TENNESSEE
DEPARTMENT OF TRANSPORTATION

TECHNICAL REPORT
INTERSTATE 24
FROM I-59 TO I-124
L.M. 1.63 (GEORGIA) TO L.M. 7.33 (TENNESSEE)
DADE COUNTY, GEORGIA
HAMILTON COUNTY, TENNESSEE
PIN 124072.00

PREPARED BY ALFRED BENESCH & COMPANY
for the
Strategic Transportation Investments Division

Recommended by:	Signature	DATE
TRANSPORTATION DIRECTOR **STRATEGIC TRANSPORTATION** **INVESTMENTS DIVISION**		8-21-18

Executive Summary

Purpose of Study

The purpose of this Technical Report is to provide an overview of the existing route deficiencies, define the preliminary purpose and need for the project, and provide a preliminary design that is feasible, cost effective, and provides improved mobility for this segment of Interstate 24 from Interstate 59 (L.M. 1.63) in Georgia to Interstate 124 (L.M. 7.33) in Tennessee. The proposed project was initiated as result of the Improving Manufacturing, Public Roads and Opportunities for a Vibrant Economy (IMPROVE) Act project delivery commitments.

Description of the Existing Routes

This section of I-24 is functionally classified as an Urban Interstate and consists primarily of a four (4) lane depressed grass median divided Urban section. The typical section consists of two (2) twelve (12) foot travel lanes in each direction, four (4) to twelve (12) foot paved outside shoulders and four (4) to eighteen (18) foot paved inside shoulders. The existing road is a major interstate entering Chattanooga and the adjacent land use primarily consists of commercial developments. The speed limit along the existing roadway ranges from 55 MPH to 70 MPH. Overall the route has an inadequate number of travel lanes to handle the current and future traffic volumes.

Existing Traffic and Safety Conditions

The base year (2022) annual average daily traffic (AADT) for the section of I-24 under study is 69,630 vehicles per day. The design year (2042) AADT is projected to be 89,230 vehicles per day. The route was analyzed utilizing methodologies from the Highway Capacity Manual (HCM) to evaluate existing operating conditions.

The analysis indicates that much of the route either currently operates at or will eventually reach a Level of Service (LOS) F during the peak hours. This means that the route is likely at or near capacity, which will result in congestion and delay.

Crash data was reviewed and crash rates were calculated for individual segments along I-24. Total crash rates are consistently below the Tennessee statewide average rate throughout the route and the severe crash rates never exceed the statewide severe crash rate average.

Conceptual Alternatives

After evaluating the safety, operational, and geometric conditions on the existing route within the study limits, two (2) conceptual alternatives were considered to address the deficiencies: No Build and Widen Interstate 24 to three (3) lanes in each direction.

The No Build alternative assumes that only routine maintenance and that no major modifications or improvements will be implemented.

The Build alternative adds one (1) travel lane in each direction to increase the total number of lanes to six (6) along this section of I-24. The proposed typical section will include three (3) twelve (12) foot travel lanes in each direction, twelve (12) foot inside shoulders and twelve (12) foot outside shoulders. From the I-59 (L.M. 1.63) in Georgia to just east of the Browns Ferry Road interchange (approx. L.M. 4.70) in Tennessee, the interstate will be widened towards the inside median, with guardrail and barrier/retaining walls as needed due to grade difference. The remainder of the route will widen mostly to the south with a median barrier and a retaining wall along the eastbound edge of outside shoulder. As per the direction of TDOT Structures and GDOT Structures, the Build alternative will replace six (6) sets of side by side bridges in Tennessee and widen two (2) sets of side by side bridges in Georgia.

Existing right-of-way (ROW) varies from approximately two hundred (200) feet to three hundred (300) feet wide and it appears that most of the improvements can be completed within existing ROW. A small portion (approx. 0.40 acres) of ROW will be required near the end of the project as it ties into I-124 (US-27).

In addition to the proposed roadway improvements in the build alternative, twelve (12) structures within the project limits will be replaced and two (2) will be widened. Any culverts, or other concrete structures under I-24 that are impacted by the widening will be extended or replaced. The existing Box Culvert / Access Road (L.M. 1.27 in Tennessee) that connects areas of the quarry split by the interstate will need to be evaluated by TDOT Structures to determine if it needs modification or upgrading due to the additional loading.

Approximately five (5) ITS poles located in the median and two (2) Dynamic Message Signs (DMS) will need to be replaced/relocated. Railroad coordination will be necessary to ensure that impacts to railroad operations are minimized and access during construction is available as needed. Design Exceptions for limited stopping sight distance due to proposed median barrier on the inside of horizontal curves may be required in the proposed build alternative.

Traffic and Operation Comparison

The proposed build alternative will reduce congestion and delays throughout this section of I-24. The additional travel lane in both the eastbound and westbound directions will reduce the vehicular density along the route and improve overall travel time. Below is a table showing the Level of Service (LOS) difference between the No Build and the Build alternative. It is important to note that the segment from Browns Ferry Road to U.S. 27 fails prior to the design year of 2042. A LOS of D is maintained until 2031 and an E is maintained until 2040.

Level of Service Comparison

Segment	Year	Peak Hour	LOS (No Build)	LOS (Build)
I-24 from I-59 to GA State Line	2022	AM	D	C
		PM	D	C
	2042	AM	F	C
		PM	F	C
I-24 from GA State Line to S.R. 2	2022	AM	D	C
		PM	E	C
	2042	AM	F	D
		PM	F	D
I-24 from S.R. 2 to Browns Ferry Rd.	2022	AM	E	C
		PM	E	C
	2042	AM	F	D
		PM	F	D
I-24 from Browns Ferry Rd. to U.S. 27	2022	AM	F	D
		PM	F	D
	2042	AM	F	F*
		PM	F	F**

* LOS E in 2031, LOS F in 2040

** LOS E in 2032, LOS F in 2041

Cost Estimate

Due to overall length and cost of the project, the I-24 corridor has been divided into three (3) segments:

Segment 1: From the I-59 interchange to the Georgia State Line

Segment 2: From the Georgia State Line to just east of Browns Ferry Road

Segment 3: From just east of Browns Ferry Road to I-124 (U.S. 27)

The total estimated planning level cost for preliminary engineering, right-of-way and utilities, and construction for this project (per segment) is broken down below:

Segment	Description	Length (Miles)	PE	ROW & UTIL.	CONST	Preliminary Cost
Segment 1	From I-59 to GA State Line	2.47	$2,406,000	$0	$33,691,000	$36,097,000
Segment 2	From GA State Line to East of Browns Ferry Rd.	4.73	$3,564,000	$94,000	$82,112,000	$85,770,000
Segment 3	From East of Browns Ferry Rd. to I-124 (US-27)	2.60	$3,555,000	$250,000	$83,591,000	$87,396,000
Totals		9.80	$9,525,000	$344,000	$199,394,000	**$209,263,000**

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1.0 Introduction

The Technical Report process involves a comprehensive study of all historic, current, and projected highway data. An assembled team reviews the project to validate identified deficiencies and determine cost effective measures to resolve the existing conditions with an emphasis placed on motorist safety, mobility and operations.

The purpose of this Technical Report is to provide an overview of the existing route deficiencies, define the preliminary purpose and need for the project, and to provide preliminary design that is feasible, cost effective, and provides improved mobility for this segment of Interstate 24. The proposed project was initiated as result of the Improving Manufacturing, Public Roads and Opportunities for a Vibrant Economy (IMPROVE) Act project delivery commitments.

1.1 Study Area, Vicinity, Existing Roadway Network Maps

I-24 is being evaluated from I-59 in Georgia to I-124 in Tennessee. This section of I-24 is located within Dade County, Georgia, Hamilton County, Tennessee and the City of Chattanooga. I-24 is a major east/west route through the City of Chattanooga.

Within the project limits there are three (3) interchanges, a rest area, and seventeen (17) bridges. The area surrounding the interchanges is mostly commercial and industrial with the rest of the corridor being mainly undeveloped. CSX and Norfolk Southern have railroad facilities within the project limits. CSX has a line that crosses underneath I-24 in Georgia and both railroads have lines paralleling the interstate along the south edge for the last 2.5 miles of the project. Also in that area, the Tennessee River runs along the north side of I-24.

Figure 1 presents an area map, Figure 2 presents a location specific map, and Figures 3 through 3C detail the corridors geographic features on United States Geographical Survey Map.

N

END PROJECT
L.M. 7.33(TN)

TENNESSEE–GEORGIA STATE LINE
L.M. 4.10(GA) L.M. 0.00(TN)
(SEE INSET FOR CONTINUATION)

TENNESSEE–GEORGIA STATE LINE
L.M. 4.10(GA) L.M. 0.00(TN)

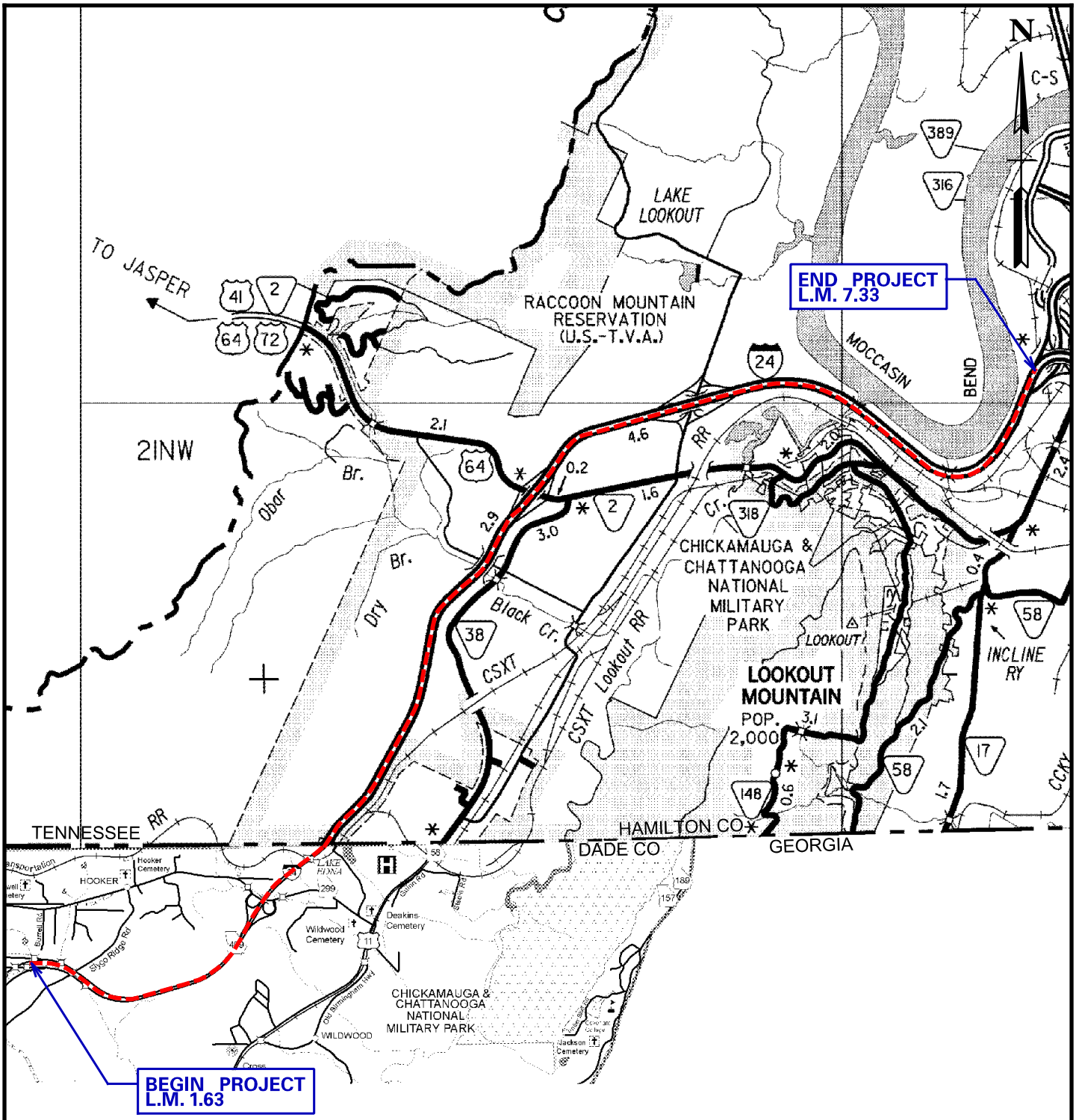
BEGIN PROJECT
L.M. 1.63(GA)

INSET

TN TDOT Department of Transportation

AREA MAP
(FIGURE 1)

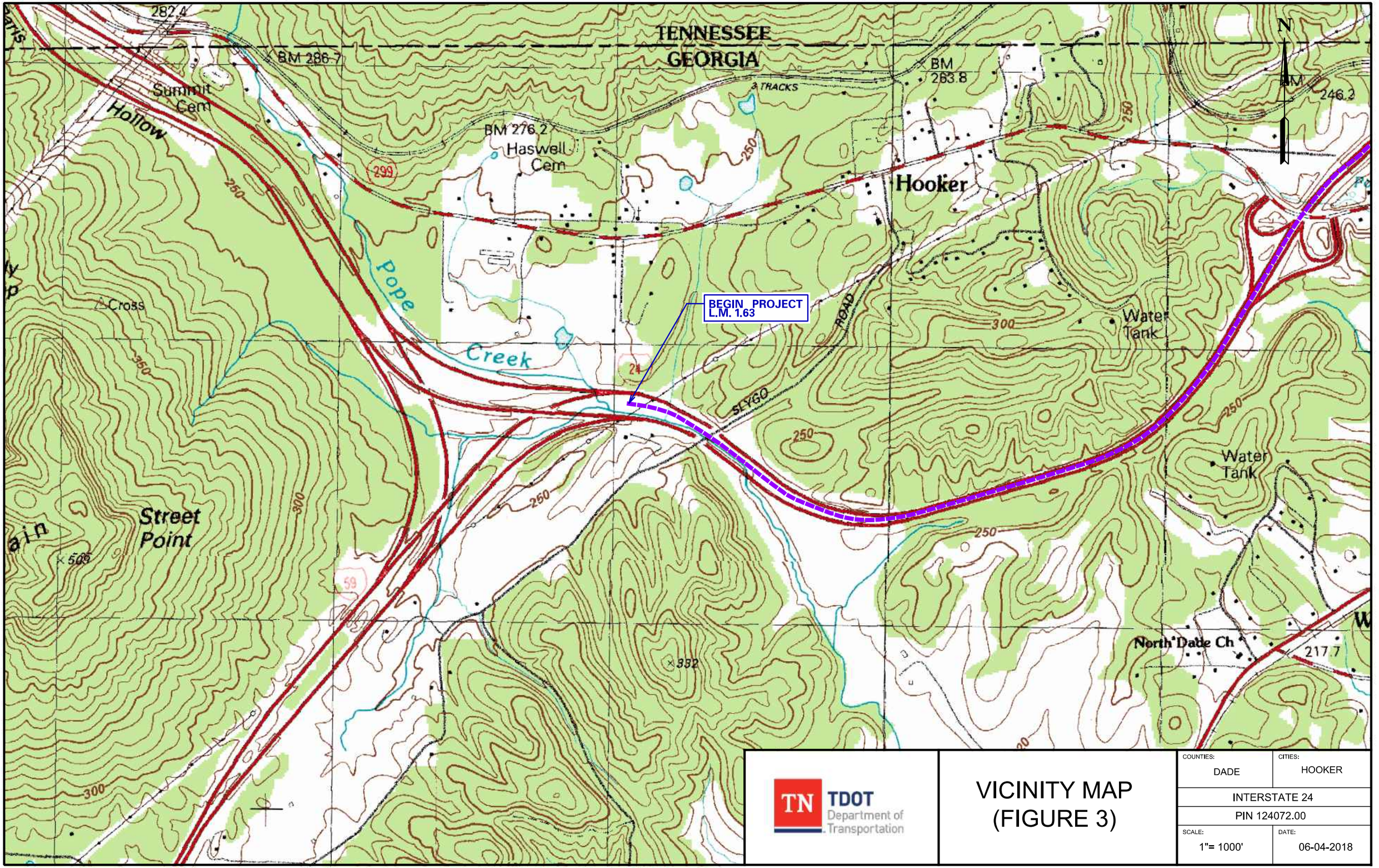
COUNTIES:	CITY:
HAMILTON (TN) DADE (GA)	CHATTANOOGA
INTERSTATE 24	
PIN 124072.00	
SCALE: 1"= 2000'	DATE: 06-04-18



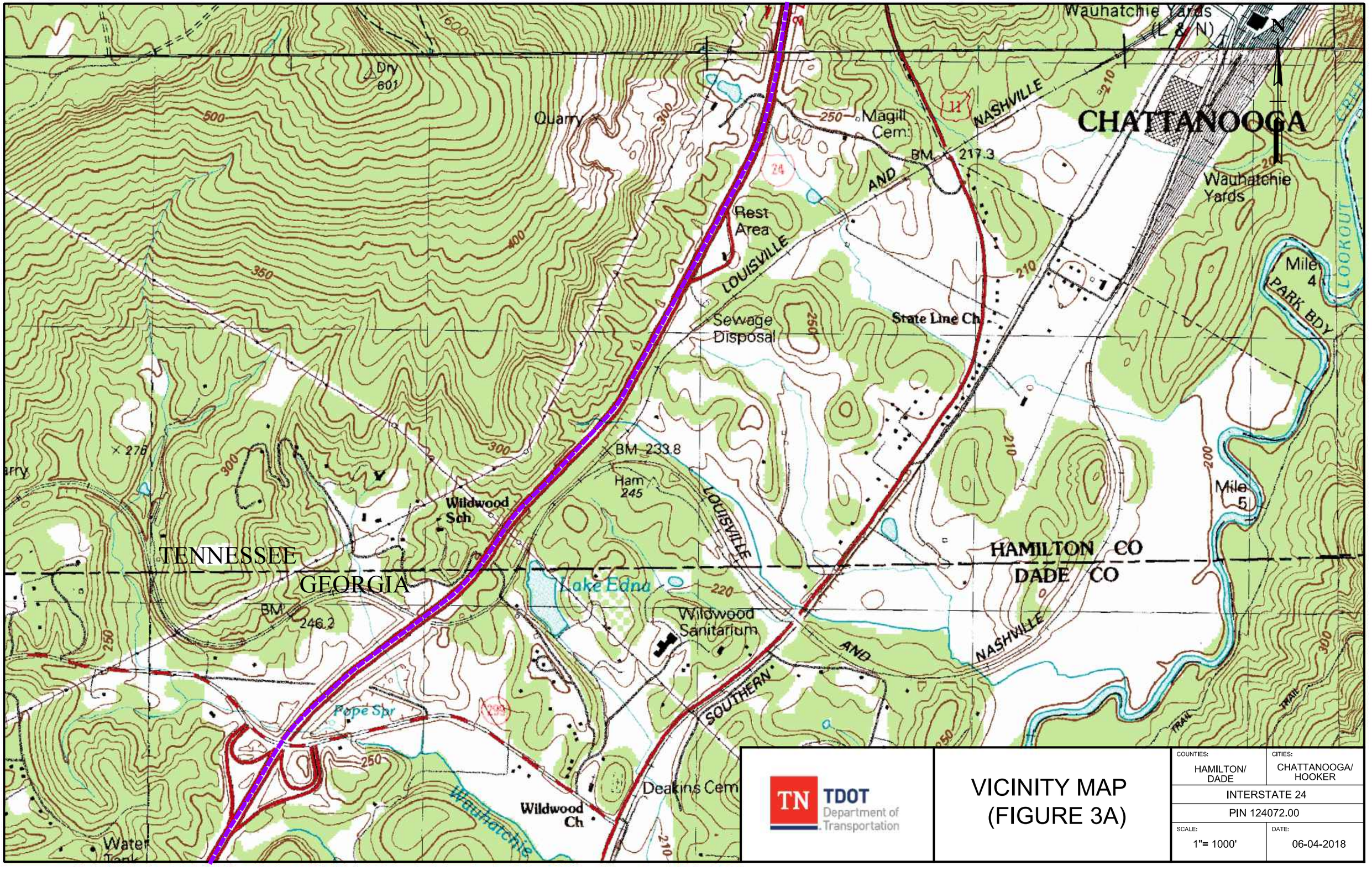
TDOT Department of Transportation

LOCATION MAP (FIGURE 2)

COUNTY:	CITY:
HAMILTON (TN) DADE (GA)	CHATTANOOGA
INTERSTATE 24	
PIN 124072.00	
SCALE: 1"= 1 MILE	DATE: 06-04-18



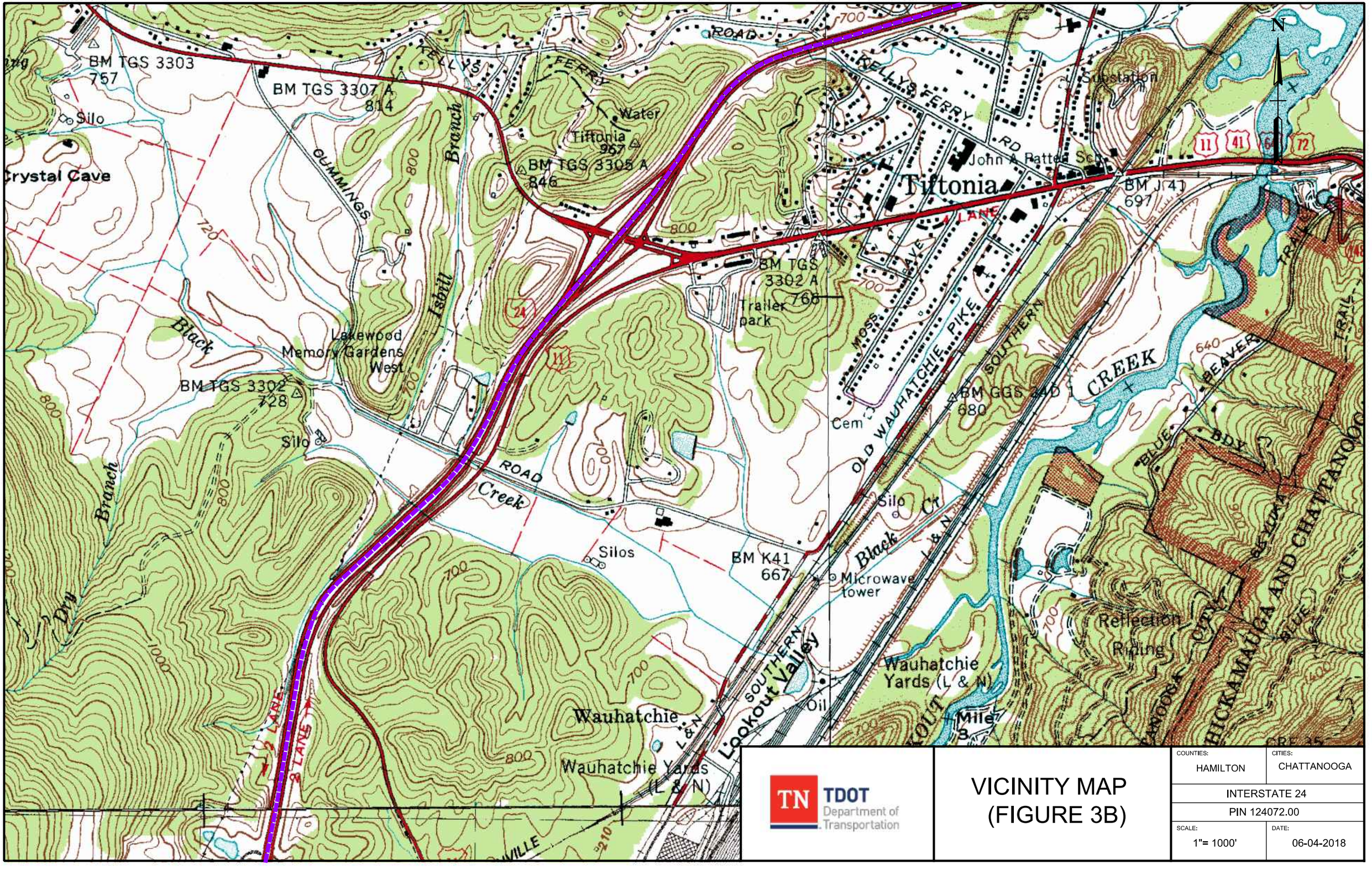
TN TDOT Department of Transportation	VICINITY MAP (FIGURE 3)	COUNTIES: DADE; CITIES: HOOKER
		INTERSTATE 24
		PIN 124072.00
		SCALE: 1"= 1000'; DATE: 06-04-2018



TN TDOT Department of Transportation

VICINITY MAP (FIGURE 3A)

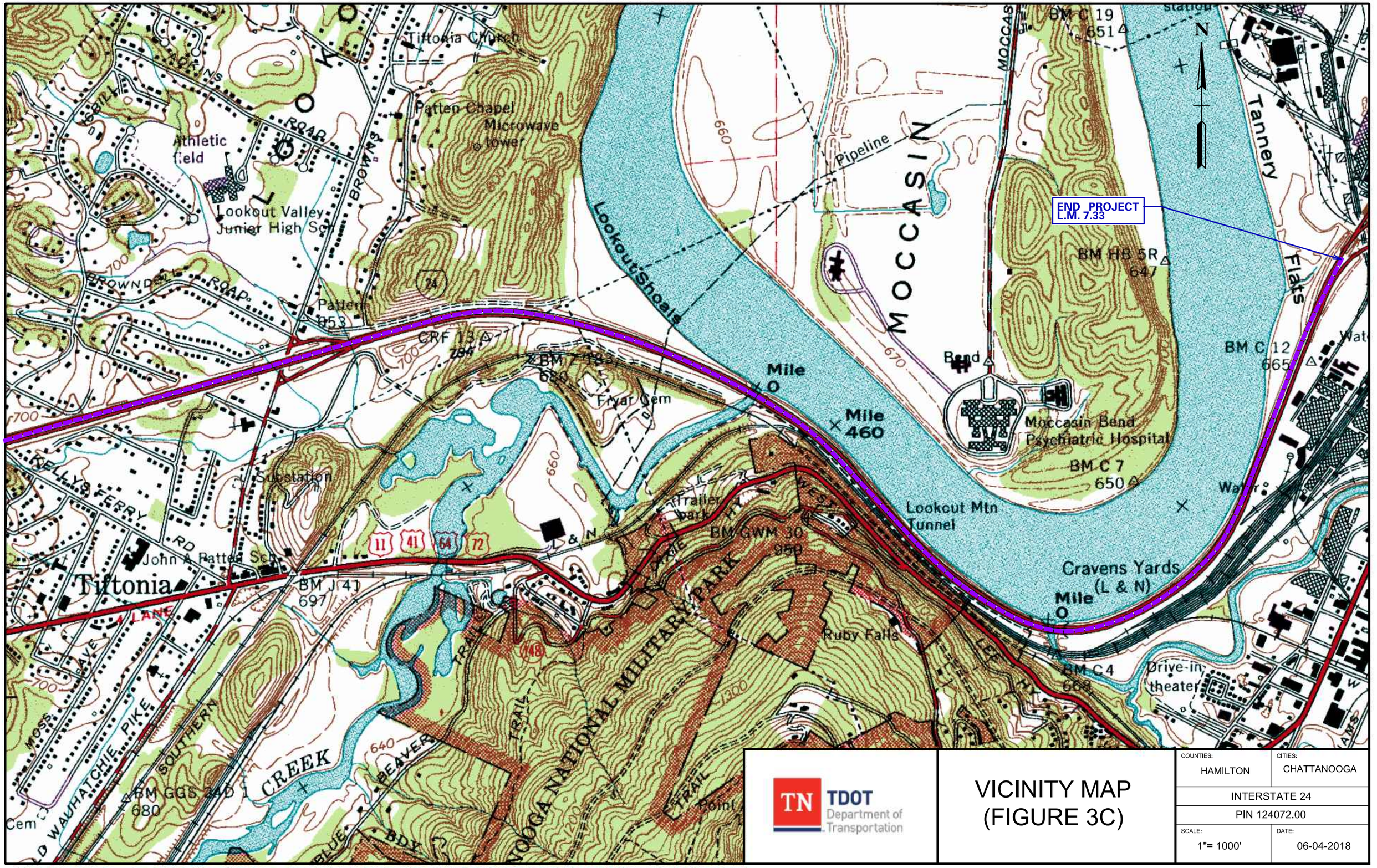
COUNTIES:	CITIES:
HAMILTON/ DADE	CHATTANOOGA/ HOOKER
INTERSTATE 24	
PIN 124072.00	
SCALE: 1"= 1000'	DATE: 06-04-2018



TN TDOT Department of Transportation

VICINITY MAP (FIGURE 3B)

COUNTIES:	CITIES:
HAMILTON	CHATTANOOGA
INTERSTATE 24	
PIN 124072.00	
SCALE: 1"= 1000'	DATE: 06-04-2018



TN TDOT Department of Transportation	VICINITY MAP (FIGURE 3C)

COUNTIES:	CITIES:
HAMILTON	CHATTANOOGA
INTERSTATE 24	
PIN 124072.00	
SCALE: 1"= 1000'	DATE: 06-04-2018

1.2 Demographics

The 2016 population of Hamilton County was estimated by the US Census Bureau as 357,738. This is a 6.3% increase from the 2010 population of 336,463. Select demographics are provided in Table 1. Equivalent demographics for Tennessee and the United States are provided for comparative purposes.

Table 1: Tennessee Demographics

Characteristic	Hamilton County	Tennessee	United States
Population Growth Rate	6.30%	4.80%	4.70%
Unemployment (April 2017)	6.90%	4.70%	4.40%
Minority Population (2016)	28.50%	21.30%	23.10%
Median Household Income (2012-2016)	$47,898.00	$48,457.00	$55,322.00
Persons Below Poverty Level (2012-2016)	13.20%	15.80%	12.70%
Median Age (2016)	39.3	38.6	37.9

Sources: U.S. Census Bureau, QuickFacts

As shown in the table, Hamilton County has similar demographics as both Tennessee and the United States. Unemployment rates and the median household income are slightly lower in Hamilton County when compared to Tennessee. The minority population in Hamilton County is significantly higher than the population percentage for Tennessee and the United States and the median age for Hamilton County is older than both Tennessee and the United States.

Table 2: Georgia Demographics

Characteristic	Dade County	Georgia	United States
Population Growth Rate	-2.30%	6.40%	4.70%
Unemployment (April 2017)	4.00%	4.90%	4.40%
Minority Population (2016)	4.10%	28.80%	23.10%
Median Household Income (2012-2016)	$43,463.00	$51,037.00	$55,322.00
Persons Below Poverty Level (2012-2016)	15.60%	16.00%	12.70%
Median Age (2016)	40.3	36.5	37.9

Sources: U.S. Census Bureau, QuickFacts

As shown in the table, Dade County has significantly different demographics when compared to both Georgia and the United States. Unemployment rates are slightly lower and the median household income is much lower in Dade County when compared to Georgia and the United States. The minority population in Hamilton County is significantly lower than the population percentage for Georgia and the United States and the median age for Hamilton County is older than both Tennessee and the United States.

1.3 Existing Land Use and Zoning

Interstate 24 is a major east/west route through Tennessee (and a small portion of Georgia) and the City of Chattanooga. The adjacent land use in this section of the route is primarily commercial with some light industrial and the CXS/NS railroad. A quarry is located on both sides of I-24, approximately one (1) mile east of the Georgia State Line. There is also a park property on the south side of I-24 immediately north of the Browns Ferry Road interchange.

1.4 Other Projects in Vicinity

TDOT Region 2 representatives indicated that there are multiple projects that could impact this I-24 project: Widening of I-24 in Georgia, Interchange improvements at both State Route 2 and Browns Ferry, and a Ramp realignment at I-124. Any of these other potential improvement projects should be coordinated and open communication maintained to minimize the chance for overlap.

In the past (approx. 2007) the Georgia Department of Transportation communicated with TDOT about possible improvements along the I-24 corridor. These discussions were tabled at the time as improvements in Tennessee were not feasible due to lack of funding. Any improvements recommended as part of this study, especially improvements within the State of Georgia, should be coordinated with GDOT to ensure continuity along the interstate facility.

There is a current TDOT project (PIN 118452.00) at the I-24 interchange with SR-2 (Cummings Highway). The project will redesign the intersections of the On & Off ramps at Cummings Highway and there will be a minor realignment of a portion of each ramp. The project is not expected to be in conflict with any improvements proposed as part of this report.

There is a current TDOT project (PIN 112833.00) at the I-24 interchanges with SR-2 (Broad Street) and SR-58 (Market Street) that realigns the I-24 Eastbound Off Ramp to SR-2. This project is in the Right-Of-Way (R.O.W.) phase and will likely be constructed prior to any proposed improvements recommended in this study. Coordination with current plans will be necessary to ensure the ramp realignment is incorporated into this report.

2.0 Existing Conditions

Within the study area, this section of I-24 is functionally classified as an Urban Interstate. It consists of two (2) twelve (12) foot travel lanes in each direction, a variable width depressed grass median, two (2) to eight (8) foot outside shoulders and zero (0) to two (2) foot inside shoulders within 200 to 300 feet of existing ROW. The speed limit along the existing roadway is posted as 70 MPH for the section from the

Interstate 59 Interchange (L.M. 1.63) to the Georgia State Line (L.M.4.10 / L.M. 0.00), 65 MPH for the section from the Georgia State Line (L.M. 0.00) to Lookout Creek (L.M. 6.25), and 55 MPH for the section from Lookout Creek (L.M. 6.25) to I-124 (L.M. 7.33).

There are three (3) interchanges within the study area: State Route 299 in Georgia, State Route 2 (US-11/41/64) and Browns Ferry Road, both in Tennessee. The State Route 299 interchange is a two (2) quadrant partial cloverleaf, with both quadrants on the same side of State Route 299. Both of the interchanges in Tennessee are diamond interchanges, with only one of the ramp termini currently signalized.

2.1 Structures and Bridges Conditions

There are seventeen (17) existing bridges within the project limits:

1. Georgia - Bridge ID 083-0016-0: Slygo Road over I-24 (sufficiency rating 50.8). Steel structure with a length of 427 feet and a maximum span length of 90 feet. The structure is in good condition.
2. Georgia - Bridge ID 083-0043-0: I-24 Eastbound over Pope Creek (sufficiency rating 94.7). Concrete structure with a length of 124 feet and a maximum span length of 51 feet. The structure is in good condition.
3. Georgia - Bridge ID 083-0020-0: Georgia State Route 299 over I-24 (New Construction). Concrete structure with a length of 202 feet and a maximum span length of 104 feet. The structure is in excellent condition.
4. Georgia - Bridge ID 083-0044-0: I-24 Eastbound over CSX (sufficiency rating 83.7). Steel structure with a length of 221 feet and a maximum span length of 77 feet. The structure is in good condition.
5. Georgia - Bridge ID 083-0045-0: I-24 Westbound over CSX (sufficiency rating 83.7). Steel structure with a length of 189 feet and a maximum span length of 66 feet. The structure is in good condition.
6. Tennessee - Structures Number 33I00240001: I-24 Northbound bridge over Black Creek and Cummings Road (sufficiency rating 86.6). Concrete Tee Beam structure with a length of 152 feet and a maximum span length of 44 feet. The structure is in good condition.
7. Tennessee - Structures Number 33I00240002: I-24 Southbound bridge over Black Creek and Cummings Road (sufficiency rating 86.6). Concrete Tee Beam structure with a length of 152 feet and a maximum span length of 44 feet. The structure is in good condition.

8. Tennessee - Structures Number 33I00240003: I-24 Northbound bridge over Cummings Hwy (S.R. 2) (sufficiency rating 86.2). Continuous Steel structure with a length of 178 feet and a maximum span length of 56 feet. The structure is in fair condition.
9. Tennessee - Structures Number 33I00240004: I-24 Southbound bridge over Cummings Hwy (S.R. 2) (sufficiency rating 74.6). Continuous Steel structure with a length of 178 feet and a maximum span length of 56 feet. The structure is in fair condition.
10. Tennessee - Structures Number 33I00240005: I-24 Eastbound bridge over Kelley's Ferry Road (sufficiency rating 83.1). Steel structure with a length of 116 feet and a maximum span length of 53 feet. The structure is in fair condition.
11. Tennessee - Structures Number 33I00240006: I-24 Westbound bridge over Kelley's Ferry Road (sufficiency rating 73.5). Steel structure with a length of 116 feet and a maximum span length of 53 feet. The structure is in fair condition.
12. Tennessee - Structures Number 33I00240007: I-24 Eastbound bridge over Brown's Ferry Road (sufficiency rating 59.0). Steel structure with a length of 139 feet and a maximum span length of 77 feet. The structure is in fair condition.
13. Tennessee - Structures Number 33I00240008: I-24 Westbound bridge over Brown's Ferry Road (sufficiency rating 71.8). Steel structure with a length of 139 feet and a maximum span length of 77 feet. The structure is in fair condition.
14. Tennessee - Structures Number 33I00240009: I-24 Eastbound bridge over Lookout Creek (sufficiency rating 82.2). Continuous Prestressed Concrete structure with a length of 198 feet and a maximum span length of 66 feet. The structure is in fair condition.
15. Tennessee - Structures Number 33I00240010: I-24 Westbound bridge over Lookout Creek (sufficiency rating 82.2). Continuous Prestressed Concrete structure with a length of 198 feet and a maximum span length of 66 feet. The structure is in fair condition.
16. Tennessee - Structures Number 33I00240011: I-24 Eastbound bridge over Chattanooga Creek (sufficiency rating 82.2). Continuous Prestressed Concrete structure with a length of 228 feet and a maximum span length of 76 feet. The structure is in fair condition.
17. Tennessee - Structures Number 33I00240012: I-24 Westbound bridge over Chattanooga Creek (sufficiency rating 82.2). Continuous Prestressed Concrete structure with a length of 228 feet and a maximum span length of 76 feet. The structure is in fair condition.
18. Tennessee – Structures Number 33CULV01019: Access Road underneath I-24 (L.M. 1.27), connecting areas of the quarry on either side of the interstate. Box Culvert is 16 feet wide and is in fair condition.

2.2 Existing Utility Infrastructure

There are minimal utilities along the corridor, with most occurring in the vicinity of the interchanges and rest area. There are also TVA Power lines crossing the interstate at multiple locations. TDOT ITS cameras are located along the outside edge, with a few located in the medians near bridges, and will need to be considered during the design process. Additional field survey during the design will determine if there are any other underground utilities within the project area.

2.3 Preliminary Environmental Constraints

The National Wetlands Inventory Wetlands Mapper indicated one (1) wetland potentially within the project limits. This wetland is located between the Tennessee River and I-24 near the interchange with I-124 and has an approximate size of 5.89 acres. There are multiple blue line streams that either run along or cross underneath I-24. Four (4) of those streams are considered impaired for various reasons. An Unnamed Tributary to Lookout Creek (approx. L.M. 1.30) and Black Creek (approx. L.M. 2.25) are impaired for E. Coli and loss of streamside and littoral vegetation, Chattanooga Creek (approx. L.M. 6.25) is impaired for multiple items including but not limited to: Dioxin, E. Coli, PCB, Creosote and other anthropogenic substrate alterations, and the Tennessee River/Nickajack Reservoir is impaired for Dioxin and PCB. Precautions should be taken around streams to avoid contamination or destruction. As the project progresses through the National Environmental Policy Act (NEPA) process an ecology field survey will be conducted and a report generated to identify any aquatic features within the proposed project limits.

The Environmental Protection Agency (EPA) classifies geographic areas as “attainment” or “nonattainment” areas with respect to the National Ambient Air Quality Standards (NAAQS). A geographical area with air quality that meets the NAAQS for certain pollutants is referred to as an attainment area, and an area that does not meet the NAAQS is classified as a nonattainment area. A geographical area that is a nonattainment area that then later meets the NAAQS is referred to as a “maintenance” area. The EPA and Tennessee Department of Environment and Conservation (TDEC) Division of Air Pollution and Control have designated Hamilton County as a maintenance area for a few NAAQS criteria pollutants. Dade County in Georgia is classified as an attainment area.

3.0 Existing Condition Analysis

3.1 Crash Analysis on Existing Route

Utilizing the Enhanced Tennessee Roadway Information Management System (ETRIMS) database from June 1, 2014 to May 30, 2017, a crash rate (crashes per one million vehicle miles) was calculated. Table 3 shows the crash rates of the three (3) segments along the route.

Table 3: Crash Rate Comparison

Crash Rates		
From I-59 Interchange (L.M. 1.63) to GA State Line (L.M. 4.10)		
Type	**Crash Rate**	**TN SW Average**
Total	1.061	1.828
Severe (Fatal + Incap)	0.017	0.057
From GA State Line (L.M. 0.00) to S.R. 2 (L.M. 2.90)		
Type	**Crash Rate**	**TN SW Average**
Total	1.106	1.828
Severe (Fatal + Incap)	0.019	0.057
From S.R. 2 (L.M. 2.90) to Browns Ferry Rd (L.M. 4.22)		
Type	**Crash Rate**	**TN SW Average**
Total	1.516	1.828
Severe (Fatal + Incap)	0.01	0.057
From Browns Ferry Rd (L.M. 4.22) to U.S. 27 (L.M. 7.33)		
Type	**Crash Rate**	**TN SW Average**
Total	1.477	1.828
Severe (Fatal + Incap)	0.033	0.057

The calculated crash rate (A) for all segments of I-24 were lower than the Tennessee statewide average. The crash rate calculations are provided in the appendix.

To analyze crashes more in depth, Table 4 on the following page shows distributions of crash severity, type of crash, weather conditions, and more.

Table 4: Crash Statistics

CRASH STATISTICS		
Condition	**6/1/2014 - 5/31/2017**	
	Number of Crashes	**Percentage of Total**
Lighting Conditions		
Daylight	510	69%
Dark - Not Lighted	67	9%
Dark - Lighted	59	8%
Dusk/Dawn	18	3%
Other / Not Indicated	83	11%
Crash Severity		
Property Damage	627	85%
Non-Incap Injury	97	13%
Incap Injury	10	2%
Fatality	3	1%
Manner of Collision		
Rear-End	378	51%
Lane Departure	121	16%
Angle	19	3%
Sideswipe	113	15%
Head On	3	1%
Overturn	6	1%
Animal	9	2%
Other / Not Indicated	88	12%
Weather Conditions		
Clear	514	70%
Rain	136	19%
Snow	2	0%
Sleet/Hail	1	0%
Other / Not Indicated	84	11%
* Details for crashes on I-24 in Georgia were not available		

During the study period, 737 crashes took place along I-24 in Tennessee. The majority of the crashes that occurred were rear-end, lane departure and sideswipes, which is typical for interstate facilities. It is also important to note that a majority of the crashes occurred in clear, dry and daylight conditions. While

almost 20% of the crashes occurred during rainy conditions, there were no significant clusters of crashes that would indicate a specific concern for wet weather travel along the corridor. There were ten (10) incapacitating injury crashes and three (3) fatal crashes within the study area. Crash diagram figures are provided in the appendix.

3.2 Traffic Analysis on Existing Route

The base year (2022) annual average daily traffic (AADT) for the section of I-24 under study varies from 59,880 to 84,330 vehicles per day. The design year (2042) AADT is projected to be between 68,400 and 111,600 vehicles per day. Project traffic for the entire route is provided in the appendix.

Level of service (LOS) for interstate segments is defined by the density of traffic. Density describes the proximity to other vehicles and is related to the freedom to maneuver within the traffic stream. Table 5 below shows the Highway Capacity Manual (HCM) definitions of LOS for freeway segments.

Table 5: LOS Definitions

LOS	Density (pc/mi/ln)
A	<= 11
B	> 11 - 18
C	> 18 - 26
D	> 26 - 35
E	> 35 - 45
F	> 45 (Demand exceeds capacity)

Source: HCM 2010

The capacity and operation along I-24 was evaluated as an urban interstate facility utilizing the Highway Capacity Software (HCS2010) to determine a level of service (LOS) for each segment. Both AM and PM peak hours in both travel directions were evaluated and the results are summarized in the table on the following page.

Table 6: Existing Level of Service

Level of Service				
Segment	2022		2042	
	Peak Hour	LOS	Peak Hour	LOS
I-24 from I-59 to GA State Line	AM	D	AM	F
	PM	D	PM	F
I-24 from GA State Line to S.R. 2	AM	D	AM	F
	PM	E	PM	F
I-24 from S.R. 2 to Browns Ferry Rd.	AM	E	AM	F
	PM	E	PM	F
I-24 from Browns Ferry Rd. to U.S. 27	AM	F	AM	F
	PM	F	PM	F

As shown in the previous table, LOS for the segments of I-24 range from a LOS D to a LOS F. This indicates that much of the route is near or above capacity with the existing laneage.

3.3 Geometric Analysis on Existing Route

The existing geometry of I-24 is appropriate for the current posted speeds. The overall horizontal and vertical alignments meet the required design speed parameters.

3.4 Deficiencies of Existing Route

The main deficiency of I-24 within the project limits is an insufficient capacity to meet demand of the vehicular volume. With just two (2) travel lanes in each direction, vehicles become congested and drivers become impatient. This often leads to sideswipes and rear-end collisions (as indicated by the crash data) as drivers begin following much closer and making more maneuvers to get through traffic.

4.0 Preliminary Purpose and Need

The need for improvements along I-24 is due to the high volumes of traffic and the inability of the route to handle the current and projected traffic volumes. The current deficiencies that need to be addressed include an insufficient number of lanes on I-24 leading to congested conditions.

The purpose of this project is to ease congestion, improve mobility, and increase capacity along this section of I-24. Widening I-24 to include an additional lane in each travel direction will lead to an improved operation (Level of Service) throughout the corridor and increased mobility along the route.

5.0 Proposed Conceptual Alternatives

After evaluating the safety, operational, and geometric conditions on the existing route within the study limits, two (2) conceptual alternatives were considered to address the deficiencies: No Build alternative and Build Alternative.

The No Build Alternative denotes that only routine maintenance would be made to the existing corridor. No improvements or substantial modifications would be made with the No Build Alternative.

The Build alternative adds one (1) travel lane in each direction to increase the total number of lanes to six (6) along this section of I-24. The proposed typical section will include three (3) twelve (12) foot travel lanes in each direction, twelve (12) foot inside shoulders and twelve (12) foot outside shoulders. From the Interstate 59 Interchange (L.M. 1.63) in Georgia to just east of the Browns Ferry Road interchange (approx. L.M. 4.70), the interstate will be widened towards the inside median, with guardrail and barrier/retaining walls as needed due to grade difference. The remainder of the route will widen mostly to the south with a median barrier and a retaining wall along the eastbound edge of outside shoulder. As per the direction of TDOT Structures and GDOT Structures, the Build alternative will replace six (6) sets of side by side bridges in Tennessee and widen two (2) sets of side by side bridges in Georgia.

Existing right-of-way (ROW) varies from approximately two hundred (200) feet to three hundred (300) feet wide and it appears that most of the improvements can be completed within existing ROW. A small portion (approx. 0.40 acres) of ROW will be required near the end of the project as it ties into I-124 (US-27).

In addition to the proposed roadway improvements in the build alternative, twelve (12) structures in the Tennessee section will be replaced and two (2) structures in the Georgia section will be widened. TDOT Structures and TDOT Environmental have requested that the replacement of the structures over Lookout Creek and Chattanooga Creek attempt to minimize impacts to the streams. If possible, existing piers and abutments should be re-used/modified to keep construction out of the stream. Any culverts, or other concrete structures under I-24 that are impacted by the widening will be extended or replaced. The existing Box Culvert / Access Road (L.M. 1.27 in Tennessee) that connects areas of the quarry split by

the interstate will need to be evaluated by TDOT Structures to determine if it needs modification or upgrading due to the additional loading.

Approximately five (5) ITS poles located in the median and two (2) Dynamic Message Signs (DMS) will need to be replaced/relocated. Railroad coordination will be necessary to ensure that impacts to railroad operations are minimized and access during construction is available as needed. Design Exceptions for limited stopping sight distance due to proposed median barrier on the inside of horizontal curves may be required in the proposed build alternative.

Because the available topographic information is limited at this phase and the desire is to remain within existing ROW, some of the proposed design elements (shoulder width, guardrail location, retaining walls, etc…) could be revised as part of the NEPA/Design phase when a more detailed field survey is available.

5.1 Proposed Alternative Layouts

The following pages show the conceptual design of the proposed Build alternative. Layouts were not developed for No Build alternative as there are no proposed improvements. The conceptual design layouts are followed by the Environmental Technical Study Area figures.

Index Of Sheets

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING

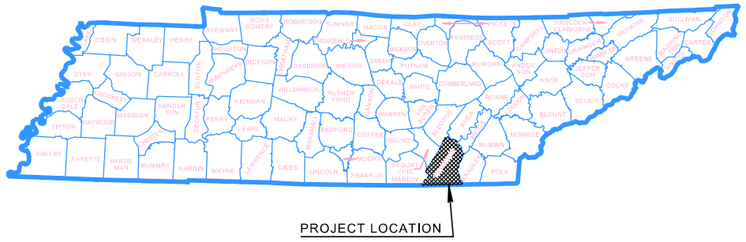
TENN.	YEAR	SHEET NO.
	2018	1
FED. AID PROJ. NO.		
STATE PROJ. NO.	33002-0175-04	

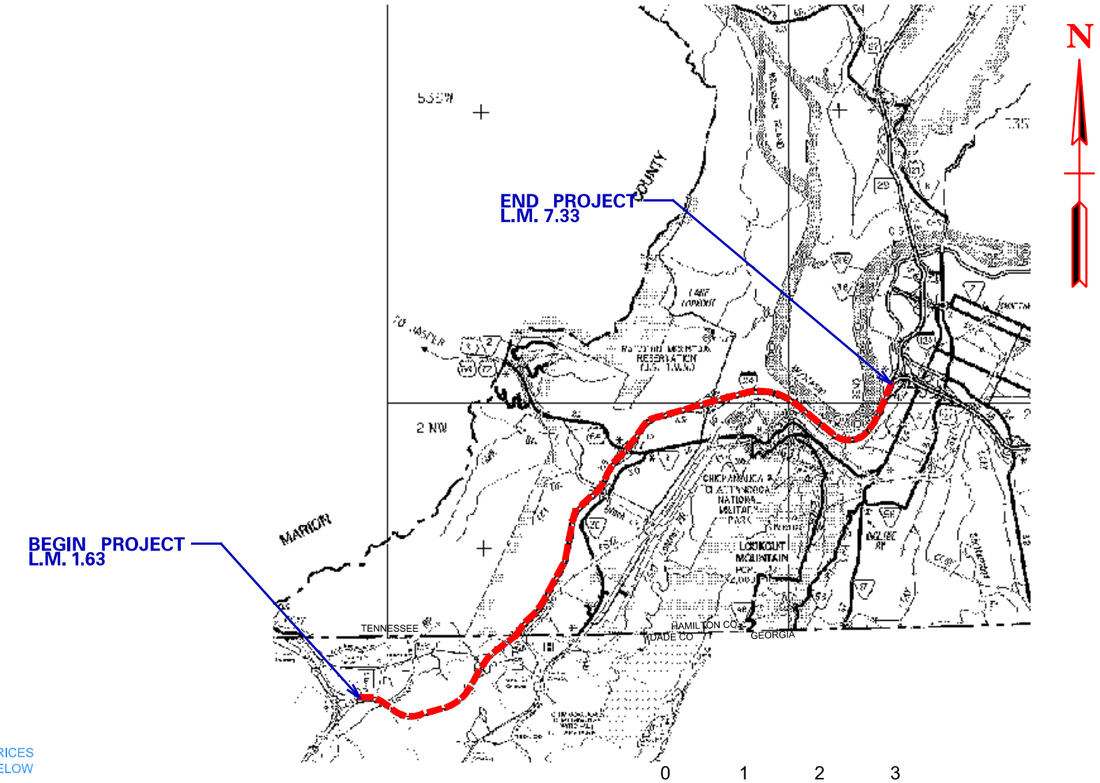
HAMILTON COUNTY

INTERSTATE 24 FROM I-59 TO I-124
L.M. 1.63(GA) TO L.M. 7.33(TN)
DADE COUNTY, GEORGIA &
HAMILTON COUNTY, TENNESSEE

TECHNICAL REPORT

STATE HIGHWAY NO. F.A.H.S. NO.





