10:45 AM	1233	95	NO
10:00 AM	11:00 AM	1200	90	NO
10:15 AM	11:15 AM	1219	90	NO
10:30 AM	11:30 AM	1213	86	NO
10:45 AM	**11:45 AM**	**1200**	**100**	**YES**
11:00 AM	12:00 PM	1218	109	NO
11:15 AM	12:15 PM	1237	118	NO
11:30 AM	12:30 PM	1286	119	NO
11:45 AM	12:45 PM	1271	111	NO
12:00 PM	1:00 PM	1350	103	NO
12:15 PM	1:15 PM	1354	91	NO
12:30 PM	1:30 PM	1326	94	NO
12:45 PM	1:45 PM	1370	110	NO
1:00 PM	**2:00 PM**	**1439**	**120**	**YES**
1:15 PM	**2:15 PM**	**1442**	**123**	**YES**
1:30 PM	**2:30 PM**	**1466**	**131**	**YES**
1:45 PM	**2:45 PM**	**1632**	**119**	**YES**

Traffic Signal Warrant Summary

Epps Mill Rd and I-24 EB Off Ramp

Date: 22-May-24

Analyst: STV Inc.

Warrant 1	Condition A	**YES**
	Condition B	**YES**
Warrant 2	Four Hour Vehicular Volume	**YES**
Warrant 3	A - Peak Hour Delay	NO
	B - Peak Hour Volume	**YES**
Warrant 4	Pedestrian Volume	
Warrant 5	School Crossing	N/A
Warrant 6	Coordinated Signal System	NO
Warrant 7	Crash Experience	NO
Warrant 8	Roadway network	N/A
Warrant 9	Intersection Near a grade Crossing	N/A

MUTCD Reference:

http://mutcd.fhwa.dot.gov/htm/2009/part4/part4c.htm#section4C02

TIME PERIOD		Epps Mill Rd					Epps Mill Rd					Miller Road					I-24 EB Off Ramp				
		RTR:	1	DIRECTION:		EB	RTR:	1	DIRECTION:		WB	RTR:	0.4	DIRECTION:		NB	RTR:	0.4	DIRECTION:		SB
START	END	Major Street					Major Street					Minor Street					Minor Street				
		L	T	R	PED	B	L	T	R	PED	B	L	T	R	PED	B	L	T	R	PED	B
6:00 AM	6:15 AM	21	167	18	0	0	23	26	51	0	0	5	15	59	0	0	32	13	19	0	0
6:15 AM	6:30 AM	18	226	23	0	0	31	28	44	0	0	0	13	51	0	0	29	12	18	0	0
6:30 AM	6:45 AM	38	185	23	0	0	62	44	41	0	0	8	13	53	0	0	40	16	24	0	0
6:45 AM	7:00 AM	23	210	10	0	0	85	59	31	0	0	10	14	57	0	0	49	19	29	0	0
7:00 AM	7:15 AM	15	254	15	0	0	133	41	56	0	0	8	23	90	0	0	53	21	32	0	0
7:15 AM	7:30 AM	28	367	26	0	0	79	74	64	0	0	8	44	176	0	0	51	21	31	0	0
7:30 AM	7:45 AM	21	333	21	0	0	64	82	49	0	0	21	32	127	0	0	68	27	41	0	0
7:45 AM	8:00 AM	15	223	18	0	0	72	77	56	0	0	13	22	88	0	0	53	21	32	0	0
8:00 AM	8:15 AM	13	190	18	0	0	33	85	44	0	0	15	16	64	0	0	41	16	25	0	0
8:15 AM	8:30 AM	21	133	26	0	0	41	95	36	0	0	8	13	51	0	0	59	24	35	0	0
8:30 AM	8:45 AM	13	149	13	0	0	33	62	46	0	0	8	15	59	0	0	49	19	29	0	0
8:45 AM	9:00 AM	36	115	3	0	3	41	36	62	0	0	3	12	47	0	0	56	23	34	0	0
9:00 AM	9:15 AM	3	113	10	0	0	33	64	59	0	0	8	9	35	0	0	55	22	33	0	0
9:15 AM	9:30 AM	18	115	13	0	0	26	64	56	0	0	3	10	39	0	0	67	27	40	0	0
9:30 AM	9:45 AM	18	115	18	0	0	46	44	38	0	0	5	12	49	0	0	54	22	32	0	0
9:45 AM	10:00 AM	21	95	3	0	0	67	62	67	0	0	5	5	21	0	0	51	21	31	0	0
10:00 AM	10:15 AM	21	77	3	0	0	36	69	59	0	0	0	9	37	0	0	63	25	38	0	0
10:15 AM	10:30 AM	28	105	10	0	0	41	77	46	0	0	8	11	43	0	0	54	22	32	0	0
10:30 AM	10:45 AM	23	103	15	0	0	38	49	56	0	0	13	15	62	0	0	59	24	35	0	0
10:45 AM	11:00 AM	23	77	10	0	0	38	62	56	0	0	8	10	39	0	0	78	31	47	0	0
11:00 AM	11:15 AM	44	97	13	0	0	51	59	56	0	0	3	13	51	0	0	54	22	32	0	0
11:15 AM	11:30 AM	13	97	3	0	0	26	64	51	0	0	8	10	41	0	0	50	20	30	0	0
11:30 AM	11:45 AM	21	97	8	0	0	54	56	44	0	0	5	11	43	0	0	49	19	29	0	0
11:45 AM	12:00 PM	5	77	3	0	0	46	85	44	0	0	3	6	23	0	0	56	23	34	0	0
12:00 PM	12:15 PM	31	77	10	0	0	44	100	46	0	3	10	10	39	0	0	58	23	35	0	0
12:15 PM	12:30 PM	21	72	21	0	0	33	64	33	0	0	13	7	29	0	0	62	25	37	0	0
12:30 PM	12:45 PM	10	64	15	0	0	46	69	49	0	0	5	5	21	0	0	64	26	38	0	0
12:45 PM	1:00 PM	18	108	13	0	0	41	90	59	0	3	8	11	45	0	0	72	29	43	0	0
1:00 PM	1:15 PM	15	141	23	0	0	44	85	59	0	0	10	11	45	0	0	62	25	37	0	0
1:15 PM	1:30 PM	15	108	10	0	0	108	46	44	0	0	8	7	27	0	0	63	25	38	0	0
1:30 PM	1:45 PM	23	100	10	0	0	105	97	72	0	0	13	11	45	0	0	59	24	35	0	0
1:45 PM	2:00 PM	28	149	5	0	0	82	87	77	0	0	18	19	78	0	0	69	28	42	0	0
2:00 PM	2:15 PM	15	126	23	0	0	59	79	41	0	0	15	13	51	0	0	67	27	40	0	0
2:15 PM	2:30 PM	18	95	13	0	0	108	100	62	0	0	18	9	35	0	0	74	30	45	0	0
2:30 PM	2:45 PM	21	208	8	0	0	51	77	62	0	0	23	32	127	0	0	73	29	44	0	0
2:45 PM	3:00 PM	23	144	5	0	0	56	141	54	0	0	10	14	57	0	0	82	33	49	0	0
3:00 PM	3:15 PM	41	123	8	0	0	67	133	51	0	0	5	15	59	0	0	86	34	52	0	0
3:15 PM	3:30 PM	33	120	0	0	0	108	126	36	0	0	18	15	59	0	0	97	39	58	0	0
3:30 PM	3:45 PM	15	144	8	0	0	95	149	54	0	0	13	14	57	0	0	99	39	59	0	0
3:45 PM	4:00 PM	44	118	10	0	0	87	151	33	0	0	15	14	55	0	0	119	48	72	0	3
4:00 PM	4:15 PM	23	149	18	0	0	59	169	54	0	0	15	13	53	0	0	73	29	44	0	0
4:15 PM	4:30 PM	31	113	18	0	0	56	136	41	0	0	5	11	45	0	0	86	34	52	0	0
4:30 PM	4:45 PM	38	115	13	0	0	87	192	38	0	0	8	12	49	0	0	99	39	59	0	0
4:45 PM	5:00 PM	28	126	18	0	0	72	136	64	0	0	23	16	66	0	0	99	39	59	0	0
5:00 PM	5:15 PM	31	144	23	0	0	82	149	49	0	0	15	14	57	0	0	94	37	56	0	0
5:15 PM	5:30 PM	10	220	13	0	0	62	151	72	0	0	5	15	62	0	0	109	44	65	0	0
5:30 PM	5:45 PM	33	161	15	0	0	82	169	49	0	0	15	17	68	0	0	96	38	58	0	0
5:45 PM	6:00 PM	31	126	18	0	0	67	156	38	0	0	18	12	49	0	0	103	41	62	0	0
6:00 PM	6:15 PM	21	118	18	0	0	33	138	54	0	0	10	9	37	0	0	96	38	58	0	0
6:15 PM	6:30 PM	15	108	10	0	0	62	92	62	0	0	10	7	29	0	0	103	41	62	0	0
6:30 PM	6:45 PM	26	92	13	0	0	54	85	38	0	0	8	11	43	0	0	79	32	48	0	0

Warrant 1- Eight Hour Vehicular Volume

Condition A - Minimum Vehicular Volume

Time Period		Major Street		Minor Street		Meets
START	END	Epps Mill Rd	>500	I-24 S Ramp	>200	Condition?
5:15 PM	6:15 PM	1855	Y	662	Y	**Y**
3:00 PM	4:00 PM	1754	Y	658	Y	**Y**
4:15 PM	5:15 PM	1800	Y	618	Y	**Y**
2:00 PM	3:00 PM	1589	Y	487	Y	**Y**
12:30 PM	1:30 PM	1280	Y	428	Y	**Y**
6:15 PM	7:15 PM	878	Y	427	Y	**Y**
10:00 AM	11:00 AM	1122	Y	417	Y	**Y**
8:45 AM	9:45 AM	1146	Y	382	Y	**Y**

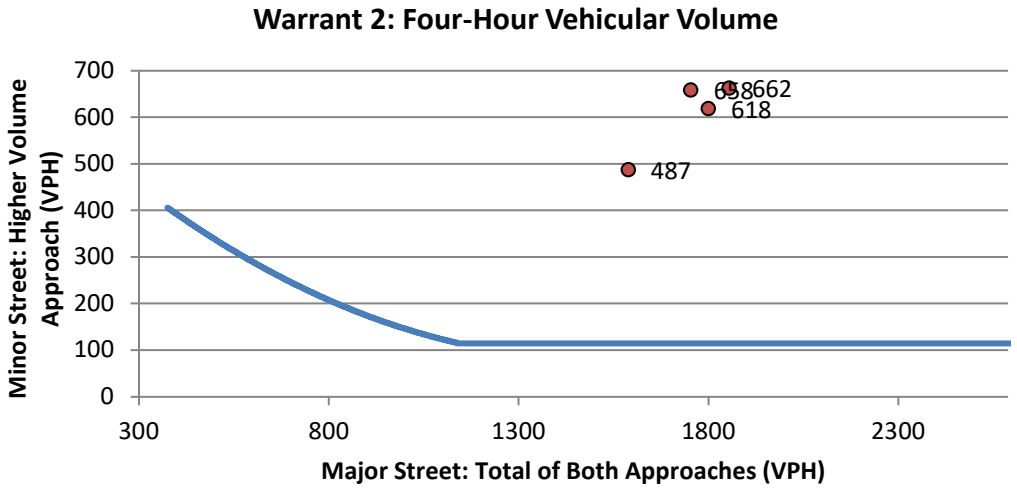
Condition B - Interruption of Continuous Traffic

Time Period		Major Street		Minor Street		Meets
START	END	Epps Mill Rd	>750	I-24 S Ramp	>100	Condition?
5:15 PM	6:15 PM	1855	Y	662	Y	**Y**
3:00 PM	4:00 PM	1754	Y	658	Y	**Y**
4:15 PM	5:15 PM	1800	Y	618	Y	**Y**
2:00 PM	3:00 PM	1589	Y	487	Y	**Y**
12:30 PM	1:30 PM	1280	Y	428	Y	**Y**
6:15 PM	7:15 PM	878	Y	427	Y	**Y**
10:00 AM	11:00 AM	1122	Y	417	Y	**Y**
8:45 AM	9:45 AM	1146	Y	382	Y	**Y**

Warrant 1 is met by satisfying the requirements of Conidtions A & B.

Warrant 2 - Four Hour Vehicular Volume

1 Major & 2 Minor



Time Period		Major Street Vol.	Minor Street Vol.	Total Volume	Above
Start	End	(both approaches)	(higher approach)	(all approaches)	Curve?
2:00 PM	3:00 PM	1589	487	2076	YES
3:00 PM	4:00 PM	1754	658	2412	YES
4:15 PM	5:15 PM	1800	618	2418	YES
5:15 PM	6:15 PM	1855	662	2517	YES

Warrant 3 - Peak Hour Volume

PART A: Peak Hour Delay

NOTE: Requirements 1 - 3 must ***ALL*** be met for the ***SAME*** hour for Part A of warrant to be met

1. Stopped Delay

1 Lane Approach	
Stopped Delay: (veh*hr)	**1**
Requirement Met:	**NO**

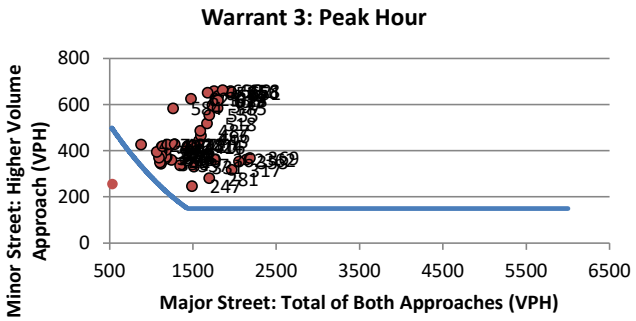
2. Minor Approach Volume

1 Moving Lane	
Approach Volume (veh/hr)	**10**
Requirement Met:	**NO**

3. Total Entering Volume Serviced

3 Approaches	
Intersection Volume (veh/hr)	**342**
Requirement Met:	**NO**

PART B: Peak Hour Volume



Warrant 3 is met based on the requirements of PART B

TIME PERIOD START	TIME PERIOD END	Major Street (both approaches)	Minor Street (higher approach)	Above Curve?
6:00 AM	7:00 AM	1487	247	YES
6:15 AM	7:15 AM	1695	281	YES
6:30 AM	7:30 AM	1963	317	YES
6:45 AM	7:45 AM	2140	362	YES
7:00 AM	8:00 AM	2183	369	YES
7:15 AM	8:15 AM	2052	353	YES
7:30 AM	8:30 AM	1766	362	YES
7:45 AM	8:45 AM	1512	331	YES
8:00 AM	9:00 AM	1344	337	YES
8:15 AM	9:15 AM	1243	360	YES
8:30 AM	9:30 AM	1183	373	YES
8:45 AM	9:45 AM	1146	382	YES
9:00 AM	10:00 AM	1168	373	YES
9:15 AM	10:15 AM	1151	386	YES
9:30 AM	10:30 AM	1166	365	YES
9:45 AM	10:45 AM	1171	373	YES
10:00 AM	11:00 AM	1122	417	YES
10:15 AM	11:15 AM	1177	403	YES
10:30 AM	11:30 AM	1124	396	YES
10:45 AM	11:45 AM	1120	379	YES
11:00 AM	12:00 PM	1114	344	YES
11:15 AM	12:15 PM	1102	350	YES
11:30 AM	12:30 PM	1092	370	YES
11:45 AM	12:45 PM	1065	395	YES
12:00 PM	1:00 PM	1134	420	YES
12:15 PM	1:15 PM	1193	427	YES
12:30 PM	1:30 PM	1280	428	YES
12:45 PM	1:45 PM	1434	420	YES
1:00 PM	2:00 PM	1533	416	YES
1:15 PM	2:15 PM	1509	424	YES
1:30 PM	2:30 PM	1574	443	YES
1:45 PM	2:45 PM	1594	466	YES

Traffic Signal Warrant Summary

Epps Mill Rd and Capital Way

Date: 24-May-24

Analyst: STV Inc.

Warrant 1	Condition A	NO
	Condition B	NO
Warrant 2	Four Hour Vehicular Volume	NO
Warrant 3	A - Peak Hour Delay	NO
	B - Peak Hour Volume	NO
Warrant 4	Pedestrian Volume	NO
Warrant 5	School Crossing	N/A
Warrant 6	Coordinated Signal System	NO
Warrant 7	Crash Experience	NO
Warrant 8	Roadway network	N/A
Warrant 9	Intersection Near a grade Crossing	N/A

MUTCD Reference:

http://mutcd.fhwa.dot.gov/htm/2009/part4/part4c.htm#section4C02

TIME PERIOD		Epps Mill Rd					Epps Mill Rd					Dollar General Driveway					Capital Way				
		RTR:	1	DIRECTION:		EB	RTR:	1	DIRECTION:		WB	RTR:	1	DIRECTION:		NB	RTR:	1	DIRECTION:		SB
START	END	Major Street					Major Street					Minor Street					Minor Street				
		L	T	R	PED	B	L	T	R	PED	B	L	T	R	PED	B	L	T	R	PED	B
6:00 AM	6:15 AM	0	15	0	0	0	0	15	5	0	0	0	0	0	0	0	3	0	0	0	0
6:15 AM	6:30 AM	0	21	0	0	0	0	10	8	0	0	0	0	0	0	0	5	0	0	0	0
6:30 AM	6:45 AM	0	28	0	0	0	0	18	10	0	0	0	0	0	0	0	3	0	5	0	0
6:45 AM	7:00 AM	0	21	0	0	0	8	10	8	0	0	0	3	5	0	0	3	0	3	0	0
7:00 AM	7:15 AM	0	15	0	0	0	0	3	13	0	0	0	0	3	0	0	5	3	0	0	0
7:15 AM	7:30 AM	3	28	3	0	0	3	23	21	0	0	3	0	8	0	0	8	0	0	0	0
7:30 AM	7:45 AM	3	21	5	0	0	10	15	31	0	0	3	0	13	0	0	10	0	0	0	0
7:45 AM	8:00 AM	0	21	3	0	0	5	33	15	0	0	0	0	10	0	0	5	0	0	0	0
8:00 AM	8:15 AM	3	18	3	0	0	10	23	18	0	0	8	0	8	0	0	8	3	3	0	0
8:15 AM	8:30 AM	3	26	3	0	0	3	23	10	0	0	3	0	5	0	0	10	0	3	0	0
8:30 AM	8:45 AM	0	13	0	0	0	3	13	15	0	0	0	0	5	0	0	13	0	0	0	0
8:45 AM	9:00 AM	3	13	0	0	0	3	21	10	0	0	0	0	3	0	0	0	3	0	0	0
9:00 AM	9:15 AM	3	18	3	0	0	3	41	10	0	0	3	0	5	0	0	13	0	0	0	0
9:15 AM	9:30 AM	0	46	3	0	0	3	21	18	0	0	0	3	0	0	0	10	3	3	0	0
9:30 AM	9:45 AM	0	36	3	0	0	8	26	18	0	0	0	3	5	0	0	8	0	3	0	0
9:45 AM	10:00 AM	0	41	0	0	0	3	41	8	0	0	3	0	5	0	0	5	0	3	0	0
10:00 AM	10:15 AM	0	51	0	0	0	8	28	13	0	0	0	0	5	0	0	15	0	0	0	0
10:15 AM	10:30 AM	0	38	0	0	0	21	21	23	0	0	5	0	13	0	0	10	0	0	0	0
10:30 AM	10:45 AM	5	41	8	0	0	13	33	13	0	0	15	0	10	0	0	10	3	8	0	0
10:45 AM	11:00 AM	0	62	5	0	0	13	33	10	0	0	5	0	10	0	0	10	3	3	0	0
11:00 AM	11:15 AM	3	51	3	0	0	5	38	15	0	0	8	0	5	0	0	15	0	3	0	0
11:15 AM	11:30 AM	0	72	5	0	0	5	36	3	0	0	0	0	5	0	0	18	0	0	0	0
11:30 AM	11:45 AM	3	46	3	0	0	10	54	5	0	0	3	0	8	0	0	3	0	0	0	0
11:45 AM	12:00 PM	0	64	3	0	0	8	62	8	0	0	5	3	13	0	0	13	0	0	0	0
12:00 PM	12:15 PM	0	77	3	0	0	8	54	10	0	0	0	0	8	0	0	3	0	3	0	0
12:15 PM	12:30 PM	0	56	0	0	0	18	36	18	0	0	15	0	3	0	0	15	0	3	0	0
12:30 PM	12:45 PM	0	67	8	0	0	8	62	26	0	0	10	0	10	0	0	21	0	0	0	0
12:45 PM	1:00 PM	0	54	3	0	0	5	54	8	0	0	3	0	8	0	0	21	0	0	0	0
1:00 PM	1:15 PM	5	72	5	0	0	8	54	13	0	0	5	3	8	0	0	13	0	5	0	0
1:15 PM	1:30 PM	3	62	5	0	0	10	72	15	0	0	5	0	3	0	0	18	3	0	0	0
1:30 PM	1:45 PM	0	72	3	0	0	3	59	8	0	0	10	0	8	0	0	5	0	0	0	0
1:45 PM	2:00 PM	3	67	8	0	0	3	54	8	0	0	8	0	5	0	0	8	0	0	0	0
2:00 PM	2:15 PM	0	90	15	0	0	5	82	10	0	0	5	0	8	0	0	10	3	3	0	0
2:15 PM	2:30 PM	0	92	5	0	0	5	64	13	0	0	8	0	10	0	0	10	0	3	0	0
2:30 PM	2:45 PM	0	51	10	0	0	5	56	8	0	0	5	0	13	0	0	8	0	3	0	0
2:45 PM	3:00 PM	3	67	5	0	0	13	79	10	0	0	15	0	5	0	0	10	0	0	0	0
3:00 PM	3:15 PM	8	64	3	0	0	10	97	13	0	0	3	0	8	0	0	10	0	3	0	0
3:15 PM	3:30 PM	3	56	15	0	0	3	113	5	0	0	8	3	5	0	0	13	0	3	0	0
3:30 PM	3:45 PM	3	74	8	0	0	15	128	8	0	0	5	0	13	0	0	8	0	3	0	0
3:45 PM	4:00 PM	3	74	5	0	0	18	149	5	0	0	3	0	21	0	0	13	0	3	0	0
4:00 PM	4:15 PM	0	92	3	0	0	5	92	0	0	0	5	0	10	0	0	18	0	0	0	0
4:15 PM	4:30 PM	5	100	10	0	0	10	120	13	0	0	8	0	5	0	0	15	0	3	0	0
4:30 PM	4:45 PM	3	85	3	0	0	18	138	10	5	0	8	0	13	0	0	15	3	0	0	0
4:45 PM	5:00 PM	0	82	8	0	0	13	138	10	0	0	15	3	8	0	0	10	0	3	0	0
5:00 PM	5:15 PM	0	120	10	0	0	15	141	3	0	0	13	0	10	0	0	28	0	8	0	0
5:15 PM	5:30 PM	0	51	5	0	0	23	136	13	0	0	8	0	15	0	0	15	0	10	0	0
5:30 PM	5:45 PM	3	74	8	0	0	13	128	18	0	0	10	0	13	0	0	15	3	0	0	0
5:45 PM	6:00 PM	0	87	8	0	0	8	113	5	0	0	15	0	8	0	0	5	0	0	0	0
6:00 PM	6:15 PM	0	56	5	0	0	23	128	10	0	0	8	0	8	0	0	18	3	0	0	0
6:15 PM	6:30 PM	0	62	5	0	0	23	108	13	0	0	21	0	10	0	0	8	0	0	0	0
6:30 PM	6:45 PM	0	64	13	0	0	8	87	3	0	0	10	0	18	0	0	23	0	10	0	0

Warrant 1- Eight Hour Vehicular Volume

Condition A - Minimum Vehicular Volume

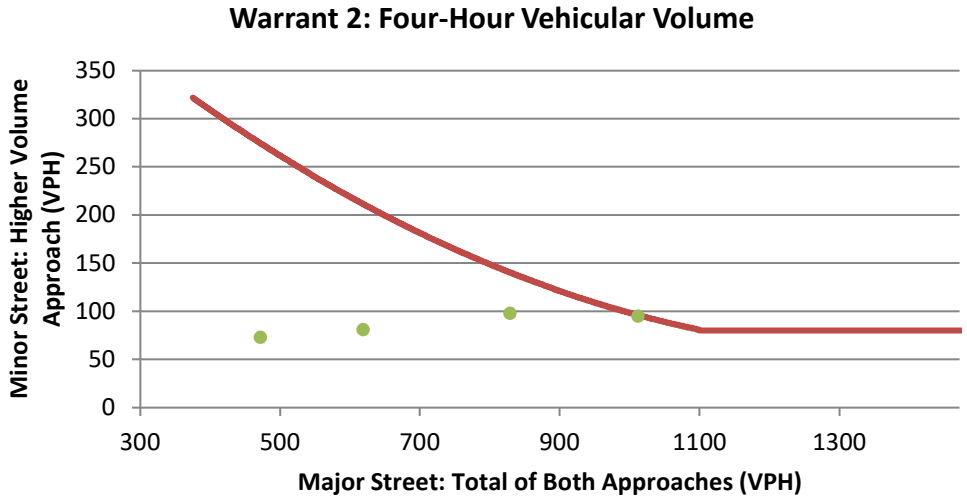
Time Period		Major Street		Minor Street		Meets
START	END	Epps Mill Rd	>500	Capital Way	>150	Condition?
5:45 PM	6:45 PM	829	Y	98	N	N
4:45 PM	5:45 PM	1012	Y	95	N	N
12:30 PM	1:30 PM	619	Y	81	N	N
10:30 AM	11:30 AM	472	N	73	N	N
3:15 PM	4:15 PM	877	Y	73	N	N
2:00 PM	3:00 PM	688	Y	69	N	N
11:30 AM	12:30 PM	546	Y	58	N	N
7:15 AM	8:15 AM	318	N	53	N	N

Condition B - Interruption of Continuous Traffic

Time Period		Major Street		Minor Street		Meets
START	END	Epps Mill Rd	>750	Capital Way	>75	Condition?
5:45 PM	6:45 PM	829	Y	98	Y	**Y**
4:45 PM	5:45 PM	1012	Y	95	Y	**Y**
12:30 PM	1:30 PM	619	N	81	Y	N
10:30 AM	11:30 AM	472	N	73	N	N
3:15 PM	4:15 PM	877	Y	73	N	N
2:00 PM	3:00 PM	688	N	69	N	N
11:30 AM	12:30 PM	546	N	58	N	N
7:15 AM	8:15 AM	318	N	53	N	N

Warrant 2 - Four Hour Vehicular Volume

1 Major & 1 Minor



Time Period		Major Street Vol.	Minor Street Vol.	Total Volume	Above
Start	End	(both approaches)	(higher approach)	(all approaches)	Curve?
10:30 AM	11:30 AM	472	73	545	NO
12:30 PM	1:30 PM	619	81	700	NO
4:45 PM	5:45 PM	1012	95	1107	NO
5:45 PM	6:45 PM	829	98	927	NO

Warrant 3 - Peak Hour Volume

PART A: Peak Hour Delay

NOTE: Requirements 1 - 3 must ***ALL*** be met for the ***SAME*** hour for Part A of warrant to be met

1. Stopped Delay

1 Lane Approach	
Stopped Delay: (veh*hr)	**1**
Requirement Met:	**NO**

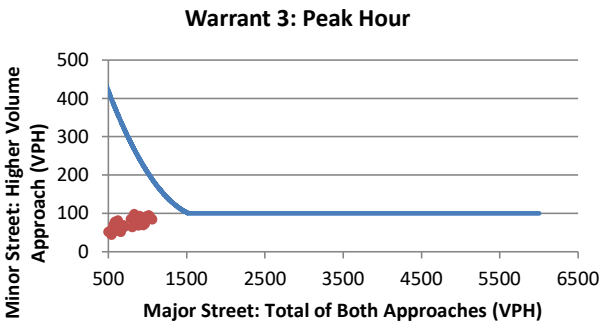
2. Minor Approach Volume

1 Moving Lane	
Approach Volume (veh/hr)	**10**
Requirement Met:	**NO**

3. Total Entering Volume Serviced

3 Approaches	
Intersection Volume (veh/hr)	**342**
Requirement Met:	**NO**

PART B: Peak Hour Volume



TIME PERIOD START	TIME PERIOD END	Major Street (both approaches)	Minor Street (higher approach)	Above Curve?
6:00 AM	7:00 AM	177	22	NO
6:15 AM	7:15 AM	173	27	NO
6:30 AM	7:30 AM	215	30	NO
6:45 AM	7:45 AM	244	38	NO
7:00 AM	8:00 AM	274	40	NO
7:15 AM	8:15 AM	318	53	NO
7:30 AM	8:30 AM	305	50	NO
7:45 AM	8:45 AM	264	45	NO
8:00 AM	9:00 AM	237	43	NO
8:15 AM	9:15 AM	240	42	NO
8:30 AM	9:30 AM	263	45	NO
8:45 AM	9:45 AM	310	43	NO
9:00 AM	10:00 AM	353	48	NO
9:15 AM	10:15 AM	375	50	NO
9:30 AM	10:30 AM	387	44	NO
9:45 AM	10:45 AM	409	56	NO
10:00 AM	11:00 AM	439	63	NO
10:15 AM	11:15 AM	454	71	NO
10:30 AM	11:30 AM	472	73	NO
10:45 AM	11:45 AM	480	55	NO
11:00 AM	12:00 PM	502	52	NO
11:15 AM	12:15 PM	539	45	NO
11:30 AM	12:30 PM	546	58	NO
11:45 AM	12:45 PM	596	67	NO
12:00 PM	1:00 PM	575	66	NO
12:15 PM	1:15 PM	580	78	NO
12:30 PM	1:30 PM	619	81	NO
12:45 PM	1:45 PM	593	65	NO
1:00 PM	2:00 PM	612	55	NO
1:15 PM	2:15 PM	657	52	NO
1:30 PM	2:30 PM	669	62	NO
1:45 PM	2:45 PM	654	62	NO

Initial Risk Assessment

Large ROW Impacts to the Northwest quadrant of currently vacant land could slow down project delivery and be a risk item going forward for the design build teams. FHWA is currently willing to accept A Safety and Operational Analysis Report (SOAR) in lieu of an Interstate Access Request (IAR) report but this could change at any point during the project cycle including during the Design Build Procurement due to alternative technical concepts (ATC). This document is covered by 23 USC 407 and its production pursuant to fulfilling public planning requirements does not waive the provisions of 407.

DB2505, I-24 Epps Mill
Project # 75I024-S1-010
PIN 124683.6
Rutherford County

N

0 200 400 600

Total take
28.37 acres

LEGEND

PROPOSED RIGHT-OF-WAY ACQUISITION AREA

EXISTING RIGHT-OF-WAY

TYPE	YEAR	COUNTY	SHEET NO.
R.O.W.	2025	RUTHERFORD	1

SEALED BY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

EPPS MILL ROAD
PROPOSED
RIGHT-OF-WAY
ACQUISITION AREA

4/24/2025 11:51:44 AM
Y:\PROJECTS\00150000\00185000\18893 I-24 EPPS MILL RD - TDOT\DGN\75I024-08-ACQUISITION AREA.DGN

Environmental Studies

Environmental Studies Request

Project Information

Route: I-24

Termini: Interchange at Epps Mill Road/Buchanan Road; Epps Mill Road, From west of Capital Way to SR-2 (US-41)

County: Rutherford

PIN: 124683.06

Request

Request Type: Initial Environmental Study

Project Plans: Concept Layout & ETSA

Date of Plans: 03/28/2024

Location: Email Attachment

Certification

Requestor: Rachel Head

Title: TDOT Statewide Technical Specialist

Signature: Rachel M Head

Digitally signed by Rachel Head
Date: 2024.11.15 14:38:24 -06'00'

Ecology

Environmental Study

Technical Section

Section: Ecology

Study Results

Based on the information provided, an environmental boundaries report dated October 25, 2024, has been completed for the subject project. Species coordination has also been completed and is included within the EBR.

Commitments

Did the study of this project result in any environmental commitments? **No**

Additional Information

Is there any additional information or material included with this study? **Yes**

Type: Environmental Boundaries Report (EBR)

Location: Email Attachment

Certification

Responder: Evelyn DiOrio

Title: TDOT SR Technical Specialist

Signature: Evelyn DiOrio

Digitally signed by Evelyn DiOrio
Date: 2024.11.20 13:59:09 -06'00'

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
ENVIRONMENTAL DIVISION
REGION 3 ENVIRONMENTAL SECTION
6601 CENTENNIAL BOULEVARD
NASHVILLE, TENNESSEE 37243-1402
(615) 335-8783

BUTCH ELEY
DEPUTY GOVERNOR &
COMMISSIONER OF TRANSPORTATION

BILL LEE
GOVERNOR

MEMORANDUM

To: Dennis Crumby
Headquarters Environmental Section

From: Evelyn DiOrio
Region 3 Environmental Section

Evelyn DiOrio Digitally signed by Evelyn DiOrio Date: 2024.10.31 09:12:33 -05'00'

Date: October 25, 2024

Subject: ENVIRONMENTAL BOUNDARIES FOR:
Rutherford County, I-24, Interchange at Epps Mill Road/Buchanan Road; Epps Mill Road, From west of Capital Way to SR-2 (US-41)
PIN: 124683.06

An ecological evaluation of the subject project has been conducted in response to an initial evaluation request with the following results:

STREAMS: There is one (1) stream within the project area.

WETLANDS: There are three (3) wetlands within the project area and one wetland just outside of the project area.

OTHER FEATURES: There are no other features within the project area.

SPECIES:

- USFWS: Coordination with USFWS has been completed. USFWS concurred with TDOT's conclusion of **Not Likely to Adversely Affect** for leafy prairie clover (*Dalea foliosa*) and it was determined there will be No Effect to any other federally listed species.

- TWRA: TWRA coordination was completed and the project is not anticipated to adversely affect any state listed animal species.

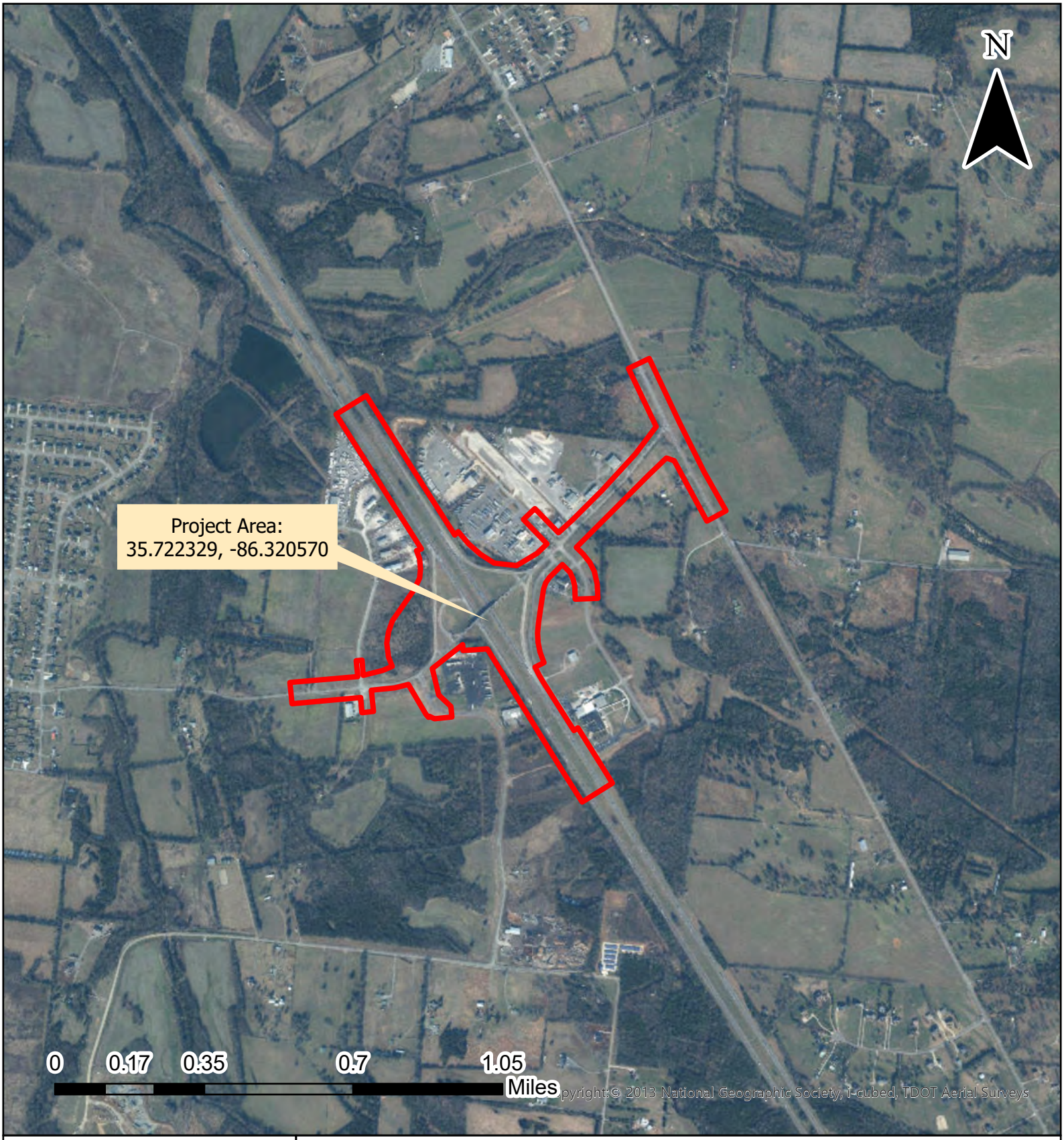
- TDEC DNA: Coordination with TDEC DNA was completed and no impacts to state listed plants are anticipated.

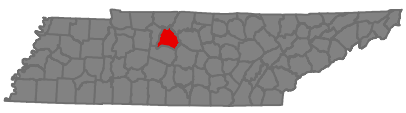
SPECIAL NOTES: There are no special notes for the subject project.

COMMITMENTS: There are no commitments for the subject project.

If the scope of work for this project is revised, please contact the regional biologist for additional review and agency coordination as soon as possible. Your assistance is appreciated. If you have any questions or comments, please contact me at (615) 837-5004 or evelyn.diorio@tn.gov.

xc: Anthony Myers
R3.EnvTechOffice
TDOT.Env.Ecology

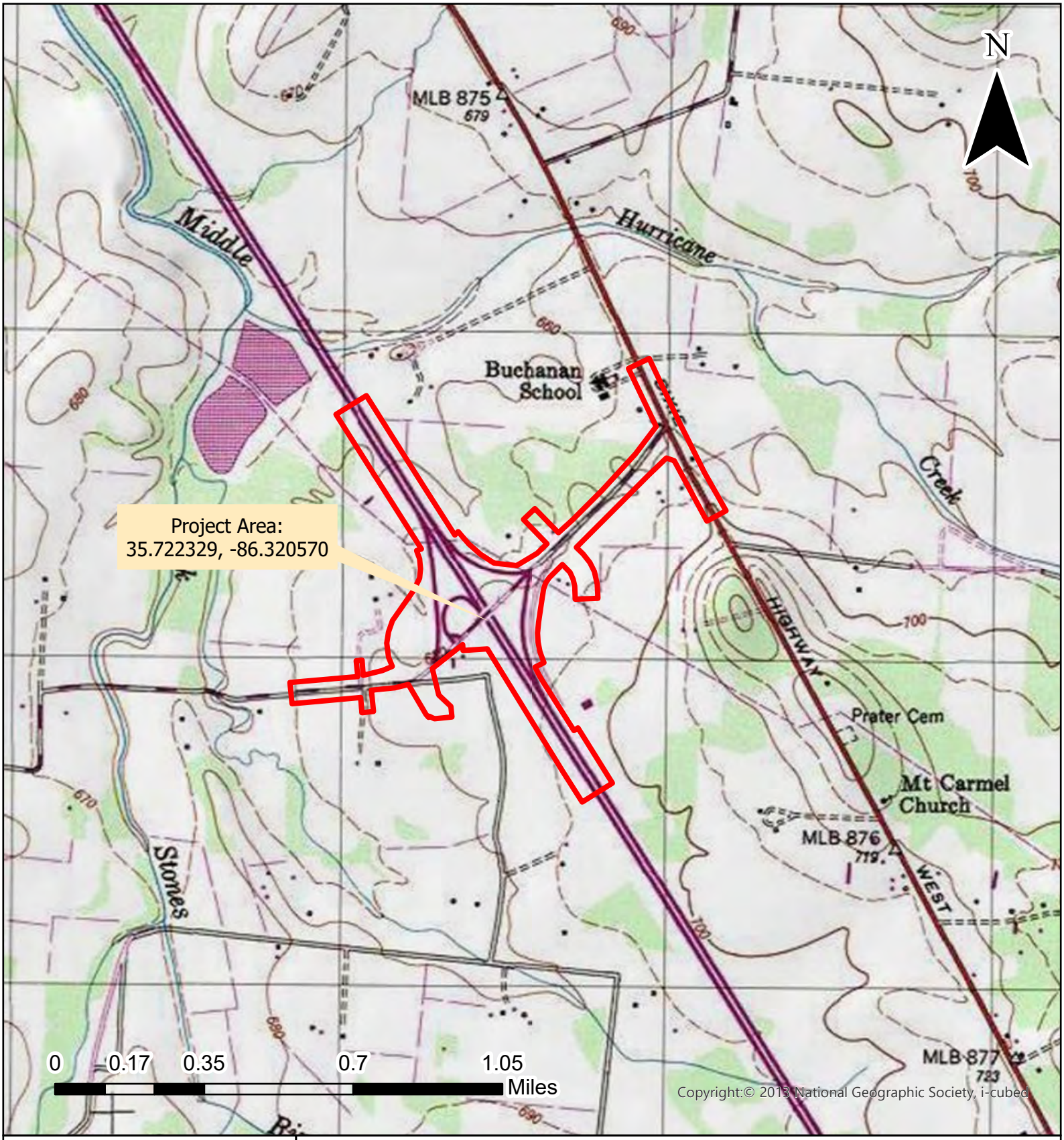




Rutherford County, Interchange at Epps Mill Road/ Buchanan Road; Epps Mill Road, From west of Capital Way to SR-2

PIN: 124683.06

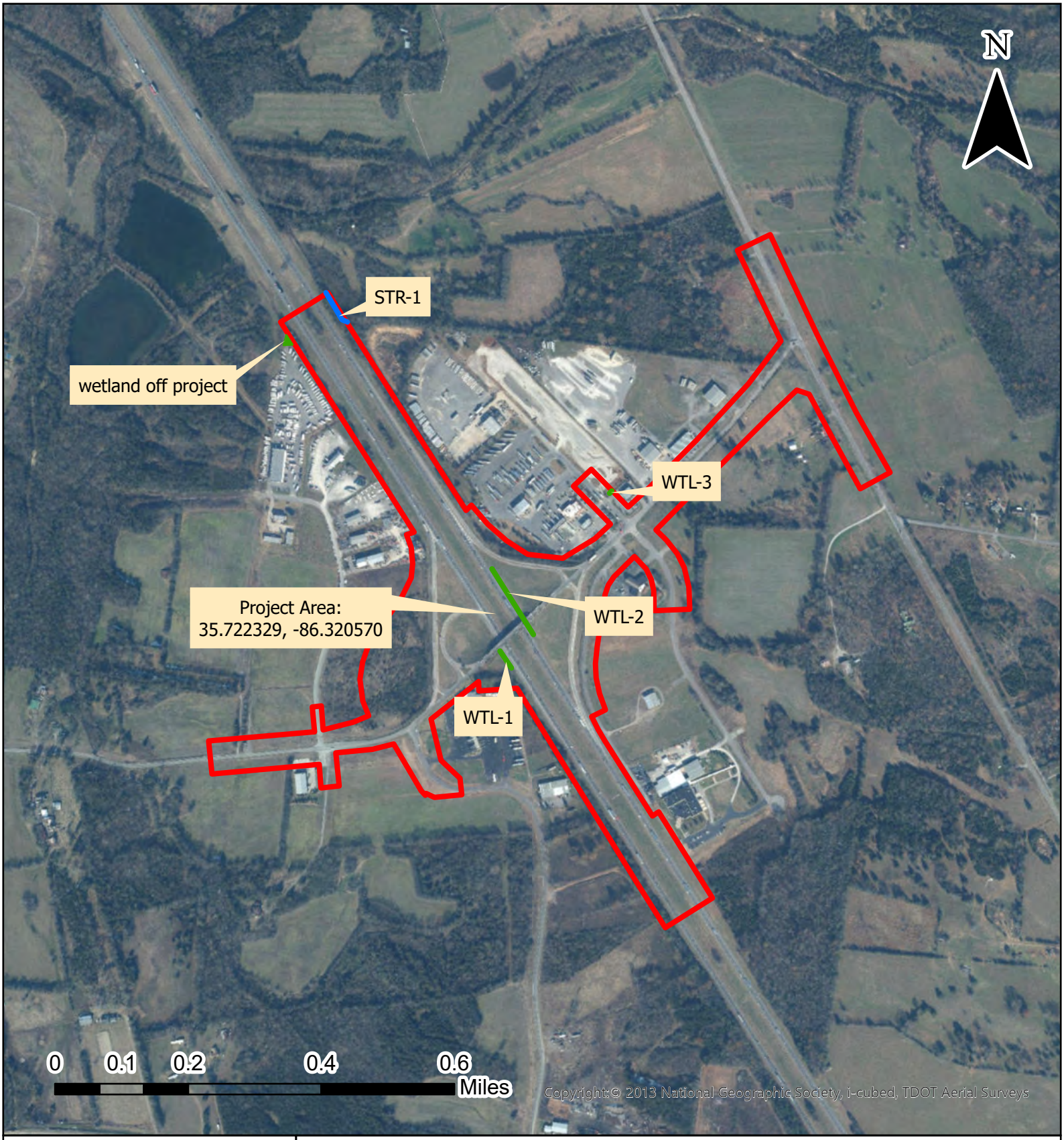
TN TDOT Department of Transportation



Rutherford County, Interchange at Epps Mill Road/ Buchanan Road; Epps Mill Road, From west of Capital Way to SR-2

PIN: 124683.06

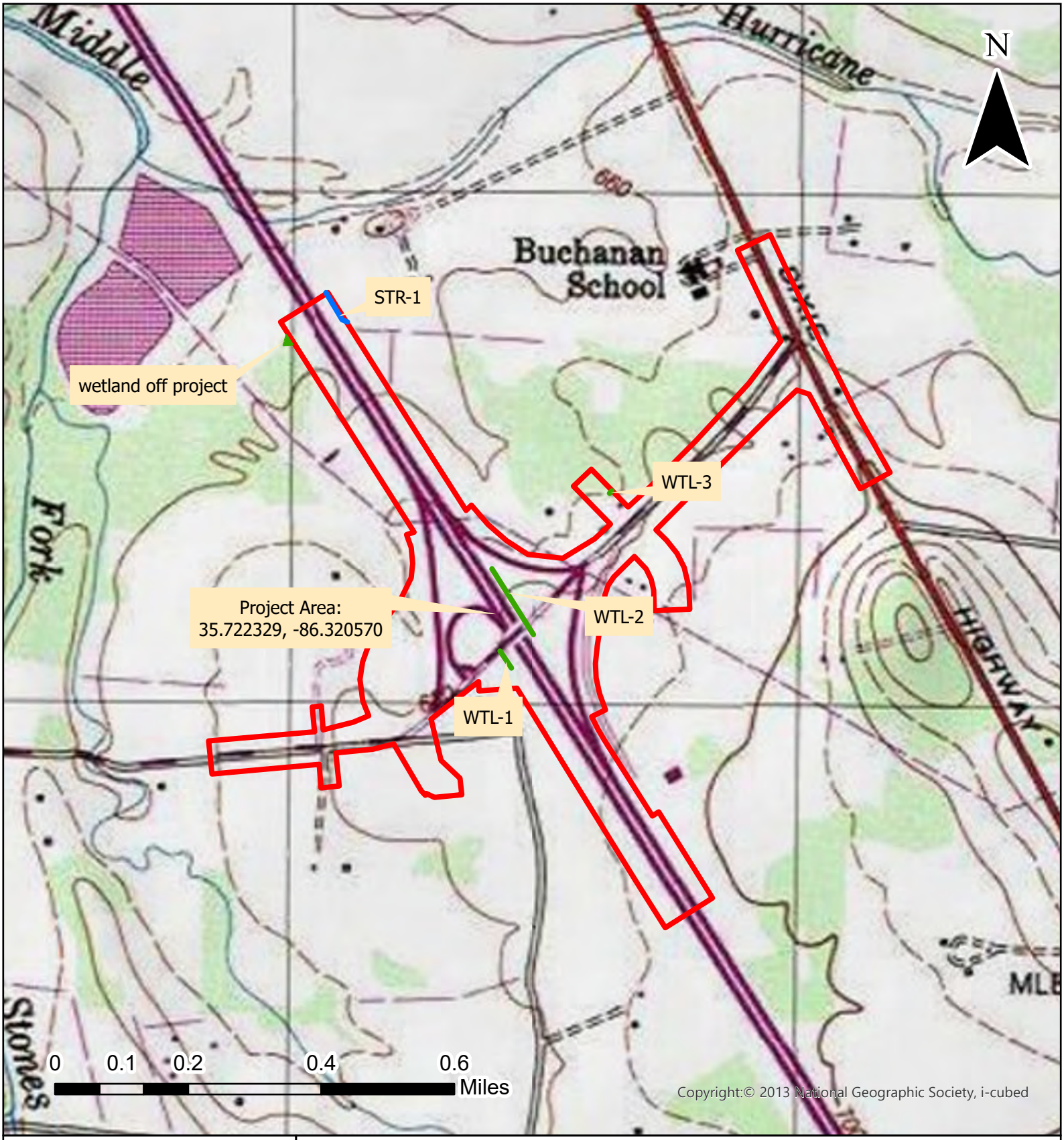
TN TDOT Department of Transportation



Rutherford County, Interchange at Epps Mill Road/ Buchanan Road; Epps Mill Road, From west of Capital Way to SR-2

PIN: 124683.06

TN TDOT Department of Transportation



Rutherford County, Interchange at Epps Mill Road/ Buchanan Road; Epps Mill Road, From west of Capital Way to SR-2

PIN: 124683.06

TN TDOT Department of Transportation

Project Name: Interchange at Epps Mill Road/Buchanan Road; Epps Mill Road, From west of Capital Way to SR-2 **PIN**:124683.06

Water Resource Table

Based on: ETSA

Date: 3/29/2024

Water Resources (Non-Wetland)

Label	Type	Latitude	Longitude	Receiving Waters	Quality
STR-1	Intermittent Stream	35.728237	-86.324907	Hurricane Creek	Unassessed

Water Resources (Wetland)*

Label	Type	Latitude	Longitude	Receiving Waters	Quality
WTL-1	Emergent	35.72147	-86.320737	N/A	Low Resource Value
WTL-2	Emergent	35.722939	-86.32089	N/A	Low Resource Value
WTL-3	Emergent	35.724615	-86.318577	N/A	Low Resource Value

Ecology Field Data Sheet: **Water Resources**

Project: Rutherford Co.	Interchange at Epps Mill Road/Buchanan Road		PIN:124683.06
Biologist:	MLB/EWD	**Affiliation:** -TDOT	**Date:** 9/20/2024

1-Station: from plans	I-24 WB north of interchange									
2-Map label and name	STR-1									
3-Latitude/Longitude	35.728238, -86.324907									
4-Feature description:										
-channel identification	perennial stream		intermittent stream	✓	ephemeral stream		wwc			
-HD score (if applicable)	0									
-OHWM indicators	bed & banks		deposition		presence of litter debris	✓	scour		veg absent, bent, matted	✓
	change in plant community	✓	destruction of terrestrial veg		multiple observe flow events		sediment sorting		water staining	
	change in soil character		leaf litter disturb or absent		natural line impressed on bank		shelving		wracking	
-channel bottom width	3.4 ft		-top of bank width	7 ft						
-width and max depth at ordinary high water mark	W: 4.1 ft		D: 0.2 ft							
-width at bankfull	5.8 ft									
-bank height	LDB - 1.3 ft		RDB - 0.6 ft							
-riffle/pool complex or other specialized habitat present?	no									
-dominant riparian species: ----------(LDB /RDB)----------	LDB: Elm, Hackberry									
	RDB: Elm, Cedar									
-particle size distribution %	Silt/Sand: 100		Gravel: 0		Cobble: 0		Boulder: 0		Bedrock: 0	
5-photo numbers	1-3									
6-HUC -8 Code & Name	05130203 Stones River									
7-Assessed	yes		no	✓						
8-ETW	yes		no	✓						
9-303 (d) List	yes		siltation		habitat:		other:			
	no	✓								

10-Notes

Culvert size and Condition

N/A

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody:	Date/Time: See notes
Assessors/Affiliation: SLN, EWD TDOT	Project ID : 124683.06
Site Name/Description: Interchange at Epps Mill Road/Buchanan Road	
Site Location: STR-2	
HUC (12 digit): 051302030202 Middle Fork Stones River	Lat/Long:
Previous Rainfall (7-days) : 1.59 inches	35.727878, -86.324615
Precipitation this Season vs. Normal : abnormally wet elevated **average** low abnormally dry unknown Source of recent & seasonal precip data : NOAA	
Watershed Size : <2 square miles	County: Rutherford Co.
Soil Type(s) / Geology : Egam silt loam	Source: NRCS
Surrounding Land Use : Wooded, Roadway, Open field	
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe Moderate **Slight** Absent	

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	✓	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	✓	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	✓	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	✓	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	✓	Stream
6. Presence of fish (except *Gambusia*)	✓	Stream
7. Presence of naturally occurring ground water table connection		Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	✓	Stream
9. Evidence watercourse has been used as a supply of drinking water	✓	Stream

NOTE: If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = Stream

Secondary Indicator Score (if applicable) = 10.5

Justification / Notes :

Secondary indicator scoring conducted during dry season on 7/28/20.
Water in feature and iron film due to groundwater observed on 1/29/21.

