

## **SR 6 TPR EXECUTIVE SUMMARY**

This Transportation Planning Report (TPR) examines the improvements listed in the Nashville Area Metropolitan Planning Organization's (MPO) Long Range Transportation Plan (LRTP) for 10.87 miles of State Route 6 (SR 6) from the City of Spring Hill to the southern limits of the City of Franklin in south-central Tennessee. The project limits also include the Town of Thompson's Station. Widening SR 6 through the City of Spring Hill's CBD or through Thompson's Station Town Limits is not supported by local officials. This TPR was initiated by request of the MPO on behalf of Williamson County. Coordination with local agencies, including the Nashville Area MPO, Williamson County, the City of Spring Hill, the Town of Thompson's Station, and the City of Franklin was conducted throughout the development of this report.

### **Purpose for Improvements**

The purpose for improvements to SR 6 is to provide a transportation facility that will improve regional mobility, reduce congestion, meet the changing social demands of the area, and improve safety by addressing existing roadway deficiencies. The following options are included in the TPR:

#### **No Build Option**

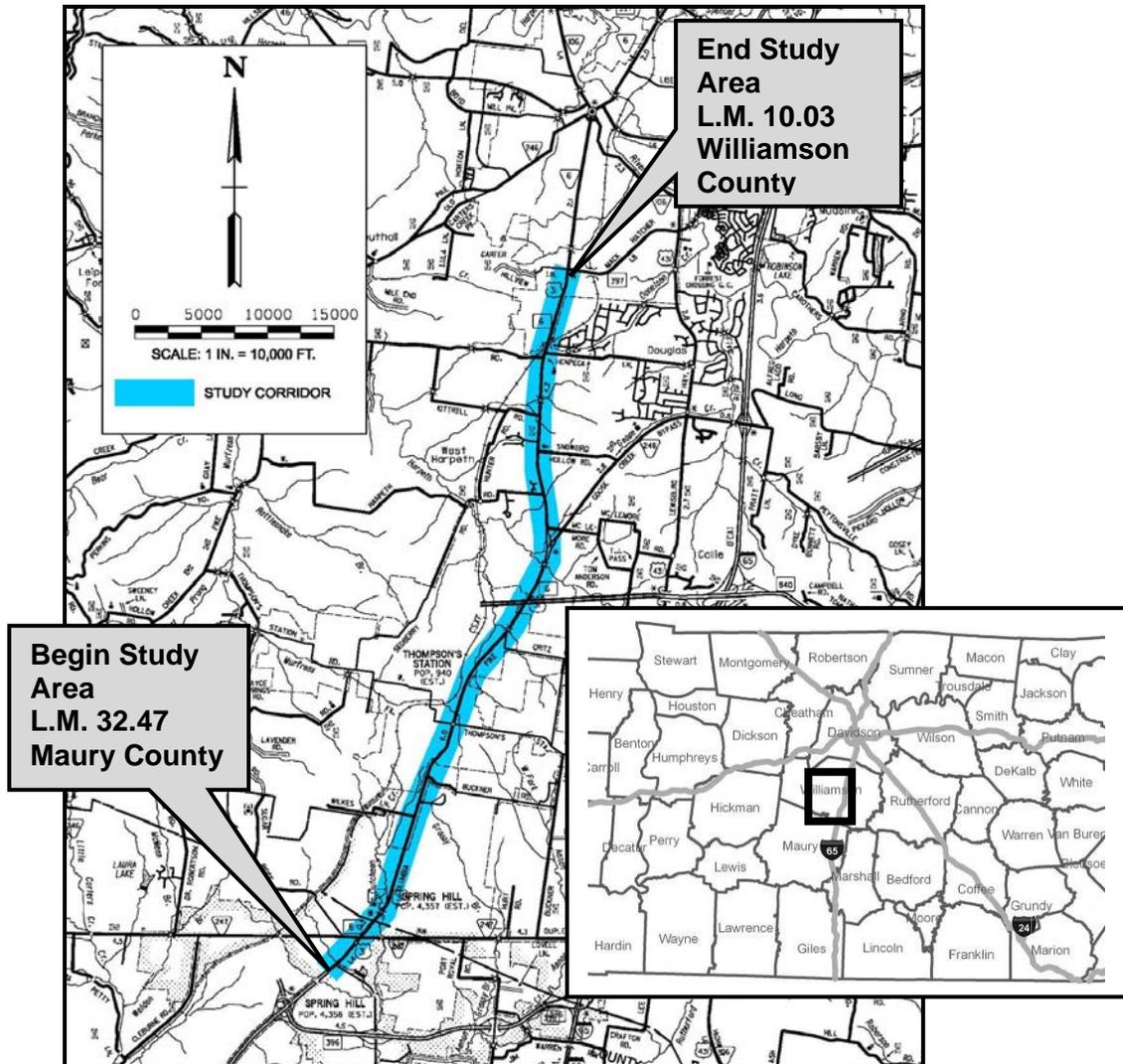
The No Build Option provides no improvements and serves as a baseline option against which all other options are compared. No improvement costs are associated with the No Build Option. All local officials contacted for this TPR acknowledge a need for improvements and therefore do not support a No Build Option.

#### **Widen Along the Existing Alignment Option**

This option is similar to the improvements listed in the MPO's LRTP and widens the existing route from two (2) travel lanes to four (4) travel lanes. The cost for corridor wide improvements is estimated to range between \$90 and \$103 million in year 2014 dollars.