SCALE: 1"= 1 MILE

PROJECT LENGTH 9.80 MILES

SPECIAL NOTES

PROPOSALS MAY BE REJECTED BY THE COMMISSIONER IF ANY OF THE UNIT PRICES CONTAINED THEREIN ARE OBVIOUSLY UNBALANCED, EITHER EXCESSIVE OR BELOW THE REASONABLE COST ANALYSIS VALUE.

THIS PROJECT TO BE CONSTRUCTED UNDER THE STANDARD SPECIFICATIONS OF THE TENNESSEE DEPARTMENT OF TRANSPORTATION DATED JANUARY 1, 2015 AND ADDITIONAL SPECIFICATIONS AND SPECIAL PROVISIONS CONTAINED IN THE PLANS AND IN THE PROPOSAL CONTRACT.

TDOT PROJECT MANAGER : SHAUN ARMSTRONG

DESIGNED BY : ALFRED BENESCH & COMPANY

DESIGNER : BRIAN N. GAFFNEY, P.E.

P.E. NO. 33002-0175-04

PIN NO. 124072.00

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED:

DIVISION ADMINISTRATOR DATE

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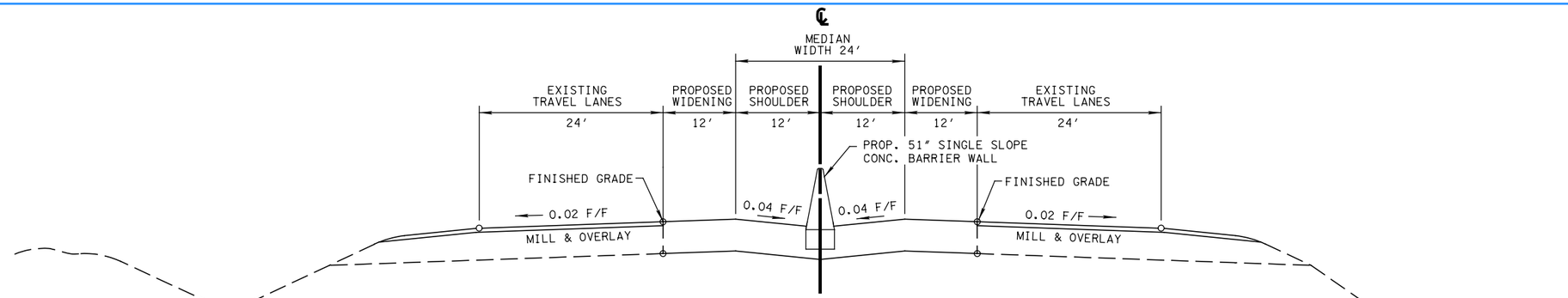
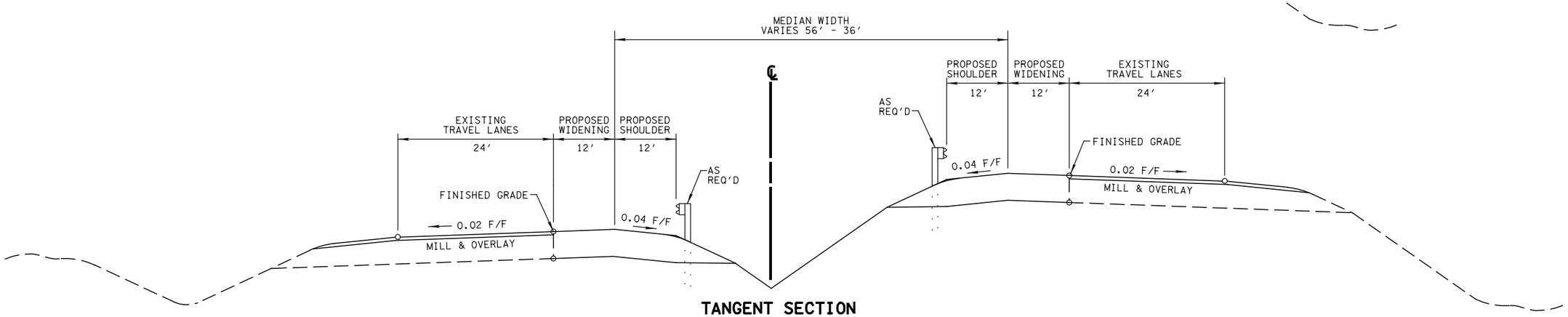
TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TECHNICAL REPORT	2018	DADE(GA) & HAMILTON(TN)	2



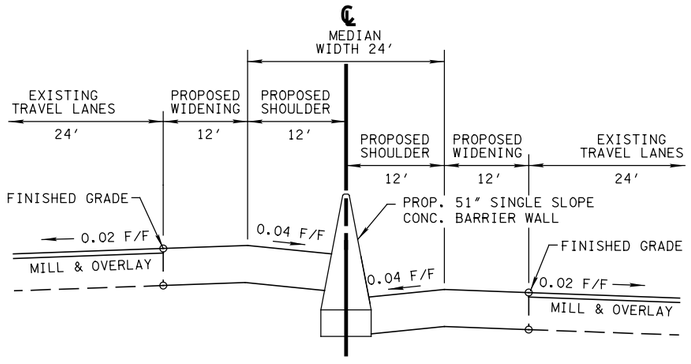
TANGENT SECTION

L.M. 4.73 TO L.M 5.39 TN
L.M. 6.87 TO L.M 7.33 TN



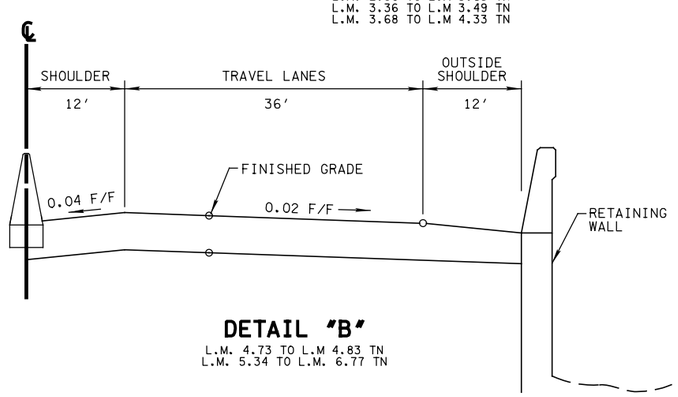
TANGENT SECTION

L.M. 1.63 TO L.M 4.10 GA
L.M. 0.00 TO L.M 1.71 TN
L.M. 1.94 TO L.M 2.32 TN
L.M. 2.90 TO L.M 3.15 TN
L.M. 3.36 TO L.M 3.49 TN
L.M. 3.68 TO L.M 4.33 TN



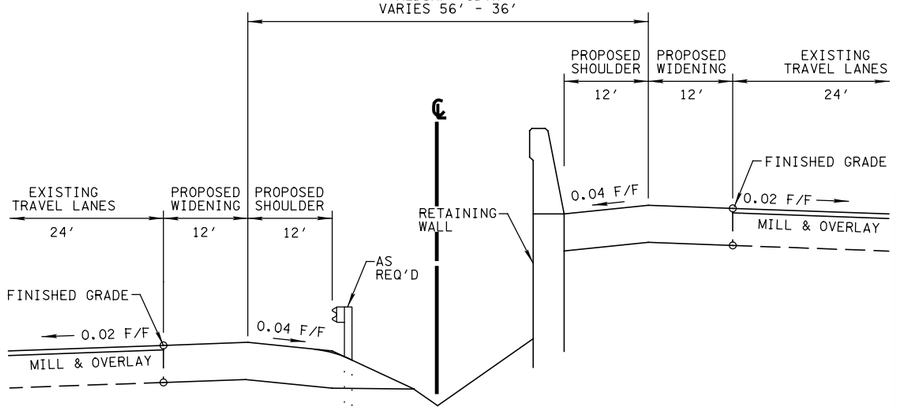
DETAIL "A"

L.M. 5.40 TO L.M 6.86 TN



DETAIL "B"

L.M. 4.73 TO L.M 4.83 TN
L.M. 5.34 TO L.M. 6.77 TN



DETAIL "C"

L.M. 1.72 TO L.M 1.93 TN
L.M. 2.33 TO L.M. 2.89 TN
L.M. 3.16 TO L.M. 3.35 TN
L.M. 3.50 TO L.M. 3.67 TN
L.M. 4.34 TO L.M. 4.73 TN

0′ 200′ 400′ 600′

TECHNICAL REPORT

INTERSTATE 24
L.M. 1.63(GA) to L.M. 7.33(TN)
DADE CO.(GA) & HAMILTON CO.(TN)

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION

TYPICAL SECTIONS

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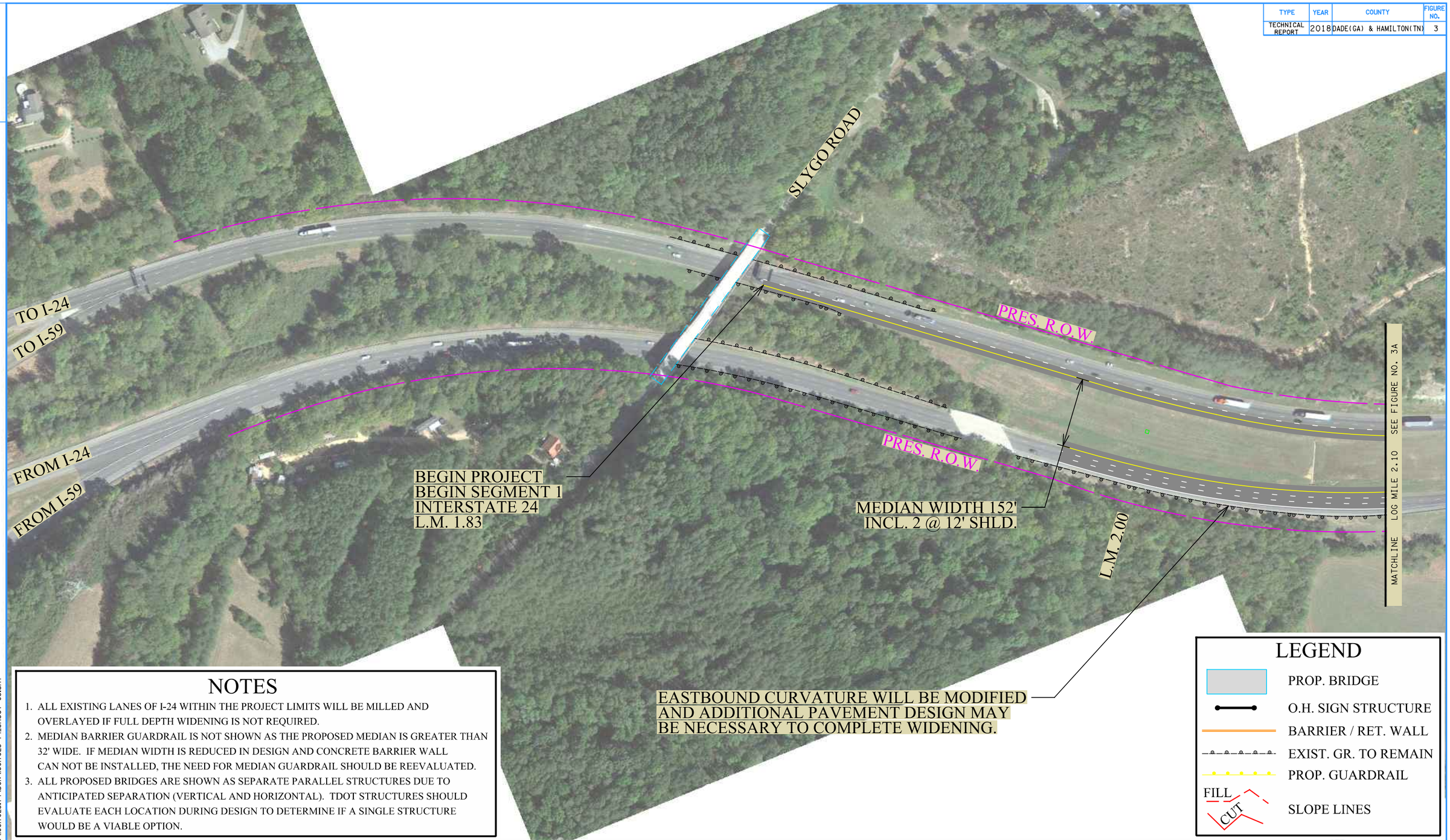
TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TECHNICAL REPORT	2018	DADE(GA) & HAMILTON(TN)	3



NOTES

1. ALL EXISTING LANES OF I-24 WITHIN THE PROJECT LIMITS WILL BE MILLED AND OVERLAYED IF FULL DEPTH WIDENING IS NOT REQUIRED.
2. MEDIAN BARRIER GUARDRAIL IS NOT SHOWN AS THE PROPOSED MEDIAN IS GREATER THAN 32' WIDE. IF MEDIAN WIDTH IS REDUCED IN DESIGN AND CONCRETE BARRIER WALL CAN NOT BE INSTALLED, THE NEED FOR MEDIAN GUARDRAIL SHOULD BE REEVALUATED.
3. ALL PROPOSED BRIDGES ARE SHOWN AS SEPARATE PARALLEL STRUCTURES DUE TO ANTICIPATED SEPARATION (VERTICAL AND HORIZONTAL). TDOT STRUCTURES SHOULD EVALUATE EACH LOCATION DURING DESIGN TO DETERMINE IF A SINGLE STRUCTURE WOULD BE A VIABLE OPTION.

LEGEND

- PROP. BRIDGE
- O.H. SIGN STRUCTURE
- BARRIER / RET. WALL
- EXIST. GR. TO REMAIN
- PROP. GUARDRAIL
- FILL / CUT — SLOPE LINES

0' 200' 400' 600'

N

TECHNICAL REPORT

INTERSTATE 24
L.M. 1.63(GA) to L.M. 7.33(TN)
DADE CO.(GA) & HAMILTON CO.(TN)

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION
INVESTMENTS DIVISION

FIGURE 3
I-24
L.M. 1.63 to
L.M. 2.10

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TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TECHNICAL REPORT	2018	DADE(GA) & HAMILTON(TN)	3A

MATCHLINE LOG MILE 2.10 SEE FIGURE NO. 3

REPLACE O.H. SIGN STRUCTURE

PRES. R.O.W.

INTERSTATE 24

PRES. R.O.W.

MEDIAN WIDTH 40'
INCL. 2 @ 12' SHLD.

L.M. 2.50

MATCHLINE LOG MILE 2.60 SEE FIGURE NO. 3B

EASTBOUND CURVATURE WILL BE MODIFIED AND ADDITIONAL PAVEMENT DESIGN MAY BE NECESSARY TO COMPLETE WIDENING.

NOTES

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LEGEND

- PROP. BRIDGE
- O.H. SIGN STRUCTURE
- BARRIER / RET. WALL
- EXIST. GR. TO REMAIN
- PROP. GUARDRAIL
- FILL / CUT — SLOPE LINES

0′ 200′ 400′ 600′

N

TECHNICAL REPORT

INTERSTATE 24
L.M. 1.63(GA) to L.M. 7.33(TN)
DADE CO.(GA) & HAMILTON CO.(TN)

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION

FIGURE 3A
I-24
L.M. 2.10 to L.M. 2.60

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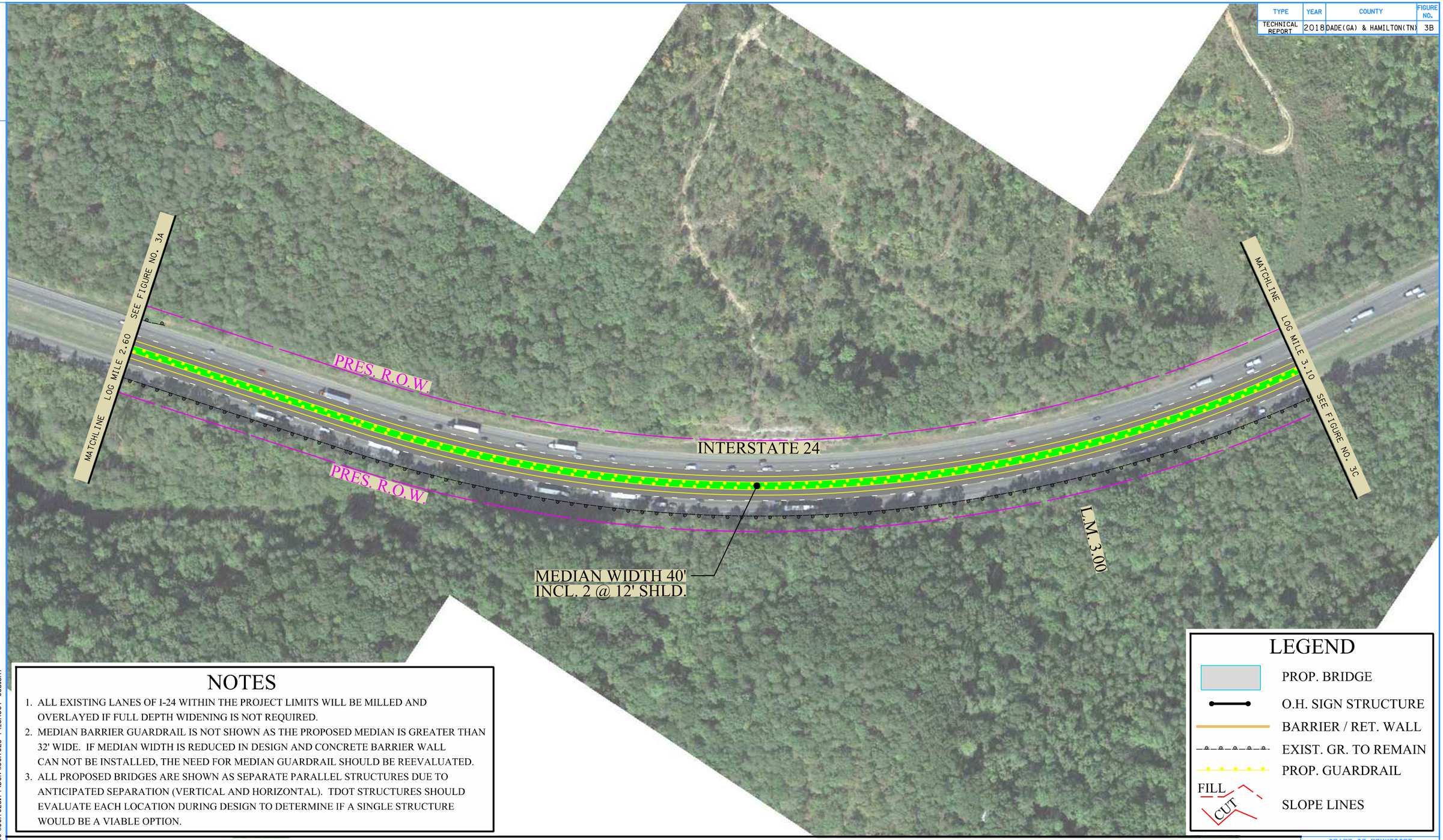
TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TECHNICAL REPORT	2018	DADE(GA) & HAMILTON(TN)	3B



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LEGEND

- PROP. BRIDGE
- O.H. SIGN STRUCTURE
- BARRIER / RET. WALL
- EXIST. GR. TO REMAIN
- PROP. GUARDRAIL
- FILL / CUT — SLOPE LINES

0′ 200′ 400′ 600′

N

TECHNICAL REPORT

INTERSTATE 24
L.M. 1.63(GA) to L.M. 7.33(TN)
DADE CO.(GA) & HAMILTON CO.(TN)

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION

FIGURE 3B
I-24
L.M. 2.60 to L.M. 3.10

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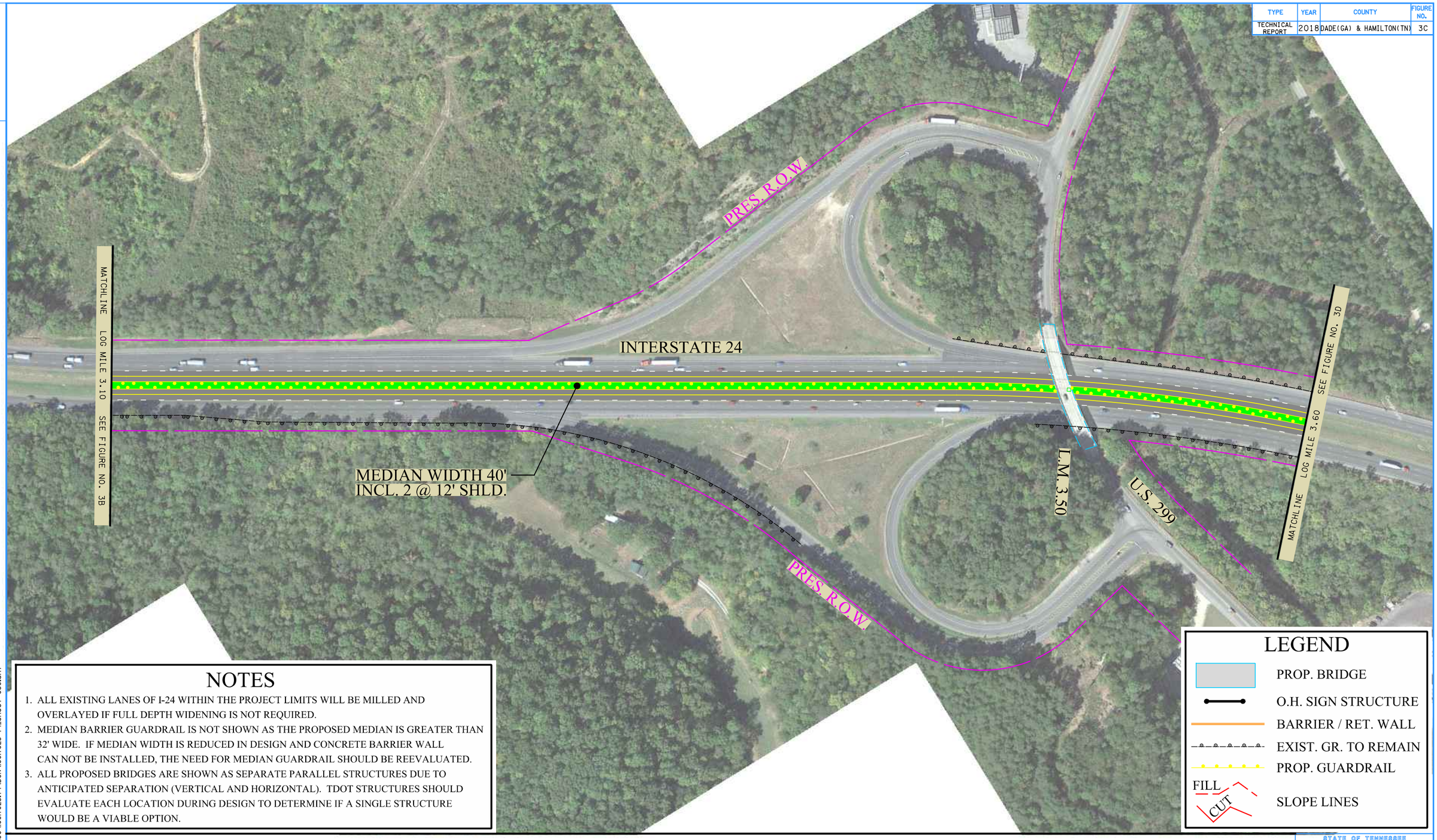
TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TECHNICAL REPORT	2018	DADE(GA) & HAMILTON(TN)	3C



NOTES

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LEGEND

- PROP. BRIDGE
- O.H. SIGN STRUCTURE
- BARRIER / RET. WALL
- EXIST. GR. TO REMAIN
- PROP. GUARDRAIL
- FILL / CUT — SLOPE LINES

0′ 200′ 400′ 600′

N

TECHNICAL REPORT

INTERSTATE 24
L.M. 1.63(GA) to L.M. 7.33(TN)
DADE CO.(GA) & HAMILTON CO.(TN)

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION
INVESTMENTS DIVISION

FIGURE 3C
I-24
L.M. 3.10 to
L.M. 3.60

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TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TECHNICAL REPORT	2018	DADE(GA) & HAMILTON(TN)	3D

CSX TRANSPORTATION

L.M. 4.00

TENNESSEE
GEORGIA

PRES. R.O.W.

INTERSTATE 24

PRES. R.O.W.

MATCHLINE LOG MILE 3.60 SEE FIGURE NO. 3C

SEE FIGURE NO. 3E MATCHLINE LOG MILE 4.10(GA) LOG MILE 0.00(TN)

MEDIAN WIDTH 40'
INCL. 2 @ 12' SHLD.

END SEGMENT 1
BEGIN SEGMENT 2
TENNESSEE (L.M. 0.00) /
GEORGIA (L.M. 4.10)
STATE LINE

NOTES

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LEGEND

- PROP. BRIDGE
- O.H. SIGN STRUCTURE
- BARRIER / RET. WALL
- EXIST. GR. TO REMAIN
- PROP. GUARDRAIL
- FILL / CUT — SLOPE LINES

0′ 200′ 400′ 600′

N

TECHNICAL REPORT

INTERSTATE 24
L.M. 1.63(GA) to L.M. 7.33(TN)
DADE CO.(GA) & HAMILTON CO.(TN)

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION
INVESTMENTS DIVISION

FIGURE 3D
I-24
L.M. 3.60 to
L.M. 4.10

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TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TECHNICAL REPORT	2018	DADE(GA) & HAMILTON(TN)	3E

END SEGMENT 1
BEGIN SEGMENT 2
TENNESSEE (L.M. 0.00) /
GEORGIA (L.M. 4.10)
STATE LINE

PRES. R.O.W.

MATCHLINE
LOG MILE 0.00(TN)
LOG MILE 4.10(GA)
SEE FIGURE NO. 3D

INTERSTATE 24

TENNESSEE
GEORGIA

CSX TRANSPORTATION

PRES. R.O.W.

SEE DETAIL "C"

MEDIAN WIDTH 56'
INCL. 2 @ 12' SHLD.

MATCHLINE
LOG MILE 0.50
SEE FIGURE NO. 4

NOTES

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LEGEND

- PROP. BRIDGE
- O.H. SIGN STRUCTURE
- BARRIER / RET. WALL
- EXIST. GR. TO REMAIN
- PROP. GUARDRAIL
- FILL / CUT — SLOPE LINES

0′ 200′ 400′ 600′

N

TECHNICAL REPORT

INTERSTATE 24
L.M. 1.63(GA) to L.M. 7.33(TN)
DADE CO.(GA) & HAMILTON CO.(TN)

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION
INVESTMENTS DIVISION

FIGURE 3E
I-24
L.M. 0.00 to
L.M. 0.50

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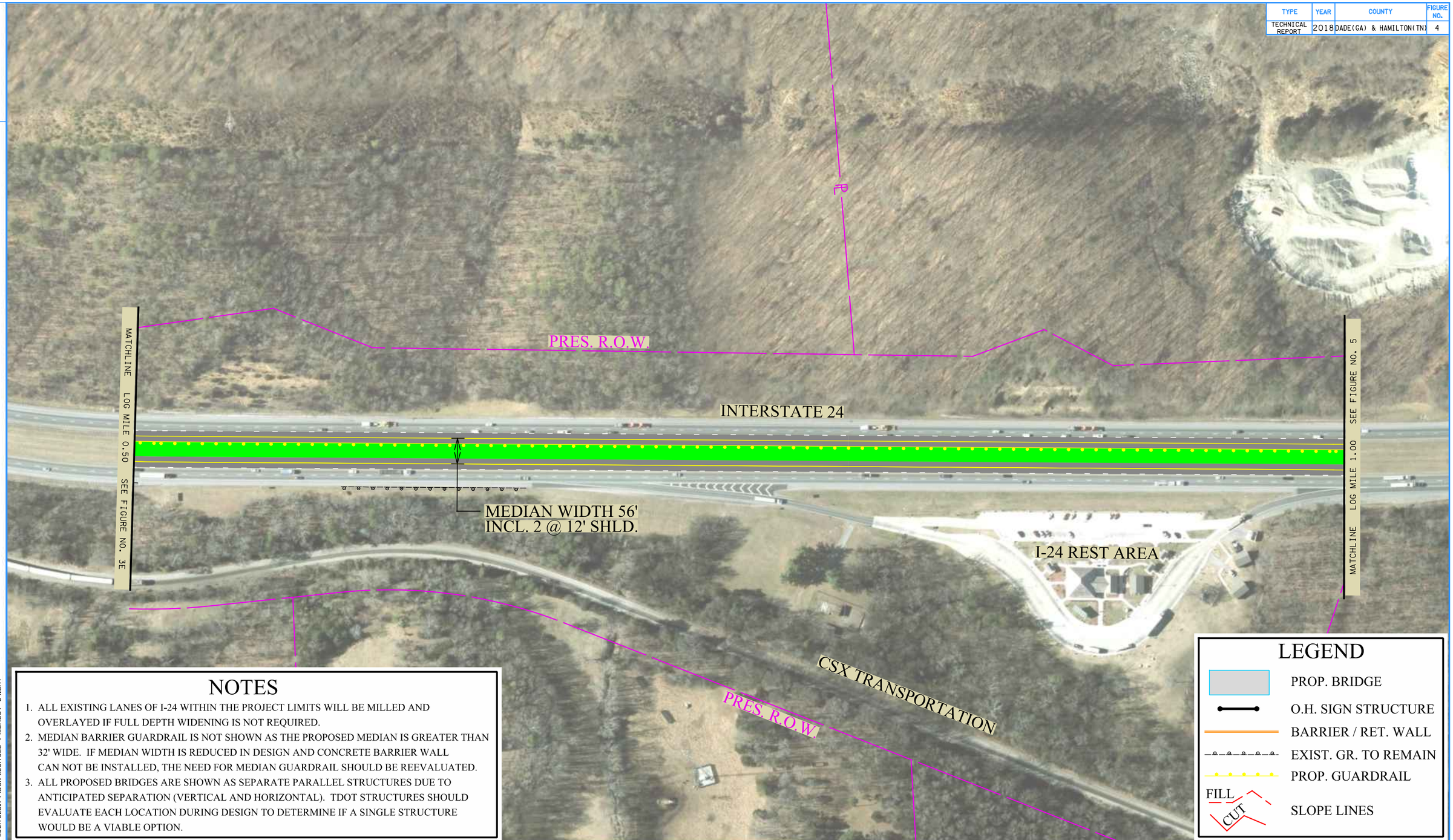
TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TECHNICAL REPORT	2018	DADE(GA) & HAMILTON(TN)	4



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LEGEND

- PROP. BRIDGE
- O.H. SIGN STRUCTURE
- BARRIER / RET. WALL
- EXIST. GR. TO REMAIN
- PROP. GUARDRAIL
- FILL / CUT — SLOPE LINES

0' 200' 400' 600'

N

TECHNICAL REPORT

INTERSTATE 24
L.M. 1.63(GA) to L.M. 7.33(TN)
DADE CO.(GA) & HAMILTON CO.(TN)

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION

FIGURE 4
I-24
L.M. 0.50 to
L.M. 1.00

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TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TECHNICAL REPORT	2018	DADE(GA) & HAMILTON(TN)	5

EXISTING BOX CULVERT / MACHINE PASS
(TO BE EVALUATED BY TDOT STRUCTURES
FOR REPLACEMENT/MODIFICATIONS)

INTERSTATE 24

MEDIAN WIDTH 56'
INCL. 2 @ 12' SHLD.

PRES. R.O.W.

PRES. R.O.W.

PRES. R.O.W.

PRES. R.O.W.

MATCHLINE LOG MILE 1.00 SEE FIGURE NO. 4

MATCHLINE LOG MILE 1.50 SEE FIGURE NO. 6

NOTES

1. ALL EXISTING LANES OF I-24 WITHIN THE PROJECT LIMITS WILL BE MILLED AND OVERLAYED IF FULL DEPTH WIDENING IS NOT REQUIRED.
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3. ALL PROPOSED BRIDGES ARE SHOWN AS SEPARATE PARALLEL STRUCTURES DUE TO ANTICIPATED SEPARATION (VERTICAL AND HORIZONTAL). TDOT STRUCTURES SHOULD EVALUATE EACH LOCATION DURING DESIGN TO DETERMINE IF A SINGLE STRUCTURE WOULD BE A VIABLE OPTION.

LEGEND

- PROP. BRIDGE
- O.H. SIGN STRUCTURE
- BARRIER / RET. WALL
- EXIST. GR. TO REMAIN
- PROP. GUARDRAIL
- FILL / CUT — SLOPE LINES

0′ 200′ 400′ 600′

N

TECHNICAL REPORT

INTERSTATE 24
L.M. 1.63(GA) to L.M. 7.33(TN)
DADE CO.(GA) & HAMILTON CO.(TN)

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION
INVESTMENTS DIVISION

FIGURE 5
I-24
L.M. 1.00 to
L.M. 1.50

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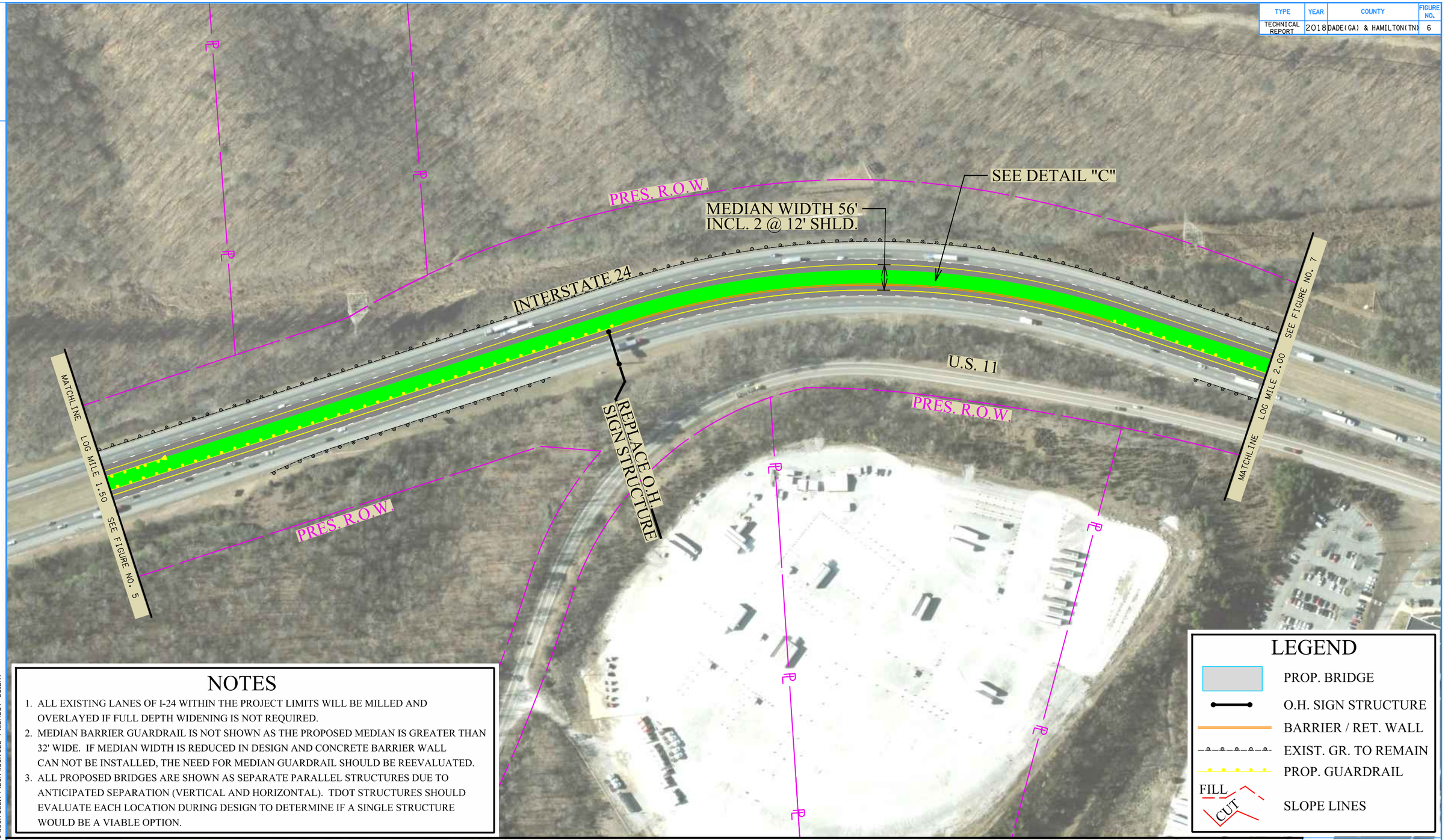
TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TECHNICAL REPORT	2018	DADE(GA) & HAMILTON(TN)	6



NOTES

1. ALL EXISTING LANES OF I-24 WITHIN THE PROJECT LIMITS WILL BE MILLED AND OVERLAYED IF FULL DEPTH WIDENING IS NOT REQUIRED.
2. MEDIAN BARRIER GUARDRAIL IS NOT SHOWN AS THE PROPOSED MEDIAN IS GREATER THAN 32' WIDE. IF MEDIAN WIDTH IS REDUCED IN DESIGN AND CONCRETE BARRIER WALL CAN NOT BE INSTALLED, THE NEED FOR MEDIAN GUARDRAIL SHOULD BE REEVALUATED.
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LEGEND

- PROP. BRIDGE
- O.H. SIGN STRUCTURE
- BARRIER / RET. WALL
- EXIST. GR. TO REMAIN
- PROP. GUARDRAIL
- FILL / CUT — SLOPE LINES

0′ 200′ 400′ 600′

N

TECHNICAL REPORT

INTERSTATE 24
L.M. 1.63(GA) to L.M. 7.33(TN)
DADE CO.(GA) & HAMILTON CO.(TN)

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION
INVESTMENTS DIVISION

FIGURE 6
I-24
L.M. 1.50 to
L.M. 2.00

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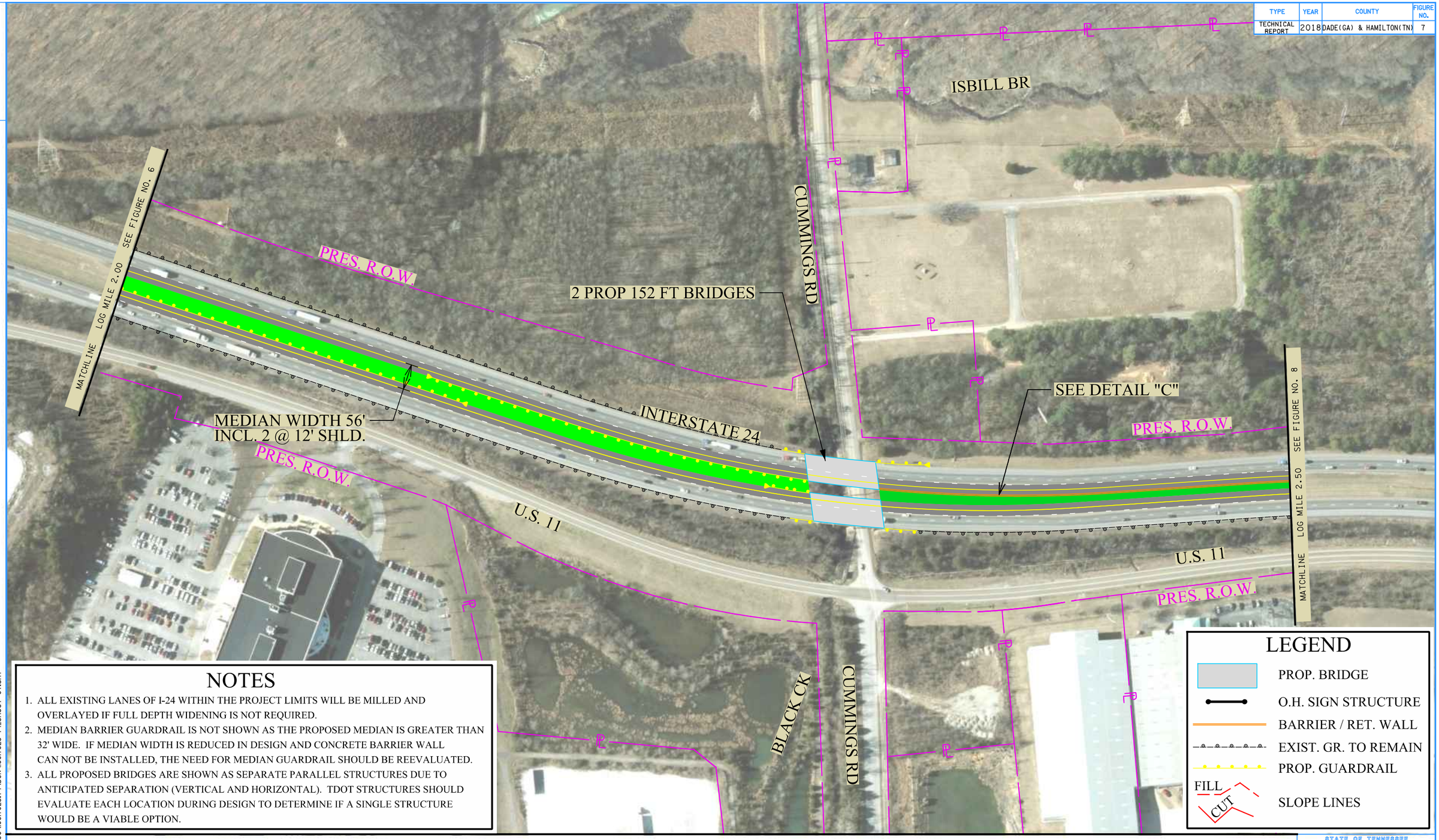
TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TECHNICAL REPORT	2018	DADE(GA) & HAMILTON(TN)	7



NOTES

1. ALL EXISTING LANES OF I-24 WITHIN THE PROJECT LIMITS WILL BE MILLED AND OVERLAYED IF FULL DEPTH WIDENING IS NOT REQUIRED.
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LEGEND

- PROP. BRIDGE
- O.H. SIGN STRUCTURE
- BARRIER / RET. WALL
- EXIST. GR. TO REMAIN
- PROP. GUARDRAIL
- FILL / CUT — SLOPE LINES

0′ 200′ 400′ 600′

N

TECHNICAL REPORT

INTERSTATE 24
L.M. 1.63(GA) to L.M. 7.33(TN)
DADE CO.(GA) & HAMILTON CO.(TN)

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION
INVESTMENTS DIVISION

FIGURE 7
I-24
L.M. 2.00 to
L.M. 2.50

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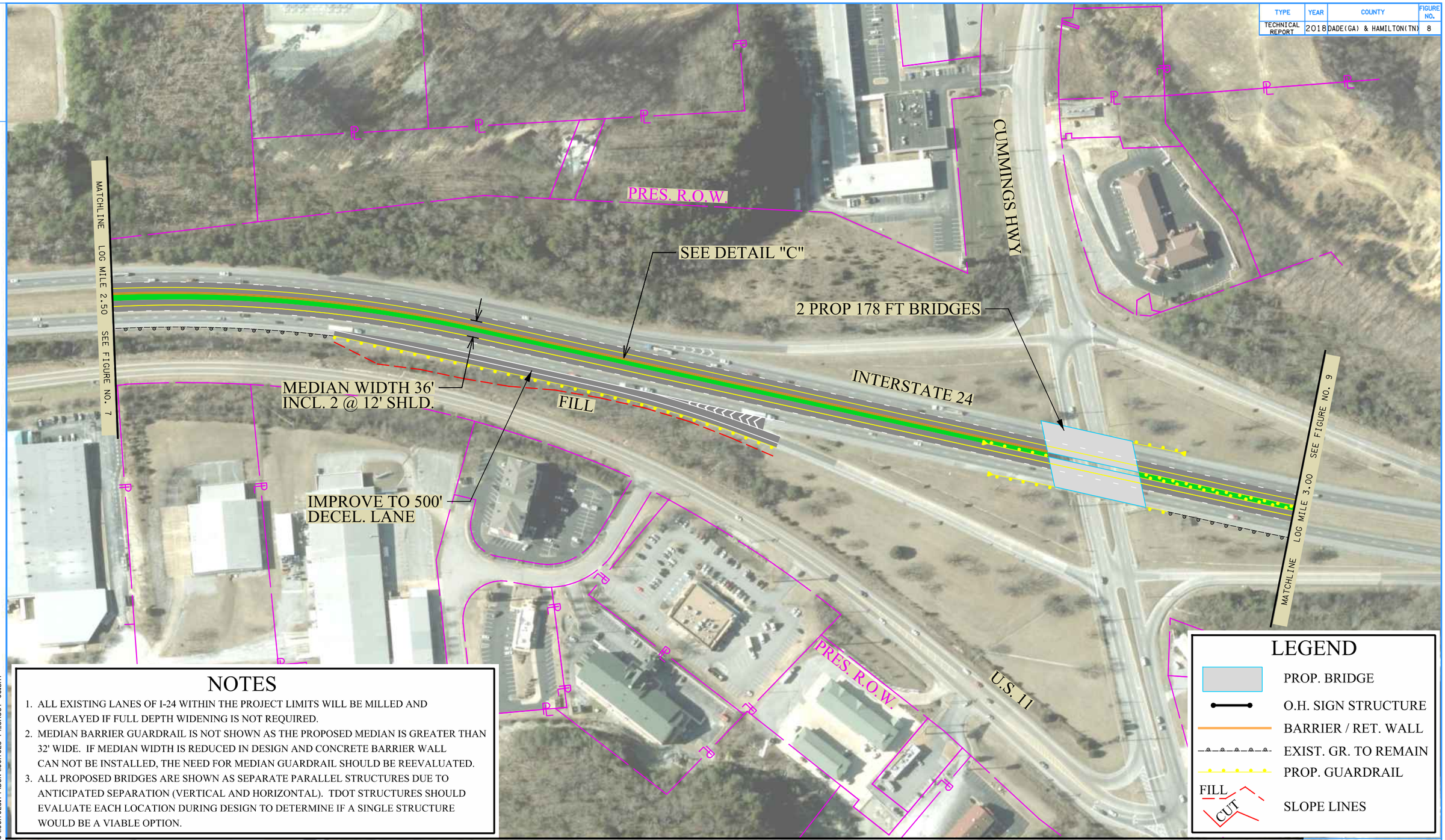
TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TECHNICAL REPORT	2018	DADE(GA) & HAMILTON(TN)	8



NOTES

1. ALL EXISTING LANES OF I-24 WITHIN THE PROJECT LIMITS WILL BE MILLED AND OVERLAYED IF FULL DEPTH WIDENING IS NOT REQUIRED.
2. MEDIAN BARRIER GUARDRAIL IS NOT SHOWN AS THE PROPOSED MEDIAN IS GREATER THAN 32' WIDE. IF MEDIAN WIDTH IS REDUCED IN DESIGN AND CONCRETE BARRIER WALL CAN NOT BE INSTALLED, THE NEED FOR MEDIAN GUARDRAIL SHOULD BE REEVALUATED.
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LEGEND

- PROP. BRIDGE
- O.H. SIGN STRUCTURE
- BARRIER / RET. WALL
- EXIST. GR. TO REMAIN
- PROP. GUARDRAIL
- FILL / CUT — SLOPE LINES

0′ 200′ 400′ 600′

N

TECHNICAL REPORT

INTERSTATE 24
L.M. 1.63(GA) to L.M. 7.33(TN)
DADE CO.(GA) & HAMILTON CO.(TN)

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION
INVESTMENTS DIVISION

FIGURE 8
I-24
L.M. 2.50 to
L.M. 3.00

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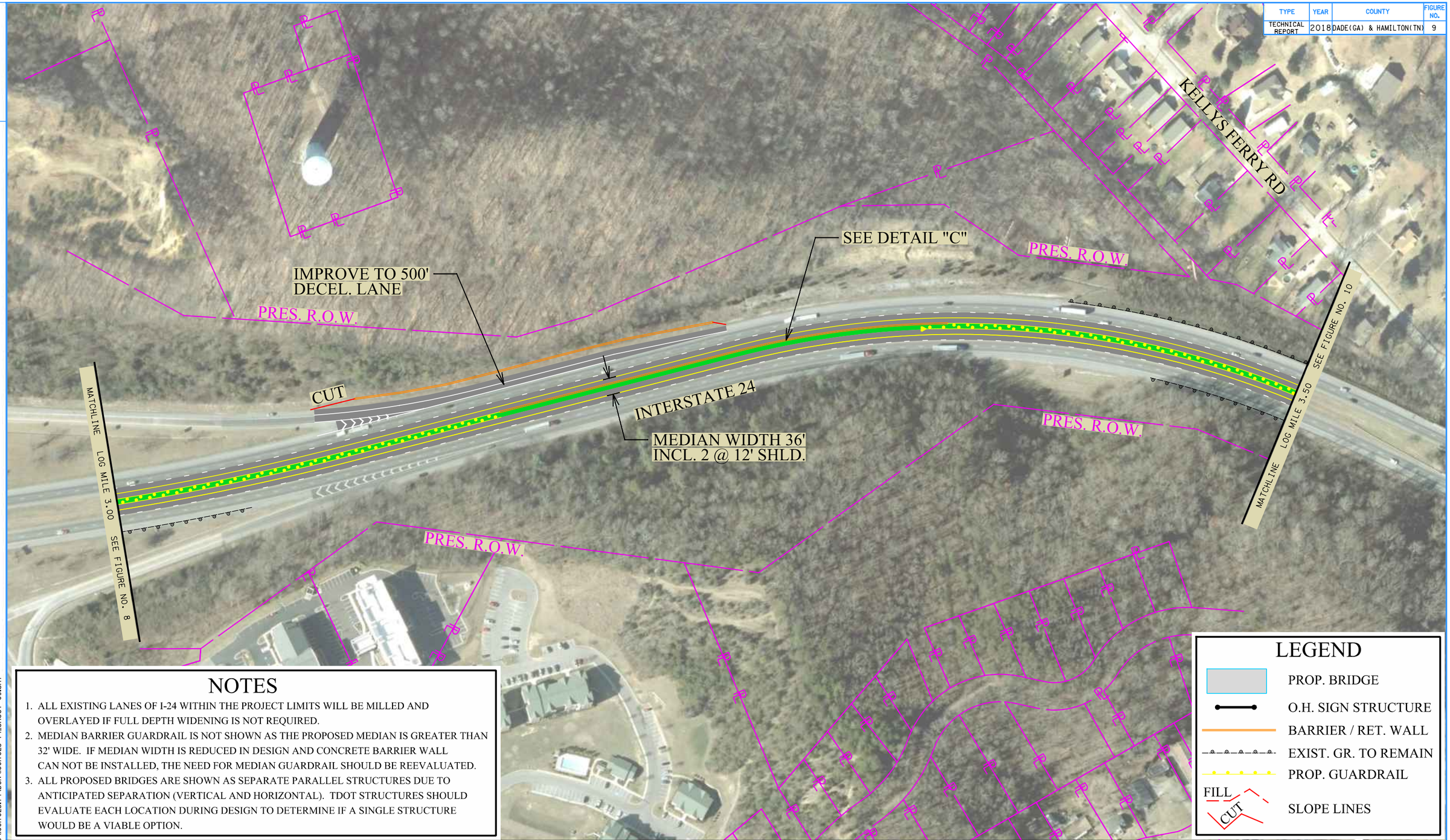
TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TECHNICAL REPORT	2018	DADE(GA) & HAMILTON(TN)	9