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 1)		**Absent**	**Weak**	**Moderate**	**Strong**
1. Continuous bed and bank	0	0	1	2	3
2. Sinuous channel	0	0	1	2	3
3. In-channel structure: riffle-pool sequences	0	0	1	2	3
4. Sorting of soil textures or other substrate	0	0	1	2	3
5. Active/relic floodplain	0	0	0.5	1	1.5
6. Depositional bars or benches	0	0	1	2	3
7. Braided channel	0	0	1	2	3
8. Recent alluvial deposits	0.5	0	0.5	1	1.5
9. Natural levees	0	0	1	2	3
10. Headcuts	0	0	1	2	3
11. Grade controls	0.5	0	0.5	1	1.5
12. Natural valley or drainageway	0	0	0.5	1	1.5
13. At least second order channel on existing USGS or NRCS map	0	No = 0		Yes = 3	

B. Hydrology (Subtotal = 3.5)		**Absent**	**Weak**	**Moderate**	**Strong**
14. Subsurface flow/discharge into channel	0	0	1	2	3
15. Water in channel and >48 hours since sig. rain	0	0	1	2	3
16. Leaf litter in channel (January – September)	0.75	1.5	1	0.5	0
17. Sediment on plants or on debris	0.5	0	0.5	1	1.5
18. Organic debris lines or piles (wrack lines)	0.75	0	0.5	1	1.5
19. Hydric soils in channel bed or sides of channel	1.5	No = 0		Yes = 1.5	

C. Biology (Subtotal = 6)		**Absent**	**Weak**	**Moderate**	**Strong**
20. Fibrous roots in channel bed [1]	2.5	3	2	1	0
21. Rooted plants in the thalweg [1]	3	3	2	1	0
22. Crayfish in stream (exclude in floodplain)	0	0	1	2	3
23. Bivalves/mussels	0	0	1	2	3
24. Amphibians	0	0	0.5	1	1.5
25. Macrobenthos (record type & abundance)	0	0	1	2	3
26. Filamentous algae; periphyton	0	0	1	2	3
27. Iron oxidizing bacteria/fungus	0	0	0.5	1	1.5
28.Wetland plants in channel bed [2]	0.5	0	0.5	1	1.5

[1] Focus is on the presence of terrestrial plants.

[2] Focus is on the presence of aquatic or wetland plants.

Total Points = 10.5

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

11. One tree base.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Interchange at Epps Mill Road/Buchanan Road PIN:124683.06 City/County: Rutherford Sampling Date: 7/27/20

Applicant/Owner: Tennessee Department of Transportation (TDOT) State: TN Sampling Point: WTL-1

Investigator(s): SLN Section, Township, Range: --

Landform (hillslope, terrace, etc.): Roadside ditch Local relief (concave, convex, none): Concave Slope (%): _____

Subregion (LRR or MLRA): LRR N Lat: 35.721574 Long: -86.320790 Datum: WGS-84

Soil Map Unit Name: Bradyville silt loam NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Roadside ditch wetland with bedrock or cement bottom.
Photo 5

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ✓ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No _____	Depth (inches): 3	
Water Table Present?	Yes _____	No _____	Depth (inches): _____	
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): surface	**Wetland Hydrology Present?** Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: WTL-1

Tree Stratum (Plot size: 10m)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling Stratum (Plot size: 5m)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Shrub Stratum (Plot size: 5m)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size: 1.5m)			
1. Eleocharis obtusa, Blunt Spikerush	30	Yes	OBL
2. Ludwigia repens, Creeping Primrose-Willow	30	Yes	OBL
3. Echinochloa crus-galli, Barnyard Grass	5	No	FAC
4. Paspalum dilatatum, Dallisgrass	5	No	FAC
5. Cyperus iria, Rice Flatsedge	10	No	FACW
6.			
7.			
8.			
9.			
10.			
11.			
	80 = Total Cover		
50% of total cover: 40	20% of total cover: 16		
Woody Vine Stratum (Plot size: 10m)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: 0 (A)	0 (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL Sampling Point: WTL-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10 YR 4/2	95	10YR 3/6	5	C	M	SICLO	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✓ **No** _____

Remarks:

Bedrock or concrete underneath. Deeper sample not possible.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Interchange at Epps Mill Road/Buchanan Road PIN:124683.06 City/County: Rutherford Sampling Date: 7/27/20

Applicant/Owner: Tennessee Department of Transportation (TDOT) State: TN Sampling Point: WTL-1 UPL

Investigator(s): SLN Section, Township, Range: --

Landform (hillslope, terrace, etc.): Road shoulder Local relief (concave, convex, none): Convex Slope (%): _____

Subregion (LRR or MLRA): LRR N Lat: 35.721497 Long: -86.320705 Datum: WGS-84

Soil Map Unit Name: Bradyville silt loam NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrology indicators present.

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: WTL-1 UPL

Tree Stratum (Plot size: 10m)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling Stratum (Plot size: 5m)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Shrub Stratum (Plot size: 5m)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size: 1.5m)			
1. Sorghum halepense, Johnson Grass	5	No	FACU
2. Paspalum dilatatum, Dallisgrass	25	Yes	FAC
3. Plantago lanceolata, Narrowleaf Plantain	35	Yes	UPL
4. Erigeron strigosus, Daisy Fleabane	5	No	FACU
5. UID Grass	15	No	
6.			
7.			
8.			
9.			
10.			
11.			
	85 = Total Cover		
50% of total cover: 42.5	20% of total cover: 17		
Woody Vine Stratum (Plot size: 10m)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: 0 (A)	0 (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WTL-1 UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
1-6	10YR 3/3	100					SILO	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Rocky fill material. Could not retrieve deeper sample.

WTL-1

SITUATION **TRAM REQUIRED**

- Wetland is a “roadside ditch” and not part of a larger wetland – constructed primarily to convey runoff……...NO, COMPLETE EXCEPTIONAL STATUS WETLAND SECTION ONLY

- Fringe wetlands associated with ponds, impoundments, reservoirs, large lakes…….YES- USE NON-HGM TRAM

- Created Depression wetlands, semi-permanent to permanently inundated (<6.6-feet deep)……...…….YES-USE NON-HGM TRAM

- Wetland impacts greater than 0.10 acre….....YES

NOTE: The Exceptional Status Wetland section must be completed for all proposed wetland alterations, including wetlands situations where HGM assessment is not required or the Non-HGM TRAM is used, including proposed wetlands impacts less than 0.10 acre.

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table WTL-1	Yes/No	Affirmative Result
1	The wetland has been designated as an **Outstanding Natural Resource Water (ONRW)** by the Department under 0400-40-03-.06(5)(a)**.**	No	**ORNW**
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	No	**ETW**
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	No	**ETW**
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	No	**ETW**
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as "**Critical Habitat**" for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	No	**ETW**
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	No	**ETW**
7	**The wetland exhibits outstanding ecological or recreational values such as, but not limited to, those as outlined in 8-12**	No	Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee **ranked G2, G1, or more imperiled** at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).	No	Determination Required by TDEC
9	The wetland is **an uncommon resource** (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.	No	Determination Required by TDEC
10	The wetland is an **older aged forested wetland** comprised of overstory trees with an average diameter at breast height (dbh) being **greater than or equal to 30 in** within the WAA.	No	Determination Required by TDEC
11	The wetland is observed and documented to be a **significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area**. These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.	No	Determination Required by TDEC
12	The wetland is **hydrologically connected** to and/or has significant ecological contribution to an **ETW**	No	Determination Required by TDEC
13	The wetland has High Resource Value as determined by a **score of 75 and above** using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)	No	Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Interchange at Epps Mill Road/Buchanan Road PIN:124683.06 City/County: Rutherford Sampling Date: 7/28/20

Applicant/Owner: Tennessee Department of Transportation (TDOT) State: TN Sampling Point: WTL-2

Investigator(s): SLN, EWD Section, Township, Range: --

Landform (hillslope, terrace, etc.): Roadside Ditch Local relief (concave, convex, none): Concave Slope (%): 3

Subregion (LRR or MLRA): LRR N Lat: 35.722175 Long: -86.320297 Datum: WGS-84

Soil Map Unit Name: Talbott silt loam, Talbott-Barfield-Rock outcrop complex NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation ✓, Soil ✓, or Hydrology ✓ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil ✓, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Photo #: 6

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ✓ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ✓ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No _____	Depth (inches): 4
Water Table Present?	Yes _____	No _____	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: WTL-2

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 10m)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling Stratum (Plot size: 5m)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Shrub Stratum (Plot size: 5m)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size: 1.5m)			
1. Carex frankii, Frank's Sedge	5	No	OBL
2. Rotala ramosior, Toothcup	20	No	OBL
3. Eleocharis obtusa, Blunt Spikerush	30	Yes	OBL
4. Ludwigia repens, Creeping Primrose-Willow	40	Yes	OBL
5. Echinochloa crus-galli, Barnyard Grass	10	No	FAC
6. Rhynchospora recognita, Globe Beaksedge	5	No	FACW
7.			
8.			
9.			
10.			
11.			
	110 = Total Cover		
50% of total cover: 55	20% of total cover: 22		
Woody Vine Stratum (Plot size: 10m)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: 0 (A)	0 (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ✓ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL Sampling Point: WTL-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	2.5Y 2.5/1	97					SILO	
0-4	10YR 3/4	3					SILO	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Bedrock or concrete ditch

Depth (inches): 4

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Soils contained heavy organic content.

Bedrock or concrete underneath. Deeper sample not possible.

No hydric soil indicator met possibly due to shallow barrier, heavy alteration, or both. Feature still considered wetland due to exhibited ecological characteristics.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: I-24 Exit 89, PIN 124683.05 City/County: Rutherford Sampling Date: 7/28/20

Applicant/Owner: Tennessee Department of Transportation (TDOT) State: TN Sampling Point: WTL-2 UPL

Investigator(s): SLN Section, Township, Range: --

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 25

Subregion (LRR or MLRA): LRR N Lat: 35.722158 Long: -86.320236 Datum: WGS-84

Soil Map Unit Name: Talbott silt loam NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation ✓, Soil ✓, or Hydrology ✓ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrology indicators present.

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: WTL-2 UPL

Tree Stratum (Plot size: 10m)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		

50% of total cover: 0 20% of total cover: 0

Sapling Stratum (Plot size: 5m)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		

50% of total cover: 0 20% of total cover: 0

Shrub Stratum (Plot size: 5m)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		

50% of total cover: 0 20% of total cover: 0

Herb Stratum (Plot size: 1.5m)			
1. Plantago lanceolata, Narrowleaf Plantain	35	Yes	UPL
2. Paspalum dilatatum, Dallisgrass	10	No	FAC
3. Sorghum halepense, Johnson Grass	5	No	FACU
4. UID Grass	25	Yes	
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	75 = Total Cover		

50% of total cover: 37.5 20% of total cover: 15

Woody Vine Stratum (Plot size: 10m)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		

50% of total cover: 0 20% of total cover: 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: 0 (A)	0 (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WTL-2 UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/2	100					SILO	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Rocky fill material. Could not retrieve deeper sample.

WTL-2

SITUATION **TRAM REQUIRED**

- Wetland is a “roadside ditch” and not part of a larger wetland – constructed primarily to convey runoff……...NO, COMPLETE EXCEPTIONAL STATUS WETLAND SECTION ONLY

- Fringe wetlands associated with ponds, impoundments, reservoirs, large lakes…….YES- USE NON-HGM TRAM

- Created Depression wetlands, semi-permanent to permanently inundated (<6.6-feet deep)……...…….YES-USE NON-HGM TRAM

- Wetland impacts greater than 0.10 acre….....YES

NOTE: The Exceptional Status Wetland section must be completed for all proposed wetland alterations, including wetlands situations where HGM assessment is not required or the Non-HGM TRAM is used, including proposed wetlands impacts less than 0.10 acre.

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table WTL-2	Yes/No	Affirmative Result
1	The wetland has been designated as an **Outstanding Natural Resource Water (ONRW)** by the Department under 0400-40-03-.06(5)(a)**.**	No	**ORNW**
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	No	**ETW**
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	No	**ETW**
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	No	**ETW**
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as "**Critical Habitat**" for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	No	**ETW**
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	No	**ETW**
7	**The wetland exhibits outstanding ecological or recreational values such as, but not limited to, those as outlined in 8-12**	No	Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee **ranked G2, G1, or more imperiled** at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).	No	Determination Required by TDEC
9	The wetland is **an uncommon resource** (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.	No	Determination Required by TDEC
10	The wetland is an **older aged forested wetland** comprised of overstory trees with an average diameter at breast height (dbh) being **greater than or equal to 30 in** within the WAA.	No	Determination Required by TDEC
11	The wetland is observed and documented to be a **significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area**. These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.	No	Determination Required by TDEC
12	The wetland is **hydrologically connected** to and/or has significant ecological contribution to an **ETW**	No	Determination Required by TDEC
13	The wetland has High Resource Value as determined by a **score of 75 and above** using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)	No	Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Interchange at Epps Mill Road/Buchanan Road PIN:124683.06 City/County: Rutherford Sampling Date: 9/20/2024
Applicant/Owner: Tennessee Department of Transportation (TDOT) State: TN Sampling Point: WTL-3
Investigator(s): EWD/MLB Section, Township, Range: --
Landform (hillslope, terrace, etc.): Hillslopes Local relief (concave, convex, none): concave Slope (%): _____
Subregion (LRR or MLRA): LRR:N Lat: 35.724615 Long: -86.318577 Datum: WGS-84
Soil Map Unit Name: Talbott-Barfield-Rock outcrop complex, 2 to 12 percent slopes NWI classification: Not Mapped
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓ No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:
Photo 7

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ✓ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: WTL-3

Tree Stratum (Plot size: 10m)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling Stratum (Plot size: 5m)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Shrub Stratum (Plot size: 5m)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size: 1.5m)			
1. Eleocharis obtusa (blunt spikerush)		Yes	OBL
2. Ludwigia palustris (marsh seedbox)		Yes	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Woody Vine Stratum (Plot size: 1.5m)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: 0 (A)	0 (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL Sampling Point: WTL-3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	2.5Y 2.5/1	100					organic	almost muck but not fine enough
4-5.5	10YR 4/2	97	10YR 4/6	3			silty clay loam	
5.5-10	2.5 YR 4/6	95	10YR 5/3	5			clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ✓ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Clay

Depth (inches): 5.5 inches from surface

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Interchange at Epps Mill Road/Buchanan Road PIN:124683.06 City/County: Rutherford Sampling Date: 9/20/2024

Applicant/Owner: Tennessee Department of Transportation (TDOT) State: TN Sampling Point: WTL-3 UPL

Investigator(s): EWD/MLB Section, Township, Range: --

Landform (hillslope, terrace, etc.): Hillslopes Local relief (concave, convex, none): convex Slope (%): _____

Subregion (LRR or MLRA): LRR:N Lat: 35.724615 Long: -86.318577 Datum: WGS-84

Soil Map Unit Name: Talbott-Barfield-Rock outcrop complex, 2 to 12 percent slopes NWI classification: Not Mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: WTL-3 UPL

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 10m)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling Stratum (Plot size: 5m)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Shrub Stratum (Plot size: 5m)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size: 1.5m)			
1. Paspalum dilatatum (dallisgrass)	30	Yes	FAC
2. Cynodon dactylon (Bermudagrass)	40	Yes	FACU
3. Taraxacum officinale (common dandelion)	10	No	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	80 = Total Cover		
50% of total cover: 40	20% of total cover: 16		
Woody Vine Stratum (Plot size: 1.5m)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: 0 (A)	0 (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL Sampling Point: WTL-3 UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-3 in	10YR 3/3	100					clay loam	rocky fill underneath, couldn't get deeper sample

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: rocky fill

Depth (inches): 3 in

Hydric Soil Present? **Yes** ____ **No** ✓

Remarks:

WTL-3

SITUATION **TRAM REQUIRED**

- Wetland is a “roadside ditch” and not part of a larger wetland – constructed primarily to convey runoff……...NO, COMPLETE EXCEPTIONAL STATUS WETLAND SECTION ONLY

- Fringe wetlands associated with ponds, impoundments, reservoirs, large lakes…….YES- USE NON-HGM TRAM

- Created Depression wetlands, semi-permanent to permanently inundated (<6.6-feet deep)……...…….YES-USE NON-HGM TRAM

- Wetland impacts greater than 0.10 acre….....YES

NOTE: The Exceptional Status Wetland section must be completed for all proposed wetland alterations, including wetlands situations where HGM assessment is not required or the Non-HGM TRAM is used, including proposed wetlands impacts less than 0.10 acre.

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table WTL-3	Yes/No	Affirmative Result
1	The wetland has been designated as an **Outstanding Natural Resource Water (ONRW)** by the Department under 0400-40-03-.06(5)(a)**.**	No	**ORNW**
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	No	**ETW**
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	No	**ETW**
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	No	**ETW**
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as "**Critical Habitat**" for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	No	**ETW**
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	No	**ETW**
7	**The wetland exhibits outstanding ecological or recreational values such as, but not limited to, those as outlined in 8-12**	No	Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee **ranked G2, G1, or more imperiled** at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).	No	Determination Required by TDEC
9	The wetland is **an uncommon resource** (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.	No	Determination Required by TDEC
10	The wetland is an **older aged forested wetland** comprised of overstory trees with an average diameter at breast height (dbh) being **greater than or equal to 30 in** within the WAA.	No	Determination Required by TDEC
11	The wetland is observed and documented to be a **significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area**. These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.	No	Determination Required by TDEC
12	The wetland is **hydrologically connected** to and/or has significant ecological contribution to an **ETW**	No	Determination Required by TDEC
13	The wetland has High Resource Value as determined by a **score of 75 and above** using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)	No	Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

Photo 1. STR-1 looking downstream in winter when water is present

Photo 2. STR-1 looking upstream

Photo 3. STR-1 looking downstream

Photo 4. Wetland off project

Photo 5. WTL-1

Photo 6. WTL-2

NW
N
NE
E
SE
330
0
30
60
90
120
45°NE (T) 35.724615°, -86.318577° ±9ft 686ft
20 Sep 2024, 11:09:13 AM

Photo 7. WTL-3

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Tennessee Ecological Services Field Office
446 Neal Street
Cookeville, Tennessee 38501
(931) 528-6481

October 24, 2024

Mr. Steve Walker
Tennessee Department of Transportation
Environmental Planning and Permits
James K. Polk Building, Suite 900
505 Deaderick Street
Nashville, Tennessee 37243-0349

Subject: FWS# 2024-0093125. Proposed Interstate 24 Ramp Improvements at Epps Mill Road/Buchanan Road and from Epps Mill Road/Capital Way Intersection to State Route 2; PIN 124683.06, P.E. 75100-1124-44, Rutherford County, Tennessee.

Dear Mr. Walker:

Thank you for your correspondences dated September 30 and October 11, 2024, transmitting results and correspondence from a plant survey for the proposed Interstate (I-) 24 Ramp Improvements at Epps Mill Road/Buchanan Road and from Epps Mill Road/Capital Way Intersection to State Route 2 in Rutherford County, Tennessee. You have determined that the project is "not likely to adversely affect" the federally endangered leafy prairie clover (*Dalea foliosa*) due to negative surveys performed on July 27 and 28, 2020, of the original project footprint and on September 20, 2024, of glade areas within a newly expanded portion. The 2020 survey was performed during the flowering period, but the 2024 survey was outside the flowering window for this species. Both surveys were performed by a qualified individual within the Tennessee Department of Transportation's Ecology Section and prairie clover species photographed during the 2024 survey were verified as not being leafy prairie clover and likely Gattinger prairie clover (*Dalea gattingeri*) by a botanist within the Tennessee Department of Environment and Conservation, Natural Heritage Program. We have reviewed the subject proposal and offer the following comments.

Due to the negative survey results for this species within the project area footprint, we concur with your determination of "not likely to adversely affect" for the leafy prairie clover. We are not aware of any other federally listed or proposed species that would be impacted by the project. Therefore, based on the best information available at this time, we believe that your obligations

have been fulfilled for all species that currently receive protection under the Endangered Species Act of 1973 (ESA). Obligations under section 7 of the ESA must be reconsidered if (1) new information reveals impacts of the proposed action that may affect listed species or critical habitat in a manner not previously considered, (2) the proposed action is subsequently modified to include activities which were not considered during this consultation, or (3) new species are listed or critical habitat designated that might be affected by the proposed action.

The environmental boundaries survey located three wetlands along existing I-24. If wetland impacts would occur, the U.S. Army Corps of Engineers, Nashville District, Regulatory Branch can be reached at 615-369-7500.

If you have any questions regarding our comments, please contact John Griffith at 931/525-4995 or by email at *john_griffith@fws.gov*.

Sincerely,

Field Supervisor

xc: Casey Parker, TWRA, Jackson, TN

Steve A. Walker

From: Griffith, John <john_griffith@fws.gov>
Sent: Monday, June 10, 2024 2:34 PM
To: Steve A. Walker
Cc: Sikula, Nicole R; Casey Parker
Subject: [EXTERNAL] Re: IPaC delivered Official Species List for project: TDOT-Rutherford; I-24, interchange-Epps Mill/Buchanan Rd; Epps Mill-Capital Way; to SR-2 124683.06

***** This is an EXTERNAL email. Please exercise caution. DO NOT open attachments or click links from unknown senders or unexpected email - STS-Security. *****

Steve,

Thank you for requesting our review of the proposed Interstate (I-) 24 Interchange modifications at Epps Mill Road and Buchanan Road and widening of Epps Mill Road from west of Capital Way to State Route 2 in Rutherford County, Tennessee. The project would involve reconstruction of ramps at the I-24 Interchange and widening a portion of Epps Mill Road to three lanes. The project is currently scheduled to be let to construction in 2025. You have requested a list of federally threatened or endangered species that may be present in the project area.

Our database indicates that the federally endangered leafy prairie clover (*Dalea foliosa*) could occur within the project area. A qualified individual(s) should assess potential impacts to this species. As a designated representative for the Federal Highway Administration (FHWA), the Tennessee Department of Transportation may submit its assessment and findings directly to this office for review and concurrence. A finding of "may affect" can be addressed through formal consultation by the FHWA, except when the Service concurs, in writing, that a proposed action “is not likely to adversely affect” listed species.

The federally petitioned and State-listed streamside salamander (*Ambystoma barbouri*) has been observed in nearby tributaries to the Middle Fork Stones River. This species occurs in scattered populations across Middle Tennessee and has been observed in wetlands and seasonal tributaries with limestone bedrock. If habitat for this species is present in the project area, the Tennessee Wildlife Resources Agency should be contacted for potential concerns for the streamside salamander.

This email will serve as our official project response. Please let me know if we can offer further assistance. Thanks,

John Griffith
Transportation Biologist
U.S. Fish and Wildlife Service
Tennessee Field Office
931-525-4995 (office)
931-261-3755 (cell)

From: Administrator Email <ecosphere_support@ecosphere.fws.gov>
Sent: Monday, May 20, 2024 3:50 PM
To: Griffith, John <john_griffith@fws.gov>; Tennessee ES, FWS <tennesseeES@fws.gov>; Sykes, Robbie <robbie_sykes@fws.gov>; Alexander, Steven <steven_alexander@fws.gov>
Subject: IPaC delivered Official Species List for project: TDOT-Rutherford; I-24, interchange-Epps Mill/Buchanan Rd; Epps Mill-Capital Way; to SR-2 124683.06

To: IPaC point(s) of contact for Tennessee Ecological Services Field Office
Project Location: Rutherford County, Tennessee

IPaC has delivered an official Section 7 species list on behalf of your office. For your convenience, IPaC has created an ETK project (2024-0093125) with a new associated 'Species List Provided' event. A PDF file of the species list document is attached to the event and contact information for the project can be found on the last page of the PDF.

IPaC has automatically set the consultation status to "Closed". If you need to do any additional work in this project (*e.g.*, add staff, add events, change lead office, etc.), you must first change the status to "active" so that you can edit the project. You can access the project via the link, above.

Lead FWS Office:
The Tennessee Ecological Services Field Office is currently designated as the lead office for Section 7 on this project. The following additional offices have jurisdiction and have been notified: None. If another office is the lead office on this project, please access the project (via the link above) and update it. IPaC will not reset the Lead Office once it has been updated by a biologist.

*Projects created in ETK by IPaC have not been assigned to an FWS staff member. To identify the staff assigned to this project, please access the project (via the link above) and add their name(s).

TENNESSEE WILDLIFE RESOURCES AGENCY

ELLINGTON AGRICULTURAL CENTER
5107 EDMONDSON PIKE
NASHVILLE, TENNESSEE 37211

June 20, 2024

Re: Rutherford County, I-24 Interchange Epps Mill Road/Buchanan Road, PIN 124683.06

Mr. Steve Walker,

The Tennessee Wildlife Resources Agency has reviewed the information that you provided regarding the subject project in Rutherford County, Tennessee. Your letter to us requested comments by our agency regarding potential impacts to endangered species, wetlands, and other areas of concern as we may think pertinent due to the proposed project.

This project involves modifications to an existing interchange at I-24 and Epps Mill Rd. The proposed project termini (Interchange at Epps Mill Road/Buchanan Road; Epps Mill Road, from west of Capital Way to SR-2 (US-41) includes modifications of the existing interchange ramps at the I-24 interchange and the widening of Epps Mill Road to three lanes from near Capital Way to SR-2.

The initial information provided by TDOT and the data I have reviewed and compared to the proposed project, conclude that the project is not anticipated to adversely affect any federally or state-listed Endangered, Threatened, or Deemed-In-Need-of-Management species. Based upon these understandings, TWRA does not anticipate adverse impacts upon listed species under our authority due to the project and we have no concerns or objection to the proposed project. Re-coordination will be required if new species records are found or if the proposed project plans incorporate critical habitat for listed species of concern.

Thank you for the opportunity to review and comment on this proposed project. If you have further questions regarding this matter; please contact me at (731) 431-0012.

Sincerely,

Casey Parker
Wildlife Biologist/Liaison to TDOT and the Federal Highway Administration

Steve A. Walker

From: twrasurveymgmt@gmail.com
Sent: Monday, May 20, 2024 4:54 PM
To: Steve A. Walker; Casey Parker
Subject: [EXTERNAL] Environmental Review Request: 1716224400000

Steve Walker
Auto-generated email
DO NOT REPLY
Tennessee Wildlife Resource Agency has received your submission. If additional information is required, Biodiversity Division staff will reach out via the contact information you provided. Although we strive to respond to review requests as quickly as possible, a formal response may take up to 30 days.
Thank you,
TWRA Biodiversity

Steve A. Walker

From: Dillon Blankenship
Sent: Wednesday, October 9, 2024 10:20 AM
To: Steve A. Walker
Cc: Rita M. Thompson
Subject: RE: Rutherford; I-24; Interchange at Epps Mill Road/Buchanan Road; Epps Mill Road, From west of Capital Way to SR-2 (US-41); PIN 124683.06

Hi Steve,

Having reviewed the ERT report for the area you defined on 10/3/2024 2:20pm and the additional documentation you submitted, our office does not anticipate any impacts to rare, threatened, or endangered plant species from this project (TNNHP_ERT_993). You should retain a copy of this email as evidence of consultation with Division of Natural Areas. Should the project area be substantially modified beyond the current extent, our office would need to re-evaluate potential impacts to rare plant species.

Thank you for your proactive surveys and documentation, which made it very straightforward to look at the glade areas you identified. Our botanist agreed that the *Dalea* species you observed are most likely *Dalea gattingeri.*

Regards,

Dillon

Dillon Blankenship | Data Manager | Env. Review Coordinator
Division of Natural Areas | Natural Heritage Program
Davy Crockett Tower, 8th Floor
500 James Robertson Parkway
Nashville, TN 37243
p. 615-532-4799
dillon.blankenship@tn.gov
www.tn.gov/environment/natural-areas

We value your feedback! Please complete our customer satisfaction survey.

From: Steve A. Walker <Steve.A.Walker@tn.gov>
Sent: Thursday, October 3, 2024 2:25 PM
To: Dillon Blankenship <Dillon.Blankenship@tn.gov>
Cc: Rita M. Thompson <Rita.M.Thompson@tn.gov>

Subject: Rutherford; I-24; Interchange at Epps Mill Road/Buchanan Road; Epps Mill Road, From west of Capital Way to SR-2 (US-41); PIN 124683.06

Good afternoon Dillion,

I have attached a report generated for the subject project for your information. This project was previously coordinated through your office under **PIN 124683.05** in 2022 (previous response attached). There has been additional area added to the original project footprint since previous coordination efforts and the PIN number was changed to 124683.06. As a result of the additional area added two small glade areas were observed on the west side of I-24. These areas were assessed by TDOT ecology staff on 09/20/2024. I have attached the species observed along with photos from this survey for your information. Please let me know if the previous response would still be valid with the addition of the new area for the subject project or if you have any concerns for any plants listed within 4 miles for this project footprint.

Thanks Steve

Steve A.Walker| TESS AD
Environmental Division/Ecology Section Region 3
James K. Polk Building, 9th Floor
505 Deaderick Street, Nashville, TN 37243-0334
p. 615-253-9908
steve.a.walker@tn.gov
tn.gov/tdot

Follow TDOT: Facebook| X | Instagram | LinkedIn

TYPE	YEAR	COUNTY	FIGURE NO.
CR	2023	RUTHERFORD	6

STUDY AREA BEGINS 300 FEET BEFORE BEGIN PROJECT

APPROX. 150 FEET FROM END OF SIDE ROAD

APPROX. 50 FEET FROM PROP. R.O.W

BEGIN PROJECT

EPPS MILL ROAD

CAPITAL WAY

APPROX. 50 FEET FROM PROP. R.O.W

MATCHLINE SEE FIGURE 8

I-24 EB

I-24 WB

APPROX. 50 FEET FROM PROP. R.O.W

MATCHLINE SEE FIGURE 7

WTL-2

APPROX. 50 FEET FROM PROP. R.O.W

CEMETARY

WTL-1

MILLER ROAD

APPROX. 150 FEET FROM SIDE ROAD TIE

I-24 EB

I-24 WB

APPROX. 50 FEET FROM PROP. R.O.W

MILLER LANE

LEGEND

- ASPHALT PAVEMENT
- CONCRETE PAVEMENT
- BRIDGE
- EDGE OF TRAVELED WAY
- CUT LINE
- FILL LINE
- PRESENT RIGHT OF WAY
- PROPOPSED RIGHT OF WAY
- ETSA BOUNDARY

MATCHLINE SEE FIGURE 9

0 200' 400' 600'

N

ENVIRONMENTAL TECHNICAL STUDY AREA

I-24 INTERCHANGE AT EPPS MILL ROAD (EXIT 89)
LOG MILE 0.00 TO LOG MILE 0.86
RUTHERFORD COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 6
I-24 INTERCHANGE AT EPPS MILL ROAD (EXIT 89)
ETSA

3/29/2024 3:00:40 PM
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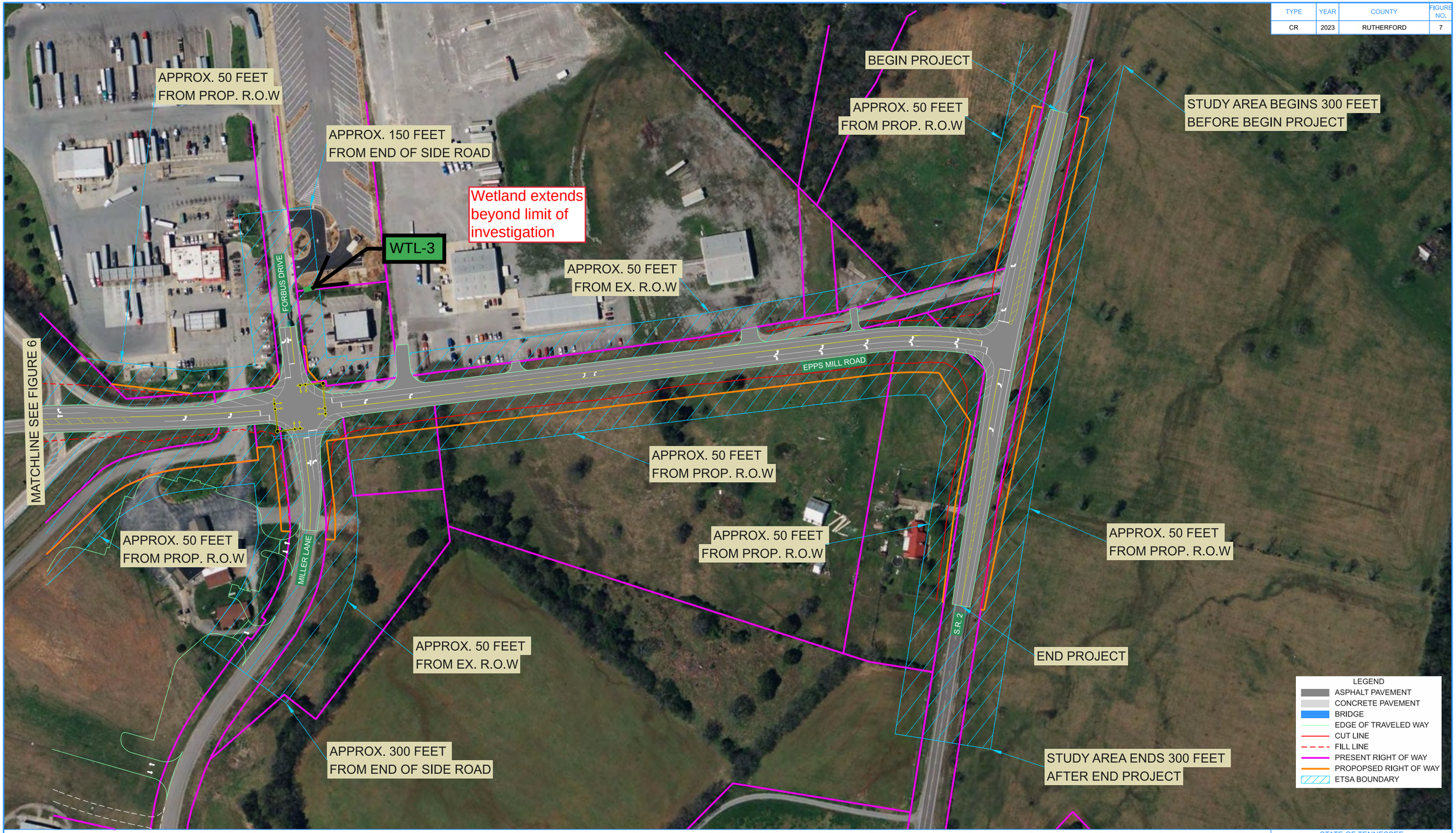
TYPE	YEAR	COUNTY	FIGURE NO.
CR	2023	RUTHERFORD	7



0 200' 400' 600'

N

ENVIRONMENTAL TECHNICAL STUDY AREA

I-24 INTERCHANGE AT EPPS MILL ROAD (EXIT 89)
LOG MILE 0.00 TO LOG MILE 0.86
RUTHERFORD COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 7
I-24 INTERCHANGE AT EPPS MILL ROAD (EXIT 89)
ETSA

3/29/2024 3:00:50 PM
C:\BMS\STV-PW-011\TRAVIS.PHY\DMS602891\24683-SHT-CONCEPT_04_REDUCTION COMMENTS.DGN

TYPE	YEAR	COUNTY	FIGURE NO.
CR	2023	RUTHERFORD	8

Wetland off project

STR-1

STUDY AREA BEGINS 300 FEET BEFORE BEGIN PROJECT

BEGIN PROJECT

EXISTING R.O.W.

EXISTING R.O.W.

I-24 EB

I-24 WB

FORBUS DRIVE

CAPITAL WAY

APPROX. 50 FEET FROM PROP. R.O.W.

APPROX. 50 FEET FROM PROP. R.O.W.

MATCHLINE SEE FIGURE 6

LEGEND
- ASPHALT PAVEMENT
- CONCRETE PAVEMENT
- BRIDGE
- EDGE OF TRAVELED WAY
- CUT LINE
- FILL LINE
- PRESENT RIGHT OF WAY
- PROPOPSED RIGHT OF WAY
- ETSA BOUNDARY

0 200' 400' 600'

ENVIRONMENTAL TECHNICAL STUDY AREA

I-24 INTERCHANGE AT EPPS MILL ROAD (EXIT 89)
LOG MILE 0.00 TO LOG MILE 0.86
RUTHERFORD COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 8
I-24 INTERCHANGE AT EPPS MILL ROAD (EXIT 89)
ETSA

3/29/2024 3:01:02 PM
C:\BMS\STV-PW-01\TRAVIS.PHY\DMS60289\124683-SHT-CONCEPT_04_REDUCTION COMMENTS.DGN

TYPE	YEAR	COUNTY	FIGURE NO.
CR	2023	RUTHERFORD	9

MATCHLINE SEE FIGURE 6

EXISTING R.O.W

MILLER ROAD

I-24 EB

I-24 WB

MILLER LANE

EXISTING R.O.W

END PROJECT

STUDY AREA BEGINS 300 FEET
AFTER END PROJECT

LEGEND
- ASPHALT PAVEMENT
- CONCRETE PAVEMENT
- BRIDGE
- EDGE OF TRAVELED WAY
- CUT LINE
- FILL LINE
- PRESENT RIGHT OF WAY
- PROPOPSED RIGHT OF WAY
- ETSA BOUNDARY

0 200' 400' 600'

N

ENVIRONMENTAL TECHNICAL STUDY AREA

I-24 INTERCHANGE AT EPPS MILL ROAD (EXIT 89)
LOG MILE 0.00 TO LOG MILE 0.86
RUTHERFORD COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 9
I-24 INTERCHANGE AT
EPPS MILL ROAD (EXIT 89)
ETSA

3/29/2024 3:01:12 PM
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Project Name: Interchange at Epps Mill Road/Buchanan Road; Epps Mill Road, From west of Capital Way to SR-2 **PIN**:124683.06

Water Resource Table for NEPA Documentation

Based on: ETSA

Date: 3/29/2024

Table Amounts are based on (choose only one): Estimated extent of resource within ETSA

Water Resources (Non-Wetland)

Label	Type	Latitude	Longitude	Receiving Waters	Quality	Amount (Linear Feet)	Amount (Acres)
STR-1	Intermittent Stream	35.728237	-86.324907	Hurricane Creek	Unassessed	232	0.03
					Total:	232	0

Water Resources (Wetland)*

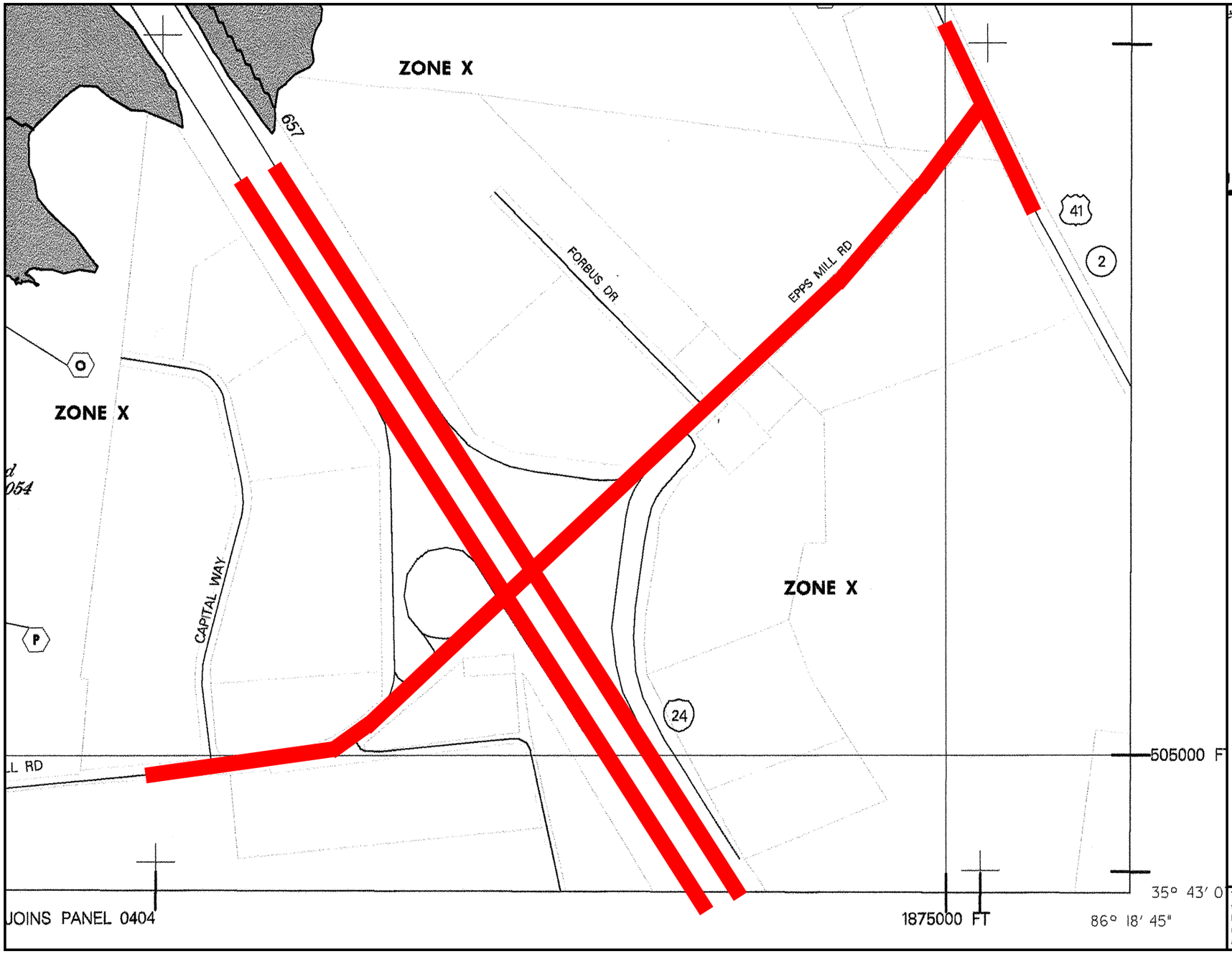
Label	Type	Latitude	Longitude	Receiving Waters	Quality	Amount (Acres)
WTL-1	Emergent	35.72147	-86.320737	N/A	Low Resource Value	0.01
WTL-2	Emergent	35.722939	-86.32089	N/A	Low Resource Value	0.04
WTL-3	Emergent	35.724615	-86.318577	N/A	Low Resource Value	0.002
					Total:**	0.052

*Unless described otherwise in the NEPA document; all wetlands are presumed to serve the following functions to varying degrees, based on location: wildlife habitat, flood storage, groundwater recharge, nutrient processing, contaminant filtering, and recreation.

**For the purposes of the NEPA document, Amount is assumed to be Permanent Loss.

Note- Features and estimated amounts referenced in this table are based on information available and may change as the project is further refined througout project development.

Floodplain Map



National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 ME

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0402H

FIRM

FLOOD INSURANCE RATE MAP

RUTHERFORD COUNTY, TENNESSEE AND INCORPORATED AREAS

PANEL 402 OF 457

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
RUTHERFORD COUNTY	470165	0402	H

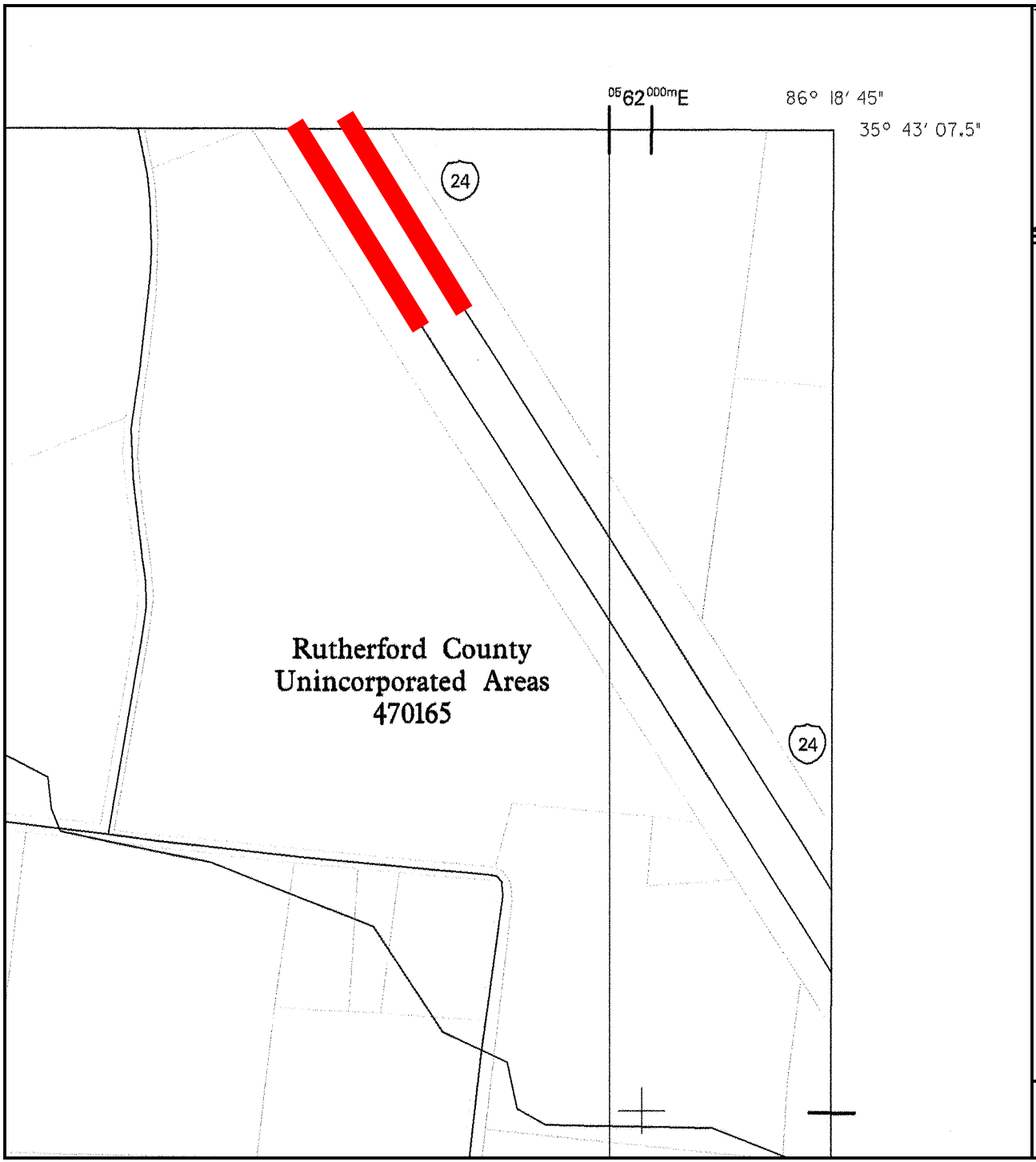
Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER 47149C0402H

MAP REVISED JANUARY 5, 2007

Federal Emergency Management Agency

This is an official FIRMette showing a portion of the above-referenced flood map created from the MSC FIRMette Web tool. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For additional information about how to make sure the map is current, please see the Flood Hazard Mapping Updates Overview Fact Sheet available on the FEMA Flood Map Service Center home page at https://msc.fema.gov.



he National Flood Insurance Program at 1-800-638-6620

MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 M

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0404H

FIRM

FLOOD INSURANCE RATE MAP

RUTHERFORD COUNTY, TENNESSEE AND INCORPORATED AREAS

PANEL 404 OF 457

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
RUTHERFORD COUNTY	470165	0404	H

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
47149C0404H

MAP REVISED
JANUARY 5, 2007

Federal Emergency Management Agency

This is an official FIRMette showing a portion of the above-referenced flood map created from the MSC FIRMette Web tool. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For additional information about how to make sure the map is current, please see the Flood Hazard Mapping Updates Overview Fact Sheet available on the FEMA Flood Map Service Center home page at https://msc.fema.gov.

Air and Noise

Environmental Study

Technical Section

Section: Air and Noise

Study Results

AIR QUALITY

Transportation Conformity
This project is in Rutherford County which is in attainment for all regulated criteria pollutants. Therefore, conformity does not apply to this project.

Mobile Source Air Toxics (MSATs)
This project qualifies as a categorical exclusion under 23 CFR 771.117 and, therefore, does not require an evaluation of MSATs per FHWA's "Interim Guidance Update on Air Toxic Analysis in NEPA Documents" dated January 2023.

NOISE

This project will not add travel lanes and will not halve the distance between the center of the near travel lane and an adjacent noise-sensitive land use. Therefore, the project is Type III in accordance with the FHWA noise regulation in 23 CFR 772 and TDOT's noise policy and a noise study is not needed.

Commitments

Did the study of this project result in any environmental commitments? **No**

Additional Information

Is there any additional information or material included with this study? **No**

Certification

Responder: Chasity L. Stinson

Title: Senior Technical Specialist, TDOT Environmental Division

Signature: Chasity Stinson

Digitally signed by Chasity Stinson
Date: 2024.11.18 13:59:07 -06'00'

Cultural Resources

Environmental Study

Technical Section

Section: Historic Preservation

Study Results

In a letter dated August 6, 2024, the TN-SHPO concurred that no historic properties would be affected by this undertaking as currently proposed. Should there be any changes to the project, including the addition of ROW or easements, updated studies may be required.

Commitments

Did the study of this project result in any environmental commitments? **No**

Additional Information

Is there any additional information or material included with this study? **Yes**

Type: SHPO Letter & Historic Report

Location: Email Attachment

Certification

Responder: Marley Abbott

Title: Senior Tech Specialist- Historian

Signature: Marley Abbott

Digitally signed by Marley Abbott
Date: 2024.11.22 13:57:19 -06'00'

Ellen Hurd

From: TN Help <tnhelp@service-now.com>
Sent: Tuesday, August 6, 2024 10:36 AM
To: Ellen Hurd
Cc: Kimberly Vasut-Shelby
Subject: Improvements to I-24 Interchange at Epps Mill Road/ PIN 124683.06 - Project # SHPO0005419

TENNESSEE HISTORICAL COMMISSION
STATE HISTORIC PRESERVATION OFFICE
2941 LEBANON PIKE
NASHVILLE, TENNESSEE 37243-0442
OFFICE: (615) 532-1550
www.tnhistoricalcommission.org

2024-08-06 10:34:23 CDT

Kimberly Vasut-Shelby
TDOT Cultural Resources Team Lead

RE: Federal Highway Administration (FHWA), Architecture Review, Improvements to I-24 Interchange at Epps Mill Road/ PIN 124683.06, Project#: SHPO0005419, Rutherford County, TN

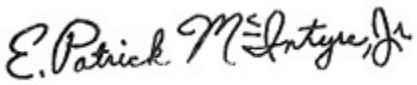
Dear Kimberly Vasut-Shelby:

In response to your request, we have reviewed the documentation submitted by you regarding the above-referenced undertaking. Our review of and comment on your proposed undertaking are among the requirements of Section 106 of the National Historic Preservation Act. This Act requires federal agencies or applicants for federal assistance to consult with the appropriate State Historic Preservation Office before they carry out their proposed undertakings. The Advisory Council on Historic Preservation has codified procedures for carrying out Section 106 review in 36 CFR 800 (Federal Register, December 12, 2000, 77698-77739).

Considering the information provided, we find that no architectural resources eligible for listing in the National Register of Historic Places will be affected by this undertaking. If project plans are changed please contact this office to determine what further action, if any, will be necessary to comply with Section 106 of the National Historic Preservation Act. Please include the Project # when submitting additional information regarding this undertaking. Questions or comments may be directed to Casey Lee, who drafted this response, at Casey.Lee@tn.gov, +16152533163.

Your cooperation is appreciated.

Sincerely,



E. Patrick McIntyre, Jr.
Executive Director and
State Historic Preservation Officer

Ref:MSG14894810_rXYSP6oHTm0KO7X8IrZ

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
ENVIRONMENTAL DIVISION
ENVIRONMENTAL TECHNICAL STUDIES SECTION
SUITE 900, JAMES K. POLK BUILDING
505 DEADERICK STREET
NASHVILLE, TENNESSEE 37243-1402
(615) 741-3655

BUTCH ELEY
COMMISSIONER

BILL LEE
GOVERNOR

August 5, 2024

Mr. E. Patrick McIntyre, Jr.
Executive Director and State Historic Preservation Officer
Tennessee Historical Commission
2941 Lebanon Road
Nashville, Tennessee 37243-0442

RE: Cultural Resources Assessment for the Interstate 24 Interchange at Epps Mill Road; Christiana, Rutherford County; TDOT PIN 124683.06

Dear Mr. McIntyre,

The Tennessee Department of Transportation (TDOT) proposes to improvements to the Interstate 24 interchange at Epps Mill Road in Rutherford County, Tennessee. The project would reconstruct the interchange ramps and widen Epps Mill Road to three lanes from near Capital Way to State Route (SR) 2/U.S. 41. The project would require modifications to intersections with side roads along Epps Mill Road. The project is state-funded, but there is federal involvement because it is an interchange project.