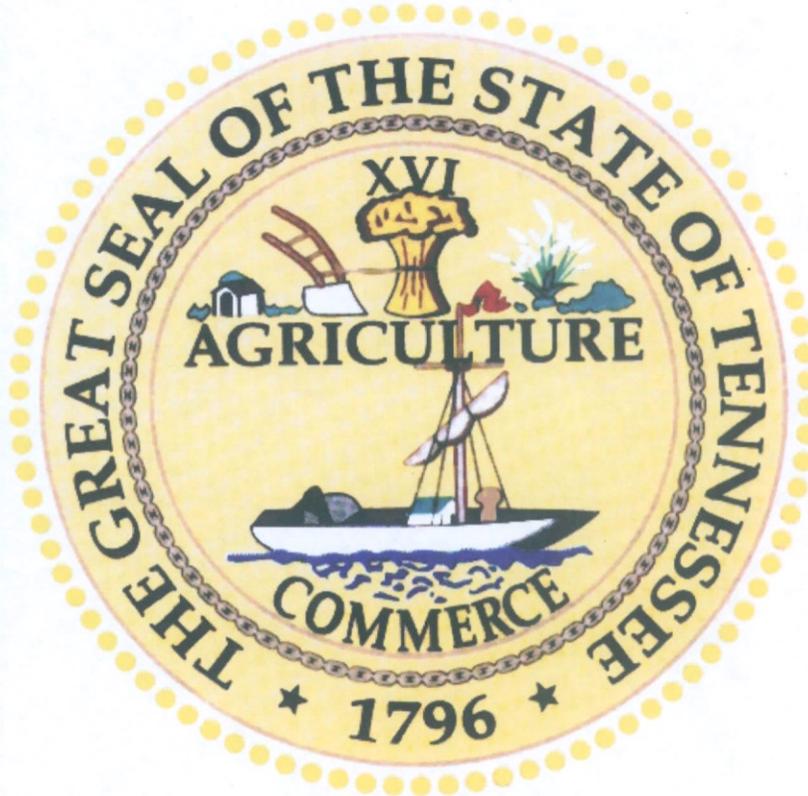
#### **Additional Options**

Due to the lack of support by local officials for the Widen Along the Existing Alignment Option, several additional options were studied, including bypass options, reduced travel lane options, and spot improvements. Many of these options, including the bypass options, are significantly different from the improvements listed in the LRTP. These options need additional coordination with the MPO's planning process. Furthermore, the additional options, in their current form, do not meet the purpose and need of the project. Further refinement of these additional options through the MPO's planning process could lead to them becoming viable improvement options. The additional improvement options studied are assessed in the **Options Requiring Additional Study Appendix**.



# TRANSPORTATION PLANNING REPORT

**STATE ROUTE 6 (US 31)**  
**FROM KEDRON ROAD TO MACK HATCHER PARKWAY**  
**MAURY AND WILLIAMSON COUNTIES**  
**PIN 111040.00**



**PREPARED BY**  
**FLORENCE & HUTCHESON**  
*For the*  
**NASHVILLE AREA METROPOLITAN PLANNING ORGANIZATION**  
*and the*  
**TENNESSEE DEPARTMENT OF TRANSPORTATION**  
**PROJECT PLANNING DIVISION**

Recommended by:	Signature	DATE
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TRANSPORTATION DIRECTOR PROJECT PLANNING DIVISION		6-14-10
TRANSPORTATION MANAGER 2 PROJECT PLANNING DIVISION		6/9/10

*This document is covered by 23 USC § 409 and its production pursuant to fulfilling public planning requirements does not waive the provisions of § 409.*

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- Options Requiring Additional Study
- Cost Estimates
- Traffic Calculations
- TDOT EES Maps
- HCS+ Calculations

## **1.0 PURPOSE OF THE TPR**

This Transportation Planning Report (TPR) examines the improvements listed in the Nashville Area Metropolitan Planning Organization's (MPO) Long Range Transportation Plan (LRTP) for 10.87 miles of State Route 6 (SR 6) from the City of Spring Hill to the southern limits of the City of Franklin in south-central Tennessee. The improvements widen the existing route from two (2) travel lanes to four (4) travel lanes. A No Build Option was also studied. This TPR was initiated by request of the MPO on behalf of Williamson County. Coordination with local agencies, including the Nashville Area MPO, Williamson County, the City of Spring Hill, the Town of Thompson's Station, and the City of Franklin was conducted throughout the development of this report.

It should be noted that the options presented in this TPR are part of a planning process, and not a design process. The corridor improvement options are presented as 2000 foot wide study areas to allow flexibility when specific alignments are developed in the future. Specific alignments will be developed in future planning documents as the National Environmental Policy Act (NEPA) process continues.

## **2.0 HISTORY & BACKGROUND**

### **2.1 PROJECT STUDY AREA**

The project study area extends from the City of Spring Hill to the southern limits of the City of Franklin, in south-central Tennessee. Please refer to **Figure 2.1.1 Area Vicinity Map**, **Figure 2.1.2 Project Location Map**, or the **Conceptual Plan Sheets** for visual representations of the study area.