NOTES

1. ALL EXISTING LANES OF I-24 WITHIN THE PROJECT LIMITS WILL BE MILLED AND OVERLAYED IF FULL DEPTH WIDENING IS NOT REQUIRED.
2. MEDIAN BARRIER GUARDRAIL IS NOT SHOWN AS THE PROPOSED MEDIAN IS GREATER THAN 32' WIDE. IF MEDIAN WIDTH IS REDUCED IN DESIGN AND CONCRETE BARRIER WALL CAN NOT BE INSTALLED, THE NEED FOR MEDIAN GUARDRAIL SHOULD BE REEVALUATED.
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LEGEND

- PROP. BRIDGE
- O.H. SIGN STRUCTURE
- BARRIER / RET. WALL
- EXIST. GR. TO REMAIN
- PROP. GUARDRAIL
- FILL / CUT — SLOPE LINES

0′ 200′ 400′ 600′

N

TECHNICAL REPORT

INTERSTATE 24
L.M. 1.63(GA) to L.M. 7.33(TN)
DADE CO.(GA) & HAMILTON CO.(TN)

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION

FIGURE 9
I-24
L.M. 3.00 to L.M. 3.50

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TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TECHNICAL REPORT	2018	DADE(GA) & HAMILTON(TN)	10

ISBILL RD
2 PROP 116 FT BRIDGES
PARKER LN
PRES. R.O.W.
INTERSTATE 24
SEE DETAIL "C"
MEDIAN WIDTH 36'
INCL. 2 @ 12' SHLD.
FILL
CUT
PRES. R.O.W.
IMPROVE TO 500'
DECEL. LANE
KELLYS FERRY RD
MATCHLINE LOG MILE 3.50 SEE FIGURE NO. 9
MATCHLINE LOG MILE 4.00 SEE FIGURE NO. 11

NOTES

1. ALL EXISTING LANES OF I-24 WITHIN THE PROJECT LIMITS WILL BE MILLED AND OVERLAYED IF FULL DEPTH WIDENING IS NOT REQUIRED.
2. MEDIAN BARRIER GUARDRAIL IS NOT SHOWN AS THE PROPOSED MEDIAN IS GREATER THAN 32' WIDE. IF MEDIAN WIDTH IS REDUCED IN DESIGN AND CONCRETE BARRIER WALL CAN NOT BE INSTALLED, THE NEED FOR MEDIAN GUARDRAIL SHOULD BE REEVALUATED.
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LEGEND

- PROP. BRIDGE
- O.H. SIGN STRUCTURE
- BARRIER / RET. WALL
- EXIST. GR. TO REMAIN
- PROP. GUARDRAIL
- SLOPE LINES (FILL / CUT)

0′ 200′ 400′ 600′

N

TECHNICAL REPORT

INTERSTATE 24
L.M. 1.63(GA) to L.M. 7.33(TN)
DADE CO.(GA) & HAMILTON CO.(TN)

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION

FIGURE 10
I-24
L.M. 3.50 to L.M. 4.00

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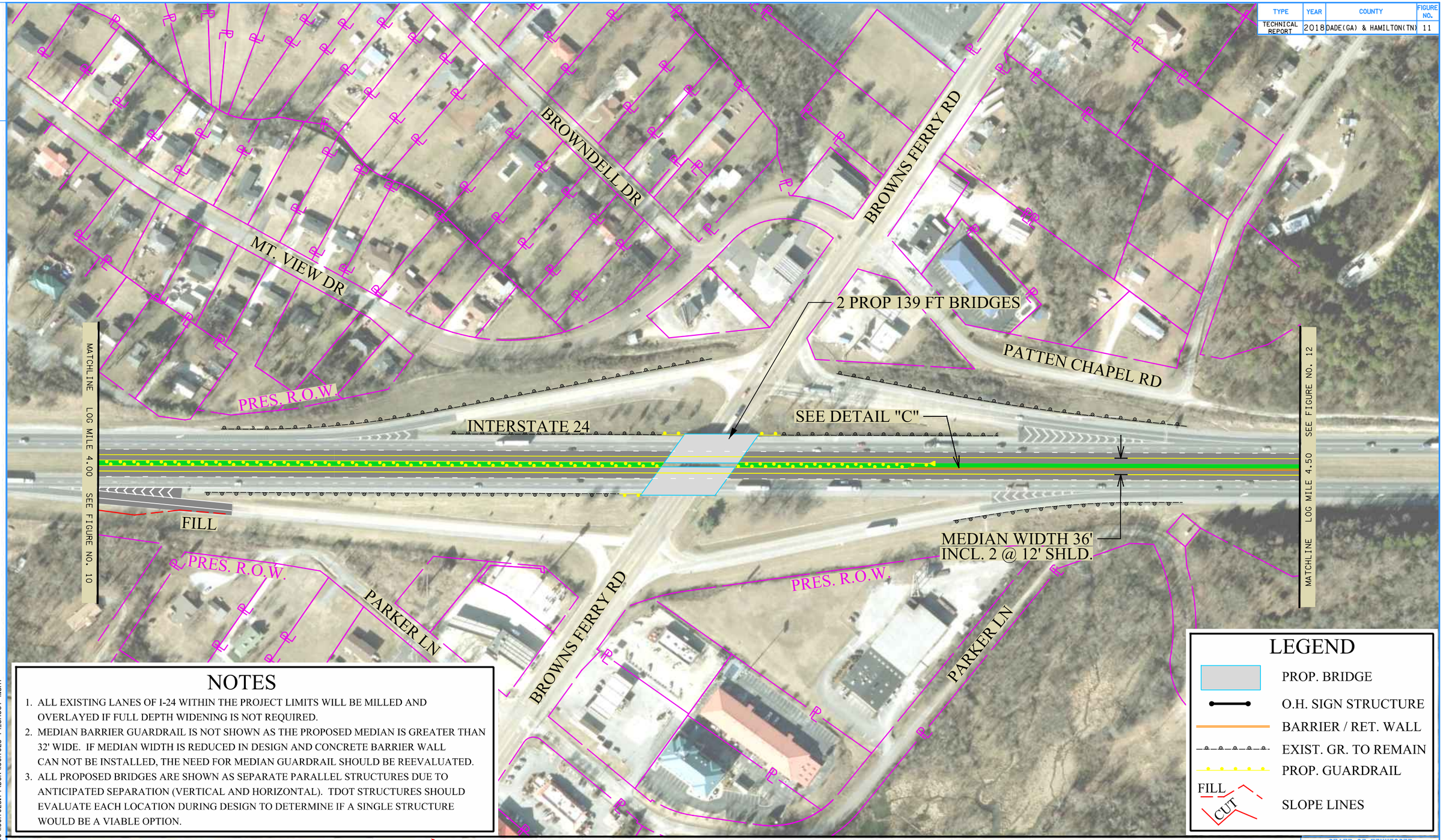
TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TECHNICAL REPORT	2018	DADE(GA) & HAMILTON(TN)	11



NOTES

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LEGEND

- PROP. BRIDGE
- O.H. SIGN STRUCTURE
- BARRIER / RET. WALL
- EXIST. GR. TO REMAIN
- PROP. GUARDRAIL
- FILL / CUT — SLOPE LINES

0′ 200′ 400′ 600′

N

TECHNICAL REPORT

INTERSTATE 24
L.M. 1.63(GA) to L.M. 7.33(TN)
DADE CO.(GA) & HAMILTON CO.(TN)

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION

FIGURE 11
I-24
L.M. 4.00 to L.M. 4.50

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TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TECHNICAL REPORT	2018	DADE(GA) & HAMILTON(TN)	12

END SEGMENT 2
BEGIN SEGMENT 3
RETAINING WALL
L.M. 4.73

MEDIAN WIDTH 24'
(2 @ 12' SHLD.)

INTERSTATE 24

SEE DETAIL "C"

SEE DETAIL "B"

FILL

PRES. R.O.W.

MATCHLINE LOG MILE 4.50 SEE FIGURE NO. 11

MATCHLINE LOG MILE 5.00 SEE FIGURE NO. 13

NORFOLK SOUTHERN RAILROAD

NOTES

1. ALL EXISTING LANES OF I-24 WITHIN THE PROJECT LIMITS WILL BE MILLED AND OVERLAYED IF FULL DEPTH WIDENING IS NOT REQUIRED.
2. MEDIAN BARRIER GUARDRAIL IS NOT SHOWN AS THE PROPOSED MEDIAN IS GREATER THAN 32' WIDE. IF MEDIAN WIDTH IS REDUCED IN DESIGN AND CONCRETE BARRIER WALL CAN NOT BE INSTALLED, THE NEED FOR MEDIAN GUARDRAIL SHOULD BE REEVALUATED.
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LEGEND

- PROP. BRIDGE
- O.H. SIGN STRUCTURE
- BARRIER / RET. WALL
- EXIST. GR. TO REMAIN
- PROP. GUARDRAIL
- FILL / CUT — SLOPE LINES

0′ 200′ 400′ 600′

N

TECHNICAL REPORT

INTERSTATE 24
L.M. 1.63(GA) to L.M. 7.33(TN)
DADE CO.(GA) & HAMILTON CO.(TN)

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION
INVESTMENTS DIVISION

FIGURE 12
I-24
L.M. 4.50 to
L.M. 5.00

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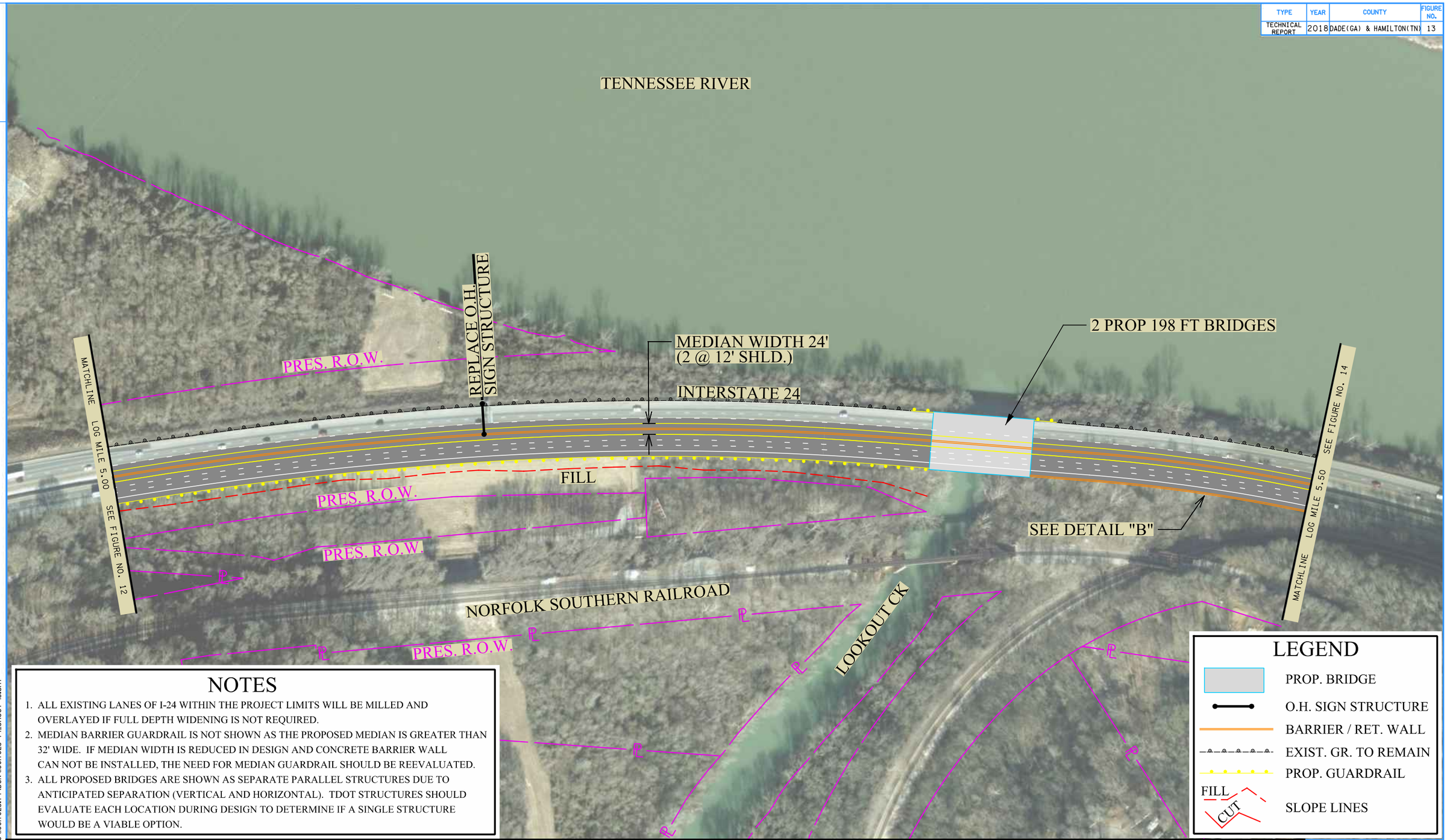
TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TECHNICAL REPORT	2018	DADE(GA) & HAMILTON(TN)	13



NOTES

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LEGEND

- PROP. BRIDGE
- O.H. SIGN STRUCTURE
- BARRIER / RET. WALL
- EXIST. GR. TO REMAIN
- PROP. GUARDRAIL
- FILL / CUT — SLOPE LINES

0′ 200′ 400′ 600′

N

TECHNICAL REPORT

INTERSTATE 24
L.M. 1.63(GA) to L.M. 7.33(TN)
DADE CO.(GA) & HAMILTON CO.(TN)

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION

FIGURE 13
I-24
L.M. 5.00 to L.M. 5.50

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TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TECHNICAL REPORT	2018	DADE(GA) & HAMILTON(TN)	14

TENNESSEE RIVER

MATCHLINE LOG MILE 5.50 SEE FIGURE NO. 13

SEE DETAIL "A"

MEDIAN WIDTH 24'
(2 @ 12' SHLD.)

INTERSTATE 24

CSX TRANSPORTATION

SEE DETAIL "B"

CUMMINGS HWY

REPLACE O.H. SIGN STRUCTURE

MATCHLINE LOG MILE 6.00 SEE FIGURE NO. 15

NOTES

1. ALL EXISTING LANES OF I-24 WITHIN THE PROJECT LIMITS WILL BE MILLED AND OVERLAYED IF FULL DEPTH WIDENING IS NOT REQUIRED.
2. MEDIAN BARRIER GUARDRAIL IS NOT SHOWN AS THE PROPOSED MEDIAN IS GREATER THAN 32' WIDE. IF MEDIAN WIDTH IS REDUCED IN DESIGN AND CONCRETE BARRIER WALL CAN NOT BE INSTALLED, THE NEED FOR MEDIAN GUARDRAIL SHOULD BE REEVALUATED.
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LEGEND

- PROP. BRIDGE
- O.H. SIGN STRUCTURE
- BARRIER / RET. WALL
- EXIST. GR. TO REMAIN
- PROP. GUARDRAIL
- FILL / CUT — SLOPE LINES

0′ 200′ 400′ 600′

N

TECHNICAL REPORT

INTERSTATE 24
L.M. 1.63(GA) to L.M. 7.33(TN)
DADE CO.(GA) & HAMILTON CO.(TN)

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION
INVESTMENTS DIVISION

FIGURE 14
I-24
L.M. 5.50 to
L.M. 6.00

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TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TECHNICAL REPORT	2018	DADE(GA) & HAMILTON(TN)	15

TENNESSEE RIVER

MATCHLINE LOG MILE 6.00 SEE FIGURE NO. 14

SEE DETAIL "A"

2 PROP 228 FT BRIDGES

MEDIAN WIDTH 24'
(2 @ 12' SHLD.)

INTERSTATE 24

SEE DETAIL "B"

CSX TRANSPORTATION

CHATTANOOGA CK

MATCHLINE LOG MILE 6.50 SEE FIGURE NO. 16

NOTES

1. ALL EXISTING LANES OF I-24 WITHIN THE PROJECT LIMITS WILL BE MILLED AND OVERLAYED IF FULL DEPTH WIDENING IS NOT REQUIRED.
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LEGEND

- PROP. BRIDGE
- O.H. SIGN STRUCTURE
- BARRIER / RET. WALL
- EXIST. GR. TO REMAIN
- PROP. GUARDRAIL
- FILL / CUT — SLOPE LINES

0′ 200′ 400′ 600′

N

TECHNICAL REPORT

INTERSTATE 24
L.M. 1.63(GA) to L.M. 7.33(TN)
DADE CO.(GA) & HAMILTON CO.(TN)

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION

FIGURE 15
I-24
L.M. 6.00 to L.M. 6.50

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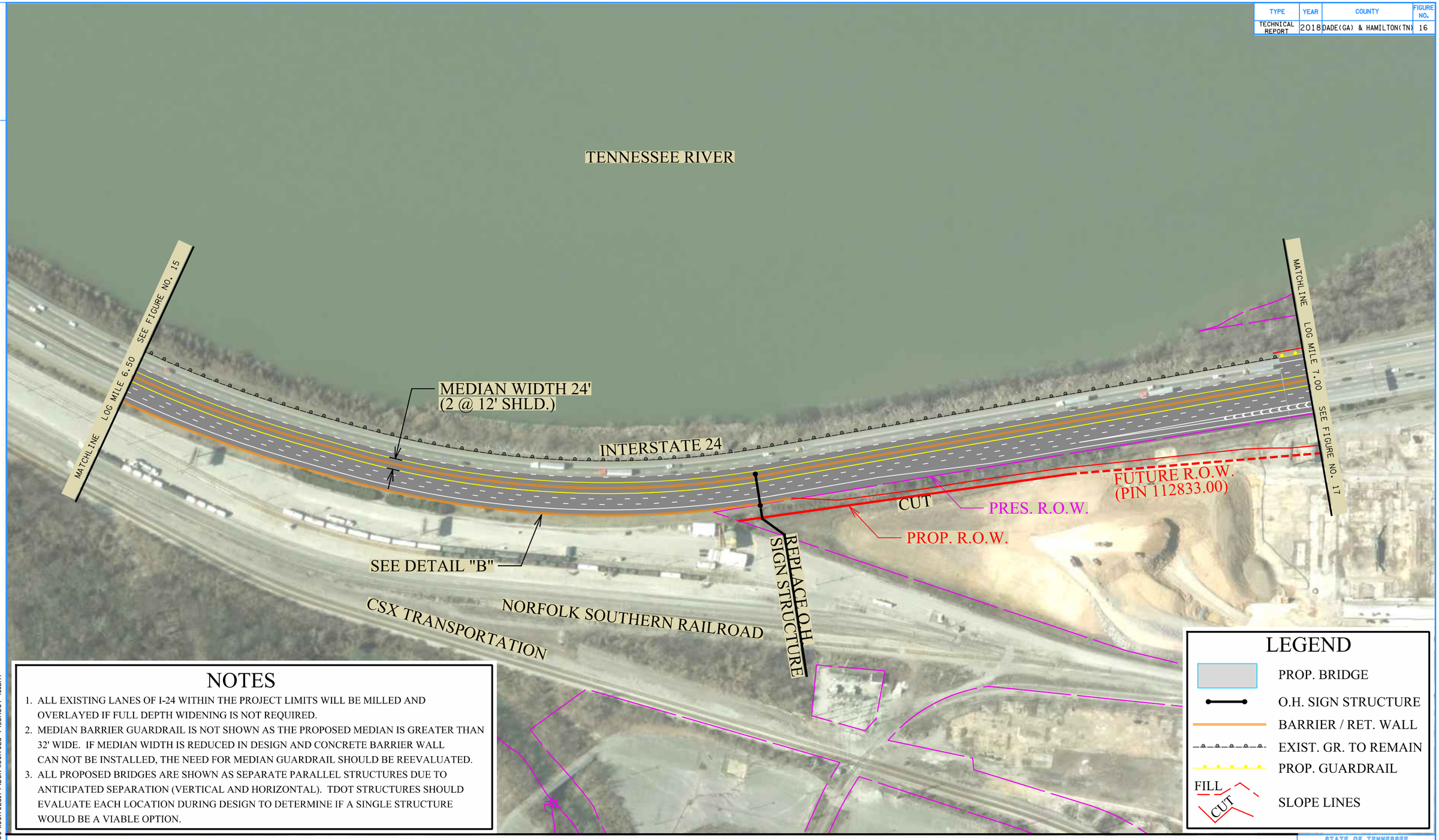
TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TECHNICAL REPORT	2018	DADE(GA) & HAMILTON(TN)	16



NOTES

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LEGEND

- PROP. BRIDGE
- O.H. SIGN STRUCTURE
- BARRIER / RET. WALL
- EXIST. GR. TO REMAIN
- PROP. GUARDRAIL
- FILL / CUT — SLOPE LINES

0′ 200′ 400′ 600′

N

TECHNICAL REPORT

INTERSTATE 24
L.M. 1.63(GA) to L.M. 7.33(TN)
DADE CO.(GA) & HAMILTON CO.(TN)

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION
INVESTMENTS DIVISION

FIGURE 16
I-24
L.M. 6.50 to
L.M. 7.00

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TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TECHNICAL REPORT	2018	DADE(GA) & HAMILTON(TN)	17

TENNESSEE RIVER

END PROJECT
END SEGMENT 3
L.M. 7.33

PRES. R.O.W.

CUT

INTERSTATE 24

CUT

PRES. R.O.W.

FROM U.S. 27
FROM DOWNTOWN
TO ATLANTA

TO DOWNTOWN

SEE FIGURE NO. 16

LOG MILE 7.00

MATCHLINE

REPLACE O.H. SIGN STRUCTURE

CUT

FUTURE R.O.W.
(PIN 112833.00)

PRES. R.O.W.

CUT

NORFOLK SOUTHERN RAILROAD

PRES. R.O.W.

NOTES

1. ALL EXISTING LANES OF I-24 WITHIN THE PROJECT LIMITS WILL BE MILLED AND OVERLAYED IF FULL DEPTH WIDENING IS NOT REQUIRED.
2. MEDIAN BARRIER GUARDRAIL IS NOT SHOWN AS THE PROPOSED MEDIAN IS GREATER THAN 32' WIDE. IF MEDIAN WIDTH IS REDUCED IN DESIGN AND CONCRETE BARRIER WALL CAN NOT BE INSTALLED, THE NEED FOR MEDIAN GUARDRAIL SHOULD BE REEVALUATED.
3. ALL PROPOSED BRIDGES ARE SHOWN AS SEPARATE PARALLEL STRUCTURES DUE TO ANTICIPATED SEPARATION (VERTICAL AND HORIZONTAL). TDOT STRUCTURES SHOULD EVALUATE EACH LOCATION DURING DESIGN TO DETERMINE IF A SINGLE STRUCTURE WOULD BE A VIABLE OPTION.

LEGEND

- PROP. BRIDGE
- O.H. SIGN STRUCTURE
- BARRIER / RET. WALL
- EXIST. GR. TO REMAIN
- PROP. GUARDRAIL
- FILL / CUT — SLOPE LINES

0′ 200′ 400′ 600′

N

TECHNICAL REPORT

INTERSTATE 24
L.M. 1.63(GA) to L.M. 7.33(TN)
DADE CO.(GA) & HAMILTON CO.(TN)

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION
INVESTMENTS DIVISION

FIGURE 17
I-24
L.M. 7.00 to
L.M. 7.33

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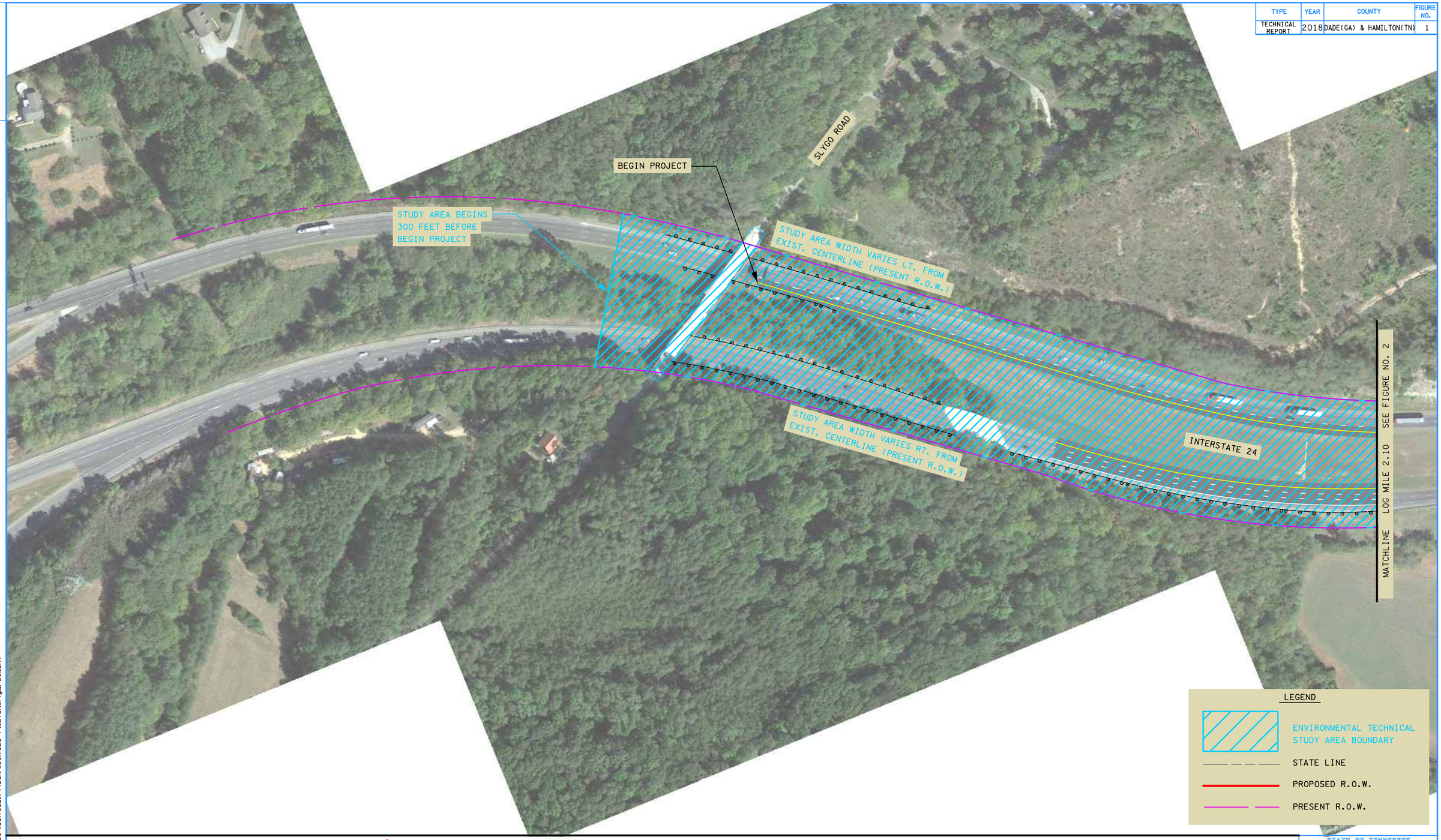
TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TECHNICAL REPORT	2018	DADE(GA) & HAMILTON(TN)	1



LEGEND

- ENVIRONMENTAL TECHNICAL STUDY AREA BOUNDARY
- STATE LINE
- PROPOSED R.O.W.
- PRESENT R.O.W.

0′ 200′ 400′ 600′

N

ENVIRONMENTAL TECHNICAL STUDY AREA

INTERSTATE 24
L.M. 1.63 to L.M. 7.33
DADE CO.(GA) & HAMILTON CO.(TN)

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION
INVESTMENTS DIVISION

FIGURE 1
I-24
L.M. 1.63 to
L.M. 2.10

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TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TECHNICAL REPORT	2018	DADE(GA) & HAMILTON(TN)	2

MATCHLINE LOG MILE 2.10 SEE FIGURE NO. 1

REPLACE O.H. SIGN STRUCTURE

STUDY AREA IS APPROX. 100.0 FEET LT. FROM EXIST. CENTERLINE (PRESENT R.O.W.)

INTERSTATE 24

STUDY AREA IS APPROX. 100.0 FEET RT. FROM EXIST. CENTERLINE (PRESENT R.O.W.)

MEDIAN WIDTH 40'
INCL. 2 @ 12' SHLD.

HOLD EXIST. CENTERLINE, WIDEN TO INSIDE OF E.B. & W.B. I-24

MATCHLINE LOG MILE 2.60 SEE FIGURE NO. 3

LEGEND

- ENVIRONMENTAL TECHNICAL STUDY AREA BOUNDARY
- STATE LINE
- PROPOSED R.O.W.
- PRESENT R.O.W.

0′ 200′ 400′ 600′

N

ENVIRONMENTAL TECHNICAL STUDY AREA

INTERSTATE 24
L.M. 1.63 to L.M. 7.33
DADE CO.(GA) & HAMILTON CO.(TN)

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION
INVESTMENTS DIVISION

FIGURE 2
I-24
L.M. 2.10 to
L.M. 2.60

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TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TECHNICAL REPORT	2018	DADE(GA) & HAMILTON(TN)	3

MATCHLINE LOG MILE 2.60 SEE FIGURE NO. 2

MATCHLINE LOG MILE 3.10 SEE FIGURE NO. 4

STUDY AREA IS APPROX. 100.0 FEET LT. FROM EXIST. CENTERLINE (PRESENT R.O.W.)

INTERSTATE 24

STUDY AREA IS APPROX. 100.0 FEET RT. FROM EXIST. CENTERLINE (PRESENT R.O.W.)

HOLD EXIST. CENTERLINE, WIDEN TO INSIDE OF E.B. & W.B. I-24

LEGEND

- ENVIRONMENTAL TECHNICAL STUDY AREA BOUNDARY
- STATE LINE
- PROPOSED R.O.W.
- PRESENT R.O.W.

0' 200' 400' 600'

N

ENVIRONMENTAL TECHNICAL STUDY AREA

INTERSTATE 24
L.M. 1.63 to L.M. 7.33
DADE CO.(GA) & HAMILTON CO.(TN)

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION
INVESTMENTS DIVISION

FIGURE 3C
I-24
L.M. 2.60 to
L.M. 3.10

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TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TECHNICAL REPORT	2018	DADE(GA) & HAMILTON(TN)	4

STUDY AREA ENDS 150 FEET ALONG RAMPS

STUDY AREA ENDS 150 FEET ALONG SIDE ROAD

STUDY AREA IS APPROX. 100.0 FEET LT. FROM EXIST. CENTERLINE (PRESENT R.O.W.)

INTERSTATE 24

STUDY AREA IS APPROX. 100.0 FEET RT. FROM EXIST. CENTERLINE (PRESENT R.O.W.)

MATCHLINE LOG MILE 3.10 SEE FIGURE NO. 3

HOLD EXIST. CENTERLINE, WIDEN TO INSIDE OF E.B. & W.B. I-24

MATCHLINE LOG MILE 3.60 SEE FIGURE NO. 5

U.S. 299

STUDY AREA ENDS 150 FEET ALONG RAMPS

STUDY AREA ENDS 150 FEET ALONG SIDE ROAD

LEGEND

- ENVIRONMENTAL TECHNICAL STUDY AREA BOUNDARY
- STATE LINE
- PROPOSED R.O.W.
- PRESENT R.O.W.

0′ 200′ 400′ 600′

N

ENVIRONMENTAL TECHNICAL STUDY AREA

INTERSTATE 24
L.M. 1.63 to L.M. 7.33
DADE CO.(GA) & HAMILTON CO.(TN)

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION
INVESTMENTS DIVISION

FIGURE 4
I-24
L.M. 3.10 to
L.M. 3.60

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TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TECHNICAL REPORT	2018	DADE(GA) & HAMILTON(TN)	5

CSX TRANSPORTATION

WIDEN EXISTING STRUCTURES

TENNESSEE
GEORGIA

STUDY AREA IS APPROX. 100.0 FEET LT. FROM
EXIST. CENTERLINE (PRESENT R.O.W.)

INTERSTATE 24

STUDY AREA IS APPROX. 100.0 FEET RT. FROM
EXIST. CENTERLINE (PRESENT R.O.W.)

HOLD EXIST. CENTERLINE, WIDEN
TO INSIDE OF E.B. & W.B. I-24

MATCHLINE LOG MILE 3.60
SEE FIGURE NO. 4

MATCHLINE LOG MILE 4.10
SEE FIGURE NO. 6

LEGEND

- ENVIRONMENTAL TECHNICAL STUDY AREA BOUNDARY
- STATE LINE
- PROPOSED R.O.W.
- PRESENT R.O.W.

0′ 200′ 400′ 600′

N

ENVIRONMENTAL TECHNICAL STUDY AREA

INTERSTATE 24
L.M. 1.63 to L.M. 7.33
DADE CO.(GA) & HAMILTON CO.(TN)

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION
INVESTMENTS DIVISION

FIGURE 5
I-24
L.M. 3.60 to
L.M. 4.10

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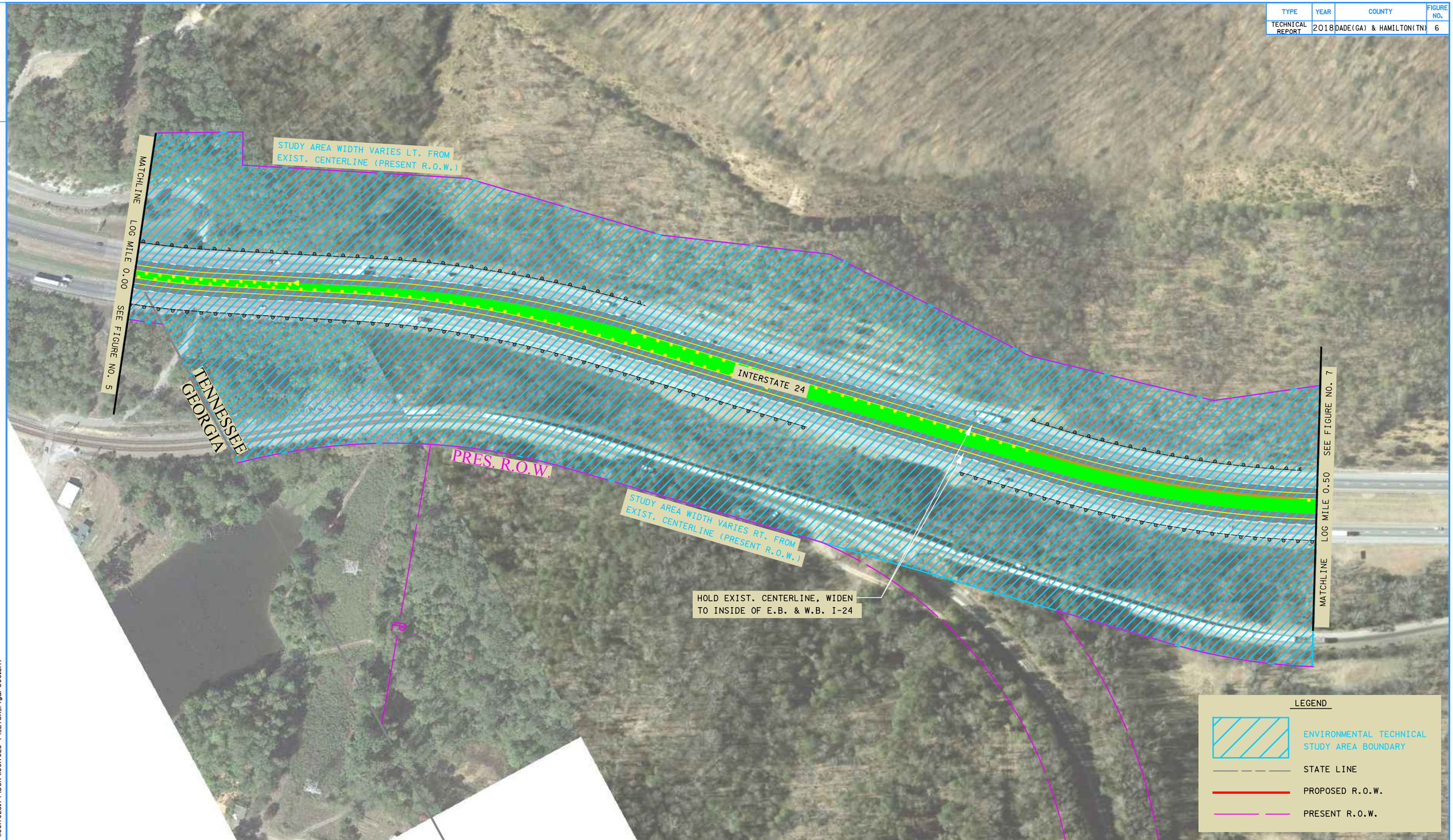
TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TECHNICAL REPORT	2018	DADE(GA) & HAMILTON(TN)	6



0' 200' 400' 600'

N

ENVIRONMENTAL TECHNICAL STUDY AREA

INTERSTATE 24
L.M. 1.63 to L.M. 7.33
DADE CO.(GA) & HAMILTON CO.(TN)

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION
INVESTMENTS DIVISION

FIGURE 6
I-24
L.M. 0.00 to
L.M. 0.50

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TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TECHNICAL REPORT	2018	DADE(GA) & HAMILTON(TN)	7

0′ 200′ 400′ 600′

N

ENVIRONMENTAL TECHNICAL STUDY AREA

INTERSTATE 24
L.M. 1.63 to L.M. 7.33
DADE CO.(GA) & HAMILTON CO.(TN)

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION
INVESTMENTS DIVISION

FIGURE 7
I-24
L.M. 0.50 to
L.M. 1.00

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TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TECHNICAL REPORT	2018	DADE(GA) & HAMILTON(TN)	8

MATCHLINE LOG MILE 1.00 SEE FIGURE NO. 7

INTERSTATE 24

HOLD EXIST. CENTERLINE, WIDEN TO INSIDE OF E.B. & W.B. I-24

STUDY AREA WIDTH VARIES LT. FROM EXIST. CENTERLINE (PRESENT R.O.W.)

STUDY AREA WIDTH VARIES RT. FROM EXIST. CENTERLINE (PRESENT R.O.W.)

MATCHLINE LOG MILE 1.50 SEE FIGURE NO. 9

LEGEND

- ENVIRONMENTAL TECHNICAL STUDY AREA BOUNDARY
- STATE LINE
- PROPOSED R.O.W.
- PRESENT R.O.W.

0′ 200′ 400′ 600′

N

ENVIRONMENTAL TECHNICAL STUDY AREA

INTERSTATE 24
L.M. 1.63 to L.M. 7.33
DADE CO.(GA) & HAMILTON CO.(TN)

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION
INVESTMENTS DIVISION

FIGURE 8
I-24
L.M. 1.00 to
L.M. 1.50

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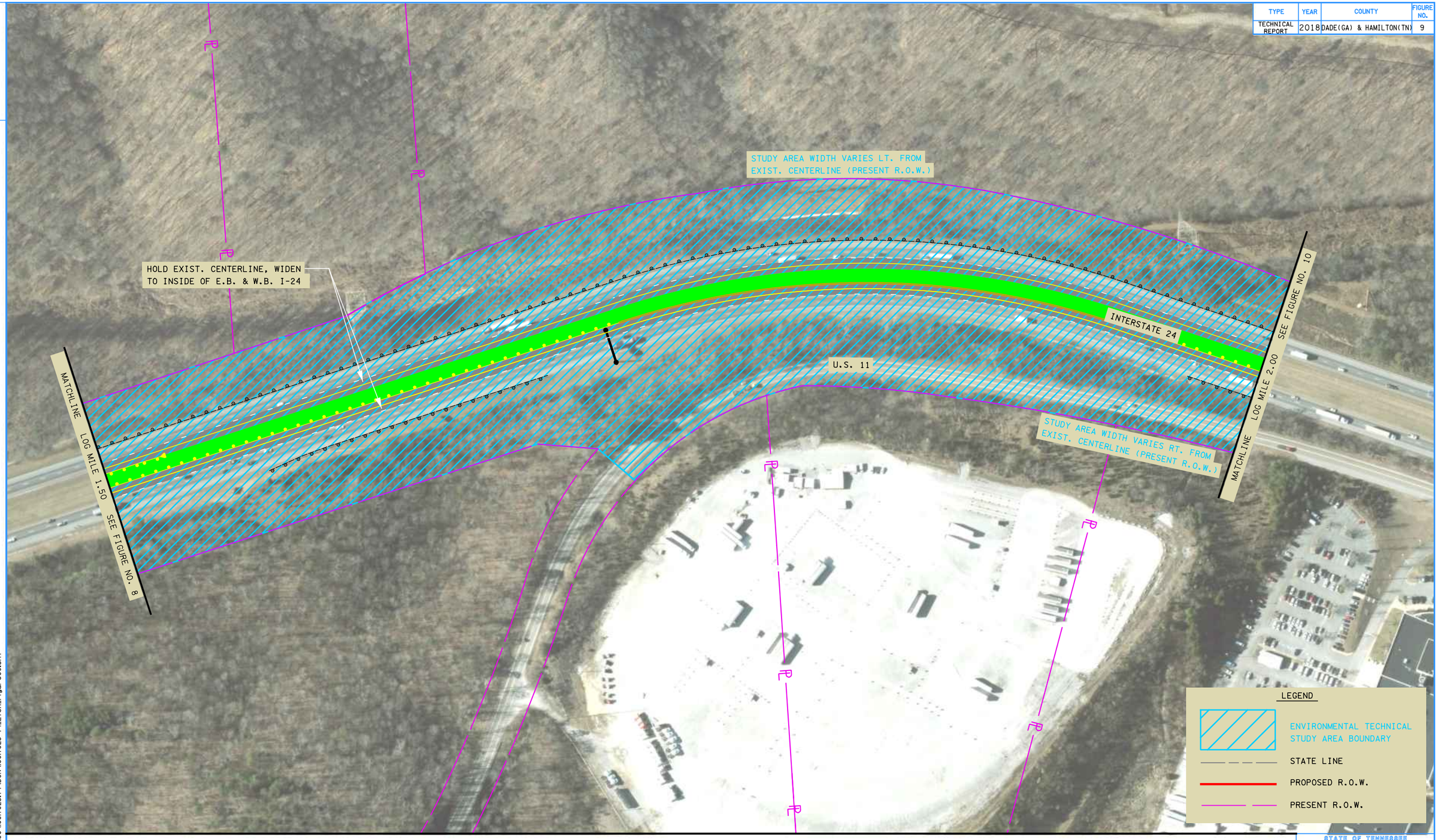
TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TECHNICAL REPORT	2018	DADE(GA) & HAMILTON(TN)	9



0′ 200′ 400′ 600′

N

ENVIRONMENTAL TECHNICAL STUDY AREA

INTERSTATE 24
L.M. 1.63 to L.M. 7.33
DADE CO.(GA) & HAMILTON CO.(TN)

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION

FIGURE 9
I-24
L.M. 1.50 to L.M. 2.00

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TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TECHNICAL REPORT	2018	DADE(GA) & HAMILTON(TN)	10

MATCHLINE LOG MILE 2.00 SEE FIGURE NO. 9

STUDY AREA WIDTH VARIES LT. FROM EXIST. CENTERLINE (PRESENT R.O.W.)

INTERSTATE 24

U.S. 11

CUMMINGS RD

STUDY AREA ENDS 150 FEET ALONG SIDE ROAD

REPLACE EXISTING STRUCTURES

MATCHLINE LOG MILE 2.50 SEE FIGURE NO. 11

STUDY AREA WIDTH VARIES RT. FROM EXIST. CENTERLINE (PRESENT R.O.W.)

HOLD EXIST. CENTERLINE, WIDEN TO INSIDE OF E.B. & W.B. I-24

STUDY AREA ENDS 150 FEET ALONG SIDE ROAD

LEGEND

- ENVIRONMENTAL TECHNICAL STUDY AREA BOUNDARY
- STATE LINE
- PROPOSED R.O.W.
- PRESENT R.O.W.

0′ 200′ 400′ 600′

N

ENVIRONMENTAL TECHNICAL STUDY AREA

INTERSTATE 24
L.M. 1.63 to L.M. 7.33
DADE CO.(GA) & HAMILTON CO.(TN)

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION
INVESTMENTS DIVISION

FIGURE 10
I-24
L.M. 2.00 to
L.M. 2.50

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TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TECHNICAL REPORT	2018	DADE(GA) & HAMILTON(TN)	11

STUDY AREA WIDTH VARIES LT. FROM EXIST. CENTERLINE (PRESENT R.O.W.)

MATCHLINE LOG MILE 2.50 SEE FIGURE NO. 10

INTERSTATE 24

CUMMINGS HWY

STUDY AREA ENDS 150 FEET ALONG SIDE ROAD

REPLACE EXISTING STRUCTURES

MATCHLINE LOG MILE 3.00 SEE FIGURE NO. 12

STUDY AREA WIDTH VARIES RT. FROM EXIST. CENTERLINE (PRESENT R.O.W.)

HOLD EXIST. CENTERLINE, WIDEN TO INSIDE OF E.B. & W.B. I-24

STUDY AREA ENDS 150 FEET ALONG SIDE ROAD

LEGEND

- ENVIRONMENTAL TECHNICAL STUDY AREA BOUNDARY
- STATE LINE
- PROPOSED R.O.W.
- PRESENT R.O.W.

0′ 200′ 400′ 600′

N

ENVIRONMENTAL TECHNICAL STUDY AREA

INTERSTATE 24
L.M. 1.63 to L.M. 7.33
DADE CO.(GA) & HAMILTON CO.(TN)

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION
INVESTMENTS DIVISION

FIGURE 11
I-24
L.M. 2.50 to
L.M. 3.00

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TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TECHNICAL REPORT	2018	DADE(GA) & HAMILTON(TN)	12

HOLD EXIST. CENTERLINE, WIDEN TO INSIDE OF E.B. & W.B. I-24

STUDY AREA WIDTH VARIES LT. FROM EXIST. CENTERLINE (PRESENT R.O.W.)

STUDY AREA WIDTH VARIES RT. FROM EXIST. CENTERLINE (PRESENT R.O.W.)

INTERSTATE 24

MATCHLINE LOG MILE 3.00 SEE FIGURE NO. 11

MATCHLINE LOG MILE 3.50 SEE FIGURE NO. 13

LEGEND

- ENVIRONMENTAL TECHNICAL STUDY AREA BOUNDARY
- STATE LINE
- PROPOSED R.O.W.
- PRESENT R.O.W.

0' 200' 400' 600'

N

ENVIRONMENTAL TECHNICAL STUDY AREA

INTERSTATE 24
L.M. 1.63 to L.M. 7.33
DADE CO.(GA) & HAMILTON CO.(TN)

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION
INVESTMENTS DIVISION

FIGURE 12
I-24
L.M. 3.00 to
L.M. 3.50

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TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TECHNICAL REPORT	2018	DADE(GA) & HAMILTON(TN)	13

MATCHLINE LOG MILE 3.50 SEE FIGURE NO. 12

REPLACE EXISTING STRUCTURES

STUDY AREA WIDTH VARIES LT. FROM EXIST. CENTERLINE (PRESENT R.O.W.)

INTERSTATE 24

STUDY AREA WIDTH VARIES RT. FROM EXIST. CENTERLINE (PRESENT R.O.W.)

HOLD EXIST. CENTERLINE, WIDEN TO INSIDE OF E.B. & W.B. I-24

MATCHLINE LOG MILE 4.00 SEE FIGURE NO. 14

LEGEND

- ENVIRONMENTAL TECHNICAL STUDY AREA BOUNDARY
- STATE LINE
- PROPOSED R.O.W.
- PRESENT R.O.W.

0′ 200′ 400′ 600′

N

ENVIRONMENTAL TECHNICAL STUDY AREA

INTERSTATE 24
L.M. 1.63 to L.M. 7.33
DADE CO.(GA) & HAMILTON CO.(TN)

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION

FIGURE 13
I-24
L.M. 3.50 to L.M. 4.00

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TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TECHNICAL REPORT	2018	DADE(GA) & HAMILTON(TN)	14

BROWNS FERRY ROAD

STUDY AREA ENDS 150 FEET ALONG SIDE ROAD

STUDY AREA WIDTH VARIES LT. FROM EXIST. CENTERLINE (PRESENT R.O.W.)

HOLD EXIST. CENTERLINE, WIDEN TO INSIDE OF E.B. & W.B. I-24

MATCHLINE LOG MILE 4.00 SEE FIGURE NO. 13

INTERSTATE 24

REPLACE EXISTING STRUCTURES

STUDY AREA WIDTH VARIES RT. FROM EXIST. CENTERLINE (PRESENT R.O.W.)

STUDY AREA ENDS 150 FEET ALONG SIDE ROAD

MATCHLINE LOG MILE 4.50 SEE FIGURE NO. 15

LEGEND

- ENVIRONMENTAL TECHNICAL STUDY AREA BOUNDARY
- STATE LINE
- PROPOSED R.O.W.
- PRESENT R.O.W.

0′ 200′ 400′ 600′

N

ENVIRONMENTAL TECHNICAL STUDY AREA

INTERSTATE 24
L.M. 1.63 to L.M. 7.33
DADE CO.(GA) & HAMILTON CO.(TN)

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION

FIGURE 14
I-24
L.M. 4.00 to L.M. 4.50

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TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TECHNICAL REPORT	2018	DADE(GA) & HAMILTON(TN)	15

STUDY AREA WIDTH VARIES LT. FROM EXIST. CENTERLINE (PRESENT R.O.W.)

INTERSTATE 24

PROPOSED RETAINING WALLS

STUDY AREA WIDTH VARIES RT. FROM EXIST. CENTERLINE (PRESENT R.O.W.)

MATCHLINE LOG MILE 4.50 SEE FIGURE NO. 14

MATCHLINE LOG MILE 5.00 SEE FIGURE NO. 16

HOLD EXIST. CENTERLINE, WIDEN TO INSIDE OF E.B. & W.B. I-24

LEGEND

- ENVIRONMENTAL TECHNICAL STUDY AREA BOUNDARY
- STATE LINE
- PROPOSED R.O.W.
- PRESENT R.O.W.

0′ 200′ 400′ 600′

N

ENVIRONMENTAL TECHNICAL STUDY AREA

INTERSTATE 24
L.M. 1.63 to L.M. 7.33
DADE CO.(GA) & HAMILTON CO.(TN)

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION
INVESTMENTS DIVISION

FIGURE 15
I-24
L.M. 4.50 to
L.M. 5.00

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TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TECHNICAL REPORT	2018	DADE(GA) & HAMILTON(TN)	16

HOLD EXIST. CENTERLINE, WIDEN TO INSIDE OF E.B. & W.B. I-24

REPLACE EXISTING STRUCTURES

STUDY AREA WIDTH VARIES LT. FROM EXIST. CENTERLINE (PRESENT R.O.W.)

INTERSTATE 24

STUDY AREA WIDTH VARIES RT. FROM EXIST. CENTERLINE (PRESENT R.O.W.)