It is the opinion of TDOT that there are no historic properties within the area of potential effects (APE) that are listed in or eligible for listing in the National Register of Historic Places (NRHP).

In compliance with Section 106 of the National Historic Preservation Act (as amended) and implementing regulations 36 CFR 800, please review the enclosed information and provide me with your comments. If any additional information is needed, please contact Historian Ellen Hurd at (615) 741-6834 or Haley Seger at (615) 770-1762 for architectural resources or me at (615) 313-3764. I appreciate your assistance.

Sincerely,

Kim Vasut-Shelby
Cultural Resources Manager

kvs/edh/hs

HISTORIC RESOURCES SURVEY REPORT
ELIGIBILITY AND EFFECTS ASSESSMENT

INTERSTATE 24 INTERCHANGE AT EPPS MILL ROAD
RUTHERFORD COUNTY, TENNESSEE
PIN #124683.06

Ellen Dement Hurd
Historian
Tennessee Department of Transportation
Historic Preservation Section
James K. Polk Building, 9th Floor
505 Deaderick Street
Nashville, Tennessee 37243

August 5, 2024

Management Summary

In July of 2024, Tennessee Department of Transportation (TDOT) historians conducted an architectural and historic resources survey for the Interstate 24 (I-24) Interchange at Epps Mill Road. This TDOT project is state-funded, but there is federal involvement because it is an interstate project. Therefore, a Historic Resources Survey Report has been prepared in compliance with Section 106 of the National Historic Preservation Act of 1966 (as amended) for review and comment by the Tennessee State Historic Preservation Office (TN SHPO). The purpose of this report is to identify historic resources in the project's Area of Potential Effects (APE); evaluate the surveyed resources' eligibility for listing in the National Register of Historic Places (NRHP); and assess the effects of the project on NRHP listed or eligible properties. A separate report will document and assess archaeological resources.

Project Description

This project would consist of improvements to the I-24 interchange at Epps Mill Road in Rutherford County, Tennessee. The project would reconstruct the interchange ramps and widen Epps Mill Road to three lanes from near Capital Way to State Route (SR) 2/U.S. 41. The project would require modifications to intersections with side roads along Epps Mill Road.

Methods and Results

This study began with a records review and a reconnaissance-level field survey. The records review identified no previously documented properties in the APE.

Following the records review, TDOT historians completed a field survey of the APE, documented the current condition of previously surveyed resources, and surveyed five newly identified properties. Based on the results of the field survey and archival research, TDOT recommends that none of the surveyed properties are eligible for the NRHP.

Section 4(f) of the U.S. Department of Transportation Act gives special consideration to the use of park and recreational lands, wildlife and waterfowl refuges, and historic sites by federally assisted transportation projects. To be considered "historic," a property must be either listed in the NRHP or be determined eligible for such listing. At this time, no federal funding is proposed for this project; thus, Section 4(f) of the Department of Transportation Act of 1966, as amended, does not apply.

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Project Summary

This Historic Resources Survey Report has been prepared for the Tennessee Department of Transportation (TDOT) for the Interstate 24 (I-24) Interchange at Epps Mill Road Project. This project would consist of improvements to the I-24 interchange at Epps Mill Road in Rutherford County, Tennessee. The project would reconstruct the interchange ramps and widen Epps Mill Road to three lanes from near Capital Way to State Route (SR) 2/U.S. 41. The project would require modifications to intersections with side roads along Epps Mill Road (Refer to Figure 1: Project Location Map).

This project is state funded, but there is federal involvement because it is an interstate project. Therefore, it must comply with Section 106 of the National Historic Preservation Act (NHPA) of 1966 and subsequent amendments and the 2020 *Programmatic Agreement Among the Federal Highway Administration (FHWA), TDOT, the Tennessee State Historic Preservation Officer (TN SHPO), and the Advisory Council on Historic Preservation (ACHP) Regarding Implementation of Transportation Projects*. Section 4(f) of the U.S. Department of Transportation Act of 1966, as amended, gives special consideration to the use of historic sites by federally assisted transportation projects. Regulations concerning TDOT's responsibilities under Section 4(f) are codified at 23 CFR 774. At this time, no federal funding is proposed for this project; thus, Section 4(f) of the Department of Transportation Act of 1966, as amended, does not apply.

This report identifies historic resources within the project area and assesses project impacts to these resources in compliance with regulations detailing the implementation of the NHPA, which are codified in 36 CFR 800. This legislation requires federal agencies to identify any resources of historic significance in the project area, including buildings, districts, structures, objects, historic sites, and archaeological sites. For the purposes of this legislation, historic significance is defined as listing in the National Register of Historic Places (NRHP) or eligibility for inclusion in the NRHP. Appendix D contains a copy of the NRHP criteria, which are codified at 36 CFR 60.4. Once eligible historic resources are identified, legislation requires these agencies to determine if the proposed project would affect them and if these effects would be considered adverse. Appendix E contains a copy of the Criteria of Effect as defined in 36 CFR 800.5. If the proposed project would have an adverse effect to a historic property, the legislation requires the federal agency to provide the ACHP an opportunity to comment on the effect.

The area of potential effects (APE) is defined in 36 CFR 800.16(d) as "the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties if any such properties exist." Based on the nature and the scope of the undertaking, the APE for this project consists of areas of existing and proposed right-of-way (ROW) and easements and adjacent parcels that fall within the viewshed of the proposed project.

Potential consulting parties were identified based on the nature of the undertaking. The other potential consulting parties invited to participate in the Section 106 process were: the Rutherford County Historian, the Greater Nashville Regional Council, the Rutherford County Mayor, and the Rutherford County Historical Society. The consulting parties were informed of our efforts to identify historic properties and asked to provide information on any unidentified NRHP listed or eligible properties within the project's APE by an email dated June 19, 2024 (see notification in

Appendix). Responses were received from the Rutherford County Historian and the Rutherford County Mayor to the invitation to become a consulting party in the Section 106 process (see correspondence in Appendix).

The APE was field surveyed during July 2024. As a result of these efforts, five historic resources were identified, all of which are recommended not eligible for the NRHP.

This Historic Resources Survey Report will be circulated to the TN SHPO and participating consulting parties for review and comment. Archaeological resources will be documented and evaluated in a separate report.

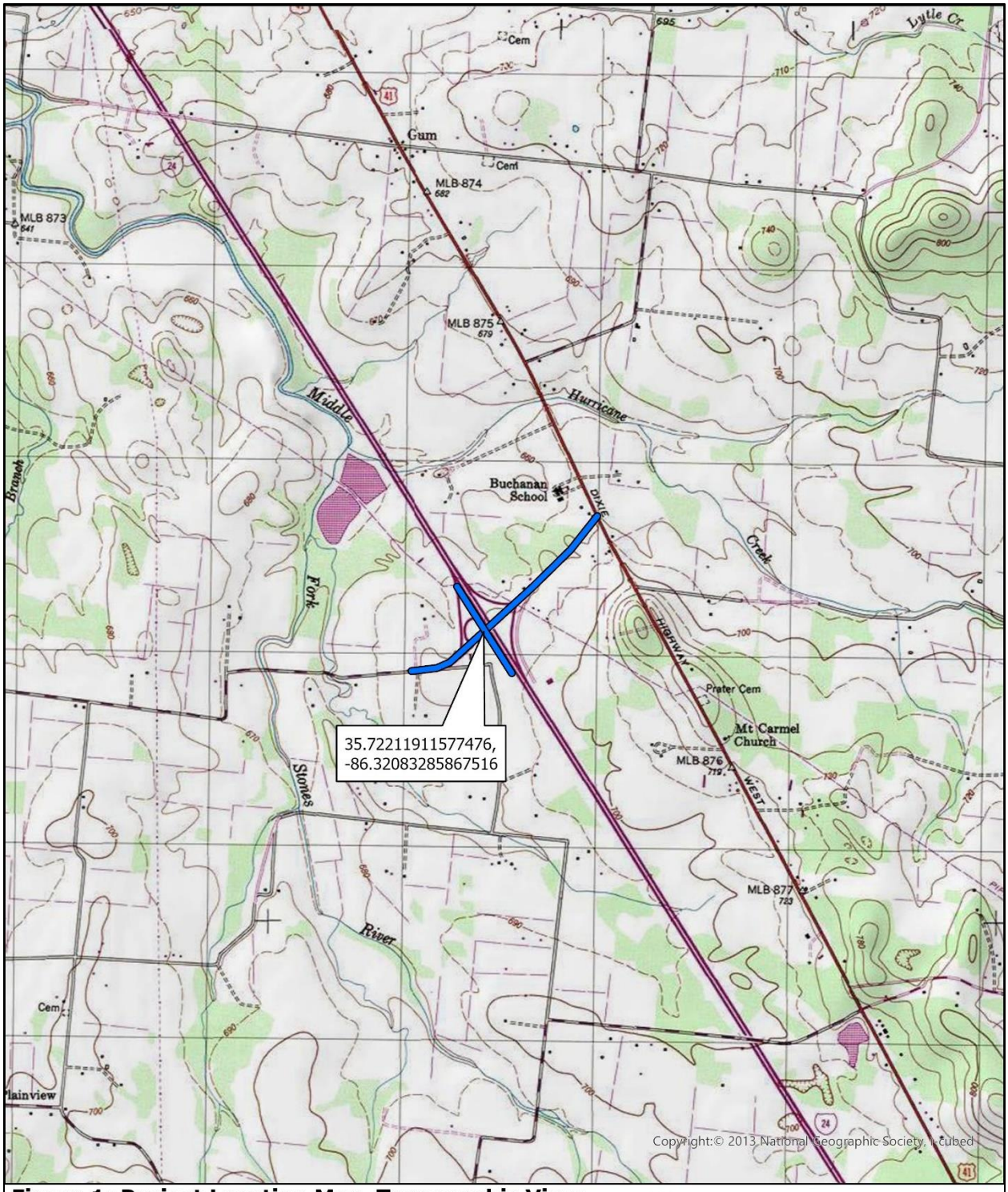
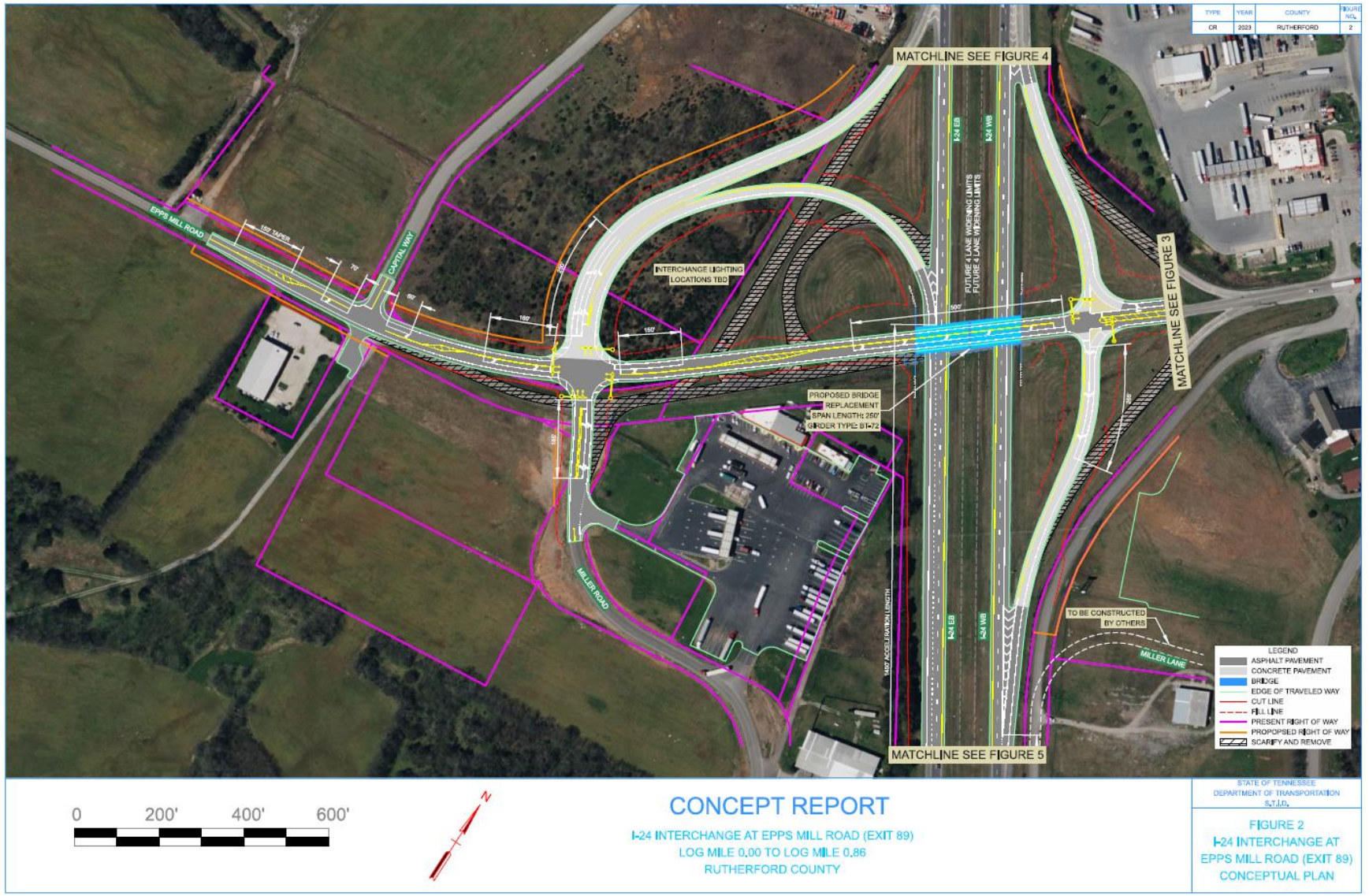
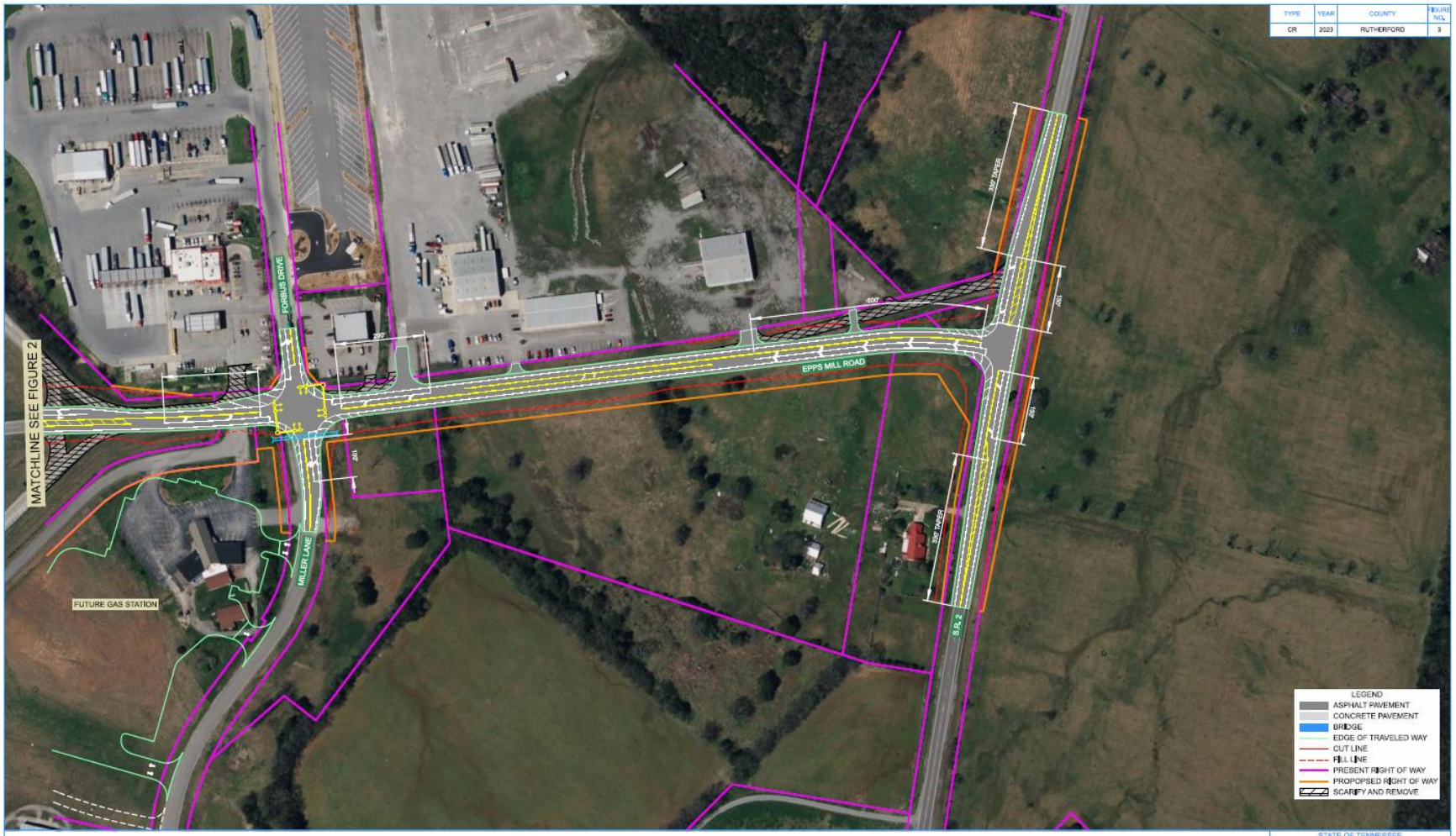


Figure 1: Project Location Map, Topographic View
Epps Mill Road and I-24 Interchange
Pin: 124683.06, Rutherford County
USGS 7.5 Webbs Jungle Quadrangle 78 NE


TYPE
YEAR
COUNTY
FIGURE NO.
OR
2023
RUTHERFORD
2
MATCHLINE SEE FIGURE 4
MATCHLINE SEE FIGURE 3
MATCHLINE SEE FIGURE 5
EPPS MILL ROAD
CAPITAL WAY
MILLER ROAD
MILLER LANE
I-24 EB
I-24 WB
INTERCHANGE LIGHTING LOCATIONS TBD
PROPOSED BRIDGE REPLACEMENT
SPAN LENGTH: 250'
GIRDER TYPE: BT-72
FUTURE 4 LANE WIDENING LIMITS
FUTURE 4 LANE WIDENING LIMITS
1497' ACCELERATION LENGTH
TO BE CONSTRUCTED BY OTHERS
LEGEND
ASPHALT PAVEMENT
CONCRETE PAVEMENT
BRIDGE
EDGE OF TRAVELED WAY
CUT LINE
FILL LINE
PRESENT RIGHT OF WAY
PROPOSED RIGHT OF WAY
SCARIFY AND REMOVE
0
200'
400'
600'
N
CONCEPT REPORT
I-24 INTERCHANGE AT EPPS MILL ROAD (EXIT 89)
LOG MILE 0.00 TO LOG MILE 0.86
RUTHERFORD COUNTY
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.
FIGURE 2
I-24 INTERCHANGE AT EPPS MILL ROAD (EXIT 89)
CONCEPTUAL PLAN


TYPE
YEAR
COUNTY
FIGURE NO.
CR
2023
RUTHERFORD
3
MATCHLINE SEE FIGURE 2
FORBUS DRIVE
EPPS MILL ROAD
MILLER LANE
FUTURE GAS STATION
S.R. 1
LEGEND
ASPHALT PAVEMENT
CONCRETE PAVEMENT
BRIDGE
EDGE OF TRAVELED WAY
CUT LINE
FILL LINE
PRESENT RIGHT OF WAY
PROPOSED RIGHT OF WAY
SCARIFY AND REMOVE
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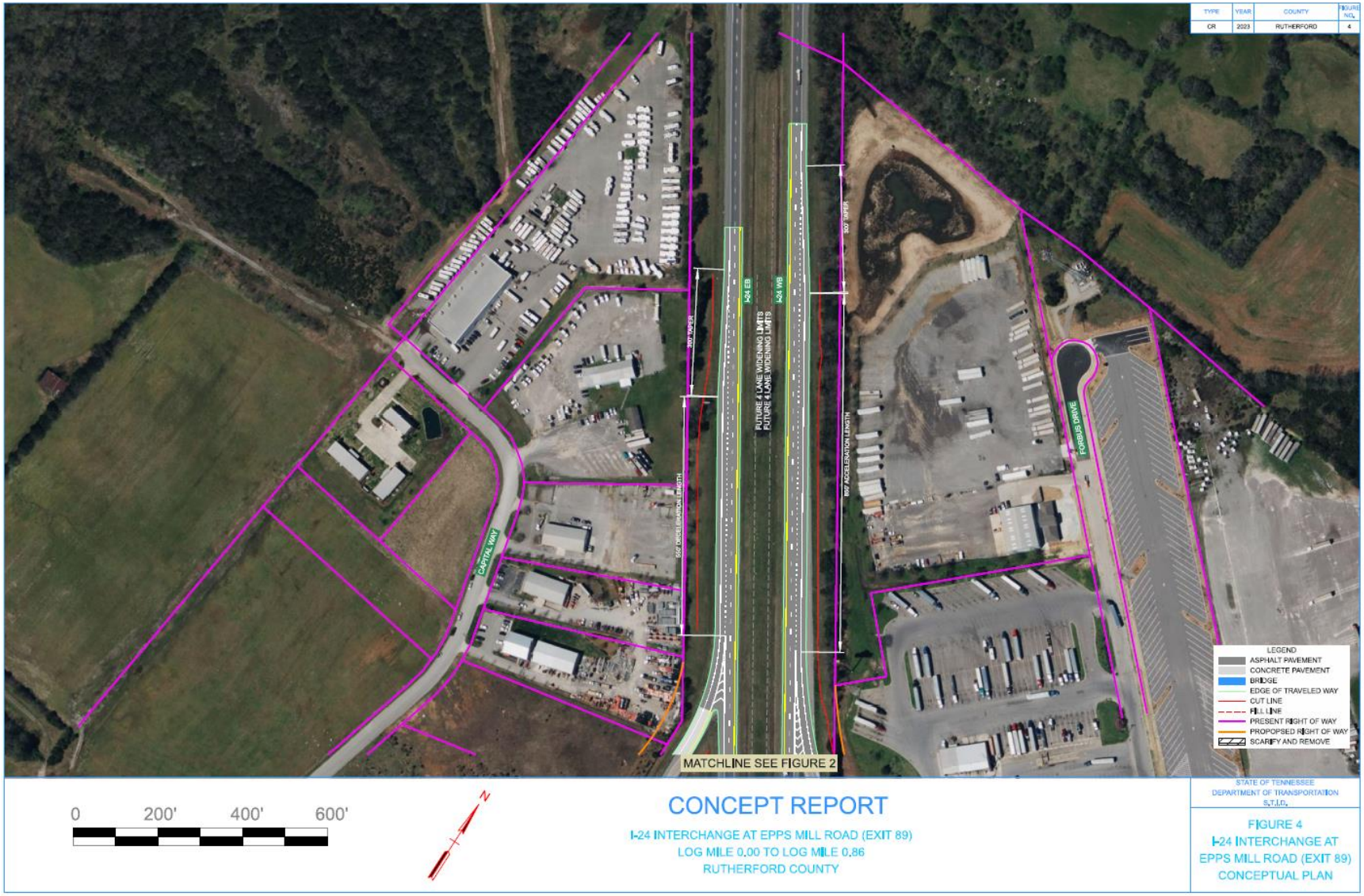
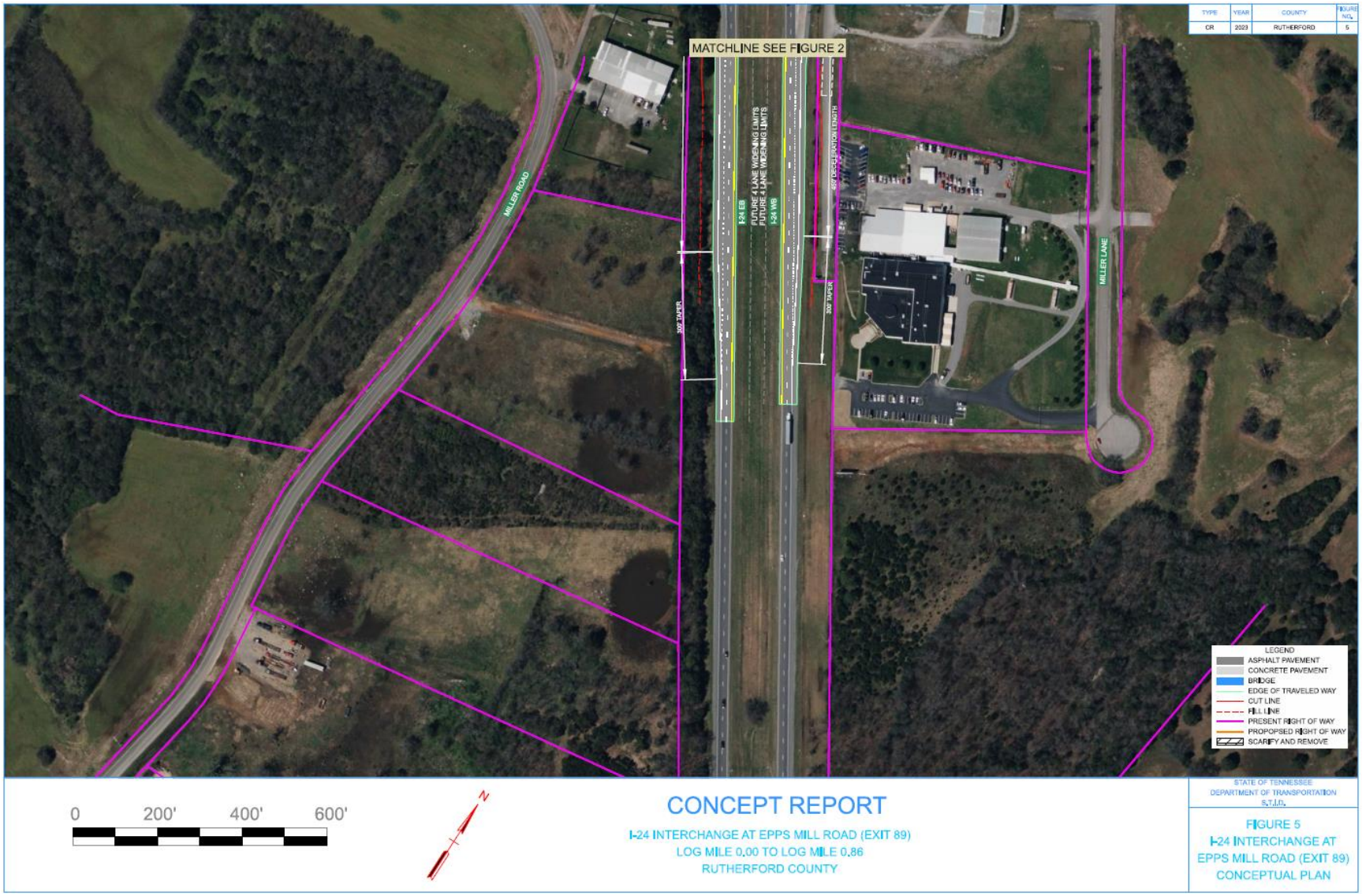
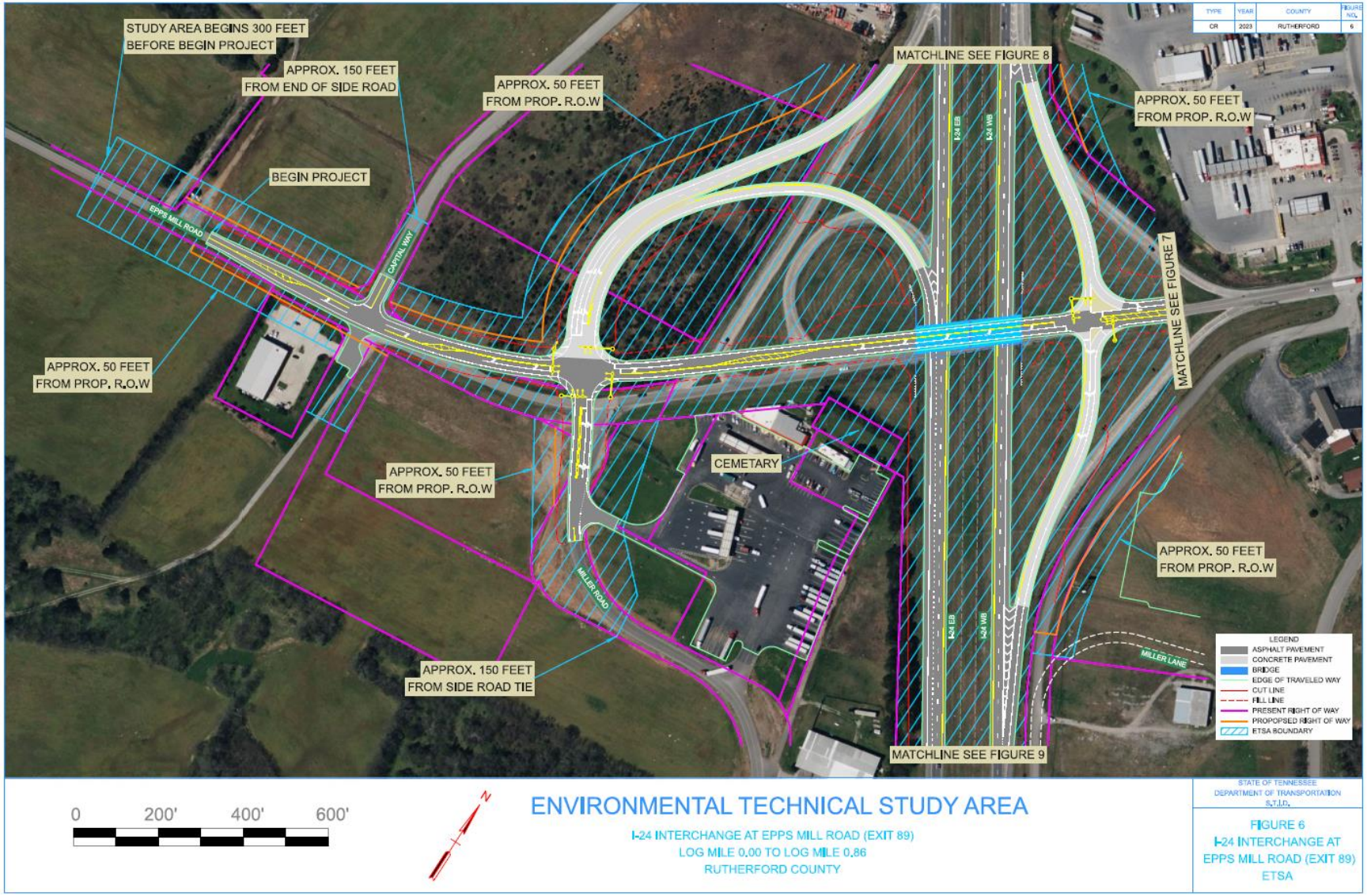
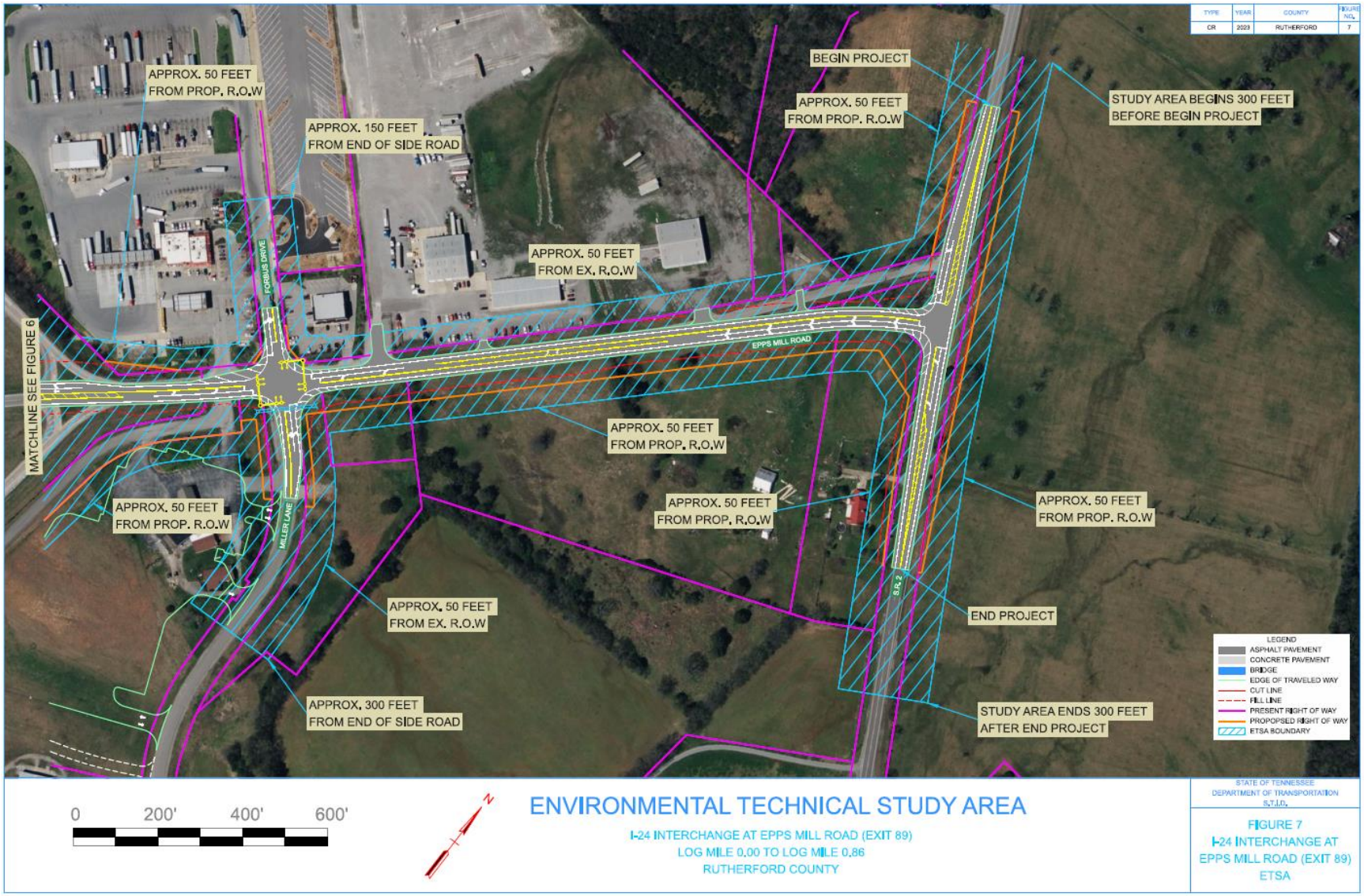
200'
400'
600'
N
CONCEPT REPORT
I-24 INTERCHANGE AT EPPS MILL ROAD (EXIT 89)
LOG MILE 0.00 TO LOG MILE 0.86
RUTHERFORD COUNTY
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.
FIGURE 3
I-24 INTERCHANGE AT
EPPS MILL ROAD (EXIT 89)
CONCEPTUAL PLAN


TYPE
YEAR
COUNTY
FIGURE NO.
CR
2023
RUTHERFORD
4
CAPITAL WAY
FORBUS DRIVE
I-24 EB
I-24 WB
FUTURE 4 LANE WIDENING LIMITS
FUTURE 4 LANE WIDENING LIMITS
300' TAPER
300' TAPER
300' DECELERATION LENGTH
300' ACCELERATION LENGTH
MATCHLINE SEE FIGURE 2
LEGEND
ASPHALT PAVEMENT
CONCRETE PAVEMENT
BRIDGE
EDGE OF TRAVELED WAY
CUT LINE
FILL LINE
PRESENT RIGHT OF WAY
PROPOPSED RIGHT OF WAY
SCARIFY AND REMOVE
0
200'
400'
600'
N
CONCEPT REPORT
I-24 INTERCHANGE AT EPPS MILL ROAD (EXIT 89)
LOG MILE 0.00 TO LOG MILE 0.86
RUTHERFORD COUNTY
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.
FIGURE 4
I-24 INTERCHANGE AT
EPPS MILL ROAD (EXIT 89)
CONCEPTUAL PLAN


TYPE
YEAR
COUNTY
FIGURE NO.
CR
2023
RUTHERFORD
5
MATCHLINE SEE FIGURE 2
MILLER ROAD
I-24 EB
FUTURE 4 LANE WIDENING LIMITS
FUTURE 4 LANE WIDENING LIMITS
I-24 WB
300' TAPER
300' TAPER
MILLER LANE
LEGEND
ASPHALT PAVEMENT
CONCRETE PAVEMENT
BRIDGE
EDGE OF TRAVELED WAY
CUT LINE
FILL LINE
PRESENT RIGHT OF WAY
PROPOPSED RIGHT OF WAY
SCARIFY AND REMOVE
0
200'
400'
600'
N
CONCEPT REPORT
I-24 INTERCHANGE AT EPPS MILL ROAD (EXIT 89)
LOG MILE 0.00 TO LOG MILE 0.86
RUTHERFORD COUNTY
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.P.
FIGURE 5
I-24 INTERCHANGE AT
EPPS MILL ROAD (EXIT 89)
CONCEPTUAL PLAN


STUDY AREA BEGINS 300 FEET BEFORE BEGIN PROJECT
APPROX. 150 FEET FROM END OF SIDE ROAD
APPROX. 50 FEET FROM PROP. R.O.W
BEGIN PROJECT
EPPS MILL ROAD
CAPITAL WAY
APPROX. 50 FEET FROM PROP. R.O.W
APPROX. 50 FEET FROM PROP. R.O.W
APPROX. 150 FEET FROM SIDE ROAD TIE
MATCHLINE SEE FIGURE 8
APPROX. 50 FEET FROM PROP. R.O.W
MATCHLINE SEE FIGURE 7
CEMETARY
APPROX. 50 FEET FROM PROP. R.O.W
MILLER ROAD
MILLER LANE
MATCHLINE SEE FIGURE 9
I-24 EB
I-24 WB
LEGEND
ASPHALT PAVEMENT
CONCRETE PAVEMENT
BRIDGE
EDGE OF TRAVELED WAY
CUT LINE
FILL LINE
PRESENT RIGHT OF WAY
PROPOSED RIGHT OF WAY
ETSA BOUNDARY
0 200' 400' 600'
N
ENVIRONMENTAL TECHNICAL STUDY AREA
I-24 INTERCHANGE AT EPPS MILL ROAD (EXIT 89)
LOG MILE 0.00 TO LOG MILE 0.86
RUTHERFORD COUNTY
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.P.
FIGURE 6
I-24 INTERCHANGE AT EPPS MILL ROAD (EXIT 89)
ETSA


TYPE
YEAR
COUNTY
FIGURE NO.
CR
2023
RUTHERFORD
7
BEGIN PROJECT
APPROX. 50 FEET FROM PROP. R.O.W
STUDY AREA BEGINS 300 FEET BEFORE BEGIN PROJECT
APPROX. 150 FEET FROM END OF SIDE ROAD
APPROX. 50 FEET FROM EX. R.O.W
FORBUS DRIVE
EPPS MILL ROAD
MATCHLINE SEE FIGURE 6
APPROX. 50 FEET FROM PROP. R.O.W
APPROX. 50 FEET FROM PROP. R.O.W
APPROX. 50 FEET FROM PROP. R.O.W
APPROX. 50 FEET FROM PROP. R.O.W
MILLER LANE
S.R. 2
APPROX. 50 FEET FROM EX. R.O.W
END PROJECT
APPROX. 300 FEET FROM END OF SIDE ROAD
STUDY AREA ENDS 300 FEET AFTER END PROJECT
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CONCRETE PAVEMENT
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PROPOPSED RIGHT OF WAY
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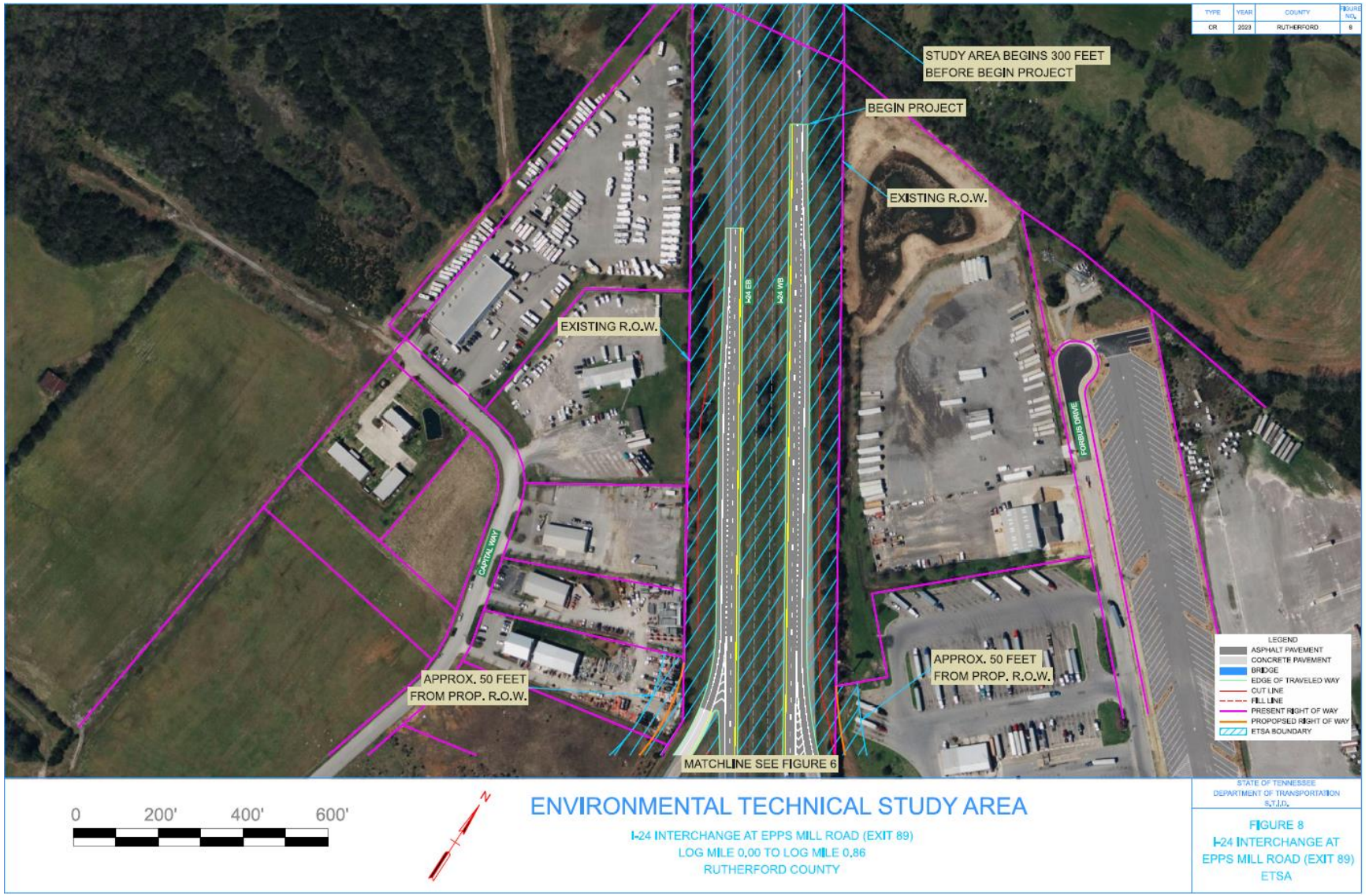
ENVIRONMENTAL TECHNICAL STUDY AREA
I-24 INTERCHANGE AT EPPS MILL ROAD (EXIT 89)
LOG MILE 0.00 TO LOG MILE 0.86
RUTHERFORD COUNTY
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.
FIGURE 7
I-24 INTERCHANGE AT EPPS MILL ROAD (EXIT 89)
ETSA


TYPE
YEAR
COUNTY
FIGURE NO.
CR
2023
RUTHERFORD
8
STUDY AREA BEGINS 300 FEET BEFORE BEGIN PROJECT
BEGIN PROJECT
EXISTING R.O.W.
EXISTING R.O.W.
I-24 EB
I-24 WB
CAPITAL WAY
FORBUS DRIVE
APPROX. 50 FEET FROM PROP. R.O.W.
APPROX. 50 FEET FROM PROP. R.O.W.
MATCHLINE SEE FIGURE 6
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CUT LINE
FILL LINE
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PROPOSED RIGHT OF WAY
ETSA BOUNDARY
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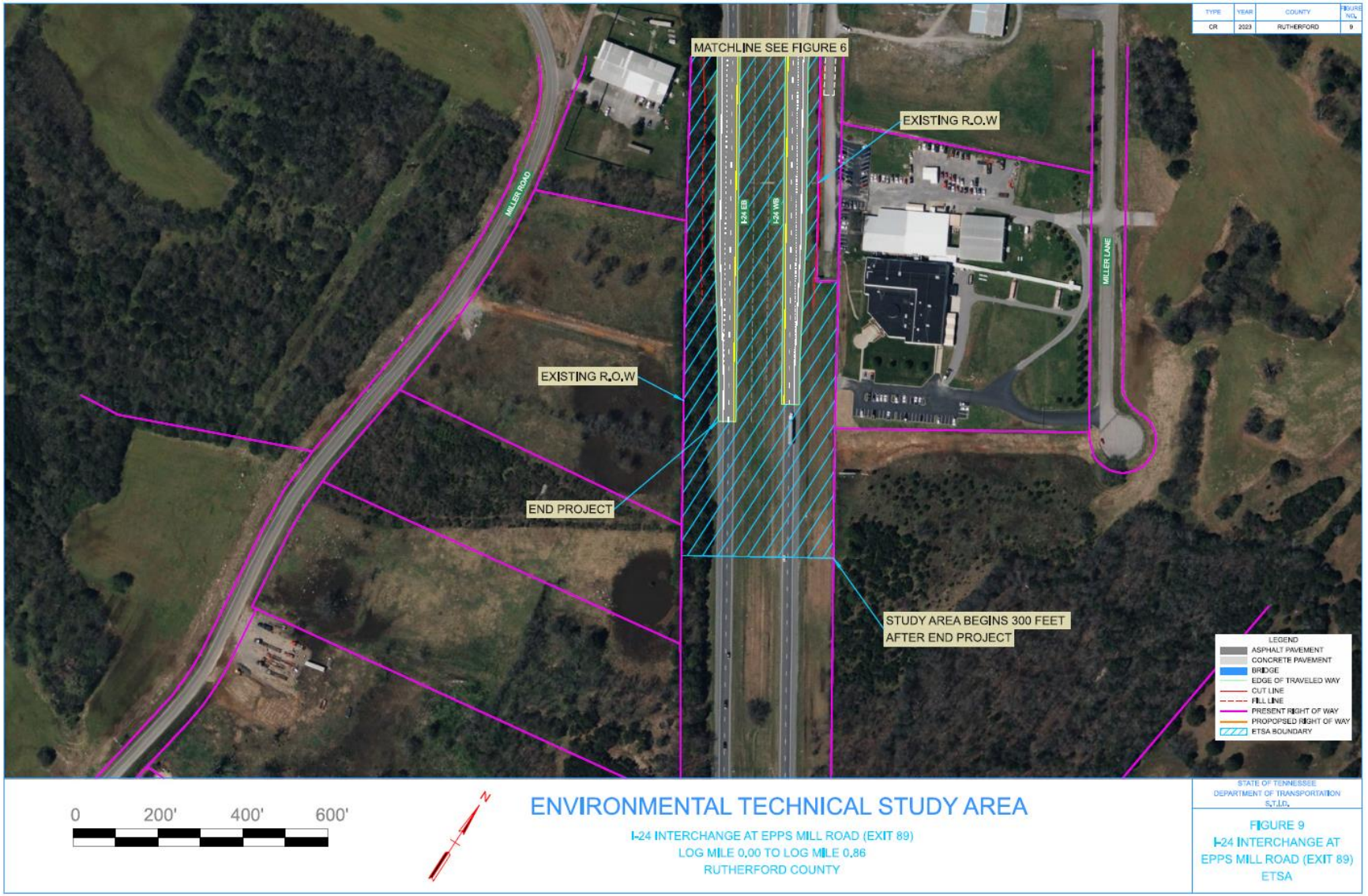
ENVIRONMENTAL TECHNICAL STUDY AREA
I-24 INTERCHANGE AT EPPS MILL ROAD (EXIT 89)
LOG MILE 0.00 TO LOG MILE 0.86
RUTHERFORD COUNTY
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.P.
FIGURE 8
I-24 INTERCHANGE AT EPPS MILL ROAD (EXIT 89)
ETSA


TYPE
YEAR
COUNTY
FIGURE NO.
CR
2023
RUTHERFORD
9
MATCHLINE SEE FIGURE 6
EXISTING R.O.W
EXISTING R.O.W
END PROJECT
STUDY AREA BEGINS 300 FEET
AFTER END PROJECT
MILLER ROAD
I-24 EB
I-24 WB
MILLER LANE
LEGEND
ASPHALT PAVEMENT
CONCRETE PAVEMENT
BRIDGE
EDGE OF TRAVELED WAY
CUT LINE
FILL LINE
PRESENT RIGHT OF WAY
PROPOPSED RIGHT OF WAY
ETSA BOUNDARY
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N
ENVIRONMENTAL TECHNICAL STUDY AREA
I-24 INTERCHANGE AT EPPS MILL ROAD (EXIT 89)
LOG MILE 0.00 TO LOG MILE 0.86
RUTHERFORD COUNTY
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.P.
FIGURE 9
I-24 INTERCHANGE AT
EPPS MILL ROAD (EXIT 89)
ETSA

Survey Methodology

Background Research

TDOT historians completed a records review to determine if any previously identified historic resources are located within the APE. This review included NRHP-listed properties, proposed NRHP nominations, National Historic Landmarks, local historic landmarks or zoning districts, and the survey files of the Tennessee Historical Commission, which serves as the TN SHPO. This research identified no previously surveyed properties in the project area.

A historic context of Rutherford County was compiled using available primary and secondary resources. Online research was conducted to determine settlement and development of the area and the types of architectural resources found in the Project APE. Online property records, topographic maps, historic maps, files of the local property assessor's office, and architectural styles were used to determine construction dates of the surveyed buildings discussed in this report.

Field Survey

The APE was surveyed in July 2024. The survey was completed in accordance with *The Tennessee Historical and Architectural Survey Manual* (published by the Tennessee Historical Commission, updated 2023) and the National Register Bulletin 24, *Guidelines for Local Surveys: A Basis for Preservation Planning* (National Park Service, 1985). The survey was conducted from the public right-of-way, unless property owners gave permission for surveyors to enter their property. Photos and field notes were taken of all newly identified resources aged 45 years or older, previously documented resources, and NRHP-listed properties located in the APE. All resources were mapped and photographed with a digital camera. Information recorded during the field work included a brief architectural description, outbuilding and landscape feature identification, dates of construction, integrity, sketches of the property layout, photos of the setting, and a photolog.

Each resource was assigned a survey ID. Previously surveyed resources were assigned the survey number used in the Tennessee Historical Commission's survey files. Newly identified resources were given a temporary survey ID, beginning with HS-1 and continuing sequentially. Inventory forms for each resource were completed using the Tennessee Historical Commission's Survey123 application and submitted on July 9, 2024.

Evaluation of Eligibility for the National Register of Historic Places

This report evaluates the NRHP eligibility of newly identified historic resources and reevaluates previously surveyed properties according to the guidelines found in 36 CFR 60.4. This report includes evaluations of above-ground resources; archaeological resources will be assessed separately. To be eligible for listing on the NRHP, buildings, sites, structures, objects, and districts must meet one of these four criteria:

- Criterion A: Association with one or more events that have made a significant contribution to the broad patterns of national, state, or local history.
- Criterion B: Association with lives or persons significant in the past.

- Criterion C: Embodiment of distinctive characteristics of a type, period, or method of construction; or representation of the work of a master; or possession of high artistic values; or representation of a significant and distinguishable entity whose components may lack individual distinction.
- Criterion D: Properties that yield, or are likely to yield, information important in prehistory or history. Criterion D is most often (but not exclusively) associated with archaeological resources.

For a property to be eligible for listing in the NRHP it must also possess integrity. This rule also applies to historic districts. The aspects of integrity are as follows:

- Location: the place where the historic property (or properties) was/were constructed or where the historic event(s) occurred;
- Design: the combination of elements that create the form, plan, space, structure, and style of a property (or properties);
- Setting: the physical environment of the historic property (or properties);
- Materials: the physical elements that were combined to create the property (or properties) during the associated period of significance;
- Workmanship: the physical evidence of the crafts of a particular culture or people during any given period in history or prehistory;
- Feeling: the property's (or properties') expression of the aesthetic or historic sense of the period of significance; and
- Association: the direct link between the important historic event(s) or person(s) and the historic property (or properties).

Historical Overview

Situated at the geographic center of the state of Tennessee, Rutherford County was established in 1803 from portions of Davidson and Williamson Counties. The county was named for General Griffith Rutherford, who served on the council of the Southwest Territory and fought in the French and Indian War and the American Revolution. The county sits within the traditional territory of the Cherokee, Chickasaw, Shawnee, Creek, and Choctaw tribes. The Nickajack Trace and Creek War Trace converged near present-day Murfreesboro; this also served as the site of Cherokee Chief Black Fox's camp. The county's major waterways, the East and West Forks of the Stones River, were named for explorer Uriah Stone ca. 1767. White settlement in the area was limited until 1794, when James Robertson, best known as the founder of Nashville, led a militia to destroy Black Fox's camp in 1794.