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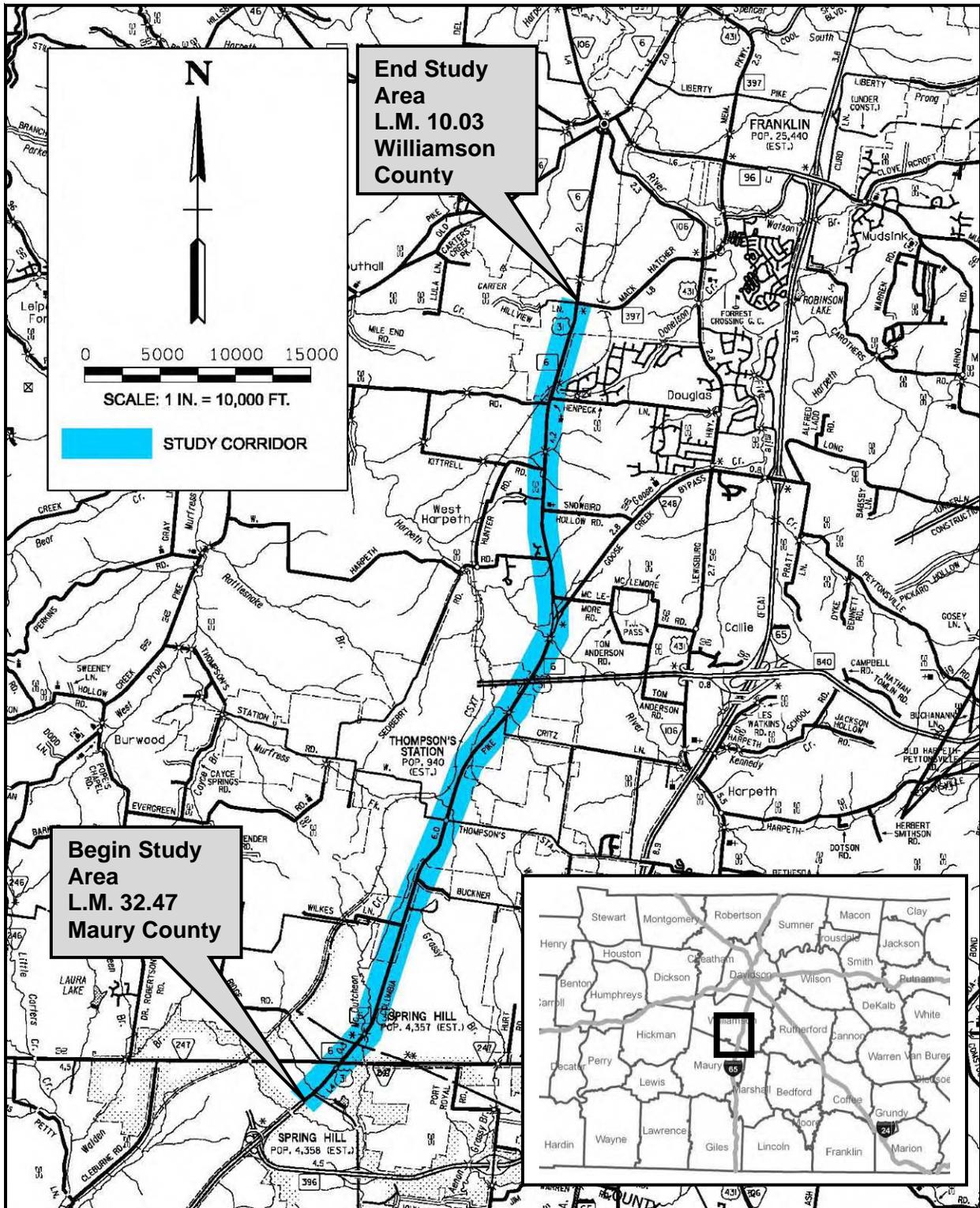
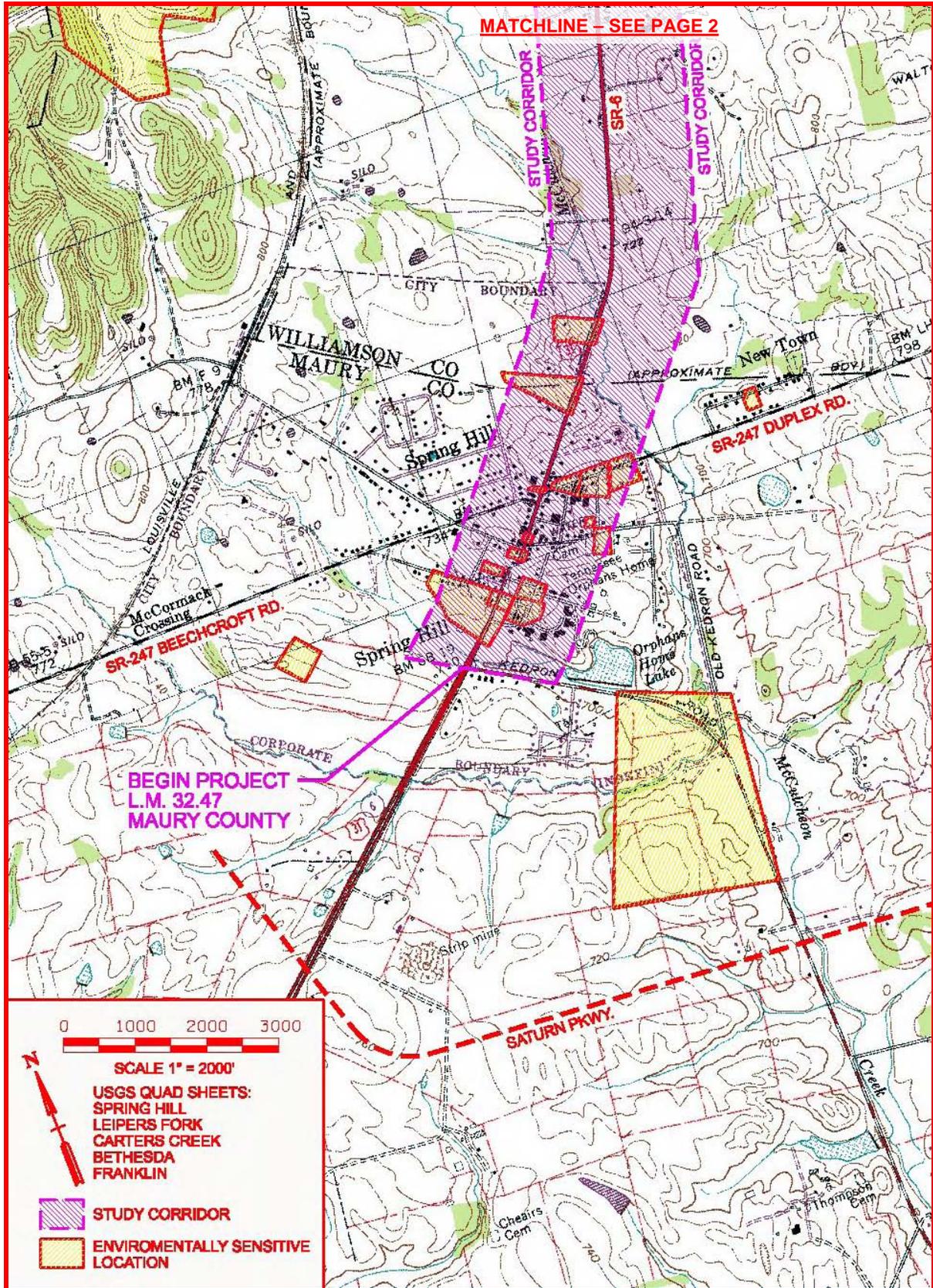