HOLD EXIST. CENTERLINE, WIDEN TO OUTSIDE OF E.B. I-24

PROPOSED RETAINING WALLS

MATCHLINE LOG MILE 5.00 SEE FIGURE NO. 15

MATCHLINE LOG MILE 5.50 SEE FIGURE NO. 17

NORFOLK SOUTHERN RAILROAD

LEGEND

- ENVIRONMENTAL TECHNICAL STUDY AREA BOUNDARY
- STATE LINE
- PROPOSED R.O.W.
- PRESENT R.O.W.

0' 200' 400' 600'

N

ENVIRONMENTAL TECHNICAL STUDY AREA

INTERSTATE 24
L.M. 1.63 to L.M. 7.33
DADE CO.(GA) & HAMILTON CO.(TN)

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION

FIGURE 16
I-24
L.M. 5.00 to L.M. 5.50

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TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TECHNICAL REPORT	2018	DADE(GA) & HAMILTON(TN)	17

0′ 200′ 400′ 600′

N

ENVIRONMENTAL TECHNICAL STUDY AREA

INTERSTATE 24
L.M. 1.63 to L.M. 7.33
DADE CO.(GA) & HAMILTON CO.(TN)

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION
INVESTMENTS DIVISION

FIGURE 17
I-24
L.M. 5.50 to
L.M. 6.00

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TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TECHNICAL REPORT	2018	DADE(GA) & HAMILTON(TN)	18

MATCHLINE LOG MILE 6.00 SEE FIGURE NO. 17

MATCHLINE LOG MILE 6.50 SEE FIGURE NO. 19

STUDY AREA WIDTH VARIES LT. FROM EXIST. CENTERLINE (PRESENT R.O.W.)

STUDY AREA WIDTH VARIES RT. FROM EXIST. CENTERLINE (PRESENT R.O.W.)

HOLD EXIST. CENTERLINE, WIDEN TO INSIDE OF E.B. & W.B. I-24

REPLACE EXISTING STRUCTURES

INTERSTATE 24

PROPOSED RETAINING WALLS

HOLD EXIST. CENTERLINE, WIDEN TO OUTSIDE OF E.B. I-24

CSX TRANSPORTATION

LEGEND

ENVIRONMENTAL TECHNICAL STUDY AREA BOUNDARY

STATE LINE

PROPOSED R.O.W.

PRESENT R.O.W.

0′ 200′ 400′ 600′

N

ENVIRONMENTAL TECHNICAL STUDY AREA

INTERSTATE 24
L.M. 1.63 to L.M. 7.33
DADE CO.(GA) & HAMILTON CO.(TN)

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION
INVESTMENTS DIVISION

FIGURE 18
I-24
L.M. 6.00 to
L.M. 6.50

8/10/2018 12:28:22 PM
Y:\nashville\160T0005\160T1023.00\160T1023.74\DGN\160T1023-74_ETSA_Figure18.sht

TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TECHNICAL REPORT	2018	DADE(GA) & HAMILTON(TN)	19

MATCHLINE LOG MILE 6.50 SEE FIGURE NO. 18

HOLD EXIST. CENTERLINE, WIDEN TO INSIDE OF E.B. & W.B. I-24

STUDY AREA WIDTH VARIES LT. FROM EXIST. CENTERLINE (PRESENT R.O.W.)

INTERSTATE 24

MATCHLINE LOG MILE 7.00 SEE FIGURE NO. 20

FUTURE R.O.W.

PROPOSED R.O.W.

STUDY AREA WIDTH VARIES RT. FROM EXIST. CENTERLINE (FUTURE R.O.W.)

STUDY AREA IS APPROX. 150.00 FEET LT. FROM EXIST. CENTERLINE (50 FT. FROM PROPOSED R.O.W.)

PROPOSED RETAINING WALLS

NORFOLK SOUTHERN RAILROAD

HOLD EXIST. CENTERLINE, WIDEN TO OUTSIDE OF E.B. I-24

CSX TRANSPORTATION

STUDY AREA WIDTH VARIES RT. FROM EXIST. CENTERLINE (PRESENT R.O.W.)

LEGEND

- ENVIRONMENTAL TECHNICAL STUDY AREA BOUNDARY
- STATE LINE
- PROPOSED R.O.W.
- PRESENT R.O.W.

0′ 200′ 400′ 600′

N

ENVIRONMENTAL TECHNICAL STUDY AREA

INTERSTATE 24
L.M. 1.63 to L.M. 7.33
DADE CO.(GA) & HAMILTON CO.(TN)

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION
INVESTMENTS DIVISION

FIGURE 19
I-24
L.M. 6.50 to
L.M. 7.00

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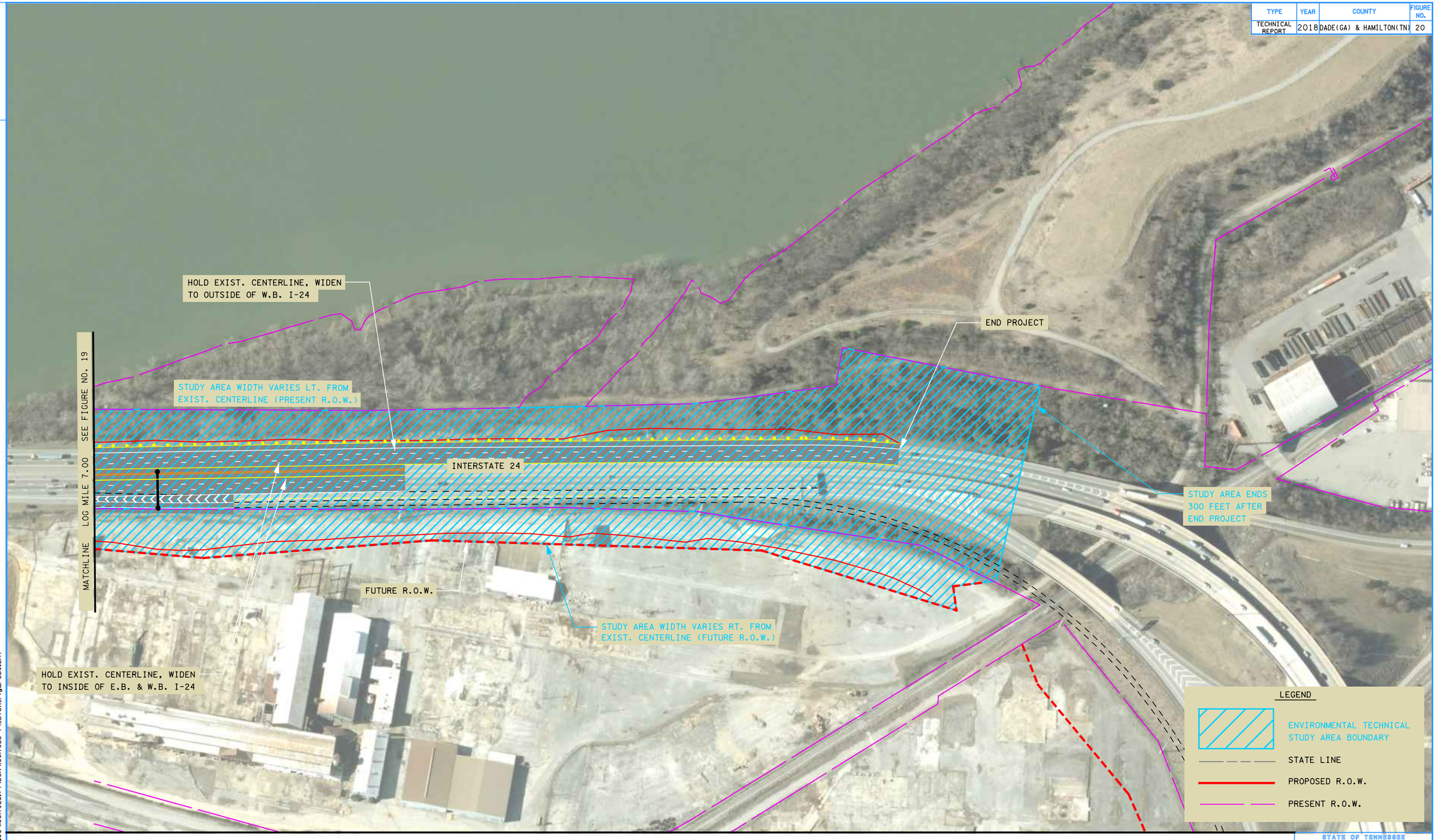
TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TECHNICAL REPORT	2018	DADE(GA) & HAMILTON(TN)	20



0′ 200′ 400′ 600′

N

ENVIRONMENTAL TECHNICAL STUDY AREA

INTERSTATE 24
L.M. 1.63 to L.M. 7.33
DADE CO.(GA) & HAMILTON CO.(TN)

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION

FIGURE 20
I-24
L.M. 7.00 to L.M. 7.33

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5.2 Proposed Alternative Costs

The total estimated planning level cost required for preliminary engineering, right-of-way and utilities, and construction for this alternative is presented in Tables 7-10 for each segment and grand total.

Table 7: Preliminary Cost Estimates

Segment	Description	Length (Miles)	PE	ROW & UTIL.	CONST	Preliminary Cost
Segment 1	From I-59 to GA State Line	2.47	$2,406,000	$0	$33,691,000	$36,097,000
Segment 2	From GA State Line to East of Browns Ferry Rd.	4.73	$3,564,000	$94,000	$82,112,000	$85,770,000
Segment 3	From East of Browns Ferry Rd. to I-124 (US-27)	2.60	$3,555,000	$250,000	$83,591,000	$87,396,000
Totals		9.80	$9,525,000	$344,000	$199,394,000	**$209,263,000**

Approximately 0.40 acres of ROW acquisition in Segment 3 is anticipated, but there will likely need to be temporary construction easements to accommodate the proposed widening. Table 7, 8 & 9 on the following pages show the cost estimate summaries for each segment. See appendix for detailed itemization of cost estimates

Table 8: Segment 1 Preliminary Cost Estimate Summary

Route:	**Interstate 24 (Section 1)**
Description:	**From Interstate 59 (L.M. 1.63)**
	To the Tennessee State Line (L.M. 4.10)
County:	**Dade**
Length:	**2.47 Miles**
Date:	**August 10, 2018**

DESCRIPTION	LOCAL 0%	STATE 0%	FEDERAL 0%	TOTAL
Construction Items				
Pavement Removal	$0	$0	$0	$809,700
Asphalt Paving	$0	$0	$0	$7,762,800
Concrete Pavement	$0	$0	$0	$0
Drainage	$0	$0	$0	$721,100
Appurtenances	$0	$0	$0	$0
Structures	$0	$0	$0	$4,190,200
Fencing	$0	$0	$0	$0
Signalization	$0	$0	$0	$19,500
Railroad Crossing or Separation	$0	$0	$0	$600,000
Earthwork	$0	$0	$0	$1,456,000
Clearing and Grubbing	$0	$0	$0	$79,400
Seeding & Sodding	$0	$0	$0	$131,800
Rip-Rap or Slope Protection	$0	$0	$0	$45,600
Guardrail	$0	$0	$0	$325,400
Signing	$0	$0	$0	$165,400
Pavement Markings	$0	$0	$0	$126,200
Maintenance of Traffic	$0	$0	$0	$2,147,700
Mobilization (10%)	$0	$0	$0	$1,858,100
Other Items = 20%	$0	$0	$0	$4,087,800
Const. Contingency = 30%	$0	$0	$0	$6,101,000
Construction Estimate	$0	$0	$0	$30,627,700
Interchanges & Unique Intersections				
Roundabouts	$0	$0	$0	$0
Interchanges	$0	$0	$0	$0
Right-of-Way & Utilties	**LOCAL 0%**	**STATE 0%**	**FEDERAL 0%**	**TOTAL**
Right-of-Way	$0	$0	$0	$0
Utilities	$0	$0	$0	$0
Preliminary & Construction Engineering and Inspection				
Prelim. Eng. 8%	$0	$0	$0	$2,406,000
Const. Eng. & Inspec. 10%	$0	$0	$0	$3,063,000
Total Project Cost	$0	$0	$0	$ 36,097,000

Table 9: Segment 2 Preliminary Cost Estimate Summary

Route:	**Interstate 24 (Section 2)**
Description:	**From the Georgia State Line (L.M. 0.00)**
	To East of Browns Ferry (L.M. 4.73)
County:	**Hamilton**
Length:	**4.73 Miles**
Date:	**August 10, 2018**

DESCRIPTION	LOCAL 0%	STATE 0%	FEDERAL 0%	TOTAL
Construction Items				
Pavement Removal	$0	$0	$0	$1,238,200
Asphalt Paving	$0	$0	$0	$14,156,900
Concrete Pavement	$0	$0	$0	$0
Drainage	$0	$0	$0	$1,404,300
Appurtenances	$0	$0	$0	$0
Structures	$0	$0	$0	$22,740,600
Fencing	$0	$0	$0	$0
Signalization	$0	$0	$0	$319,000
Railroad Crossing or Separation	$0	$0	$0	$0
Earthwork	$0	$0	$0	$2,559,100
Clearing and Grubbing	$0	$0	$0	$198,300
Seeding & Sodding	$0	$0	$0	$181,800
Rip-Rap or Slope Protection	$0	$0	$0	$76,500
Guardrail	$0	$0	$0	$494,400
Signing	$0	$0	$0	$220,000
Pavement Markings	$0	$0	$0	$189,800
Maintenance of Traffic	$0	$0	$0	$3,692,700
Mobilization (10%)	$0	$0	$0	$4,747,200
Other Items = 20%	$0	$0	$0	$10,443,800
Const. Contingency = 30%	$0	$0	$0	$11,976,600
Construction Estimate	$0	$0	$0	$74,639,200
Interchanges & Unique Intersections				
Roundabouts	$0	$0	$0	$0
Interchanges	$0	$0	$0	$0
Right-of-Way & Utilties	**LOCAL 0%**	**STATE 0%**	**FEDERAL 0%**	**TOTAL**
Right-of-Way	$0	$0	$0	$0
Utilities	$0	$0	$0	$94,000
Preliminary & Construction Engineering and Inspection				
Prelim. Eng. 5%	$0	$0	$0	$3,564,000
Const. Eng. & Inspec. 10%	$0	$0	$0	$7,473,000
Total Project Cost	$0	$0	$0	$ 85,770,000

Table 10: Segment 3 Preliminary Cost Estimate Summary

Route:	**Interstate 24 (Section 3)**
Description:	**From East of Browns Ferry (L.M. 4.73)**
	To I-124 (US-27) (L.M. 7.33)
County:	**Hamilton**
Length:	**2.60 Miles**
Date:	**August 10, 2018**

DESCRIPTION	LOCAL 0%	STATE 0%	FEDERAL 0%	TOTAL
Construction Items				
Pavement Removal	$0	$0	$0	$561,400
Asphalt Paving	$0	$0	$0	$9,314,900
Concrete Pavement	$0	$0	$0	$0
Drainage	$0	$0	$0	$2,054,200
Appurtenances	$0	$0	$0	$2,191,200
Structures	$0	$0	$0	$31,043,900
Fencing	$0	$0	$0	$9,400
Signalization	$0	$0	$0	$291,900
Railroad Crossing or Separation	$0	$0	$0	$750,000
Earthwork	$0	$0	$0	$1,488,100
Clearing and Grubbing	$0	$0	$0	$92,600
Seeding & Sodding	$0	$0	$0	$107,800
Rip-Rap or Slope Protection	$0	$0	$0	$45,600
Guardrail	$0	$0	$0	$163,900
Signing	$0	$0	$0	$628,700
Pavement Markings	$0	$0	$0	$159,700
Maintenance of Traffic	$0	$0	$0	$3,161,300
Mobilization (10%)	$0	$0	$0	$2,603,200
Other Items = 20%	$0	$0	$0	$10,933,600
Const. Contingency = 30%	$0	$0	$0	$10,367,300
Construction Estimate	$0	$0	$0	$75,969,000
Interchanges & Unique Intersections				
Roundabouts	$0	$0	$0	$0
Interchanges	$0	$0	$0	$0
Right-of-Way & Utilties	**LOCAL 0%**	**STATE 0%**	**FEDERAL 0%**	**TOTAL**
Right-of-Way	$0	$0	$0	$250,000
Utilities	$0	$0	$0	$0
Preliminary & Construction Engineering and Inspection				
Prelim. Eng. 5%	$0	$0	$0	$3,555,000
Const. Eng. & Inspec. 10%	$0	$0	$0	$7,622,000
Total Project Cost	$0	$0	$0	$ 87,396,000

5.3 Proposed Alternatives Traffic Benefit Analysis

The segments of I-24 were analyzed with the HCS2010 software for the proposed build alternative detailed previously. The LOS for both existing and proposed conditions are summarized in the table below:

Table 11: LOS Comparison

Level of Service Comparison				
Segment	Year	Peak Hour	LOS (No Build)	LOS (Build)
I-24 from I-59 to GA State Line	2022	AM	D	C
		PM	D	C
	2042	AM	F	C
		PM	F	C
I-24 from GA State Line to S.R. 2	2022	AM	D	C
		PM	E	C
	2042	AM	F	D
		PM	F	D
I-24 from S.R. 2 to Browns Ferry Rd.	2022	AM	E	C
		PM	E	C
	2042	AM	F	D
		PM	F	D
I-24 from Browns Ferry Rd. to U.S. 27	2022	AM	F	D
		PM	F	D
	2042	AM	F	F*
		PM	F	F**

* LOS E in 2031, LOS F in 2040

** LOS E in 2032, LOS F in 2041

By adding one (1) travel lane in each direction (eastbound and westbound) on I-24, the LOS improves throughout most of the route and only the 2042 peak hours for the segment between Browns Ferry Road and U.S. 27 are worse than a LOS D. It is important to note that a LOS D is maintained in this segment

until the year 2031 and a LOS E until 2040. These results indicate that the additional lane allows vehicles to travel much closer to the base free flow speed and the route will experience less congestion.

5.4 Proposed Alternatives Safety Implications

HSM PART C PREDICTIVE METHOD CONSIDERATION FOR FREEWAYS

Although safety is not included in the purpose and need for this study, Highway Safety Manual (HSM) methodology for freeways was reviewed to help better understand the safety implications of the preferred alternative and help mitigate overall crash risk and crash severity.

"The *Highway Safety Manual* (HSM) is a resource that provides safety knowledge and tools in a useful form to facilitate improved decision making based on safety performance. The focus of the HSM is to provide quantitative information for decision making. The HSM assembles currently available information and methodologies on measuring, estimating and evaluating roadways in terms of crash frequency (number of crashes per year) and crash severity (level of injuries due to crashes)." [HSM – Preface to the Highway Safety Manual, pg. xxiii]

Because the HSM does not account for jurisdiction-specific differences, it contains calibration techniques to modify tools for local use. This is necessary because of differences in factors, such as: driver populations, local roadway roadside conditions, traffic composition, typical geometrics, and traffic control measures. There are also variations in how each state or jurisdiction reports crashes and manages crash data. The HSM calibration method should be applied to each individual facility type. Examples of facility types associated with this project are freeway segments, ramp segments, and ramp terminals (i.e. where the ramp intersects with the surface street).

Since local calibration factors were unavailable for the various facility types associated with freeway analysis at the time this report was developed, it was determined that a cumulative HSM Part C predictive method analysis comparing the existing conditions to the proposed alternative would not yield accurate results.

However, a preliminary investigation of the number of crashes and severity distribution was completed for freeway segments being widened from four (4) to six (6) travel lanes [three (3) in each direction] to help understand the safety implications for the proposed alternative. It should be noted that this investigation does not account for the influence of ramps and weaving areas within the project limits. Also, this investigation is not intended to be a substitute for cumulative project HSM Part C predictive method procedures to quantify overall safety performance. The safety performance investigated is a

function of the AADT, geometric design features, traffic control features, and site characteristics for isolated freeway segments. Tables found in the appendix demonstrate crashes per mile per year based on varying AADTs and typical section types which derive the key findings shown below.

Key Findings of Investigation using Interstate Safety Analysis Tool enhance (ISATe) for Isolated Freeway Segments:

- Overall: Safety performance calculations using ISATe for widening projects that meet TDOT design standards will predict an overall reduction in crashes and the percent reduction is a function of the AADT, geometric design features, traffic control features, and site characteristics.
- Widening with a Reduction in Median Width: Assuming that the horizontal alignment and clear zones do not change, there will be a small increase in fatal and serious injury crashes if the depressed grass median width is reduced for median widths less than 90 feet.
- Changing Median Type: Assuming that the horizontal alignment and clear zones do not change, there will be a small increase in fatal and serious injury crashes when widening to the inside from a standard 48 foot depressed grass median to a standard 26 foot barrier wall separated median.
- Increasing Inside Shoulder Width for Barrier Wall Separated Medians: Assuming that the horizontal alignment and clear zones do not change when widening from four (4) travel lanes with barrier wall separation to six (6) travel lanes with barrier wall separation, and the inside shoulder width is improved, then it is predicted that there will be a small decrease in fatal and serious injury crashes.

Note: The HSM is not a legal standard. Instead, the HSM provides analytical tools and techniques for quantifying the potential effects of decisions made in planning, design, operations and maintenance.

Crash rate statistics were analyzed within the study areas.

Crash Modification Factors (CMF's) are defined as "*an index of how much crash experience is expected to change following a modification in design or traffic control. CMF is the ratio between the number of crashes per unit of time expected after a modification or measure is implemented and the number of crashes per unit of time estimated if the change does not take place.*" The CMF Clearinghouse (www.cmfclearinghouse.org) provides a quantitative basis for estimating how a given CMF might improve safety. The CMF Clearinghouse is a website funded by the U.S. Department of Transportation Federal Highway Administration and is maintained by the University of North Carolina Highway Safety

Research Center. The website provides a database of CMFs to assist in selecting appropriate improvements based on safety.

According to the CMF Clearinghouse, extending Off Ramp deceleration lanes along I-24 by approximately 100 feet is predicted to improve safety with a crash reduction factor (CRF) of 7.0 percent for all crash types as shown in the table below:

Table 12: CMFs

Crash Modification Factors that Apply to the Conceptual Alternatives							
Source	Treatment	Setting	Star Rating	Crash Type	CMF	CRF	Std. Error
CMF Clearinghouse, CMF ID: 475	Extend deceleration lane by approx. 100 ft	Principal Arterial Interstate	3/5	All	0.93	7.0%	0.06

A CRF is a way to represent the expected effect of a countermeasure in terms of percentage decrease in crashes based on the CMF. This CRF had a three (3) / five (5) star rating with an unadjusted standard error of 0.06. See Table 12 on the following page for an explanation on the CMF clearinghouse star ratings.

Table 13: CMF Star Ratings

Relative Rating	Excellent	Fair	Poor
Study Design	Statistically rigorous study design with reference group or randomized experiment and control	Cross sectional study or other coefficient based analysis	Simple before / after study
Sample Size	Large sample, multiple years, diversity of sites	Moderate sample size, limited years, and limited diversity of sites	Limited homogeneous sample
Standard Error	Small compared to CRF	Relatively large SE, but confidence interval does not include zero	Large SE and confidence interval includes zero
Potential Bias	Controls for all sources of known potential bias *See below for a list of potential biases	Controls for some sources of potential bias	No consideration of potential bias
Data Source	Diversity in States representing different geographies	Limited to one State, but diversity in geography within State (e.g., CA)	Limited to one jurisdiction in one State

To provide a more quantitative translation from these categories to the star rating, a point-based system was developed. Points are assigned to each CMF characteristic based on the level of rigor (excellent = 2 points, fair = 1 point, or poor = 0 points). While the points decrease from excellent to poor, not all characteristics receive equal weight. For example, the study design is more important than the data source. Therefore, the final quality rating is based on a weighted score. Study design and sample size categories receive twice the weight of the other characteristics (see equation below).

Score = (2 * study design) + (2 * sample size) + standard error + potential bias + data source

The star rating is assigned based on the score and the ranges in the table below. It should be noted that information may be missing from a study report for specific characteristics such as sample size. In these cases, the rating is based on available information and the CMF will likely receive a lower rating due to the lack of information.

Score	Star Rating
14 (max possible)	5 Stars
11 – 13	4 Stars
7 – 10	3 Stars
3 – 6	2 Stars
1 – 2	1 Star
0	0 Stars

5.5 Proposed Alternatives Geometric Benefit Analysis

As there were no current geometric (horizontal and vertical alignment) deficiencies noted, the only anticipated geometric benefits from the proposed build alternatives are the additional lanes and shoulder widening along the route.

6.0 Recommendations

The proposed improvements will improve congestion, mobility, and increase capacity along the study corridor. The ultimate build alternative should improve operations by:

- Increasing travel speed and reducing congestion along I-24
- Reducing crashes by up to 7.0% for Ramp merge/diverge areas based on the CMF Clearinghouse

The construction of the proposed widening is essential in the overall transportation network.

Based on the information and analyses contained in this report, it is recommended to complete the proposed Build Alternative, which includes the addition of one (1) travel lane in both the eastbound and westbound directions along I-24, replace twelve (12) bridges in Tennessee, widen two (2) bridges in Georgia and replace ITS equipment as needed.

7.0 Appendix

7.1 Cost Estimates

7.2 Background Data

7.3 Project Traffic

7.4 Traffic Analysis

7.5 Crash Analysis

7.0 Appendix

7.1 Cost Estimates

COST ESTIMATE SUMMARY

Route:	Interstate 24 (Section 1)
Description:	From Interstate 59 (L.M. 1.63)
	To the Tennessee State Line (L.M. 4.10)
County:	Dade
Length:	2.47 Miles
Date:	August 10, 2018

TN TDOT Department of Transportation

DESCRIPTION	LOCAL 0%	STATE 0%	FEDERAL 0%	TOTAL	% Contribution
Construction Items					
Pavement Removal	$0	$0	$0	$809,700	4.36%
Asphalt Paving	$0	$0	$0	$7,762,800	41.78%
Concrete Pavement	$0	$0	$0	$0	0.00%
Drainage	$0	$0	$0	$721,100	3.88%
Appurtenances	$0	$0	$0	$0	0.00%
Structures	$0	$0	$0	$4,190,200	22.55%
Fencing	$0	$0	$0	$0	0.00%
Signalization	$0	$0	$0	$19,500	0.10%
Railroad Crossing or Separation	$0	$0	$0	$600,000	3.23%
Earthwork	$0	$0	$0	$1,456,000	7.84%
Clearing and Grubbing	$0	$0	$0	$79,400	0.43%
Seeding & Sodding	$0	$0	$0	$131,800	0.71%
Rip-Rap or Slope Protection	$0	$0	$0	$45,600	0.25%
Guardrail	$0	$0	$0	$325,400	1.75%
Signing	$0	$0	$0	$165,400	0.89%
Pavement Markings	$0	$0	$0	$126,200	0.68%
Maintenance of Traffic	$0	$0	$0	$2,147,700	11.56%
Mobilization (10%)	$0	$0	$0	$1,858,100	
Other Items = 20%	$0	$0	$0	$4,087,800	
Const. Contingency = 30%	$0	$0	$0	$6,101,000	
Construction Estimate	$0	$0	$0	$30,627,700	
Interchanges & Unique Intersections					
Roundabouts	$0	$0	$0	$0	
Interchanges	$0	$0	$0	$0	
Right-of-Way & Utilties	**LOCAL 0%**	**STATE 0%**	**FEDERAL 0%**	**TOTAL**	
Right-of-Way	$0	$0	$0	$0	
Utilities	$0	$0	$0	$0	
Preliminary & Construction Engineering and Inspection					
Prelim. Eng. 8%	$0	$0	$0	$2,406,000	
Const. Eng. & Inspec. 10%	$0	$0	$0	$3,063,000	
Total Project Cost	$0	$0	$0	$ 36,097,000	

Per Mile Cost
$ 14,614,170.04

PAY ITEM SUMMARY

TDOT PAY ITEM	TDOT DESCRIPTION	UNIT	TOOL QUANTITIES	ADDITIONAL QUANTITIES	TOOL QUANTITIES + ADDITIONAL QUANTITIES	Statewide UNIT COST	TOTAL COST
Pavment Removal							
411-12.01	Scoring Shoulders (Cont. 16")	L.M.		4.94	5	$ 616.22	$ 3,044.14
415-01.02	Cold Planning Bituminous Pavement	SY	69555	70000	139555	$ 5.78	$ 806,629.06
						PAVEMENT REMOVAL TOTAL (ROUNDED)	$ 809,700
Asphalt Roads							
303-01	Mineral Aggregate, Type A Base, Grading D	TON	148153		148153	$ 18.13	$ 2,686,720.94
307-02.01	Asphalt Concrete Mix (PG70-22) (BPMB-HM) Grading A	TON	15998	13331	29329	$ 62.92	$ 1,845,235.00
307-02.02	Asphalt Cement (PG70-22)(BPMB-HM) Grading A-S	TON	176		176	$ 723.66	$ 127,408.74
307-02.03	Aggregate (BPMB-HM) Grading A-S Mix	TON	5693		5693	$ 66.80	$ 380,255.17
307-02.08	Asphalt Concrete Mix (PG70-22) (BPMB-HM) Grading B-M2	TON	11790	3275	15065	$ 78.66	$ 1,184,996.44
402-01	Bituminous Material For Prime Coat (PC)	TON	145		145	$ 609.86	$ 88,142.89
402-02	Aggregate For Cover Material (PC)	TON	522		522	$ 44.10	$ 23,007.37
403-01	Bituminous Material For Tack Coat (TC)	TON	74	9	83	$ 732.41	$ 60,622.32
411-01.07	ACS (PG64-22) GR "E"	TON	5608		5608	$ 86.18	$ 483,303.20
411-02.10	ACS Mix(PG70-22) Grading D	TON	6912	1920	8832	$ 99.98	$ 883,030.65
						PAVING TOTAL (ROUNDED)	$ 7,762,800
Concrete Roads							
						CONCRETE RAMPS AND ROADWAYS TOTAL (ROUNDED)	$ -
Drainage							
209-05	Sediment Removal	CY		5000	5000	$ 10.12	$ 50,612.16
209-08.03	Temporary Silt Fence (Without Backing)	LF		1950	1950	$ 1.53	$ 2,982.72
209-08.07	Rock Check Dam	EACH		100	100	$ 223.69	$ 22,369.07
209-08.08	Enhanced Rock Check Dam	EACH		50	50	$ 391.19	$ 19,559.27
607-05.02	24" Concrete Pipe Culvert (Class III)	LF	4817		4817	$ 69.58	$ 335,141.10
611-07.01	Class A Concrete (Pipe Endwalls)	CY	80		80	$ 943.70	$ 75,056.07
611-07.02	Steel Bar Reinforcement (Pipe Endwalls)	LB	7558		7558	$ 2.18	$ 16,480.22
710.02	Aggregate Underdrains (with pipe)	LF	26083		26083	$ 5.46	$ 142,414.27
740-11.03	TEMPORARY SEDIMENT TUBE 18IN (DESCRIPT)	LF		18000	18000	$ 3.13	$ 56,407.88
						DRAINAGE TOTAL (ROUNDED)	$ 721,100
Appurtenances							
						ROADWAY AND PAVEMENT APPURTENANCES TOTAL (ROUNDED)	$ -
Earthwork & Mineral							
105-01	Constrction Stakes, Lines, and Grades	LS	1		1	$ 112,407.96	$ 112,407.96
203-01	Road & Drainage Excavation (Unclassified)	CY	173888	-134000	39888	$ 16.48	$ 657,218.42
203-03	Borrow Excavation (Unclassified)	CY	144907	-100000	44907	$ 14.76	$ 662,925.09
303-10.01	Mineral Aggregate (Size 57)	TON		800	800	$ 29.27	$ 23,412.73
						EARTHWORK & MINERAL TOTAL (ROUNDED)	$ 1,456,000
Structures							
N/A	New Bridge (Steel Girder)	SF	10660		10660	$ 300.00	$ 3,198,000.00
						STRUCTURES TOTAL (ROUNDED)	$ 4,190,200
Interchanges and Unique Intersections							
						INTERCHANGES AND UNIQUE INTERSECTIONS TOTAL (ROUNDED)	$ -
Lighting & Signalization							
714-01.32	Structural Lighting	LS		2	2	$ 9,743.29	$ 19,486.58
						LIGHTING & SIGNALIZATION TOTAL (ROUNDED)	$ 19,500
Guardrail							
705-01.01	Guardrail at Bridge Ends	LF	200	-92	108	$ 73.34	$ 7,920.72
705-02.02	Single Guardrail (Type 2)	LF	7173	11560	18732.88	$ 16.56	$ 310,135.40
705-04.07	Tan Energy Absg Term (NCHRP, 350, TL3)	EA	13	-11	2	$ 2,354.25	$ 4,708.50
705-04.09	Earth Pad for Type 38 GR End Treatment	EA	13	-11	2	$ 1,291.67	$ 2,583.35
						GUARDRAIL TOTAL (ROUNDED)	$ 325,400
Seeding and Sodding							
801-01	Seeding (With Mulch)	UNIT	1793		1793	$ 38.91	$ 69,782.78
801-01.07	Temporary Seeding (With Mulch)	UNIT	1345		1345	$ 26.45	$ 35,576.09
801-02	Seeding (Without Mulch)	UNIT	1345		1345	$ 19.59	$ 26,343.48
						SODDING TOTAL (ROUNDED)	$ 131,800
Maintenace of Traffic							
N/A	Traffic Control	LS	1	2	3	$ 188,178.18	$ 564,534.54
712-02.02	Interconnected Portable Barrier Rail	LF	652	26000	26652	$ 31.07	$ 828,051.62
712-09.01	Removable Pavement Marking Line	LF		105000	105000	$ 2.09	$ 219,806.05
712-09.02	Removable Pavement Marking (8" Barrier Line)	LF		150000	150000	$ 3.57	$ 535,258.67
						MAINTENANCE OF TRAFFIC TOTAL (ROUNDED)	$ 2,147,700
Signs							
713-09.06	Steel Overhead Sign Structure	EA		1	1	$ 133,120.00	$ 133,120.00
Not Listed	Signs (Construction)	LS	1	1	2	$ 16,100.00	$ 32,200
						SIGNING TOTAL (ROUNDED)	$ 165,400
Pavement Markings							
716-01.23	Snwplwble Pvmt Mrkrs (Bi-Dir)(2 Color)	EA		350	350	$ 30.11	$ 10,537.76
716-12.02	Enhanced Flat Thermo P.M. (6")	LM		24.7	24.7	$ 4,681.46	$ 115,632.12
						PAVEMENT MARKINGS TOTAL (ROUNDED)	$ 126,200
Fencing							
						FENCE TOTAL (ROUNDED)	$ -
Rip-Rap							
709-05.05	Machined Rip-Rap (Class A-3)	TON		800	800	$ 34.74	$ 27,791.00
709-05.06	Machined Rip-Rap (Class A-1)	TON		300	300	$ 32.44	$ 9,731.84
709-05.08	Machined Rip-Rap (Class B)	TON		150	150	$ 33.70	$ 5,054.63
709-05.09	Machined Rip-Rap (Class C)	TON		90	90	$ 32.78	$ 2,949.94
						RIP-RAP & SLOPE PROTECTION TOTAL (ROUNDED)	$ 45,600.00
Clearing and Grubing							
201-01	Clearing and Grubbing	LS		0.3	0.3	$ 264,380.06	$ 79,314.02
						CLEAR AND GRUBBING TOTAL (ROUNDED)	$ 79,400.00
Railroad At-Grade Crossing							
N/A	Railroad Coordination and Construction Flagger	DAYS		600	600	$ 1,000.00	$ 600,000.00
						RAILROAD CROSSING OR SEPARATION TOTAL (ROUNDED)	$ 600,000.00
Utilties							
						UTILITIES TOTAL (ROUNDED)	$ -
Right-of-Way							
						RIGHT-OF-WAY TOTAL (ROUNDED)	$ -

COST ESTIMATE SUMMARY

Route:	Interstate 24 (Section 2)
Description:	From the Georgia State Line (L.M. 0.00)
	To East of Browns Ferry (L.M. 4.73)
County:	Hamilton
Length:	4.73 Miles
Date:	August 10, 2018

TN TDOT Department of Transportation

DESCRIPTION	LOCAL 0%	STATE 0%	FEDERAL 0%	TOTAL	% Contribution
Construction Items					
Pavement Removal	$0	$0	$0	$1,238,200	2.61%
Asphalt Paving	$0	$0	$0	$14,156,900	29.82%
Concrete Pavement	$0	$0	$0	$0	0.00%
Drainage	$0	$0	$0	$1,404,300	2.96%
Appurtenances	$0	$0	$0	$0	0.00%
Structures	$0	$0	$0	$22,740,600	47.90%
Fencing	$0	$0	$0	$0	0.00%
Signalization	$0	$0	$0	$319,000	0.67%
Railroad Crossing or Separation	$0	$0	$0	$0	0.00%
Earthwork	$0	$0	$0	$2,559,100	5.39%
Clearing and Grubbing	$0	$0	$0	$198,300	0.42%
Seeding & Sodding	$0	$0	$0	$181,800	0.38%
Rip-Rap or Slope Protection	$0	$0	$0	$76,500	0.16%
Guardrail	$0	$0	$0	$494,400	1.04%
Signing	$0	$0	$0	$220,000	0.46%
Pavement Markings	$0	$0	$0	$189,800	0.40%
Maintenance of Traffic	$0	$0	$0	$3,692,700	7.78%
Mobilization (10%)	$0	$0	$0	$4,747,200	
Other Items = 20%	$0	$0	$0	$10,443,800	
Const. Contingency = 30%	$0	$0	$0	$11,976,600	
Construction Estimate	$0	$0	$0	$74,639,200	
Interchanges & Unique Intersections					
Roundabouts	$0	$0	$0	$0	
Interchanges	$0	$0	$0	$0	
Right-of-Way & Utilties	**LOCAL 0%**	**STATE 0%**	**FEDERAL 0%**	**TOTAL**	
Right-of-Way	$0	$0	$0	$0	
Utilities	$0	$0	$0	$94,000	
Preliminary & Construction Engineering and Inspection					
Prelim. Eng. 5%	$0	$0	$0	$3,564,000	
Const. Eng. & Inspec. 10%	$0	$0	$0	$7,473,000	
Total Project Cost	$0	$0	$0	$ 85,770,000	

Per Mile Cost
$ 18,133,192.39

PAY ITEM SUMMARY

TDOT PAY ITEM	TDOT DESCRIPTION	UNIT	TOOL QUANTITIES	ADDITIONAL QUANTITIES	TOOL QUANTITIES + ADDITIONAL QUANTITIES	Statewide UNIT COST	TOTAL COST
Pavment Removal							
411-12.01	Scoring Shoulders (Cont. 16")	L.M.		9.46	9	$ 616.22	$ 5,829.47
415-01.02	Cold Planning Bituminous Pavement	SY	133197	80000	213197	$ 5.78	$ 1,232,277.50
						PAVEMENT REMOVAL TOTAL (ROUNDED)	$ 1,238,200
Asphalt Roads							
303-01	Mineral Aggregate, Type A Base, Grading D	TON	283709		283709	$ 18.13	$ 5,145,016.20
307-02.01	Asphalt Concrete Mix (PG70-22) (BPMB-HM) Grading A	TON	30635	25529	56164	$ 62.92	$ 3,533,613.15
307-02.02	Asphalt Cement (PG70-22)(BPMB-HM) Grading A-S	TON	337		337	$ 720.36	$ 242,871.50
307-02.03	Aggregate (BPMB-HM) Grading A-S Mix	TON	10901		10901	$ 59.87	$ 652,650.56
307-02.08	Asphalt Concrete Mix (PG70-22) (BPMB-HM) Grading B-M2	TON	22577	6271	28848	$ 69.73	$ 2,011,633.54
402-01	Bituminous Material For Prime Coat (PC)	TON	277		277	$ 514.58	$ 142,421.62
402-02	Aggregate For Cover Material (PC)	TON	999		999	$ 23.89	$ 23,862.50
403-01	Bituminous Material For Tack Coat (TC)	TON	141	17	158	$ 687.73	$ 108,846.61
411-01.07	ACS (PG64-22) GR "E"	TON	10739		10739	$ 78.53	$ 843,332.27
411-02.10	ACS Mix(PG70-22) Grading D	TON	13236	3677	16913	$ 85.88	$ 1,452,589.46
						PAVING TOTAL (ROUNDED)	$ 14,156,900
Concrete Roads							
						CONCRETE RAMPS AND ROADWAYS TOTAL (ROUNDED)	$ -
Drainage							
209-05	Sediment Removal	CY		7310	7310	$ 10.12	$ 73,994.98
209-08.03	Temporary Silt Fence (Without Backing)	LF		10000	10000	$ 1.53	$ 15,296.02
209-08.07	Rock Check Dam	EACH		200	200	$ 223.69	$ 44,738.15
209-08.08	Enhanced Rock Check Dam	EACH		100	100	$ 391.19	$ 39,118.54
209-09.03	Sediment Filter Bag (15' x15')	EACH		2	2	$ 515.07	$ 1,030.15
209-40.41	Catch Basin Filter Assembly (Type 1)	EACH		15	15	$ 490.37	$ 7,355.60
209-40.42	Catch Basin Filter Assembly (Type 2)	EACH		15	15	$ 507.43	$ 7,611.43
606-24.10	Sheet Piles	SF		500	500	$ 36.18	$ 18,090.00
607-05.02	24" Concrete Pipe Culvert (Class III)	LF	9514		9514	$ 65.21	$ 620,421.14
611-07.01	Class A Concrete (Pipe Endwalls)	CY	152		152	$ 840.10	$ 127,951.98
611-07.02	Steel Bar Reinforcement (Pipe Endwalls)	LB	14474		14474	$ 2.06	$ 29,807.39
611-41.02	Catch Basins, Type 41, > 4' - 8' Depth	EA		10	10	$ 4,729.22	$ 47,292.19
611-51.02	Catch Basins, Type 51, > 4' - 8' Depth	EA		5	5	$ 7,235.77	$ 36,178.85
710.02	Aggregate Underdrains (with pipe)	LF	49949		49949	$ 5.46	$ 272,720.45
740-11.03	TEMPORARY SEDIMENT TUBE 18IN (DESCRIPT)	LF		20000	20000	$ 3.13	$ 62,675.42
						DRAINAGE TOTAL (ROUNDED)	$ 1,404,300
Appurtenances							
						ROADWAY AND PAVEMENT APPURTENANCES TOTAL (ROUNDED)	$ -
Earthwork & Mineral							
105-01	Constrction Stakes, Lines, and Grades	LS	1		1	$ 112,407.96	$ 112,407.96
203-01	Road & Drainage Excavation (Unclassified)	CY	339816	-265576	74240	$ 16.20	$ 1,202,428.25
203-03	Borrow Excavation (Unclassified)	CY	283180	-199683	83497	$ 14.52	$ 1,212,050.54
303-10.01	Mineral Aggregate (Size 57)	TON		1100	1100	$ 29.27	$ 32,192.50
						EARTHWORK & MINERAL TOTAL (ROUNDED)	$ 2,559,100
Structures							
N/A	Removal of Bridge	SF	52111		52111	$ 30.00	$ 1,563,324.00
N/A	New Bridge (Concrete Girder):	SF	18848		18848	$ 200.00	$ 3,769,600.00
N/A	New Bridge (Steel Girder):	SF	53692		53692	$ 300.00	$ 16,107,600.00
604-07.01	Retaining Wall	SF	13000		13000	$ 100.00	$ 1,300,000.00
						STRUCTURES TOTAL (ROUNDED)	$ 22,740,600
Interchanges and Unique Intersections							
						INTERCHANGES AND UNIQUE INTERSECTIONS TOTAL (ROUNDED)	$ -
Lighting & Signalization							
714-01.32	Structural Lighting	LS		8	8	$ 9,743.29	$ 77,946.32
725-20.91	CCTV CAMERA SYSTEM (PAN, TILT & ZOOM)	EA		3	3	$ 10,000.00	$ 30,000.00
725-21.02	DYNAMIC MESSAGE SIGN (MULTI-COLOR)	EA		1	1	$ 145,000.00	$ 145,000.00
725-21.06	DYNAMIC MESSAGE SIGN REMOVE AND REPLACE	EA		1	1	$ 20,000.00	$ 20,000.00
N/A	ITS Installation	LS		1	1	$ 46,000.00	$ 46,000.00
						LIGHTING & SIGNALIZATION TOTAL (ROUNDED)	$ 319,000
Guardrail							
705-01.01	Guardrail at Bridge Ends	LF	800		800	$ 53.33	$ 42,661.82
705-02.02	Single Guardrail (Type 2)	LF	13736	10000	23735.92	$ 15.95	$ 378,496.22
705-04.07	Tan Energy Absg Term (NCHRP, 350, TL3)	EA	42	-22	20	$ 2,339.36	$ 46,787.26
705-04.09	Earth Pad for Type 38 GR End Treatment	EA	42	-22	20	$ 1,319.83	$ 26,396.55
						GUARDRAIL TOTAL (ROUNDED)	$ 494,400
Seeding and Sodding							
801-01	Seeding (With Mulch)	UNIT	3626		3626	$ 22.48	$ 81,500.04
801-01.07	Temporary Seeding (With Mulch)	UNIT	2719		2719	$ 22.85	$ 62,130.30
801-02	Seeding (Without Mulch)	UNIT	2719		2719	$ 14.01	$ 38,088.46
						SODDING TOTAL (ROUNDED)	$ 181,800
Maintenace of Traffic							
N/A	Traffic Control	LS	1	2	3	$ 401,475.42	$ 1,204,426.26
712-02.02	Interconnected Portable Barrier Rail	LF	1249	48700	49949	$ 30.29	$ 1,512,850.10
712-09.01	Removable Pavement Marking Line	LF		125000	125000	$ 2.09	$ 261,673.87
712-09.02	Removable Pavement Marking (8" Barrier Line)	LF		200000	200000	$ 3.57	$ 713,678.23
						MAINTENANCE OF TRAFFIC TOTAL (ROUNDED)	$ 3,692,700
Signs							
713-09.06	Steel Overhead Sign Structure	EA		1	1	$ 133,120.00	$ 133,120.00
Not Listed	Signs (Construction)	LS	1	1	2	$ 43,400.00	$ 86,800
						SIGNING TOTAL (ROUNDED)	$ 220,000
Pavement Markings							
716-01.23	Snwplwble Pvmt Mrkrs (Bi-Dir)(2 Color)	EA		550	550	$ 30.11	$ 16,559.34
716-12.02	Enhanced Flat Thermo P.M. (6")	LM		37	37	$ 4,681.46	$ 173,214.10
						PAVEMENT MARKINGS TOTAL (ROUNDED)	$ 189,800
Fencing							
						FENCE TOTAL (ROUNDED)	$ -
Rip-Rap							
709-05.05	Machined Rip-Rap (Class A-3)	TON		1200	1200	$ 34.74	$ 41,686.50
709-05.06	Machined Rip-Rap (Class A-1)	TON		700	700	$ 32.44	$ 22,707.62
709-05.08	Machined Rip-Rap (Class B)	TON		250	250	$ 33.70	$ 8,424.39

PAY ITEM SUMMARY

709-05.09	Machined Rip-Rap (Class C)	TON		110	110	$ 32.78	$ 3,605.49
						RIP-RAP & SLOPE PROTECTION TOTAL (ROUNDED)	$ 76,500.00
Clearing and Grubing							
201-01	Clearing and Grubbing	LS		0.75	0.75	$ 264,380.06	$ 198,285.05
						CLEAR AND GRUBBING TOTAL (ROUNDED)	$ 198,300.00
Railroad At-Grade Crossing							
						RAILROAD CROSSING OR SEPARATION TOTAL (ROUNDED)	$ -
Utilties							
N/A	Overhead Distribution	LM	0.25		0.25	$ 375,000	$ 93,750
						UTILITIES TOTAL (ROUNDED)	$ 93,800.00
Right-of-Way							
N/A	Right-of-Way	LS	1		1	$ -	$ -
						RIGHT-OF-WAY TOTAL (ROUNDED)	$ -

COST ESTIMATE SUMMARY

Route:	Interstate 24 (Section 3)
Description:	From East of Browns Ferry (L.M. 4.73)
	To I-124 (US-27) (L.M. 7.33)
County:	Hamilton
Length:	2.60 Miles
Date:	August 10, 2018

TN TDOT Department of Transportation

DESCRIPTION	LOCAL 0%	STATE 0%	FEDERAL 0%	TOTAL	% Contribution
Construction Items					
Pavement Removal	$0	$0	$0	$561,400	1.08%
Asphalt Paving	$0	$0	$0	$9,314,900	17.89%
Concrete Pavement	$0	$0	$0	$0	0.00%
Drainage	$0	$0	$0	$2,054,200	3.95%
Appurtenances	$0	$0	$0	$2,191,200	4.21%
Structures	$0	$0	$0	$31,043,900	59.63%
Fencing	$0	$0	$0	$9,400	0.02%
Signalization	$0	$0	$0	$291,900	0.56%
Railroad Crossing or Separation	$0	$0	$0	$750,000	1.44%
Earthwork	$0	$0	$0	$1,488,100	2.86%
Clearing and Grubbing	$0	$0	$0	$92,600	0.18%
Seeding & Sodding	$0	$0	$0	$107,800	0.21%
Rip-Rap or Slope Protection	$0	$0	$0	$45,600	0.09%
Guardrail	$0	$0	$0	$163,900	0.31%
Signing	$0	$0	$0	$628,700	1.21%
Pavement Markings	$0	$0	$0	$159,700	0.31%
Maintenance of Traffic	$0	$0	$0	$3,161,300	6.07%
Mobilization (10%)	$0	$0	$0	$2,603,200	
Other Items = 20%	$0	$0	$0	$10,933,600	
Const. Contingency = 30%	$0	$0	$0	$10,367,300	
Construction Estimate	$0	$0	$0	$75,969,000	
Interchanges & Unique Intersections					
Roundabouts	$0	$0	$0	$0	
Interchanges	$0	$0	$0	$0	
Right-of-Way & Utilties	**LOCAL 0%**	**STATE 0%**	**FEDERAL 0%**	**TOTAL**	
Right-of-Way	$0	$0	$0	$250,000	
Utilities	$0	$0	$0	$0	
Preliminary & Construction Engineering and Inspection					
Prelim. Eng. 5%	$0	$0	$0	$3,555,000	
Const. Eng. & Inspec. 10%	$0	$0	$0	$7,622,000	
Total Project Cost	$0	$0	$0	$ 87,396,000	