When it was established in 1803, Rutherford County's seat was Jefferson, which is now covered by Percy Priest Lake. The designation was transferred to Murfreesboro in 1811 in response to residents' demands for a more centrally located county seat. Located on land given by Revolutionary War veteran Colonel William Lytle, the town was originally named Cannonsburgh after Newton Cannon, a local politician. A month after its establishment, Lytle requested that the settlement be named Murfreesborough after his friend and fellow Revolutionary War veteran Colonel Hardee Murfree. Murfreesboro served as capital of Tennessee from 1818 to 1826.

Rutherford County originally encompassed Bedford County, which was created in 1807, and portions of Cannon County, established in 1836. Throughout the antebellum era, the county prospered agriculturally with the support of slave labor, with large plantations and small farms producing corn, cotton, and tobacco. Growth in the county was supported by its rivers, a series of turnpikes connecting Murfreesboro to surrounding cities, and the Nashville and Chattanooga Railroad, completed in 1851. Throughout the nineteenth century, other towns grew in the county, including Eagleville, La Vergne, and Smyrna. Early educational institutions in the county included Bradley Academy, established in 1811, Union University, and Soule Female College.

Rutherford County was a major target during the Civil War for its strategic location between Nashville and Chattanooga. Murfreesboro was occupied by the U.S. Army early in the war, until Confederate Nathan Bedford Forrest raided the garrison in July 1862. The December 31, 1862-January 2, 1863, Battle of Stones River was one of the bloodiest of the war, and today the battlefield is listed on the NRHP and designated as a national battlefield. As a result of the U.S. victory in the battle, Rutherford County was occupied by the U.S. Army for the remainder of the war, with the Fortress Rosecrans serving as a base and supply depot for military maneuvers south into Chattanooga and Atlanta.

Following Reconstruction, Rutherford County slowly rebuilt its agricultural economy. Rutherford County resident John Price Buchanan was elected governor of Tennessee in 1890 with support from the Farmers' Alliance. Educational opportunities in the county grew, with the Tennessee College for Women completed in 1907 and the Middle Tennessee Normal School in 1911 (now Middle Tennessee State University or MTSU). Bradley Academy was reopened in 1884 as the county's first school for African-American students. The Rutherford Health Center and Hospital were opened in the 1920s, and the Public Works Administration built the Alvin C. York Veterans

Administration Hospital in Murfreesboro in the late 1930s. In 1941, the War Department constructed Smyrna Air Force Base near Smyrna for use as a training base during World War II (WWII).

Following WWII, Rutherford County's economy became increasingly diverse, with local businessmen forming an Industrial Committee to seek investment in industry in the county. This was later supported by the construction of Interstate 24 (I-24) in the late 1960s, which bisects Rutherford County from northeast to southwest and is a major freight corridor. Major employers have included the Carnation Milk Plant, Sunshine Hosiery Mills, General Electric, Bridgestone, and Nissan Motor Manufacturing Corporation.

Survey Results

Background research identified no previously surveyed resources in the THC survey map within the APE (refer to Figure 10). However, 11 buildings in the APE were surveyed by historic preservation students at Middle Tennessee State University (MTSU) for a historic resources survey in 1980. These resources were revisited in a subsequent 2010 update. Of these resources, one remains extant and was resurveyed, the Pearson Family Cemetery. Fieldwork documented a total of four additional resources 45 years of age or older within the proposed Project's APE (refer to Table 1). Surveyed resource locations are illustrated in Figure 11.

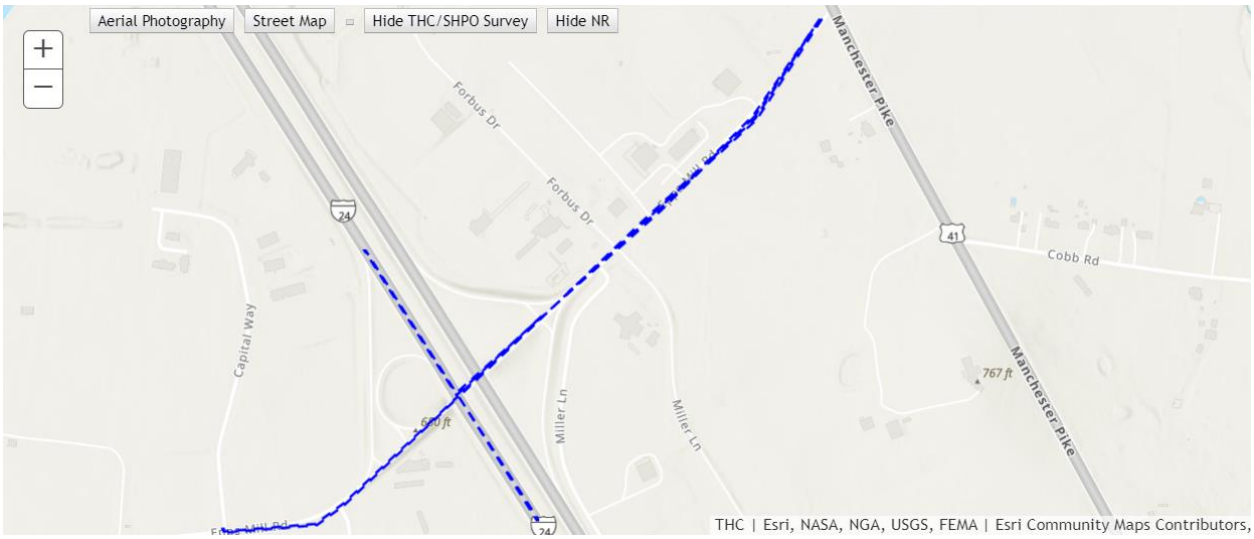

Figure 10: THC survey map, with no previously surveyed resources in project area (accessed June 10, 2024).

Table 1: Newly surveyed historic resources

Survey ID	Name	Date	Style/Type	Location/ Address	NRHP Eligibility Recommendation
HS-1		1950	Ranch House	8830 Manchester Pike	Not Eligible
HS-2		1972	Convenience Store	5501 Miller Lane	Not Eligible
HS-3	Barrett Firearms Manufacturers	1972	Manufacturing Facility	5926 Miller Lane	Not Eligible
HS-4		1968	Gas Station	5965 Miller Road	Not Eligible
HS-5	Pearson Family Cemetery	1910-1963	Rural Family Cemetery	South side of Epps Mill Road	Not Eligible

In total, there are no properties in the APE that are recommended eligible for listing on the NRHP. There are five properties that have been recommended not eligible (refer to Figure 2: Resource Location Map). Because the project area contains no historic resources that are listed in or recommended eligible for the NRHP, the project is anticipated to have no effect on historic resources and Section 4(f) does not apply.

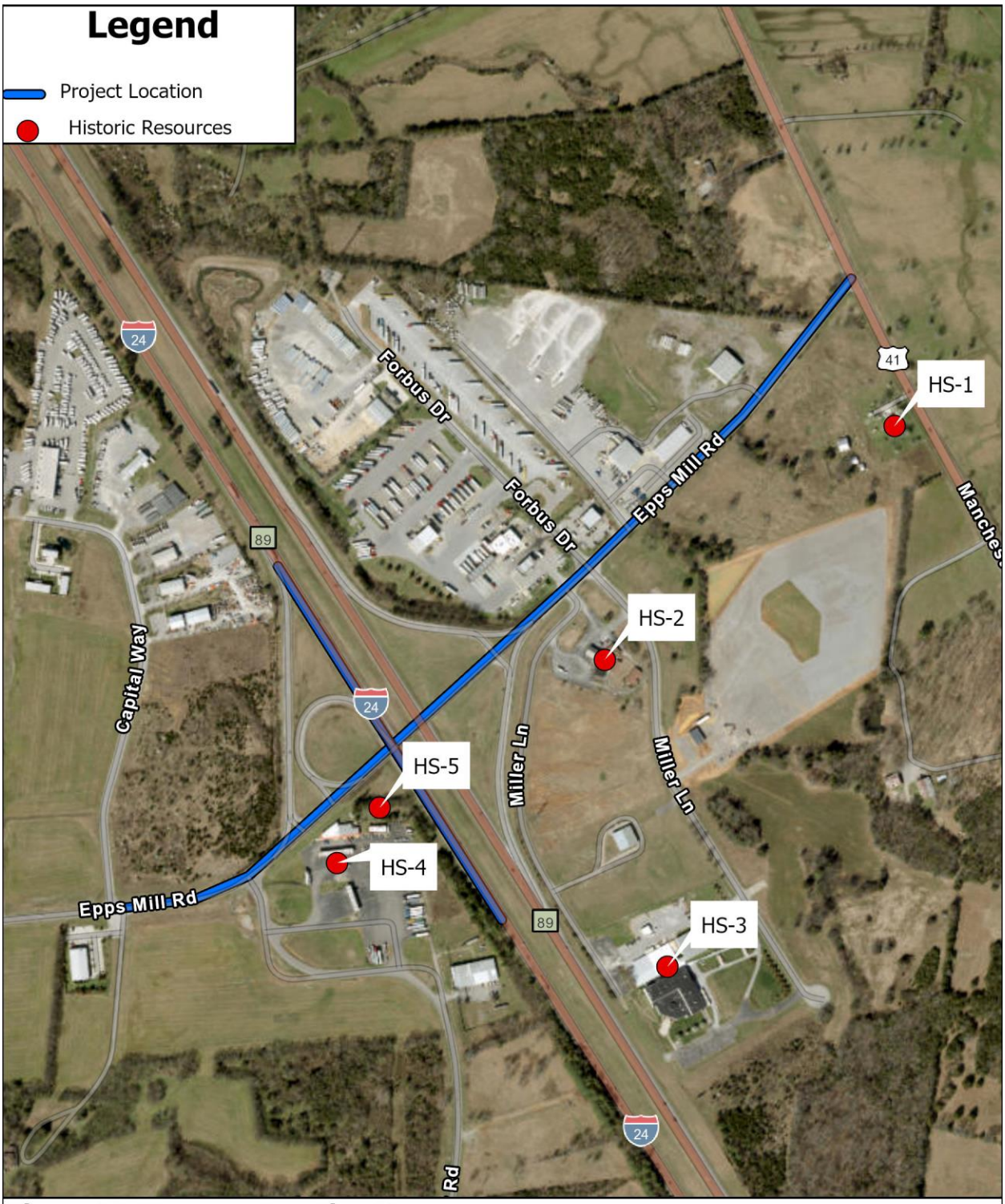

Figure 11: Resource Location Map
Epps Mill Road and I-24 Interchange
Pin: 124683.06, Rutherford County
USGS 7.5 Webbs Jungle Quadrangle 78 NE

Rutherford County OIT/GIS, Maxar, Esri Community Maps Contributors, Rutherford County, TN, Tennessee STS GIS, © OpenStreetMap, Microsoft, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, USFWS

Historic Resource Inventory Form HS-1

Summary: HS-1 is a ranch house located at 8830 Manchester Pike that is recommended not eligible for the NRHP.

Description: With an address of 8830 Manchester Pike, HS-1 is a ranch house that sits on the southwest corner of Epps Mill Road and Manchester Pike. The one-story house has a rectangular plan and a side-gable roof with standing-seam metal cladding. The house has an inset porch at roughly its center with decorative iron support posts and a poured-concrete floor. The porch covers a replacement metal entry door and a grouping of three single-hung vinyl windows; the area under the porch is clad with vertical vinyl boards. To the right of the porch, the house is clad with roman-brick stone and includes a vinyl picture window that is flanked by single-hung vinyl windows. The remainder of the façade is clad with brick, and fenestration consists of paired vinyl windows, some of which have metal storm windows. The garage on the right side of the house is set back from the main massing and has a non-historic rolltop metal door. There is a small rooftop addition to the garage that has a shed roof, with a single-hung vinyl window on the façade and an octagonal vinyl window on its side elevation. This addition and the secondary elevations of the house are clad with vinyl clapboard.

The concrete driveway is flanked by two roman-brick stone piers. One has a metal lantern on top; the other is missing. The rear yard is enclosed by a chain-link fence, and there is a small, prefabricated shed in the backyard.

HS-1-1: Northeastern façade and northwestern elevation of HS-1.

Figure HS-1.2: setting of HS-1, showing piers flanking driveway and fence around backyard in distance.

NRHP Evaluation: HS-1 is recommended not eligible for the NRHP.

The resource is recommended not eligible under Criteria A and B because there are no known associations with events or persons that have made a significant contribution to the broad patterns of our history. No associations were indicated or suggested as a result of background research on the project area and deed research on the property.

The house is not a good and intact example of a ranch house. It has been modified through a rooftop addition, replacement windows and doors, and the addition of non-historic siding on some portions of the house. As a result, it is not a representative example of its type and is recommended not eligible under Criterion C.

The resource is recommended not eligible under Criterion D because there are no indications that it is likely to yield information on important research questions in history or prehistory. This resource does not appear to have the potential to be the principal source of important information.

Historic Resource Inventory Form HS-2

Summary: HS-2 is a convenience store located at 5501 Miller Lane that is recommended not eligible for the NRHP.

Description: HS-2 is a commercial building that is located on the south side of Miller Lane. According to tax assessor records, the building was constructed in 1972, which is consistent with historic aerials. Assessor records also indicate that the building is a convenience store; it appears to be unoccupied and under renovation currently. The building was owned by the Outpost, an armory and shooting range, from 2003 to 2020.

The one-story building has a roughly t-shaped plan, with multiple entrances located at the corners formed by the intersections of the wings. The main wing faces Miller Lane to the north, with Epps Mill Road beyond, and has a front-gable roof, stone-veneer piers, replacement composite-board cladding, and vinyl clerestory windows. The side wing project to the southeast and southwest and have stone-veneer cladding, vinyl picture windows, and mansard roofs. At the crossings, poured-concrete portals cover metal entry door systems. The entire building is surrounded by a paved parking lot.

Figure HS-2.1: looking south at façade of HS-2.

Figure HS-2.2: looking southeast, showing main wing, southwestern wing, and entry portal.

NRHP Evaluation: HS-2 is recommended not eligible for the NRHP.

Because HS-2 has no known associations with events or persons that contributed significantly to the broad patterns of our history, it is recommended not eligible under Criteria A or B. The resource has been significantly altered, with changes to the cladding, windows, doors, and roof, and it does not represent any type, period, or method of construction. Therefore, it is recommended not eligible under Criterion C. It is recommended not eligible under Criterion D because it is not likely to yield information important in history or prehistory.

Historic Resource Inventory Form HS-3

Summary: Located at 5926 Miller Lane, HS-3 is a firearms manufacturing facility, Barrett Firearms, that is recommended not eligible for the NRHP. Access to the parcel during fieldwork was limited by security fencing.

Description: HS-3 is used as the headquarters of Barrett Firearms, a weapons manufacturer founded in 1982 by Ronnie Barrett. According to tax assessor records, the property includes one building constructed in 1972, one constructed in 1986, one from 2006, and one from 2007. Historic aerials indicate that the 1972 building sits at the northwest corner of the property, with the 1986 building attached to its northeastern elevation. The 2006 building is attached to the southeast elevation of the 1972 building, and the 2007 building is attached to the northeast side of the 1982 building (refer to Figure HS-3.1).

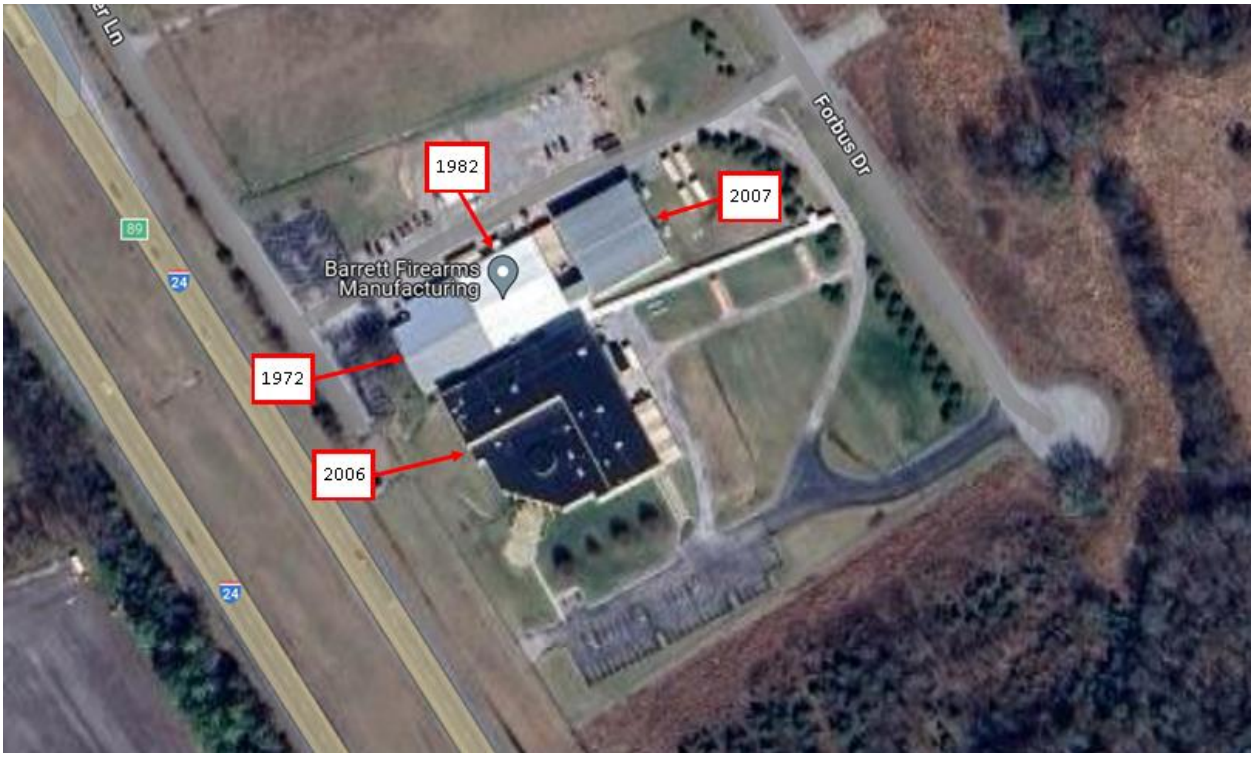

Figure HS-3.1: dates of construction for phases of Barrett Firearms complex (base image courtesy of Google).

The 1972 building is a single-story, rectangular-plan building constructed of metal siding with a front-gable roof. It has a metal entry door and vinyl single-hung windows on its southwestern elevation, which faces Miller Lane and I-24. The rest of the building is windowless.

The 1982 and 2007 buildings are both simple, utilitarian buildings with metal cladding and front-gable roofs. The 2006 building is two stories, with stucco cladding, a flat roof with crenellation, and narrow metal windows. There is a formal entry with stand-alone arches leading to it on the southwestern corner of the building.

Figure HS-3.2: looking south at Barrett Firearms, with 1972 building in foreground on the right, 1982 building in foreground to its left with a roofline slightly above that of the 1972 building, and two-story 2006 building in background.

Figure HS-3.3: looking northwest at complex, with rear of 2006 building at left and 2007 building at right.

Figure HS-3.4: looking northeast at 2006 building (courtesy of Google Streetview, July 2023).

NRHP Evaluation: Barrett Firearms is recommended not eligible for the NRHP.

Barrett Firearms is a major producer of guns, particularly the M82 semi-automatic rifle, which is used by militaries worldwide, and the company was founded in Murfreesboro and has always operated from this location. However, the company was established in 1982—less than 50 years ago—and preliminary research suggests that it did not have exceptional significance in the history of gun manufacturing that would warrant listing on the NRHP under Criterion Consideration G. No information on the history and use of the building prior to its use by Barrett Firearms was uncovered. Therefore, HS-3 is recommended not eligible under Criterion A.

HS-3 has no known associations with persons who have contributed significantly to the broad patterns of our history and is recommended not eligible under Criterion B.

The resource has no historical academic type or style. The oldest building on the property is simple and utilitarian, and its integrity has been diminished significantly by the construction of new buildings abutting it as well as the replacement of windows and doors. Therefore, it is recommended not eligible under Criterion C.

The resource is recommended not eligible under Criterion D because there are no indications that it is likely to yield information on important research questions in history or prehistory.

Historic Resource Inventory Form HS-4

Summary: HS-4 is a gas station located at 5965 Miller Road that is recommended not eligible for the NRHP.

Description: Located at 5965 Miller Road, HS-4 is a Shell gas station that sits on the southern side of Epps Mill Road with I-24 to the east and Miller Road to the west and south. According to tax assessor records, the building was constructed in 1968; this is consistent with historic aerials. The property also includes two pump canopies that aerials indicate were constructed between 2008 and 2010. Aerials also indicate that these replaced an earlier canopy that was connected to the building perpendicularly. To the immediate east of the building is a 2007 fast food restaurant building on a separate parcel that tax assessor records indicate was subdivided from the HS-4 property in 2006. The two buildings share a parking lot and two driveways off of Miller Road.

The one-story building has a roughly rectangular plan, concrete block construction, and a flat roof. The exterior cladding on the front and side elevations is comprised of decorative concrete panels arranged in a grid pattern. There is a faux-mansard roof on the front and side elevations with standing-seam metal panels. The southern façade has two storefronts with fixed metal windows and metal doors; one storefront is a convenience store and the other is a cheesesteak restaurant.

One of the pump canopies is parallel to the building and sits directly in front of it. The other is farther away and is perpendicular to the other canopy; this serves tractor trailers. Both are constructed of metal support beams with flat metal roofs.

NRHP Evaluation: HS-4 is recommended not eligible for the NRHP.

HS-4 has no known associations with persons or events that have contributed significantly to the broad patterns of our history; therefore, it is recommended not eligible under Criteria A or B. The property has been extensively altered, with the lot being subdivided and a non-historic building being constructed adjacent to the convenience store building and the original canopy being replaced by two separate canopies. As a result, it does not embody the distinctive characteristics of any type, period, or method of construction and is recommended not eligible under Criterion C. The resource is recommended not eligible under Criterion D because it is not likely to yield information important in history or prehistory.

Figure HS-4.1: Looking north at convenience store building associated with HS-4.

Figure HS-4.2: Looking north at convenience store, with non-historic canopy in front.

Figure HS-4.3: Looking east at non-historic tractor trailer canopy, with convenience store building and non-historic canopy at left with non-historic restaurant building in background (source: Google Streetview, April 2021).

Historic Resource Inventory Form HS-5

Summary: HS-5 is the Pearson Family Cemetery and is recommended not eligible for the NRHP.

Description: HS-5 is a rural family cemetery that is located on the southwestern corner of the I-24 and Epps Mill Road interchange to the rear of a Shell gas station (surveyed in this report as HS-4). Although the tax assessor record calls this property the "Garrison Cemetery," the four marked graves in the cemetery all belong to members of the Pearson family.

The cemetery includes three grave markers, one of which is a joint marker for Joseph E. Pearson and Mary Miller Pearson. This marker is a granite slab with base and lists death dates in 1951 for Joseph and 1963 for Mary. The two other markers belong to Paul Fowler Pearson, born in 1906, and Annie Ruth Pearson, born in 1909. Both died as children in March 1910, and both gravestones identify them as the children of J.E. and Mary Pearson. These markers are marble slabs that feature carved lamb figurines on top. There are marble footstones east of these markers. The parcel marked as the cemetery extends almost 200 feet to the east of these graves, but there are no other marked burials. The entire parcel is enclosed with a modern wire fence, and dense trees separate it from the interstate interchange.

Figure HS-5.1: headstones in the Pearson Family Cemetery, looking east.

Figure HS-5.2: Looking north at gravestones and setting of Pearson Family Cemetery.

NRHP Evaluation: The Pearson Cemetery is recommended not eligible for the NRHP.

The Pearson Cemetery is recommended not eligible under Criterion A. The cemetery is an example of the rural family cemetery type, representing a burial pattern in which families buried their dead in small cemeteries on their farms. This trend was ubiquitous in Tennessee's rural communities, and there is no evidence that the Pearson Cemetery contributed significantly to this broad pattern of history. It is not an early example of this type in Tennessee, nor does it represent a significant example of burial practices in the state. Furthermore, integrity has been diminished significantly due to drastic changes in the cemetery's setting as a result of the construction of I-24 and a gas station immediately adjacent to the cemetery. Thus, the cemetery no longer conveys the characteristics of a rural family cemetery.

The Pearson Cemetery is recommended not eligible under Criterion B because it is not associated with individuals who contributed significantly to the broad patterns of our history. An obituary for Joseph Pearson stated that he was a farmer who lived in the Buchanan community; Mary Pearson's obituary indicated she was born in the Rucker community. No evidence was uncovered to suggest that the Pearson family contributed significantly to the broad patterns of history.

The cemetery contains only two types of monuments, and none of the stones represent high artistic values or distinctive types of grave markers. There are no other decorative landscape elements. The setting of the resource has drastically changed with the construction of I-24 and a gas station immediately adjacent to the cemetery, meaning that it has lost the rural setting that characterizes its type. As a whole, the cemetery does not represent the distinctive characteristics of a type, style, or period of development, does not possess high artistic values, and does not represent the work of a master. Therefore, it is recommended not eligible under Criterion C.

The cemetery is not likely to yield information important in history or prehistory and is recommended not eligible under Criterion D.

Conclusion

The proposed TDOT project would reconstruct the I-24 interchange ramps at Epps Mill Road and widen Epps Mill Road to three lanes from near Capital Way to SR 2/U.S. This report has identified no properties that are listed on or recommended eligible for the NRHP within the project's APE.

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Appendix: Notification Letter and Correspondence with Consulting Parties

Ellen Hurd

From: Ellen Hurd
Sent: Thursday, June 20, 2024 2:53 PM
To: Mike Hughes
Cc: countymayor; Doug Demosi; John Lodl
Subject: RE: Interstate 24 Interchange at Epps Mill Road, Rutherford County; TDOT PIN 234683.06

Thank you, Mike. I will send you all the draft Section 106 documentation when it is ready for your review and comment.

Sincerely,

Ellen Dement Hurd | Historian
Environmental Division | Cultural Resources
James K. Polk Building, 9th Floor
505 Deadrick St, Suite 900, Nashville, TN 37243
Work: (615) 741-6834
Cell: (470) 433-4121
Email: Ellen.Hurd@tn.gov

From: Mike Hughes <mhughes@rutherfordcountytn.gov>
Sent: Thursday, June 20, 2024 12:41 PM
To: Ellen Hurd <Ellen.Hurd@tn.gov>
Cc: countymayor <countymayor@rutherfordcountytn.gov>; Doug Demosi <ddemosi@rutherfordcountytn.gov>; John Lodl <jlodl@rutherfordcountytn.gov>
Subject: [EXTERNAL] RE: Interstate 24 Interchange at Epps Mill Road, Rutherford County; TDOT PIN 234683.06

***** This is an EXTERNAL email. Please exercise caution. DO NOT open attachments or click links from unknown senders or unexpected email - STS-Security. *****

Ellen,
Please include myself, Doug Demosi (the Rutherford County Planning Director – email: ddemosi@rutherfordcountytn.gov), and Dr. John Lodl (the Rutherford County Archives Director – email: jlodl@rutherfordcountytn.gov) as part of the historic preservation consulting party for this project.
Thank you,

Mike Hughes, P.E., C.F.M.
County Engineer
Rutherford County Planning & Engineering Department
Phone: 615-898-7732
Email: mhughes@rutherfordcountytn.gov

From: County Mayor <countymayor@rutherfordcountytn.gov>
Sent: Thursday, June 20, 2024 10:59 AM
To: Doug Demosi <ddemosi@rutherfordcountytn.gov>; Mike Hughes <mhughes@rutherfordcountytn.gov>
Subject: FW: Interstate 24 Interchange at Epps Mill Road, Rutherford County; TDOT PIN 234683.06

From: Ellen Hurd <Ellen.Hurd@tn.gov>
Sent: Wednesday, June 19, 2024 2:44 PM
Subject: Interstate 24 Interchange at Epps Mill Road, Rutherford County; TDOT PIN 234683.06

EXTERNAL EMAIL WARNING	Please do not open links, nor attachments, without verifying their authenticity.

The Tennessee Department of Transportation (TDOT), with funding from the Federal Highway Administration (FHWA), proposes improvements to the I-24 interchange at Epps Mill Road in Rutherford County, Tennessee. The project would reconstruct the interchange ramps and widen Epps Mill Road to three lanes from near Capital Way to State Route (SR) 2/U.S. 41. The project would require modifications to intersections with side roads along Epps Mill Road (map of project location attached).

The Advisory Council on Historic Preservation regulations stipulate that TDOT invite local government representatives to participate in the historic review process as a consulting party. TDOT would like to invite you, as the local government official, to participate as a consulting party for the proposed project. If you choose to participate as a consulting party, you will receive copies of TDOT's environmental reports and will be invited to attend project-related meetings between TDOT and the Tennessee State Historic Preservation Office (TN SHPO), if any are held. As a consulting party, you should be prepared to attend any such meetings between TDOT and the TN-SHPO and provide a response to TDOT's reports in written form within 30 days upon receipt of the report. TDOT also wishes to seek your comments on the identification and evaluation of historic properties that the proposed project might impact.

If you would like to participate as a consulting party, please write to me at the above email address. To facilitate our planning process, please respond within 30 days of receipt of this email. Thank you for your assistance.

TN TDOT Department of Transportation

Ellen Dement Hurd | Historian
Environmental Division | Cultural Resources
James K. Polk Building, 9th Floor
505 Deadrick St, Suite 900, Nashville, TN 37243
Work: (615) 741-6834
Cell: (470) 433-4121
Email: Ellen.Hurd@tn.gov

This message w/attachments (message) is intended solely for the use of the intended recipient(s) and may contain information that is privileged, confidential or proprietary. If you are not an intended recipient, please notify the sender, and then please delete and destroy all copies and attachments. Please be advised that any review or dissemination of, or the taking of any action in reliance on, the information contained in or attached to this message is prohibited.

Ellen Hurd

From: Ellen Hurd
Sent: Thursday, June 20, 2024 7:52 AM
To: k.gregory.tucker
Subject: Re: [EXTERNAL] Re: Interstate 24 Interchange at Epps Mill Road, Rutherford County; TDOT PIN 234683.06

Excellent! I will send you copies of the Section 106 documentation once it is completed for your review and comment.

Sincerely,

Ellen Dement Hurd | Historian
Environmental Division | Cultural Resources
James K. Polk Building, 9th Floor
505 Deadrick St, Suite 900, Nashville, TN 37243
Work: (615) 741-6834
Cell: (470) 433-4121
Email: Ellen.Hurd@tn.gov

From: Gregory Tucker <k.gregory.tucker@gmail.com>
Sent: Wednesday, June 19, 2024 7:11 PM
To: Ellen Hurd <Ellen.Hurd@tn.gov>
Subject: [EXTERNAL] Re: Interstate 24 Interchange at Epps Mill Road, Rutherford County; TDOT PIN 234683.06

***** This is an EXTERNAL email. Please exercise caution. DO NOT open attachments or click links from unknown senders or unexpected email - STS-Security. *****

Yes, I will participate. Greg Tucker

On Wed, Jun 19, 2024 at 2:44 PM Ellen Hurd <Ellen.Hurd@tn.gov> wrote:

> The Tennessee Department of Transportation (TDOT), with funding from the Federal Highway Administration (FHWA), proposes improvements to the I-24 interchange at Epps Mill Road in Rutherford County, Tennessee. The project would reconstruct the interchange ramps and widen Epps Mill Road to three lanes from near Capital Way to State Route (SR) 2/U.S. 41. The project would require modifications to intersections with side roads along Epps Mill Road (map of project location attached).
>
> The Advisory Council on Historic Preservation regulations stipulate that TDOT invite local government representatives to participate in the historic review process as a consulting party. TDOT would like to invite you, as the local government official, to participate as a consulting party for the proposed project. If you choose to participate as a consulting party, you will receive copies of TDOT's environmental reports and will be invited to attend project-related meetings between TDOT and the Tennessee State Historic Preservation Office (TN SHPO), if any are held. As a consulting party, you should be prepared to attend any such meetings between TDOT and the TN-SHPO and provide a response to TDOT's reports in written form within 30 days upon receipt of the report. TDOT also wishes to seek your comments on the identification and evaluation of historic properties that the proposed project might impact.

If you would like to participate as a consulting party, please write to me at the above email address. To facilitate our planning process, please respond within 30 days of receipt of this email. Thank you for your assistance.

Ellen Dement Hurd | Historian
Environmental Division | Cultural Resources
James K. Polk Building, 9th Floor
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Work: (615) 741-6834
Cell: (470) 433-4121
Email: Ellen.Hurd@tn.gov

Environmental Study

Technical Section

Section: Archaeology

Study Results

In a letter dated 2/12/2025 TN SHPO concurred with TDOT Archaeology that no archaeological resources are eligible for listing in the NRHP will be effected by this undertaking. Should project plans change, then the project will need to be reevaluated by TDOT Archaeology. Documents posted to R Drive.

Commitments

Did the study of this project result in any environmental commitments? **Yes**

Avoid Pearson and Cobb Cemeteries with at least a 10ft buffer. Project Lead advised w/ KMZ file 2/12/2025 and HAATS notes

Additional Information

Is there any additional information or material included with this study? **Yes**

Type: Archaeology Report

Location: R: Drive

Link: \\AG03SDCWF00007.net.ads.state.tn.us\10Shared\ENVRPLAN\ED Social & Cultural Resources Office\Archaeology\Project Files\PIN Folder\124683.06\Intial ESR\Separate Archaeology

Certification

Responder: Angela Blankenship

Title: Senior Technical Specialist

Signature: Angela Blankenship

Digitally signed by Angela Blankenship
Date: 2025.02.12 12:56:29 -06'00'

From:	TN Help
To:	Angela L. Blankenship; Kimberly Vasut-Shelby
Cc:	Kimberly Vasut-Shelby
Subject:	Improvements to I-24 Interchange at Epps Mill Road/ PIN 124683.06 - Project # SHPO0005419
Date:	Wednesday, February 12, 2025 11:32:23 AM
Attachments:	image image

TENNESSEE HISTORICAL COMMISSION
STATE HISTORIC PRESERVATION OFFICE
2941 LEBANON PIKE
NASHVILLE, TENNESSEE 37243-0442
OFFICE: (615) 532-1550
www.tnhistoricalcommission.org

02-12-2025 11:31:43 CST

Kim Vasut-Shelby
TDOT
kimberly.vasut-shelby@tn.gov

RE: Federal Highway Administration (FHWA), Improvements to I-24 Interchange at Epps Mill Road/ PIN 124683.06, Project#: SHPO0005419, Christiana, TN, Rutherford County, TN

Dear Kim Vasut-Shelby:

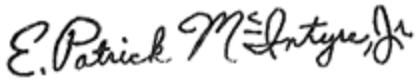
In response to your request, we have reviewed the archaeological report of investigations and accompanying documentation submitted by you regarding the above-referenced undertaking. Our review of and comment on your proposed undertaking are among the requirements of Section 106 of the National Historic Preservation Act. This Act requires federal agencies or applicants for federal assistance to consult with the appropriate State Historic Preservation Office before they carry out their proposed undertakings. The Advisory Council on Historic Preservation has codified procedures for carrying out Section 106 review in 36 CFR 800 (Federal Register, December 12, 2000, 77698-77739).

Considering the information provided, we find that no archaeological resources eligible for listing in the National Register of Historic Places will be affected by this undertaking. If project plans are changed or archaeological remains are discovered during project construction, please contact this office to determine what further action, if any, will be necessary to comply with Section 106 of the National Historic Preservation Act. Complete and/or updated Tennessee Site Survey Forms should be submitted to the Tennessee Division of Archaeology for all sites recorded and/or revisited during the current investigation. Please provide your Project # when submitting any additional information regarding this undertaking. Questions or

comments may be directed to Jennifer Barnett, who drafted this response, at Jennifer.Barnett@tn.gov, +16156874780.

Your cooperation is appreciated.

Sincerely,



E. Patrick McIntyre, Jr.
Executive Director and
State Historic Preservation Officer

Ref:MSG17242969_OsA4ORM18T8GfrRQZNB

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
ENVIRONMENTAL DIVISION
SUITE 900, JAMES K. POLK BUILDING
505 DEADERICK STREET
NASHVILLE, TENNESSEE 37243-1402
(615) 741-3655

BUTCH ELEY
COMMISSIONER

BILL LEE
GOVERNOR

February 12, 2025

Mr. E. Patrick McIntyre, Jr.
Executive Director and State Historic Preservation Officer
Tennessee Historical Commission
2941 Lebanon Road
Nashville, Tennessee 37243

RE: Archaeological Assessment for the Proposed Improvements of the I-24 Interchange at Epps Mill Road, Rutherford County, TDOT PIN 124683.06

Dear Mr. McIntyre,

The Tennessee Department of Transportation (TDOT) proposes improvements to the I-24 Interchange at Epps Mill Road in Rutherford County. The planned improvements include the replacement of the existing bridge on the same alignment, ramp reconstruction, and widening of Epps Mill Road to three lanes from near Capital Way to SR-2. The proposed project Area of Potential Effects (APE) is defined as the Environmental Technical Study Area (ETSA) provided by TDOT's Strategic Transportation Investments Division, comprising approximately 97.1 acres (39.9 hectares; 0.15 square miles) of existing and proposed right-of-way (ROW) and easements.

TDOT retained Edwards-Pittman Environmental, Inc. (EPI) to complete the Phase I archaeological survey of the APE. Sara Parkin, M.A., served as Principal Investigator and oversaw all aspects of the work. As a result of this survey, two previously identified archaeological sites (40RD342 and 40RD300 [Cobb Cemetery]) were revisited, one historic cemetery (Pearson Cemetery), and one historic Isolate Find (IF) were identified during field work. No new sites were identified.

EPI recommends:

- Avoidance to both the Pearson and Cobb Cemeteries
    - The data potential for these cemeteries are unknown. For these resources EPI recommends avoidance; if avoidance is not possible, further investigation using a non-destructive subsurface testing method such as Ground Penetrating Radar (GPR) is recommended.
- No further work is recommended for both Site 40RD342 and IF 1 as they do not meet the requirements for NRHP inclusion.

The TDOT Archaeology Section has reviewed this project documentation and concur with this opinion. Please find enclosed the DRAFT report for TDOT PIN 124683.06.

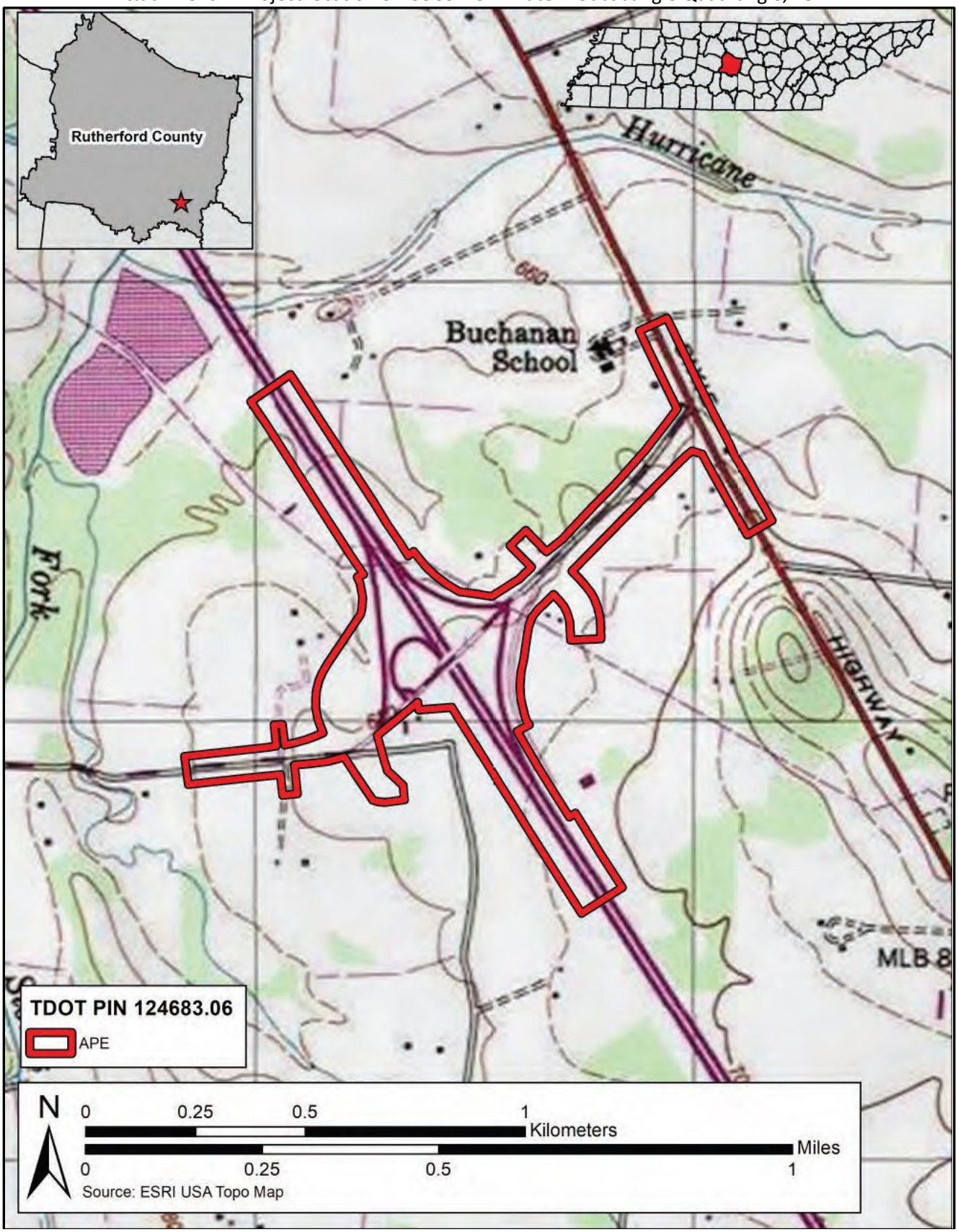
In compliance with Section 106 of the National Historic Preservation Act (as amended) and implementing regulations 36 CFR 800, please review this information and provide me with your comments. If any additional information is needed, please contact Kim Vasut-Shelby at (615) 313-3764. I appreciate your assistance.

Sincerely,

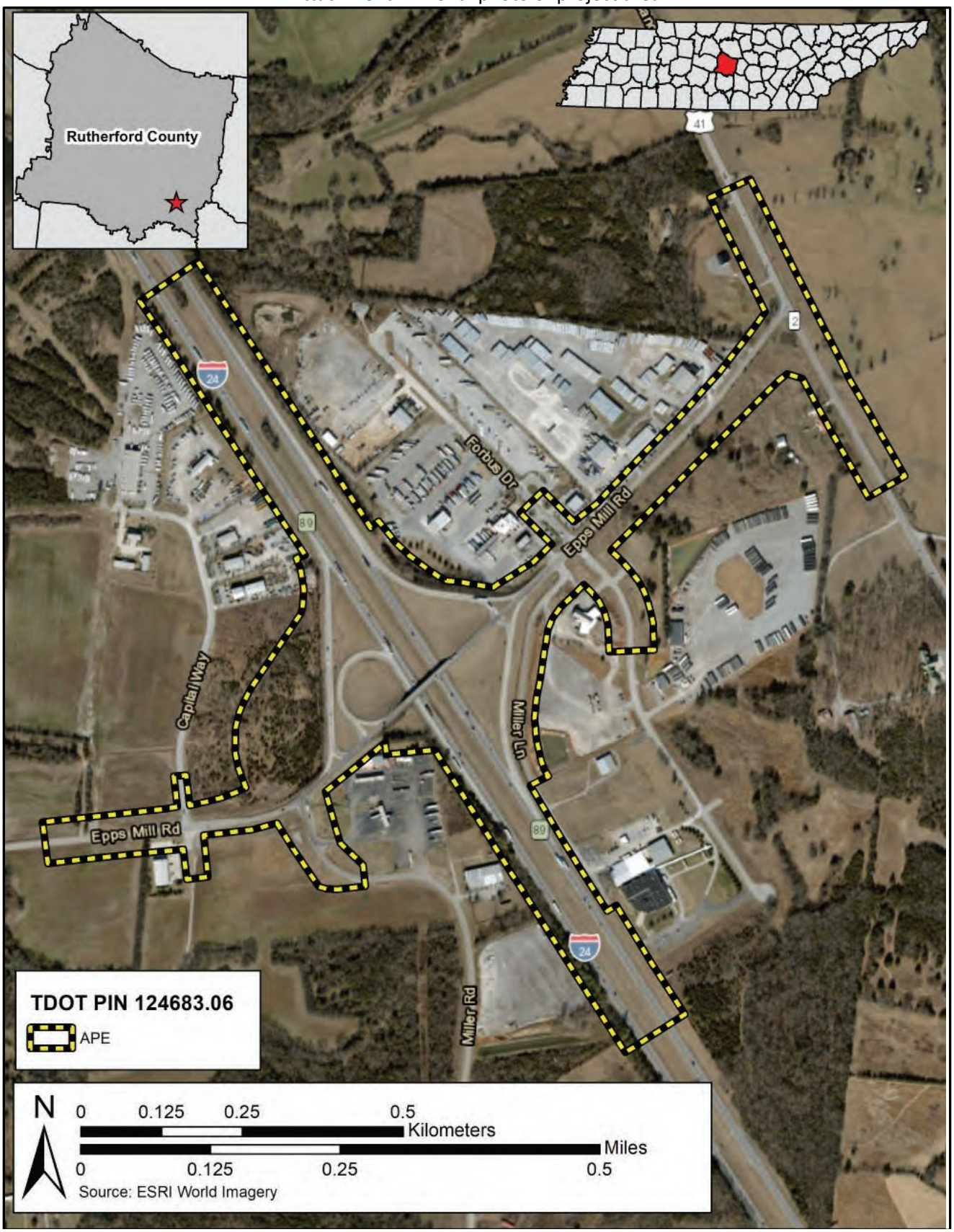
Kimberly Vasut-Shelby
Cultural Resources Team
Lead - Environmental
Division

cc: Ms. Jennifer Barnett, TDOA, w/enclosure

Attachment 1: Project location on USGS 7.5 Minute Webbs Jungle Quadrangle, 78 NE



Attachment 2: Aerial photo of project area



PHASE I ARCHAEOLOGICAL SURVEY OF THE I-24 INTERCHANGE AT EPPS MILL ROAD, RUTHERFORD COUNTY, TENNESSEE

TDOT PIN 124683.06
TDOA PERMIT NO. 001624

DRAFT REPORT

FEBRUARY 2025

Phase I Archaeological Survey of the I-24 Interchange at Epps Mill Road, Rutherford County, Tennessee

The contents of this publication reflect the views of the author, who is responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the DEPARTMENT or Federal Highway Administration. This publication does not constitute a standard, specification, or regulation.

TDOT PIN 124683.06
TDOA Permit No. 001624

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Draft Report

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Lead Agency: The Federal Highway Administration

MANAGEMENT SUMMARY

At the request of the Tennessee Department of Transportation (TDOT), Edwards-Pitman Environmental, Inc. (EP) completed a Phase I archaeological survey for interchange improvements at the intersection of Interstate (I)-24 and Epps Mills Road in Rutherford County, Tennessee (TDOT PIN 124683.06). The goal of the survey was to locate archaeological sites within the Area of Potential Effect (APE), which is defined as the Environmental Technical Study Area (ETSA) provided by TDOT's Strategic Transportation Investments Division (STID). The survey was conducted in accordance with the Tennessee SHPO Standards and Guidelines for Archaeological Resource Management Studies (Tennessee State Historic Preservation Office [SHPO] 2024) and the TDOT Scope of Work for Consultant Implemented Phase I Archaeological Assessments (TDOT 2021). The effects of the undertaking on identified archaeological resources were evaluated and recommendations are made for further archaeological resource management in compliance with Section 106 of the National Historic Preservation Act (NHPA) (1966, as amended through 2016) and its implementing regulations (36 CFR Part 800), as well as Tennessee Code Annotated (TCA) 11-6.

The ETSA, referred to as the Area of Potential Effect (APE), for EP's survey extends along I-40 for a length of approximately 1.7 kilometers (km) (1.1 miles [mi.]) and a width of approximately 126.7 meters (m) (115.7 feet [ft.]), and it extends along McCrory Lane approximately 1.4 km (0.69 mi.) and a varying width between 45 and 190 m (147.6 and 623.4 ft.). The APE covers a total of 97.1 acres (ac.) (39.9 hectares [ha]; 0.15 square miles [sq. mi.]). Prior to the survey, EP obtained an archaeological permit from the Tennessee Department of Environment and Conservation Division of Archaeology (TDOA; Permit No. 001624). Fieldwork was conducted in January 2025. Two archaeological sites were revisited, 40RD342 and 40RD300 (Cobb Cemetery). One historic cemetery, the Pearson Cemetery, and one Isolated Find (IF1) were also recorded during the survey. The TDOA no longer assigns state site numbers to historic cemeteries, which is why Cobb Cemetery (40RD300) has a trinomial but Pearson Cemetery does not. No new archaeological sites were recorded during the survey. Avoidance of both Pearson Cemetery and Cobb Cemetery is recommended in compliance with Tennessee state law (TCA 46-8-103). No further work is recommended.

No further work is recommended. Should the project be changed to include areas beyond the limits of the APE, additional archaeological fieldwork may be necessary.

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CHAPTER 1: INTRODUCTION

In January 2025, Edwards-Pitman Environmental, Inc. (EP) conducted a Phase I archaeological survey prior to proposed Interstate (I) -24 interchange improvements at Epps Mill Road in Rutherford County, Tennessee (Tennessee Department of Transportation [TDOT] PIN 124683.06). The goal of the survey was to locate archaeological sites within the Area of Potential Effects (APE), which is defined as the Environmental Technical Study Area (ETSA) provided by TDOT's Strategic Transportation Division (STID). The survey was conducted in accordance with the Tennessee State Historic Preservation Office (SHPO) Standards and Guidelines for Archaeological Resource Management Studies (Tennessee SHPO 2024) and the TDOT Scope of Work (SOW) for Consultant Implemented Phase I Archaeological Assessments (TDOT 2021). The effects of the undertaking on identified archaeological resources were evaluated and recommendations were made for further archaeological resource management in compliance with Section 106 of the National Historic Preservation Act (NHPA) (1966, as amended through 2016) and its implementing regulations (36 CFR Part 800), as well as Tennessee Code Annotated (TCA) 11-6. The Federal Highway Administration (FHWA) is the lead agency for the proposed project.

Project Description

The proposed project is on the I-24 Interchange at Epps Mill Road/Buchanon Road (Epps Mill Road) from west of Capital Way to State Route (SR)-2 (US-41) and will reconstruct the ramps at the I-24 interchange and widen Epps Mill Road to three lanes from near Capital Way to SR-2.

Archaeological Investigation and Reporting

The APE for EP's survey extends along Epps Mill Road for 1.49 kilometers (km) (0.93 miles [mi.]) and 1.39 km (0.86 mi.) along I-24, with a varying width between 65-110 meters (m) (213.3-360.9 feet [ft.]). The APE covers a total of 90.8 acres (ac.) (36.75 hectares [ha]; 0.14 square miles [sq. mi.]). Land use within the APE consists of multiple transportation corridors, commercial properties, agricultural fields, and undeveloped land, the latter of which consists of undeveloped woodlands (**Figures 1.1 and 1.2**).

Prior to the commencement of fieldwork, EP obtained an archaeological permit from the Tennessee Division of Archaeology (TDOA) (Permit No. 001624) (**Appendix A**) and requested site file information online through the TDOA's Site File. A document request was submitted on December 9, 2024, and EP received files back from the TDOA on December 11, 2024. The survey consisted of a visual inspection of areas with greater than 25% ground surface visibility, shovel testing of areas with less than 25% ground surface visibility, as well as the collection of field notes and photography of field conditions.

The Principal Investigator in charge of EP's Phase I survey was Sara Mackenzie Parkin, who authored this report. The fieldwork was conducted by Field Director Gary Owenby, as well as Archaeological Technicians Sydney Murdock, Amil Harp, and Taylor Salinas. Angela Blankenship is the TDOT Archaeologist responsible for reviewing this report. All artifacts, notes, photographs, maps, and other records produced during the project are temporarily curated at EP's offices in Atlanta, Georgia. Following acceptance of the final report, copies of it and all project materials will be curated at the TDOT offices in Nashville, Tennessee.

This report is organized into five chapters: Chapter 2 describes the environmental setting and cultural history of the project area and vicinity, Chapter 3 contains an explanation of the archaeological field and laboratory methodologies, Chapter 4 reports the results of the archaeological investigation, and Chapter 5 is a summary of findings as well as recommendations. Appendix A contains the TDOA permit, Appendix B contains the TDOT site forms, and Appendix C contains the artifact catalog.

Figure 1.1. Project location depicted on an aerial photograph.