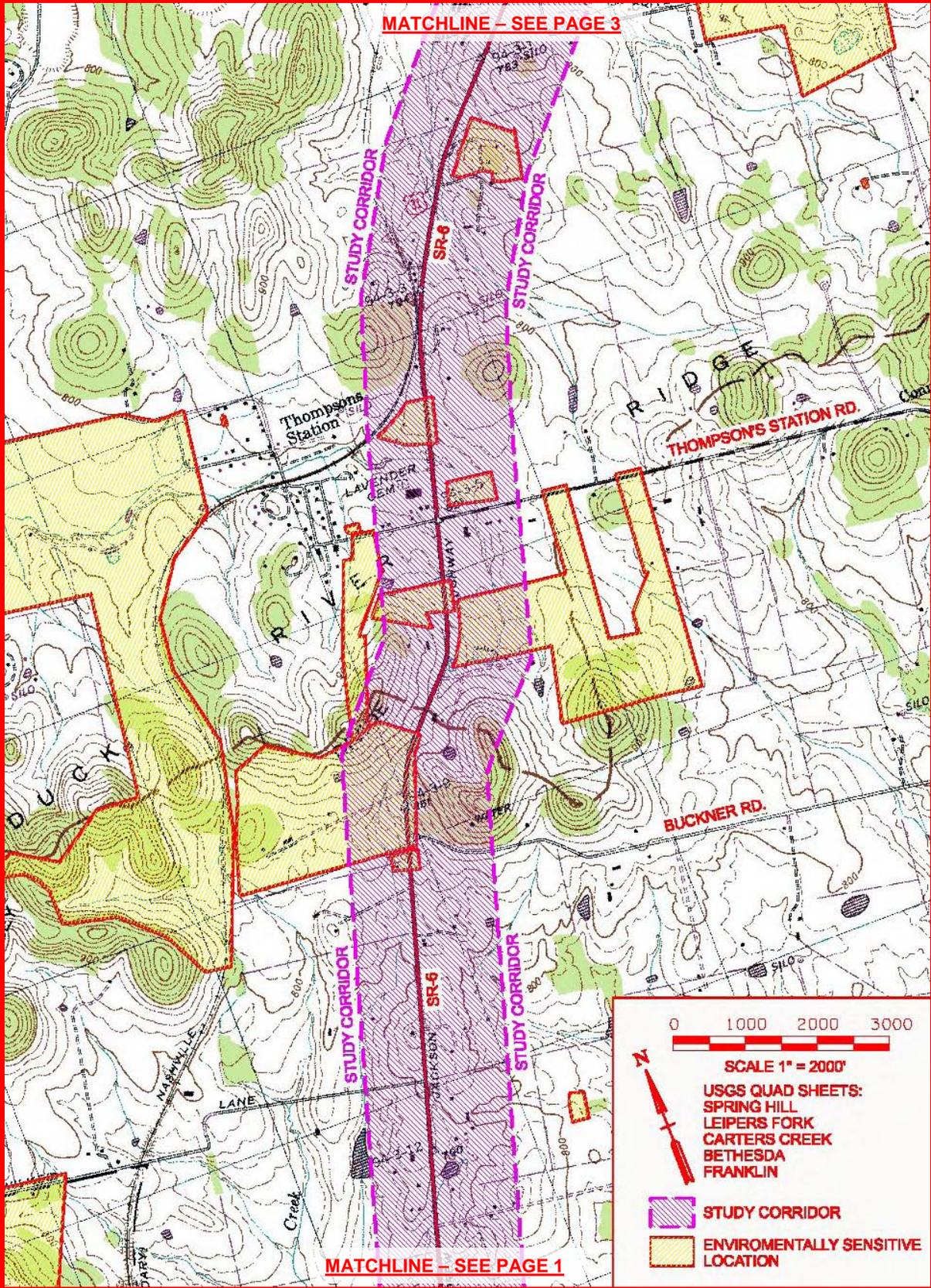
FIGURE 2.1.1 VICINITY MAP

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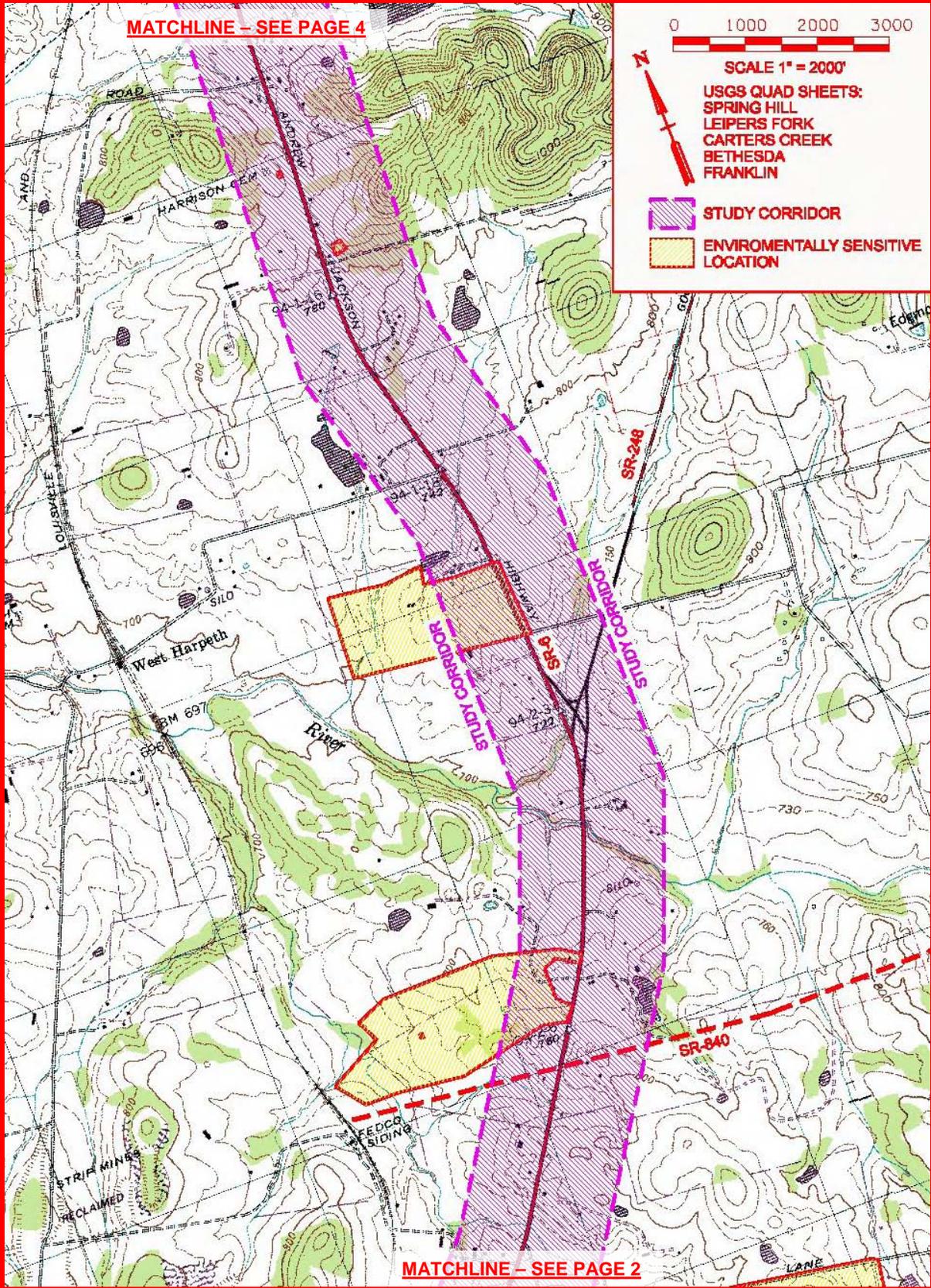
**FIGURE 2.1.2 PROJECT LOCATION MAP (1 OF 4)**