Per Mile Cost	
$	33,613,846.15

PAY ITEM SUMMARY

TDOT PAY ITEM	TDOT DESCRIPTION	UNIT	TOOL QUANTITIES	ADDITIONAL QUANTITIES	TOOL QUANTITIES + ADDITIONAL QUANTITIES	Statewide UNIT COST	TOTAL COST
Pavment Removal							
411-12.01	Scoring Shoulders (Cont. 16")	L.M.		5.2	5	$ 616.22	$ 3,204.36
415-01.02	Cold Planning Bituminous Pavement	SY	73216	100000	173216	$ 3.22	$ 558,183.19
						PAVEMENT REMOVAL TOTAL (ROUNDED)	$ 561,400
Asphalt Roads							
303-01	Mineral Aggregate, Type A Base, Grading D	TON	199468		199468	$ 18.13	$ 3,617,313.43
307-02.01	Asphalt Concrete Mix (PG70-22) (BPMB-HM) Grading A	TON	16840	14033	30873	$ 62.92	$ 1,942,375.81
307-02.02	Asphalt Cement (PG70-22)(BPMB-HM) Grading A-S	TON	185		185	$ 723.47	$ 134,079.25
307-02.03	Aggregate (BPMB-HM) Grading A-S Mix	TON	5992		5992	$ 66.40	$ 397,880.41
307-02.08	Asphalt Concrete Mix (PG70-22) (BPMB-HM) Grading B-M2	TON	16547	3447	19994	$ 69.73	$ 1,394,218.99
402-01	Bituminous Material For Prime Coat (PC)	TON	203		203	$ 567.84	$ 115,186.05
402-02	Aggregate For Cover Material (PC)	TON	732		732	$ 35.19	$ 25,763.33
403-01	Bituminous Material For Tack Coat (TC)	TON	89	9	98	$ 723.55	$ 70,724.58
411-01.07	ACS (PG64-22) GR "E"	TON	8855		8855	$ 78.53	$ 695,347.96
411-02.10	ACS Mix(PG70-22) Grading D	TON	7276	2021	9297	$ 99.17	$ 921,963.32
						PAVING TOTAL (ROUNDED)	$ 9,314,900
Concrete Roads							
						CONCRETE RAMPS AND ROADWAYS TOTAL (ROUNDED)	$ -
Drainage							
209-05	Sediment Removal	CY		5100	5100	$ 10.12	$ 51,624.40
209-08.02	Temporary Silt Fence (With Backing)	LF		2000	2000	$ 3.74	$ 7,487.88
209-08.03	Temporary Silt Fence (Without Backing)	LF		67400	67400	$ 1.53	$ 103,095.14
209-08.07	Rock Check Dam	EACH		100	100	$ 223.69	$ 22,369.07
209-08.08	Enhanced Rock Check Dam	EACH		50	50	$ 391.19	$ 19,559.27
209-09.03	Sediment Filter Bag (15' x15')	EACH		6	6	$ 515.07	$ 3,090.44
209-40.41	Catch Basin Filter Assembly (Type 1)	EACH		35	35	$ 490.37	$ 17,163.06
209-40.42	Catch Basin Filter Assembly (Type 2)	EACH		35	35	$ 507.43	$ 17,760.01
606-24.10	Sheet Piles	SF		2500	2500	$ 36.18	$ 90,450.00
607-05.02	24" Concrete Pipe Culvert (Class III)	LF	18460		18460	$ 65.21	$ 1,203,764.26
611-07.01	Class A Concrete (Pipe Endwalls)	CY	84		84	$ 937.74	$ 78,507.48
611-07.02	Steel Bar Reinforcement (Pipe Endwalls)	LB	7956		7956	$ 2.17	$ 17,292.21
611-41.02	Catch Basins, Type 41, > 4' - 8' Depth	EA		30	30	$ 4,729.22	$ 141,876.58
611-51.02	Catch Basins, Type 51, > 4' - 8' Depth	EA		5	5	$ 7,235.77	$ 36,178.85
710.02	Aggregate Underdrains (with pipe)	LF	27456		27456	$ 5.46	$ 149,909.76
740-11.03	TEMPORARY SEDIMENT TUBE 18IN (DESCRIPT)	LF		30000	30000	$ 3.13	$ 94,013.13
						DRAINAGE TOTAL (ROUNDED)	$ 2,054,200
Appurtenances							
202-08.28	Removal of Median Barrier	LF		1900	1900	$ 85.00	$ 161,500.00
711-05.71	51" Single Slope Concrete Barrier Wall	LF	13728	5000	18728	$ 108.38	$ 2,029,661.59
						ROADWAY AND PAVEMENT APPURTENANCES TOTAL (ROUNDED)	$ 2,191,200
Earthwork & Mineral							
105-01	Constrction Stakes, Lines, and Grades	LS	1		1	$ 112,407.96	$ 112,407.96
203-01	Road & Drainage Excavation (Unclassified)	CY	176939	-136131	40808	$ 16.47	$ 672,065.37
203-03	Borrow Excavation (Unclassified)	CY	147449	-101552	45897	$ 14.76	$ 677,253.07
303-10.01	Mineral Aggregate (Size 57)	TON		900	900	$ 29.27	$ 26,339.32
						EARTHWORK & MINERAL TOTAL (ROUNDED)	$ 1,488,100
Structures							
N/A	Removal of Bridge	SF	37403		37403	$ 30.00	$ 1,122,084.00
N/A	New Bridge (Concrete Girder):	SF	52824		52824	$ 200.00	$ 10,564,800.00
604-07.01	Retaining Wall	SF	193570		193570	$ 100.00	$ 19,357,000.00
						STRUCTURES TOTAL (ROUNDED)	$ 31,043,900
Interchanges and Unique Intersections							
						INTERCHANGES AND UNIQUE INTERSECTIONS TOTAL (ROUNDED)	$ -
Lighting & Signalization							
714-01.32	Structural Lighting	LS		4	4	$ 9,743.29	$ 38,973.16
714-01.38	Light Pole Relocation	EA		4	4	$ 1,561.78	$ 6,247.12
714-08.06	Light Standards (Steel)	EA		4	4	$ 3,900.00	$ 15,600.00
725-20.91	CCTV CAMERA SYSTEM (PAN, TILT & ZOOM)	EA		2	2	$ 10,000.00	$ 20,000.00
725-21.02	DYNAMIC MESSAGE SIGN (MULTI-COLOR)	EA		1	1	$ 145,000.00	$ 145,000.00
725-21.06	DYNAMIC MESSAGE SIGN REMOVE AND REPLACE	EA		1	1	$ 20,000.00	$ 20,000.00
N/A	ITS Installation	LS		1	1	$ 46,000.00	$ 46,000.00
						LIGHTING & SIGNALIZATION TOTAL (ROUNDED)	$ 291,900
Guardrail							
705-01.01	Guardrail at Bridge Ends	LF	400		400	$ 62.21	$ 24,885.29
705-02.02	Single Guardrail (Type 2)	LF	7550		7550.4	$ 17.92	$ 135,288.55
705-04.07	Tan Energy Absg Term (NCHRP, 350, TL3)	EA	22	-21	1	$ 2,355.08	$ 2,355.08
705-04.09	Earth Pad for Type 38 GR End Treatment	EA	22	-21	1	$ 1,290.11	$ 1,290.11
						GUARDRAIL TOTAL (ROUNDED)	$ 163,900
Seeding and Sodding							
801-01	Seeding (With Mulch)	UNIT	1201		1201	$ 52.06	$ 62,529.41
801-01.07	Temporary Seeding (With Mulch)	UNIT	901		901	$ 27.62	$ 24,880.15
801-02	Seeding (Without Mulch)	UNIT	901		901	$ 22.57	$ 20,335.28
						SODDING TOTAL (ROUNDED)	$ 107,800
Maintenace of Traffic							
N/A	Traffic Control	LS	1	2	3	$ 441,445.74	$ 1,324,337.22
712-02.02	Interconnected Portable Barrier Rail	LF	686	27000	27686	$ 31.03	$ 859,226.98
712-09.01	Removable Pavement Marking Line	LF		75000	75000	$ 2.09	$ 157,004.32
712-09.02	Removable Pavement Marking (8" Barrier Line)	LF		230000	230000	$ 3.57	$ 820,729.97
						MAINTENANCE OF TRAFFIC TOTAL (ROUNDED)	$ 3,161,300
Signs							
713-09.06	Steel Overhead Sign Structure	EA		4	4	$ 133,120.00	$ 532,480.00
Not Listed	Signs (Construction)	LS	1	1	2	$ 48,100.00	$ 96,200
						SIGNING TOTAL (ROUNDED)	$ 628,700
Pavement Markings							
716-01.23	Snwplwble Pvmt Mrkrs (Bi-Dir)(2 Color)	EA		450	450	$ 30.11	$ 13,548.55
716-12.02	Enhanced Flat Thermo P.M. (6")	LM		31.2	31.2	$ 4,681.46	$ 146,061.62
						PAVEMENT MARKINGS TOTAL (ROUNDED)	$ 159,700
Fencing							
707-01.11	Chain Link Fence (6 Foot)	LF		800	800	$ 10.69	$ 8,553.20
708-02.01	Markers (Concrete ROW Posts)	EA		4	4	$ 190.44	$ 761.76

PAY ITEM SUMMARY

						FENCE TOTAL (ROUNDED)	$ 9,400.00
Rip-Rap							
709-05.05	Machined Rip-Rap (Class A-3)	TON		800	800	$ 34.74	$ 27,791.00
709-05.06	Machined Rip-Rap (Class A-1)	TON		300	300	$ 32.44	$ 9,731.84
709-05.08	Machined Rip-Rap (Class B)	TON		150	150	$ 33.70	$ 5,054.63
709-05.09	Machined Rip-Rap (Class C)	TON		90	90	$ 32.78	$ 2,949.94
						RIP-RAP & SLOPE PROTECTION TOTAL (ROUNDED)	$ 45,600.00
Clearing and Grubing							
201-01	Clearing and Grubbing	LS		0.35	0.35	$ 264,380.06	$ 92,533.02
						CLEAR AND GRUBBING TOTAL (ROUNDED)	$ 92,600.00
Railroad At-Grade Crossing							
N/A	Railroad Coordination and Construction Flagger	DAYS		750	750	$ 1,000.00	$ 750,000.00
						RAILROAD CROSSING OR SEPARATION TOTAL (ROUNDED)	$ 750,000.00
Utilties							
						UTILITIES TOTAL (ROUNDED)	$ -
Right-of-Way							
N/A	Right-of-Way	LS	1		1	$ 250,000.00	$ 250,000.00
						RIGHT-OF-WAY TOTAL (ROUNDED)	$ 250,000.00

7.2 Background Data

Project Photographs
Technical Report
Interstate 24
Hamilton County
Date Photos Taken: 12/18/2017

Photograph 1

L.M. 7.40

View looking west along Interstate 24 near ramp from Interstate 124 (U.S. 27).

Photograph 2

L.M. 6.00

View looking west along Interstate 24. River is visible to the right and the grade separation is visible to the left.

Project Photographs
Technical Report
Interstate 24
Hamilton County
Date Photos Taken: 12/18/2017

Photograph 3

L.M. 4.85

View looking west along Interstate 24. Overhead dynamic message sign visible.

Photograph 4

L.M. 4.50

View looking west along Interstate 24 at exit ramp to Browns Ferry Road.

Project Photographs
Technical Report
Interstate 24
Hamilton County
Date Photos Taken: 12/18/2017

Photograph 5

L.M. 0.00

View looking east along Interstate 24. Grass median with grade separation visible.

Photograph 6

L.M. 4.45

View looking east along Interstate 24. Monument near R.O.W. east of Browns Ferry Road.

Project Photographs
Technical Report
Interstate 24
Hamilton County
Date Photos Taken: 12/18/2017

Photograph 7

L.M. 5.90

View looking east along Interstate 24. Railroad and cliffs visible.

Photograph 8

L.M. 6.50

View looking east along Interstate 24. Railroad yard is visble.

Route Feature Description Listing

Hamilton County (33) - Route: I0024, Special Case: 0-None , County Sequence: 2, Log Mile 0 to 9

COUNTY: HAMILTON **COUNTY NO:** 33

ROUTE: I0024 **SPECIAL CASE:** 0-NONE **CTY SEQ:** 2

LOG MILE	ITEM CODE	ROUTE FEATURE	DESC CODE
0.000	1	TENNESSEE-GEORGIA STATE LINE	110
0.000	1	ENTER CHATTANOOGA CITY LIMITS	130
0.000	0	BEGIN I-24	920
0.000	9	BEGIN 65 MPH	932
0.000	9	TRUCK 55 MPH	932
0.030	9	CULVERT: C036	980
0.400	9	EMBEDDED DETECTION LOOPS [CYCLE COUNT # 186] WB	969
0.480	9	EMBEDDED DETECTION LOOPS [CYCLE COUNT # 186] EB	969
0.500	9	ITS CAMERA # 24-1 / EB LNS.	967
0.710	0	ENTRANCE TO REST AREA & WELCOME CENTER RT.	943
0.900	0	REST AREA & WELCOME CENTER RT.	943
0.919	9	TRAFFIC COUNT STATION 524	959
0.970	0	MILE POST # 172	963
1.000	0	EXIT FROM REST AREA & WELCOME CENTER RT. [REST AREA ATR]	943
1.270	2	OVERHEAD: ROCK QUARRY RD.	205
1.280	9	ITS CAMERA # 24-2 / EB LNS.	967
1.417	9	TRAFFIC COUNT STATION 186	959
1.820	9	ITS CAMERA # 24-3 / WB LNS.	967
1.990	0	MILE POST # 173	963
2.300	2	PARALLEL BRIDGES [33I00240001] [33I00240002]: BLACK CREEK	211
2.300	2	PARALLEL OVERHEADS [33I00240001] [33I00240002]: 5000 CUMMINGS RD.	211
2.340	9	ITS CAMERA # 24-4 / WB LNS.	967
2.730	0	EXIT 174: US-11 / 41 / 64 / TIFTONIA / LOOKOUT MOUNTAIN	990
2.730	7	RAMP 174-A TO SR-2 CUMMINGS HWY. RT.	711
2.730	7	RAMP 174-D FROM SR-2 CUMMINGS HWY. LT.	715
2.880	9	ITS CAMERA # 24-5 / EB LNS.	967
2.900	2	PARALLEL OVERHEADS [33I00240003] [33I00240004]: SR-2 CUMMINGS HWY.	241
2.900	0	INTERCHANGE 0174	939

Route Feature Description Listing

Hamilton County (33) - Route: I0024, Special Case: 0-None , County Sequence: 2, Log Mile 0 to 9

COUNTY: HAMILTON **COUNTY NO:** 33

ROUTE: I0024 **SPECIAL CASE:** 0-NONE **CTY SEQ:** 2

LOG MILE	ITEM CODE	ROUTE FEATURE	DESC CODE
3.000	0	MILE POST # 174	963
3.130	7	RAMP 174-B FROM SR-2 CUMMINGS HWY. RT.	714
3.130	7	RAMP 174-C TO SR-2 CUMMINGS HWY. LT.	712
3.361	9	TRAFFIC COUNT STATION 183	959
3.400	9	ITS CAMERA # 24-6 / WB LNS.	967
3.570	2	PARALLEL OVERHEADS [33I00240005] [33I00240006]: C037 KELLYS FERRY RD.	231
3.960	0	MILE POST # 175	963
3.960	0	EXIT 175: BROWNS FERRY RD. / LOOKOUT MOUNTAIN	990
3.960	7	RAMP 175-A TO 3622 BROWNS FERRY RD. RT.	721
4.090	7	RAMP 175-D FROM 3622 BROWNS FERRY RD. LT.	725
4.220	2	PARALLEL OVERHEADS [33I00240007] [33I00240008]: 3622 BROWNS FERRY RD.	231
4.220	9	ITS CAMERA # 24-7 / EB LNS.	967
4.220	0	INTERCHANGE 0175	939
4.400	7	RAMP 175-B FROM 3622 BROWNS FERRY RD. RT.	724
4.430	7	RAMP 175-C TO 3622 BROWNS FERRY RD. LT.	722
4.770	9	ITS CAMERA # 24-8 / WB LNS.	967
4.970	0	MILE POST # 176	963
5.220	9	ITS CAMERA # 24-9 / WB LNS.	967
5.330	2	PARALLEL BRIDGES [33I00240009] [33I00240010]: LOOKOUT CREEK	261
5.980	0	MILE POST # 177	963
6.190	2	PARALLEL BRIDGES [33I00240011] [33I00240012]: CHATTANOOGA CREEK	261
6.250	9	BEGIN 55 MPH	932
6.520	9	EMBEDDED DETECTION LOOPS [CYCLE COUNT # 182]	969
6.530	9	ITS CAMERA # 24-10 / EB LNS.	967
6.800	9	BEGIN ILLUMINATION	930
7.060	0	MILE POST # 178	963
7.090	9	TRAFFIC COUNT STATION 182	959
7.330	0	EXIT 178: US-11 / 41 / 64 / LOOKOUT MOUNTAIN / BROAD ST. / US-27 NORTH / DOWNTOWN CHATTANOOGA	990

Route Feature Description Listing

Hamilton County (33) - Route: I0024, Special Case: 0-None , County Sequence: 2, Log Mile 0 to 9

COUNTY: HAMILTON **COUNTY NO:** 33

ROUTE: I0024 **SPECIAL CASE:** 0-NONE **CTY SEQ:** 2

LOG MILE	ITEM CODE	ROUTE FEATURE	DESC CODE
7.330	3	I-124 WB LNS. RT.	360
7.340	3	I-124 EB LNS. LT.	360
7.410	2	PARALLEL OVERHEADS [33I00240013] [33I00240014]: CSXT [350085U]	205
7.520	2	OVERHEAD [33I00240015]: I-124 NB LNS. / RT. LNS. ONLY	241
7.530	2	OVERHEAD [33I00240016]: I-124 NB LNS. / LT. LNS. ONLY	241
7.530	9	ITS CAMERA # 24-11 / WB LNS.	967
7.570	0	PICK UP US-27 DESIGNATION	992
7.610	9	END OF OVERHEAD	983
7.630	2	PARALLEL OVERHEADS [33I00240017] [33I00240018]: A660 CHESTNUT ST. / CSXT [350052G]	205
7.710	7	RAMP 178-E FROM A643 WILLIAMS ST. LT. / LT. LNS. ONLY	735
7.740	9	END OF OVERHEADS	983
7.780	0	INTERCHANGE 0178	939
7.780	2	PARALLEL OVERHEADS [33I00240021] [33I00240022]: SR-2 BROAD ST.	251
7.840	7	RAMP 178-A FROM I-124 SB LNS. / RT. LNS. ONLY	705
7.910	2	PARALLEL OVERHEADS [33I00240023] [33I00240024]: A643 WILLIAMS ST.	251
8.010	0	MILE POST # 179	963
8.030	2	PARALLEL OVERHEADS [33I00240025] [33I00240026]: A642 LONG ST.	251
8.100	2	PARALLEL OVERHEADS [33I00240027] [33I00240028]: SR-58 MARKET ST.	251
8.130	3	SR-58 MARKET ST. / CENTER OF OVERHEAD	370
8.230	7	RAMP 178-B FROM SR-58 MARKET ST. & A642 LONG ST. RT.	714
8.380	7	RAMP 178-C FROM SR-58 MARKET ST. RT.	714
8.430	7	RAMP 178-D TO I-124 NB LNS. LT. / LT. LNS. ONLY	703
8.520	9	EMBEDDED DETECTION LOOPS [CYCLE COUNT # 154]	969
8.533	9	TRAFFIC COUNT STATION 154	959
8.550	9	ITS CAMERA # 24-12 / WB LNS.	967
8.560	2	PARALLEL OVERHEADS [33I00240029] [33I00240030]: NS [736869S]	241
8.740	2	PARALLEL OVERHEADS [33I00240031] [33I00240032]: RAMP TO SR-2 E. 23RD ST.	251
8.740	0	INTERCHANGE 180A	939

Route Feature Description Listing

Hamilton County (33) - Route: I0024, Special Case: 0-None , County Sequence: 2, Log Mile 0 to 9

COUNTY: HAMILTON **COUNTY NO:** 33

ROUTE: I0024 **SPECIAL CASE:** 0-NONE **CTY SEQ:** 2

LOG MILE	ITEM CODE	ROUTE FEATURE	DESC CODE
8.820	0	EXIT 180A: SR-8 NORTH / ROSSVILLE BLVD. / CENTRAL AVE.	990
8.820	7	RAMP 180A-A TO SR-2 E. 23RD ST. RT.	711
8.910	9	AUTOMATIC TRAFFIC RECORDER [ATR # 30] WB	960
8.920	9	AUTOMATIC TRAFFIC RECORDER [ATR # 30] EB	960
8.940	2	OVERHEAD [33I00240033]: B631 BURNETT ST.	251
8.968	9	TRAFFIC COUNT STATION 990	959
8.980	0	MILE POST # 180	963

Road Segment Report

Hamilton County (33) - Route: I0024, Special Case: 0-None , County Sequence: 2

COUNTY: HAMILTON **COUNTY NO: 33**

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	2	0.000	1.830	08	11				U / INTERSTATE	02-INTERSTATE URBAN	52	52	STATE HWAY AGENCY	I-24	3302I0240000
I0024	0	2	1.830	2.900	08	11				U / INTERSTATE	02-INTERSTATE URBAN	52	52	STATE HWAY AGENCY	I-24	
I0024	0	2	2.900	4.090	08	11				U / INTERSTATE	02-INTERSTATE URBAN	52	52	STATE HWAY AGENCY	I-24	3302I0240291
I0024	0	2	4.090	4.220	08	11				U / INTERSTATE	02-INTERSTATE URBAN	52	52	STATE HWAY AGENCY	I-24	3302I0240419
I0024	0	2	4.220	4.430	08	11				U / INTERSTATE	02-INTERSTATE URBAN	52	52	STATE HWAY AGENCY	I-24	
I0024	0	2	4.430	6.750	08	11				U / INTERSTATE	02-INTERSTATE URBAN	52	52	STATE HWAY AGENCY	I-24	3302I0240464
I0024	0	2	6.750	7.330	08	11				U / INTERSTATE	02-INTERSTATE URBAN	52	52	STATE HWAY AGENCY	I-24	
I0024	0	2	7.330	7.520	08	11				U / INTERSTATE	02-INTERSTATE URBAN	52	52	STATE HWAY AGENCY	I-24	3302I0240738
I0024	0	2	7.520	7.570	08	11				U / INTERSTATE	02-INTERSTATE URBAN	52	52	STATE HWAY AGENCY	I-24	3302I0240752
I0024	0	2	7.570	7.780	08	11		27		U / INTERSTATE	02-INTERSTATE URBAN	52	52	STATE HWAY AGENCY	I-24	3302I0240752
I0024	0	2	7.780	8.100	08	11		27		U / INTERSTATE	02-INTERSTATE URBAN	52	52	STATE HWAY AGENCY	I-24	
I0024	0	2	8.100	8.360	08	11		27		U / INTERSTATE	02-INTERSTATE URBAN	52	52	STATE HWAY AGENCY	I-24	3301I0240821
I0024	0	2	8.360	8.560	08	11		27		U / INTERSTATE	02-INTERSTATE URBAN	52	52	STATE HWAY AGENCY	I-24	3301I0240851
I0024	0	2	8.560	8.820	08	11		27		U / INTERSTATE	02-INTERSTATE URBAN	52	52	STATE HWAY AGENCY	I-24	3302I0240862
I0024	0	2	8.820	9.120	08	11		27		U / INTERSTATE	02-INTERSTATE URBAN	52	52	STATE HWAY AGENCY	I-24	
I0024	0	2	9.120	9.290	08	11		27		U / INTERSTATE	02-INTERSTATE URBAN	52	52	STATE HWAY AGENCY	I-24	3302I0240922
I0024	0	2	9.290	9.320	08	11		27		U / INTERSTATE	02-INTERSTATE URBAN	52	52	STATE HWAY AGENCY	I-24	
I0024	0	2	9.320	9.351	08	11				U / INTERSTATE	02-INTERSTATE URBAN	52	52	STATE HWAY AGENCY	I-24	
I0024	0	2	9.351	11.422	08	11	26			U / INTERSTATE	02-INTERSTATE URBAN	52	52	STATE HWAY AGENCY	I-24	
I0024	0	2	11.422	12.088	08	11	26			U / INTERSTATE	02-INTERSTATE URBAN	52	89	STATE HWAY AGENCY	I-24	
I0024	0	2	12.088	12.590	08	11	26			U / INTERSTATE	02-INTERSTATE URBAN	52	52	STATE HWAY AGENCY	I-24	
I0024	0	2	12.590	12.950	08	11	26			U / INTERSTATE	02-INTERSTATE URBAN	52	52	STATE HWAY AGENCY	I-24	3302I0241259
I0024	0	2	12.950	13.340	08	11	26			U / INTERSTATE	02-INTERSTATE URBAN	52	52	STATE HWAY AGENCY	I-24	3302I0241317
I0024	0	2	13.340	13.746	08	11	26			U / INTERSTATE	02-INTERSTATE URBAN	52	52	STATE HWAY AGENCY	I-24	3302I0241334

Road Segment Report

Hamilton County (33) - Route: I0024, Special Case: 0-None , County Sequence: 2

COUNTY: HAMILTON **COUNTY NO: 33**

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	2	13.746	14.710	08	11				U / INTERSTATE	02-INTERSTATE URBAN	52	52	STATE HWAY AGENCY	I-24	3302I0241334

GEOMETRIC REPORT

Hamilton County (33) - Route: I0024, Special Case: 0-None , County Sequence: 2, Log Mile 0 to 9

County: HAMILTON (33) ***Route No.*** I0024 ***Special Case*** 0-NONE ***County Sequence*** 2

Beg Log Mile	End Log Mile	ROW	Access Control	Operation	Illum-ination	School Spd Lmt	Spd Lmt	Truck Spd Lmt	Terrain	Land Use	Thru Lanes	Nbr Lanes	Feature Information			
													Seq. #	Type	Width	Composition
0.000	0.710	300	2-FULL	2-TWO WAY	NO		65	55	2-ROLLING	0-RURAL	4	4	1	DRAINAGE		DITCH
		300									4	4	2	SHOULDER (OUTSIDE)	10.0	ASPHALT CONCRETE
		300									4	4	4	PAVEMENT	24.0	ASPHALT CONCRETE
		300									4	4	5	SHOULDER (INSIDE)	4.0	ASPHALT CONCRETE
		300									4	4	6	DRAINAGE		DITCH
		300									4	4	7	MEDIAN	70.0	GRASS PLOT
		300									4	4	8	DRAINAGE		DITCH
		300									4	4	9	SHOULDER (INSIDE)	4.0	ASPHALT CONCRETE
		300									4	4	10	PAVEMENT	24.0	ASPHALT CONCRETE
		300									4	4	12	SHOULDER (OUTSIDE)	12.0	ASPHALT CONCRETE
		300									4	4	13	DRAINAGE		DITCH
0.710	1.310	300	2-FULL	2-TWO WAY	NO		65	55	2-ROLLING	0-RURAL	4	4	1	DRAINAGE		DITCH
		300									4	4	3	SHOULDER (OUTSIDE)	10.0	ASPHALT CONCRETE
		300									4	4	5	PAVEMENT	24.0	ASPHALT CONCRETE
		300									4	4	7	SHOULDER (INSIDE)	4.0	ASPHALT CONCRETE
		300									4	4	9	DRAINAGE		DITCH
		300									4	4	11	MEDIAN	70.0	GRASS PLOT
		300									4	4	13	DRAINAGE		DITCH
		300									4	4	15	SHOULDER (INSIDE)	4.0	ASPHALT CONCRETE

GEOMETRIC REPORT

Hamilton County (33) - Route: I0024, Special Case: 0-None , County Sequence: 2, Log Mile 0 to 9

County: HAMILTON (33) ***Route No.*** I0024 ***Special Case*** 0-NONE ***County Sequence*** 2

Beg Log Mile	End Log Mile	ROW	Access Control	Operation	Illum-ination	School Spd Lmt	Spd Lmt	Truck Spd Lmt	Terrain	Land Use	Thru Lanes	Nbr Lanes	Feature Information			
													Seq. #	Type	Width	Composition
0.710	1.310	300	2-FULL	2-TWO WAY	NO		65	55	2-ROLLING	0-RURAL	4	4	17	PAVEMENT	24.0	ASPHALT CONCRETE
		300									4	4	19	SHOULDER (OUTSIDE)	12.0	ASPHALT CONCRETE
		300									4	4	21	DRAINAGE		DITCH
1.310	1.670	300	2-FULL	2-TWO WAY	NO		65	55	2-ROLLING	0-RURAL	4	4	1	DRAINAGE		DITCH
		300									4	4	2	SHOULDER (OUTSIDE)	10.0	ASPHALT CONCRETE
		300									4	4	3	PAVEMENT	24.0	ASPHALT CONCRETE
		300									4	4	4	SHOULDER (INSIDE)	4.0	ASPHALT CONCRETE
		300									4	4	5	DRAINAGE		DITCH
		300									4	4	6	MEDIAN	70.0	GRASS PLOT W/ CABLE BARRIER RT.
		300									4	4	7	DRAINAGE		DITCH
		300									4	4	8	SHOULDER (INSIDE)	4.0	ASPHALT CONCRETE
		300									4	4	9	PAVEMENT	24.0	ASPHALT CONCRETE
		300									4	4	10	SHOULDER (OUTSIDE)	12.0	ASPHALT CONCRETE
		300									4	4	11	DRAINAGE		DITCH
1.670	1.990	300	2-FULL	2-TWO WAY	NO		65	55	2-ROLLING	0-RURAL	4	4	1	DRAINAGE		DITCH
		300									4	4	2	SHOULDER (OUTSIDE)	10.0	ASPHALT CONCRETE
		300									4	4	3	PAVEMENT	24.0	ASPHALT CONCRETE
		300									4	4	4	SHOULDER (INSIDE)	4.0	ASPHALT CONCRETE

GEOMETRIC REPORT

Hamilton County (33) - Route: I0024, Special Case: 0-None , County Sequence: 2, Log Mile 0 to 9

County: HAMILTON (33) ***Route No.*** I0024 ***Special Case*** 0-NONE ***County Sequence*** 2

Beg Log Mile	End Log Mile	ROW	Access Control	Operation	Illum-ination	School Spd Lmt	Spd Lmt	Truck Spd Lmt	Terrain	Land Use	Thru Lanes	Nbr Lanes	Feature Information			
													Seq. #	Type	Width	Composition
1.670	1.990	300	2-FULL	2-TWO WAY	NO		65	55	2-ROLLING	0-RURAL	4	4	5	DRAINAGE		DITCH
		300									4	4	6	MEDIAN	70.0	GRASS PLOT
		300									4	4	7	DRAINAGE		DITCH
		300									4	4	8	SHOULDER (INSIDE)	4.0	ASPHALT CONCRETE
		300									4	4	9	PAVEMENT	24.0	ASPHALT CONCRETE
		300									4	4	10	SHOULDER (OUTSIDE)	10.0	ASPHALT CONCRETE
		300									4	4	11	DRAINAGE		DITCH
1.990	2.190	300	2-FULL	2-TWO WAY	NO		65	55	2-ROLLING	0-RURAL	4	4	1	DRAINAGE		DITCH
		300									4	4	2	SHOULDER (OUTSIDE)	10.0	ASPHALT CONCRETE
		300									4	4	3	PAVEMENT	24.0	ASPHALT CONCRETE
		300									4	4	4	SHOULDER (INSIDE)	4.0	ASPHALT CONCRETE
		300									4	4	5	DRAINAGE		DITCH
		300									4	4	6	MEDIAN	70.0	GRASS PLOT W/ CABLE BARRIER LT.
		300									4	4	7	DRAINAGE		DITCH
		300									4	4	8	SHOULDER (INSIDE)	4.0	ASPHALT CONCRETE
		300									4	4	9	PAVEMENT	24.0	ASPHALT CONCRETE
		300									4	4	10	SHOULDER (OUTSIDE)	10.0	ASPHALT CONCRETE
		300									4	4	11	DRAINAGE		DITCH

GEOMETRIC REPORT

Hamilton County (33) - Route: I0024, Special Case: 0-None , County Sequence: 2, Log Mile 0 to 9

County: HAMILTON (33) ***Route No.*** I0024 ***Special Case*** 0-NONE ***County Sequence*** 2

Beg Log Mile	End Log Mile	ROW	Access Control	Operation	Illum-ination	School Spd Lmt	Spd Lmt	Truck Spd Lmt	Terrain	Land Use	Thru Lanes	Nbr Lanes	Feature Information			
													Seq. #	Type	Width	Composition
2.190	2.340	300	2-FULL	2-TWO WAY	NO		65	55	2-ROLLING	0-RURAL	4	4	1	DRAINAGE		DITCH
		300									4	4	2	SHOULDER (OUTSIDE)	10.0	ASPHALT CONCRETE
		300									4	4	3	PAVEMENT	24.0	ASPHALT CONCRETE
		300									4	4	4	SHOULDER (INSIDE)	4.0	ASPHALT CONCRETE
		300									4	4	5	DRAINAGE		DITCH
		300									4	4	6	MEDIAN	70.0	GRASS PLOT
		300									4	4	7	DRAINAGE		DITCH
		300									4	4	8	SHOULDER (INSIDE)	4.0	ASPHALT CONCRETE
		300									4	4	9	PAVEMENT	24.0	ASPHALT CONCRETE
		300									4	4	10	SHOULDER (OUTSIDE)	10.0	ASPHALT CONCRETE
		300									4	4	11	DRAINAGE		DITCH
2.340	3.130	300	2-FULL	2-TWO WAY	NO		65	55	2-ROLLING	0-RURAL	4	4	1	DRAINAGE		DITCH
		300									4	4	2	SHOULDER (OUTSIDE)	10.0	ASPHALT CONCRETE
		300									4	4	3	PAVEMENT	24.0	ASPHALT CONCRETE
		300									4	4	4	SHOULDER (INSIDE)	4.0	ASPHALT CONCRETE
		300									4	4	5	DRAINAGE		DITCH
		300									4	4	6	MEDIAN	70.0	GRASS PLOT W/ CABLE BARRIER RT.
		300									4	4	7	DRAINAGE		DITCH

GEOMETRIC REPORT

Hamilton County (33) - Route: I0024, Special Case: 0-None , County Sequence: 2, Log Mile 0 to 9

County: HAMILTON (33) ***Route No.*** I0024 ***Special Case*** 0-NONE ***County Sequence*** 2

Beg Log Mile	End Log Mile	ROW	Access Control	Operation	Illum-ination	School Spd Lmt	Spd Lmt	Truck Spd Lmt	Terrain	Land Use	Thru Lanes	Nbr Lanes	Feature Information			
													Seq. #	Type	Width	Composition
2.340	3.130	300	2-FULL	2-TWO WAY	NO		65	55	2-ROLLING	0-RURAL	4	4	8	SHOULDER (INSIDE)	4.0	ASPHALT CONCRETE
		300									4	4	9	PAVEMENT	24.0	ASPHALT CONCRETE
		300									4	4	10	SHOULDER (OUTSIDE)	10.0	ASPHALT CONCRETE
		300									4	4	11	DRAINAGE		DITCH
3.130	3.280	300	2-FULL	2-TWO WAY	NO		65	55	2-ROLLING	0-RURAL	4	6	1	DRAINAGE		DITCH
		300									4	6	2	SHOULDER (OUTSIDE)	10.0	ASPHALT CONCRETE
		300									4	6	3	ACCELERATION/ DECELERATION LANE	16.0	ASPHALT CONCRETE
		300									4	6	4	PAVEMENT	24.0	ASPHALT CONCRETE
		300									4	6	5	SHOULDER (INSIDE)	4.0	ASPHALT CONCRETE
		300									4	6	6	DRAINAGE		DITCH
		300									4	6	7	MEDIAN	70.0	GRASS PLOT W/ CABLE BARRIER RT.
		300									4	6	8	DRAINAGE		DITCH
		300									4	6	9	SHOULDER (INSIDE)	4.0	ASPHALT CONCRETE
		300									4	6	10	PAVEMENT	24.0	ASPHALT CONCRETE
		300									4	6	11	ACCELERATION/ DECELERATION LANE	16.0	ASPHALT CONCRETE
		300									4	6	12	SHOULDER (OUTSIDE)	10.0	ASPHALT CONCRETE
		300									4	6	13	DRAINAGE		DITCH

GEOMETRIC REPORT

Hamilton County (33) - Route: I0024, Special Case: 0-None , County Sequence: 2, Log Mile 0 to 9

County: HAMILTON (33) ***Route No.*** I0024 ***Special Case*** 0-NONE ***County Sequence*** 2

Beg Log Mile	End Log Mile	ROW	Access Control	Operation	Illum-ination	School Spd Lmt	Spd Lmt	Truck Spd Lmt	Terrain	Land Use	Thru Lanes	Nbr Lanes	Feature Information			
													Seq. #	Type	Width	Composition
3.280	3.920	300	2-FULL	2-TWO WAY	NO		65	55	2-ROLLING	0-RURAL	4	4	1	DRAINAGE		DITCH
		300									4	4	2	SHOULDER (OUTSIDE)	12.0	ASPHALT CONCRETE
		300									4	4	3	PAVEMENT	24.0	ASPHALT CONCRETE
		300									4	4	4	SHOULDER (INSIDE)	4.0	ASPHALT CONCRETE
		300									4	4	5	DRAINAGE		DITCH
		300									4	4	6	MEDIAN	70.0	GRASS PLOT W/ CABLE BARRIER RT.
		300									4	4	7	DRAINAGE		DITCH
		300									4	4	8	SHOULDER (INSIDE)	4.0	ASPHALT CONCRETE
		300									4	4	9	PAVEMENT	24.0	ASPHALT CONCRETE
		300									4	4	10	SHOULDER (OUTSIDE)	12.0	ASPHALT CONCRETE
		300									4	4	11	DRAINAGE		DITCH
3.920	4.090	300	2-FULL	2-TWO WAY	NO		65	55	2-ROLLING	0-RURAL	4	5	1	DRAINAGE		DITCH
		300									4	5	2	SHOULDER (OUTSIDE)	10.0	ASPHALT CONCRETE
		300									4	5	3	ACCELERATION/ DECELERATION LANE	12.0	ASPHALT CONCRETE
		300									4	5	4	PAVEMENT	24.0	ASPHALT CONCRETE
		300									4	5	5	SHOULDER (INSIDE)	4.0	ASPHALT CONCRETE
		300									4	5	6	DRAINAGE		DITCH

GEOMETRIC REPORT

Hamilton County (33) - Route: I0024, Special Case: 0-None , County Sequence: 2, Log Mile 0 to 9

County: HAMILTON (33) ***Route No.*** I0024 ***Special Case*** 0-NONE ***County Sequence*** 2

Beg Log Mile	End Log Mile	ROW	Access Control	Operation	Illum-ination	School Spd Lmt	Spd Lmt	Truck Spd Lmt	Terrain	Land Use	Thru Lanes	Nbr Lanes	Feature Information			
													Seq. #	Type	Width	Composition
3.920	4.090	300	2-FULL	2-TWO WAY	NO		65	55	2-ROLLING	0-RURAL	4	5	7	MEDIAN	70.0	GRASS PLOT W/ CABLE BARRIER RT.
		300									4	5	8	DRAINAGE		DITCH
		300									4	5	9	SHOULDER (INSIDE)	4.0	ASPHALT CONCRETE
		300									4	5	10	PAVEMENT	24.0	ASPHALT CONCRETE
		300									4	5	11	SHOULDER (OUTSIDE)	12.0	ASPHALT CONCRETE
		300									4	5	12	DRAINAGE		DITCH
4.090	4.400	300	2-FULL	2-TWO WAY	NO		65	55	2-ROLLING	0-RURAL	4	4	1	DRAINAGE		DITCH
		300									4	4	2	SHOULDER (OUTSIDE)	10.0	ASPHALT CONCRETE
		300									4	4	3	PAVEMENT	24.0	ASPHALT CONCRETE
		300									4	4	4	SHOULDER (INSIDE)	4.0	ASPHALT CONCRETE
		300									4	4	5	DRAINAGE		DITCH
		300									4	4	6	MEDIAN	70.0	GRASS PLOT W/ CABLE BARRIER RT.
		300									4	4	7	DRAINAGE		DITCH
		300									4	4	8	SHOULDER (INSIDE)	4.0	ASPHALT CONCRETE
		300									4	4	9	PAVEMENT	24.0	ASPHALT CONCRETE
		300									4	4	10	SHOULDER (OUTSIDE)	12.0	ASPHALT CONCRETE
		300									4	4	11	DRAINAGE		DITCH
4.400	4.620	300	2-FULL	2-TWO WAY	NO		65	55	2-ROLLING	0-RURAL	4	6	1	DRAINAGE		CURB AND GUTTER

GEOMETRIC REPORT

Hamilton County (33) - Route: I0024, Special Case: 0-None , County Sequence: 2, Log Mile 0 to 9

County: HAMILTON (33) ***Route No.*** I0024 ***Special Case*** 0-NONE ***County Sequence*** 2

Beg Log Mile	End Log Mile	ROW	Access Control	Operation	Illum-ination	School Spd Lmt	Spd Lmt	Truck Spd Lmt	Terrain	Land Use	Thru Lanes	Nbr Lanes	Feature Information			
													Seq. #	Type	Width	Composition
4.400	4.620	300	2-FULL	2-TWO WAY	NO		65	55	2-ROLLING	0-RURAL	4	6	2	SHOULDER (OUTSIDE)	10.0	ASPHALT CONCRETE
		300									4	6	3	ACCELERATION/ DECELERATION LANE	12.0	ASPHALT CONCRETE
		300									4	6	4	PAVEMENT	24.0	ASPHALT CONCRETE
		300									4	6	5	SHOULDER (INSIDE)	4.0	ASPHALT CONCRETE
		300									4	6	6	DRAINAGE		DITCH
		300									4	6	7	MEDIAN	70.0	GRASS PLOT W/ CABLE BARRIER RT.
		300									4	6	8	DRAINAGE		DITCH
		300									4	6	9	SHOULDER (INSIDE)	4.0	ASPHALT CONCRETE
		300									4	6	10	PAVEMENT	24.0	ASPHALT CONCRETE
		300									4	6	11	ACCELERATION/ DECELERATION LANE	16.0	ASPHALT CONCRETE
		300									4	6	12	SHOULDER (OUTSIDE)	12.0	ASPHALT CONCRETE
		300									4	6	13	DRAINAGE		DITCH
4.620	4.930	300	2-FULL	2-TWO WAY	NO		65	55	2-ROLLING	0-RURAL	4	5	1	DRAINAGE		CURB AND GUTTER
		300									4	5	2	SHOULDER (OUTSIDE)	10.0	ASPHALT CONCRETE
		300									4	5	3	ACCELERATION/ DECELERATION LANE	12.0	ASPHALT CONCRETE
		300									4	5	4	PAVEMENT	24.0	ASPHALT CONCRETE

GEOMETRIC REPORT

Hamilton County (33) - Route: I0024, Special Case: 0-None , County Sequence: 2, Log Mile 0 to 9

County: HAMILTON (33) ***Route No.*** I0024 ***Special Case*** 0-NONE ***County Sequence*** 2

Beg Log Mile	End Log Mile	ROW	Access Control	Operation	Illum-ination	School Spd Lmt	Spd Lmt	Truck Spd Lmt	Terrain	Land Use	Thru Lanes	Nbr Lanes	Feature Information			
													Seq. #	Type	Width	Composition
4.620	4.930	300	2-FULL	2-TWO WAY	NO		65	55	2-ROLLING	0-RURAL	4	5	5	SHOULDER (INSIDE)	6.0	ASPHALT CONCRETE
		300									4	5	6	DRAINAGE		DITCH
		300									4	5	7	MEDIAN	26.0	GRASS PLOT
		300									4	5	8	DRAINAGE		DITCH
		300									4	5	9	SHOULDER (INSIDE)	6.0	ASPHALT CONCRETE
		300									4	5	10	PAVEMENT	24.0	ASPHALT CONCRETE
		300									4	5	11	SHOULDER (OUTSIDE)	12.0	ASPHALT CONCRETE
		300									4	5	12	DRAINAGE		DITCH
4.930	6.250	300	2-FULL	2-TWO WAY	NO		65	55	2-ROLLING	0-RURAL	4	4	1	DRAINAGE		DITCH
		300									4	4	2	SHOULDER (OUTSIDE)	12.0	ASPHALT CONCRETE
		300									4	4	3	PAVEMENT	24.0	ASPHALT CONCRETE
		300									4	4	4	SHOULDER (INSIDE)	6.0	ASPHALT CONCRETE
		300									4	4	5	DRAINAGE		DITCH
		300									4	4	6	MEDIAN	26.0	GRASS PLOT
		300									4	4	7	DRAINAGE		DITCH
		300									4	4	8	SHOULDER (INSIDE)	6.0	ASPHALT CONCRETE
		300									4	4	9	PAVEMENT	24.0	ASPHALT CONCRETE
		300									4	4	10	SHOULDER (OUTSIDE)	12.0	ASPHALT CONCRETE
		300									4	4	11	DRAINAGE		DITCH

GEOMETRIC REPORT

Hamilton County (33) - Route: I0024, Special Case: 0-None , County Sequence: 2, Log Mile 0 to 9

County: HAMILTON (33) ***Route No.*** I0024 ***Special Case*** 0-NONE ***County Sequence*** 2

Beg Log Mile	End Log Mile	ROW	Access Control	Operation	Illum-ination	School Spd Lmt	Spd Lmt	Truck Spd Lmt	Terrain	Land Use	Thru Lanes	Nbr Lanes	Feature Information			
													Seq. #	Type	Width	Composition
6.250	6.640	300	2-FULL	2-TWO WAY	NO		55	55	2-ROLLING	0-RURAL	4	4	1	DRAINAGE		DITCH
		300									4	4	2	SHOULDER (OUTSIDE)	12.0	ASPHALT CONCRETE
		300									4	4	3	PAVEMENT	24.0	ASPHALT CONCRETE
		300									4	4	4	SHOULDER (INSIDE)	6.0	ASPHALT CONCRETE
		300									4	4	5	DRAINAGE		DITCH
		300									4	4	6	MEDIAN	26.0	GRASS PLOT
		300									4	4	7	DRAINAGE		DITCH
		300									4	4	8	SHOULDER (INSIDE)	6.0	ASPHALT CONCRETE
		300									4	4	9	PAVEMENT	24.0	ASPHALT CONCRETE
		300									4	4	10	SHOULDER (OUTSIDE)	12.0	ASPHALT CONCRETE
		300									4	4	11	DRAINAGE		DITCH
6.640	6.760	300	2-FULL	2-TWO WAY	NO		55	55	2-ROLLING	4-FRINGE (MIX RES. COMM.)	4	4	1	DRAINAGE		DITCH
		300									4	4	2	SHOULDER (OUTSIDE)	10.0	ASPHALT CONCRETE
		300									4	4	4	PAVEMENT	24.0	ASPHALT CONCRETE
		300									4	4	5	SHOULDER (INSIDE)	18.0	ASPHALT CONCRETE
		300									4	4	6	DRAINAGE		CURB AND GUTTER
		300									4	4	7	MEDIAN	2.0	CONCRETE BARRIER
		300									4	4	8	DRAINAGE		CURB AND GUTTER

GEOMETRIC REPORT

Hamilton County (33) - Route: I0024, Special Case: 0-None , County Sequence: 2, Log Mile 0 to 9

County: HAMILTON (33) ***Route No.*** I0024 ***Special Case*** 0-NONE ***County Sequence*** 2

Beg Log Mile	End Log Mile	ROW	Access Control	Operation	Illum-ination	School Spd Lmt	Spd Lmt	Truck Spd Lmt	Terrain	Land Use	Thru Lanes	Nbr Lanes	Feature Information			
													Seq. #	Type	Width	Composition
6.640	6.760	300	2-FULL	2-TWO WAY	NO		55	55	2-ROLLING	4-FRINGE (MIX RES. COMM.)	4	4	9	SHOULDER (INSIDE)	10.0	ASPHALT CONCRETE
		300									4	4	10	PAVEMENT	24.0	ASPHALT CONCRETE
		300									4	4	12	SHOULDER (OUTSIDE)	12.0	ASPHALT CONCRETE
		300									4	4	13	DRAINAGE		DITCH
6.760	6.770	300	2-FULL	2-TWO WAY	NO		55	55	2-ROLLING	4-FRINGE (MIX RES. COMM.)	4	5	1	DRAINAGE		DITCH
		300									4	5	2	SHOULDER (OUTSIDE)	10.0	ASPHALT CONCRETE
		300									4	5	4	PAVEMENT	24.0	ASPHALT CONCRETE
		300									4	5	5	SHOULDER (INSIDE)	18.0	ASPHALT CONCRETE
		300									4	5	6	DRAINAGE		CURB AND GUTTER
		300									4	5	7	MEDIAN	2.0	CONCRETE BARRIER
		300									4	5	8	DRAINAGE		CURB AND GUTTER
		300									4	5	9	SHOULDER (INSIDE)	10.0	ASPHALT CONCRETE
		300									4	5	10	PAVEMENT	24.0	ASPHALT CONCRETE
		300									4	5	11	ACCELERATION/ DECELERATION LANE	12.0	ASPHALT CONCRETE
		300									4	5	12	SHOULDER (OUTSIDE)	10.0	ASPHALT CONCRETE
		300									4	5	13	DRAINAGE		DITCH
6.770	6.800	200	2-FULL	2-TWO WAY	NO		55		2-ROLLING	5-INDUSTRIAL (FACTORIES, WAREHOUSES)	4	5	1	DRAINAGE		DITCH

GEOMETRIC REPORT

Hamilton County (33) - Route: I0024, Special Case: 0-None , County Sequence: 2, Log Mile 0 to 9

County: HAMILTON (33) ***Route No.*** I0024 ***Special Case*** 0-NONE ***County Sequence*** 2

Beg Log Mile	End Log Mile	ROW	Access Control	Operation	Illumination	School Spd Lmt	Spd Lmt	Truck Spd Lmt	Terrain	Land Use	Thru Lanes	Nbr Lanes	Feature Information			
													Seq. #	Type	Width	Composition
6.770	6.800	200	2-FULL	2-TWO WAY	NO		55		2-ROLLING	5-INDUSTRIAL (FACTORIES, WAREHOUSES)	4	5	2	SHOULDER (OUTSIDE)	10.0	ASPHALT CONCRETE
		200									4	5	4	PAVEMENT	24.0	ASPHALT CONCRETE
		200									4	5	5	SHOULDER (INSIDE)	18.0	ASPHALT CONCRETE
		200									4	5	6	DRAINAGE		CURB AND GUTTER
		200									4	5	7	MEDIAN	2.0	CONCRETE BARRIER
		200									4	5	8	DRAINAGE		CURB AND GUTTER
		200									4	5	9	SHOULDER (INSIDE)	10.0	ASPHALT CONCRETE
		200									4	5	10	PAVEMENT	24.0	ASPHALT CONCRETE
		200									4	5	11	ACCELERATION/ DECELERATION LANE	12.0	ASPHALT CONCRETE
		200									4	5	12	SHOULDER (OUTSIDE)	10.0	ASPHALT CONCRETE
		200									4	5	13	DRAINAGE		DITCH
6.800	7.000	200	2-FULL	2-TWO WAY	YES		55		2-ROLLING	5-INDUSTRIAL (FACTORIES, WAREHOUSES)	4	5	1	DRAINAGE		DITCH
		200									4	5	2	SHOULDER (OUTSIDE)	10.0	ASPHALT CONCRETE
		200									4	5	4	PAVEMENT	24.0	ASPHALT CONCRETE
		200									4	5	5	SHOULDER (INSIDE)	18.0	ASPHALT CONCRETE
		200									4	5	6	DRAINAGE		CURB AND GUTTER

GEOMETRIC REPORT

Hamilton County (33) - Route: I0024, Special Case: 0-None , County Sequence: 2, Log Mile 0 to 9

County: HAMILTON (33) ***Route No.*** I0024 ***Special Case*** 0-NONE ***County Sequence*** 2