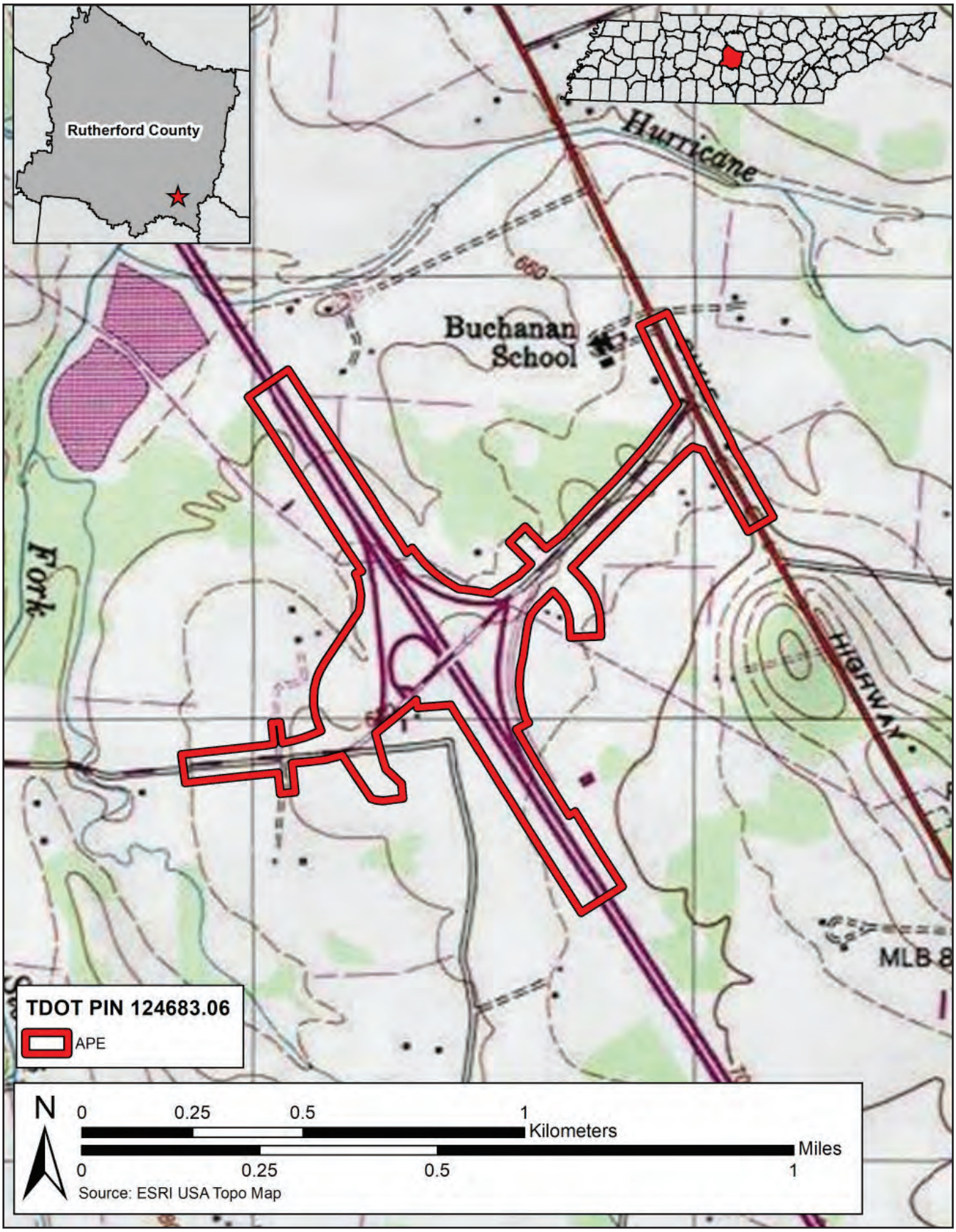

Figure 1.2. Project location depicted on the USGS 7.5 minute Webbs Jungle, TN quadrangle 78 NE.

CHAPTER 2: ENVIRONMENTAL AND CULTURAL CONTEXT

Environmental Setting

Physical Setting

The APE is located along I-24 south of Murfreesboro, Rutherford County, and covers a total of 90.8 ac. (36.75 ha; 0.14 sq. mi.). Modern land use within the APE consists of multiple transportation corridors, commercial properties, agricultural fields, and undeveloped land, the latter of which consists of undeveloped woodlands (**Figures 2.1 and 2.2**). Most of the APE and its immediate vicinity is developed.

Natural Setting

Physiography, Geology, and Soils

The APE is located within the Inner Nashville Basin of the larger Interior Plateau Level IV ecoregion as defined by the Environmental Protection Agency (EPA) (Griffith et al. n.d.) (**Figure 2.3**). Elevation in the Inner Nashville Basin varies from 500-900 ft. above mean sea level (amsl); terrain in this subregion typically consists of smooth, rolling plains with low hills. The underlying geology of this ecoregion consists of thin clay Quaternary residuum and Ordovician limestone. (Griffith et al. n.d.).

Soil series mapped by the Soil Survey Staff (SSS) of the National Resource Conservation Service, United States Department of Agriculture (NRCS, USDA) (SSS, NRCS, USDA 2025) indicate 14 major soil series within the APE (**Figure 2.4; Table 2.1**). The three primary soil types previously mapped within the survey area include Talbott silt loam (TaB2; 2-5% slopes), Talbott-Barfield-Rock outcrop complex (TrC; 2-12% slopes), and Bradyville silt loam (BrA; 0-2% slopes). Talbott soils consist of moderately deep, well-drained soils. These soils frequently form in clayey residuum weathered from limestone. Mimosa soils consist of deep, well-drained soils commonly found on uplands. These soils frequently form from limestone residuum (SSS, NCRS, USDA 2025).

Hydrology

The survey area is located within the Stones River Basin in Middle Tennessee. The western portion of the APE is directly drained by an unnamed tributary of Middle Fork Stones River, and the eastern portion of the APE is drained by Hurricane Creek, which is also a tributary of Middle Fork Stones River. Middle Fork Stones River flows northwest, where it merges with West Fork Stone River just southwest of Murfreesboro, Tennessee. The West Fork Stones River continues north to Smyrna, Tennessee, where it joins with the East Fork Stones River to form Stones River, which is impounded as J. Percy Priest Reservoir. The Percy Priest Dam is located near I-40

Figure 2.1. Mixed use commercial area within the APE, facing west.

Figure 2.2. Fallow agricultural field context within the APE, facing south.

Figure 2.3. The APE depicted on a map of the Level IV ecoregions of Tennessee (Griffith et al. n.d.) and the river basins of Tennessee.

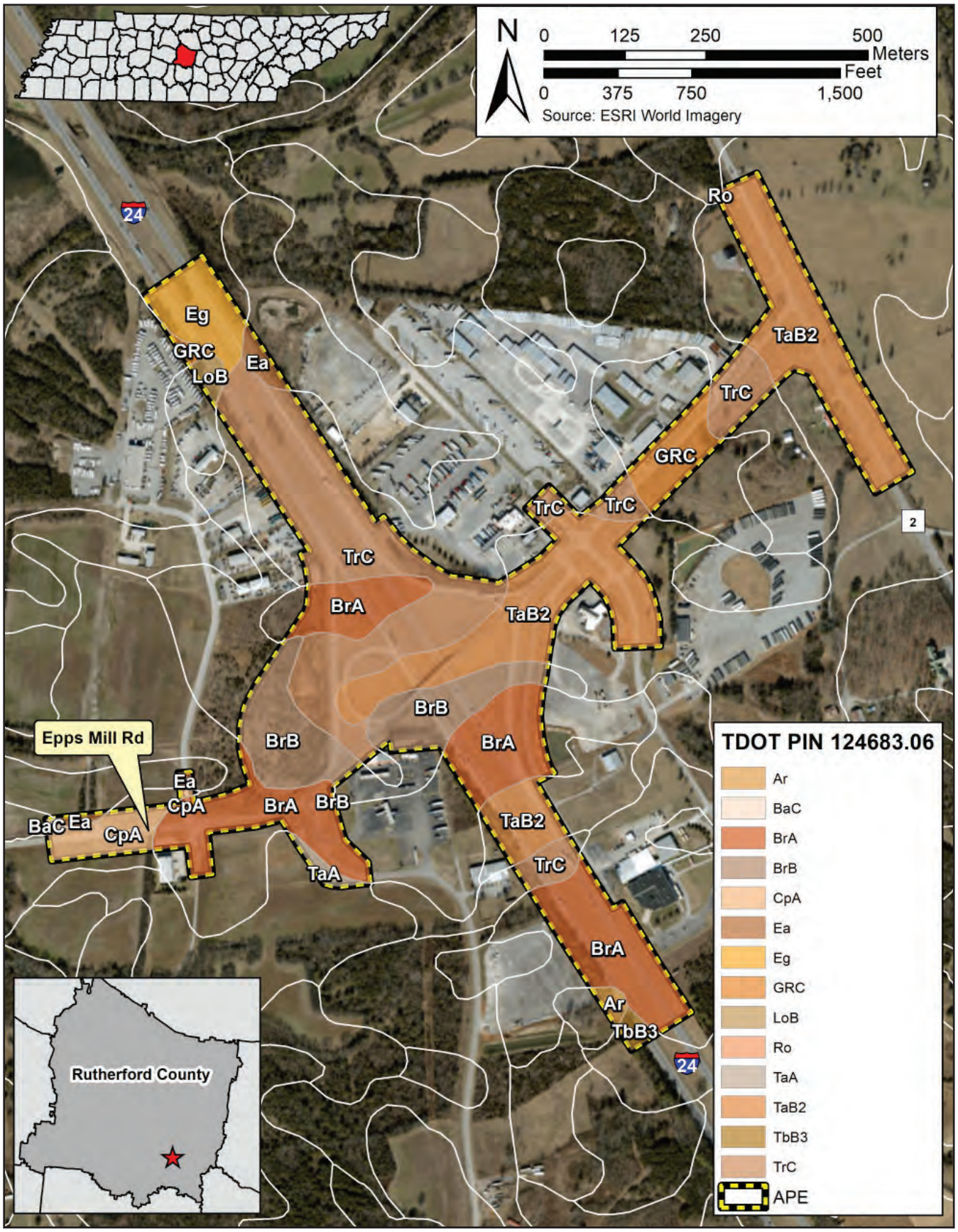

Figure 2.4. Soils mapped within the APE (SSS, NCRS, USDA 2025).

Table 2.1. Soils Mapped within the APE (SSS, NCRS, USDA 2025).

Soil Name	Symbol	Soil Type Acreage	Percent of Soil Type in the APE
Arrington silt loam (0-2% slopes, ocassionally flooded)	Ar	0.5 ac (0.2 ha)	0.5%
Barfield silty clay loam (1-8% slopes)	BaC	0.1 ac, (0.04 ha)	0.1%
Bradyville silt loam (0-2% slopes)	BrA	20.8 ac. (8.4 ha)	22.9%
Bradyville silt loam (2-5% slopes)	BrB	9.7 ac. (3.9 ha)	10.7%
Capshaw silt loam (0-2% slopes)	CpA	2.4 ac. (0.97 ha)	2.7%
Eagleville silty clay loam	Ea	1.1 ac. (0.4 ha)	1.2%
Egam silt loam	Eg	3.6 ac. (1.5 ha)	4.0%
Gladeville-Rock outcrop complex (2-15% slopes, extremely stony)	GRC	3.1 ac (1.3 ha)	3.4%
Lomond silt loam (2-5% slopes)	LoB	0.6 ac. (0.2 ha)	0.6%
Roellen silty clay loam	Ro	>0.0 ac. (>0.0 ha)	>0.0%
Talbott silt loam (0-2% slopes)	TaA	0.5 ac. (0.2 ha)	0.6%
Talbott silt loam (2-5% slopes, eroded)	TaB2	24.5 ac. (9.9 ha)	27.0%
Talbott silty clay loam (2-5% slopes, severely eroded)	TbB3	0.5 ac. (0.2 ha)	0.6%
Talbott-Barfield-Rock outcrop complex (2-12% slopes)	TrC	23.4 ac. (9.5 ha)	25.8%
Totals for the APE	**-**	**90.9 ac. (36.8 ha)**	**100%**

in east Nashville. From the Percy Priest Dam, Stones River flows northwest a short distance before merging with the Cumberland River in Nashville. The Cumberland River continues west-northwest across the state and into southwestern Kentucky until it meets the Ohio River. The Ohio River continues west a short distance until its confluence with the Mississippi River. The

Mississippi River continues from this point at the Missouri/Illinois/Kentucky border further south along the states of Tennessee, Arkansas, Mississippi, and Louisiana, where it empties into the Gulf of Mexico near New Orleans.

The vicinity of the APE contains numerous sources of fresh water, and the local environment would have provided prehistoric peoples with several key natural resources. In addition to providing water, the many streams and creeks in the region, including the Middle Fork Stones River, would have attracted a diverse range of faunal species and would have served as habitat for exploitable floral species that could be utilized by native populations.

Flora and Fauna

The Inner Nashville Basin is comprised of urban and residential development, pasture and cropland, and mixed woodlands. Common crops grown in this subregion include hay, corn, and small grains, as well as beef cattle and dairy. Mixed forests in this region include oak-hickory forests (Griffith et al. n.d.).

Oak-hickory forests contain a variety of oak species, including white oak (*Quercus alba*), northern red oak (*Quercus rubra*), and black oak (*Quercus velutina*), as well as hickory species like shagbark (*Carya ovata*), pignut (*Carya glabra*), mockernut (*Carya tomentosa*), and bitternut (*Carya cordiformis*). Other common types include ash (*Fraxinus*), blackgum (*Nyssa sylvatica*), yellow-poplar (*Liriodendron tulipifera*), elm (*Ulmus*), maple (*Acer*), sassafras (*Sassafras albidum*), black cherry (*Prunus serotina*), black locust (*Robinia pseudoacacia*), black walnut (*Juglans nigra*), and persimmon (*Diospyros virginiana*) (Hopper et al. 1995). The mixed mesophytic forests include species like chestnut oak (*Quercus prinus*), beech (*Fagus*), tulip poplar (*Liriodendron tulipifera*), sugar maple (*Acer saccharum*), basswood (*Tilia americana*), ash (*Fraxinus*), buckeye (*Aesculus flava*), hemlock (*Tsuga*), and river birch (*Betula nigra*) (Griffith et al. n.d.).

A variety of mammals, birds, reptiles, and amphibians would have been available in the region throughout both history and prehistory, including: white-tailed deer (*Odocoileus virginianus*), beavers (*Castor*), chipmunks (*Tamias*), rabbits (*Sylvilagus floridanus*), squirrels (*Sciurus carolinensis*), foxes (*Vulpes vulpes*), raccoons (*Procyon lotor*), opossums (*Didelphidae*), skunks (*Mephitidae*), groundhogs (*Marmota monax*), porcupines (*Erethizon dorsatum*), bats (*Chiroptera*), hawks (*Buteo*), woodpeckers and sapsuckers (*Picidae*), warblers (*Parulidae*), thrushes (*Turdidae*), wrens (*Troglodytidae*), nuthatches (*Sitta*), flycatchers (*Tyrannidae*), grouses (*Tetraonini*), frogs (*Anura*), salamanders (*Urodela*), turtles (*Testudines*), rattlesnakes (*Crotalus*), and copperhead snakes (*Agkistrodon contortix*) (Klappenbach 2019).

Climate

The ecoregion in which the APE is located in has historically had hot summers and moderate winters. Precipitation has been fairly well distributed throughout the year, with an annual average precipitation of approximately 50.5 inches (in.) (128.3 centimeters [cm]). Winter temperatures averaged around 35.5°F, and summer temperatures averaged around 78°F. These regions experience an average of 200 frost free days (Griffith et al. n.d.).

Cultural Setting

Prehistoric Overview

Paleoindian Period (ca. 12,000-8,000 BC)

At present, it is uncertain when the first human populations permanently settled the western hemisphere, although most scholars believe it was sometime between 20,000 and 13,000 years ago, in the last stages of the Pleistocene glaciation. Reliable dates as early as ca. 11,800 BC have been obtained from a Paleoindian site in Monte Verde, Chile (Dillehay 1989). In North America, two of the earliest sites are Cactus Hill (44SX202), a stratified multicomponent site in Virginia, and the Topper site (38AL23), a quarry/manufacturing site near Allendale, South Carolina. A number of Paleoindian component sites have been recorded in Tennessee, including the Coats-Hines Site (40WM31), the Wells Creek Crater Site (40SW73), and the Johnson Site (40DV400) (Anderson et al. 1990; Barker and Broster 1996; Deter-Wolf et al. 2011). Initially recorded by the TDOA when mastodon bones were identified during the construction of a golf course, the Coats-Hines Site unmistakably demonstrates Pleistocene megafauna were incorporated as part of the Paleoindian subsistence base.

The end of the Paleoindian period coincides with the Pleistocene/Holocene transition, and in most areas of the Southeast, is given an arbitrary terminal date of 8,000 BC. In the Southeast, the Paleoindian period is typically divided into three broad temporal categories, Early, Middle, and Late or Transitional, based, in part, on the occurrence of specific point types in the archaeological record (Anderson et al. 1990). Clovis assemblages, highlighted by relatively large, fluted projectile points often having concave, ground basal margins, denote the Early Paleoindian subperiod. The Middle Paleoindian subperiod is generally characterized by smaller fluted points with Clovis projectile points more evident, and in the Late Paleoindian subperiod, Cumberland, Suwannee, Quad, and Dalton point types are observed (Anderson 2005; Anderson et al. 1990; Goodyear 1999).

According to the site file search from the TDOA, there are no previously recorded sites with a Paleoindian component within a mile (1.61 km) of the APE.

Archaic Period (ca. 8,000-1,000 BC)

The transition from the Paleoindian to the Archaic period was gradual and related to the evolution of modern climatic conditions, similar to those the first European explorers and settlers encountered. The Archaic period is typically divided into the Early, Middle, and Late Archaic Periods. Several dramatic environmental changes near the beginning of the Early Archaic affected the native populations of the Southeast. The Laurentide Ice Sheet retreated north of the Great Lakes, temperatures became warmer in summer and colder in winter, and sea levels rose considerably (Anderson and Sassaman 1996). Changes in technology, population demography, and diversity in social organization characterize this era. The growth of subregional traditions is indicated in the archaeological record by the appearance of a range of notched and/or stemmed hafted biface types across the Southeast, such as the Big Sandy, Kirk Stemmed, Kirk Serrated, and the Stanly Stemmed (Sassaman et al. 1990).

During the Early Archaic period (ca. 8,000-6,000 BC), a dramatic increase in population, based on the identification of a larger number of archaeological sites dating to the period, resulted in decreased group mobility and exploitation of a wider range of food resources. The larger variety of Early Archaic tools suggests that more specialized tasks were undertaken as sites were occupied for longer periods. The population was likely organized into small bands of 25-50 individuals that coalesced at specific times of the year to more efficiently exploit seasonal resources and take advantage of the benefits provided by a wider social network. Populations were more sedentary, setting up base camps in river valleys, and smaller, specialized camps in the surrounding area. Early Archaic components are recognized at archaeological sites by the presence of a series of bifaces from the side and corner-notched traditions, as well as other specialized tools (Anderson and Hanson 1988; Chapman 1975, 1985). In Tennessee, Big Sandy, Eva, Palmer, Kirk Serrated and Kirk Side Notched projectile point types are diagnostic of the Early Archaic (Cambron and Hulse 1986; Franklin 2017; Justice 1987).

The beginning of the Middle Archaic period (ca. 6,000-3,000 BC) is correlated with the onset of a period of climatic warming and drying known as the Middle Holocene Hypsithermal (Delcourt 1979). During the Middle Archaic, human populations increased and sites became larger and more widely distributed. Sites were still occupied on a temporary basis by mobile bands that were hunting, collecting, and foraging using an exploitive strategy referred to as “adaptive flexibility” by Blanton and Sassaman (1989). Artifacts associated with the Middle Archaic include groundstone items such as atlatl weights, notched netsinkers, and ground axes (Chapman 1985). Projectile point types diagnostic of the Middle Archaic include Eva, Morrow Mountain, Guilford, and Sykes-White Springs (Justice 1987).

The Late Archaic period (ca. 3,000-1,000 BC) roughly corresponds to a time when warm and dry conditions associated with the Hypsithermal began to moderate, so that by the end of the Late

Archaic, conditions had assumed the characteristics of the present-day climate. Many important cultural developments took place during the Late Archaic, which saw populations across the Americas increase at a rapid pace, as evidenced by larger and more numerous sites. Some of the most important cultural developments from this time include the introduction of stone bowls of steatite and sandstone, as well as pottery vessels for use in food preparation, the first instances of plant cultivation, mound building, and the establishment of long-distance trade networks (Bense 1994). It was around 1300 BC that fiber-tempered Wheeler pottery appeared in the Tennessee Valley, coinciding with the beginning of the Middle Gulf Formational (Bense 1994:93; Jackson et al. 2002:239). Late Archaic lithic technology remained basically unchanged from the Middle Archaic. Projectile points were somewhat smaller than those from earlier times, but the basic triangular point and stemmed base form such as the Kays and Savannah River points remained unchanged (Bense 1994; Justice 1987).

According to the site file search from the TDOA, two previously recorded sites with an Archaic component have been recorded within a mile (1.61 km) of the APE, 40RD254 and 40RD255.

Sites 40RD254 and 40RD255 were recorded in 2001 in advance of a proposed sewer line along the Middle Fork Stones River, located northwest of the survey area (Johnson 2001a, 2001b). Both sites were recorded as open habitations and lithic scatters. Site 40RD254 had a total of 64 artifacts, one of which was a Late Archaic/Early Woodland resharpened Gary type projectile point. Due to erosion and past agricultural activities, no further work was recommended at 40RD254.

During Phase I investigations at 40RD255, five cultural features were identified through backhoe trenching and shovel testing. A subsequent Phase II investigation recovered nearly 3,000 artifacts, including diagnostic projectile points, faunal remains, and ceramic sherds. A variety of projectile point types were recovered, including Kirk, Morrow Mountain, Gary, and Copena. The artifact assemblage broadly represents the Early Archaic to Late Woodland period, with the majority of the artifacts dating between the Late Archaic and Late Woodland period. No further investigations of the site were recommended (Johnson 2001b).

Woodland Period (ca. 1,000 BC-AD 1,000)

The widespread adoption of ceramic technology marks the beginning of the Woodland period, although the date of demarcation is somewhat arbitrary between the Woodland and Terminal Archaic period. The shift from Archaic to Woodland is also marked by the development of numerous distinctive traditions and independent communities across the Southeast. The Woodland period in southeastern Tennessee can be arbitrarily divided into Early Woodland, ca. 900 BC to 400 BC; Middle Woodland, ca. 400 BC to AD 700; and Late Woodland, ca. AD 700 to 1000 (Chapman 1985). Increased social complexity is reflected in widespread Woodland characteristics, such as an increase in long distance trade, changes in ceramic technology, the development of sedentary

village life, and the cultivation of domestic plants. Few changes in lithic technology, settlement, or subsistence have been identified during the Late Archaic through Early Woodland periods. Culturally diagnostic artifacts from these periods include the Mud Creek and Flint Creek projectile point types. The transition from Late Archaic to the Early Woodland is characterized by the addition of ceramics to the Late Archaic assemblage and a change toward increased floodplain horticulture.

The earliest Early Woodland phase recorded in the region is the Watts Bar Phase, which is recognized by quartz tempered, fabric impressed pottery and Adena-like stemmed and Wade corner-notched projectile points. After about 400 BC, the Long Branch phase is recognized, and is distinguished by limestone tempered, fabric-marked ceramics and the appearance of stemless projectile points. The Middle Woodland in the eastern region of Tennessee can be discussed in terms of two horizons, the Patrick and Ice House Bottom Phases (Kimball 1985). The early Middle Woodland Patrick Phase dates from 200 BC to AD 400, and is characterized by limestone tempered ceramics exhibiting plain, fabric marked, check stamped, and simple stamped surface treatments (Kimball 1985; Faulkner and McCollough 1973). The projectile point types associated with the early Middle Woodland include the Middle Woodland Triangular cluster. The late Middle Woodland Ice House Bottom Phase dates from AD 400 to 700. The relative percentage of limestone tempered fabric marked ceramics decreases, while cord marked ceramics increase correspondingly (Kimball 1985). Projectile point types associated with this period include Lanceolate Expanding Stemmed, and Lanceolate Spike cluster.

The Late Woodland can be dated from approximately AD 700 to 1,100. The ceramic assemblage for the Late Woodland consists of limestone-tempered plain (Mulberry Creek Plain), cord marked (Candy Creek Cordmarked), and limestone-tempered brushed (Flint River Brushed) (Lewis and Kneberg 1946). Incurvate base Hamilton projectile points, Jacks Reef corner notched, and Jacks Reef pentagonal projectile points are the primary diagnostic lithic artifacts of this period. Woodland burial mounds of the Hamilton culture are known throughout eastern Tennessee.

According to the site file search from the TDOA, two sites with a Woodland component have been recorded within 1 mi. (1.61 km) of the APE, 40RD254 and 40RD255, both of which were discussed in the Archaic section of this cultural context. Additionally, one Wooland period mound, 40RD297, or Sanders Mound, is located right outside the 1 mi. (1.61 km) search radius. This small burial mound was recorded in the 1970s and presumably contains a single burial (TDOA 2009).

Mississippian Period (ca. AD 1,000-1,650)

A major cultural shift occured in southeastern North America approximately 1,100-1,000 years ago. Intensive maize agriculture, settlement in the floodplains of rivers, the appearance of shell-tempered pottery, rectangular wall-trench structures, pyramidal earthen mounds, and the circulation of well-crafted prestige objects are characteristic of what archaeologists refer to as Mississippian

culture. Mississippian groups had a distinctive, non-egalitarian form of socio-political organization: the chiefdom. According to Fried (1967:109), ranked societies have differential access to positions of elevated status. For Mississippian societies, chiefly positions of elevated status were typically inherited within a single group of elites. The existence of elevated social statuses are evident in the presence of platform mounds, upon which chiefly elites resided, conducted religious rituals, and were sometimes buried in box graves lined with limestone, siltstone, or shale. These chiefdom societies expanded across the Southeast during the Mississippian period and developed a complicated network of villages and mound centers. Two examples of such villages in nearby Davidson County are the Brandywine Pointe site (40DV247) and the Sogom site (40DV68) (Smith and Moore 1994; Hally and Rudolph 1995; Norton and Broster 2004). Although many mound centers and sites of this period shared a characteristic suite of traits and organizational strategies, there was also a great deal of diversity among Mississippian societies (Anderson and Sassaman 2012).

Mississippian settlements tend to be located on the boundary zone between two ecotones and on the floodplain terraces of major rivers, which allowed their residents to take advantage of multiple diverse natural resources. Riverine environments allowed the Mississippians to utilize arable soils for the cultivation of maize, squash, and bean crops, and there were ample foraging and hunting opportunities at the outskirts of settlements (Bense 1994). Mississippian settlements appear to have been erratic and unstable; populations appear to quickly rise at and around prominent mound centers only to diminish or disperse within a century or two. Such declines may relate to local environmental resource depletion or an inherent instability in chiefdom socio-political organization (Anderson and Sassaman 2012).

According to the site file search from the TDOA, one site with a Mississippian component has been recorded within a mile (1.61 km) of the APE, 40RD255. This site was discussed previously in the Archaic section of this cultural context.

European Contact - Twentieth Century

European contact with prehistoric societies in the Southeast is generally marked by the de Soto Entrada in 1540. De Soto's expedition began in the vicinity of Tampa Bay, Florida in 1539, and moved northward through Florida. The expedition would eventually traverse through the Piedmont of South Carolina, the mountains of North Carolina and eastern Tennessee, and through northern Georgia before crossing into Alabama (Duncan 1995). The protohistoric chiefdoms acted as a supply line for de Soto's movement through the Southeast, where the expedition purposely searched for large population centers to furnish them with food, enslaved people, and information (Walthall 1980:251). From these initial interactions with the earliest European explorers, the Native American population drastically declined as epidemics fueled by diseases such as smallpox,

mumps, measles, and the flu were introduced to an isolated group with no natural immunity to these pathogens (Bense 1994:257; Smith 2001). Prior to colonization, a multitude of trails connected native communities across the Southeast, including several major thoroughfares that connected what would become Nashville and Chattanooga, through Murfreesboro (Myer 1923).

Middle Tennessee was settled in the late eighteenth century, and Rutherford County was created in 1803. The county seat, Murfreesboro, served as the capital of the state of Tennessee from 1818 to 1826 (Hankins 2017). After the American Revolution in 1776, the European-American population in the newly-founded United States of America continued to swell. Native peoples were consistently pushed off their land by settlers, and skirmishes between the settlers and native groups escalated. Relations with native groups, the Cherokee and Chickasaw specifically in Tennessee, had reached an all time low when Andrew Jackson was elected United States (US) President in 1828. He introduced the Indian Removal Act in 1830, which required all native groups to be removed west of the Mississippi. From 1838 to 1839, native peoples from across the southeast were forcibly removed west in an event now known as the Trail of Tears. Of the estimated fourteen thousand people that were marched west, four thousand are estimated to have perished along the way (Nance 2001).

Shortly after the Trail of Tears, from 1861-1865, was the American Civil War, which was triggered by the writing of the Emancipation Proclamation, a document that effectively freed all enslaved peoples in the United States. Tennessee succeeded from the Union and joined the Confederacy. The Civil War devastated the South's infrastructure. Many major battles and skirmishes occurred within Tennessee. Rutherford County was involved early on in the war; in the winter of 1862, Union General William S. Rosecrans left Nashville and marched on Confederate General Braxton Bragg's position in Murfreesboro. Over 75,000 men were involved in the Battle at Stones River, of which nearly 25,000 died. Stones River resulted in a Union victory, albeit one that greatly weakened Rosecrans' ability to continue his campaign towards Chattanooga (ABT 2025a).

Today, the area is Stones River National Battlefield, located approximately 3 mi. (4.8 km) northwest of Murfreesboro. The Battlefield includes Stones River National Cemetery, where more than 6,100 Union soldiers from the battle are buried, as well as Fortress Rosecrans (ABT 2025b). Fortress Rosecrans is an earthenwork fortification that was constructed after the Union victory at Stones River. This fortification was vital in protecting the railway and warehouses that served as a supply point for the eventual successful seizure of Chattanooga (ABT 2025c; Bearss 1960; NPS 2025). No known Civil War activity occurred within the limits of the survey area, and no archaeological sites with a Civil War component have been recorded within the vicinity of the APE.

The first major rail line through the county was the Nashville and Chattanooga Railroad (RR) in 1845. This popular line was referred to as the "Dixie Line" and was a passenger train between

Chicago and Florida. A multitude of small rail towns were constructed around depots along its route. The RR was captured and utilized by Union forces during the Civil War and was later returned to its private owners at the end of the war in 1865. It later merged with the Nashville and Northwestern RR, after which the Nashville and Chattanooga RR was renamed the Nashville, Chattanooga, & St. Louis RR, which is how it is labeled on most historic late nineteenth-early twentieth century maps of Rutherford County. The RR's ownership changed hands multiple times over the nineteenth and twentieth centuries; today, the rail lines are still in use by CSX Transportation (CSX) (Prince 2001). This rail line travels north-south through Rutherford County, from Nashville, through Murfreesboro, and is located approximately 5 mi. (8 km) west of the APE.

During Reconstruction (1865-1900), the United States set forth policies to integrate the formerly enslaved into the population. Part of that effort was education; in Rutherford County, the Bradley Academy (1806-present) taught only white men from 1806-1884. The school received wide spread recognition because former United States President James K. Polk attended the Academy. As a part of Reconstruction, the Academy was converted into an all-Black school for men and women that operated through the mid-twentieth century. A new Bradley Academy building was constructed in 1917. This building housed the Bradley Academy until 1955, when the students were transferred to the Bradley Elementary School. After the 1918 Bradley Academy building was abandoned, it became an epicenter of importance for organizing during the Civil Rights Movement (ca. 1940s-1970s). The modern Bradley Elementary School was renamed the Bradley Academy sometime in the 2000s, likely to link back to the historic origins of the school. The new Bradley Academy is a public state-designated STEAM (Science, Technology, Engineering, Art, and Math) elementary school. In the 1990s, the 1918 Bradley Academy building was added to the National Register of Historic Places (NRHP) (#9000914), and a federal grant was received to rehabilitate the building into a community and history center. Today, the NRHP listed Bradley Academy building houses the Bradley Academy Museum and Cultural Center (Bradley Academy 2025; BAMCC 2024; RCHS 2025a, 2025b; Tucker 2010).

Located 10 mi. (16.1 km) northwest of the APE, Murfreesboro is the fifth most populated city in Tennessee. The APE is located along I-24, which connects southern Indiana to Kentucky, Nashville, Murfreesboro, and Chattanooga. In the eighteenth, nineteenth, and early twentieth centuries, Rutherford County was still comprised of predominantly rural, agricultural communities (see **Figure 4.15**). Following the Great Depression and the second World War (WWII), cities across the US expanded as the nation experienced a period of prosperity, infrastructure development, and the expansion of federal and state highways (Holmes 1991). Today, suburban sprawl/residential development and commercial development extends out from Nashville's urban core down I-40, I-65, and I-24 throughout Middle Tennessee. Murfreesboro's top employers today

include industries in car manufacturing, primary and higher education, health and auto insurance, book printing, distribution and fulfillment services, and healthcare (Beckwith 2018).

Based on a site file search at the TDOA, there are two previously recorded sites with an historic component within a mile (1.16 km) of the APE, 40RD300 (Cobb Cemetery) and 40RD342. Both of these sites were revisited during the current survey and are discussed in detail in Chapter 4 of this report. Additionally, one historic cemetery was identified within the APE during preliminary background research, Pearson Cemetery. This cemetery was also visited during the current survey, and a complete discussion is included in Chapter 4 of this report.

Background Research

On December 9, 2024, EP requested a review of materials at the TDOA Site File for previously recorded sites and archaeological investigations conducted within a 1 mi. (1.61 km) radius of the APE. On December 11, 2024, TDOA's returned site file search showed four previously recorded archaeological sites within the requested search radius: 40RD254, 40RD255, 40RD300 (Cobb Cemetery) and 40RD342 (**Table 2.2 ; Figure 2.6**), and one previously conducted archaeological investigation intersects the APE (Peacock and Simpson 2024). This survey was not included in the TDOA's online Site File viewer but was requested by EP after reviewing the site forms for 40RD300 and 40RD342.

Additional research indicated another cemetery within the APE, the Pearson Cemetery. This cemetery is discussed further in the results chapter, but the TDOA no longer assigns site numbers to historic-period cemeteries (TDOA 2025). Sites 40RD300 (Cobb Cemetery), 40RD342, and Pearson Cemetery are all located within the APE and are discussed further in the results chapter.

Table 2.2. Previously Recorded Sites and Cemeteries identified within 1 mi. (1.61 km) of the APE.

Trinomial	Time Period	Site Type	NRHP Eligibility	Citation
40RD254	Late Archaic/Early Woodland	open habitation, lithic reduction	-	Johnson 2001a
40RD255	Early Archaic - Mississippian	open habitation, lithic reduction	-	Johnson 2001b
**40RD300 Cobb Cemetery	nineteenth century	cemetery	-	Barker 2011; Walls 2024
**40RD342	unknown precontact and unknown historic	surface scatter	Ineligible	Walls and Peacock 2024
**Pearson Cemetery	twentieth century	cemetery	Unknown	FindAGrave 2025

**These sites were revisited during the current survey.

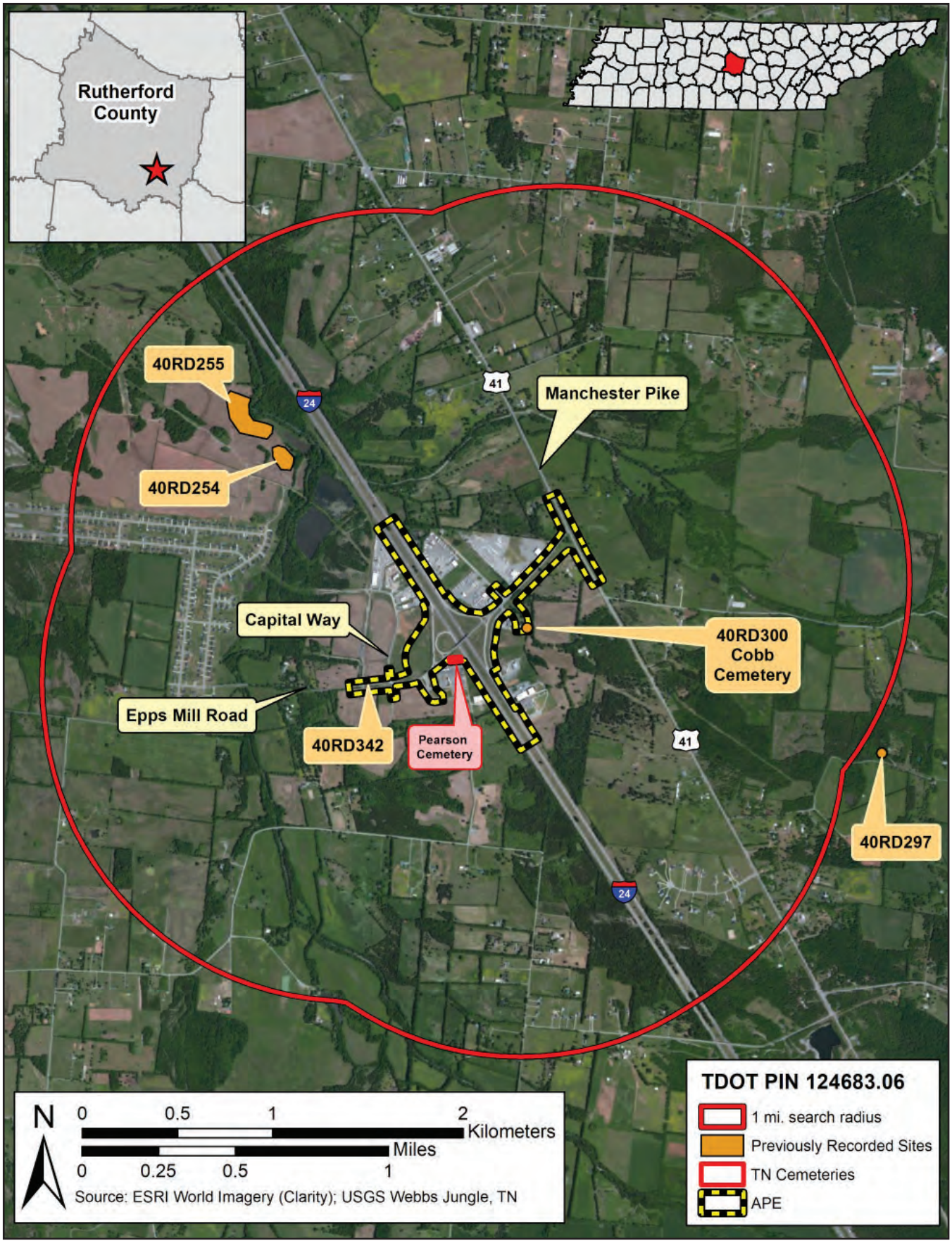

Figure 2.5. Previously recorded sites within 1 mi. (1.61 km) of the APE.

Survey Expectations

Middle Tennessee has been occupied in varying degrees from the Paleoindian period through the modern day. Based on previous research from the region and localized landforms, there is high potential for prehistoric sites, particularly Archaic and Woodland sites, within the APE. Historic background research indicates that settlement of the area began in the late eighteenth century, and based on the nearby eighteenth century historic habitation, archaeological sites dating to this period and later are highly possible. Archaeological sites related to the Civil War are less likely. Based on a review of reports, soils in the vicinity have been impacted by urban development and the installation of utilities.

CHAPTER 3: METHODOLOGY

Literature and Records Search

Prior to fieldwork, an archaeological permit was acquired from the TDOA, and background research was conducted by electronic request at the TDOA in Nashville. This research sought information on previous cultural resource studies in the region and archaeological sites and projects recorded within a 1 mi. (1.62 km) radius of the APE. Research was also conducted online at the Nationwide Environmental Title Research (NETR) and the United States Geological Survey (USGS) Historical Topographic Maps websites. These sources were consulted to provide data relevant to the history of the county and the vicinity of the APE. Historic maps (e.g., topographic maps, soil maps, and aerial photographs) were examined, when available, in order to provide data pertaining to changes in the natural and built landscape of the APE. The research was used in the preparation of the cultural context (see Chapter 2) and guided the fieldwork design.

Archaeological Field Survey

The archaeological survey was completed in accordance with the Scope of Work for Consultant Implemented Phase I Archaeological Assessments (TDOT 2021). Survey for this project utilized visual inspection and systematic shovel testing to locate, map, and investigate archaeological sites. Standards and terminology for archaeological survey were conducted in accordance with the Scope of Work for Consultant Implemented Phase I Archaeological Assessments (TDOT 2021), the Tennessee SHPO Standards and Guidelines for Archaeological Resource Management Studies (SHPO 2024), and the Secretary of the Interior's Standards and Guidelines (Federal Register 48[190]:44734-44737).

Visual Inspection

Typically, during the visual inspection phase, any ground surface with greater than 75% visibility is subjected to a surface survey in addition to a subsurface shovel testing survey. If artifacts or surface features are encountered, their location is marked via a handheld Juniper and Geode Global Positioning System (GPS) device, and the area is then subjected to systematic close-interval shovel test survey. However, in areas with surface visibility of less than 75%, visual inspection is limited to identification of surface features (e.g., wells, fieldstone walls, structural remains, cemeteries or graves, old roadbeds, etc.) during intensive archaeological survey.

Shovel Testing

Throughout the APE, shovel tests were excavated at 20 m (65.6 ft.) intervals along transects spaced 20 m (65.6 ft.) apart. All shovel tests were at least 30 cm (11.8 in.) wide and were excavated to sterile clay subsoil or the water table. Shovel tests were not excavated in areas with

standing water, pavement, or excessive slope. Excavated soil was screened with 0.64 cm (0.25 in.) hardware cloth to look for the presence of artifacts. For all excavations, soil colors, textures, and stratigraphic depths were recorded, and any soil disturbances were noted. Surface exposures were examined and photographed when present. Per TDOT's SOW (2021), positive shovel tests and site revisits are delineated outside the survey area in order to fully delineate archaeological sites wholly or partially within the APE.

Laboratory Methods

When encountered in the field, all cultural materials collected are returned to the EP laboratory in Atlanta, Georgia for processing and analysis. Artifacts are washed, classified, and temporarily curated at that facility.

Artifact Processing and Analysis

Artifacts arrive from the field accompanied by a bag list, which contains provenience information recorded in the field for each bag. Bag list information is added to the database and provenience numbers are assigned. Artifacts are cleaned and placed on drying racks with mesh bottoms.

After initial processing, all artifacts are counted, weighed, sorted and cataloged. Artifacts from each provenience lot are sorted by material and type into analytical categories. Artifacts are further analyzed to identify more specific typological and functional characteristics, with the aim of obtaining relative dates. Previously defined types are used, when possible, to facilitate chronological and cultural association and intra-site comparisons. Hazardous material, such as asbestos, are discarded.

The analysis of precontact period artifacts seeks to place artifacts in categories so that individual cultural or technological trends can be observed. Historic period artifacts are initially sorted into material categories of ceramics, glass, metal, and other. Once in these material categories, artifacts are further classified by attributes such as manufacturing method, morphological attributes, color, and makers' marks. One goal of Historic period artifact analysis is the refinement of site chronology. In general, these dates help guide the establishment of site chronology, assuming that the pattern of manufacture, use, and discard of artifacts identified in previous research has universal application from region to region.

Curation

Artifacts are placed in 4 mil (thousandths of an inch) thick polyethylene bags for curation; metal specimens are placed within a microenvironment. Modern material and unstable metal specimens are discarded prior to the submission of the collection to the curation facility. All documents are printed on acid free paper, and digital data is stored on archival preservation disks. Notes,

photographs, maps, and other records produced during the project are temporarily curated at EP's offices in Atlanta, Georgia.

Following acceptance of the final report, copies of the final report and all project materials, including notes, photographs, artifacts, and digital data, shall be curated at the TDOT Offices in Nashville, Tennessee under accession number 24.052.

Site Evaluation - Standards and Terminology

Standards and terminology for archaeological survey was conducted in accordance with Scope of Work for Consultant Implemented Phase I Archaeological Assessments (TDOT 2021), Section 106 of the NHPA (1966, as amended through 2016), and its implementing regulations (36 CFR Part 800), and follows the standards set forth by the Tennessee SHPO Standards and Guidelines for Archaeological Resource Management Studies (SHPO 2024) and the Secretary of the Interior's Standards and Guidelines (Federal Register 48[190]:44734-44737).

Archaeological site designations are based on the discretion of the Principal Investigator utilizing the NRHP Guidelines below (TDOT 2021; SHPO 2024). Isolated Finds (IF) are constituted as single artifacts or a small group of artifacts that do not constitute an archaeological site. In some cases, modern (<50 years old) material, dump sites, or features may be recorded in the field as archaeological sites and later determined to be non-historic through document and map research. These instances are referred to as Non-historic localities that are not considered archaeological sites and are documented alongside the rest of the survey results.

National Registration of Historic Places Criteria

Archaeological sites within the survey area are evaluated by their potential for listing on the NRHP. The NRHP is the Secretary of the Interior's official list of cultural resources worthy of preservation. For a site to be eligible for listing on the NRHP, it must meet certain criteria and retain integrity. Each encountered site is evaluated for significance and integrity as it relates to the potential for nomination to the NRHP.

The NRHP significance criteria in 36 CFR 60.4 define eligible cultural resources as buildings, structures, objects, sites, and districts that meet one or more of the following criteria (NPS 2000).

- **Criterion A:** *Association with events that have significantly contributed to the broad patterns of history;*
- **Criterion B:** *Association with persons significant in the past;*
- **Criterion C:** *Possession of the distinctive characteristics of a type, period, or method of construction; an exemplification of the work of a master architect, engineer, or artist; the*

embodiment of high artistic values; or evidence of a significant and discernible entity whose components may lack distinction on their own; and

- **Criterion D***: Ability to yield information significant to prehistory or history.*

Criterion D is most often, but not exclusively, used to evaluate archaeological resources. National Register Bulletin 36 (NPS 2000) outlines how to evaluate archaeological resources under Criterion D. In addition to established significance under one or more of these four criteria, resources having NRHP eligibility also must have integrity, evaluated under seven aspects: location, design, setting, materials, workmanship, feeling, and association (NPS 2000).

The NPS has provided guidance for understanding these aspects of integrity for archaeological sites specifically:

- **Location:** *Archeological sites and districts almost always have integrity of location. Integrity of location is closely linked to integrity of association. Integrity of location would not necessarily preclude the eligibility of secondary or redeposited deposits in an archeological property (NPS 2000:38).*

- **Design:** *Elements of design include organization of space, proportion, scale, technology, ornamentation, and materials. For an archeological site, integrity of design generally refers to the patterning of structures, buildings, or discrete activity areas relative to one another. Under Criterion D, integrity of design for archeological sites most closely approximates intra-site artifact and feature patterning (NPS 2000:39).*

- **Setting:** *Setting includes elements such as topographic features, open-space, views, landscapes, vegetation, manmade features (e.g., paths, fences), and relationships between buildings and other features. If the setting conveys an archeological site's significance, then the site has integrity of setting under Criteria A and B.*

  In order to convey significance, the setting should:

  - *appear as it did during the site's or district's period of significance; and*
  - *be integral to the importance of the site or district (NPS 2000:40).*

- **Materials:** *The choice and combination of materials reveal the preferences of those who created the property and indicate the availability of particular types of materials and technologies. Under Criterion D, integrity of materials is usually described in terms of the presence of intrusive artifacts/features, the completeness of the artifact/feature assemblage, or the quality of artifact or feature preservation (NPS 2000:40-41).*

- **Workmanship:** *Workmanship is the evidence of an artisan's labor and skill in constructing or altering a building, structure, object, or site. It can apply to the property as a whole or to its individual components. Under Criterion D, workmanship usually is addressed indirectly in terms of the quality of the artifacts or architectural features. The skill needed to produce the artifact or construct the architectural feature is also an indication of workmanship. The importance of workmanship is dependent on the nature of the site and its research importance (NPS 2000:41).*

- **Feeling:** *A property has integrity of feeling if its features in combination with its setting convey a historic sense of the property during its period of significance. Integrity of feeling enhances a property's ability to convey its significance under all of the criteria (NPS 2000:42).*
- **Association:** *A property retains association if it is the place where the event or activity occurred and is sufficiently intact to convey that relationship to an observer. Under Criterion D, integrity of association is measured in terms of the strength of the relationship between the site's data or information and the important research questions (NPS 2000:42).*

While a site could retain and reflect all seven aspects of integrity, according to NPS, the most important aspects for sites evaluated under Criterion D are location, design, materials, and association (NPS 2000:35).

In order to be eligible for the NRHP; a site must contain significant data and integrity sufficient to answer important research questions. Poorly preserved examples of typical site types are generally ineligible. To make informed determinations about a site's potential to address topical and current research questions, culture period context studies specific to this region of Tennessee were referenced. The above definitions of significance and integrity are used to assess eligibility for newly and previously recorded sites encountered during survey. All sites are fully investigated to the best of the surveyors ability, including outside the designated survey area, to ensure a fully bound site.

CHAPTER 4: SURVEY RESULTS AND ANALYSIS

EP conducted a Phase I archaeological survey for the proposed I-24 interchange improvements at Epps Mill Road in Rutherford County, Tennessee in January 2025. Conditions within the APE consisted primarily of transportation corridors, as well as commercial development and some agricultural fields (**Figure 4.1**). A total of 636 shovel test locations were investigated at 20 m (65.6 ft.) intervals throughout the APE, 595 of which were negative, one was positive for cultural material, and 40 were not excavated due to roadways, parking lots, and cemeteries (**Figures 4.2-4.10**). Ground surface visibility ranged from 0-15% across the APE. Vegetation within the area included secondary growth forest, fallow agricultural fields, pasture, and a mowed, grassy ROW. This investigation revisited two previously recorded archaeological sites, 40DV300 and 40DV342, recorded one cemetery, the Pearson Cemetery, and recorded one isolated find, IF1.

Soils throughout the APE were comparable to previously mapped soils in the region (SSS, NRCS, USDA 2025). Soils in shovel test 22-2 (Datum 1) consisted of dark reddish brown (5YR 3/3) silty loam from approximately 0-20 cmbs (0-7.9 inbs.), and red (10R 5/6) clay with from approximately 20-30 cmbs (7.9-11.8 inbs.) (**Figures 4.11** and **4.12**).

Figure 4.1. View along the I-24 access road, facing north.

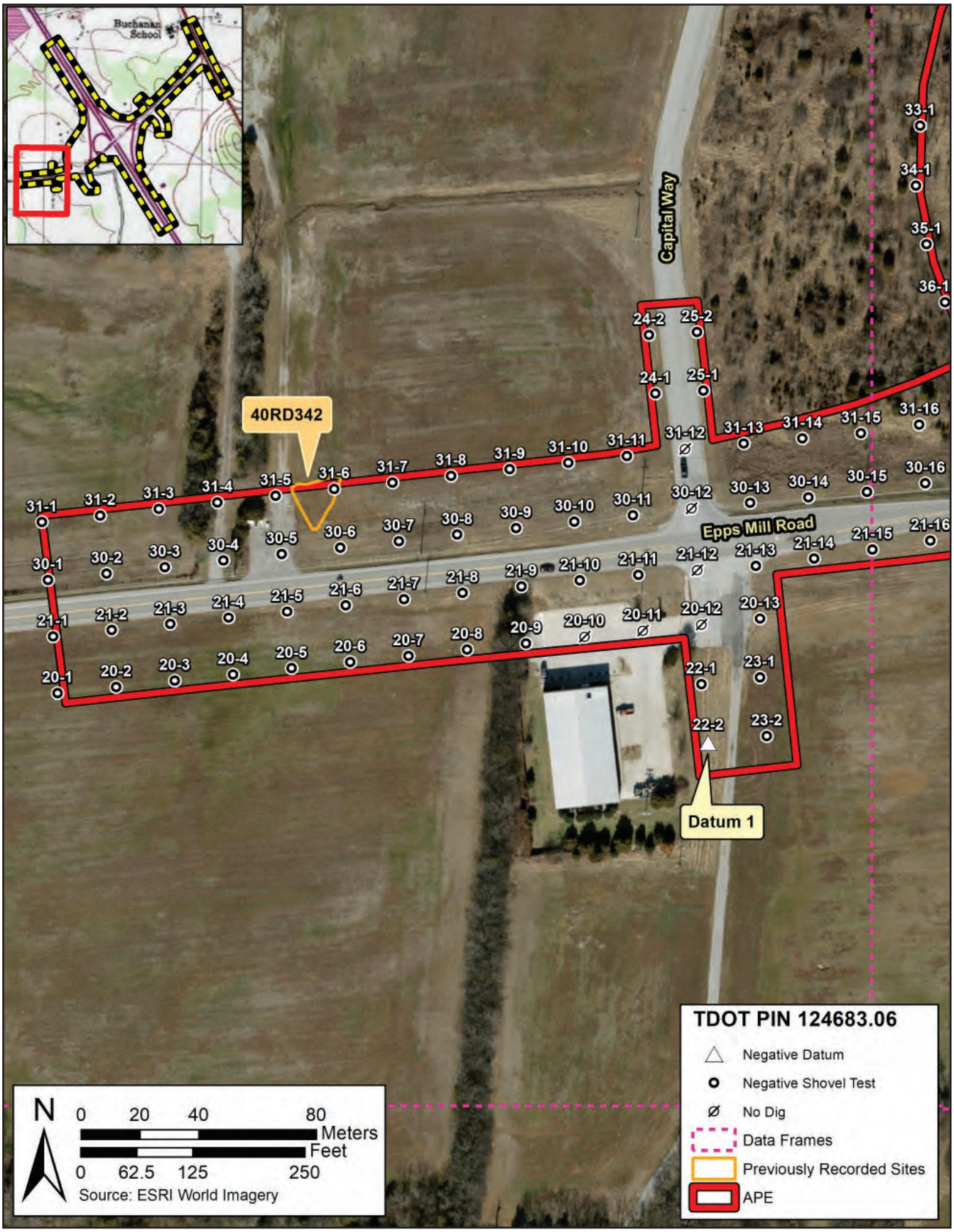

Figure 4.2. Shovel test results within the APE (1 of 9).