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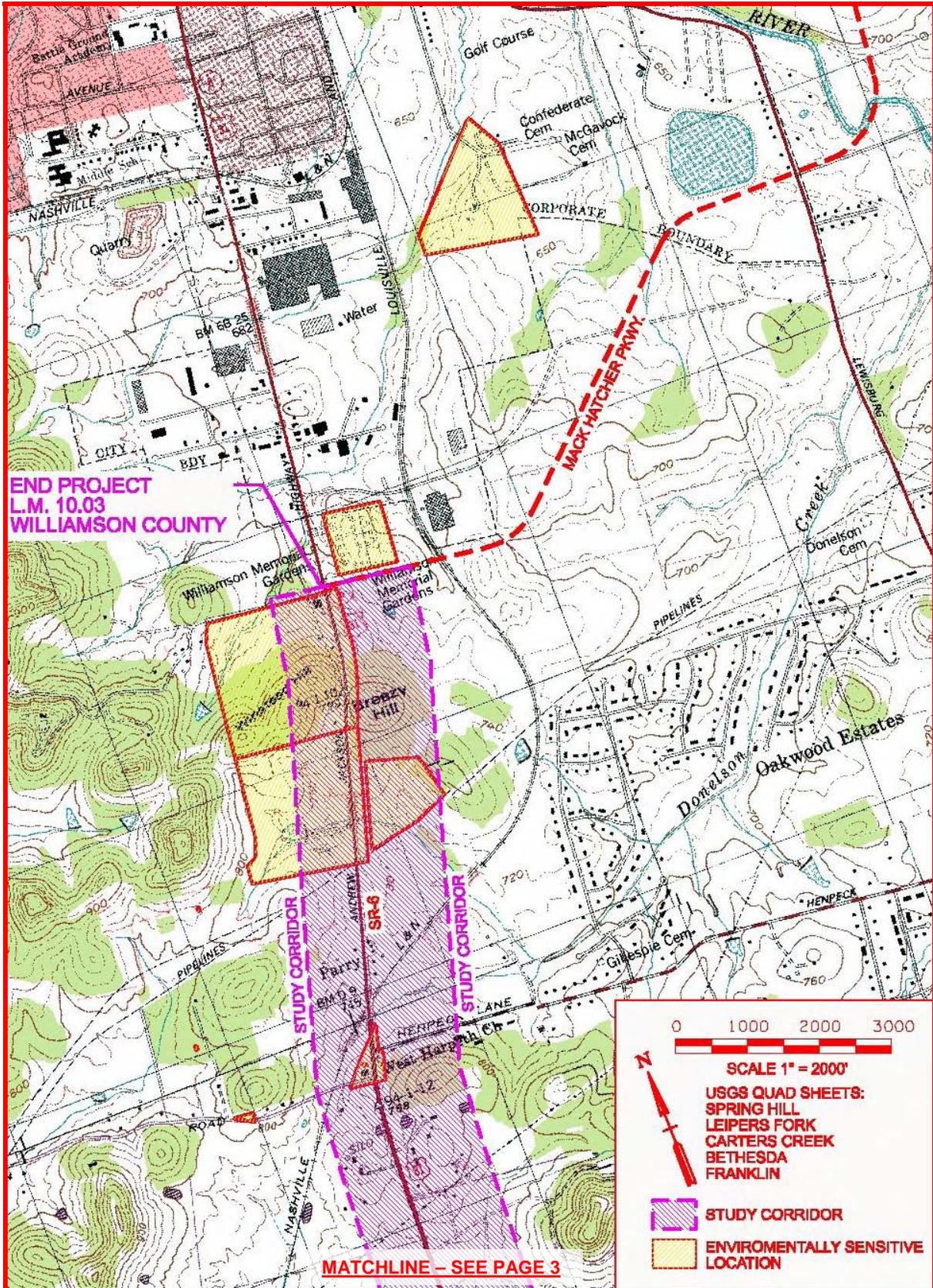
**FIGURE 2.1.2 PROJECT LOCATION MAP (2 OF 4)**

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**FIGURE 2.1.2 PROJECT LOCATION MAP (3 OF 4)**

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**FIGURE 2.1.2 PROJECT LOCATION MAP (4 OF 4)**

## 2.2 PROJECT HISTORY

This TPR is a continuation of several previous studies and meetings. A summary of previous activity concerning this project is provided in **Table 2.2 Project History**. Correspondence concerning this project, including minutes from the previous meetings, is provided in the **Appendix**.