Beg Log Mile	End Log Mile	ROW	Access Control	Operation	Illum-ination	School Spd Lmt	Spd Lmt	Truck Spd Lmt	Terrain	Land Use	Thru Lanes	Nbr Lanes	Feature Information			
													Seq. #	Type	Width	Composition
6.800	7.000	200	2-FULL	2-TWO WAY	YES		55		2-ROLLING	5-INDUSTRIAL (FACTORIES, WAREHOUSES)	4	5	7	MEDIAN	2.0	CONCRETE BARRIER
		200									4	5	8	DRAINAGE		CURB AND GUTTER
		200									4	5	9	SHOULDER (INSIDE)	10.0	ASPHALT CONCRETE
		200									4	5	10	PAVEMENT	24.0	ASPHALT CONCRETE
		200									4	5	11	ACCELERATION/ DECELERATION LANE	12.0	ASPHALT CONCRETE
		200									4	5	12	SHOULDER (OUTSIDE)	10.0	ASPHALT CONCRETE
		200									4	5	13	DRAINAGE		DITCH
7.000	7.330	200	2-FULL	2-TWO WAY	YES		55		2-ROLLING	5-INDUSTRIAL (FACTORIES, WAREHOUSES)	4	7	1	DRAINAGE		DITCH
		200									4	7	3	SHOULDER (OUTSIDE)	12.0	ASPHALT CONCRETE
		200									4	7	5	ACCELERATION/ DECELERATION LANE	12.0	ASPHALT CONCRETE
		200									4	7	6	PAVEMENT	24.0	ASPHALT CONCRETE
		200									4	7	7	SHOULDER (INSIDE)	18.0	ASPHALT CONCRETE
		200									4	7	8	DRAINAGE		CURB AND GUTTER
		200									4	7	9	MEDIAN	2.0	CONCRETE BARRIER
		200									4	7	10	DRAINAGE		CURB AND GUTTER

GEOMETRIC REPORT

Hamilton County (33) - Route: I0024, Special Case: 0-None , County Sequence: 2, Log Mile 0 to 9

County: HAMILTON (33) ***Route No.*** I0024 ***Special Case*** 0-NONE ***County Sequence*** 2

Beg Log Mile	End Log Mile	ROW	Access Control	Operation	Illum-ination	School Spd Lmt	Spd Lmt	Truck Spd Lmt	Terrain	Land Use	Thru Lanes	Nbr Lanes	Feature Information			
													Seq. #	Type	Width	Composition
7.000	7.330	200	2-FULL	2-TWO WAY	YES		55		2-ROLLING	5-INDUSTRIAL (FACTORIES, WAREHOUSES)	4	7	11	SHOULDER (INSIDE)	10.0	ASPHALT CONCRETE
		200									4	7	12	PAVEMENT	24.0	ASPHALT CONCRETE
		200									4	7	13	ACCELERATION/ DECELERATION LANE	24.0	ASPHALT CONCRETE
		200									4	7	14	SHOULDER (OUTSIDE)	10.0	ASPHALT CONCRETE
		200									4	7	15	DRAINAGE		DITCH
7.330	7.340	200	2-FULL	2-TWO WAY	YES		55		2-ROLLING	5-INDUSTRIAL (FACTORIES, WAREHOUSES)	4	4	1	DRAINAGE		CURB AND GUTTER
		200									4	4	3	SHOULDER (OUTSIDE)	10.0	ASPHALT CONCRETE
		200									4	4	5	PAVEMENT	24.0	ASPHALT CONCRETE
		200									4	4	7	SHOULDER (INSIDE)	10.0	ASPHALT CONCRETE
		200									4	4	9	DRAINAGE		CURB AND GUTTER
		200									4	4	11	MEDIAN	2.0	CONCRETE BARRIER
		200									4	4	13	DRAINAGE		CURB AND GUTTER
		200									4	4	15	SHOULDER (INSIDE)	10.0	ASPHALT CONCRETE
		200									4	4	17	PAVEMENT	24.0	ASPHALT CONCRETE
		200									4	4	19	SHOULDER (OUTSIDE)	10.0	ASPHALT CONCRETE
		200									4	4	21	DRAINAGE		DITCH

GEOMETRIC REPORT

Hamilton County (33) - Route: I0024, Special Case: 0-None , County Sequence: 2, Log Mile 0 to 9

County: HAMILTON (33) ***Route No.*** I0024 ***Special Case*** 0-NONE ***County Sequence*** 2

Beg Log Mile	End Log Mile	ROW	Access Control	Operation	Illum-ination	School Spd Lmt	Spd Lmt	Truck Spd Lmt	Terrain	Land Use	Thru Lanes	Nbr Lanes	Feature Information			
													Seq. #	Type	Width	Composition
7.340	7.410	500	2-FULL	2-TWO WAY	YES		55		2-ROLLING	2-COMMERCIAL	4	4	1	DRAINAGE		CURB AND GUTTER
		500									4	4	3	SHOULDER (OUTSIDE)	10.0	ASPHALT CONCRETE
		500									4	4	5	PAVEMENT	24.0	ASPHALT CONCRETE
		500									4	4	7	SHOULDER (INSIDE)	10.0	ASPHALT CONCRETE
		500									4	4	9	DRAINAGE		CURB AND GUTTER
		500									4	4	11	MEDIAN	2.0	CONCRETE BARRIER
		500									4	4	13	DRAINAGE		CURB AND GUTTER
		500									4	4	15	SHOULDER (INSIDE)	10.0	ASPHALT CONCRETE
		500									4	4	17	PAVEMENT	24.0	ASPHALT CONCRETE
		500									4	4	19	SHOULDER (OUTSIDE)	10.0	ASPHALT CONCRETE
		500									4	4	21	DRAINAGE		DITCH
7.410	7.780	500	2-FULL	2-TWO WAY	YES		55		2-ROLLING	2-COMMERCIAL	4	4	1	DRAINAGE		CURB ONLY
		500									4	4	2	SHOULDER (OUTSIDE)	10.0	PORTLAND CEMENT CONCRETE
		500									4	4	4	PAVEMENT	24.0	PORTLAND CEMENT CONCRETE
		500									4	4	5	SHOULDER (INSIDE)	10.0	PORTLAND CEMENT CONCRETE
		500									4	4	6	DRAINAGE		CURB AND GUTTER

GEOMETRIC REPORT

Hamilton County (33) - Route: I0024, Special Case: 0-None , County Sequence: 2, Log Mile 0 to 9

County: HAMILTON (33) ***Route No.*** I0024 ***Special Case*** 0-NONE ***County Sequence*** 2

Beg Log Mile	End Log Mile	ROW	Access Control	Operation	Illumination	School Spd Lmt	Spd Lmt	Truck Spd Lmt	Terrain	Land Use	Thru Lanes	Nbr Lanes	Feature Information			
													Seq. #	Type	Width	Composition
7.410	7.780	500	2-FULL	2-TWO WAY	YES		55		2-ROLLING	2-COMMERCIAL	4	4	7	MEDIAN	2.0	CONCRETE BARRIER
		500									4	4	8	DRAINAGE		CURB ONLY
		500									4	4	9	SHOULDER (INSIDE)	10.0	PORTLAND CEMENT CONCRETE
		500									4	4	10	PAVEMENT	24.0	PORTLAND CEMENT CONCRETE
		500									4	4	12	SHOULDER (OUTSIDE)	10.0	PORTLAND CEMENT CONCRETE
		500									4	4	13	DRAINAGE		CURB AND GUTTER
7.780	7.830	500	2-FULL	2-TWO WAY	YES		55		2-ROLLING	2-COMMERCIAL	6	6	1	DRAINAGE		CURB AND GUTTER
		500									6	6	3	SHOULDER (OUTSIDE)	10.0	PORTLAND CEMENT CONCRETE
		500									6	6	5	PAVEMENT	24.0	PORTLAND CEMENT CONCRETE
		500									6	6	7	SHOULDER (INSIDE)	10.0	PORTLAND CEMENT CONCRETE
		500									6	6	9	DRAINAGE		CURB AND GUTTER
		500									6	6	11	MEDIAN	2.0	CONCRETE BARRIER
		500									6	6	13	DRAINAGE		CURB ONLY
		500									6	6	15	SHOULDER (INSIDE)	10.0	PORTLAND CEMENT CONCRETE

GEOMETRIC REPORT

Hamilton County (33) - Route: I0024, Special Case: 0-None , County Sequence: 2, Log Mile 0 to 9

County: HAMILTON (33) ***Route No.*** I0024 ***Special Case*** 0-NONE ***County Sequence*** 2

Beg Log Mile	End Log Mile	ROW	Access Control	Operation	Illum-ination	School Spd Lmt	Spd Lmt	Truck Spd Lmt	Terrain	Land Use	Thru Lanes	Nbr Lanes	Feature Information			
													Seq. #	Type	Width	Composition
7.780	7.830	500	2-FULL	2-TWO WAY	YES		55		2-ROLLING	2-COMMERCIAL	6	6	17	PAVEMENT	24.0	PORTLAND CEMENT CONCRETE
		500									6	6	19	SHOULDER (OUTSIDE)	10.0	PORTLAND CEMENT CONCRETE
		500									6	6	21	DRAINAGE		CURB ONLY
7.830	8.140	500	2-FULL	2-TWO WAY	YES		55		2-ROLLING	2-COMMERCIAL	6	8	1	DRAINAGE		CURB AND GUTTER
		500									6	8	2	SHOULDER (OUTSIDE)	10.0	PORTLAND CEMENT CONCRETE
		500									6	8	3	ACCELERATION/ DECELERATION LANE	12.0	PORTLAND CEMENT CONCRETE
		500									6	8	4	PAVEMENT	36.0	PORTLAND CEMENT CONCRETE
		500									6	8	5	SHOULDER (INSIDE)	10.0	PORTLAND CEMENT CONCRETE
		500									6	8	6	DRAINAGE		CURB AND GUTTER
		500									6	8	7	MEDIAN	2.0	CONCRETE BARRIER
		500									6	8	8	DRAINAGE		CURB AND GUTTER
		500									6	8	9	SHOULDER (INSIDE)	10.0	PORTLAND CEMENT CONCRETE
		500									6	8	10	PAVEMENT	36.0	PORTLAND CEMENT CONCRETE

GEOMETRIC REPORT

Hamilton County (33) - Route: I0024, Special Case: 0-None , County Sequence: 2, Log Mile 0 to 9

County: HAMILTON (33) ***Route No.*** I0024 ***Special Case*** 0-NONE ***County Sequence*** 2

Beg Log Mile	End Log Mile	ROW	Access Control	Operation	Illum-ination	School Spd Lmt	Spd Lmt	Truck Spd Lmt	Terrain	Land Use	Thru Lanes	Nbr Lanes	Feature Information			
													Seq. #	Type	Width	Composition
7.830	8.140	500	2-FULL	2-TWO WAY	YES		55		2-ROLLING	2-COMMERCIAL	6	8	11	COLLECTOR/DISTRIBUTOR LANE	12.0	PORTLAND CEMENT CONCRETE
		500									6	8	12	SHOULDER (OUTSIDE)	12.0	PORTLAND CEMENT CONCRETE
		500									6	8	13	DRAINAGE		DITCH
8.140	9.000	300	2-FULL	2-TWO WAY	YES		55		2-ROLLING	2-COMMERCIAL	6	8	1	DRAINAGE		DITCH
		300									6	8	3	SHOULDER (OUTSIDE)	10.0	ASPHALT CONCRETE
		300									6	8	5	COLLECTOR/DISTRIBUTOR LANE	12.0	ASPHALT CONCRETE
		300									6	8	6	PAVEMENT	36.0	ASPHALT CONCRETE
		300									6	8	7	SHOULDER (INSIDE)	10.0	ASPHALT CONCRETE
		300									6	8	8	DRAINAGE		CURB AND GUTTER
		300									6	8	9	MEDIAN	2.0	CONCRETE BARRIER
		300									6	8	10	DRAINAGE		CURB AND GUTTER
		300									6	8	11	SHOULDER (INSIDE)	10.0	ASPHALT CONCRETE
		300									6	8	12	PAVEMENT	36.0	ASPHALT CONCRETE
		300									6	8	13	COLLECTOR/DISTRIBUTOR LANE	12.0	ASPHALT CONCRETE
		300									6	8	14	SHOULDER (OUTSIDE)	10.0	ASPHALT CONCRETE
		300									6	8	15	DRAINAGE		DITCH

Gaffney, Brian

From: Caiafa, Thomas <tcaiafa@dot.ga.gov>
Sent: Tuesday, July 3, 2018 8:49 AM
To: Gaffney, Brian
Cc: Shaun Armstrong (Shaun.Armstrong@tn.gov)
Subject: RE: TDOT Project - I-24, From I-59 to I-124 in Chattanooga Information

Good morning Brian,

I'm doing pretty well. We've actually just received the requested information on each of the I-24 bridges from our Bridge Office. A summary of that information is below:

Structures/Bridges	Bridge ID	Length (feet)	Number Spans	Super Type	Sub Type	Width (feet)	Max Span (feet)
Slygo Road @ I-24	083-0016-0	427	6	Steel Beams	Con Bents	32.25	90
I-24 EB @ Pope Creek	083-0043-0	124	3	Reinforced Concrete	Con Bents	56.5	51
I-24 WB @ CSX	083-0045-0	189	3	Steel Beams	Con Bents	40.33	66
I-24 EB @ CSX	083-0044-0	221	3	Steel Beams	Con Bents	40.33	77
SR 299 @ I-24	083-0020-0	201'-7"	2	PSC Beam	Con Bents	43.25	103'-10"

As far as the widening/replacement of the bridges is concerned, that determination would most likely be made during the PE phase. However, given the higher sufficiency ratings of the bridges on I-24 itself, we would most likely prefer to widen them.

In addition, as discussed in our telephone conversation on June 12th, our GEARS software can only retrieve the requested additional crash information at the countywide level. That information (for Dade County) is summarized in the below chart:

Crash Information (Countywide)	**2014**	**2015**	**2016**		
Total Non-Private Crashes	396	433	438		
				Percentage o	
Manner of Collision	**2014**	**2015**	**2016**	**2014**	**2**
Non-collision with Motor Vehicle	138	154	143	34.79%	35
Rear End	109	145	133	27.58%	33
Head On	9	77	14	2.32%	17
Sideswipe-Same Direction	39	33	51	9.79%	7.
Sideswipe-Opposite Direction	10	9	10	2.58%	2.
Angle	91	77	86	22.94%	17
Light Condition	**2014**	**2015**	**2016**	**2014**	**2**
Daylight	288	310	329	72.68%	71

Dark Lighted	7	12	11	1.80%	2.
Dark Not Lighted	87	101	85	21.91%	23
Dawn	10	6	7	2.58%	1.
Dusk	4	4	5	1.03%	0.
Weather Conditions	**2014**	**2015**	**2016**	**2014**	**2**
Clear	189	195	258	47.68%	44
Cloudy	117	128	123	29.64%	29
Fog	6	31	3	1.55%	7.
Rain	76	101	49	19.07%	23
Snow	8	6	1	2.06%	1.
Sleet	N/A	N/A	4	N/A	N

As always, if you need any additional information, feel free to ask. Have a great 4th as well!

Thanks,
Tom

Tom Caiafa
Branch Chief

Georgia Department of Transportation

Office of Planning
600 West Peachtree Street, NW
5th Floor
Atlanta, GA 30308
404.631.1749 office

From: Gaffney, Brian [mailto:BGaffney@benesch.com]
Sent: Tuesday, July 3, 2018 9:23 AM
To: Caiafa, Thomas <tcaiafa@dot.ga.gov>
Cc: Shaun Armstrong (Shaun.Armstrong@tn.gov) <Shaun.Armstrong@tn.gov>
Subject: RE: TDOT Project - I-24, From I-59 to I-124 in Chattanooga Information

Tom,

I hope your holiday week is going well and the weather holds off for a decent 4th! I wanted to check in with you to see if you have heard anything else from your structural group about the requested bridge information in my previous email?

Thanks!

Brian Gaffney, PE, CPESC, CPSWQ | Project Manager II

Alfred Benesch & Company
P 615-370-6079 Ext. 884 | **C** 615-473-1816

From: Gaffney, Brian
Sent: Wednesday, June 6, 2018 3:33 PM
To: 'tcaiafa@dot.ga.gov' <tcaiafa@dot.ga.gov>
Cc: 'cyvandyke@dot.ga.gov' <cyvandyke@dot.ga.gov>; 'rsimpson@dot.ga.gov' <rsimpson@dot.ga.gov>; Shaun Armstrong (Shaun.Armstrong@tn.gov) <Shaun.Armstrong@tn.gov>
Subject: RE: TDOT Project - I-24, From I-59 to I-124 in Chattanooga Information

Tom,

Good afternoon! I am working with Shaun Armstrong (TDOT) on a report for I-24, from I-59 in Georgia to I-124 in Tennessee. He forwarded me the information you provided recently and it is very much appreciated. As I started working the data into our report, I ran into a few areas where I'd love to get more information, if at all possible. Those areas are listed below:

- Bridges – would it be possible to get length/width/# of spans/max span length/material? Could I also get the Bridge ID for the recently replaced bridge at the State Route 299 interchange?
- I noticed that you mentioned that none of the bridges on I-24 in Georgia were currently slated for replacement or widening. Since we are going to impact the 2 structures over CSX due to the additional travel lane, is the preference to widen the existing structures or to replace?
- Crash Data – Do you have any additional information available on Lighting Condition (Daylight, Dark, etc…), Manner of Collision (Rear-End, Sideswipe, etc…) and weather conditions?

If there is a way for me to get any of this information myself through a website or something along those lines, please let me know and we can hopefully limit any impacts on your time. If you need any more information from me or would like to chat about any of the items, please feel free to contact me.

Thank you in advance,

Brian Gaffney, PE, CPESC, CPSWQ | Project Manager II
Alfred Benesch & Company
P 615-370-6079 Ext. 884 | **C** 615-473-1816

From: Shaun Armstrong [mailto:Shaun.Armstrong@tn.gov]
Sent: Friday, June 1, 2018 4:11 PM
To: Gaffney, Brian <BGaffney@benesch.com>
Subject: Fwd: TDOT Project - I-24, From I-59 to I-124 in Chattanooga Information

Sent from my iPad

Begin forwarded message:

> **From:** "Caiafa, Thomas" <tcaiafa@dot.ga.gov>
> **Date:** June 1, 2018 at 2:09:31 PM CDT
> **To:** 'Shaun Armstrong' <Shaun.Armstrong@tn.gov>
> **Cc:** "VanDyke, Cindy" <cyvandyke@dot.ga.gov>, "Simpson, Radney" <rsimpson@dot.ga.gov>
> **Subject: RE: TDOT Project - I-24, From I-59 to I-124 in Chattanooga Information**

***** This is an EXTERNAL email. Please exercise caution. DO NOT open attachments or click links from unknown senders or unexpected email - STS-Security. *****

Good afternoon Shaun,

Regarding your questions on the subject corridor:

1. **Structures:** Of the four structures along the I-24 corridor (aside from the Wildwood bridge), none of them are currently slated for full replacement or widening in our Construction Work Program. As a guide, below are the Bridge IDs and current sufficiency ratings for each of the structures (going west to east):

Structures/Bridges	Bridge ID	Sufficiency Rating
Slygo Road @ I-24	083-0016-0	50.8
I-24 EB @ Pope Creek	083-0043-0	94.7
I-24 WB @ CSX	083-0045-0	83.7
I-24 EB @ CSX	083-0044-0	83.7

2. **Linear Referencing:** GDOT uses a linear referencing system consisting of a unique RCLINK and milepoint. Each individual RCLINK consists of a 10-digit code that is comprised of the county code, route type, route number, and route suffix. Both the point and linear feature can be represented using the RCLINK and milepoint.
    a. For the segment of I-24 from I-59 to the GA/TN state line, the RCLINK designation is **0831040900** with the breakdown as:
        i. County Code: **083** (Dade County)
        ii. Route Type: **1** (Interstate)
        iii. Route Number: **0409** (Georgia State Route 409, which is our state route designation for I-24)
        iv. Route Suffix: **00** (no route suffix in this case)
    b. The milepoints for this segment of I-24 are **1.63** (at the eastern edge of the I-59 interchange ramps) and **4.1** (at the GA/TN state line)

3. **Crash Data:** For the period from 2014 to 2016 (which are the latest full years available), there have been 192 crashes along the corridor, with the breakdown as follows:

Crash Information (east of I-59)	# of PDO Crashes	# of Injury Crashes	# of F
2014	45	13	
2015	52	20	
2016	41	18	
3 Year Total	138	51	

PDO=Property Damage Only crash

If you need any additional information about the corridor, feel free to ask us. Have a good weekend.

Thanks,
Tom

Tom Caiafa
Branch Chief
Georgia DOT – Office of Planning

600 West Peachtree Street, NW – 5th Floor
Atlanta, GA 30308
Phone: 404-631-1749
tcaiafa@dot.ga.gov

From: VanDyke, Cindy
Sent: Thursday, May 24, 2018 10:49 AM
To: 'Shaun Armstrong' <Shaun.Armstrong@tn.gov>
Cc: Simpson, Radney <rsimpson@dot.ga.gov>; Caiafa, Thomas <tcaiafa@dot.ga.gov>
Subject: RE: TDOT Project - I-24, From I-59 to I-124 in Chattanooga Information

Shaun, we'll pull this information together and get this to you as soon as possible. Tom Caiafa is the point-of-contact for this. I've cc'd him on this response.

Thanks and enjoy the long weekend.

Cindy VanDyke
State Transportation Planning Administrator
Georgia Department of Transportation
One Georgia Center
600 W. Peachtree St, NW
Atlanta, GA 30308
404-631-1987(office)
404-895-4974 (cell)

From: Shaun Armstrong [mailto:Shaun.Armstrong@tn.gov]
Sent: Thursday, May 24, 2018 10:14 AM
To: VanDyke, Cindy
Subject: TDOT Project - I-24, From I-59 to I-124 in Chattanooga Information

Cindy,
Good morning and greetings to our neighbors to the south. Hope all is well in Atlanta and enjoying the summertime weather like we are here in Nashville. TDOT is in the process of conducting Technical Reports for multiple projects statewide, one of which is the reason I am reaching out to you. I-24, from the I-59 interchange to I-124 in Chattanooga was identified within legislation for capacity improvements. Due to logical termini, we are extending into Georgia to I-59. We are under contract with a firm to assist us in conducting the study, which is primarily adding an additional lane in each direction.

As we work through this report, we have a few questions regarding the Georgia piece. Please see below:

1. Structures – Within our technical report, we will identify structures for widening or replacement. There is a stream crossing on the eastbound side, an overpass, and a dual structure over a railroad. Of these, which would be set for full replacement or widening

only? The Wildwood interchange bridge we know has recently been completed. This will help us not only identify these in the functional layouts, but also with costing them appropriately.

2. Linear referencing - TDOT uses a log mile per county, and we would like to utilize the appropriate linear system GDOT has in place for the Georgia segment. Can you provide a begin and end point from I-59 to the TN State Line?
3. Crash information – Our report provides a summary of crash data for the segments. Is information available for this segment? We have typically done the past 3-years of data in our reports.

Thank you in advance, and please feel free to contact me anytime for any additional questions. If I need to reach out to anyone else, please let me know that as well.

Shaun Armstrong |Transportation Manager 1
Strategic Transportation Investments Division
James K. Polk Building, 10th Floor
505 Deaderick Street, Nashville, TN 37243
p. 615-253-5327
c. 615-339-7371
Shaun.Armstrong@tn.gov
tn.gov/tdot

7.3 Project Traffic

TENNESSEE DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION

PROJECT NO.: 33002-0175-04 ROUTE: I-24
COUNTY: HAMILTON CITY: CHATTANOOGA
PROJECT PIN NUMBER: 124072.00
PROJECT DESCRIPTION: FROM THE GEORIGA STATE LINE TO THE S.R. 29 INTERCHANGE.

[1] AVERAGE TRAFFIC DATA.

DIVISION REQUESTING:

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

YEAR PROJECT PROGRAMMED FOR CONSTRUCTION:
PROJECTED LETTING DATE:

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]	69,630	2022	89,230	7,915	9	2042	51-49	18	27		

REQUESTED BY: NAME SHAUN ARMSTRONG DATE 7/27/17
DIVISION S.T.I.D.
ADDRESS 1000 J. K. POLK BUILDING
NASHVILLE TN 37243

REVIEWED BY: TONY ARMSTRONG Tony Armstrong DATE 12-28-17
TRANSPORTATION MANAGER 1
SUITE 1000, JAMES K. POLK BUILDING

APPROVED BY: JIM WATERS DATE 1/3/18
ASSISTANT DIRECTOR
SUITE 1000, JAMES K. POLK BUILDING

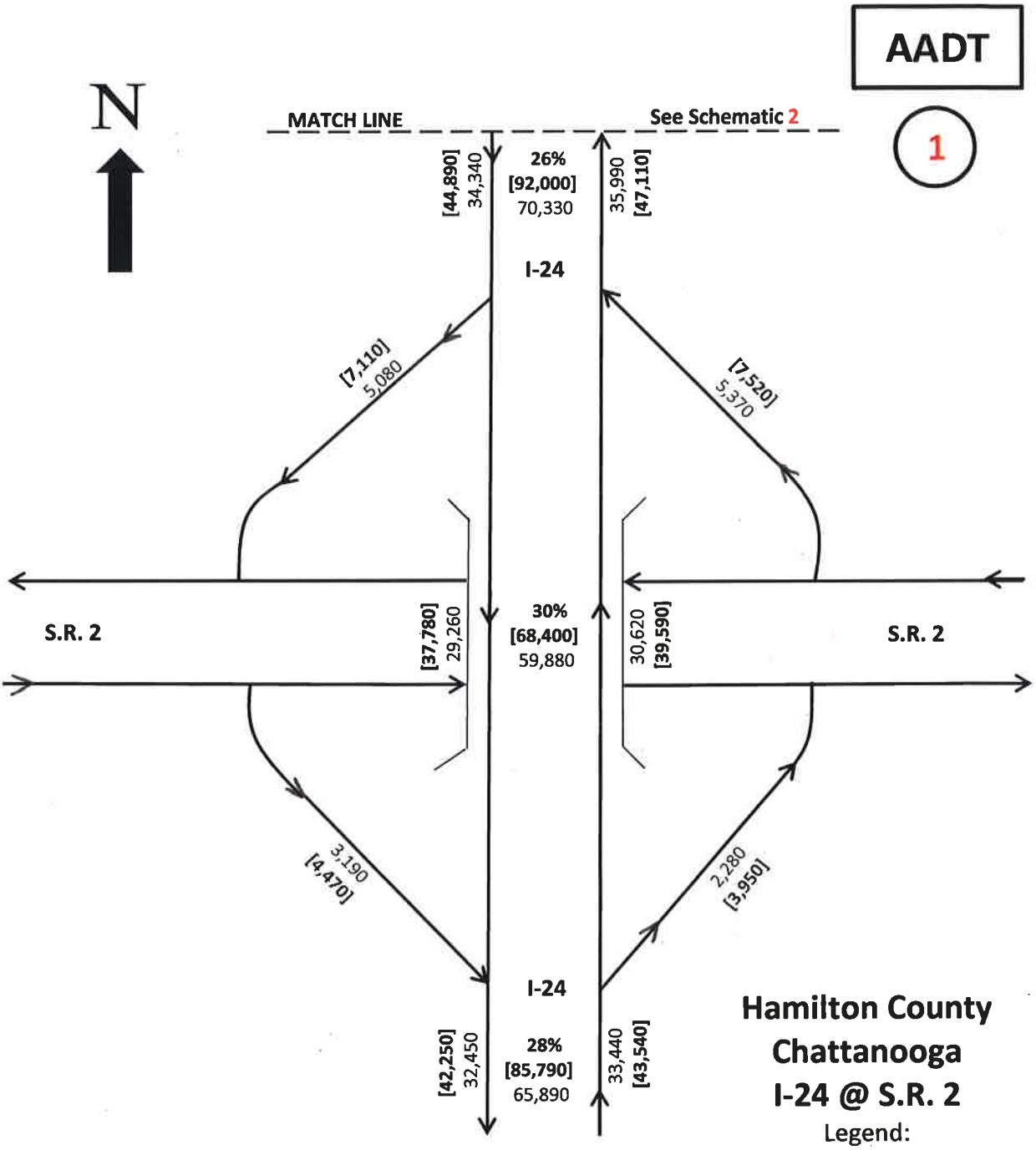
COMMENTS:

THIS TRAFFIC IS BASED ON 2017 CYCLE AND RAMP COUNTS. THE DESIGN YEAR TRAFFIC IS BASED ON GROWTH RATE FROM THE CHATTANOOGA TPO COMPUTER ASSIGNMENT MODEL. AADT's AND BOTH YEAR DHV's ARE INCLUDED.

Cc: MIKE GILBERT, S.T.I.D.

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. 2/22/17)



Hamilton County
Chattanooga
I-24 @ S.R. 2

Legend:

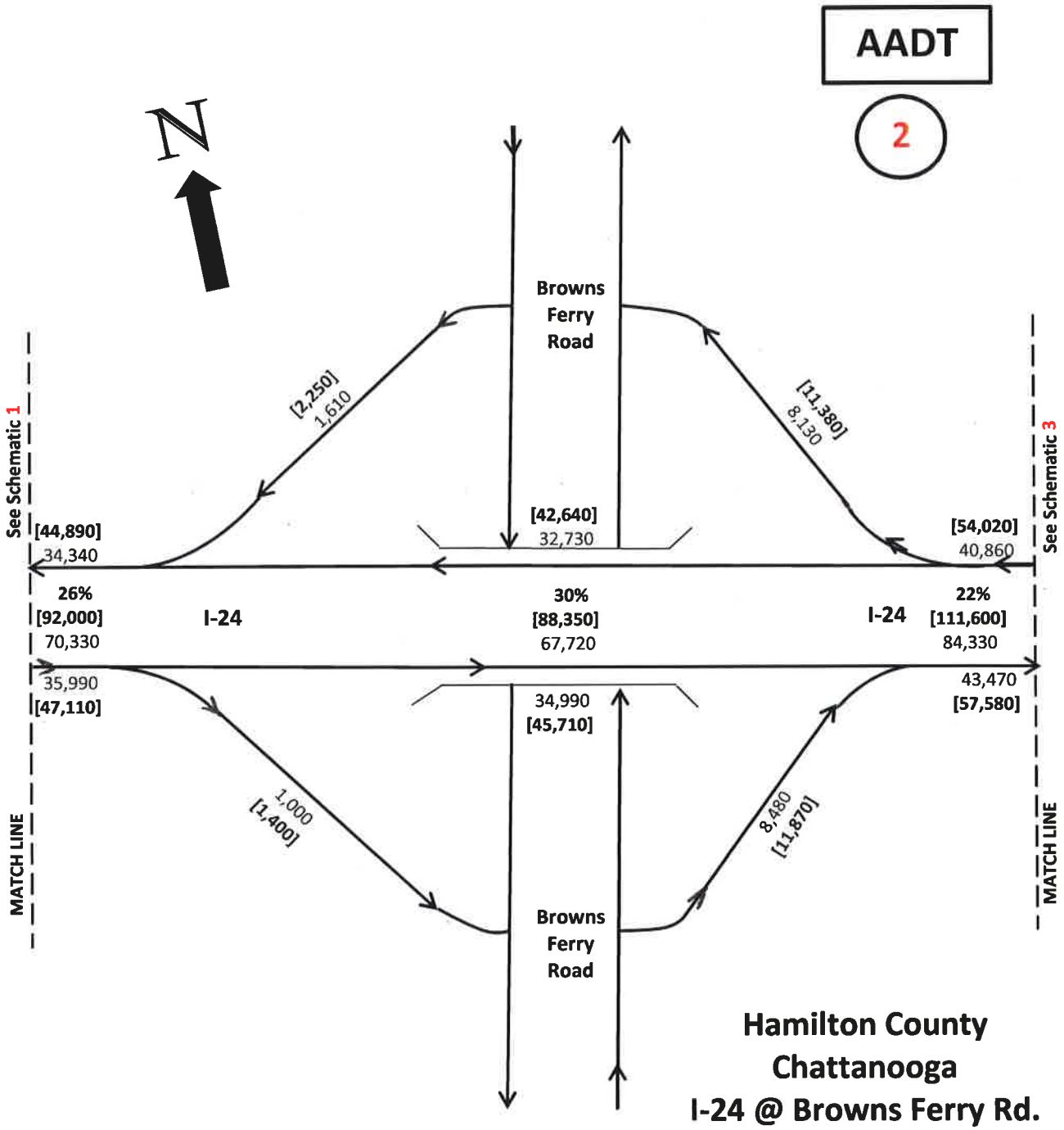
2022 AADT - 000

2042 AADT - [000]

AADT Truck % - **0%**

Date: December 28, 2017

TA



Hamilton County
Chattanooga
I-24 @ Browns Ferry Rd.

Legend:

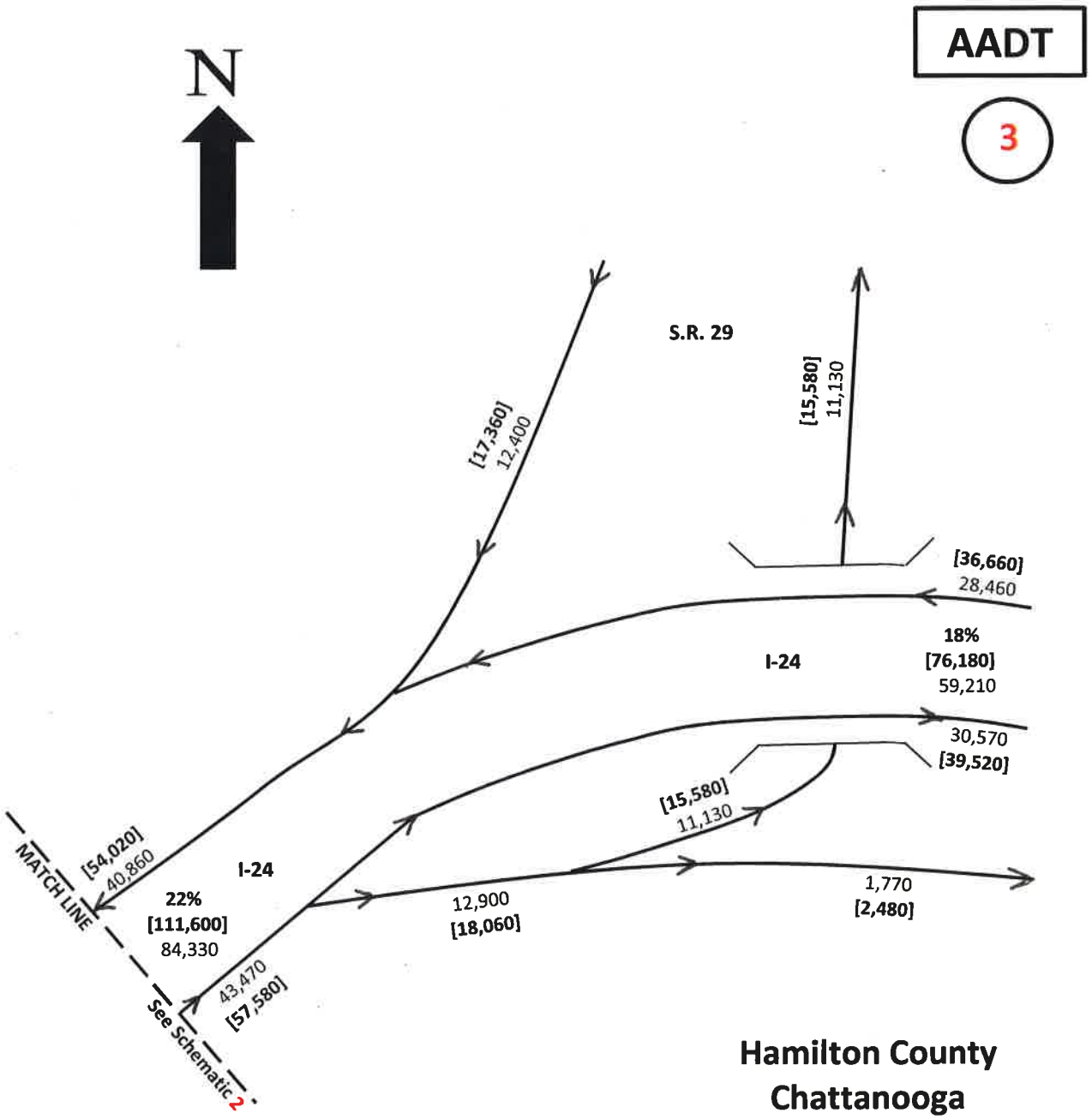
2022 AADT - 000

2042 AADT - [000]

AADT Truck % - **0%**

Date: December 28, 2017

TA



Hamilton County
Chattanooga
I-24 @ S.R. 29

Legend:

2022 AADT - 000

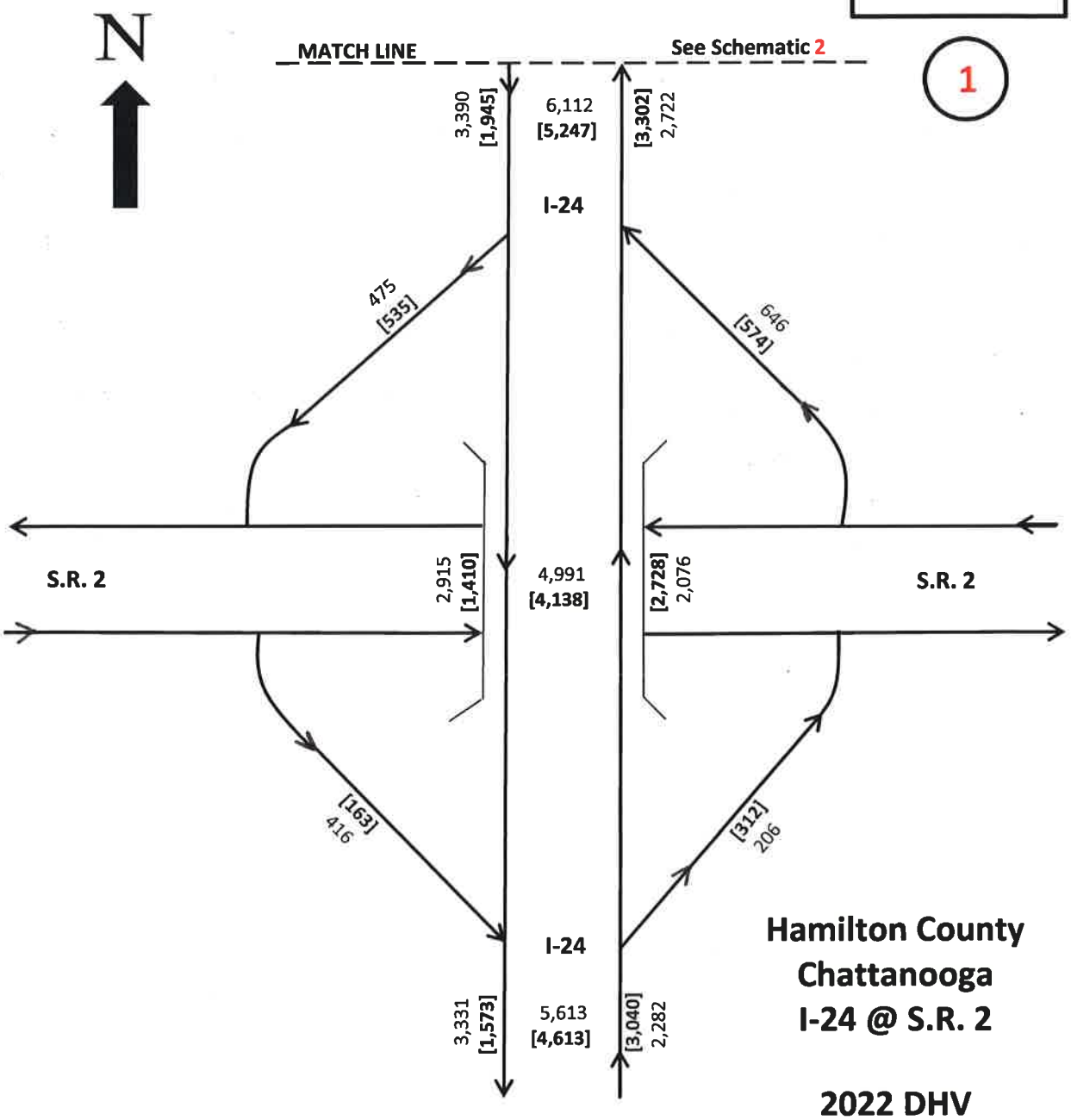
2042 AADT - [000]

AADT Truck % - **0%**

Date: December 28, 2017

TA

2022 DHV



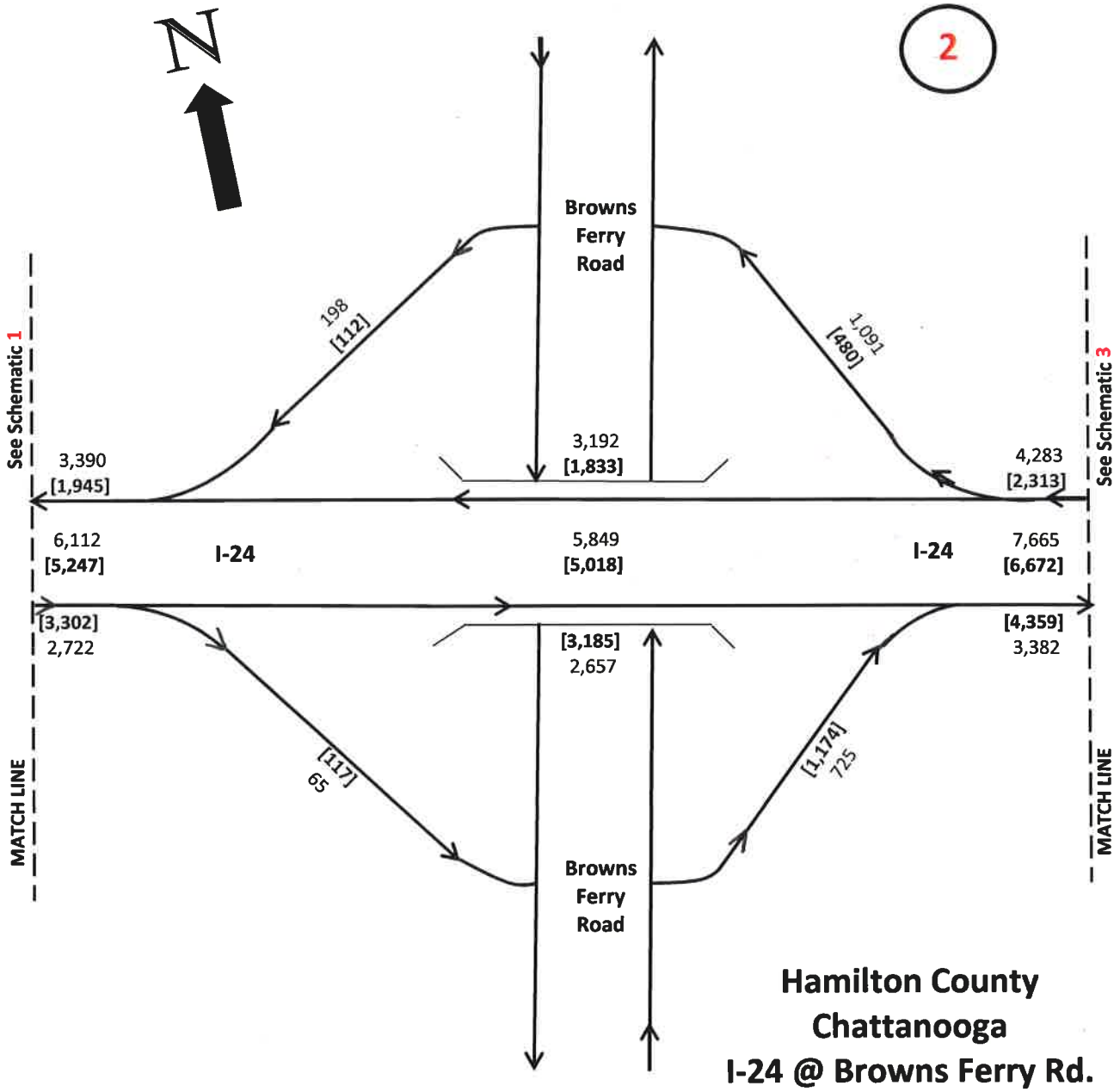
Hamilton County
Chattanooga
I-24 @ S.R. 2

2022 DHV
PM
[AM]

Date: December 28, 2017
TA

2022 DHV

2



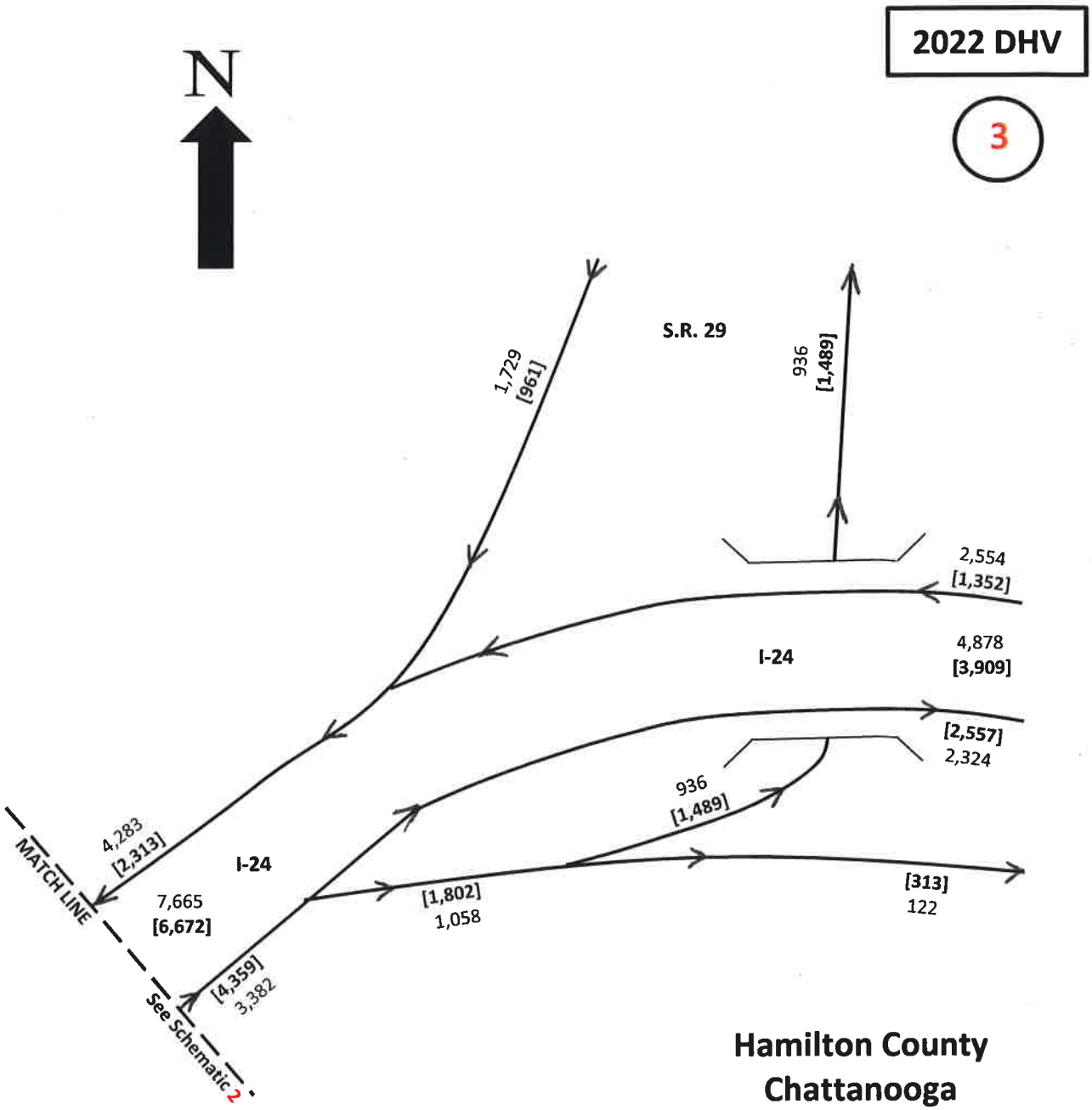
Hamilton County
Chattanooga
I-24 @ Browns Ferry Rd.