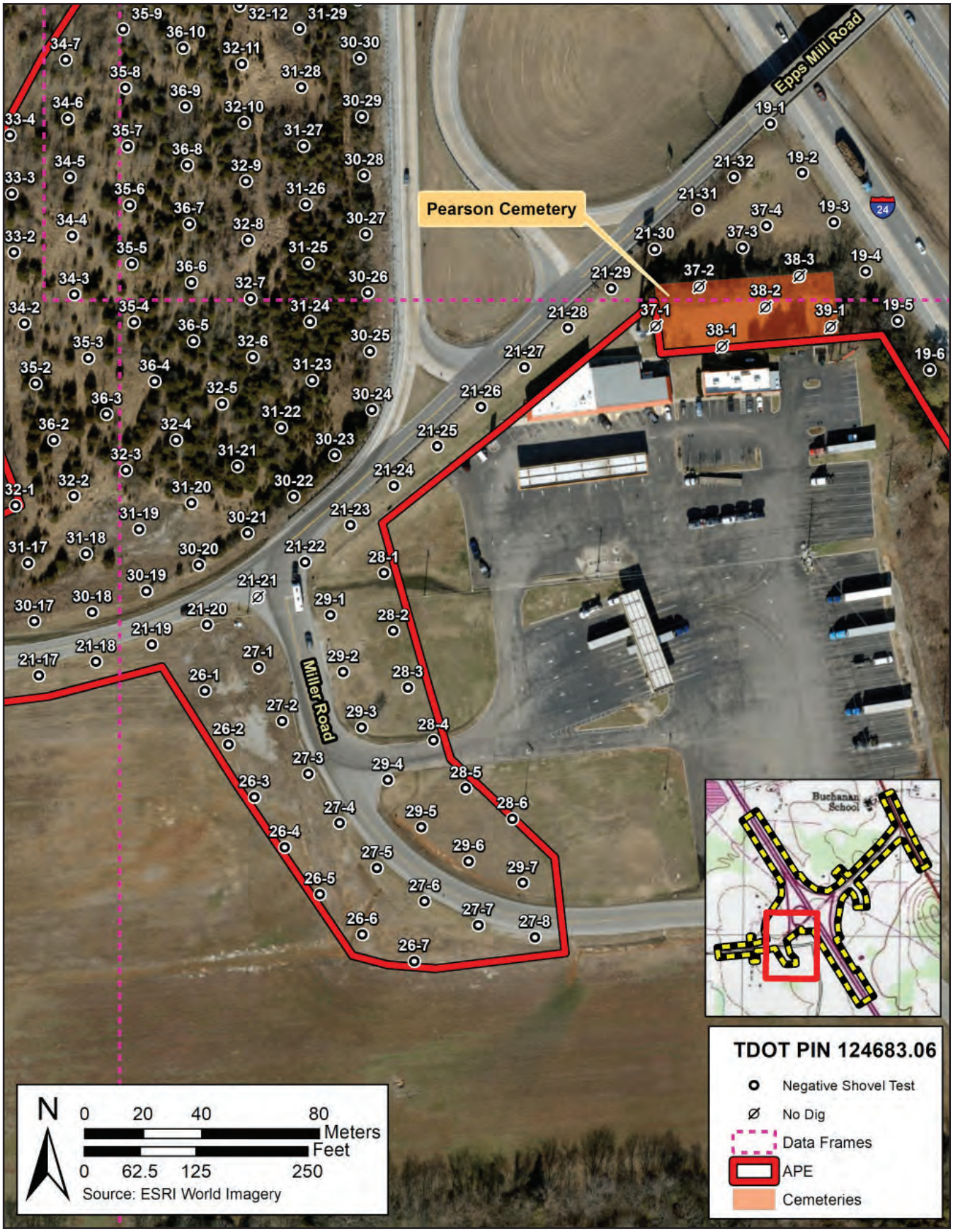

Figure 4.3. Shovel test results within the APE (2 of 9).

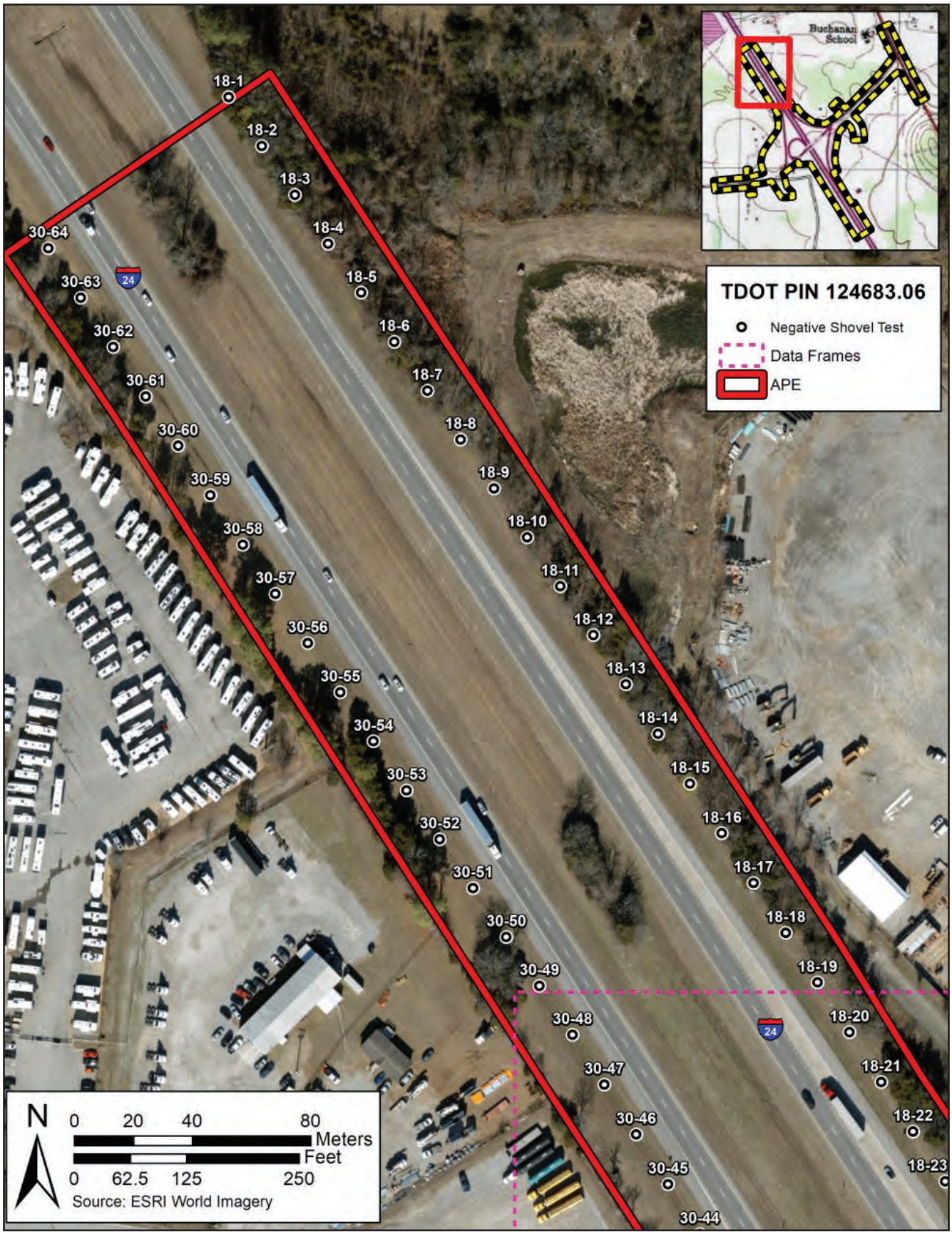

Figure 4.4. Shovel test results within the APE (3 of 9).

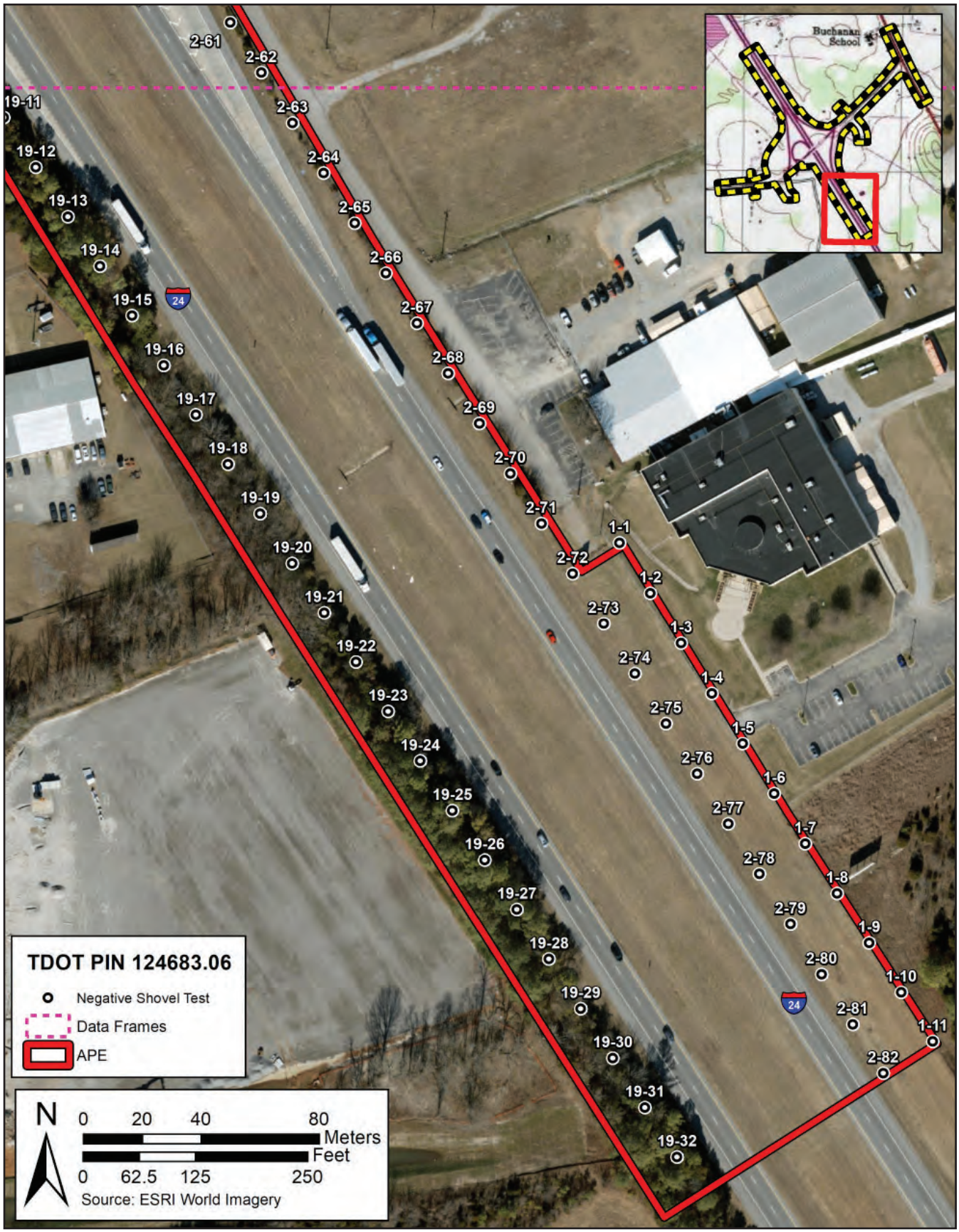

Figure 4.5. Shovel test results within the APE (4 of 9).

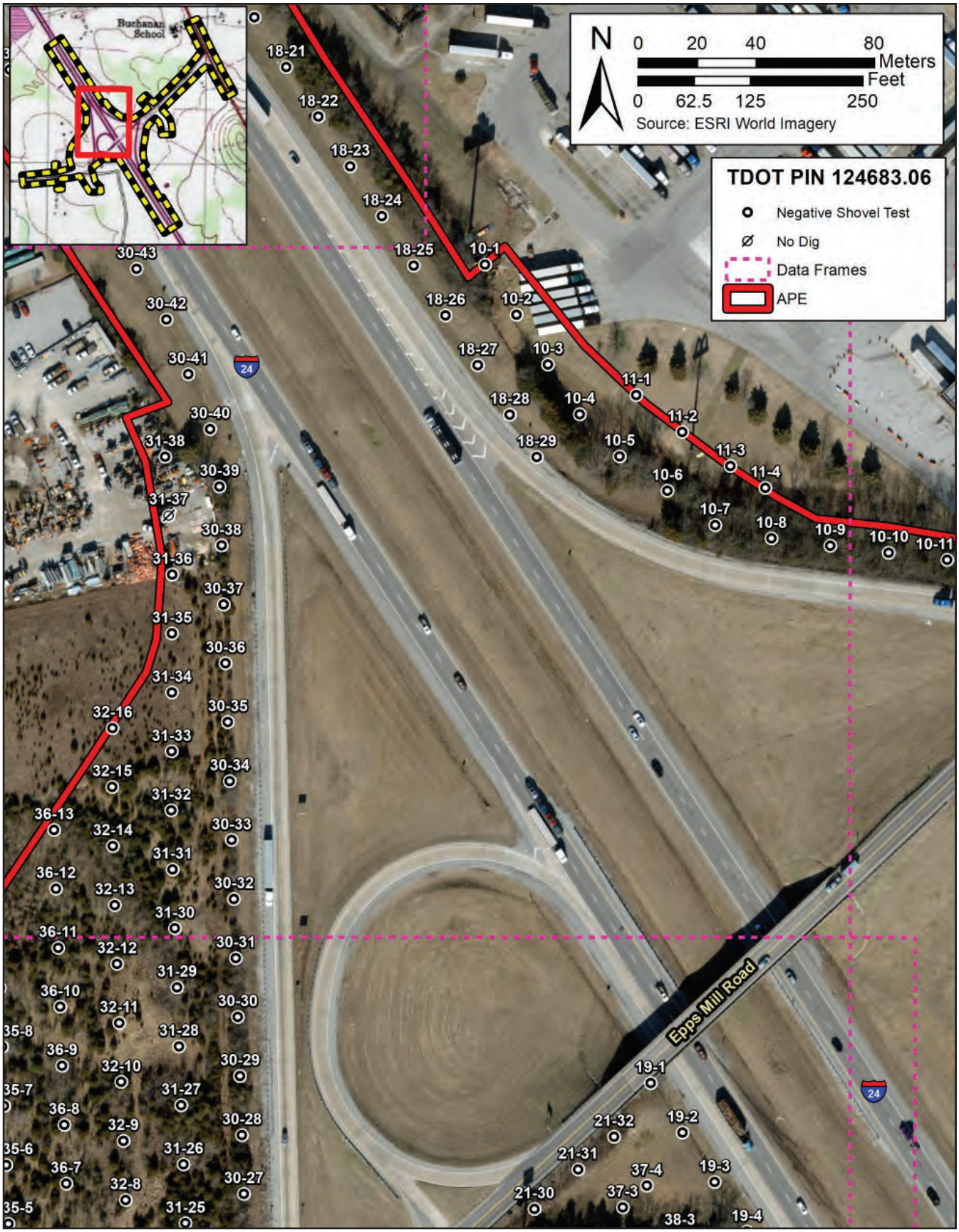

Figure 4.6. Shovel test results within the APE (5 of 9).

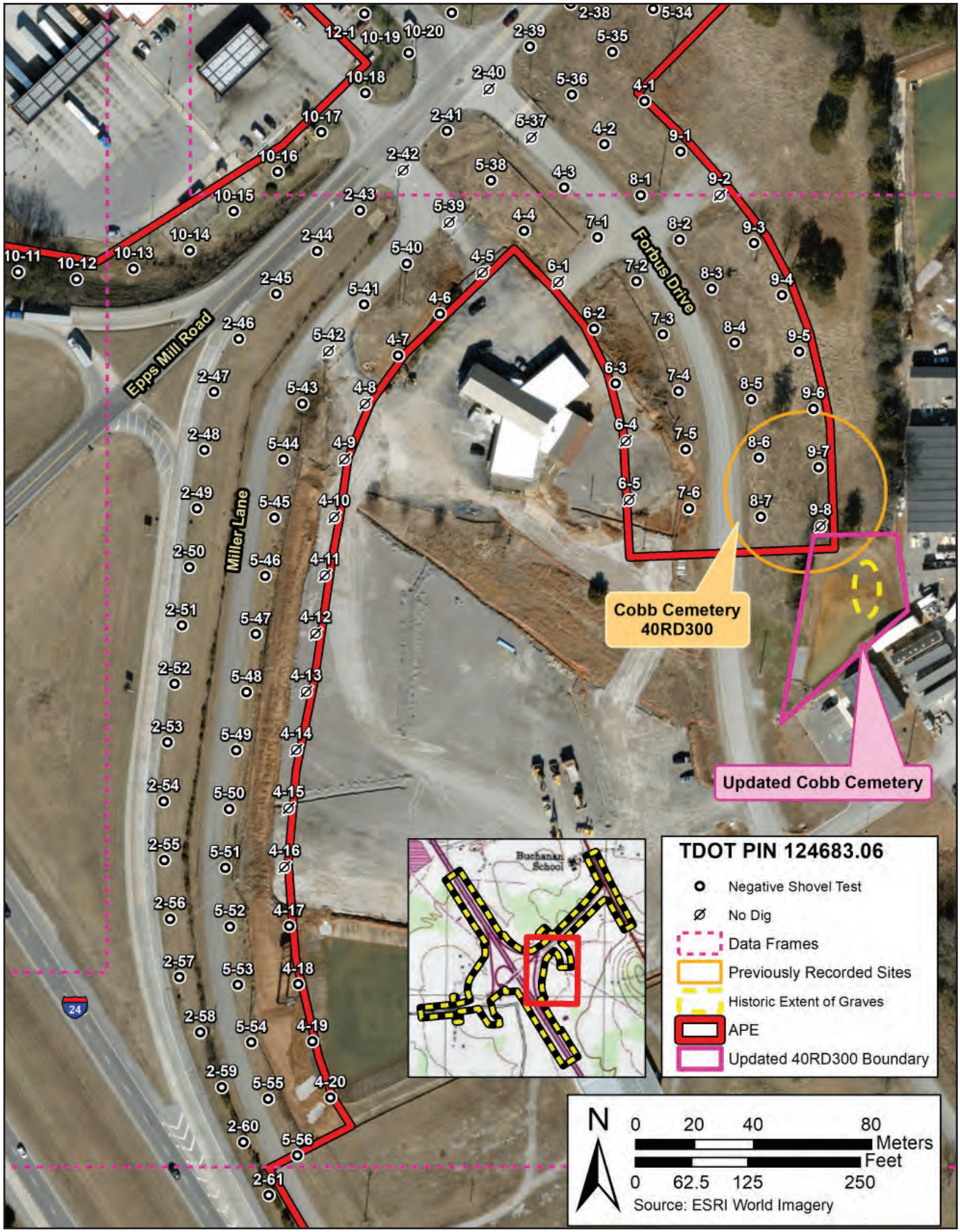

Figure 4.7. Shovel test results within the APE (6 of 9).

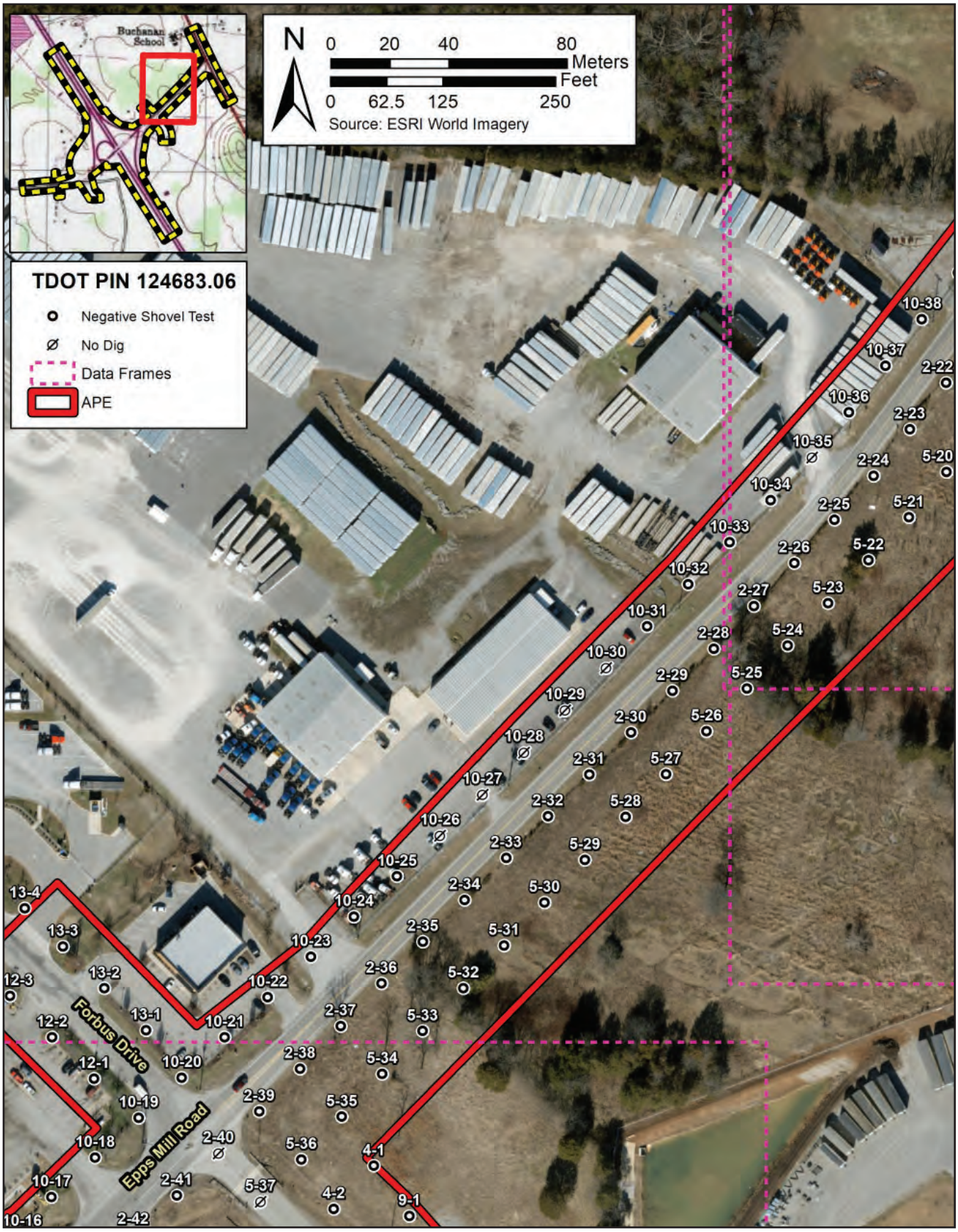

Figure 4.8. Shovel test results within the APE (7 of 9).

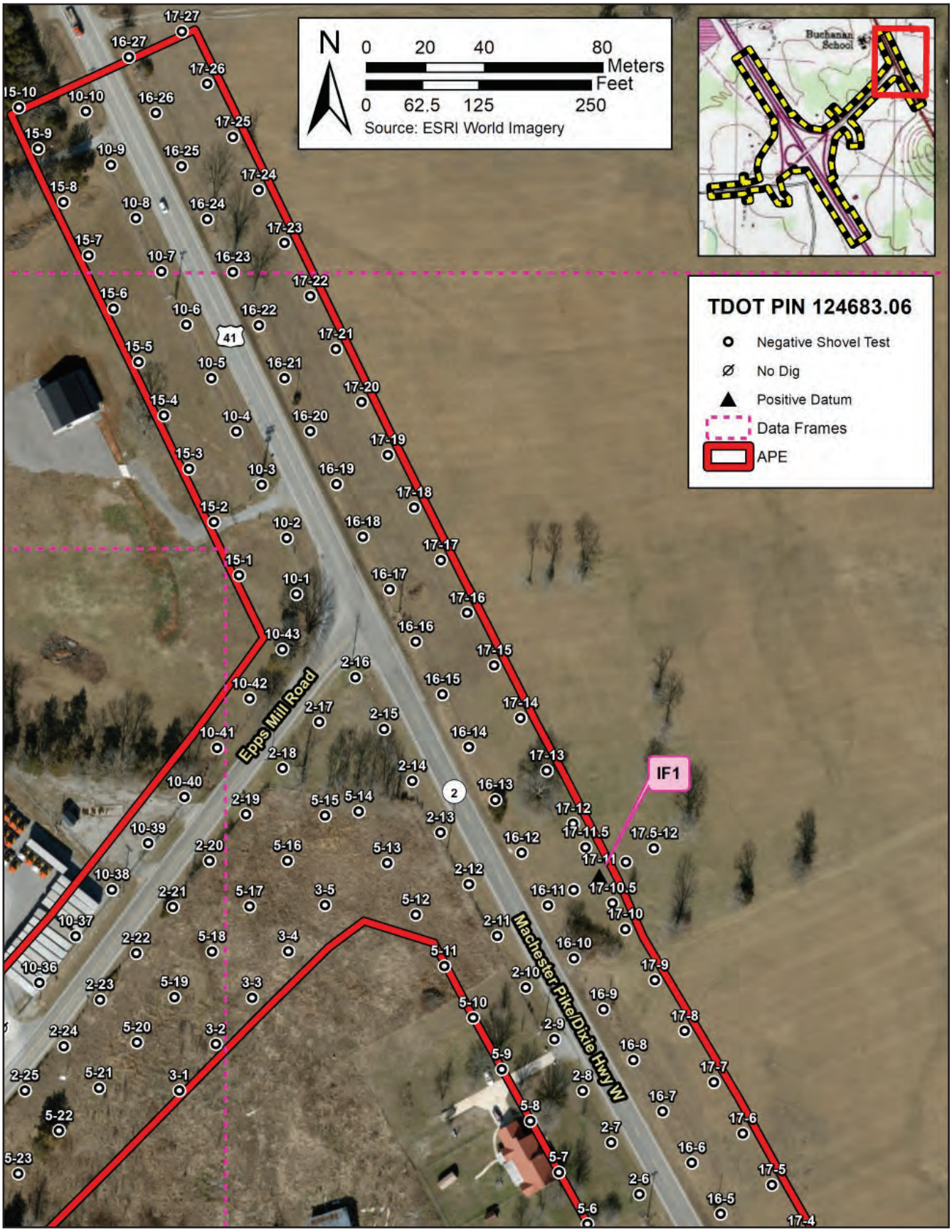

Figure 4.9. Shovel test results within the APE (8 of 9).

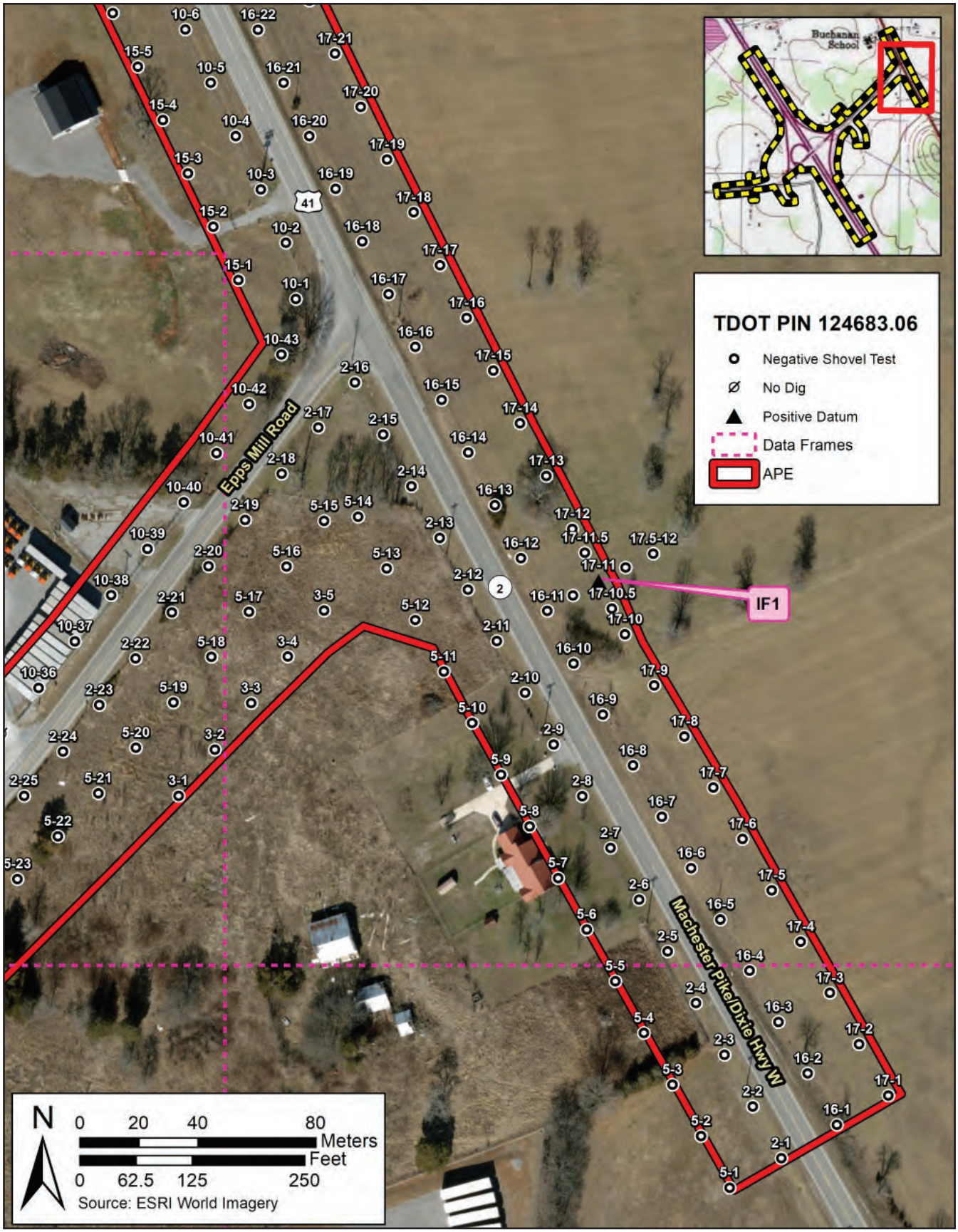

Figure 4.10. Shovel test results within the APE (9 of 9).

Figure 4.11. Photograph of TR22 ST2's western soil profile (Datum 1).

0-20 cmbs	dark reddish brown (5YR 3/3) silty loam
20-30 cmbs	red (10R 5/6) clay

Figure 4.12. Profile sketch of TR22 ST2 (Datum 1).

Resource Descriptions and Evaluations

Site 40RD300 - Cobb Cemetery - Revisit

Site 40RD300, Cobb Cemetery, is a previously recorded, late nineteenth to early twentieth century cemetery located east of I-24 and south of Epps Mill Road. The Cobb Cemetery was originally recorded in 2011 by TDOT Archaeologists in advance of a State Industrial Access (SIA) Road for Barrett Firearms, Inc. (Barker 2011). Barker recorded one intact grave marker, a Woodsmen of the World style, as well as an additional seven unmarked depressions (**Figure 4.13**). The marked interment dates to 1912 (Barker 2011).

In October 2024, New South Associates, Inc. (New South) revisited Cobb Cemetery. During the revisit, it was noted that the cemetery area had been heavily disturbed, and the headstone had been removed. New South noted that the cemetery was also recorded on the Rutherford County Cemetery Survey (RCCS), but the date of that survey is unknown. During the RCCS survey, two gravemarkers were photographed, the same Woodsmen grave marker seen in 2011, as well as a flat marker underneath a large volume of dense vegetation. New South noted that it appeared both headstones have been removed, and that part of the cemetery boundary has been filled in with a retention pond (Walls 2024; RCCS 2025).

Figure 4.13. Photograph of Woodsmen grave marker at 40RD300, facing east (Barker 2011).

During EP's revisit investigation of 40RD300, the vicinity of where Cobb Cemetery was recorded was visually inspected (**Figure 4.14**). EP archaeologists noted that the tree line around the cemetery is still present, but the area has been fenced off and excavated for use as a retention pond. No gravestones or depressions were seen within or near the site boundary.

The oldest aerial photograph of the area EP identified was from 1958 (NETR 2025; **Figure 4.15**). A small shadow is present in the area of Cobb Cemetery, and there is a large farmstead to the northeast of the cemetery. By 1975, I-24 and the Epps Mill Road exit had been constructed, as well as the large building in the southeast quadrant of the I-24/Epps Mill Road intersection (**Figure 4.16**). In this map, the shadow of

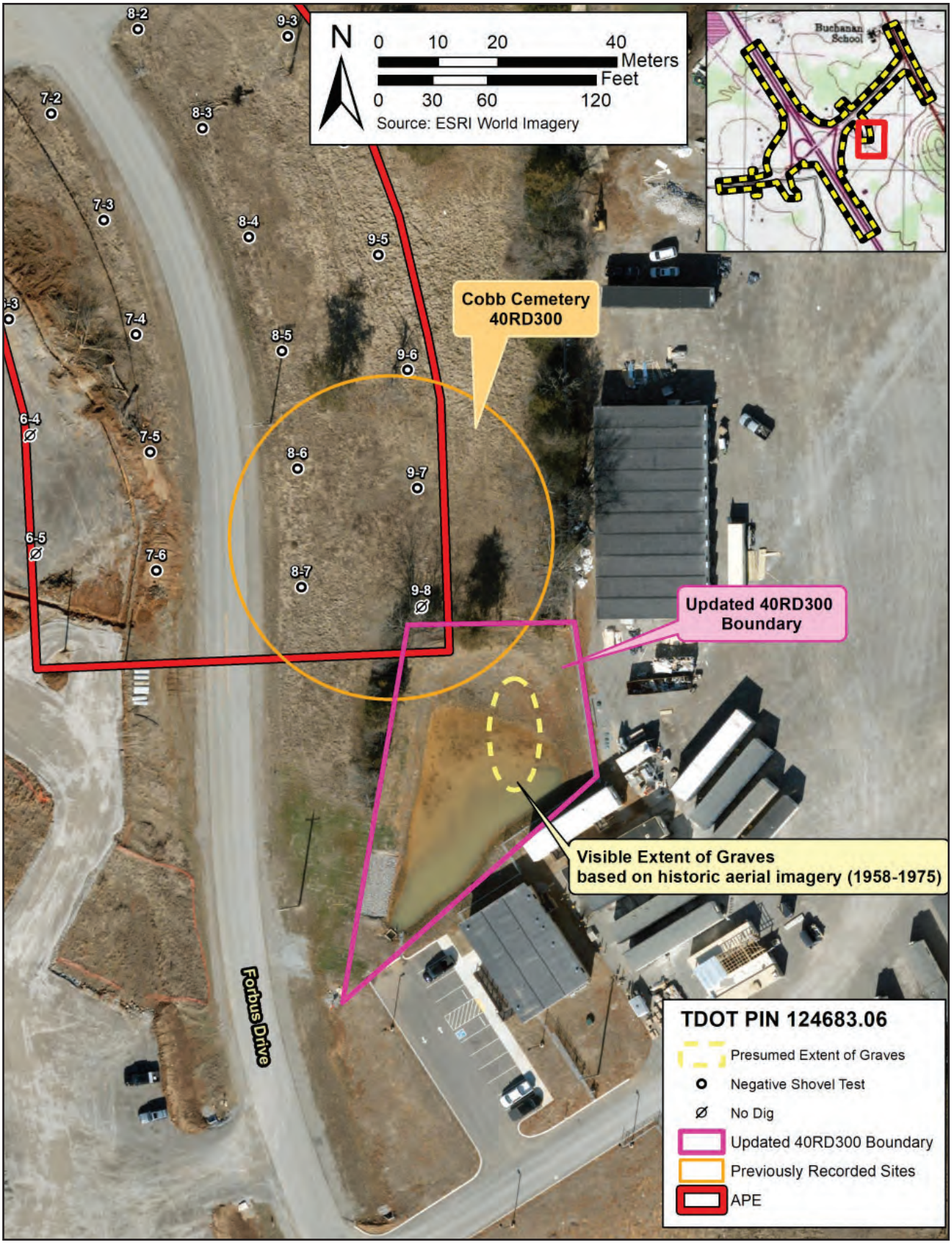

Figure 4.14. Site 40RD300, Cobb Cemetery revisit survey results.

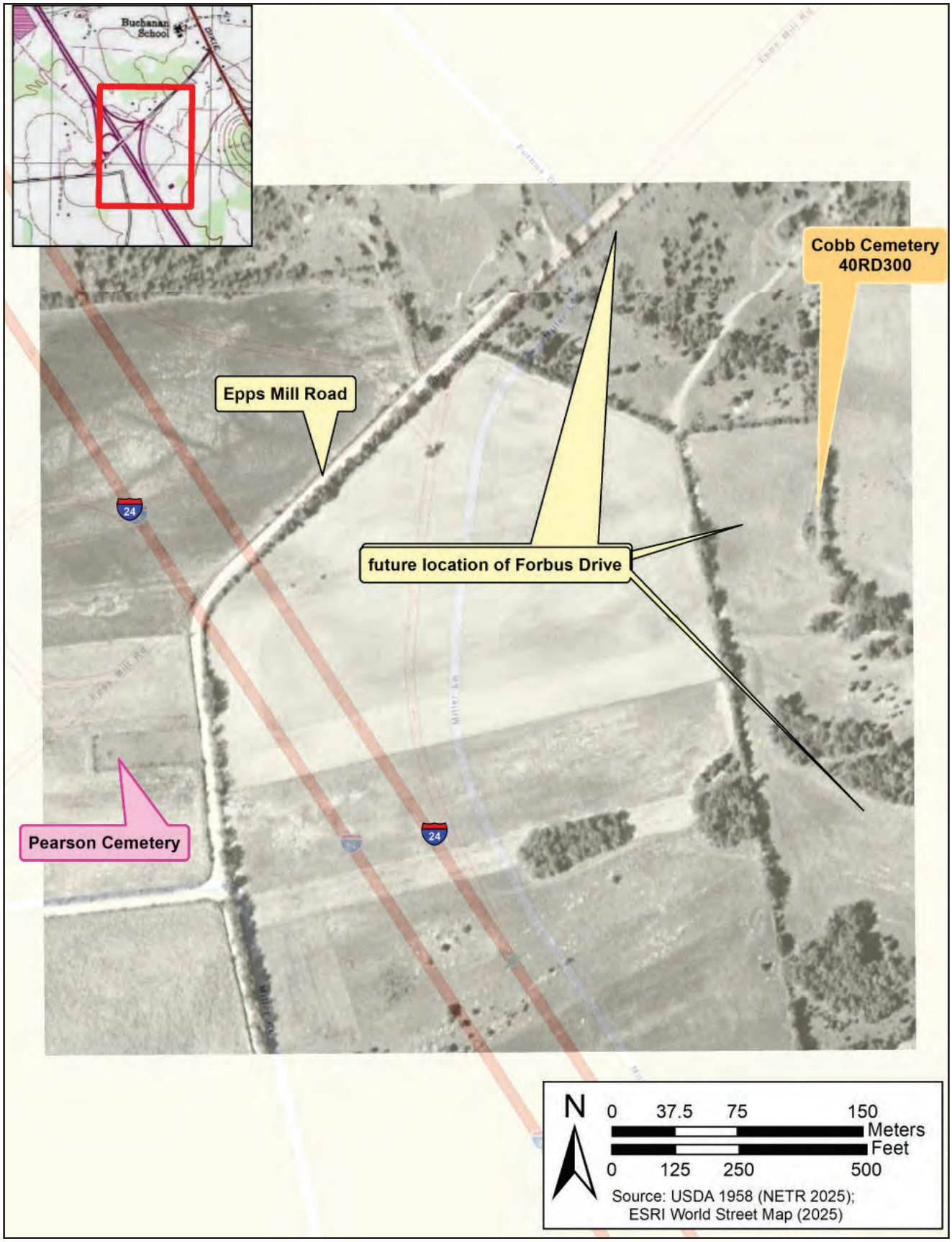

Figure 4.15. Site 40RD300, Cobb Cemetery, depicted on a 1958 aerial photograph, with a transparent street map overlay (NETR 2025).

Figure 4.16. Site 40RD300, Cobb Cemetery, depicted on a 1975 aerial photograph, overlaid on recent aerial imagery (NETR 2025).

Cobb Cemetery is still visible (NETR 2025). By 1980, a fence was built around the northern and western boundaries of the cemetery, and a long white building was constructed north of the cemetery. This building is visible in the background of a photograph of the cemetery taken by Barker (2011) (**Figure 4.17**). By 2006, the previously visible fenceline is a treeline (NETR 2025), but no other major changes to the area occurred. In 2011, when the cemetery was recorded as an archaeological site, Forbus Road, the SIA that connects Epps Mill Road to Barrett Firearms was constructed and the long white building north of the cemetery was demolished. The treeline around the cemetery was still intact, and there are trees visible that are congruent with the photographs taken by TDOT archaeologists (Barker 2011; **Figure 4.18**). From 1958 to roughly 2016, the cemetery was mowed regularly, and the treeline surrounding the cemetery on the west, north, and east sides is clearly visible (NETR 2025). In 2021, it appears the western treeline bordering the cemetery was partially removed (NETR 2025). By February of 2024, the cemetery was removed and replaced with a retention pond (Google Earth 2025). Further evidence of the cemetery's exact location can be seen in the digital elevation model of the site (**Figure 4.19**). This model clearly demonstrates the small mounded area that is also visible in **Figure 4.17** and other historic aerial photographs.

Figure 4.17. Photograph of Cobb Cemetery from the original recording (Barker 2011).

Figure 4.18. Site 40RD300, Cobb Cemetery, depicted on a 2012 aerial photograph, overlaid on recent aerial imagery (NETR 2025).

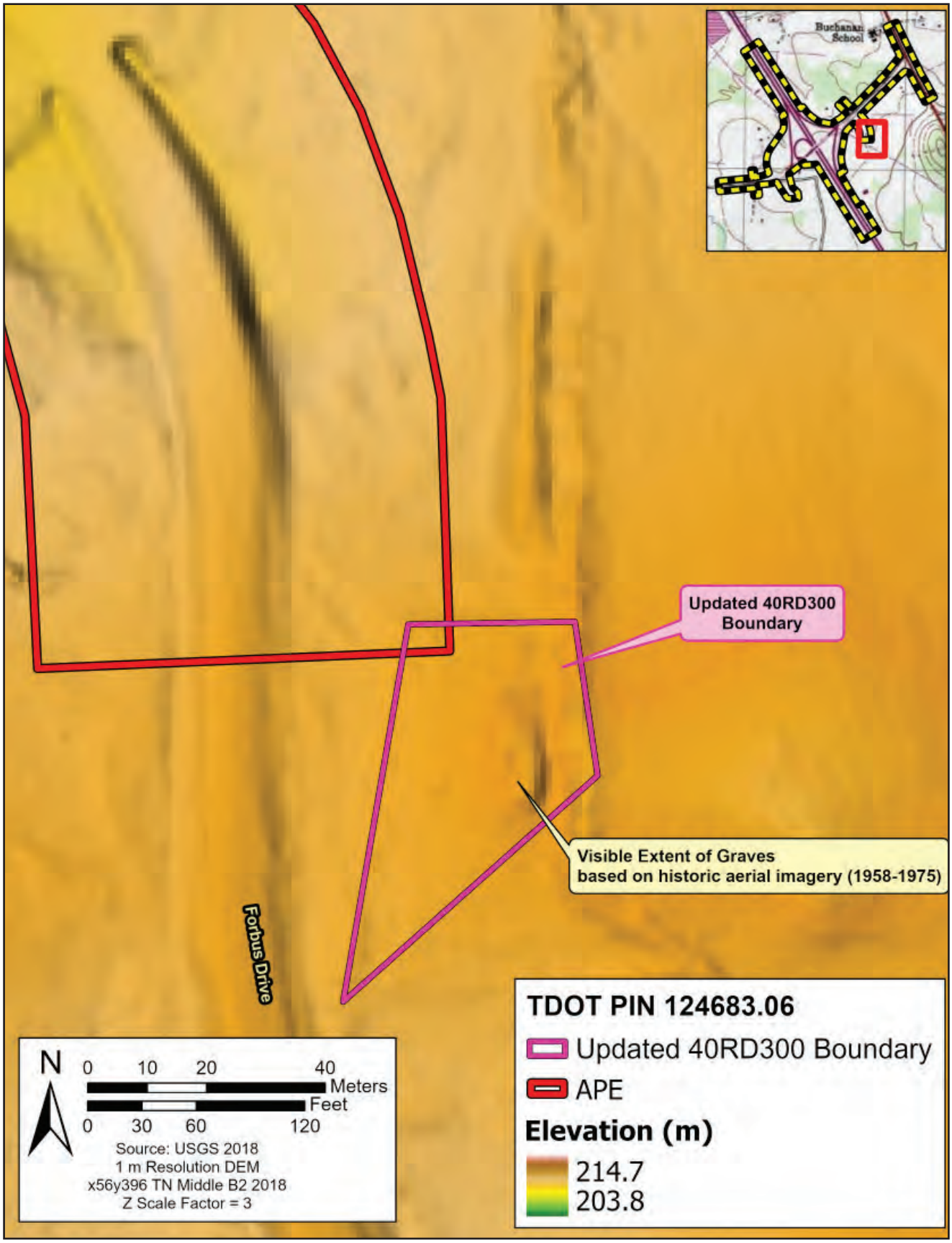

Figure 4.19. Site 40RD300, Cobb Cemetery, depicted on a digital elevation model (DEM).

Based on EP's review of historic maps and aerial photographs, as well as the photographs of the cemetery taken during the 2011 survey (Barker 2011), the cemetery boundary has been revised to reflect the approximate limits of the historic parcel boundaries, as well as the extent of visible graves visible on historic imagery (see **Figure 4.16**).

Based on a note from the TDOA on the 2024 revisit form, the new landowner illegally removed the headstones during the construction on the property, but it is unknown if the graves were moved, relocated, or damaged (Walls 2024). Further field assessment of the cemetery would be required to determine the extent of graves and their condition.

Conclusions and Recommendations

Site 40RD300, the Cobb Cemetery, was originally recorded as an archaeological site in 2011 (Barker 2011). This late nineteenth to early twentieth century cemetery has approximately eight graves). During the subsequent revisits by New South (Walls 2024) and EP, survey results indicate that the cemetery has been illegally turned into a retention pond. No subsurface excavation within the limits of the cemetery were conducted; therefore, the condition and exact location of each burial is unknown. This site has not been evaluated for inclusion in the NRHP, and it's eligibility is considered Unknown. Avoidance of the boundary of Cobb Cemetery is recommended.

If avoidance of the cemetery is not possible, EP recommends a ground penetrating radar (GPR) survey be conducted within the cemetery boundary to determine if any grave shafts or burials within the cemetery remain intact, as well as their exact location. This could be conducted when the retention pond is dry, or has been drained and left to dry out. Because there is no longer any surface vegetation, and the top soil has been excavated to build the pond, GPR results for this cemetery have the potential to be clear.

Site 40RD342 - Revisit

Site 40RD342 was originally recorded in an agricultural field in 2024 by New South (Walls and Peacock 2024). This site was recorded as a multicomponent surface scatter, with an unknown prehistoric component and a general historic scatter. New South recommended 40RD342 as Ineligible for inclusion in the NRHP under Criterion D.

Shovel Testing and Visual Inspection

EP's revisit investigation at 40RD342 included shovel testing and visual inspection of the site boundary (**Figure 4.20**). The agricultural field this site is located in was fallow during the current survey. During the pedestrian survey of the site, no cultural material was collected from the surface, and shovel tests within the vicinity were negative. During the original survey, cultural material was only recovered from the surface (Walls and Peacock 2024). It is likely that all of the

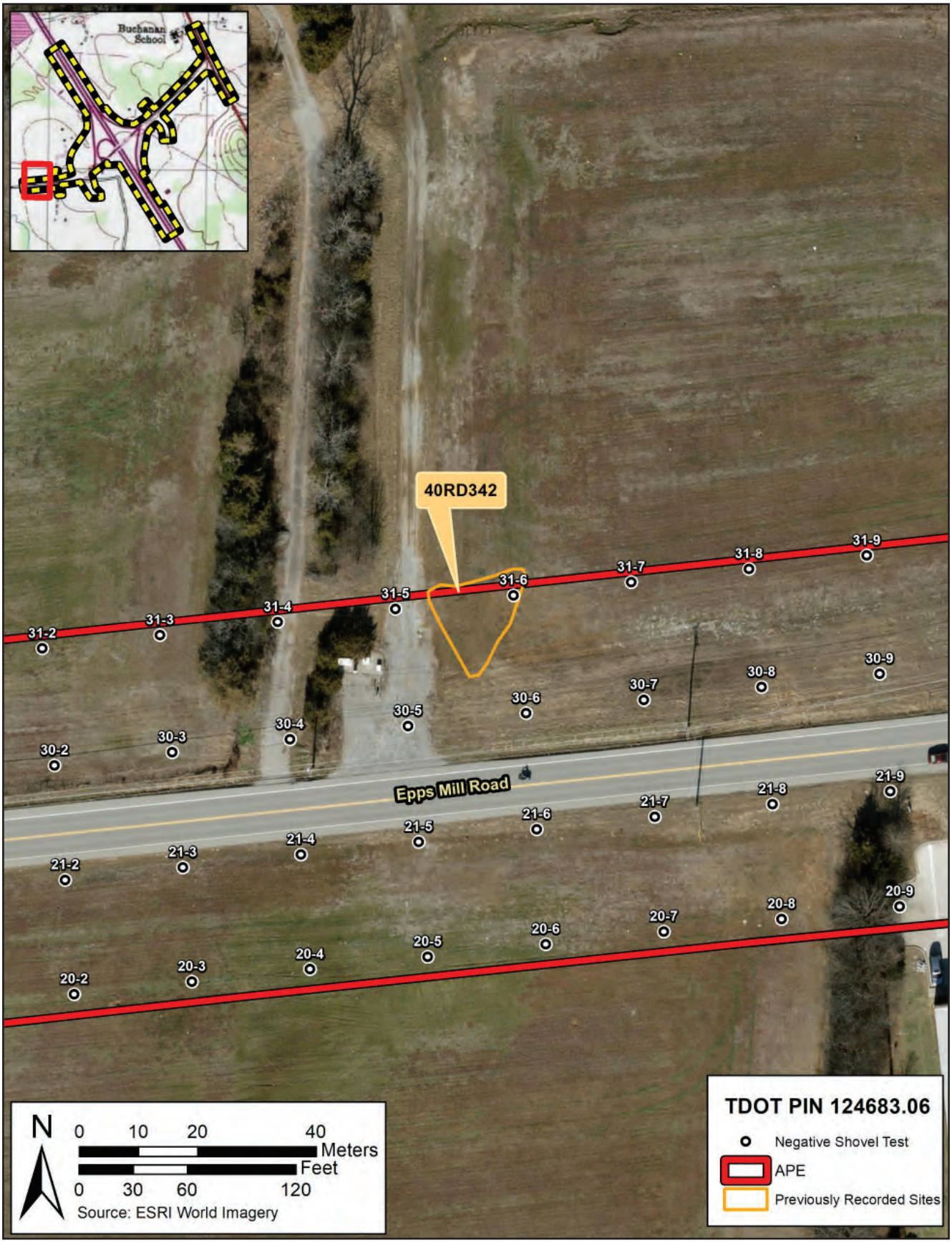

Figure 4.20. Site 40RD342 revisit survey results.

material cultural previously located at this site was recovered during the previous investigation, or the artifacts have continued to be decontexualized as they are manipulated within the plowzone of an agricultural field.

Soils within the site boundary (TR31ST6) included a reddish yellow (5YR 7/8) clay with rocky inclusions from 0-5 cmbs (0-2 inbs.) and gravel from 5-15 cmbs (2-5.9 inbs.). The gravel inclusions throughout the shovel test are likely from the nearby gravel roadway to the west of the site boundary.

Conclusions and Recommendations

Site 40RD342 was recorded in 2024 as a surface scatter of prehistoric and historic cultural material (Walls and Peacock 2024). During EP's revisit, the site was not relocated. EP concurs with the previous recommendation, that 40RD342 is Ineligible for inclusion in the NRHP under Criterion D, and no further work is recommended.

Pearson Cemetery

Pearson Cemetery is an historic family cemetery that was identified during background research of the survey area (**Figure 4.21**). The cemetery is located in the southwestern quadrant of the I-24/Epps Mill Road intersection, immediately north of the Cheesesteak Factory restaurant. The cemetery is completely fenced in, and there is a treeline around the perimeter. This cemetery consists of four known graves: Joseph Pearson (1871-1951) and Mary Elizabeth Miller Pearson (1872-1963), as well as their two young children, Annie Ruth Pearson (1909-1910) and Paul Fowler Pearson (1906-1910) (FindAGrave 2025). The known visible extent of graves is limited to the far western portion of the cemetery (see **Figure 4.21**).