**TABLE 2.2 PROJECT HISTORY**

<b>Date</b>	<b>Activity</b>
April 4, 2008	Mr. Michael Skipper, Executive Director for the Nashville Area Metropolitan Planning Organization (MPO), issued a letter to TDOT requesting a Transportation Planning Report (TPR) be completed for SR 6 from Old Kedron Road to Mack Hatcher Memorial Parkway. Improvements along SR 6 are listed in the MPO's 2030 Long Range Transportation Plan Update with a horizon year of 2016. A copy of the letter is provided in the <b>Appendix</b> .
May 2008	Florence & Hutcheson, Inc. was retained by TDOT's Project Planning Division to produce a Transportation Planning Report (TPR) to examine improvements along SR 6 from Old Kedron Road in Spring Hill to Mack Hatcher Memorial Parkway in Franklin.
August 29, 2008	A site visit was held to gain input from local stakeholders along the route. Thirteen (13) people were in attendance representing the City of Franklin, the Nashville Area MPO, TDOT, the Town of Thompson's Station, and Williamson County. The meeting began with a short discussion of the project limits and the status of the study. The meeting was then opened up for questions, comments, recommendations for improvements (including spot improvements), and closed with a field reconnaissance. Minutes of this meeting are provided in the <b>Appendix</b> .

**TABLE 2.2 PROJECT HISTORY (CONT.)**

<b>Date</b>	<b>Activity</b>
September 10, 2008	A meeting was held with the City of Spring Hill to gain input from local stakeholders. Six (6) people were in attendance. The meeting began with a discussion of what occurred at the Site Visit on 8/29/08. The meeting was then opened up for questions, comments, and recommendations for improvements (including spot improvements). A copy of the City's Major Thoroughfare Plan was provided to Florence & Hutcheson. Minutes of this meeting are provided in the <b>Appendix</b> .
January 28, 2009	A meeting was held with TDOT and the MPO to discuss the SR 6 TPR Draft. The primary focus of the meeting was to determine if the options included in the TPR should be strictly limited by what is listed in the MPO's LRTP, or if additional options requested by local agencies should also be included. The Draft SR 6 TPR at that time included bypass options and spot improvements, in addition to an option to widen along the existing alignment. The LRTP only lists widening along the existing alignment. Additional discrepancies between the LRTP and the options presented in the TPR were discussed. It was determined to proceed with submitting the SR 6 TPR with the Bypass Options. Minutes of this meeting are provided in the <b>Appendix</b> .
October 21, 2009 & November 2, 2009	Meetings were held with TDOT that followed an MPO retreat. The role of a TPR in relation to the LRTP was discussed at the retreat. It was determined that a TPR can include reasonable options not listed in the LRTP. However, the additional options must meet TDOT's requirements, including meeting access control issues, meeting the Purpose and Need for improvements, geometric standards, and regional significance. Direction to proceed with this TPR was provided, which included investigating if the additional options met these requirements. Minutes of these meetings are provided in the <b>Appendix</b> .

**TABLE 2.2 PROJECT HISTORY (CONT.)**

Date	Activity
March 4, 2010	A meeting was held with TDOT to discuss the revised Draft SR 6 TPR. At this meeting, it was decided to limit the TPR to a No Build Option and an option resembling the improvements listed in the LRTP. This was decided due to the additional options studied not meeting the Purpose and Need for the project. The additional options are also significant alterations to the LRTP, and have not been included in the MPO's planning process. The additional options investigated are included in the <b>Appendix</b> , as they may be modified with further study to meet the Purpose and Need of the project. Significant alterations to the project should originate through the MPO Planning Process.

**2.3 PLANNED AND RECENT IMPROVEMENTS**

**2.3.1 Planned Improvements**

Williamson and part of Maury County are part of the Nashville Area Metropolitan Planning Organization (MPO). The Nashville Area MPO leads in the development of the region's Long Range Transportation Plan (LRTP) and short-range Transportation Improvement Program (TIP). The goal of the Nashville Area MPO is to provide leadership in planning a comprehensive, multi-modal regional transportation system that promotes economic vitality and encourages sustainable land development to protect community and natural resources. The current TIP is for fiscal years 2008 – 2011. The current LRTP Update (amended November 14, 2007) covers a twenty five (25) year planning horizon through the year 2030.

Numerous transportation improvements are planned within the study area that will directly affect traffic operations along SR 6. Tables **2.3.1 MPO 2008-2011 TIP Projects** and **2.3.2 MPO 2030 LRTP Projects** provide a list of the proposed improvements in their respective current plans. The projects listed in these tables are either along SR 6, intersect SR 6, or provide improvements to a parallel facility. Improvements along a parallel facility are listed because utilization of these routes may decrease congestion along SR 6.

MPO's are established through federal legislation and exist throughout the United States in urbanized areas of more than 50,000 people. It is through MPOs that local communities prioritize state and federal funds for various transportation projects and programs. Each MPO is comprised of representatives from:

- City and County governments
- Their respective State Department of Transportation
- The Federal Highway Administration
- The Federal Transit Administration
- Other local or regional transportation-related agencies such as transit authorities and airports.

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The improvements for SR 6 listed in the Nashville Area MPO's 2030 LRTP are to widen SR 6 from the existing two (2) travel lanes to four (4) travel lanes. Specifically, the LRTP promotes widening SR 6 from the existing two (2) lanes to five (5) lanes between Old Kedron Road and Buckner Road (MPO LRTP Project #6001, Horizon Year 2016). The LRTP also specifies widening SR 6 from the existing two (2) lanes to four (4) or five (5) lanes between Buckner Road and Henpeck Lane (MPO LRTP Project #6022, Horizon Year 2016). The LRTP specifies SR 6 will be five (5) lanes within Spring Hill's City Limits and four (4) lanes in Williamson County. Spring Hill's City Limits end approximately one-quarter ( $\frac{1}{4}$ ) of a mile north of Buckner Road. Thompson's Station's Town Limits are not mentioned in the LRTP. Thompson's Station's Town Limits border Spring Hill's City Limits and end approximately 3.2 miles before Franklin's City Limits begin. Also of note, Old Kedron Road does not intersect SR 6. Kedron Road intersects SR 6. The existing five (5) lane section of SR 6 south of Spring Hill transitions to three (3) lanes at Kedron Road. The logical terminus of Kedron Road is the southern limit of this TPR's study area.