2022 DHV
PM
[AM]

Date: December 28, 2017
TA

2022 DHV

3

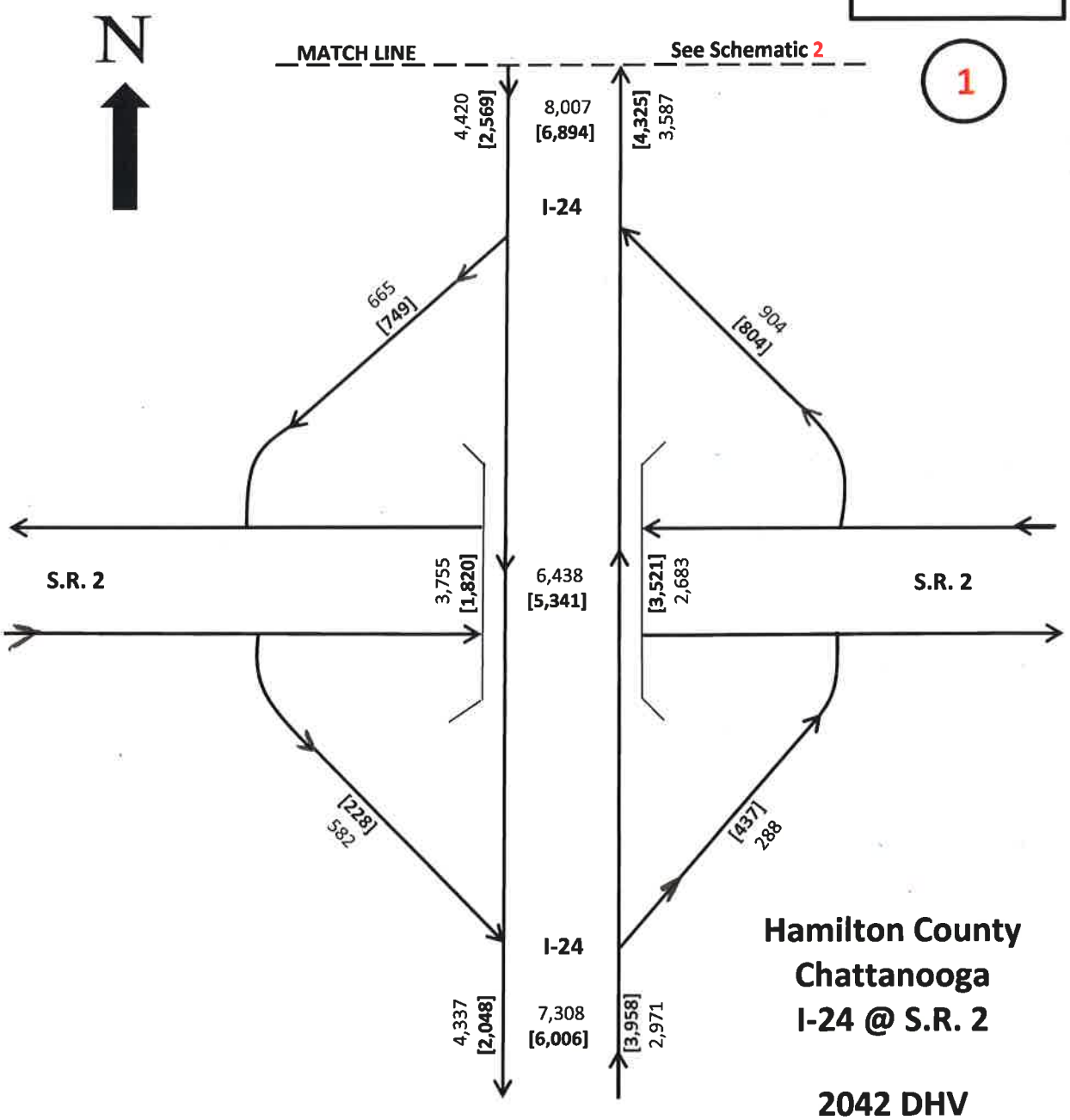


Hamilton County
Chattanooga
I-24 @ S.R. 29

2022 DHV
PM
[AM]

Date: December 28, 2017
TA

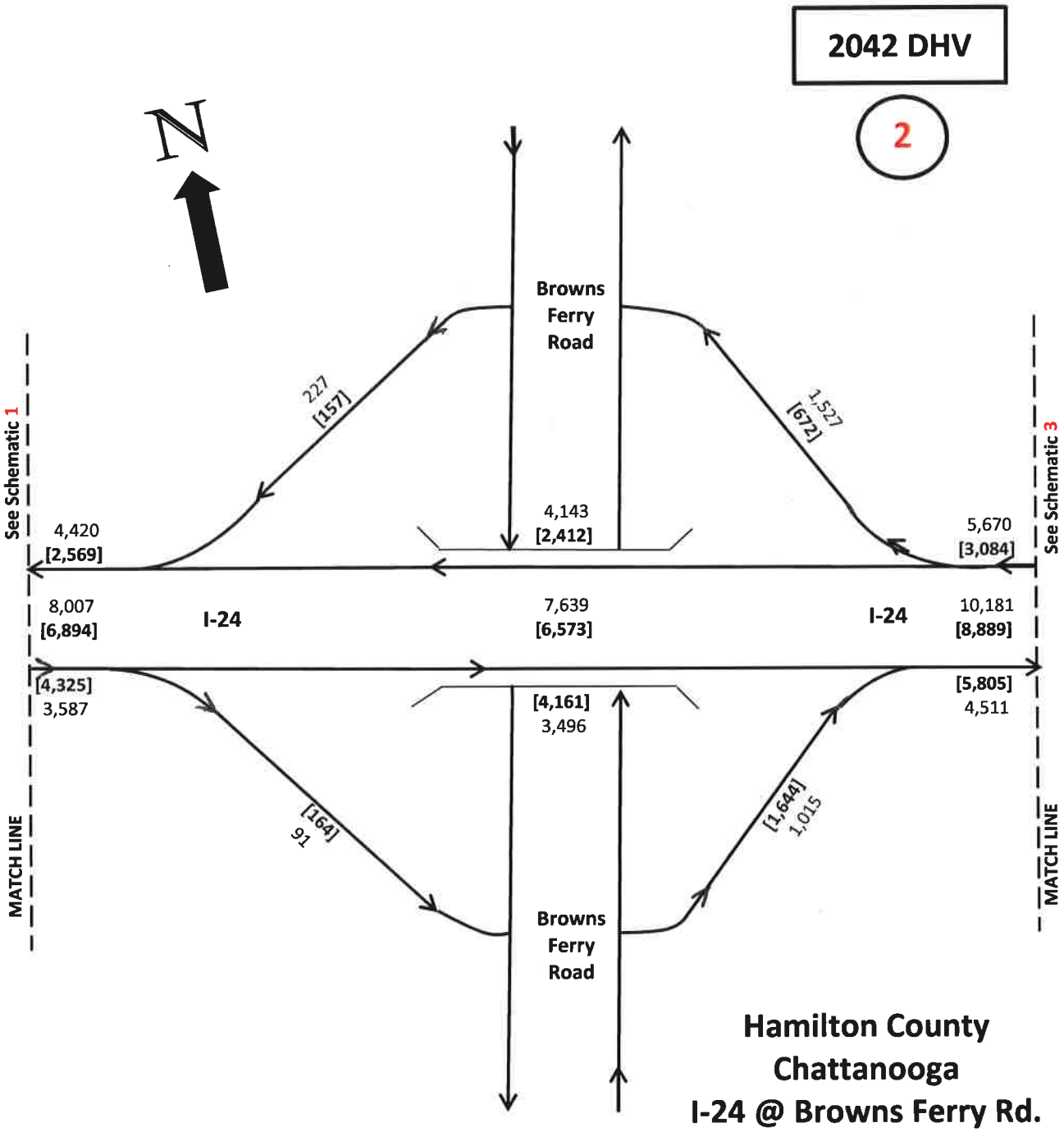
2042 DHV



Hamilton County
Chattanooga
I-24 @ S.R. 2

2042 DHV
PM
[AM]

Date: December 28, 2017
TA



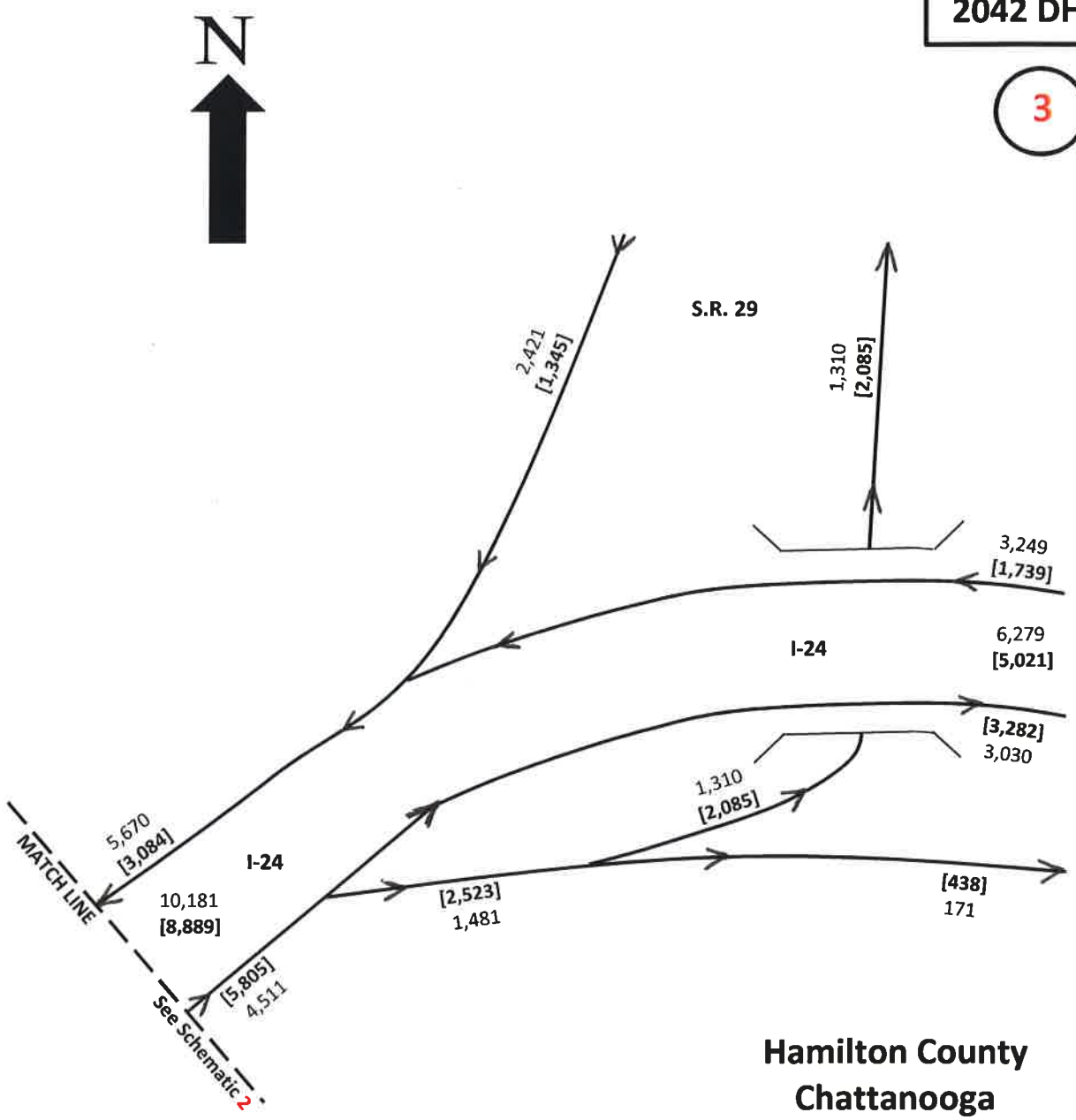
Hamilton County
Chattanooga
I-24 @ Browns Ferry Rd.

2042 DHV
PM
[AM]

Date: December 28, 2017
TA

2042 DHV

3



Hamilton County
Chattanooga
I-24 @ S.R. 29

2042 DHV
PM
[AM]

Date: December 28, 2017
TA

7.4 Traffic Analysis

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Brian Gaffney*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*6/6/18*
Analysis Time Period	*Existing AM*

Site Information

Highway/Direction of Travel	*I-24 EB*
From/To	*I-59 to GA State Line*
Jurisdiction	*Georgia*
Analysis Year	*2022*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2970*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.787*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD	*0.81*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*2.7*	mph
FFS	*72.7*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2006*	pc/h/ln
S	*63.8*	mph
D = v_p / S	*31.4*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Brian Gaffney*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*6/6/18*
Analysis Time Period	*Existing AM*

Site Information

Highway/Direction of Travel	*I-24 WB*
From/To	*I-59 to GA State Line*
Jurisdiction	*Georgia*
Analysis Year	*2022*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1352*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.787*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD	*0.81*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*2.7*	mph
FFS	*72.7*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*913*	pc/h/ln
S	*75.0*	mph
D = v_p / S	*12.2*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Greg Freeman*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*1/4/2018*
Analysis Time Period	*Existing AM*

Site Information

Highway/Direction of Travel	*I-24 EB*
From/To	*GA State Line to SR-2*
Jurisdiction	
Analysis Year	*2022*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3040*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.787*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD	*0.35*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*1.3*	mph
FFS	*74.1*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2054*	pc/h/ln
S	*62.7*	mph
D = v_p / S	*32.8*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Greg Freeman*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*1/4/2018*
Analysis Time Period	*Existing AM*

Site Information

Highway/Direction of Travel	*I-24 WB*
From/To	*GA State Line to SR-2*
Jurisdiction	
Analysis Year	*2022*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1573*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.787*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD	*0.35*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*1.3*	mph
FFS	*74.1*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1063*	pc/h/ln
S	*75.0*	mph
D = v_p / S	*14.2*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Greg Freeman*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*1/4/2018*
Analysis Time Period	*Existing AM*

Site Information

Highway/Direction of Travel	*I-24 EB*
From/To	*SR-2 to Browns Ferry Rd*
Jurisdiction	
Analysis Year	*2022*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3302*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.787*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD	*1.55*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*4.7*	mph
FFS	*70.7*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2231*	pc/h/ln
S	*57.7*	mph
D = v_p / S	*38.7*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Greg Freeman*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*1/4/2018*
Analysis Time Period	*Existing AM*

Site Information

Highway/Direction of Travel	*I-24 WB*
From/To	*SR-2 to Browns Ferry Rd*
Jurisdiction	
Analysis Year	*2022*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1945*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.787*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD	*1.55*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*4.7*	mph
FFS	*70.7*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1314*	pc/h/ln
S	*69.8*	mph
D = v_p / S	*18.8*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Greg Freeman*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*1/4/2018*
Analysis Time Period	*Existing AM*

Site Information

Highway/Direction of Travel	*I-24 EB*
From/To	*Browns Ferry Rd to SR 29*
Jurisdiction	
Analysis Year	*2022*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4359*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*14*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.826*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD	*0.65*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*2.2*	mph
FFS	*73.2*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2806*	pc/h/ln
S	*38.9*	mph
D = v_p / S	*72.1*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Greg Freeman*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*1/4/2018*
Analysis Time Period	*Existing AM*

Site Information

Highway/Direction of Travel	*I-24 WB*
From/To	*Browns Ferry Rd to SR 29*
Jurisdiction	
Analysis Year	*2022*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2313*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*14*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.826*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD	*0.65*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*2.2*	mph
FFS	*73.2*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1489*	pc/h/ln
S	*72.4*	mph
D = v_p / S	*20.6*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Brian Gaffney*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*6/6/18*
Analysis Time Period	*Existing PM*

Site Information

Highway/Direction of Travel	*I-24 EB*
From/To	*I-59 to GA State Line*
Jurisdiction	*Georgia*
Analysis Year	*2022*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2052*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.787*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD	*0.81*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*2.7*	mph
FFS	*72.7*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1386*	pc/h/ln
S	*73.4*	mph
D = v_p / S	*18.9*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Brian Gaffney*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*6/6/18*
Analysis Time Period	*Existing PM*

Site Information

Highway/Direction of Travel	*I-24 WB*
From/To	*I-59 to GA State Line*
Jurisdiction	*Georgia*
Analysis Year	*2022*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3022*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.787*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD	*0.81*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*2.7*	mph
FFS	*72.7*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2041*	pc/h/ln
S	*63.0*	mph
D = v_p / S	*32.4*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Greg Freeman*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*1/4/2018*
Analysis Time Period	*Existing PM*

Site Information

Highway/Direction of Travel	*I-24 EB*
From/To	*GA State Line to SR-2*
Jurisdiction	
Analysis Year	*2022*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2282*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.787*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD	*0.35*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*1.3*	mph
FFS	*74.1*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1542*	pc/h/ln
S	*71.7*	mph
D = v_p / S	*21.5*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Greg Freeman*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*1/4/2018*
Analysis Time Period	*Existing PM*

Site Information

Highway/Direction of Travel	*I-24 WB*
From/To	*GA State Line to SR-2*
Jurisdiction	
Analysis Year	*2022*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3331*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.787*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD	*0.35*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*1.3*	mph
FFS	*74.1*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2250*	pc/h/ln
S	*57.7*	mph
D = v_p / S	*39.0*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Greg Freeman*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*1/4/2018*
Analysis Time Period	*Existing PM*

Site Information

Highway/Direction of Travel	*I-24 EB*
From/To	*SR-2 to Browns Ferry Rd*
Jurisdiction	
Analysis Year	*2022*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2722*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.787*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD	*1.55*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*4.7*	mph
FFS	*70.7*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1839*	pc/h/ln
S	*65.3*	mph
D = v_p / S	*28.2*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Greg Freeman*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*1/4/2018*
Analysis Time Period	*Existing PM*

Site Information

Highway/Direction of Travel	*I-24 WB*
From/To	*SR-2 to Browns Ferry Rd*
Jurisdiction	
Analysis Year	*2022*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3390*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.787*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD	*1.55*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*4.7*	mph
FFS	*70.7*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2290*	pc/h/ln
S	*56.2*	mph
D = v_p / S	*40.7*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Greg Freeman*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*1/4/2018*
Analysis Time Period	*Existing PM*

Site Information

Highway/Direction of Travel	*I-24 EB*
From/To	*Browns Ferry Rd to SR 29*
Jurisdiction	
Analysis Year	*2042*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4511*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*14*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.826*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD	*0.65*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*2.2*	mph
FFS	*73.2*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2903*	pc/h/ln
S	*34.9*	mph
D = v_p / S	*83.2*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Greg Freeman*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*1/4/2018*
Analysis Time Period	*Existing PM*

Site Information

Highway/Direction of Travel	*I-24 WB*
From/To	*Browns Ferry Rd to SR 29*
Jurisdiction	
Analysis Year	*2022*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4283*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*14*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.826*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD	*0.65*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*2.2*	mph
FFS	*73.2*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2757*	pc/h/ln
S	*40.8*	mph
D = v_p / S	*67.5*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Brian Gaffney*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*6/6/18*
Analysis Time Period	*Existing AM*

Site Information

Highway/Direction of Travel	*I-24 EB*
From/To	*I-59 to GA State Line*
Jurisdiction	*Georgia*
Analysis Year	*2042*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3861*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.787*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD	*0.81*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*2.7*	mph
FFS	*72.7*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2608*	pc/h/ln
S	*46.4*	mph
D = v_p / S	*56.2*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Brian Gaffney*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*6/6/18*
Analysis Time Period	*Existing AM*

Site Information

Highway/Direction of Travel	*I-24 WB*
From/To	*I-59 to GA State Line*
Jurisdiction	*Georgia*
Analysis Year	*2042*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1758*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.787*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD	*0.81*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*2.7*	mph
FFS	*72.7*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1188*	pc/h/ln
S	*74.6*	mph
D = v_p / S	*15.9*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Greg Freeman*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*1/4/2018*
Analysis Time Period	*Existing AM*

Site Information

Highway/Direction of Travel	*I-24 EB*
From/To	*GA State Line to SR-2*
Jurisdiction	
Analysis Year	*2042*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3958*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.787*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD	*0.35*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*1.3*	mph
FFS	*74.1*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2674*	pc/h/ln
S	*44.0*	mph
D = v_p / S	*60.8*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Greg Freeman*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*1/4/2018*
Analysis Time Period	*Existing AM*

Site Information

Highway/Direction of Travel	*I-24 WB*
From/To	*GA State Line to SR-2*
Jurisdiction	
Analysis Year	*2042*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2048*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.787*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD	*0.35*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*1.3*	mph
FFS	*74.1*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1383*	pc/h/ln
S	*73.4*	mph
D = v_p / S	*18.8*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Greg Freeman*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*1/4/2018*
Analysis Time Period	*Existing AM*

Site Information

Highway/Direction of Travel	*I-24 EB*
From/To	*SR-2 to Browns Ferry Rd*
Jurisdiction	
Analysis Year	*2042*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4325*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.787*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD	*1.55*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*4.7*	mph
FFS	*70.7*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2922*	pc/h/ln
S	*35.6*	mph
D = v_p / S	*82.1*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Greg Freeman*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*1/4/2018*
Analysis Time Period	*Existing AM*

Site Information

Highway/Direction of Travel	*I-24 WB*
From/To	*SR-2 to Browns Ferry Rd*
Jurisdiction	
Analysis Year	*2042*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2569*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.787*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD	*1.55*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*4.7*	mph
FFS	*70.7*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1735*	pc/h/ln
S	*66.7*	mph
D = v_p / S	*26.0*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Greg Freeman*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*1/4/2018*
Analysis Time Period	*Existing AM*

Site Information

Highway/Direction of Travel	*I-24 EB*
From/To	*Browns Ferry Rd to SR 29*
Jurisdiction	
Analysis Year	*2042*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5805*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*14*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.826*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD	*0.65*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*2.2*	mph
FFS	*73.2*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*3736*	pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Greg Freeman*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*1/4/2018*
Analysis Time Period	*Existing AM*

Site Information

Highway/Direction of Travel	*I-24 WB*
From/To	*Browns Ferry Rd to SR 29*
Jurisdiction	
Analysis Year	*2042*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3084*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*14*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.826*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD	*0.65*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*2.2*	mph
FFS	*73.2*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1985*	pc/h/ln
S	*64.3*	mph
D = v_p / S	*30.9*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Brian Gaffney*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*6/6/18*
Analysis Time Period	*Existing PM*

Site Information

Highway/Direction of Travel	*I-24 EB*
From/To	*I-59 to GA State Line*
Jurisdiction	*Georgia*
Analysis Year	*2042*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2668*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.787*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD	*0.81*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*2.7*	mph
FFS	*72.7*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1802*	pc/h/ln
S	*67.9*	mph
D = v_p / S	*26.5*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Brian Gaffney*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*6/6/18*
Analysis Time Period	*Existing PM*

Site Information

Highway/Direction of Travel	*I-24 WB*
From/To	*I-59 to GA State Line*
Jurisdiction	*Georgia*
Analysis Year	*2042*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3929*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.787*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD	*0.81*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*2.7*	mph
FFS	*72.7*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2654*	pc/h/ln
S	*44.7*	mph
D = v_p / S	*59.4*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Greg Freeman*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*1/4/2018*
Analysis Time Period	*Existing PM*

Site Information

Highway/Direction of Travel	*I-24 EB*
From/To	*GA State Line to SR-2*
Jurisdiction	
Analysis Year	*2042*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2971*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.787*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD	*0.35*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*1.3*	mph
FFS	*74.1*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2007*	pc/h/ln
S	*63.8*	mph
D = v_p / S	*31.5*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Greg Freeman*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*1/4/2018*
Analysis Time Period	*Existing PM*

Site Information

Highway/Direction of Travel	*I-24 WB*
From/To	*GA State Line to SR-2*
Jurisdiction	
Analysis Year	*2042*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4337*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.787*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD	*0.35*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*1.3*	mph
FFS	*74.1*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2930*	pc/h/ln
S	*33.8*	mph
D = v_p / S	*86.8*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Greg Freeman*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*1/4/2018*
Analysis Time Period	*Existing PM*

Site Information

Highway/Direction of Travel	*I-24 EB*
From/To	*SR-2 to Browns Ferry Rd*
Jurisdiction	
Analysis Year	*2042*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3587*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.787*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD	*1.55*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*4.7*	mph
FFS	*70.7*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2423*	pc/h/ln
S	*52.6*	mph
D = v_p / S	*46.0*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Greg Freeman*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*1/4/2018*
Analysis Time Period	*Existing PM*

Site Information

Highway/Direction of Travel	*I-24 WB*
From/To	*SR-2 to Browns Ferry Rd*
Jurisdiction	
Analysis Year	*2042*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4420*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.787*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD	*1.55*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*4.7*	mph
FFS	*70.7*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2986*	pc/h/ln
S	*33.0*	mph
D = v_p / S	*90.5*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Greg Freeman*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*1/4/2018*
Analysis Time Period	*Existing PM*

Site Information

Highway/Direction of Travel	*I-24 EB*
From/To	*Browns Ferry Rd to SR 29*
Jurisdiction	
Analysis Year	*2042*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4511*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*14*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.826*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD	*0.65*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*2.2*	mph
FFS	*73.2*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2903*	pc/h/ln
S	*34.9*	mph
D = v_p / S	*83.2*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Greg Freeman*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*1/4/2018*
Analysis Time Period	*Existing PM*

Site Information

Highway/Direction of Travel	*I-24 WB*
From/To	*Browns Ferry Rd to SR 29*
Jurisdiction	
Analysis Year	*2042*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5670*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*14*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.826*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD	*0.65*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*2.2*	mph
FFS	*73.2*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*3649*	pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Brian Gaffney*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*6/6/18*
Analysis Time Period	*Proposed AM*

Site Information

Highway/Direction of Travel	*I-24 EB*
From/To	*I-59 to GA State Line*
Jurisdiction	*Georgia*
Analysis Year	*2022*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2970*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.787*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD	*0.81*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*2.7*	mph
FFS	*72.7*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1338*	pc/h/ln
S	*73.7*	mph
D = v_p / S	*18.1*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Brian Gaffney*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*6/6/18*
Analysis Time Period	*Proposed AM*

Site Information

Highway/Direction of Travel	*I-24 WB*
From/To	*I-59 to GA State Line*
Jurisdiction	*Georgia*
Analysis Year	*2022*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1352*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.787*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD	*0.81*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*2.7*	mph
FFS	*72.7*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*609*	pc/h/ln
S	*75.0*	mph
D = v_p / S	*8.1*	pc/mi/ln
LOS	*A*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Greg Freeman*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*1/4/2018*
Analysis Time Period	*Existing AM*

Site Information

Highway/Direction of Travel	*I-24 EB*
From/To	*GA State Line to SR-2*
Jurisdiction	
Analysis Year	*2022*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3040*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.787*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD	*0.35*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*1.3*	mph
FFS	*74.1*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1369*	pc/h/ln
S	*73.5*	mph
D = v_p / S	*18.6*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Greg Freeman*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*1/4/2018*
Analysis Time Period	*Existing AM*

Site Information

Highway/Direction of Travel	*I-24 WB*
From/To	*GA State Line to SR-2*
Jurisdiction	
Analysis Year	*2022*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1573*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.787*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD	*0.35*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*1.3*	mph
FFS	*74.1*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*708*	pc/h/ln
S	*75.0*	mph
D = v_p / S	*9.4*	pc/mi/ln
LOS	*A*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Greg Freeman*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*1/4/2018*
Analysis Time Period	*Existing AM*

Site Information

Highway/Direction of Travel	*I-24 EB*
From/To	*SR-2 to Browns Ferry Rd*
Jurisdiction	
Analysis Year	*2022*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3302*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.787*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD	*1.55*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*4.7*	mph
FFS	*70.7*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1487*	pc/h/ln
S	*69.0*	mph
D = v_p / S	*21.5*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Greg Freeman*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*1/4/2018*
Analysis Time Period	*Existing AM*

Site Information

Highway/Direction of Travel	*I-24 WB*
From/To	*SR-2 to Browns Ferry Rd*
Jurisdiction	
Analysis Year	*2022*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1945*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.787*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD	*1.55*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*4.7*	mph
FFS	*70.7*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*876*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*12.5*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Greg Freeman*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*1/4/2018*
Analysis Time Period	*Existing AM*

Site Information

Highway/Direction of Travel	*I-24 EB*
From/To	*Browns Ferry Rd to SR 29*
Jurisdiction	
Analysis Year	*2022*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4359*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*14*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.826*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD	*0.65*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*2.2*	mph
FFS	*73.2*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1870*	pc/h/ln
S	*66.6*	mph
D = v_p / S	*28.1*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Greg Freeman*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*1/4/2018*
Analysis Time Period	*Existing AM*

Site Information

Highway/Direction of Travel	*I-24 WB*
From/To	*Browns Ferry Rd to SR 29*
Jurisdiction	
Analysis Year	*2022*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2313*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*14*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.826*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD	*0.65*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*2.2*	mph
FFS	*73.2*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*992*	pc/h/ln
S	*75.0*	mph
D = v_p / S	*13.2*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Brian Gaffney*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*6/6/18*
Analysis Time Period	*Proposed PM*

Site Information

Highway/Direction of Travel	*I-24 EB*
From/To	*I-59 to GA State Line*
Jurisdiction	*Georgia*
Analysis Year	*2022*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2052*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.787*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD	*0.81*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*2.7*	mph
FFS	*72.7*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*924*	pc/h/ln
S	*75.0*	mph
D = v_p / S	*12.3*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Brian Gaffney*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*6/6/18*
Analysis Time Period	*Proposed PM*

Site Information

Highway/Direction of Travel	*I-24 WB*
From/To	*I-59 to GA State Line*
Jurisdiction	*Georgia*
Analysis Year	*2022*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3022*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.787*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD	*0.81*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*2.7*	mph
FFS	*72.7*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1361*	pc/h/ln
S	*73.6*	mph
D = v_p / S	*18.5*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Greg Freeman*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*1/4/2018*
Analysis Time Period	*Existing PM*

Site Information

Highway/Direction of Travel	*I-24 EB*
From/To	*GA State Line to SR-2*
Jurisdiction	
Analysis Year	*2022*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2282*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.787*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD	*0.35*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*1.3*	mph
FFS	*74.1*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1028*	pc/h/ln
S	*75.0*	mph
D = v_p / S	*13.7*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Greg Freeman*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*1/4/2018*
Analysis Time Period	*Existing PM*

Site Information

Highway/Direction of Travel	*I-24 WB*
From/To	*GA State Line to SR-2*
Jurisdiction	
Analysis Year	*2022*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3331*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.787*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD	*0.35*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*1.3*	mph
FFS	*74.1*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1500*	pc/h/ln
S	*72.2*	mph
D = v_p / S	*20.8*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Greg Freeman*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*1/4/2018*
Analysis Time Period	*Existing PM*

Site Information

Highway/Direction of Travel	*I-24 EB*
From/To	*SR-2 to Browns Ferry Rd*
Jurisdiction	
Analysis Year	*2022*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2722*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.787*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD	*1.55*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*4.7*	mph
FFS	*70.7*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1226*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*17.5*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Greg Freeman*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*1/4/2018*
Analysis Time Period	*Existing PM*

Site Information

Highway/Direction of Travel	*I-24 WB*
From/To	*SR-2 to Browns Ferry Rd*
Jurisdiction	
Analysis Year	*2022*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3390*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.787*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD	*1.55*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*4.7*	mph
FFS	*70.7*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1527*	pc/h/ln
S	*68.8*	mph
D = v_p / S	*22.2*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Greg Freeman*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*1/4/2018*
Analysis Time Period	*Existing PM*

Site Information

Highway/Direction of Travel	*I-24 EB*
From/To	*Browns Ferry Rd to SR 29*
Jurisdiction	
Analysis Year	*2042*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4511*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*14*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.826*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD	*0.65*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*2.2*	mph
FFS	*73.2*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1936*	pc/h/ln
S	*65.3*	mph
D = v_p / S	*29.6*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Greg Freeman*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*1/4/2018*
Analysis Time Period	*Existing PM*

Site Information

Highway/Direction of Travel	*I-24 WB*
From/To	*Browns Ferry Rd to SR 29*
Jurisdiction	
Analysis Year	*2022*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4283*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*14*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.826*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD	*0.65*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*2.2*	mph
FFS	*73.2*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1838*	pc/h/ln
S	*67.2*	mph
D = v_p / S	*27.3*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*Brian Gaffney*	Highway/Direction of Travel	*I-24 EB*
Agency or Company	*Alfred Benesch & Company*	From/To	*I-59 to GA State Line*
Date Performed	*6/6/18*	Jurisdiction	*Georgia*
Analysis Time Period	*Proposed AM*	Analysis Year	*2042*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3861*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.787*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD	*0.81*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*2.7*	mph
FFS	*72.7*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1739*	pc/h/ln
S	*69.0*	mph
D = v_p / S	*25.2*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Brian Gaffney*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*6/6/18*
Analysis Time Period	*Proposed AM*

Site Information

Highway/Direction of Travel	*I-24 WB*
From/To	*I-59 to GA State Line*
Jurisdiction	*Georgia*
Analysis Year	*2042*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1758*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.787*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD	*0.81*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*2.7*	mph
FFS	*72.7*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*792*	pc/h/ln
S	*75.0*	mph
D = v_p / S	*10.6*	pc/mi/ln
LOS	*A*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Greg Freeman*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*1/4/2018*
Analysis Time Period	*Existing AM*

Site Information

Highway/Direction of Travel	*I-24 EB*
From/To	*GA State Line to SR-2*
Jurisdiction	
Analysis Year	*2042*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3958*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.787*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD	*0.35*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*1.3*	mph
FFS	*74.1*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1783*	pc/h/ln
S	*68.2*	mph
D = v_p / S	*26.1*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Greg Freeman*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*1/4/2018*
Analysis Time Period	*Existing AM*

Site Information

Highway/Direction of Travel	*I-24 WB*
From/To	*GA State Line to SR-2*
Jurisdiction	
Analysis Year	*2042*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2048*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.787*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD	*0.35*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*1.3*	mph
FFS	*74.1*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*922*	pc/h/ln
S	*75.0*	mph
D = v_p / S	*12.3*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Greg Freeman*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*1/4/2018*
Analysis Time Period	*Existing AM*

Site Information

Highway/Direction of Travel	*I-24 EB*
From/To	*SR-2 to Browns Ferry Rd*
Jurisdiction	
Analysis Year	*2042*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4325*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.787*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD	*1.55*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*4.7*	mph
FFS	*70.7*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1948*	pc/h/ln
S	*63.5*	mph
D = v_p / S	*30.7*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Greg Freeman*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*1/4/2018*
Analysis Time Period	*Existing AM*

Site Information

Highway/Direction of Travel	*I-24 WB*
From/To	*SR-2 to Browns Ferry Rd*
Jurisdiction	
Analysis Year	*2042*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2569*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.787*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD	*1.55*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*4.7*	mph
FFS	*70.7*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1157*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*16.5*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Greg Freeman*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*1/4/2018*
Analysis Time Period	*Existing AM*

Site Information

Highway/Direction of Travel	*I-24 EB*
From/To	*Browns Ferry Rd to SR 29*
Jurisdiction	
Analysis Year	*2042*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5805*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*14*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.826*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD	*0.65*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*2.2*	mph
FFS	*73.2*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2491*	pc/h/ln
S	*50.4*	mph
D = v_p / S	*49.4*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Greg Freeman*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*1/4/2018*
Analysis Time Period	*Existing AM*

Site Information

Highway/Direction of Travel	*I-24 WB*
From/To	*Browns Ferry Rd to SR 29*
Jurisdiction	
Analysis Year	*2042*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3084*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*14*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.826*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD	*0.65*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*2.2*	mph
FFS	*73.2*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1323*	pc/h/ln
S	*73.8*	mph
D = v_p / S	*17.9*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Brian Gaffney*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*6/6/18*
Analysis Time Period	*Proposed PM*

Site Information

Highway/Direction of Travel	*I-24 EB*
From/To	*I-59 to GA State Line*
Jurisdiction	*Georgia*
Analysis Year	*2042*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2668*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.787*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD	*0.81*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*2.7*	mph
FFS	*72.7*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1202*	pc/h/ln
S	*74.5*	mph
D = v_p / S	*16.1*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Brian Gaffney*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*6/6/18*
Analysis Time Period	*Proposed PM*

Site Information

Highway/Direction of Travel	*I-24 WB*
From/To	*I-59 to GA State Line*
Jurisdiction	*Georgia*
Analysis Year	*2042*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3929*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.787*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD	*0.81*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*2.7*	mph
FFS	*72.7*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1769*	pc/h/ln
S	*68.5*	mph
D = v_p / S	*25.8*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Greg Freeman*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*1/4/2018*
Analysis Time Period	*Existing PM*

Site Information

Highway/Direction of Travel	*I-24 EB*
From/To	*GA State Line to SR-2*
Jurisdiction	
Analysis Year	*2042*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2971*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.787*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD	*0.35*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*1.3*	mph
FFS	*74.1*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1338*	pc/h/ln
S	*73.7*	mph
D = v_p / S	*18.1*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Greg Freeman*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*1/4/2018*
Analysis Time Period	*Existing PM*

Site Information

Highway/Direction of Travel	*I-24 WB*
From/To	*GA State Line to SR-2*
Jurisdiction	
Analysis Year	*2042*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4337*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.787*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD	*0.35*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*1.3*	mph
FFS	*74.1*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1953*	pc/h/ln
S	*64.9*	mph
D = v_p / S	*30.1*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Greg Freeman*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*1/4/2018*
Analysis Time Period	*Existing PM*

Site Information

Highway/Direction of Travel	*I-24 EB*
From/To	*SR-2 to Browns Ferry Rd*
Jurisdiction	
Analysis Year	*2042*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3587*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.787*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD	*1.55*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*4.7*	mph
FFS	*70.7*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1615*	pc/h/ln
S	*68.0*	mph
D = v_p / S	*23.7*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Greg Freeman*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*1/4/2018*
Analysis Time Period	*Existing PM*

Site Information

Highway/Direction of Travel	*I-24 WB*
From/To	*SR-2 to Browns Ferry Rd*
Jurisdiction	
Analysis Year	*2042*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4420*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.787*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD	*1.55*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*4.7*	mph
FFS	*70.7*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1991*	pc/h/ln
S	*62.7*	mph
D = v_p / S	*31.7*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Greg Freeman*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*1/4/2018*
Analysis Time Period	*Existing PM*

Site Information

Highway/Direction of Travel	*I-24 EB*
From/To	*Browns Ferry Rd to SR 29*
Jurisdiction	
Analysis Year	*2042*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4511*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*14*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.826*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD	*0.65*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*2.2*	mph
FFS	*73.2*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1936*	pc/h/ln
S	*65.3*	mph
D = v_p / S	*29.6*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Greg Freeman*
Agency or Company	*Alfred Benesch & Company*
Date Performed	*1/4/2018*
Analysis Time Period	*Existing PM*

Site Information

Highway/Direction of Travel	*I-24 WB*
From/To	*Browns Ferry Rd to SR 29*
Jurisdiction	
Analysis Year	*2042*

Project Description *I-24 Technical Report*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5670*	veh/h	Peak-Hour Factor, PHF	*0.94*
AADT		veh/day	%Trucks and Buses, P_T	*14*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Rolling*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*2.0*
E_T	*2.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.826*

Speed Inputs

Lane Width	*12.0*	ft
Rt-Side Lat. Clearance	*6.0*	ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD	*0.65*	ramps/mi
FFS (measured)		mph
Base free-flow Speed, BFFS	*75.4*	mph

Calc Speed Adj and FFS

f_{LW}	*0.0*	mph
f_{LC}	*0.0*	mph
TRD Adjustment	*2.2*	mph
FFS	*73.2*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2433*	pc/h/ln
S	*52.3*	mph
D = v_p / S	*46.5*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

7.5 Crash Analysis

Tables Below Represent Crashes/Mi/Year for Urban Environments	
Legend	
K:	Fatal
A:	Incapacitating
B:	Non-Incapcitating Evident
C:	Possible Injury
PDO:	No Injury / Property Damage

4-lane Divided w/ 48' Depressed Median							
Base Year	**Design Year**	**Total**	**K**	**A**	**B**	**C**	**PDO**
20000	26000	4.316	0.036	0.093	0.505	0.812	2.870
30000	39000	7.374	0.059	0.151	0.818	1.314	5.032
40000	52000	11.054	0.084	0.216	1.170	1.879	7.706
50000	65000	15.698	0.102	0.268	1.446	2.973	10.908
60000	78000	21.470	0.121	0.322	1.731	4.291	15.005
70000	91000	28.265	0.141	0.380	2.036	5.756	19.951
80000	104000	35.989	0.163	0.442	2.365	7.329	25.690
90000	114000	47.437	0.195	0.531	2.833	9.511	34.368
100000	124000	51.360	0.205	0.561	2.993	10.244	37.356

4-lane Divided w/ 72' Depressed Median							
Base Year	**Design Year**	**Total**	**K**	**A**	**B**	**C**	**PDO**
20000	26000	4.462	0.039	0.101	0.550	0.883	2.889
30000	39000	7.579	0.063	0.162	0.879	1.411	5.064
40000	52000	11.320	0.089	0.230	1.246	2.001	7.754
50000	65000	16.030	0.108	0.283	1.526	3.137	10.976
60000	78000	21.875	0.127	0.338	1.814	4.498	15.098
70000	91000	28.749	0.148	0.396	2.125	6.007	20.074
80000	104000	36.560	0.170	0.460	2.460	7.624	25.847
90000	114000	44.022	0.191	0.519	2.771	9.094	31.447
100000	124000	52.095	0.213	0.581	3.101	10.615	37.584

4-lane Divided w/ >90' Depressed Median							
Base Year	**Design Year**	**Total**	**K**	**A**	**B**	**C**	**PDO**
20000	26000	4.281	0.039	0.099	0.538	0.864	2.742
30000	39000	7.252	0.061	0.158	0.855	1.372	4.806
40000	52000	10.814	0.087	0.222	1.207	1.938	7.360
50000	65000	15.291	0.104	0.273	1.472	3.025	10.417
60000	78000	20.844	0.122	0.325	1.744	4.325	14.328
70000	91000	27.373	0.142	0.380	2.038	5.762	19.051
80000	104000	34.790	0.163	0.441	2.356	7.302	24.529
90000	114000	41.875	0.182	0.496	2.651	8.701	29.844
100000	124000	49.539	0.204	0.556	2.965	10.148	35.667

Tables Below Represent Crashes/Mi/Year for Urban Environments	
Legend	
K:	Fatal
A:	Incapacitating
B:	Non-Incapcitating Evident
C:	Possible Injury
PDO:	No Injury / Property Damage

6-lane Divided w/ 26' Median and Barrier Wall							
Base Year	**Design Year**	**Total**	**K**	**A**	**B**	**C**	**PDO**
20000	26000	5.084	0.037	0.099	0.557	1.013	3.378
30000	39000	8.526	0.060	0.159	0.894	1.628	5.785
40000	52000	12.612	0.085	0.226	1.273	2.316	8.712
50000	65000	17.329	0.113	0.299	1.687	3.070	12.159
60000	78000	22.667	0.143	0.379	2.135	3.885	16.125
70000	91000	29.134	0.165	0.442	2.483	5.343	20.701
80000	104000	36.760	0.186	0.505	2.826	7.061	26.182
90000	114000	44.230	0.205	0.562	3.136	8.689	31.639
100000	124000	52.461	0.225	0.621	3.458	10.424	37.734

6-lane Divided w/ 30' Depressed Median							
Base Year	**Design Year**	**Total**	**K**	**A**	**B**	**C**	**PDO**
20000	26000	4.473	0.040	0.103	0.559	0.899	2.872
30000	39000	7.474	0.064	0.165	0.893	1.434	4.918
40000	52000	11.027	0.091	0.233	1.265	2.032	7.406
50000	65000	15.121	0.120	0.308	1.672	2.685	10.336
60000	78000	19.747	0.152	0.389	2.110	3.389	13.707
70000	91000	25.360	0.175	0.455	2.460	4.673	17.596
80000	104000	31.971	0.198	0.521	2.807	6.190	22.255
90000	114000	38.441	0.219	0.580	3.120	7.629	26.893
100000	124000	45.563	0.240	0.642	3.444	9.164	32.074

6-lane Divided w/ 48' Depressed Median							
Base Year	**Design Year**	**Total**	**K**	**A**	**B**	**C**	**PDO**
20000	26000	3.919	0.035	0.090	0.486	0.781	2.527
30000	39000	6.547	0.056	0.143	0.776	1.246	4.326
40000	52000	9.659	0.079	0.202	1.098	1.764	6.515
50000	65000	13.246	0.104	0.267	1.451	2.331	9.092
60000	78000	17.300	0.132	0.338	1.831	2.942	12.058
70000	91000	22.215	0.152	0.395	2.134	4.054	15.479
80000	104000	28.005	0.172	0.452	2.435	5.369	19.577
90000	114000	33.672	0.190	0.503	2.706	6.617	23.657
100000	124000	39.912	0.208	0.557	2.987	7.947	28.214

Tables Below Represent Crashes/Mi/Year for Urban Environments	
Legend	
K:	Fatal
A:	Incapacitating
B:	Non-Incapcitating Evident
C:	Possible Injury
PDO:	No Injury / Property Damage

6-lane Divided w/ 72' Depressed Median							
Base Year	**Design Year**	**Total**	**K**	**A**	**B**	**C**	**PDO**
20000	26000	4.069	0.038	0.098	0.533	0.856	2.543
30000	39000	6.756	0.060	0.155	0.839	1.347	4.354
40000	52000	9.926	0.085	0.217	1.177	1.891	6.557
50000	65000	13.573	0.111	0.285	1.545	2.482	9.150
60000	78000	17.689	0.139	0.358	1.941	3.117	12.133
70000	91000	22.670	0.160	0.416	2.248	4.270	15.576
80000	104000	28.532	0.180	0.474	2.553	5.628	19.698
90000	114000	34.267	0.198	0.526	2.827	6.913	23.803
100000	124000	40.579	0.217	0.580	3.113	8.282	28.387

6-lane Divided w/ >90' Depressed Median							
Base Year	**Design Year**	**Total**	**K**	**A**	**B**	**C**	**PDO**
20000	26000	3.912	0.038	0.096	0.523	0.841	2.414
30000	39000	6.476	0.059	0.151	0.819	1.315	4.133
40000	52000	9.497	0.082	0.211	1.144	1.837	6.223
50000	65000	12.969	0.108	0.276	1.497	2.404	8.684
60000	78000	16.885	0.135	0.346	1.876	3.013	11.516
70000	91000	21.618	0.154	0.401	2.166	4.115	14.782
80000	104000	27.188	0.173	0.456	2.454	5.411	18.694
90000	114000	32.634	0.190	0.505	2.714	6.636	22.590
100000	124000	38.628	0.208	0.556	2.984	7.939	26.940

8-lane Divided w/ 26' Median and Barrier Wall							
Base Year	**Design Year**	**Total**	**K**	**A**	**B**	**C**	**PDO**
20000	26000	4.794	0.037	0.099	0.559	1.017	3.082
30000	39000	7.921	0.060	0.158	0.889	1.618	5.197
40000	52000	11.589	0.084	0.223	1.257	2.288	7.738
50000	65000	15.789	0.111	0.294	1.659	3.019	10.706
60000	78000	20.512	0.140	0.371	2.092	3.807	14.101
70000	91000	25.748	0.171	0.453	2.554	4.648	17.921
80000	104000	31.491	0.204	0.540	3.043	5.539	22.165
90000	114000	37.351	0.225	0.601	3.380	6.848	26.297
100000	124000	43.973	0.245	0.661	3.704	8.373	30.991

TENNESSEE DEPARTMENT OF TRANSPORTATION

COUNTY	= Dade County, Georgia	Date:	7/5/2018
Route	= Interstate 24		
Location	= From I-59 Interchange (L.M. 1.63)		
	From Georgia State Line (L.M. 4.10)		
Highway Type	= 4-Lane Divided		
FUNCTIONAL CLAS	Urban Interstate		
DATA YEARS	= 2014-2016		
ADT YEARS USED=	2016		
COMMENTS	=		
	AADT from GDOT Station Counts		
ANALYZED BY	= BNG		

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

BLM	ELM	Length	Average AADT	VMT
1.630	4.100	2.470	66,900	165,243
0.000		0.000		0
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
		2.470	66,900	165,243

INTERSECTION
Log Mile = 0

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	=	0
East	=	0
South	=	0
West	=	0
Entering AADT	=	0
		#VALUE!

4-Lane Divided
2014-2016

		Total	Fatal	Incap. Injury	*Severe Crashes	Other Injury
No. of Crashes	=	192	3	0	3	51
No. of Years	=	3				
SW avg. rate	=	1.828	0.009	0.048	0.057	0.365
14-16 TN S/W Rates						
Exposure (E)	=	180.9411				
Crash Rate (A)	=	1.061	0.017	0.000	0.017	0.282
Critical Rate (C)	=	2.065				
Severity Index (SI)	=	0.3281				
Actual Rate/SW Average	=	0.58	1.84	0.00	0.29	0.77
Ratio of A/C	=	0.51				

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

Revised 4/8/15

TENNESSEE DEPARTMENT OF TRANSPORTATION

COUNTY	= Hamilton	Date:	12/5/2017
Route	= Interstate 24		
Location	= From Georgia State Line (L.M. 0.00)		
	To State Route 2 (US 64, Cummings Hwy)		
Highway Type	= 4-Lane Divided		
FUNCTIONAL CLAS	Urban Interstate		
DATA YEARS	= 2014-2017		
ADT YEARS USED=	2016		
COMMENTS	=		
	AADT from TDOT Station Counts		
ANALYZED BY	= BNG		

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

BLM	ELM	Length	Average AADT	VMT
0.000	2.900	2.900	65,197	189,071
0.000		0.000		0
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
		2.900	65,197	189,071

INTERSECTION

Log Mile = 0

Leg		Traffic AADT
North	=	0
East	=	0
South	=	0
West	=	0
Entering AADT	=	0
		#VALUE!

4-Lane Divided
2014-2017

		Total	Fatal	Incap. Injury	*Severe Crashes	Other Injury
No. of Crashes	=	229	1	3	4	30
No. of Years	=	3				
SW avg. rate	=	1.828	0.009	0.048	0.057	0.365
14-16 S/W Rates						
Exposure (E)	=	207.0331				
Crash Rate (A)	=	1.106	0.005	0.014	0.019	0.145
Critical Rate (C)	=	2.049				
Severity Index (SI)	=	0.1747				
Actual Rate/SW Average	=	0.61	0.54	0.30	0.34	0.40
Ratio of A/C	=	0.54				

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

Revised 4/8/15

Crash Summary Report

County: HAMILTON **Route:** I0024 **Spcl Cse:** 0-NONE **Cnty Seq:** 2

Log Miles: 0.000 to 2.900 - Crash Dates: 5/31/2014 to 6/1/2017
Vehicle Filter: None - Other Factors Filter: None

Statistics

Fatal Crashes:	1
Total Killed:	1
Incap Injury Crashes:	3
Total Incap Injuries:	3
Other Injury Crashes:	30
Total Other Injuries:	50
Prop Damage Crashes:	195
Total Crashes:	**229**

Crash Location

Along Roadway:	209
At Intersection:	12
Railroad Crossing:	0
Bridge:	1
Underpass:	0
Ramp:	6
Private Property:	1
Other:	0

Crashes Involving

Pedestrians:	0
Hazardous Cargo:	0
Work / Constr Zones:	0
Fixed Objects:	18
Single Unit Trucks	18
Tractor - Trailer Trucks:	30
Bicycles:	0
Motorcycles:	2
Lane Departures:	27
Distracted Drivers:	14

Road Conditions

Ice:	1
Snow or Slush:	0
Sand, Mud, Dirt or Oil:	0
Wet:	38
Dry:	161

First Harmful Event

Pedestrian:	0
Pedalcycle:	0
Railway Train:	0
Deer (Animal):	5
Other Animal:	1
Motor Vehicle in Transport:	160
Motor Vehicle in Transport in Other Roadway:	0
Parked Motor Vehicle:	4
Other Type Non-Motorist:	0
Fixed Object:	18
Other Object (Not Fixed):	8
Non Collision:	1
Overturn:	1
Jackknife:	1
Cross Median:	0
Ran Off Road:	0

Manner of Collision

Rear End:	114
Head On:	1
Rear-to-Side / Rear:	3
Angle:	10
Sideswipe Same Dir:	36
Sideswipe Opp Dir:	0
Unknown:	1

Light Conditions

Dawn:	4
Daylight:	150
Dusk:	1
Dark / Lighted:	15
Dark / Not Lighted:	32
Not Indicated:	0

Weather Conditions

No Adverse Conditions:	171
Rain:	30
Sleet and Hail:	1
Snow:	0
Foggy:	0
Smog, Smoke:	0
Crosswind:	0

Fixed Objects

Boulder:	0	Other Barrier:	3	Ditch:	2
Building:	0	Highway Traffic Sign Post	0	Embankment:	1
Impact Attenuator:	0	Overhead Sign Support:	0	Fence:	0
Overhead Structure:	0	Luminaire/Light Support:	1	Wall:	0
Bridge Pier/Abutment/End:	0	Traffic Signal Support:	0	Mail Box:	0
Bridge Rail:	0	Utility Pole:	0	Shrubbery:	0
Guardrail:	4	Other Post, Pole Supports:	1	Tree:	0
Cable Barrier:	6	Culvert:	0	Fire Hydrant:	0
		Curb:	0	Other Fixed Object:	0

This report was generated by E-TRIMS

TENNESSEE DEPARTMENT OF TRANSPORTATION

COUNTY	= Hamilton	Date:	12/5/2017
Route	= Interstate 24		
Location	= From State Route 2 (US 64, Cummings Hwy)		
	To Browns Ferry Rd		
Highway Type	= 4-Lane Divided		
FUNCTIONAL CLAS	Urban Interstate		
DATA YEARS	= 2014-2017		
ADT YEARS USED=	2016		
COMMENTS	=		
	AADT from TDOT Station Counts		
ANALYZED BY	= BNG		

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

BLM	ELM	Length	Average AADT	VMT
2.900	4.220	1.320	68,905	90,955
0.000		0.000		0
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
		1.320	68,905	90,955

INTERSECTION
Log Mile = 0

Leg		Traffic AADT
North	=	0
East	=	0
South	=	0
West	=	0
Entering AADT	=	0
		#VALUE!