Visual Inspection

EP's investigation of Pearson Cemetery included visual inspection of the cemetery; no shovel tests were excavated within the bounds of the cemetery. During the field survey, EP located the three gravestones (four graves) identified during background research of the cemetery (FindAGrave 2025; **Figure 4.22**). They are located along the western edge of a small mowed plot that is bound on all four sides by an unmaintained fence and a treeline.

The grave markers consist of one large granite headstone for the adults, as well as two smaller marble headstones with footers for the two children. Each of the children's gravestones have a lamb sculpture on top of the headstone, which is common funerary iconography for children's graves of the Protestant Christian faith. All of the headstones face the west, which is also common in Christian burials from the early twentieth century. The cemetery is visible on historic aerial imagery of the area in 1958 and 1975, after I-24 was constructed (see **Figures 4.15** and **4.16**).

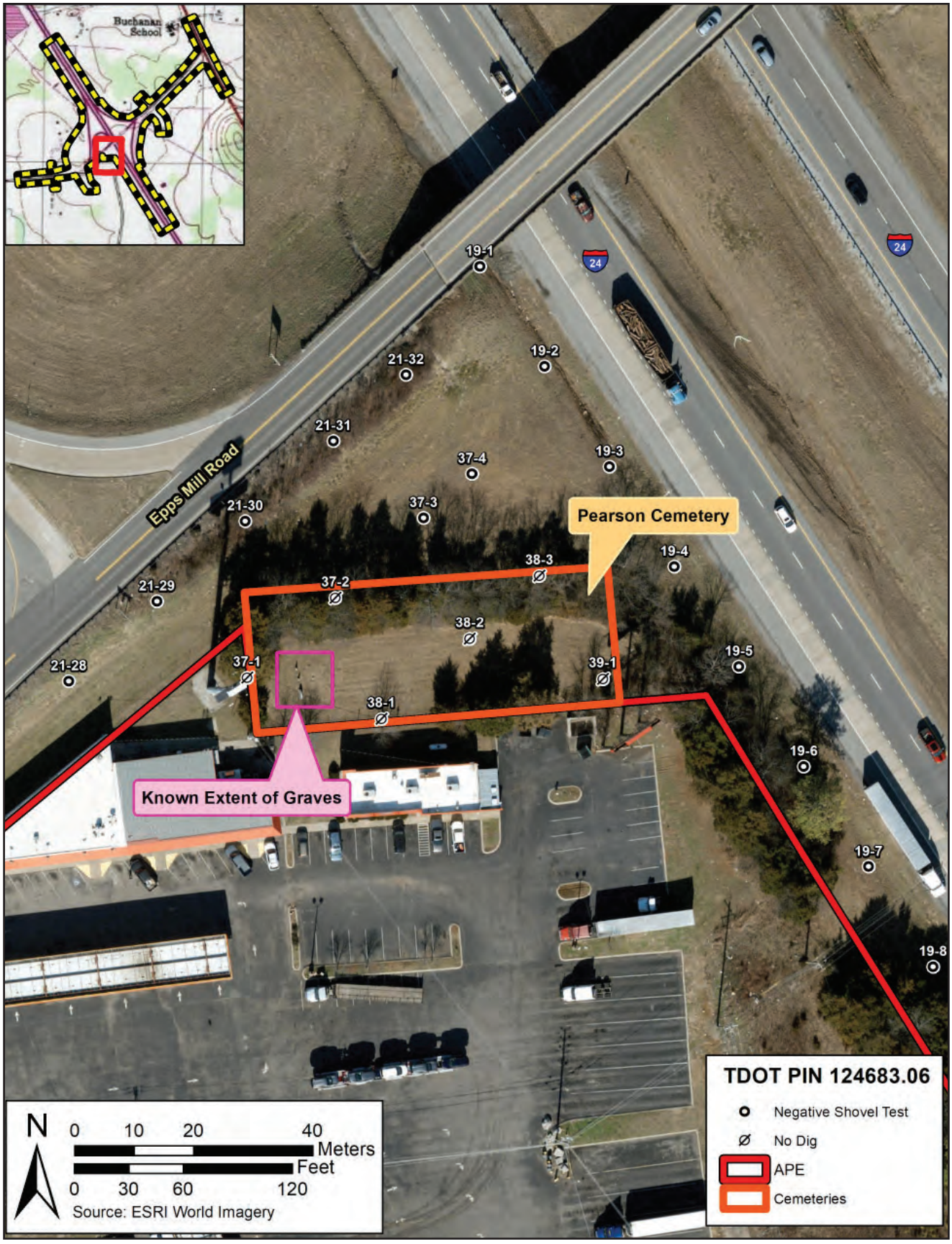

Figure 4.21. Site Pearson Cemetery survey results.

Figure 4.22. Photograph Pearson Cemetery, facing east.

Visual inspection of the cemetery's periphery did not identify any depressions or evidence that any burials are present outside of cemetery limits.

According to Public Health Reports from the late nineteenth and early twentieth centuries, smallpox cases were prevalent in 1910, as they were throughout the preceding decade (Trask 1911). Over 2,000 smallpox deaths were reported in Tennessee, and Trask (1911) notes that the dataset for Tennessee was incomplete, indicating there were many more deaths than reported. Considering that the two children's graves have death dates within weeks of one another (March 8, 1910 and March 24, 1910), it's possible that they died as a result of this smallpox outbreak. Smallpox was not considered eradicated from the United States until circa 1980.

Conclusions and Recommendations

The Pearson Cemetery is an historic early twentieth century family cemetery with four known graves. The cemetery is still bound and has maintained its size and shape over the past century. All of the known gravestones are intact and in situ. No excavations were conducted within the known limits of the cemetery. The TDOA no longer records cemeteries as archaeological sites, so this historic cemetery will not receive an archaeological site number. EP recommends avoidance of the cemetery. If the cemetery can not be avoided, EP recommends a GPR survey to confirm the known extent of graves within the small cemetery plot. Because the cemetery boundary is

maintained and free of excess vegetation, GPR survey would be possible within the cemetery boundary.

Isolated Find 1 (IF1)

IF1 was located within an open agricultural field east of US 41/SR 2/Manchester Pike/Dixie Hwy West (US 41). This IF consists of two historic artifacts: an undecorated piece of porcelain and a shard of clear vessel glass (**Figure 4.23; Table 4.1**). The single positive shovel test (TR17ST1) was delineated in four orthogonal directions at a reduced testing interval, and no additional cultural material was identified (**Figure 4.24**).

Datum 2's (TR17ST11) soil profile consisted of brown (10YR 4/3) silty loam from 0-25 cmbs (0-9.8 inbs.), overlying bedrock from 25+ cmbs (9.8+ inbs.) (**Figures 4.25** and **4.26**). Artifacts were recovered from the plowzone, between 10-20 cmbs (3.9-7.9 inbs.) The shovel test was documented, photographed, and backfilled after reaching an impenetrable layer of bedrock. All other shovel tests were negative for cultural material.

Based on a review of historic topographic maps of the area, the cultural material found at IF1 is likely related to an historic domestic residence in the immediate vicinity, possibly from the mid-twentieth century (USGS 1951). IF1 was delineated fully during fieldwork. Isolated finds are not evaluated for the NRHP. No further work is recommended.

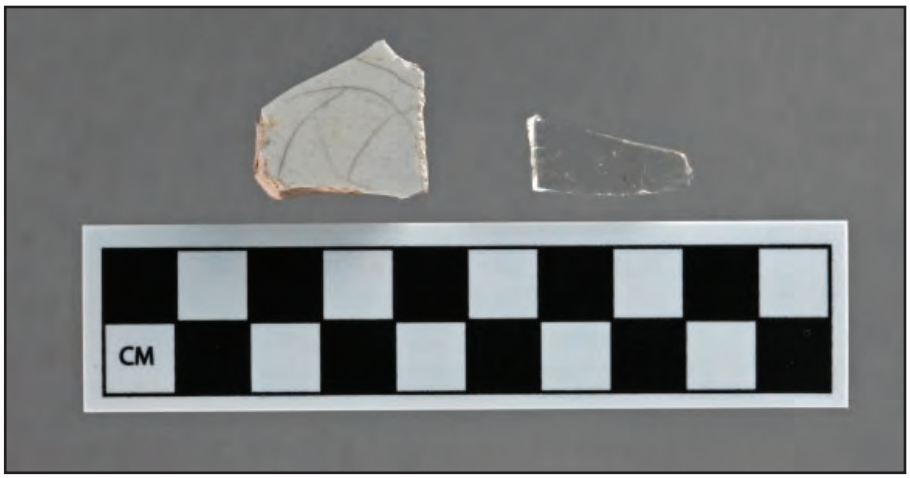

Figure 4.23. Historic artifacts recovered from IF1.

Table 4.1. IF1 Artifact Recovery Table.

	TR17ST11	Total
Historic		
Historic Ceramics		
utility porcelain, undecorated	1	1
Glass		
container glass, clear	1	1
Total	**2**	**2**

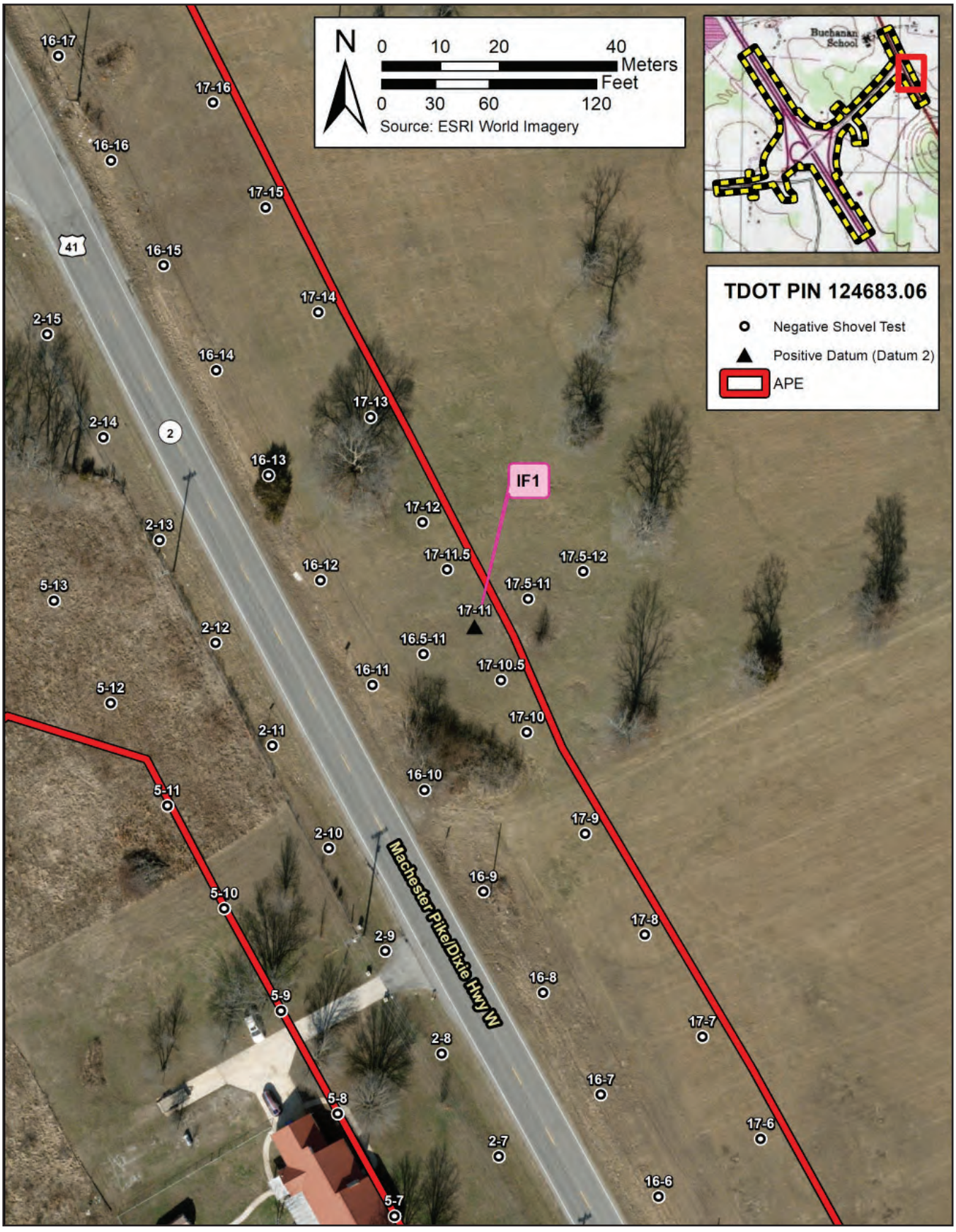

Figure 4.24. Shovel test results for IF1.

Figure 4.25. Photograph of TR17 ST11's western soil profile (Datum 2).

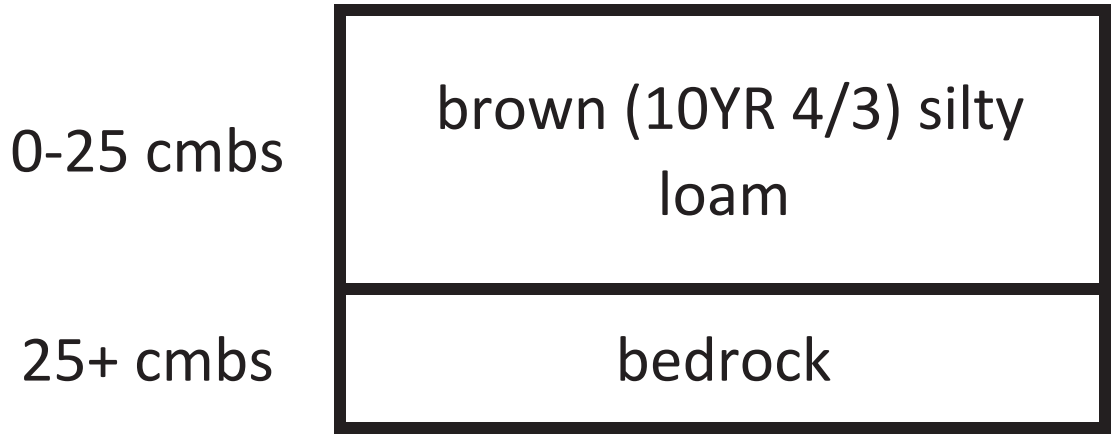

Figure 4.26. Profile sketch of TR17 ST11 (Datum 2).

CHAPTER 5: SUMMARY AND RECOMMENDATIONS

EP's Phase I archaeological survey for the proposed interstate interchange improvements at the intersection of I-24 and Epps Mill Road in Rutherford County, Tennessee (TDOT PIN 124683.06), was completed in January 2025, under TDOT Permit No. 001624. The survey included the visual inspection of the entire APE, as well as the excavation of 596 shovel tests. Of those, one was positive for cultural material (IF1). Two archaeological sites were revisited, 40RD300 and 40RD342, and one cemetery was recorded, the Pearson Cemetery (**Table 5.1**).

Site 40RD300, Cobb Cemetery was originally recorded in 2011 prior to the construction of an SIA road (Barker 2011). In 2024, Cobb Cemetery was revisited by New South (Walls 2024), and the cemetery had been excavated into a retention pond. During EP's revisit survey, similar conditions to those reported by New South were encountered. Through further historical research, EP refined the historic parcel boundaries of the cemetery, and isolated the area most likely to contain the eight burials previously reported here (Barker 2011). No subsurface investigations were conducted within the cemetery; this site has not been evaluated for inclusion in the NRHP. Avoidance of the cemetery is recommended. If avoidance isn't possible, additional field investigations are recommended to isolate the exact burial locations and determine if they were significantly disturbed by the installation of a retention pond.

Table 5.1. Resource Summary and Recommendations.

Trinomial	Time Period	Site Type	NRHP Recommendation
40RD300	nineteenth and twentieth century	Cobb Cemetery	Unknown
40RD342	multicomponent	surface artifact scatter	Ineligible
-	twentieth century	Pearson Cemetery	Unknown
IF1	twentieth century	subsurface artifact scatter	NA

Site 40RD342 was recorded as a multicomponent surface artifact scatter (Walls and Peacock 2024). This site contained undiagnostic prehistoric cultural material, as well as broadly historic domestic refuse. During EP's revisit, no cultural material was recovered during shovel testing, and no artifacts were recovered from the surface. EP concurs with the previous recommendation, that 30RD342 is Ineligible for inclusion in the NRHP under Criterion D. No further work is recommended.

Pearson Cemetery is a twentieth century family cemetery with four graves. The cemetery is well bound, and all the known interments are located at the far western extent of the boundary. This cemetery's evaluation for inclusion in the NRHP under Criterion D is considered Unknown. Avoidance of the cemetery boundary is recommended. If the cemetery can not be avoided, further field investigations of the cemetery are recommended.

IF1 is comprised of two mid-twentieth century household artifacts. IFs do not meet the requirements to be evaluated for the NRHP; no further work is recommended.

Should the project be changed to include areas beyond the limits of the current APE, additional archaeological fieldwork may be necessary. Avoidance of both cemetery boundaries is recommended (Cobb Cemetery and Pearson Cemetery). No further archaeological work within the APE is recommended at this time.

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APPENDIX A: TENNESSEE DIVISION OF ARCHAEOLOGY PERMIT

STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF ARCHAEOLOGY
Cole Building #3, 1216 Foster Avenue
NASHVILLE, TN 37243
(615) 741-1588

ARCHAEOLOGICAL PERMIT

NO. 001624

IN ACCORDANCE WITH THE PROVISIONS OF TENNESSEE CODE ANNOTATED SECTION 11-6-101 ET SEQ. PERMISSION IS HEREBY GRANTED TO:

SARA MACKENZIE PARKIN

REPRESENTING:

EDWARDS-PITMAN, INC.

FOR ARCHAEOLOGICAL INVESTIGATION ON THE FOLLOWING DESIGNATED STATE-OWNED OR CONTROLLED LANDS:

PHASE I ARCHAEOLOGICAL SURVEY OF THE I-24 INTERCHANGE AT EPPS MILL ROAD, RUTHERFORD COUNTY

IN ACCORDANCE WITH THE APPLICATION FILED DECEMBER 10, 2024 IN THE OFFICE OF THE DIVISION OF ARCHAEOLOGY AND IN CONFORMITY WITH THE DATA SUBMITTED THEREIN WHICH IS CONSIDERED AS A PART OF THIS PERMIT.

ISSUED THIS 15TH DAY OF DECEMBER 2024

TO EXPIRE THE 31ST DAY OF DECEMBER 2025

ADDITIONAL TERMS TO PERMIT APPLICATION: ARTIFACTUAL REMAINS AND PROJECT RECORDS ARE THE PROPERTY OF THE STATE OF TENNESSEE. THIS PERMIT IS SUBJECT TO PERIODIC REVIEW AND/OR CANCELLATION BY THE DIVISION OF ARCHAEOLOGY SHOULD CONDITIONS WARRANT SAME.

Phillip R. Hodges
DIRECTOR/STATE ARCHAEOLOGIST

_____
APPLICANT

CN-0939

APPENDIX B: ARCHAEOLOGICAL SITE FORMS

ARCHAEOLOGICAL SITE SURVEY RECORD

Tennessee Department of Environment and Conservation
Division of Archaeology
Cole Building #3
1216 Foster Avenue
Nashville, Tennessee 37243
Phone (615) 741-1588 Fax (615) 741-7329

State Site No: **40RD300**
Date Assigned: **4/25/2011**

Submittal of an archaeological site survey record constitutes a request for a state number on a new site, or revises information on a previously recorded site. Send by mail to the above address, or as an attached email document to Suzanne.Hoyal@tn.gov. A copy of the completed record will be returned to the reporter.

Our office does not define a site by an arbitrary number of artifacts or other specific criteria. Request a preliminary review if site status is uncertain or if additional guidance is needed.

The site record can be filled in with pencil or electronically. Double click on check box to access options. If the format is not compatible with your system, please request an alternate method of submittal.

Site name or field number: Cobb Cemetery

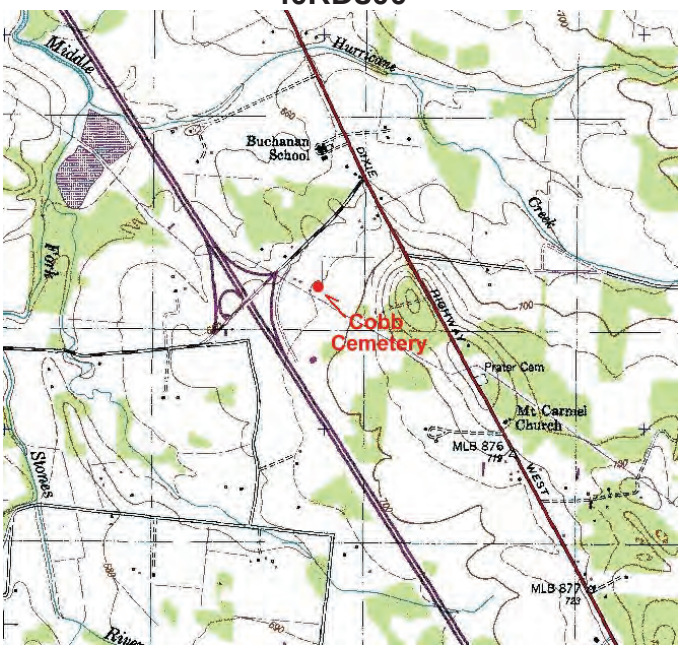
Cultural Affiliation:

- ☐ 0001 Undetermined Prehistoric
- ☐ 0002 Paleoindian
- ☐ 0003 Transitional Paleo
- ☐ 0004 Archaic
- ☐ 0005 Early Archaic
- ☐ 0006 Middle Archaic
- ☐ 0007 Late Archaic
- ☐ 0008 Gulf Formational
- ☐ 0009 Early Gulf Formational
- ☐ 0010 Middle Gulf Formational
- ☐ 0011 Late Gulf Formational
- ☐ 0012 Woodland
- ☐ 0013 Early Woodland
- ☐ 0014 Middle Woodland
- ☐ 0015 Late Woodland
- ☐ 0016 Mississippian
- ☐ 0017 Early Mississippian
- ☐ 0018 Middle Mississippian
- ☐ 0019 Late Mississippian
- ☐ 0020 Protohistoric
- ☐ 0021 Contact Period Indian
- ☐ 0022 Historic Indian
- X 0023 Historic Non-Indian
- ☐ 0024 Pleistocene Fauna

This block is for Division use only

Site Type: Historic – private cemetery
County: Rutherford
Physiographic Div.: Central Basin
Drainage: 7A
Elevation: 690 ft. AMSL
USGS 7.5' quad: Webbs Jungle, Tenn. 78 NE, 1949 photorevised 1980; 20 ft. contour intervals

40RD300



40RD300 – Cobb Cemetery

Date Range (historic sites only):
☐02 Pre-1770
☐03 1770-1819
☐04 1820-1860
☐05 1861-1865
X 06 1866-1900
X **07** 1901-1932
☐**08** 1933-present

Human Remains:
☐00 Unknown
☐01 Scattered Surface Remains
☐02 Isolated Intact Burial(s)
X **03** Cemetery
☐04 Absent (historic sites only)
☐05 Unknown, but likely

Ownership:
X 02 Private Individual/Corporation
☐**03** Local Government
☐04 State of Tennessee
☐05 Federal-TVA, COE, etc.

Site Size (in meters): Cemetery boundaries unmarked (estimated) N/S-12 m, E/W-6 m, Area in sq.m. 72

Basis for Size Estimate:
☐01 Taped
X 02 Paced
☐03 Guessed
☐04 Transit/alidade
☐05 Estimated from map

Boundary: ☐Partial (explain in site description) X Inclusive

Land Use/Ground Cover:
☐01 Grassland/Pasture
☐02 Cultivation
X 03 Secondary Growth
☐04 Unimproved Forest
☐05 Improved Forest/Orchard
☐06 Intermittent Flooding
☐07 Inundated/Shoreline
☐08 Urban
☐09 Roadway
☐10 Open and Eroded
☐99 Other (explain in site description)

Condition/Percent Disturbed:
X 01 Undisturbed [excellent]
☐02 <25% [very good]
☐03 26-50% [good]
☐04 51-75% [fair]
☐05 76-99% [poor]
☐06 Destroyed
☐07 Percent Unknown

Level of Investigation:
X 01 No Collection
☐02 Surface Collection (grab bag)
☐03 Surface Collection (intensive, may include shovel tests)
☐04 Surface Collection + Test Units (Phase I+)
☐05 Extensive Testing Program (Phase II)
☐06 Excavation Program
☐07 Total Excavation

Reporter Type:
☐01 Private Consulting Firm
X 02 Agency or Non-educ. Inst.
☐03 Educational Institution
☐04 Amateur Society Member
☐05 Landowner
☐06 Private Individual
☐07 Student (volunteered rpt.)
☐08 Professional (volunt'd rpt.)

Last Day of Investigation: Month 4 Day 7 Year 2011 X New Site ☐Previously Recorded

In addition to the check box pages, please include:

- USGS 7.5' topographic map with site boundary and scale (place multiple sites on a single map when possible)
- Descriptive page(s) with the following:
  - field number and/or site name on each page
  - landowner, tenant, or easement holder
  - verbal directions to the site (if appropriate or helpful in rural areas)
  - landform, setting, distance and direction to water
  - surface conditions, level of survey, and explanation for limitations in determining site boundary
  - nature and extent of past and anticipated disturbance
  - cultural affiliation, site type, features, table and summary of observed/collected artifacts, and site map, if available
    --for prehistoric sites cultural affiliation must be supported by presence of temporally sensitive artifact(s)
    --for historic sites a pre-1933 occupation date should be established using features, maps, deeds, informants, etc. (the presence of a scatter with artifacts such as ceramics or bottles that **might have been** manufactured before 1933 is generally inadequate for recording a site **unless also supported by other evidence**)
  - relationship, if any, to nearby sites
  - associated history, persons, buildings
  - photo media and quantity; temporary and permanent repositories for artifacts and documentation
  - location of any additional information such as reports, maps, local informants, etc.
  - title, author, and date of the report in which the site is or will be reported
  - reporter name, affiliation, address, phone, fax, email, and date of submittal

Do not put headings followed by empty space for items that are not applicable. Electronic narrative should be sent as a Word document; maps as JPEG or PDF. Electronic submittals will be edited to reduce space.

Gary Barker (TDOT Region III Archaeologist) 40RD300

Field name/ number: Cobb Cemetery- Barrett Firearms Inc. SIA- 1

Site Property Owner: Benz, Brenda Jean

Site Type: Late 19th –early 20th century cemetery

Site Location: This historic period cemetery is in southeast Rutherford County, Tennessee. It can be visited by taking I-24 southeast from Murfreesboro approximately 9 miles (14.5 km) and exiting east on to Epps Mill Road (I-24 Exit 89). Immediately after crossing over I-24 the cemetery is approximately 720' (220 m) south of the intersection of Epps Mill Road and Forbes Drive [see attached USGS 7.5 minute series topographic quadrangle 78NE (*Webb's Jungle*)].

Site Setting: The cemetery is in an overgrown area covered by periwinkle (cemetery ivy) cedar trees and scrub brush (Figure 1). It occurs directly west and adjacent to an old road bed that extends north-south along the property line shown on the attached quadrangle and in Figure 2. Examination of a 1939 postal route map of the study area suggests the old road bed connected Murfreesboro and Manchester.

Site Assessment Purpose, Methods and Results:

The site locality was field surveyed April 7, 2011 as part of a TDOT cultural resource assessment of proposed State Industrial Access (SIA) right-of-way (ROW), see Barnett and Barker (2011). The TDOT proposed to construct the SIA to allow Barrett Firearms Inc. truck access from its manufacturing plant to Interstate 24. The project length was .419 mile (.67 km). The purpose of the assessment was to identify and determine the spatial limits of archaeological and historic architectural resources within the project Area of Potential Effect (APE) that are listed, eligible, or potentially eligible for inclusion in the National Register of Historic Places (NRHP) pursuant to 36CFR60.4 and TCA 4-11-111.

Reconnaissance of the cemetery locality identified a minimum of two rows of four (4) grave depressions extending over an area approximately 40' north-south and 20' east-west. One of the graves is marked by an elaborate headstone placed by *Woodsmen of the World*, a fraternal organization established by Joseph Cullen Root June 6th 1890. *Woodsmen of the World* grew out of the *Woodsmen of America* fraternal organization that Root also established January 5th 1883. *Woodsmen of the World*, headquartered in Omaha, Nerbraska placed tens of thousands of sawed stump shaped headstones across the USA before 1930. The headstone at the Cobb Cemetery reads "Woodsmen of the World Memorial" "Robert H. Cobb Born Dec. 7 1857, Died Feb. 18, 1912, Age 54 yrs, 2 mos, 11 days" and is shown in figures 3 and 4. The other seven (7) grave depressions lack any above ground markers. The Cobb cemetery will be marked and avoided during construction of the proposed SIA.

Photo media/quantity; artifact repositories: Digital images: 4.7.2011 (a-g).

References Cited

Barnett, Holly and Gary Barker
2011 *Phase I Cultural Resource Assessment: State Industrial Access From Epps Mill Road to Barrett Firearms Inc, Rutherford County, TN*. On file TDOA and TnSHPO, Nashville.

Figure 1. View northeast showing Cobb Cemetery.

Figure 2. View north Showing Cobb Cemetery (center) and old road bed extending north-south adjacent to it (right).

Figure 3. View east showing *Woodsmen of the World* Memorial to Robert H. Cobb at Cobb Cemetery.

Figure 4. Inscription Close-up.

ARCHAEOLOGICAL SITE SURVEY RECORD

Tennessee Department of Environment and Conservation
Division of Archaeology
Cole Building #3
1216 Foster Avenue
Nashville, Tennessee 37243
Phone (615) 741-1588 Fax (615) 741-7329

Submit completed Word Document to: tdoa.sitefile@tn.gov

State Site No.: 40RD300

Date Assigned/**Updated**: 10/01/2024

Record Type: New Site **Previously Recorded Site**

Alternative site name or field number: Cobb Cemetery, 2024 Update

LOCATION

County: Rutherford

USGS 7.5' Quad Name: Webbs Jungle, Tenn; 78NE

Elevation (ft AMSL)**:** 690

Physiographic Region: Central Basin

Lat/Long (decimal degrees)**:** 86.3168573°W 35.7225327°N

CULTURAL AFFILIATION AND SITE TYPE

Historic Component: **YES** NO

Historic Date Range: [**select** all that apply; must be supported by historic maps or temporally diagnostic artifacts]

1760-1819	1861-1865	**1901-1932**	1950-present
1820-1860	**1866-1900**	1933-1950	

Historic Site Types: private cemetery

SITE CONDITIONS

Site Size (long x short, in meters): 12 x 6

Boundary: **Partial** Complete

Size Basis: [**select** one]

Taped	Guessed	Estimated from map
Paced	**Transit/alidade/digital**	

Land Use/Ground Cover: [**select** all applicable]

Grassland/Pasture/Yard	Unimproved Forest	Inundated/Shoreline	**Open and Eroded**
Cultivation	Improved Forest/Orchard	Urban	Other
Secondary Growth	Intermittent Flooding	Roadway	

If Other, describe:

Condition (Percent Disturbed): [**select** one]

Excellent (0%)	Good (25-50%)	**Poor (76-99%)**	Percent Unknown
Very good (<25%)	Fair (51-75%)	Destroyed (100%)	

Human Remains: [**select** one]

Unknown	Isolated Intact Burial/s	Absent (historic sites only)
Scattered Surface Remains	**Cemetery**	Unknown, but likely

Ownership: [**select** one]

Private Individual or Corporation	State of Tennessee
Local Government	Federal Government (TVA, COE, DOD, etc)

Name of current landowner, tenant, or easement holder: CHRISTIANA MILLER LLC

TDOA Permit Number, if on State-Owned or -Controlled land: TDOA P001574

SURVEY INFORMATION

Level of Investigation: [**select** all that apply]

Thematic Survey/Archival Research	Geophysical/Remote Sensing	Test Units
Reconnaissance/Field Observation	**Shovel Testing**	Excavation

Last Date of Investigation (mm/dd/yyyy)**: July 30, 2024**

40RD300
Cobb Cemetery

Collection Status: [**select** one]
No Collection | Permanent Repository | Returned to Landowner

Was this site recorded during a survey conducted for purposes of compliance with federal regulations?
Yes | No | Unknown

Lead Agency: TDOT

Reporter's NRHP Recommendation: [**select** one]
Unassessed | Recommended Potentially Eligible
Recommended Not Eligible | Recommended Eligible

Formal NRHP Eligibility Determination:

Site Reporter: Lauren A Walls, MA, RPA **Affiliation:** New South Associates, Inc

Reporter Type: [**select** one]
Private Consultant | Avocational Archaeologist | Student (volunteered report)
Government Agency | Landowner | Professional (volunteered report)
Educational Institution | Private Individual

Report (Author. Year. *Title*.)**:** Cottle-Peacock et al. 2024 "*Phase I Archaeological Survey for I-24 Interchange Improvements at Epps Mill Road/Buchanan Road, Rutherford County, Tennessee*"

SUPPORTING DOCUMENTATION

Briefly describe evidence of historic site type, date range, and ethnic heritage, including artifacts, features, historical documents, informant reports, etc.: Private cemetery, headstones have been removed but graves are still present.

Briefly describe survey purpose and methods: NSA completed a Phase I survey for I-24 interchange improvements at Epps Mill Road in July of 2024. The survey followed standards set forth in TDOT's Scope of Work for Consultant Implemented Phase I Archaeological Surveys. The Cobb Cemetery was investigated vis pedestrian survey and all areas within and around the recorded site boundary were investigated.

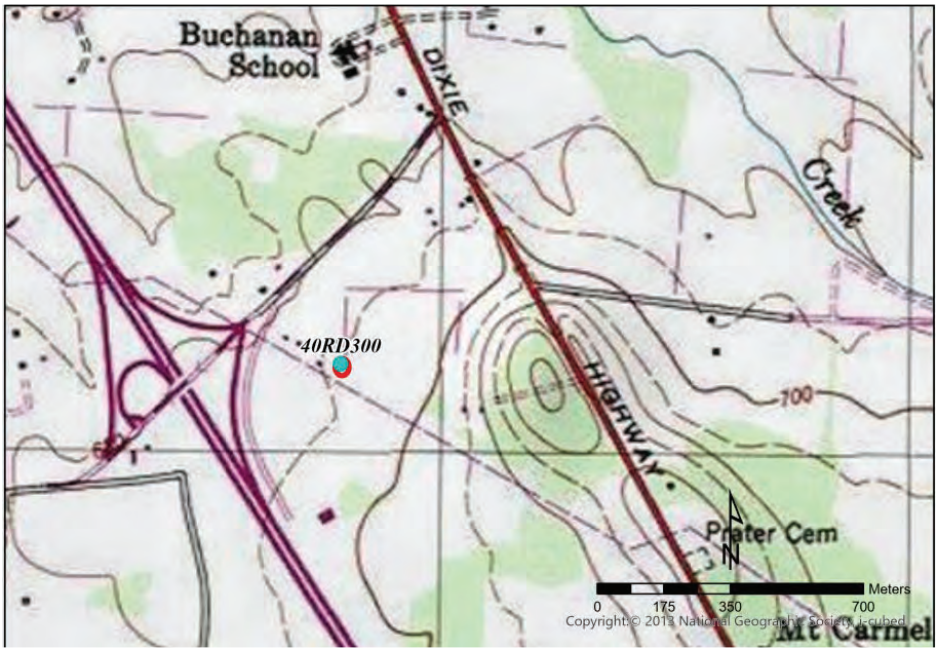
Briefly describe limitations in site size and boundary determination, including details regarding survey area limits, land access, ground conditions, etc.: The APE for this survey slightly overlapped the northern boundary of site 40RD300. NSA investigated the entirety of the Cobb Cemetery area as it is mapped by TDOA and Rutherford County. No shovel tests were dug within the site boundary. There is NO evidence of the Cobb Cemetery in this location. It is unknown what happened to the formal headstones and NSA found nothing to indicate that they were broken or collapsed in the secondary growth along the field edge, where they could be seen in the original Rutherford County Cemetery Survey (RCCS) photographs. RCCS mapped the cemetery east of the location recorded by TDOA (see aerial map). A local informant suggested that the adjacent landowner removed the two headstones when they built the retention pond (see aerial map).

[**TDOA Note:** the TDOA original recorded boundary has been corrected to match the RCCS location, which is the correct location. While the headstones have been removed illegally by the new landowners, the graves have not been moved or relocated. As of this update, the landowner and the family of the persons buried are in legal dispute with plans for the landowner to restore the cemetery.]

Briefly describe the nature and extent of past and anticipated disturbance: The area encompassed by this site boundary is heavily disturbed. There are divots and depressions, scattered construction debris, and exposed bedrock, as well as recently built retention pond. TDOT's current road-widening project should not have any impact on the 40RD300 site area.

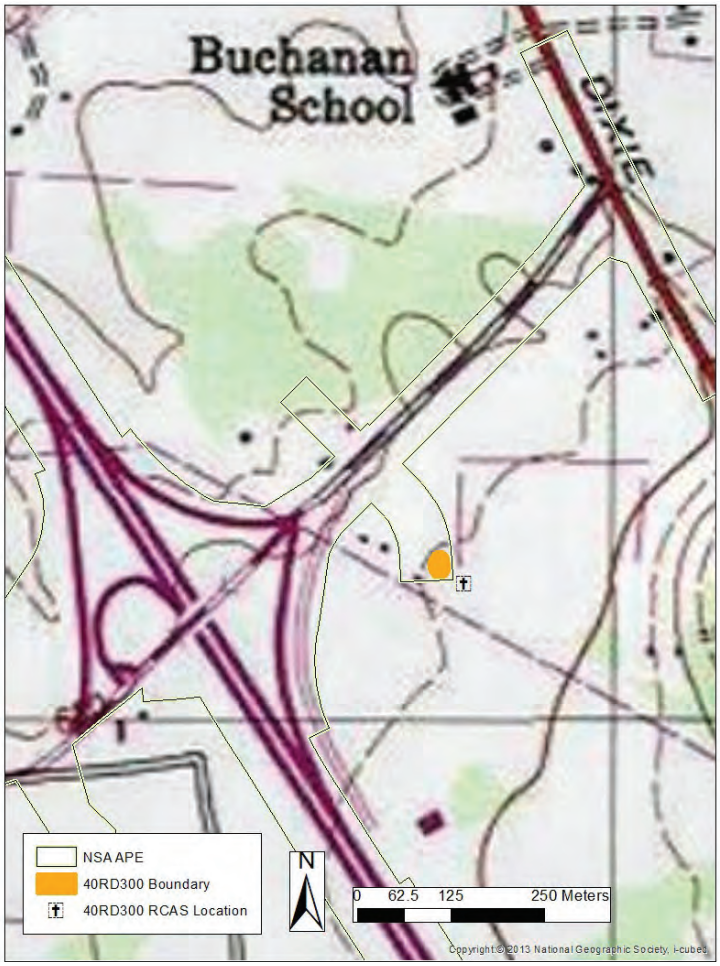
Briefly provide any additional information related to NRHP recommendation, if needed: This site has not been evaluated for eligibility to the NRHP.

MAPS AND FIGURES



TDOA recorded location corrected to RCAS location after this update

Inexact boundary, as headstones have been removed



TDOA recorded location prior to correction

40RD300
Cobb Cemetery

Figure 4. Viewing Fence Line and Pond, Facing South-Southwest

ARCHAEOLOGICAL SITE SURVEY RECORD

Tennessee Department of Environment and Conservation
Division of Archaeology
Cole Building #3
1216 Foster Avenue
Nashville, Tennessee 37243
Phone (615) 741-1588 Fax (615) 741-7329

Submit completed Word Document to: tdoa.sitefile@tn.gov

State Site No.: 40RD300 - Revisit

Date Assigned/Updated:

Record Type: New Site **Previously Recorded Site**

Alternative site name or field number:

LOCATION

County: Rutherford

USGS 7.5' Quad Name: Webbs Jungle, TN

Elevation (ft AMSL)**:** 690

Physiographic Region: Central Basin

Lat/Long (decimal degrees)**:** 86.3168573°W 35.7225327°N

CULTURAL AFFILIATION AND SITE TYPE

Prehistoric Component: YES **NO**

Prehistoric Cultural Affiliation: [**select** all that apply; must be supported by temporally diagnostic artifacts]

Pleistocene Fauna	Archaic	Woodland	Mississippian
Undetermined Prehistoric	Early Archaic	Early Woodland	Early Mississippian
Paleoindian	Middle Archaic	Middle Woodland	Middle Mississippian
Transitional Paleo	Late Archaic	Late Woodland	Late Mississippian

Prehistoric Site Types:

Protohistoric/Contact Period Native American Component: YES **NO**

Protohistoric Site Types: [**select** all applicable prehistoric and/or historic site types from list on last page]

Ethnic Heritage, if applicable:

Historic Component: **YES** NO

Historic Date Range: [**select** all that apply; must be supported by historic maps or temporally diagnostic artifacts]

1760-1819	1861-1865	**1901-1932**	1950-present
1820-1860	**1866-1900**	1933-1949	

Historic Site Types: [**select** all applicable historic site types from list on last page]

Military Era: [**select** all that apply- only if military site type is selected]

French-Indian War	War of 1812	Civil War	World War II
Revolutionary War	Spanish-American War	World War I	Other/Unknown

Ethnic Heritage, if applicable:

SITE CONDITIONS

Site Size (long x short, in meters): 41 x 30 **Boundary:** Partial **Complete**

Size Basis: [select one]

Taped	Guessed	**Estimated from map**
Paced	Transit/alidade/digital	

Land Use/Ground Cover: [select all applicable]

Grassland/Pasture/Yard	Unimproved Forest	Inundated/Shoreline	**Open and Eroded**
Cultivation	Improved Forest/Orchard	Urban	Other
Secondary Growth	Intermittent Flooding	Roadway	

If Other, describe:

Condition (Percent Disturbed): [select one]

Excellent (0%)	Good (25-50%)	Poor (76-99%)	**Percent Unknown**
Very good (<25%)	Fair (51-75%)	Destroyed (100%)	

Human Remains: [select one]

Unknown	Isolated Intact Burial/s	Absent (historic sites only)
Scattered Surface Remains	**Cemetery**	Unknown, but likely

Ownership: [select one]

Private Individual or Corporation	State of Tennessee
Local Government	Federal Government (TVA, COE, DOD, etc)

Name of current landowner, tenant, or easement holder: CHRISTIANA MILLER LLC

TDOA Permit Number, if on State-Owned or -Controlled land: TDOA 001624

SURVEY INFORMATION

Level of Investigation: [select all that apply]

Thematic Survey/Archival Research	Geophysical/Remote Sensing	Test Units
Reconnaissance/Field Observation	Shovel Testing	Excavation

Last Date of Investigation (mm/dd/yyyy)**: 01/16/2025**

Collection Status: [select one]

No Collection	Permanent Repository	Returned to Landowner

Permanent Repository (curation at TDOA is by permission only)**: TDOT**

TDOA Accession Number(s): [To be completed by TDOA]

Was this site recorded during a survey conducted for purposes of compliance with federal regulations?

Yes	No	Unknown

Lead Agency: TDOT

Reporter's NRHP Recommendation: [select one]

Unassessed	Recommended Potentially Eligible
Recommended Not Eligible	Recommended Eligible

Formal NRHP Eligibility Determination: [To be completed by TDOA]

Site Reporter: Gary Owenby **Affiliation: Edwards-Pitman, Inc.**

Reporter Type: [select one]

Private Consultant	Avocational Archaeologist	Student (volunteered report)
Government Agency	Landowner	Professional (volunteered report)
Educational Institution	Private Individual	

Report (Author. Year. *Title*.)**: Parkin, Sara Mackenzie. 2025. *Phase I Archaeological Survey for I-24 Interchange Improvements at Epps Mill Road, Rutherford County, Tennessee*. TDOT PIN 124683.06**

Additional References:

SUPPORTING DOCUMENTATION - answer all applicable questions

Address or driving/walking directions: The site is located approximately 210m SE of the I-40 Epps Mill Rd. Site 40RD300 is separated from an access road by a fence, sparse tree line, and scrub growth.

Briefly describe setting, landform, and distance/direction to water: This cemetery has been excavated into a retention pond. Status of the burials themselves is unknown, but all gravemarkers are gone.

Relationship to nearby sites: Unknown

Briefly describe evidence of prehistoric cultural affiliation and site type, including artifacts, stratigraphy, features, etc.: NA

Briefly describe evidence of protohistoric cultural affiliation and site type, including artifacts, features, historical documents, etc.: NA

Briefly describe evidence of historic site type, date range, and ethnic heritage, including artifacts, features, historical documents, informant reports, etc.: See original 2011 site form.

Briefly describe survey purpose and methods: EP's current investigation was conducted in advance of proposed improvements to the interchange at I-24 and Epps Mill Rd. The portion of the survey area overlapping the 40RD300 boundary was subjected to pedestrian survey to assess how the current project could impact the resource.

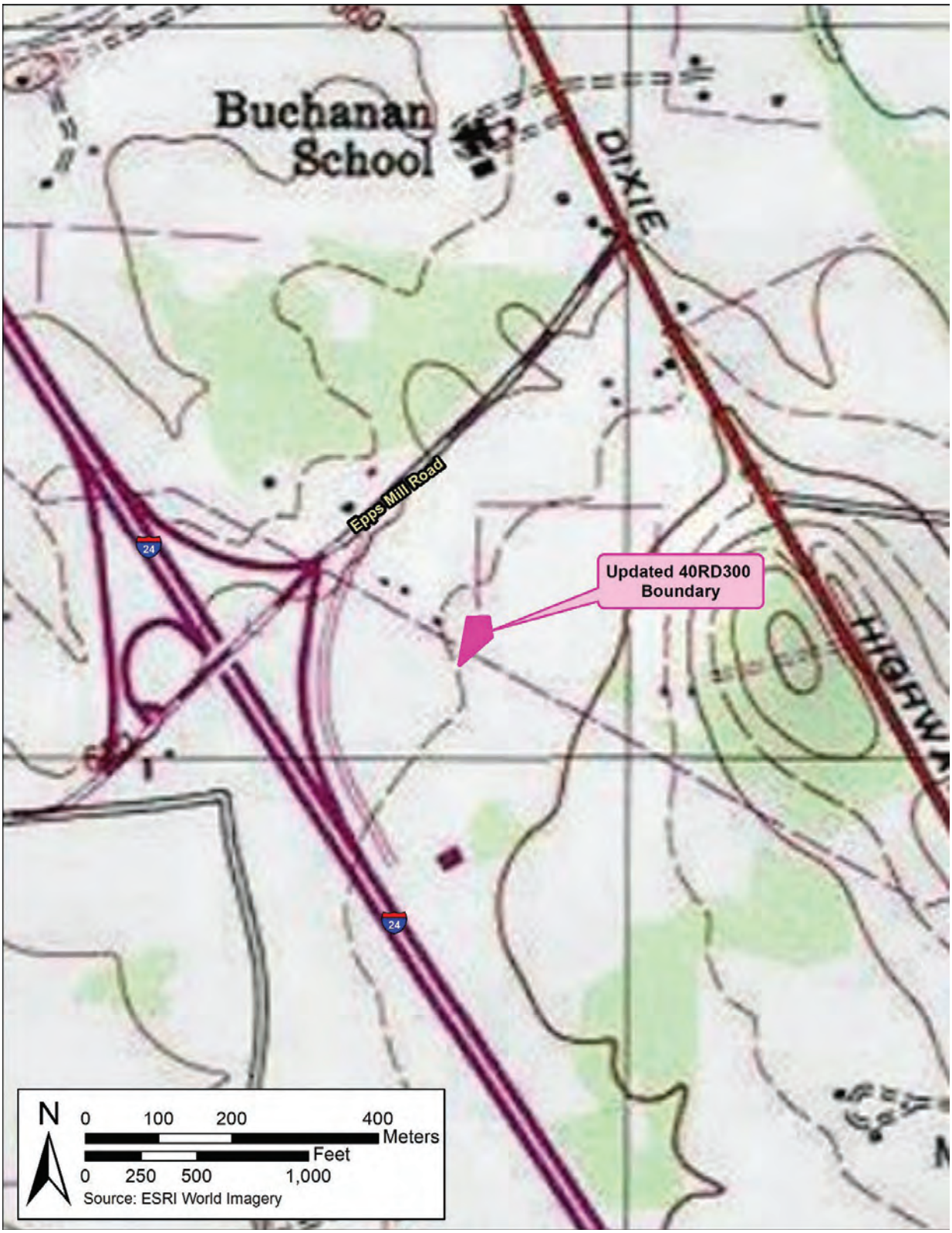
Briefly describe limitations in site size and boundary determination, including details regarding survey area limits, land access, ground conditions, etc.: Through extensive historic map and aerial photograph analysis, the recommended cemetery boundary has been edited to reflect the historic parcel boundary, as well as the estimated extent of graves (see attached figures).

Briefly describe the nature and extent of past and anticipated disturbance: Surveyors encountered a heavily disturbed area; the disturbance seems to be associated with the current owner adding a retention pond to the property. The headstones were removed and not recovered during investigation of the site boundaries.

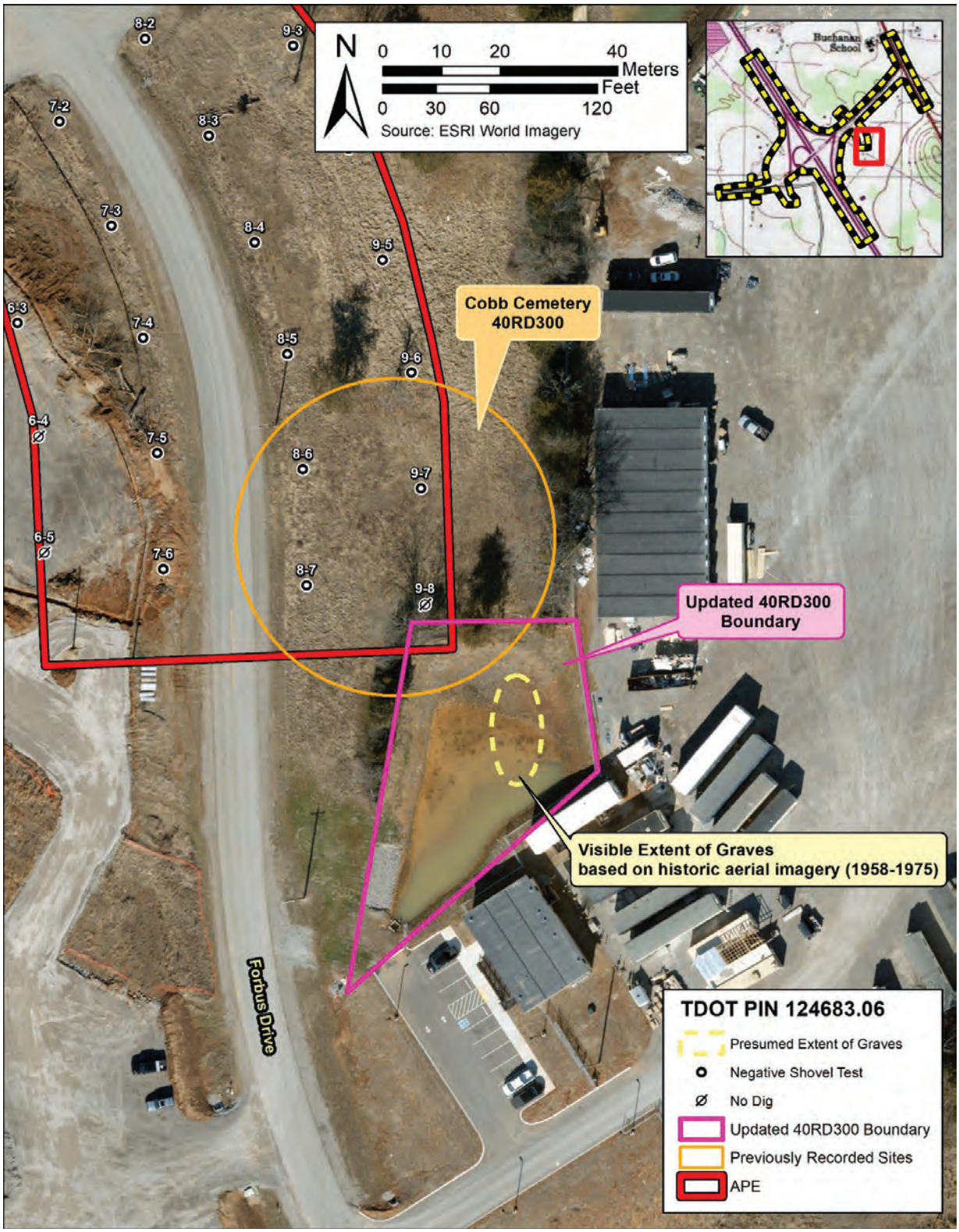
Briefly provide any additional information related to NRHP recommendation, if needed: This site has not been evaluated for eligibility to the NRHP.