It should be noted that the northern terminus for improvements to SR 6 listed in the LRTP extend only to Henpeck Lane. The study limits of this TPR extend from Kedron Road to Mack Hatcher Parkway. Therefore, improvements to the 1.25 mile section of SR 6 from Henpeck Lane to Mack Hatcher Parkway are not in the LRTP. In discussions with a representative of the MPO, it was noted that this section will need to be adopted into the LRTP. As part of the Nashville Area MPO's planning process, a Tier 2 report will also need to be performed by the MPO for this segment of SR 6. Tier 2 reports are necessary to comply with the Nashville Area MPO's Congestion Management Process. Ending the project at Henpeck Lane is not a logical terminus. The City of Franklin is improving SR 6 to five (5) lanes north of Mack Hatcher. Terminating this project at Henpeck Lane would leave a two (2) travel lane segment between these four (4) travel lane segments.

Other than improvements to SR 6, significant highway improvements planned in the area include widening Interstate 65 and completion of the southern loop of SR 840. Interstate 65 is planned to be improved from four (4) travel lanes to eight (8) travel lanes (including high occupancy vehicle lanes) between SR 840 and SR 96.

SR 840 was initiated in 1986 as part of the state's Better Roads Program to provide economic growth by improving access to communities in Middle Tennessee. On the 78 mile route, 57.1 miles are open to traffic, with 20.9 miles remaining in some phase of construction or development. The entire route is scheduled to be open to traffic by 2012. Completion of SR 840 can be expected to impact traffic patterns within the study area.

The traffic data utilized in this report was generated in conjunction with the MPO's travel demand model. This model incorporates future improvements as programmed in the LRTP. Therefore, the traffic data utilized in this report incorporates the effects on travel patterns created by the highway improvements listed in the LRTP and TIP. The traffic generation calculations are provided in the **Appendix**.

In addition to the MPO planning data, the Major Thoroughfare Plans of the City of Spring Hill and the City of Franklin were examined. The City of Franklin is currently in the planning stages to widen SR 6 to five (5) lanes north of Mack Hatcher Parkway, at the northern terminus of this TPR. This will provide a logical terminus for the improvements discussed in this TPR.

The Town of Thompson's Station was consulted for this TPR. The town is developing a greenway plan. The greenway locations are not currently known. However, it is anticipated

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greenways will eventually cross SR 6. The town has requested that the greenways and SR 6 be grade separated. This could be accomplished by providing oversized culverts or bridge spans where these structures are needed. The design of improvements along SR 6 should therefore be coordinated with the Town, especially concerning the development of their greenway plan.

**TABLE 2.3.1 MPO 2008-2011 TIP PROJECTS**

<b>Description</b>	<b>Horizon Year</b>	<b>Cost</b>
Widen SR 247 from SR 6 to near Interstate 65 from two (2) lanes to three (3) lanes.	2008 (PE)	\$15,580,000
Construct new four (4) lane segment of SR 840 from west of Bending Chestnut Road to east of Thompson's Station Road	2008 (ROW)	\$75,000,000
Coordinate the signal timing of six (6) existing intersections along SR 6 between Stephen P. Yokich Parkway and Buckner Road.	2008	\$540,000
Construct new four (4) lane segment of SR 840 from southeast of SR 100 to west of Bending Chestnut Road	2008	72,500,000
Construct new four (4) lane segment of SR 840 from west of Bending Chestnut Road to west of Leipers Creek Road (SR 46)	2009	\$70,000,000
Construct new four (4) lane segment of SR 840 from west of Leipers Creek Road (SR 46) to west of Carters Creek Pike (SR 246)	2009	\$41,900,000
Improve the intersection of SR 6 at Duplex/Beechcroft Road.	2011	\$740,000
Widen Interstate 65 from south of SR 840 to SR 96, including the interchange with Peytonsville Rd, from four (4) lanes to eight (8) lanes. The interchange may be improved to a single point urban design.	2011	\$84,549,392
<b>Total Improvements:</b>		<b>\$360,809,392</b>

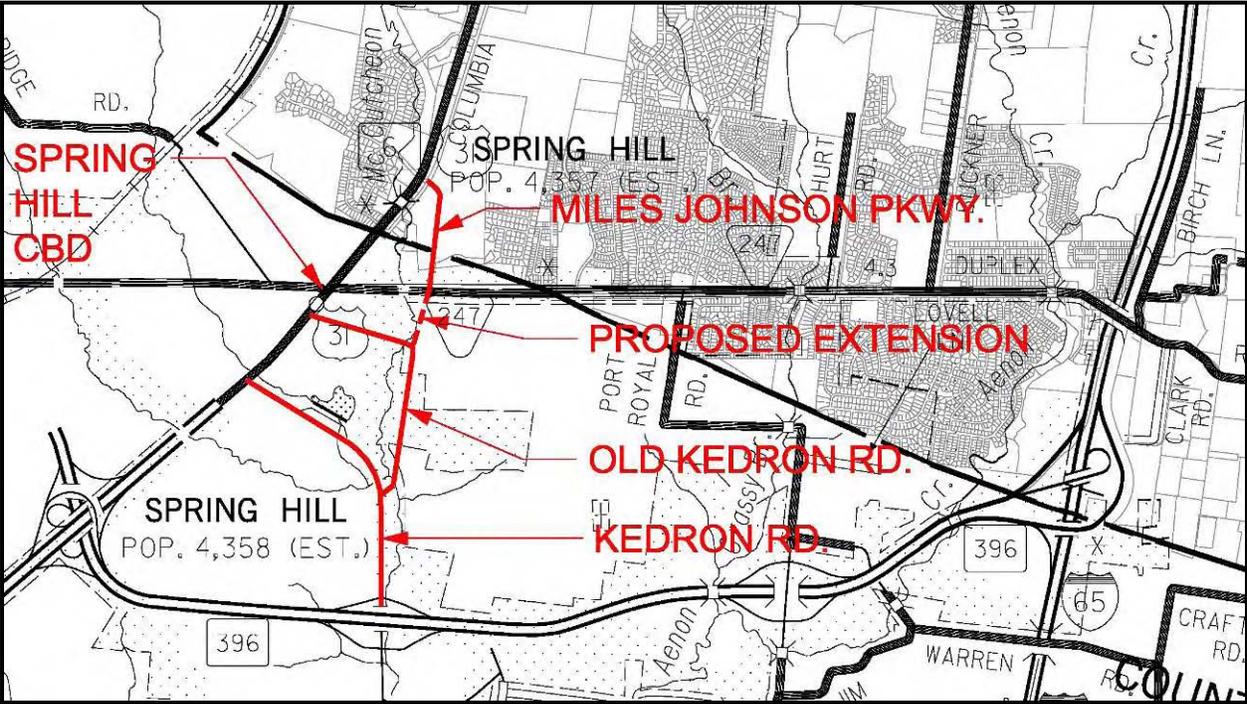
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**TABLE 2.3.2 MPO 2030 LRTP PROJECTS**