4-Lane Divided
2014-2017

		Total	Fatal	Incap. Injury	*Severe Crashes	Other Injury
No. of Crashes	=	151	0	1	1	20
No. of Years	=	3				
SW avg. rate	=	1.828	0.009	0.048	0.057	0.365
14-16 S/W Rates						
Exposure (E)	=	99.5953				
Crash Rate (A)	=	1.516	0.000	0.010	0.010	0.201
Critical Rate (C)	=	2.148				
Severity Index (SI)	=	0.1457				
Actual Rate/SW Average	=	0.83	0.00	0.21	0.18	0.55
Ratio of A/C	=	0.71				

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

Revised 4/8/15

Crash Summary Report

County: HAMILTON **Route:** I0024 **Spcl Cse:** 0-NONE **Cnty Seq:** 2

Log Miles: 2.900 to 4.220 - Crash Dates: 5/31/2014 to 6/1/2017
Vehicle Filter: None - Other Factors Filter: None

Statistics

Fatal Crashes:	0
Total Killed:	0
Incap Injury Crashes:	1
Total Incap Injuries:	1
Other Injury Crashes:	20
Total Other Injuries:	46
Prop Damage Crashes:	130
Total Crashes:	**151**

Crash Location

Along Roadway:	144
At Intersection:	0
Railroad Crossing:	0
Bridge:	1
Underpass:	0
Ramp:	6
Private Property:	0
Other:	0

Crashes Involving

Pedestrians:	0
Hazardous Cargo:	0
Work / Constr Zones:	0
Fixed Objects:	23
Single Unit Trucks	7
Tractor - Trailer Trucks:	17
Bicycles:	0
Motorcycles:	0
Lane Departures:	26
Distracted Drivers:	9

Road Conditions

Ice:	0
Snow or Slush:	1
Sand, Mud, Dirt or Oil:	0
Wet:	32
Dry:	101

First Harmful Event

Pedestrian:	0
Pedalcycle:	0
Railway Train:	0
Deer (Animal):	0
Other Animal:	0
Motor Vehicle in Transport:	105
Motor Vehicle in Transport in Other Roadway:	0
Parked Motor Vehicle:	0
Other Type Non-Motorist:	0
Fixed Object:	23
Other Object (Not Fixed):	2
Non Collision:	2
Overturn:	2
Jackknife:	0
Cross Median:	0
Ran Off Road:	0

Manner of Collision

Rear End:	86
Head On:	0
Rear-to-Side / Rear:	0
Angle:	0
Sideswipe Same Dir:	19
Sideswipe Opp Dir:	0
Unknown:	1

Light Conditions

Dawn:	2
Daylight:	111
Dusk:	2
Dark / Lighted:	8
Dark / Not Lighted:	11
Not Indicated:	1

Weather Conditions

No Adverse Conditions:	105
Rain:	28
Sleet and Hail:	0
Snow:	0
Foggy:	0
Smog, Smoke:	1
Crosswind:	0

Fixed Objects

Boulder:	0	Other Barrier:	5	Ditch:	0
Building:	0	Highway Traffic Sign Post	1	Embankment:	1
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:	10	Other Post, Pole Supports:	0	Tree:	1
Cable Barrier:	5	Culvert:	0	Fire Hydrant:	0
		Curb:	0	Other Fixed Object:	0

This report was generated by E-TRIMS

TENNESSEE DEPARTMENT OF TRANSPORTATION

COUNTY	= Hamilton	Date:	12/5/2017
Route	= Interstate 24		
Location	= From Browns Ferry Rd		
	To I-124		
Highway Type	= 4-Lane Divided		
FUNCTIONAL CLAS	Urban Interstate		
DATA YEARS	= 2014-2017		
ADT YEARS USED=	2016		
COMMENTS	=		
	AADT from TDOT Station Counts		
ANALYZED BY	= BNG		

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

BLM	ELM	Length	Average AADT	VMT
4.220	7.330	3.110	70,994	220,791
0.000		0.000		0
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
		3.110	70,994	220,791

INTERSECTION

Log Mile = 0

Leg	Traffic AADT
North =	0
East =	0
South =	0
West =	0
Entering AADT =	0
	#VALUE!

4-Lane Divided
2014-2017

		Total	Fatal	Incap. Injury	*Severe Crashes	Other Injury
No. of Crashes	=	357	2	6	8	47
No. of Years	=	3				
SW avg. rate	=	1.828	0.009	0.048	0.057	0.365
14-16 S/W Rates						
Exposure (E)	=	241.7665				
Crash Rate (A)	=	1.477	0.008	0.025	0.033	0.194
Critical Rate (C)	=	2.032				
Severity Index (SI)	=	0.1877				
Actual Rate/SW Average	=	0.81	0.92	0.52	0.58	0.53
Ratio of A/C	=	0.73				

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

Revised 4/8/15

Crash Summary Report

County: HAMILTON **Route:** I0024 **Spcl Cse:** 0-NONE **Cnty Seq:** 2

Log Miles: 4.220 to 7.330 - Crash Dates: 5/31/2014 to 6/1/2017
Vehicle Filter: None - Other Factors Filter: None

Statistics

Fatal Crashes:	2
Total Killed:	2
Incap Injury Crashes:	6
Total Incap Injuries:	7
Other Injury Crashes:	47
Total Other Injuries:	94
Prop Damage Crashes:	302
Total Crashes:	**357**

Crash Location

Along Roadway:	347
At Intersection:	0
Railroad Crossing:	0
Bridge:	0
Underpass:	0
Ramp:	10
Private Property:	0
Other:	0

Crashes Involving

Pedestrians:	0
Hazardous Cargo:	0
Work / Constr Zones:	1
Fixed Objects:	51
Single Unit Trucks	25
Tractor - Trailer Trucks:	45
Bicycles:	0
Motorcycles:	4
Lane Departures:	68
Distracted Drivers:	22

Road Conditions

Ice:	1
Snow or Slush:	1
Sand, Mud, Dirt or Oil:	0
Wet:	91
Dry:	226

First Harmful Event

Pedestrian:	0
Pedalcycle:	0
Railway Train:	0
Deer (Animal):	2
Other Animal:	1
Motor Vehicle in Transport:	249
Motor Vehicle in Transport in Other Roadway:	0
Parked Motor Vehicle:	1
Other Type Non-Motorist:	0
Fixed Object:	51
Other Object (Not Fixed):	4
Non Collision:	7
Overturn:	3
Jackknife:	0
Cross Median:	0
Ran Off Road:	0

Manner of Collision

Rear End:	178
Head On:	2
Rear-to-Side / Rear:	1
Angle:	9
Sideswipe Same Dir:	58
Sideswipe Opp Dir:	0
Unknown:	2

Light Conditions

Dawn:	6
Daylight:	249
Dusk:	3
Dark / Lighted:	36
Dark / Not Lighted:	24
Not Indicated:	2

Weather Conditions

No Adverse Conditions:	238
Rain:	78
Sleet and Hail:	0
Snow:	2
Foggy:	0
Smog, Smoke:	0
Crosswind:	0

Fixed Objects

Boulder:	0	Other Barrier:	19	Ditch:	2
Building:	0	Highway Traffic Sign Post	0	Embankment:	2
Impact Attenuator:	0	Overhead Sign Support:	0	Fence:	1
Overhead Structure:	0	Luminaire/Light Support:	0	Wall:	1
Bridge Pier/Abutment/End:	0	Traffic Signal Support:	0	Mail Box:	0
Bridge Rail:	2	Utility Pole:	0	Shrubbery:	1
Guardrail:	18	Other Post, Pole Supports:	0	Tree:	4
Cable Barrier:	0	Culvert:	1	Fire Hydrant:	0
		Curb:	0	Other Fixed Object:	0

This report was generated by E-TRIMS

Crash Summary Report

County: HAMILTON **Route:** I0024 **Spcl Cse:** 0-NONE **Cnty Seq:** 2

Log Miles: 0.000 to 7.330 - Crash Dates: 5/31/2014 to 6/1/2017
Vehicle Filter: None - Other Factors Filter: None

Statistics

Fatal Crashes:	3
Total Killed:	3
Incap Injury Crashes:	10
Total Incap Injuries:	11
Other Injury Crashes:	97
Total Other Injuries:	190
Prop Damage Crashes:	627
Total Crashes:	**737**

Crash Location

Along Roadway:	700
At Intersection:	12
Railroad Crossing:	0
Bridge:	2
Underpass:	0
Ramp:	22
Private Property:	1
Other:	0

Crashes Involving

Pedestrians:	0
Hazardous Cargo:	0
Work / Constr Zones:	1
Fixed Objects:	92
Single Unit Trucks	50
Tractor - Trailer Trucks:	92
Bicycles:	0
Motorcycles:	6
Lane Departures:	121
Distracted Drivers:	45

Road Conditions

Ice:	2
Snow or Slush:	2
Sand, Mud, Dirt or Oil:	0
Wet:	161
Dry:	488

First Harmful Event

Pedestrian:	0
Pedalcycle:	0
Railway Train:	0
Deer (Animal):	7
Other Animal:	2
Motor Vehicle in Transport:	514
Motor Vehicle in Transport in Other Roadway:	0
Parked Motor Vehicle:	5
Other Type Non-Motorist:	0
Fixed Object:	92
Other Object (Not Fixed):	14
Non Collision:	10
Overturn:	6
Jackknife:	1
Cross Median:	0
Ran Off Road:	0

Manner of Collision

Rear End:	378
Head On:	3
Rear-to-Side / Rear:	4
Angle:	19
Sideswipe Same Dir:	113
Sideswipe Opp Dir:	0
Unknown:	4

Light Conditions

Dawn:	12
Daylight:	510
Dusk:	6
Dark / Lighted:	59
Dark / Not Lighted:	67
Not Indicated:	3

Weather Conditions

No Adverse Conditions:	514
Rain:	136
Sleet and Hail:	1
Snow:	2
Foggy:	0
Smog, Smoke:	1
Crosswind:	0

Fixed Objects

Boulder:	0	Other Barrier:	27	Ditch:	4
Building:	0	Highway Traffic Sign Post	1	Embankment:	4
Impact Attenuator:	0	Overhead Sign Support:	0	Fence:	1
Overhead Structure:	0	Luminaire/Light Support:	1	Wall:	1
Bridge Pier/Abutment/End:	0	Traffic Signal Support:	0	Mail Box:	0
Bridge Rail:	2	Utility Pole:	0	Shrubbery:	1
Guardrail:	32	Other Post, Pole Supports:	1	Tree:	5
Cable Barrier:	11	Culvert:	1	Fire Hydrant:	0
		Curb:	0	Other Fixed Object:	0

This report was generated by E-TRIMS

TENNESSEE D.O.T.

S.T.I.D.

FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TS	2017	HAMILTON	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

CONDITION CODES LEGEND

X - X - X - # ← NUMBER OF VEHICLES

WEATHER
C=Clear
R=Rain
CLD=Cloudy
F=Fog
S=Snow
U=Unknown

ROAD SURFACE
D=Dry
W=Wet
I=Icy
O=Other
U=Unknown

LIGHTING
D=Daylight
DKN=Dark Not Lighted
DKL=Dark Lighted
DN=Dawn
DS=Dusk
U=Unknown

TYPE OF CRASH

NUMBER OF FATALITIES OR INJURIES

- # FATAL CRASH
- # INCAPACITATING INJURY CRASH
- # NON-INCAPACITATING INJURY CRASH
- PROPERTY DAMAGE CRASH

Time: A=AM P=PM

- ▨ Parked Vehicle
- □ Object (Specify)

BEGIN PROJECT
LOG MILE 0.00

LM 0.56
CABLE BARRIER

08/28/16 01:14P C-D-D-1
MOTORCYCLE
ALCOHOL & DRUG TEST PENDING.

TENNESSEE
GEORGIA

MATCH LINE LOG MILE 0.44 SEE FIGURE NO. 2

0′ 200′ 400′ 600′

N

TECHNICAL STUDY

INTERSTATE 24
L.M. 0.00 TO L.M. 10.03
HAMILTON COUNTY

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

FIGURE 1
I-24
L.M. 0.00 to L.M. 0.44

8/15/2017 9:54:59 AM
X:\Projects\Hamilton\I-24\From I-59 to US-27 (PIN 124072.00\Project Files\Microstation\Crash Diagrams (DGN & PDF)\Figure 0124 Hamilton County.dgn

TENNESSEE D.O.T.
S.T.I.D.
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TS	2017	HAMILTON	2

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

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=Unknown	DS=Dusk
U=Unknown		U=Unknown

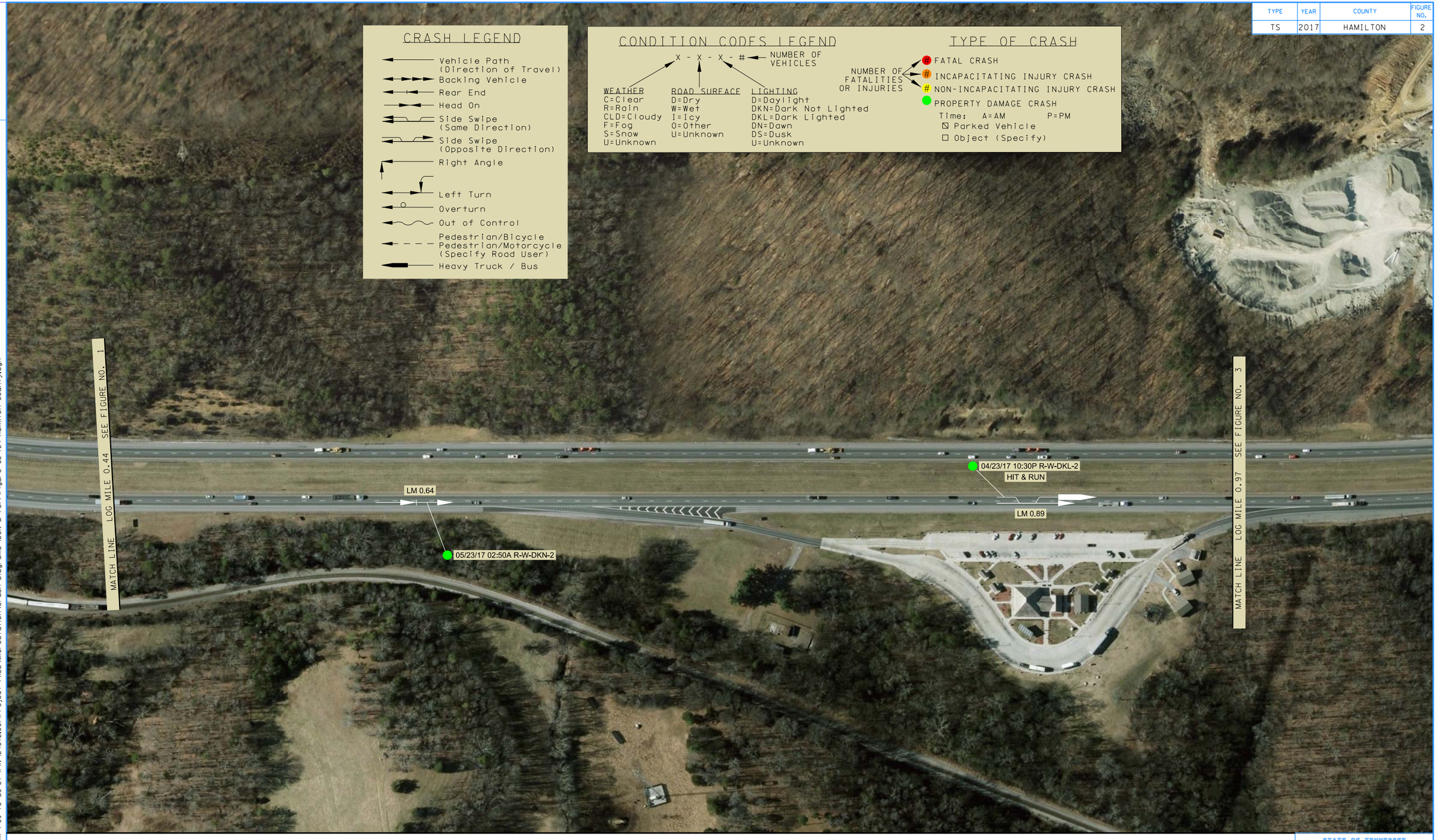
TYPE OF CRASH

NUMBER OF FATALITIES OR INJURIES

- # FATAL CRASH
- # INCAPACITATING INJURY CRASH
- # NON-INCAPACITATING INJURY CRASH
- PROPERTY DAMAGE CRASH

Time: A=AM P=PM

- ⊠ Parked Vehicle
- ☐ Object (Specify)



0′ 200′ 400′ 600′

N

TECHNICAL STUDY

INTERSTATE 24
L.M. 0.00 TO L.M. 10.03
HAMILTON COUNTY

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

FIGURE 2
I-24
L.M. 0.44 to
L.M. 0.97

8/15/2017 9:56:50 AM
X:\Projects\Hamilton\I-24\From I-59 to US-27 (PIN 124072.00)\Project Files\Microstation\Crash Diagrams (DGN & PDF)\Figure 02 I24 Hamilton County.dgn

TENNESSEE D.O.T.
S.T.I.D.
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TS	2017	HAMILTON	3

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

CONDITION CODES LEGEND

X - X - X - # ← NUMBER OF VEHICLES

WEATHER
C=Clear
R=Rain
CLD=Cloudy
F=Fog
S=Snow
U=Unknown

ROAD SURFACE
D=Dry
W=Wet
I=Icy
O=Other
U=Unknown

LIGHTING
D=Daylight
DKN=Dark Not Lighted
DKL=Dark Lighted
DN=Dawn
DS=Dusk
U=Unknown

TYPE OF CRASH

NUMBER OF FATALITIES OR INJURIES
- # FATAL CRASH
- # INCAPACITATING INJURY CRASH
- # NON-INCAPACITATING INJURY CRASH
- PROPERTY DAMAGE CRASH

Time: A=AM P=PM
▨ Parked Vehicle
□ Object (Specify)

MATCH LINE LOG MILE 0.97 SEE FIGURE NO. 2

LM 1.06

LM 1.12

04/04/17 06:34P C-D-D-2

04/06/17 07:00P C-D-D-2
HIT & RUN

04/09/17 03:20P C-D-D-2

LM 1.35

MATCH LINE LOG MILE 1.43 SEE FIGURE NO. 4

0′ 200′ 400′ 600′

N

TECHNICAL STUDY

INTERSTATE 24
L.M. 0.00 TO L.M. 10.03
HAMILTON COUNTY

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

FIGURE 3
I-24
L.M. 0.97 to
L.M. 1.43

8/15/2017 9:59:18 AM
X:\Projects\Hamilton\I-24\From I-59 to US-27 (PIN 124072.00)\Project Files\Microstation\Crash Diagrams (DGN & PDF)\Figure 03 I24 Hamilton County.dgn

TENNESSEE D.O.T.
S.T.I.D.
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TS	2017	HAMILTON	4

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

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=Unknown	DS=Dusk
U=Unknown		U=Unknown

TYPE OF CRASH

NUMBER OF FATALITIES OR INJURIES

- # FATAL CRASH
- # INCAPACITATING INJURY CRASH
- # NON-INCAPACITATING INJURY CRASH
- PROPERTY DAMAGE CRASH

Time: A=AM P=PM

- ▨ Parked Vehicle
- □ Object (Specify)

0′ 200′ 400′ 600′

N

TECHNICAL STUDY

INTERSTATE 24
L.M. 0.00 TO L.M. 10.03
HAMILTON COUNTY

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

FIGURE 4
I-24
L.M. 1.43 to
L.M. 1.86

8/15/2017 10:0b:7 AM
X:\Projects\Hamilton\I-24\From I-59 to US-27 (PIN 124072.00)\Project Files\Microstation\Crash Diagrams (DGN & PDF)\Figure 04 I24 Hamilton County.dgn

TENNESSEE D.O.T.

S.T.I.D.

FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TS	2017	HAMILTON	5

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

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=Unknown	DS=Dusk
U=Unknown		U=Unknown

TYPE OF CRASH

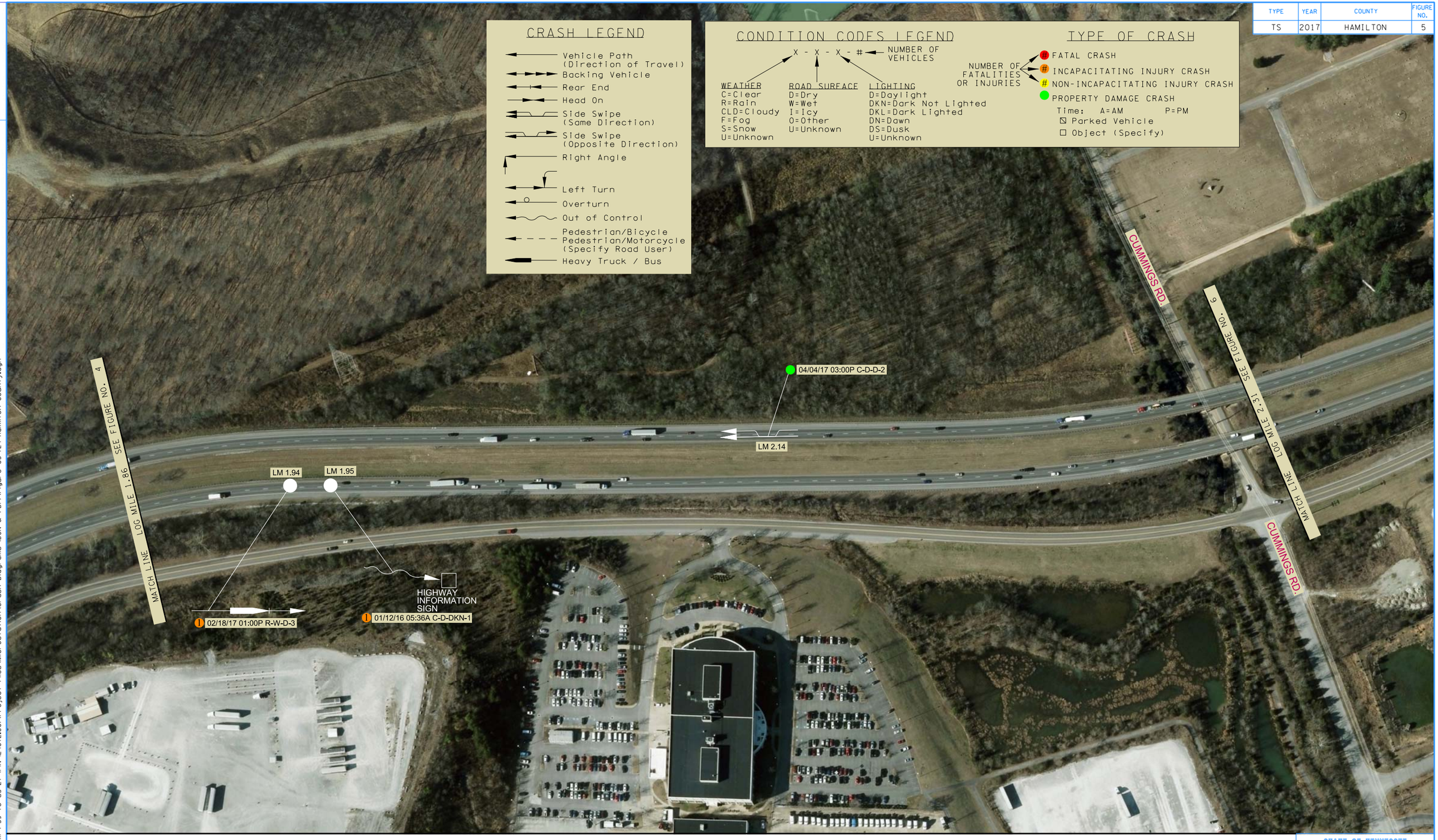
NUMBER OF FATALITIES OR INJURIES

- # FATAL CRASH
- # INCAPACITATING INJURY CRASH
- # NON-INCAPACITATING INJURY CRASH
- PROPERTY DAMAGE CRASH

Time: A=AM P=PM

▨ Parked Vehicle

☐ Object (Specify)



0′ 200′ 400′ 600′

N

TECHNICAL STUDY

INTERSTATE 24
L.M. 0.00 TO L.M. 10.03
HAMILTON COUNTY

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

FIGURE 5
I-24
L.M. 1.86 to
L.M. 2.31

8/15/2017 10:03:03 AM
X:\Projects\Hamilton\I-24\From I-59 to US-27 (PIN 124072.00)\Project Files\Microstation\Crash Diagrams (DGN & PDF)\Figure 05 I24 Hamilton County.dgn

TENNESSEE D.O.T.
S.T.I.D.
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TS	2017	HAMILTON	6

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

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=Unknown	DS=Dusk
U=Unknown		U=Unknown

TYPE OF CRASH

NUMBER OF FATALITIES OR INJURIES

- # FATAL CRASH
- # INCAPACITATING INJURY CRASH
- # NON-INCAPACITATING INJURY CRASH
- PROPERTY DAMAGE CRASH

Time: A=AM P=PM

- ⊠ Parked Vehicle
- ☐ Object (Specify)

0′ 200′ 400′ 600′

N

TECHNICAL STUDY

INTERSTATE 24
L.M. 0.00 TO L.M. 10.03
HAMILTON COUNTY

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

FIGURE 6
I-24
L.M. 2.32 to
L.M. 2.77

8/15/2017 10:05:09 AM
X:\Projects\Hamilton\I-24\From I-59 to US-27 (PIN 124072.00)\Project Files\Microstation\Crash Diagrams (DGN & PDF)\Figure 06 I24 Hamilton County.dgn

TENNESSEE D.O.T.
S.T.I.D.
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
RSA	2017	HAMILTON	7

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

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=Unknown	DS=Dusk
U=Unknown		U=Unknown

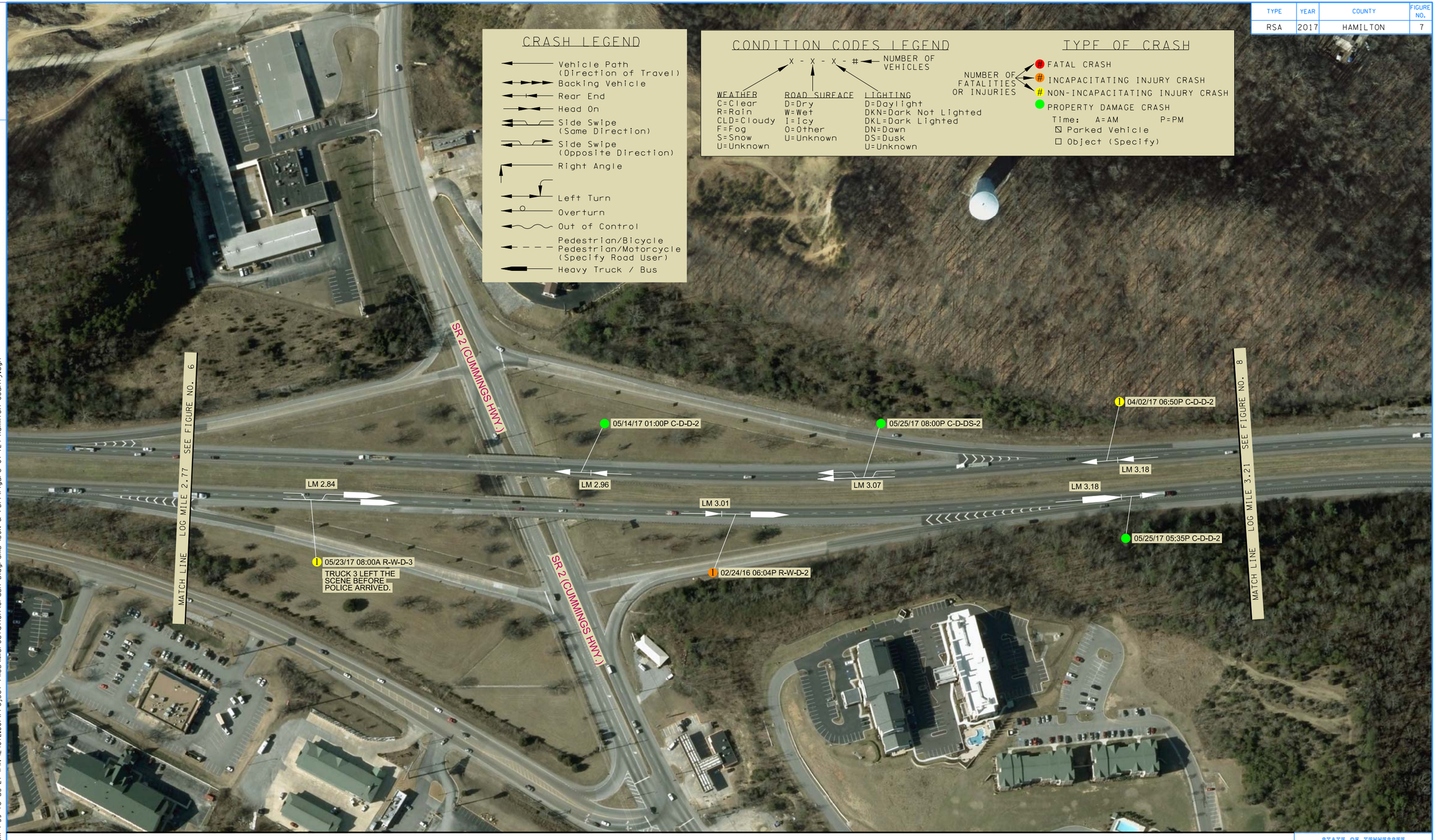
TYPE OF CRASH

NUMBER OF FATALITIES OR INJURIES

- # FATAL CRASH
- # INCAPACITATING INJURY CRASH
- # NON-INCAPACITATING INJURY CRASH
- PROPERTY DAMAGE CRASH

Time: A=AM P=PM

- Parked Vehicle
- Object (Specify)



0′ 200′ 400′ 600′

N

TECHNICAL STUDY

INTERSTATE 24
L.M. 0.00 TO L.M. 10.03
HAMILTON COUNTY

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

FIGURE 7
I-24
L.M. 2.77 to
L.M. 3.21

8/15/2017 10:07:48 AM
X:\Projects\Hamilton\I-24\From I-59 to US-27 (PIN 124072.00)\Project Files\Microstation\Crash Diagrams (DGN & PDF)\Figure 07 I24 Hamilton County.dgn

TENNESSEE D.O.T.
S.T.I.D.
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
RSA	2017	HAMILTON	8

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

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=Unknown	DS=Dusk
U=Unknown		U=Unknown

TYPE OF CRASH

NUMBER OF FATALITIES OR INJURIES

- # FATAL CRASH
- # INCAPACITATING INJURY CRASH
- # NON-INCAPACITATING INJURY CRASH
- PROPERTY DAMAGE CRASH

Time: A=AM P=PM

▨ Parked Vehicle

☐ Object (Specify)

0′ 200′ 400′ 600′

N

TECHNICAL STUDY

INTERSTATE 24
L.M. 0.00 TO L.M. 10.03
HAMILTON COUNTY

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

FIGURE 8
I-24
L.M. 3.21 to
L.M. 3.62

8/15/2017 10:45:51 AM
X:\Projects\Hamilton\I-24\From I-59 to US-27 (PIN 124072.00)\Project Files\Microstation\Crash Diagrams (DGN & PDF)\Figure 08 I24 Hamilton County.dgn
PDF\Figure 08 I24 Hamilton County.dgn

TENNESSEE D.O.T.
S.T.I.D.
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TS	2017	HAMILTON	9

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

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=Unknown	DS=Dusk
U=Unknown		U=Unknown

TYPE OF CRASH

NUMBER OF FATALITIES OR INJURIES

- # FATAL CRASH
- # INCAPACITATING INJURY CRASH
- # NON-INCAPACITATING INJURY CRASH
- PROPERTY DAMAGE CRASH

Time: A=AM P=PM
▨ Parked Vehicle
□ Object (Specify)

0′ 200′ 400′ 600′

N

TECHNICAL STUDY

INTERSTATE 24
L.M. 0.00 TO L.M. 10.03
HAMILTON COUNTY

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

FIGURE 9
I-24
L.M. 3.62 to
L.M. 4.06

8/15/2017 10:16:48 AM
X:\Projects\Hamilton\I-24\From I-59 to US-27 (PIN 124072.00)\Project Files\Microstation\Crash Diagrams (DGN & PDF)\Figure 09 I24 Hamilton County.dgn

TENNESSEE D.O.T.
S.T.I.D.
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TS	2017	HAMILTON	10

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

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=Unknown	DS=Dusk
U=Unknown		U=Unknown

TYPE OF CRASH

NUMBER OF FATALITIES OR INJURIES

- # FATAL CRASH
- # INCAPACITATING INJURY CRASH
- # NON-INCAPACITATING INJURY CRASH
- PROPERTY DAMAGE CRASH

Time: A=AM P=PM

▨ Parked Vehicle

☐ Object (Specify)

0′ 200′ 400′ 600′

N

TECHNICAL STUDY

INTERSTATE 24
L.M. 0.00 TO L.M. 10.03
HAMILTON COUNTY

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

FIGURE 10
I-24
L.M. 4.06 to L.M. 4.57

8/15/2017 10:19:10 AM
X:\Projects\Hamilton\I-24\From I-59 to US-27 (PIN 124072.00)\Project Files\Microstation\Crash Diagrams (DGN & PDF)\Figure 10 I24 Hamilton County.dgn

TENNESSEE D.O.T.

S.T.I.D.

FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
RSA	2017	HAMILTON	11

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

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=Unknown	DS=Dusk
U=Unknown		U=Unknown

TYPE OF CRASH

NUMBER OF FATALITIES OR INJURIES

- # FATAL CRASH
- # INCAPACITATING INJURY CRASH
- # NON-INCAPACITATING INJURY CRASH
- PROPERTY DAMAGE CRASH

Time: A=AM P=PM

☒ Parked Vehicle

☐ Object (Specify)

0′ 200′ 400′ 600′

N

TECHNICAL STUDY

INTERSTATE 24
L.M. 0.00 TO L.M. 10.03
HAMILTON COUNTY

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

FIGURE 11
I-24
L.M. 4.57 to
L.M. 4.91

8/15/2017 10:2:00 AM
X:\Projects\Hamilton\I-24\From I-59 to US-27 (PIN 124072.00)\Project Files\Microstation\Crash Diagrams (DGN & PDF)\Figure 11 I24 Hamilton County.dgn

TENNESSEE D.O.T.
S.T.I.D.
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TS	2017	HAMILTON	12

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

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=Unknown	DS=Dusk
U=Unknown		U=Unknown

TYPE OF CRASH

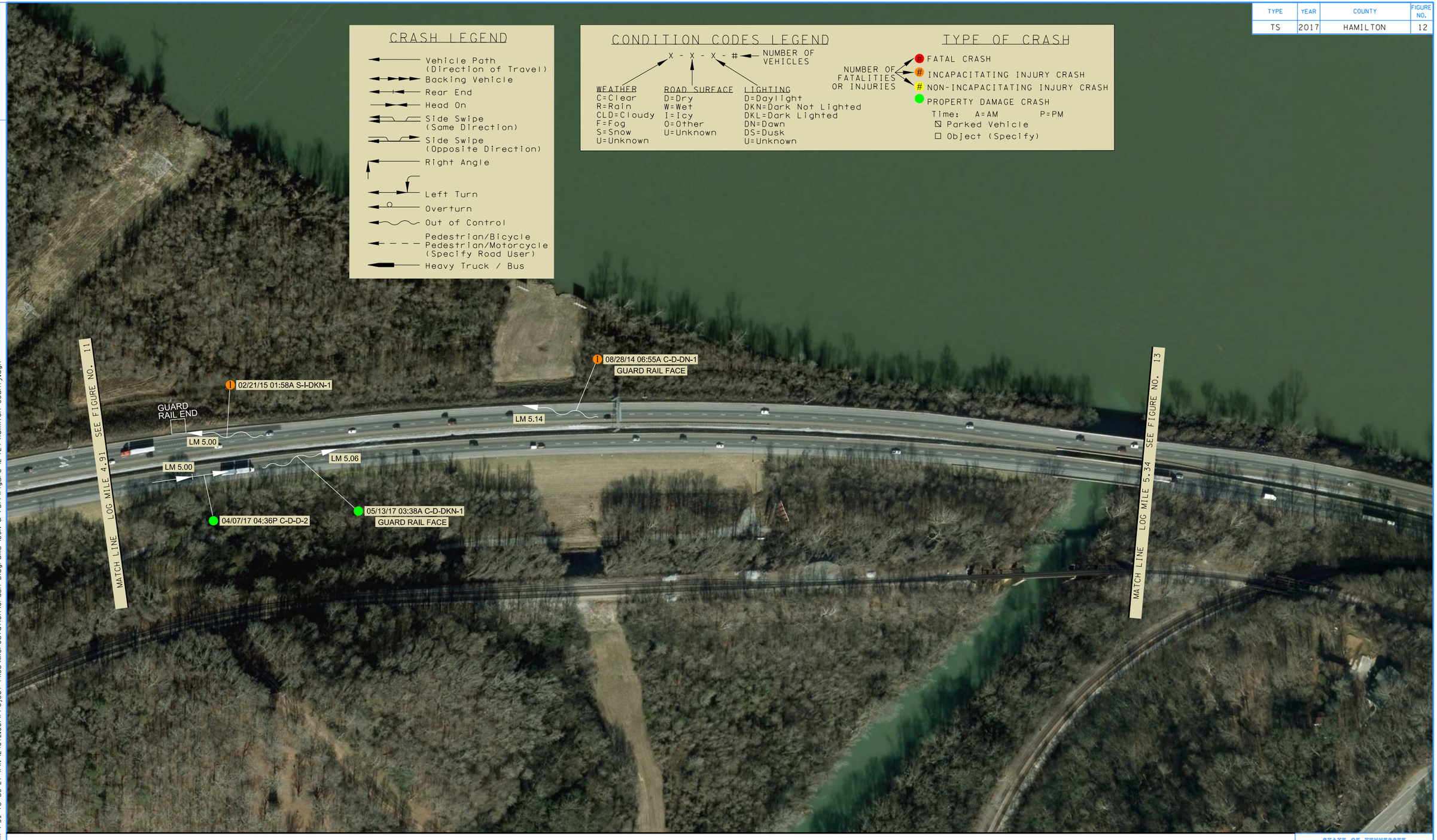
NUMBER OF FATALITIES OR INJURIES

- # FATAL CRASH
- # INCAPACITATING INJURY CRASH
- # NON-INCAPACITATING INJURY CRASH
- PROPERTY DAMAGE CRASH

Time: A=AM P=PM

▨ Parked Vehicle

□ Object (Specify)



0′ 200′ 400′ 600′

N

TECHNICAL STUDY

INTERSTATE 24
L.M. 0.00 TO L.M. 10.03
HAMILTON COUNTY

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

FIGURE 12
I-24
L.M. 4.91 to
L.M. 5.34

PDF\Figure 12 I24 Hamilton County.dgn
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TENNESSEE D.O.T.
S.T.I.D.
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TS	2017	HAMILTON	13

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

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=Unknown	DS=Dusk
U=Unknown		U=Unknown

TYPE OF CRASH

NUMBER OF FATALITIES OR INJURIES

- # FATAL CRASH
- # INCAPACITATING INJURY CRASH
- # NON-INCAPACITATING INJURY CRASH
- PROPERTY DAMAGE CRASH

Time: A=AM P=PM

- ⊠ Parked Vehicle
- ☐ Object (Specify)

0′ 200′ 400′ 600′

N

TECHNICAL STUDY

INTERSTATE 24
L.M. 0.00 TO L.M. 10.03
HAMILTON COUNTY

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

FIGURE 13
I-24
L.M. 5.34 to
L.M. 5.78

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TENNESSEE D.O.T.
S.T.I.D.
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TS	2017	HAMILTON	14

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

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=Unknown	DS=Dusk
U=Unknown		U=Unknown

TYPE OF CRASH

NUMBER OF FATALITIES OR INJURIES

- # FATAL CRASH
- # INCAPACITATING INJURY CRASH
- # NON-INCAPACITATING INJURY CRASH
- PROPERTY DAMAGE CRASH

Time: A=AM P=PM

☒ Parked Vehicle

☐ Object (Specify)

0′ 200′ 400′ 600′

N

TECHNICAL STUDY

INTERSTATE 24
L.M. 0.00 TO L.M. 10.03
HAMILTON COUNTY

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

FIGURE 14
I-24
L.M. 5.78 to
L.M. 6.28

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TENNESSEE D.O.T.
S.T.I.D.
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TS	2017	HAMILTON	15

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

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=Unknown	DS=Dusk
U=Unknown		U=Unknown

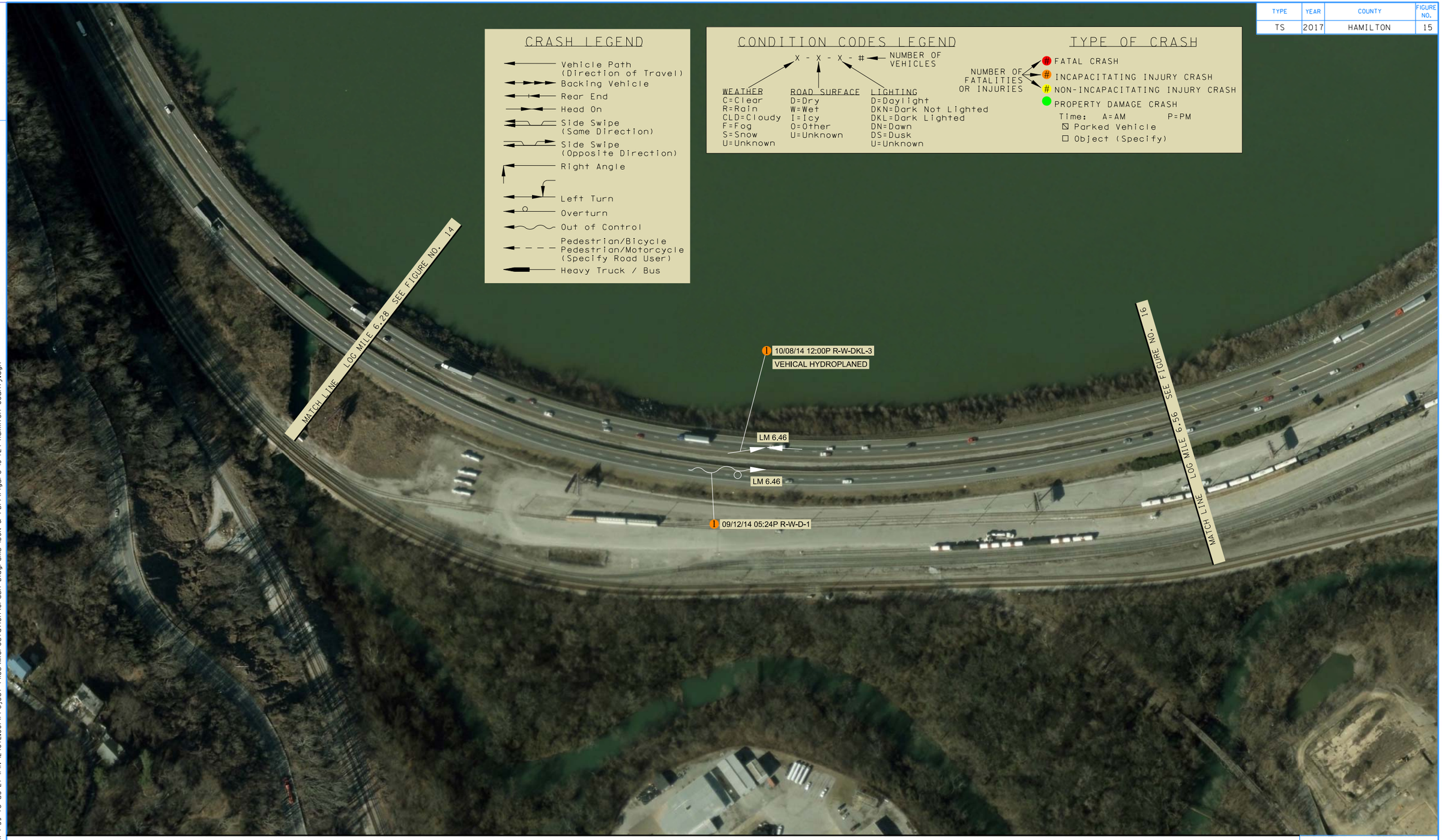
TYPE OF CRASH

NUMBER OF FATALITIES OR INJURIES

- # FATAL CRASH
- # INCAPACITATING INJURY CRASH
- # NON-INCAPACITATING INJURY CRASH
- PROPERTY DAMAGE CRASH

Time: A=AM P=PM

- ▨ Parked Vehicle
- □ Object (Specify)



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TECHNICAL STUDY

INTERSTATE 24
L.M. 0.00 TO L.M. 10.03
HAMILTON COUNTY

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

FIGURE 15
I-24
L.M. 6.28 to
L.M. 6.56

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TENNESSEE D.O.T.
S.T.I.D.
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TS	2017	HAMILTON	16

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

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=Unknown	DS=Dusk
U=Unknown		U=Unknown

TYPE OF CRASH

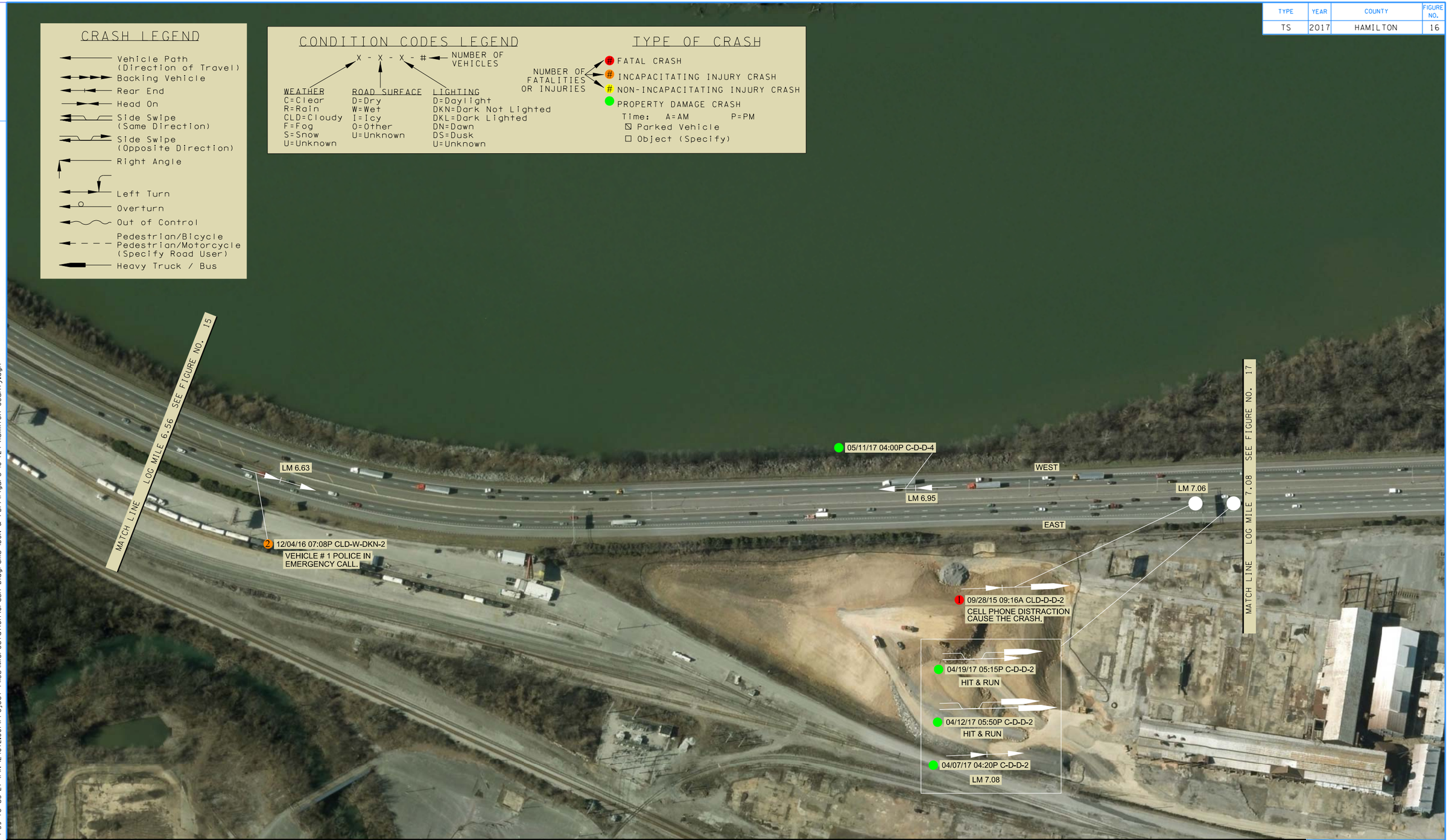
NUMBER OF FATALITIES OR INJURIES

- # FATAL CRASH
- # INCAPACITATING INJURY CRASH
- # NON-INCAPACITATING INJURY CRASH
- PROPERTY DAMAGE CRASH

Time: A=AM P=PM

▨ Parked Vehicle

☐ Object (Specify)



0′ 200′ 400′ 600′

N

TECHNICAL STUDY

INTERSTATE 24
L.M. 0.00 TO L.M. 10.03
HAMILTON COUNTY

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

FIGURE 16
I-24
L.M. 6.56 to
L.M. 7.08

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TENNESSEE D.O.T.
S.T.I.D.
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TS	2017	HAMILTON	17

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

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=Unknown	DS=Dusk
U=Unknown		U=Unknown

TYPE OF CRASH

NUMBER OF FATALITIES OR INJURIES

- # FATAL CRASH
- # INCAPACITATING INJURY CRASH
- # NON-INCAPACITATING INJURY CRASH
- PROPERTY DAMAGE CRASH

Time: A=AM P=PM

☒ Parked Vehicle

☐ Object (Specify)

0′ 200′ 400′ 600′

N

TECHNICAL STUDY

INTERSTATE 24
L.M. 0.00 TO L.M. 10.03
HAMILTON COUNTY

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

FIGURE 17
I-24
L.M. 7.08 to
L.M. 7.36

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TENNESSEE D.O.T.

S.T.I.D.

FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TS	2017	HAMILTON	18

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

SR 27 (US27)

SR 27 (US27)

CHESTNUT ST.

04/17/17 10:23P R-W-DKN-1
JACKKNIFE

05/28/17 02:40A R-W-DKN-1

03/07/15 01:13A C-D-DKL-2
ATTEMPTING TO EVADE PLOICE.

05/16/17 08:13A C-D-D-2

05/15/17 11:32P C-D-DKN-2
MOTORCYCLE
DUI DRUGS

04/27/17 07:49A R-W-D-3

04/27/17 07:49A R-W-D-2
SEPARATE CRASH.

04/19/17 04:19P C-D-D-2
HIT & RUN

LM 7.59

LM 7.66

LM 7.69

LM 7.54

SR 27 (US27)

LM 7.68

11/29/16 07:20A CLD-W-D-1

11/19/16 05:25A R-W-DKL-1

LM 7.46

LM 7.76
PARK DOT HELP TRUCK

01/03/17 08:45A R-W-D-2
PRESENCE OF DRUGS.

MATCH LINE LOG MILE 7.76 SEE FIGURE NO. 19

MATCH LINE LOG MILE 7.36 SEE FIGURE NO. 17

CHESTNUT ST.

11/09/15 08:00A R-W-D-1

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=Unknown	DS=Dusk
U=Unknown		U=Unknown

TYPE OF CRASH

NUMBER OF FATALITIES OR INJURIES

- # FATAL CRASH
- # INCAPACITATING INJURY CRASH
- # NON-INCAPACITATING INJURY CRASH
- PROPERTY DAMAGE CRASH

Time: A=AM P=PM

☒ Parked Vehicle

☐ Object (Specify)

0′ 200′ 400′ 600′

N

TECHNICAL STUDY

INTERSTATE 24
L.M. 0.00 TO L.M. 10.03
HAMILTON COUNTY

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

FIGURE 18
I-24
L.M. 7.36 to
L.M. 7.76

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