MAPS AND FIGURES

Maps and Figures

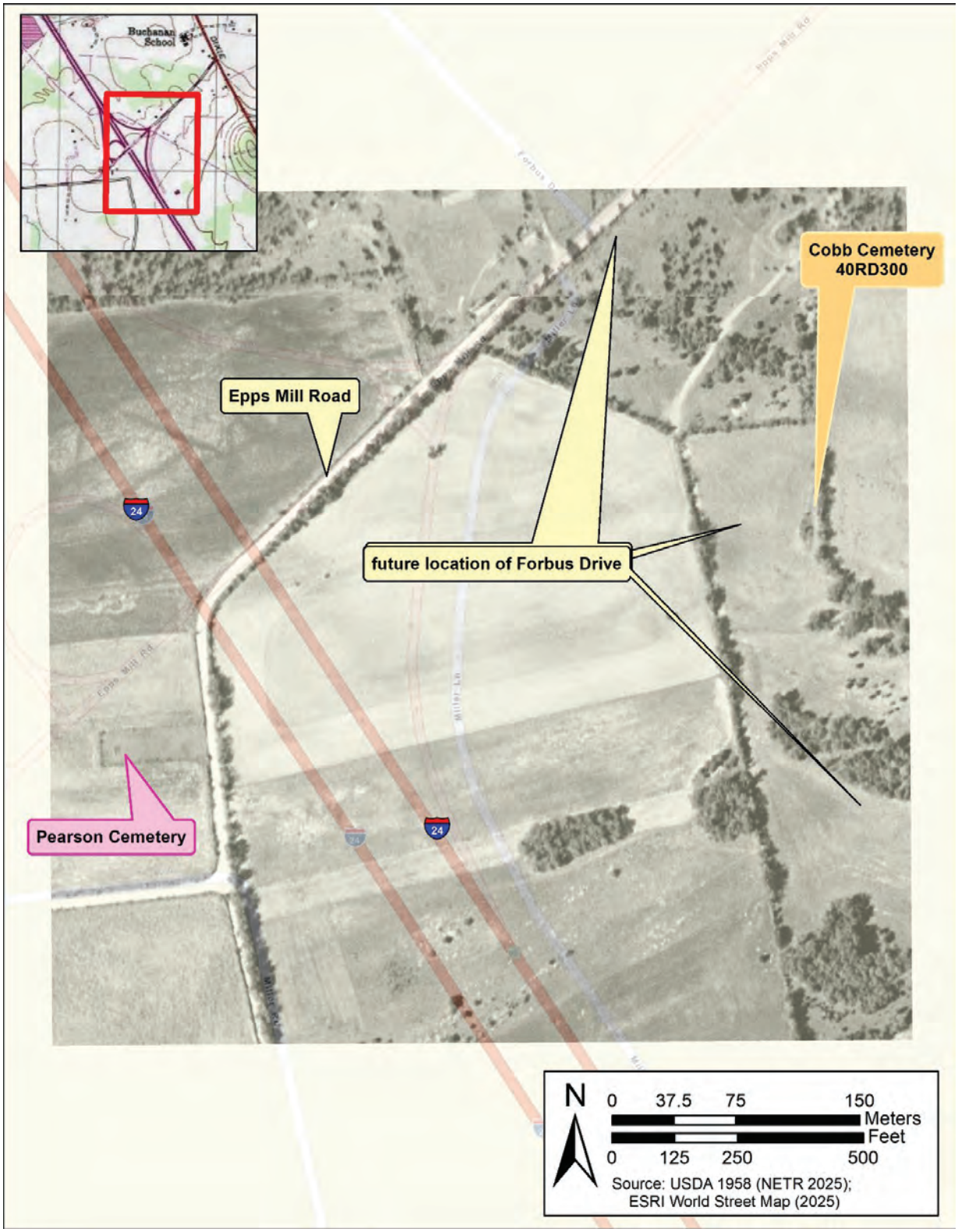


Maps and Figures



40RD300 depicted on a 2024 aerial photograph.

Maps and Figures



40RD300 depicted on an aerial photograph from 1951.

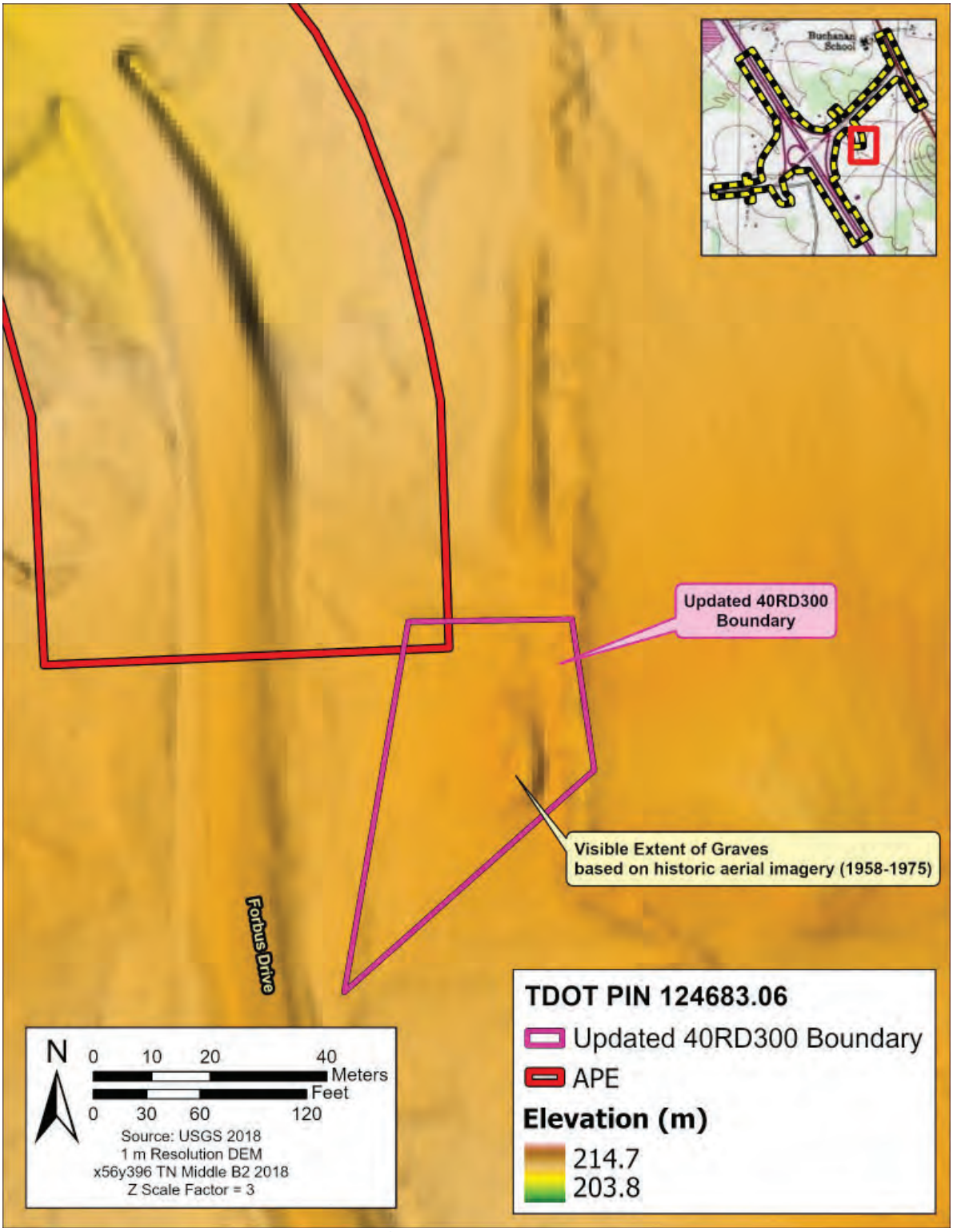
Maps and Figures

40RD300 depicted on an aerial photograph from 1975.

Maps and Figures

40RD300 depicted on an aerial photograph from 2012.

Maps and Figures



40RD300 depicted on a digital elevation model (DEM) from 2018.

Site Type List

Underline and Bold all applicable site types

Prehistoric

Open habitation /lithic scatter
Cave
Prehistoric Rockshelter
Mound complex
Platform mound
Stone mound
Earth mound
Indeterminate mound
Shell mound/midden
Earthworks
Stoneworks
Isolated burial/s
Cemetery
Quarry/lithic extraction
Prehistoric Petroglyph
Prehistoric Pictograph
Prehistoric Fish weir
Pleistocene Fauna

Historic

Industrial
- Pottery
- Brickmaking
- Factory
  - Tobacco Factory
  - Fertilizer factory
- Mill
  - Mill--Grist
  - Mill--Feed
  - Mill--Saw
  - Mill--Stave
  - Mill--Paper
  - Mill--Woolen
  - Mill--Cotton
  - Mill--Powder
  - Mill--Button
- Mine
  - Mine--Iron ore
  - Mine--Coal
  - Mine--Clay
  - Mine--Gold
  - Mine--Saltpeter
  - Mine--Stone quarry
  - Mine—Sulphur
  - Mine—Copper
- Ore Processing
  - Copper processing
  - Gold processing
  - Iron Ore processing
- Iron Industry
  - Iron Furnace
  - Iron Forge
  - Iron Foundry
  - Iron Mfg--Nailery
  - Iron Mfg--Rolling mill
- Lumbering operation
- Lime kiln
- Hamlet/company town
- Distillery
- Bottling plant

Home or Small Industry
- Pottery
- Brick kiln
- Blacksmith shop
- Wagon-making shop
- Furniture shop
- Cobbling shop
- Saddlery
- Tanyard
- Cotton gin
- Moonshine still
- Sorghum mill
- Gunmaker/gunsmith

Commercial
- Store
- Tavern
- Boarding house
- Hotel/inn
- Health spa
- Bank/warehouse
- Office

Public
- Courthouse
- Jail
- County/city office
- Fairground
- Post office
- Pump house
- Reservoir
- CCC camp
- State capitol
- Poorhouse/farm

Educational
- School
- Academy
- College/university

Religious
- Church
- Mission
- Camp meeting
- Religious school/academy
- Parsonage

Medical
- Hospital/clinic
- Mental hospital/home
- Doctor's office
- Pharmacist's office
- Dentist's office

Rural Domestic
- House
- Farmstead
- Plantation
- Barn
- Springhouse
- Well
- Cistern
- Untyped non-stone structure
- Untyped stone structure (including pile, fence, wall)
- Cellar (pit, storm, etc)

Urban Domestic
- House in existing town
- Town
- Abandoned town site

Cemetery
- Public
- **Private**
- Isolated grave

Military
- Frontier station
- Blockhouse
- Stockade
- US Indian Agency
- Muster Grounds
- Fort
- Earthwork
- Entrenchment
- Redoubt
- Redan
- Lunette
- Priest cap
- Artillery emplacement
- Railroad guard post
- Battlefield-small
- Battlefield-large
- Short term encampment
- Long term encampment
- Freedmen’s encampment
- Internment center/military prison
- Hospital-short term
- Hospital-long term
- Headquarters
- Signal station
- Explosive magazine
- Military Cemetery
- Military post

Transportation
- Boat landing
- Lock/dam
- Ferry
- Boat wreck
- Shipyard
- Railroad depot
- Railroad spurs
- Railroad bridge
- Road/pike
- Bridge
- Tollgate
- Airfield

Other
- Dump
- Explosive magazine-(non-military)
- Historic fish weir
- Check dam
- Historic rockshelter
- Historic petroglyph
- Historic pictograph
- Fraternal organization
- Untyped historic scatter

ARCHAEOLOGICAL SITE SURVEY RECORD

Tennessee Department of Environment and Conservation
Division of Archaeology
Cole Building #3
1216 Foster Avenue
Nashville, Tennessee 37243
Phone (615) 741-1588 Fax (615) 741-7329

Submit completed Word Document to: tdoa.sitefile@tn.gov

State Site No.:	**40RD342**
Date Assigned/Updated:	8/1/2024

Record Type: **New Site** Previously Recorded Site

Alternative site name or field number: FS-01

LOCATION

County: Rutherford

USGS 7.5' Quad Name: Webbs Jungle, Tenn; 78NE

Elevation (ft AMSL)**:** 670

Physiographic Region: Central Basin

Lat/Long (decimal degrees)**:** 86.3262947°W, 35.7202375°N

CULTURAL AFFILIATION AND SITE TYPE

Prehistoric Component: **YES** NO

Prehistoric Cultural Affiliation: [**select** all that apply; must be supported by temporally diagnostic artifacts]

Pleistocene Fauna	Archaic	Woodland	Mississippian
Undetermined Prehistoric	Early Archaic	Early Woodland	Early Mississippian
Paleoindian	Middle Archaic	Middle Woodland	Middle Mississippian
Transitional Paleo	Late Archaic	Late Woodland	Late Mississippian

Prehistoric Site Types: open habitation

Historic Component: **YES** NO

Historic Site Types: untyped historic scatter

SITE CONDITIONS

Site Size (long x short, in meters): 17m x 15.5m (amorphous) **Boundary:** **Partial** Complete

Size Basis: [**select** one]

Taped	Guessed	Estimated from map
Paced	**Transit/alidade/digital**	

Land Use/Ground Cover: [**select** all applicable]

Grassland/Pasture/Yard	Unimproved Forest	Inundated/Shoreline	**Open and Eroded**
Cultivation	Improved Forest/Orchard	Urban	Other
Secondary Growth	Intermittent Flooding	Roadway	

If Other, describe:

Condition (Percent Disturbed): [**select** one]

Excellent (0%)	Good (25-50%)	**Poor (76-99%)**	Percent Unknown
Very good (<25%)	Fair (51-75%)	Destroyed (100%)	

Human Remains: [**select** one]

Unknown	Isolated Intact Burial/s	**Absent (historic sites only)**
Scattered Surface Remains	Cemetery	Unknown, but likely

Ownership: [**select** one]

Private Individual or Corporation	**State of Tennessee**
Local Government	Federal Government (TVA, COE, DOD, etc)

Name of current landowner, tenant, or easement holder: TN Dept. of Transportation (TDOT)

TDOA Permit Number, if on State-Owned or -Controlled land: 001574

SURVEY INFORMATION

Level of Investigation: [**select** all that apply]

Thematic Survey/Archival Research	Geophysical/Remote Sensing	Test Units
Reconnaissance/Field Observation	Shovel Testing	Excavation

Last Date of Investigation (mm/dd/yyyy)**:** 07/12/2024

Collection Status: [**select** one]

No Collection	**Permanent Repository**	Returned to Landowner

Permanent Repository (curation at TDOA is by permission only)**:** TDOT

Was this site recorded during a survey conducted for purposes of compliance with federal regulations?

Yes	No	Unknown

Lead Agency: TDOT/ Federal Highway Administration (FHWA)

Reporter's NRHP Recommendation: [**select** one]

Unassessed	Recommended Potentially Eligible
Recommended Not Eligible	Recommended Eligible

Formal NRHP Eligibility Determination:

Site Reporter: Lauren A. Walls & Clélie Cottle Peacock **Affiliation:** New South Associates, Inc.

Reporter Type: [**select** one]

Private Consultant	Avocational Archaeologist	Student (volunteered report)
Government Agency	Landowner	Professional (volunteered report)
Educational Institution	Private Individual	

Report: Cottle Peacock et al. 2024 *Phase I Archaeological Survey of the I-24 Interchange at Epps Mill Road/Buchanan Road, Rutherford County, Tennessee.*

SUPPORTING DOCUMENTATION

Address or driving/walking directions: 40RD342 is located on the north side of Epps Mill Road in Christiana, TN, between Capital Way (to the east) and 5595 Epps Mill Road (to the west). The property does not have an official street number included in the parcel information on the Rutherford County GIS Public Information Web App. The parcel number is 156-027.00-000. Since no exact street number exists for the property, driving directions are included below.

Beginning at the intersection of US Highway 41/Manchester Pike and Epps Mill Road, proceed southwest on Epps Mill Road for 0.9 miles. The property will be on the right (north) side of the street and is characterized by a gravel turn-off (which becomes a farm road) next to an agricultural field. At the time of writing, the agricultural field is planted with corn and a Dollar General retail store is located across Epps Mill Rd from the property, slightly southeast of the gravel turn-off.

Briefly describe setting, landform, and distance/direction to water: 40RD342 is 0.4 miles east of the main branch of Middle Fork Stones River and 0.2 miles east of one of its unnamed distributaries. The setting is a cultivated corn field that is adjacent to a farm road to the west and Epps Mill Road to the south. The soils are highly eroded.

Relationship to nearby sites: There is no evidence to suggest that 40RD342 is related to any nearby sites.

Briefly describe evidence of prehistoric cultural affiliation and site type, including artifacts, stratigraphy, features, etc.: The Precontact component consists of ten lithic artifacts, nine of which are debitage and one is an untyped utilized chert flake/chipped stone tool. Of the nine pieces of debitage, seven are chert angular debris, one is a fragmented chert flake, and one is a faceted chert flake. The artifacts were all collected from the surface via pedestrian survey in a highly disturbed and eroded corn field alongside historic artifacts. The stratigraphy is not intact, and no features were observed. The disturbed nature of the site suggests that the artifacts were redeposited in secondary contexts through agricultural activities. There is not enough data to determine cultural affiliation.

Briefly describe evidence of historic site type, date range, and ethnic heritage, including artifacts, features, historical documents, informant reports, etc.: Historic artifacts recovered include brick fragments (handmade), ceramic tile fragments, a piece of coal, five fragments of container/curved glass (colorless, very dark olive/"light" Black, white/opaque milk glass, and "7-Up" green), and two fragments of refined earthenware/whiteware (1 embossed edge rim w/gold gilding, 1 partial base with light blue transfer print design). Manufacture date ranges for the ceramics and glass span a wide range and considering these artifact types had long use-lives, those date ranges do not provide enough information to date the scatter.

Review of historical topographic maps from the 1940s and an aerial image from 1953, show that there were three farmsteads within 0.2 miles. One of these is on the same property, though it was located further north of Epps Mill Road than the scatter location (see maps on

following pages). The historical artifacts from 40RD342 likely represent a trash deposit/dump from the one or more of the farmsteads and/or workers who constructed Epps Mill Road.

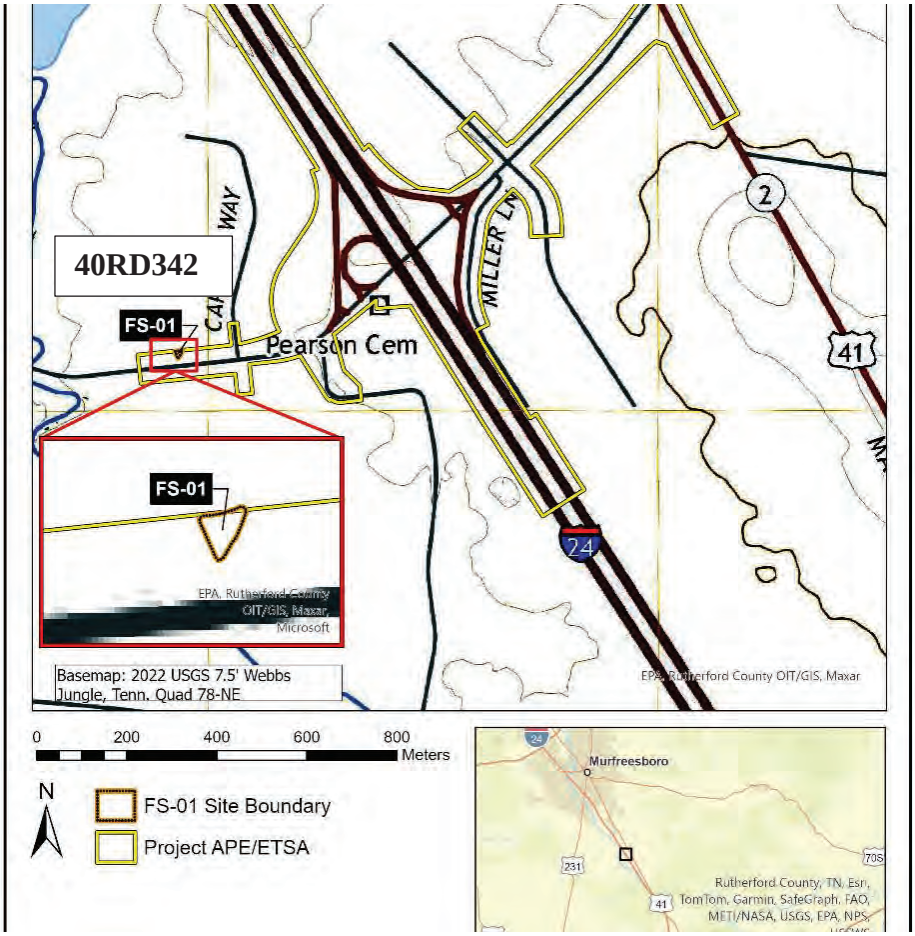
Briefly describe survey purpose and methods: The survey was initiated by Tennessee Department of Transportation's (TDOT) plans to reconstruct the I-24 interchange and widen Epps Mill Road to three lanes from near Capital to SR-2 (US-41) using federal funds. New South Associates, Inc. (NSA) conducted a Section 106 Phase I shovel test survey on behalf of TDOT to identify and assess any archaeological resources that may be impacted within the project area. The APE was predetermined as an Environmental Technical Study Area (ETSA) defined by TDOT. The ETSA is focused on the interchange on I-24 at Epps Mill Rd/Buchannan Rd: Epps Mill Rd west of Capital Way to SR-2 (centered on Exit 89).

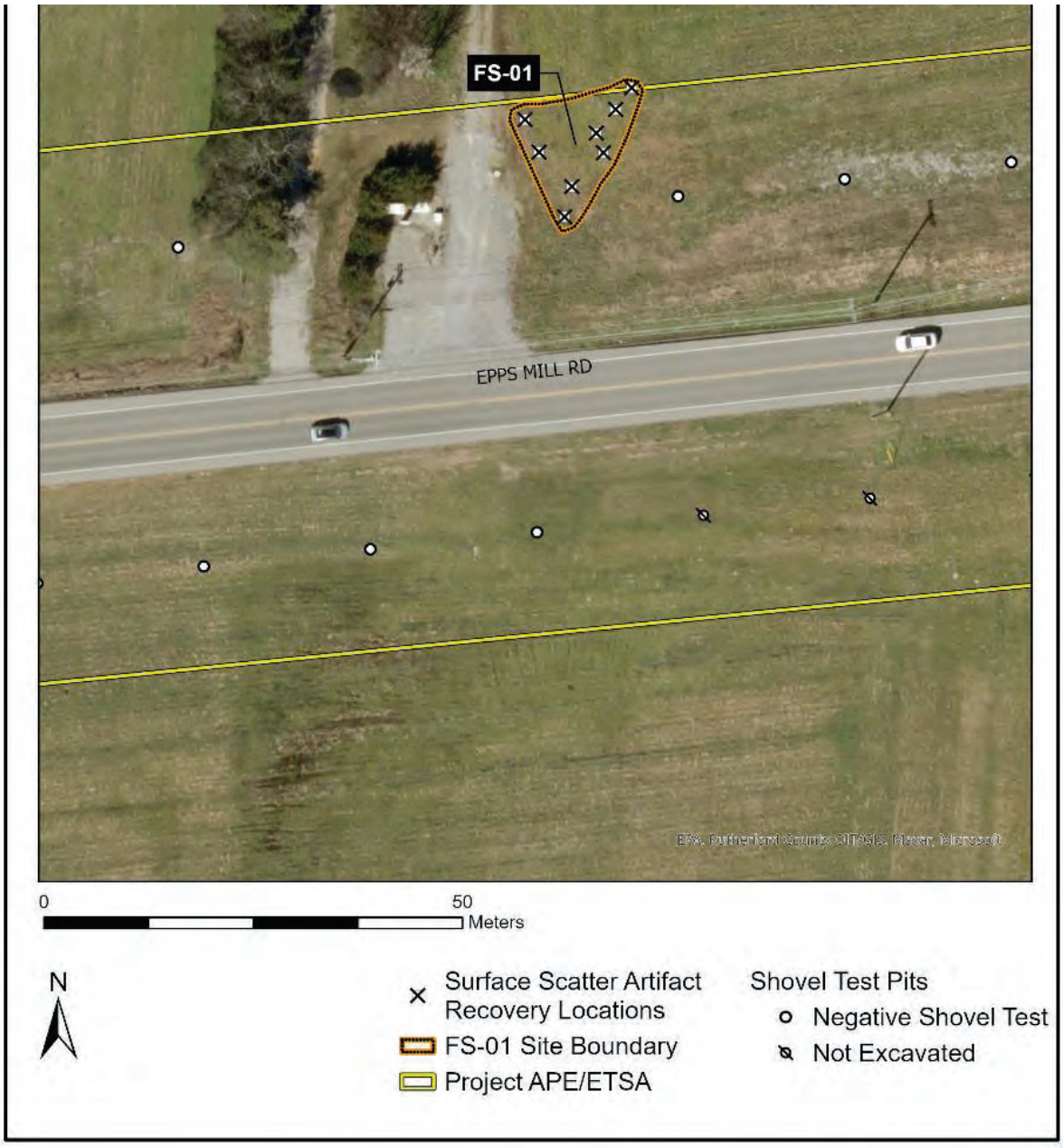
NSA surveyed the ETSA via shovel testing along transects spaced at 20-meter intervals. Any areas where shovel tests could not be placed but were reasonably accessible were investigated via pedestrian survey. In all, NSA investigated 330 shovel test pit locations with the ETSA. The only artifacts recovered from the survey were those included in 40RD342.

Briefly describe limitations in site size and boundary determination, including details regarding survey area limits, land access, ground conditions, etc.: The site boundary was determined using the outermost locations of surface artifact finds recovered through pedestrian survey. The size/boundary of the site is limited by the northern boundary of the APE/ETSA (though the northeastern-most recovery location does extend the site boundary approximately 50 cm outside the APE/ETSA). It is limited to the west by the gravel farm road. The site was not subjected to shovel testing, due to the highly eroded soils and disturbed nature of the area (see below).

Briefly describe the nature and extent of past and anticipated disturbance: 40RD342 has been extensively disturbed. The location is a cultivated field with highly eroded soil in close proximity to both a major public road and a farm road. There is only one stratum (subsoil), which is clearly visible from the surface. Many years of cultivation and the construction of the roads likely lead to the disturbed, eroded state of the site and the recovered artifacts' locations on the ground surface. We anticipate the planned expansion of Epps Mill Road by TDOT will further disturb this site.

MAPS AND FIGURES




FS-01
EPPS MILL RD
0
50
Meters
N
Surface Scatter Artifact Recovery Locations
FS-01 Site Boundary
Project APE/ETSA
Shovel Test Pits
Negative Shovel Test
Not Excavated

RCHAEOLOGICAL SITE SURVEY RECORD

ennessee Department of Environment and Conservation
ivision of Archaeology
ole Building #3
16 Foster Avenue
ashville, Tennessee 37243
one (615) 741-1588 Fax (615) 741-7329

bmit completed Word Document to: tdoa.sitefile@tn.gov

State Site No.: 40RD342 Revisit

Date Assigned/Updated:

ecord Type: New Site **Previously Recorded Site**

lternative site name or field number:

LOCATION

ounty: Rutherford

USGS 7.5' Quad Name: Webbs Jungle, TN

levation (ft AMSL)**:** 670

Physiographic Region: Central Basin

at/Long (decimal degrees)**:** 86.3262947°W, 35.7202375°N

CULTURAL AFFILIATION AND SITE TYPE

rehistoric Component: **YES** NO

rehistoric Cultural Affiliation: [**select** all that apply; must be supported by temporally diagnostic artifacts]

eistocene Fauna	Archaic	Woodland	Mississippian
ndetermined Prehistoric	Early Archaic	Early Woodland	Early Mississippian
aleoindian	Middle Archaic	Middle Woodland	Middle Mississippian
ransitional Paleo	Late Archaic	Late Woodland	Late Mississippian

rehistoric Site Types: **Open habitation**

rotohistoric/Contact Period Native American Component: YES **NO**

rotohistoric Site Types: [**select** all applicable prehistoric and/or historic site types from list on last page]

thnic Heritage, if applicable:

istoric Component: **YES** NO

istoric Date Range: [**select** all that apply; must be supported by historic maps or temporally diagnostic artifacts]

760-1819	1861-1865	1901-1932	1950-present
820-1860	1866-1900	1933-1949	

istoric Site Types: **Untyped historic scatter**

ilitary Era: [**select** all that apply- only if military site type is selected]

rench-Indian War	War of 1812	Civil War	World War II
evolutionary War	Spanish-American War	World War I	Other/Unknown

thnic Heritage, if applicable:

SITE CONDITIONS

e Size (long x short, in meters): 17 x 15.5 **Boundary:** Partial **Complete**

e Basis: [select one]
ped Guessed **Estimated from map**
ced Transit/alidade/digital

nd Use/Ground Cover: [select all applicable]
assland/Pasture/Yard Unimproved Forest Inundated/Shoreline **Open and Eroded**
ltivation Improved Forest/Orchard Urban Other
condary Growth Intermittent Flooding Roadway
Other, describe:

ndition (Percent Disturbed): [select one]
cellent (0%) Good (25-50%) **Poor (76-99%)** Percent Unknown
ry good (<25%) Fair (51-75%) Destroyed (100%)

man Remains: [select one]
known Isolated Intact Burial/s **Absent (historic sites only)**
attered Surface Remains Cemetery Unknown, but likely

wnership: [select one]
ivate Individual or Corporation State of Tennessee
cal Government Federal Government (TVA, COE, DOD, etc)

me of current landowner, tenant, or easement holder: Rhode Development Company

OA Permit Number, if on State-Owned or -Controlled land: 001624

SURVEY INFORMATION

vel of Investigation: [select all that apply]
ematic Survey/Archival Research Geophysical/Remote Sensing Test Units
connaissance/Field Observation **Shovel Testing** Excavation

st Date of Investigation (mm/dd/yyyy)**: January 2025**

llection Status: [select one]
Collection Permanent Repository Returned to Landowner

rmanent Repository (curation at TDOA is by permission only)**:**

OA Accession Number(s): [To be completed by TDOA]

as this site recorded during a survey conducted for purposes of compliance with federal regulations?
s No Unknown

ad Agency: TDOT/ Federal Highway Administration (FHWA)

porter's NRHP Recommendation: [select one]
assessed Recommended Potentially Eligible
commended Not Eligible Recommended Eligible

rmal NRHP Eligibility Determination: [To be completed by TDOA]

e Reporter: Gary Owenby **Affiliation: Edwards-Pitman, Inc.**

porter Type: [select one]
ivate Consultant Avocational Archaeologist Student (volunteered report)
vernment Agency Landowner Professional (volunteered report)
ucational Institution Private Individual

port (Author. Year. *Title*.)**:**

ldditional References: Parkin, Sara Mackenzie. 2025. *Phase I Archaeological Survey for I-24 Interchange Improvements Epps Mill Road, Rutherford County, Tennessee*. TDOT PIN 124682.06

SUPPORTING DOCUMENTATION - answer all applicable questions

Address or driving/walking directions: Beginning at the intersection of US Highway 41/Manchester Pike and Epps Mill Road, proceed southwest on Epps Mill Road for 0.9 miles. The property will be on the right (north) side of the street and is characterized by a gravel turn-off (which becomes a farm road) next to an agricultural field. At the time of writing, the agricultural field is planted with corn and a Dollar General retail store is located across Epps Mill Rd from the property, slightly southeast of the gravel turn-off.

Briefly describe setting, landform, and distance/direction to water: 40RD342 is 0.4 miles east of the main branch of Middle Fork Stones River and 0.2 miles east of one of its unnamed distributaries. The setting is a cultivated corn field that is adjacent to a farm road to the west and Epps Mill Road to the south. The soils are highly eroded.

Relationship to nearby sites: No recorded sites related to 40RD342

Briefly describe evidence of prehistoric cultural affiliation and site type, including artifacts, stratigraphy, features, etc.: Previous archaeological survey identified a prehistoric component consisting of ten lithic artifacts, nine of which are debitage and one is an untyped utilized chert flake/chipped stone tool. Subsequent pedestrian survey during the current survey and shovel testing identified no related artifacts. The area surrounding 40RD342 is highly disturbed due to agricultural practices, and roadwork improvements along Epps Mill Rd.

Briefly describe evidence of protohistoric cultural affiliation and site type, including artifacts, features, historical documents, etc.: NA

Briefly describe evidence of historic site type, date range, and ethnic heritage, including artifacts, features, historical documents, informant reports, etc.: Previous archaeological survey identified a historic component consisting of brick fragments (handmade), ceramic tile fragments, a piece of coal, five fragments of container/curved glass (colorless, very dark olive/"light" Black, white/opaque milk glass, and "7-Up" green), and two fragments of refined earthenware/whiteware (1 embossed edge rim w/gold gilding, 1 partial base with light blue transfer print design). No date range was provided for the historic artifact assemblage. No artifacts were recovered during the 2025 survey.

Briefly describe survey purpose and methods: The survey was initiated by Tennessee Department of Transportation's (TDOT) plans to reconstruct the I-24 interchange and widen Epps Mill Road. The survey area overlapping the 40RD342 site boundary was subjected to shovel testing and pedestrian survey to assess how the current project could impact the resource.

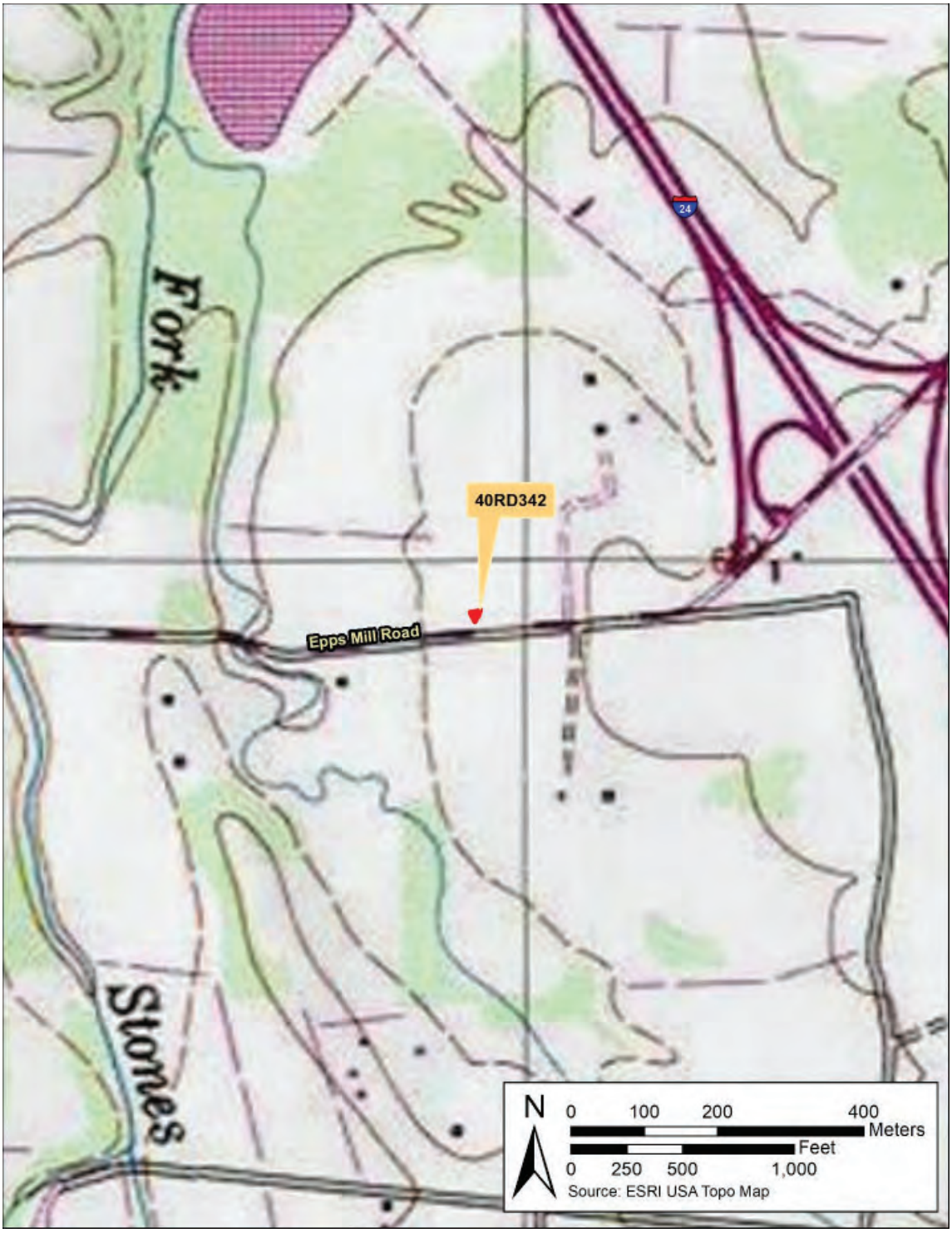
Briefly describe limitations in site size and boundary determination, including details regarding survey area limits, land access, ground conditions, etc.: The survey of site 40RD342 was determined by existing site boundaries. The site was surveyed by shovel testing along transects at 20 meter intervals, as well as pedestrian survey.

Briefly describe the nature and extent of past and anticipated disturbance: 40RD342 has been extensively disturbed by agricultural practices, utility work, and roadwork, leading to soil erosion. The planned expansion of Epps Mill Rd. will further contribute to the disturbance of this site.

Briefly provide any additional information related to NRHP recommendation, if needed: This site was previously recommended as ineligible for inclusion in the NRHP under Criterion D, and EP concurs with that recommendation.

MAPS AND FIGURES

[Insert required site location map on USGS topo here]


Fork
Stones
40RD342
Epps Mill Road
24
N
0 100 200 400
Meters
Feet
0 250 500 1,000
Source: ESRI USA Topo Map

[Insert photo/s of diagnostic artifacts, if required, here]

Site Type List

Underline and Bold all applicable site types

Prehistoric

Open habitation /lithic scatter
Cave
Prehistoric Rockshelter
Mound complex
Platform mound
Stone mound
Earth mound
Indeterminate mound
Shell mound/midden
Earthworks
Stoneworks
Isolated burial/s
Cemetery
Quarry/lithic extraction
Prehistoric Petroglyph
Prehistoric Pictograph
Prehistoric Fish weir
Pleistocene Fauna

Historic

Industrial
- Pottery
- Brickmaking
- Factory
  - Tobacco Factory
  - Fertilizer factory
- Mill
  - Mill--Grist
  - Mill--Feed
  - Mill--Saw
  - Mill--Stave
  - Mill--Paper
  - Mill--Woolen
  - Mill--Cotton
  - Mill--Powder
  - Mill--Button
- Mine
  - Mine--Iron ore
  - Mine--Coal
  - Mine--Clay
  - Mine--Gold
  - Mine--Saltpeter
  - Mine--Stone quarry
  - Mine—Sulphur
  - Mine—Copper
- Ore Processing
  - Copper processing
  - Gold processing
  - Iron Ore processing
- Iron Industry
  - Iron Furnace
  - Iron Forge
  - Iron Foundry
  - Iron Mfg--Nailery
  - Iron Mfg--Rolling mill
- Lumbering operation
- Lime kiln
- Hamlet/company town
- Distillery
- Bottling plant

Home or Small Industry
- Pottery
- Brick kiln
- Blacksmith shop
- Wagon-making shop
- Furniture shop
- Cobbling shop
- Saddlery
- Tanyard
- Cotton gin
- Moonshine still
- Sorghum mill
- Gunmaker/gunsmith

Commercial
- Store
- Tavern
- Boarding house
- Hotel/inn
- Health spa
- Bank/warehouse
- Office

Public
- Courthouse
- Jail
- County/city office
- Fairground
- Post office
- Pump house
- Reservoir
- CCC camp
- State capitol
- Poorhouse/farm

Educational
- School
- Academy
- College/university

Religious
- Church
- Mission
- Camp meeting
- Religious school/academy
- Parsonage

Medical
- Hospital/clinic
- Mental hospital/home
- Doctor's office
- Pharmacist's office
- Dentist's office

Rural Domestic
- House
- Farmstead
- Plantation
- Barn
- Springhouse
- Well
- Cistern
- Untyped non-stone structure
- Untyped stone structure (including pile, fence, wall)
- Cellar (pit, storm, etc)

Urban Domestic
- House in existing town
- Town
- Abandoned town site

Cemetery
- Public
- Private
- Isolated grave

Military
- Frontier station
- Blockhouse
- Stockade
- US Indian Agency
- Muster Grounds
- Fort
- Earthwork
- Entrenchment
- Redoubt
- Redan
- Lunette
- Priest cap
- Artillery emplacement
- Railroad guard post
- Battlefield-small
- Battlefield-large
- Short term encampment
- Long term encampment
- Freedmen's encampment
- Internment center/military prison
- Hospital-short term
- Hospital-long term
- Headquarters
- Signal station
- Explosive magazine
- Military Cemetery
- Military post

Transportation
- Boat landing
- Lock/dam
- Ferry
- Boat wreck
- Shipyard
- Railroad depot
- Railroad spurs
- Railroad bridge
- Road/pike
- Bridge
- Tollgate
- Airfield

Other
- Dump
- Explosive magazine-(non-military)
- Historic fish weir
- Check dam
- Historic rockshelter
- Historic petroglyph
- Historic pictograph
- Fraternal organization
- **Untyped historic scatter**

APPENDIX C: ARTIFACT CATALOG

Site: FS 1

Provenience: TR17ST11-1 Bag Number: 1

Bag Description:

Catalog Number	*Count*	*Weight in grams*	*Description*	*Additional Notes*
1	1	7.72	utility porcelain, undecorated	1760-present
2	1	1.23	container glass, clear	
Total:	2	8.95		
Site Total:	2	8.95		
Project Total:	**2**	**8.95**		

Native American Consultation (NAC)

To: TDOT NEPA

From: Joe Santangelo,
Cultural Resources Section Manager

Date: 2.21.2023

Subject: NAC & State-Funded Projects

TDOT projects that are not Federal Highway Administration (FHWA) projects per Title 23 U.S.C., do not qualify as FHWA undertakings. Projects that are not FHWA undertakings as defined in 36 CFR 800.16(y), pursuant to Section 106 of the National Historic Preservation Act, do not require Native American Consultation (NAC) to be performed by FHWA. Therefore, NAC will not be performed by TDOT on projects that are not FHWA undertakings. If a TDOT project requires a permit or other federal action, and it is not an FHWA undertaking, the lead federal agency is responsible for conducting NAC under Section 106.

TDOT - Environmental Division • Suite 900, James K. Polk Bldg. • 505 Deaderick Street• Nashville, TN 37243
Tel: 615-741-3655

Hazardous Materials

Environmental Study

Technical Section

Section: Hazardous Materials

Study Results

Based on the Environmental Technical Study Area figures dated 2 May 2024, the project has five known hazardous materials sites located adjacent to the project corridor as follows. Continued avoidance and minimization of these properties is recommended at this time.
1. TDEC UST Facility #5750366, Kwik Stop Market, 6137 Epps Mill Road, Christiana, 37037. This is an inactive facility with three permanently out of use tanks.
2. TDEC UST Facility #5750451, Love's Travel Stop No. 314, 6137 Epps Mill Road, Christiana, 37037. This is an active facility with seven currently in use tanks.
3. TDEC UST Facility #5750055, Crazy J's Fireworks, 6177 Epps Mill Road, Murfreesboro, 37130. This is an inactive facility with three permanently out of use tanks. This site is listed by TDEC as a facility with an environmental related activity that occurred due to a tank closure, a suspected release, or a confirmed release. The case is closed.
4. TDEC UST Facility #5750038, Outpost, 5435 Miller Lane, Christiana, 37037. This is an inactive facility with three permanently out of use tanks. This site is listed twice by TDEC as a facility with an environmental related activity that occurred due to a tank closure, a suspected release, or a confirmed release. Both cases are closed.
5. TDEC UST Facility #5750256, Serve N Go No.19, 5965 Miller Road, Christiana, 37037. This is an active facility with four currently in use and eight permanently out of use tanks. This site is listed twice by TDEC as a facility with an environmental related activity that occurred due to a tank closure, a suspected release, or a confirmed release. Both cases are closed.

Barrett Firearms Manufacturing, 5926 Miller Lane, Christiana, 37037 is listed in the EPA EnviroFacts Hazardous Waste database, but is not within the project footprint.

Commitments

Did the study of this project result in any environmental commitments? **Yes**

An Asbestos Containing Material (ACM) survey was completed on Bridge No. 75I00240041 Epps Mill Road over I-24 LM 0.48 (75-01044-00.48). No asbestos was detected. Please see the report for further details and photographs. No special accommodations for demolition and waste disposal are anticipated for these structures and the material can be deposited in a C&D landfill. Prior to the demolition or rehabilitation of any structure (bridge or building), the contractor is required to submit the National Emission Standards for Hazardous Air Pollutants standard 10-day notice of demolition to the TDEC Division of Air Pollution Control (per TDOT Standard Specifications for Road and Bridge Construction (January 1, 2021) Sections 107.08.D and 202.03).

Additional Information

Is there any additional information or material included with this study? **No**

Certification

Responder: Kyle Kirschenmann

Title: Statewide Technical Specialist

Signature:

Digitally signed by Kyle Kirschenmann
Date: 2024.11.18 08:41:24 -05'00'

Multimodal

Environmental Study

Technical Section

Section: Multimodal

Study Results

This project includes sidewalks along the bridge and pedestrian infrastructure to connect the two truck stops on either side of I-24 per the project information. See TDOT Roadway Design Guidelines Chapter 3 and TDOT Multimodal Policy VII.Procedures.A.1 through 7.

Commitments

Did the study of this project result in any environmental commitments? **No**

Additional Information

Is there any additional information or material included with this study? **No**

Certification

Responder: Owen Knight

Title: Trans. Prog. Monitor 1

Signature: Owen Knight

Digitally signed by Owen Knight
Date: 2024.11.18 14:15:44 -06'00'

TN TDOT Department of Transportation **DEPARTMENTAL POLICY** **State of Tennessee** **Department of Transportation**	**Policy Number: 530-01**
	Effective Date: **July 31, 2015**
Approved By:	**Supersedes:** **December 1, 2010**
SUBJECT: Multimodal Access Policy	

I. RESPONSIBLE OFFICE: Multimodal Transportation Resources Division

II. AUTHORITY: T.C.A. 4-3-2303. If any portion of this policy conflicts with applicable state or federal laws or regulations, that portion shall be considered void. The remainder of this policy shall not be affected thereby and shall remain in full force and effect.

III. PURPOSE: To create and implement a multimodal transportation policy that encourages safe access and mobility for users of all ages and abilities through the planning, design, construction, maintenance, and operation of new construction, reconstruction and retrofit transportation facilities that are federally or state funded. Users include, but are not limited to, motorists, transit-riders, freight-carriers, bicyclists and pedestrians.

IV. APPLICATION: All Tennessee Department of Transportation (TDOT) employees, consultants and contractors involved in the planning, design, construction, maintenance, and operation of state and federally funded projects, and local governments managing and maintaining transportation projects with funding through TDOT's Local Programs Development Office.

V. DEFINITIONS:

a. Highway: A main road or thoroughfare, such as a street, boulevard, or parkway, available to the public for use for travel or transportation
b. Multimodal: For the purposes of this policy, multimodal is defined as the movement of people and goods on state and functionally-classified roadways. Users include, but are not limited to, motorists, transit-riders, freight-carriers, bicyclists and pedestrians, including those with disabilities.
c. Reconstruction: Complete removal and replacement of the pavement structure or the addition of new continuous traffic lanes on an existing roadway.
d. Retrofit: Changes to an existing highway within the general right-of-way, such as adding lanes, modifying horizontal and vertical alignments, structure rehabilitation, safety improvements, and maintenance.
e. Roadway: The portion of a highway, including shoulders, that is available for vehicular, bicycle or pedestrian use.

VI. POLICY: The Department of Transportation recognizes the benefits of integrating multimodal facilities into the transportation system as a means to improve the mobility, access and safety of all users. The intent of this policy is to promote the inclusion of multimodal accommodations in all transportation planning and project development activities at the local, regional and statewide levels, and to develop a comprehensive, integrated, and connected multimodal transportation network. TDOT will collaborate with local government agencies and regional planning agencies through established transportation planning processes to ensure that multimodal accommodations are addressed throughout the planning, design, construction, maintenance, and operation of new construction, reconstruction and retrofit transportation facilities as outlined in TDOT's Multimodal Access Policy Implementation Plan.

VII. PROCEDURES:

A. TDOT is committed to the development of a transportation system that improves conditions for multimodal transportation users through the following actions:

1. Provisions for multimodal transportation shall be given full consideration in new construction, reconstruction and retrofit roadway projects through design features appropriate for the context and function of the transportation facility.

2. The planning, design and construction of new facilities shall give full consideration to likely future demand for multimodal facilities and not preclude the provision of future improvements. If all feasible roadway alternatives have been explored and suitable multimodal facilities cannot be provided within the existing or proposed right of way due to environmental constraints, an alternate route that provides continuity and enhances the safety and accessibility of multimodal travel should be considered.

3. Multimodal provisions on existing roadways shall not be made more difficult or impossible by roadway improvements or routine maintenance projects.

4. Intersections and interchanges shall be designed (where appropriate based on context) to accommodate the mobility of bicyclists and pedestrians to cross corridors as well as travel along them in a manner that is safe, accessible, and convenient.

5. While it is not the intent of resurfacing projects to expand existing facilities, opportunities to provide or enhance bicycle and pedestrian facilities shall be given full consideration during the program development stage of resurfacing projects.

6. Pedestrian facilities shall be designed and built to accommodate persons with disabilities in accordance with the access standards required by the Americans with Disabilities Act (ADA). Sidewalks, shared use paths, street crossings

(including over- and under-crossings) and other infrastructure shall be constructed so that all pedestrians, including those with disabilities, can travel independently.

7. Provisions for transit riders, pedestrians, and bicyclists shall be included when closing roads, bridges or sidewalks for construction projects where pedestrian, bicycle, or transit traffic is documented or expected.

B. It is TDOT's expectation that full consideration of multimodal access will be integrated in all appropriate new construction, reconstruction and retrofit infrastructure projects. However, there are conditions where it is generally inappropriate to provide multimodal facilities. Examples of these conditions include, but are not limited to:

1. Controlled access facilities where non-motorized users are prohibited from using the roadway. In this instance, a greater effort may be necessary to accommodate these users elsewhere within the same transportation corridor.

2. The cost of accommodations would be excessively disproportionate to the need and probable use. Excessively disproportionate is defined as exceeding twenty percent (20%) of the cost of the project. The twenty percent figure should be used in an advisory rather than an absolute sense, especially in instances where the cost may be difficult to quantify. Compliance with ADA requirements may require greater than 20% of project cost to accommodate multimodal access. Costs associated with ADA requirements are NOT an exception.

3. Areas in which the population and employment densities or level of transit service around the facility, both existing and future, does not justify the incorporation of multimodal alternatives.

4. Inability to negotiate and enter into an agreement with a local government to assume the operational and maintenance responsibility of the facility.

5. Other factors where there is a demonstrated absence of need or prudence, or as requested by the Commissioner of the Department of Transportation.

C. Exceptions for not accommodating multimodal transportation users on State roadway projects in accordance with this policy shall be documented describing the basis and supporting data for the exception, and must be approved by TDOT's Chief Engineer and Chief of Environment or their designees.

D. The Department recognizes that a well-planned and designed transportation network is responsive to its context and meets the needs of its users. Therefore, facilities will be designed and constructed in accordance with current applicable laws and regulations, using best practices and guidance, including but not limited to the following: TDOT Standard Drawings and guidelines, American Association of State Highway and Transportation Officials (AASHTO) publications, Institute of

Transportation Engineers (ITE) publications, the Manual of Uniform Traffic Control Devices (MUTCD), National Association of City Transportation Officials (NACTO) publications, the Public Rights-of-Ways Accessibility Guidelines (PROWAG), and the Americans with Disabilities Act Accessibility Guidelines (ADAAG).

Project Commitments

COMMITMENTS

Commitment	Type	Status	Commitment To	Created By	Created On	Plans Report	LT Maint Commit
EDAC001	Environment	Pending	TDOT	Angela L. Blankenship (JJ12234)	02/13/2025	☐	☐

COMMITMENT DETAILS

SOURCE DIVISION
Environmental Division, Archeological

CONSIDERATION MADE ON
02/13/2025

STATION/LOCATION
APE

GPS
Not set

DESCRIPTION
Please avoid Pearson and Cobb Cemeteries with at least a 10ft buffer

Items per page: 10

1 – 1 of 1

Quality Assurance Review

Project Information

Route: Interstate 24

Termini: Interchange at Epps Mill Road/Buchanan Road & Epps Mill Road, From west of Capital Way to SR-2 (US

County: Rutherford

PIN: 124683.06

Preparer: Rachel Head

Certification

By signing below, you certify that this document has been reviewed for compliance with all applicable environmental laws, regulations and procedures. The document has been evaluated for quality, accuracy, and completeness, and that all source material has been verified, compiled and included in the attachments and technical appendices.

Reviewer:	Erick Hunt-Hawkins	**Signature:**	Erick Hunt-Hawkins Digitally signed by Erick Hunt-Hawkins Date: 2025.05.06 14:31:12 -05'00'
Title:	NEPA Team Lead	**Comment:**	Comments made.

Reviewer:	Rachel Head	**Signature:**	Rachel M Head Digitally signed by Rachel Head Date: 2025.05.13 12:59:42 -05'00'
Title:	TDOT Statewide Technical Specialist	**Comment:**	Revisions made.

Reviewer:	Erick Hunt-Hawkins	**Signature:**	Erick Hunt-Hawkins Digitally signed by Erick Hunt-Hawkins Date: 2025.05.20 11:43:30 -05'00'
Title:	NEPA Team Lead	**Comment:**	Comments addressed. Approved

Reviewer:	Enter Reviewer Name	**Signature:**	
Title:	Enter Reviewer Title	**Comment:**	Enter Comment

Reviewer:	Enter Reviewer Name	**Signature:**	
Title:	Enter Reviewer Title	**Comment:**	Enter Comment