Description	Horizon Year	Cost
Widen SR 6 from Buckner Lane to Henpeck Lane from two (2) lanes to four (4) lanes in the County and from two (2) lanes to five (5) lanes through the City of Spring Hill. Project #6022.	2016	\$29,000,000
Widen SR 6 from Old Kedron Road to Buckner Road from two (2) lanes to five (5) lanes. Project #6001.	2016	\$7,200,000
Widen SR 6 from Mack Hatcher Parkway (SR 397) to Downs Boulevard from three (3) lanes to five (5) lanes, with bike lanes, sidewalk, and curb and gutter. Project #6027	2016	\$9,251,500
Widen Goose Creek Bypass (SR 248) from SR 106 (Lewisburg Pike) to Interstate 65 from two (2) lanes to four (4) lanes with a median and bike lanes. Project #6034.	2016	\$2,450,000
Widen SR 106 (Lewisburg Pike) from Henpeck Lane to Mack Hatcher Parkway (SR 397) from two (2) lanes to four (4) lanes with bike lanes. Project #6032.	2016	\$15,000,000
Widen SR 106 (Lewisburg Pike) from Critz Lane to Goose Creek Bypass (SR 248) from two (2) lanes to four (4) lanes. Project #6021	2020	\$15,000,000
Widen Goose Creek Bypass (SR 248) from SR 6 to SR 106 (Lewisburg Pike) from two (2) lanes to three (3) lanes. Project #6038.	2025	\$11,000,000
Construct an interchange at Interstate 65 and Thompson's Station Road. Project #6046.	2030	\$6,500,000
<b>Total Improvements:</b>		<b>\$95,401,500</b>

**2.3.2 Recent Improvements**

In addition to the planned improvements previously discussed, the City of Spring Hill has recently constructed Miles Johnson Parkway. The southern terminus of Miles Johnson Parkway is located at an intersection with Duplex Road (SR 247) approximately 0.4 miles east of SR 6. The City's Major Thoroughfare Plan lists a project to extend Miles Johnson Parkway south approximately 0.2 miles to Old Kedron Road. Miles Johnson Parkway's northern terminus is at an intersection with SR 6 approximately 0.6 miles north of Spring Hill's Central Business District (CBD). Miles Johnson Parkway should reduce traffic in the CBD by providing access between numerous new subdivisions located along Duplex Road and destinations to the north. Additionally, when the extension to Kedron Road is complete, Miles Johnson Parkway will provide improved access to an interchange on Saturn Parkway (SR 396), which will further enhance this route as an alternate to SR 6 through the CBD. It is unknown when funding for the 0.2 mile long Miles Johnson Parkway extension will be available.



**FIGURE 2.3 MILES JOHNSON PARKWAY DETAIL**

## **3.0 PURPOSE AND NEED FOR IMPROVEMENTS**

### **3.1 PURPOSE FOR IMPROVEMENTS**

The purpose for improvements to SR 6 is to provide a transportation facility that will improve regional mobility, reduce congestion, meet the changing social demands of the area, and improve safety by addressing existing roadway deficiencies. This TPR was initiated by request of the Nashville Area MPO on behalf of Williamson County. The MPO's 2030 Long Range Transportation Plan (LRTP) calls for widening SR 6 from the existing two (2) travel lanes to four (4) travel lanes.

### **3.2 NEED FOR IMPROVEMENTS**

#### **3.2.1 Improve Regional Mobility**

Improvements to the transportation system are needed to improve regional mobility. SR 6 is a critical arterial in south-central Tennessee. Within the study limits of this TPR, SR 6 runs parallel to Interstate 65 and serves regional travel demand between Columbia, Spring Hill, Thompson's Station, and Franklin. Considerable commuter driving patterns occur between these cities, creating congestion during peak travel times. The Nashville Area MPO reports that twelve percent (12%) of Maury County residents commute to work in Williamson County and nine percent (9%) commute to Davidson County. SR 6, along with Interstate 65 and SR 106 (Lewisburg Pike) are the primary north-south routes in the region. When traffic incidents occur on Interstate 65, SR 6 is a primary detour route.

#### **3.2.2 Reduce Congestion**

Improvements to the transportation system are needed to reduce congestion. As mandated by federal transportation regulations, a Congestion Management Process (CMP) has been implemented in the Nashville MPO Area. A CMP is required due to the MPO Area having a population over 200,000 people and therefore being a Transportation Management Area (TMA). Projects must comply with the CMP prior to approval in the LRTP. The MPO's 2030 LRTP calls for widening SR 6 from the existing two (2) travel lanes to four (4) travel lanes. Therefore, the Nashville Area MPO's planning process indicates SR 6 is congested and that travel demand reduction strategies outlined in the CMP Document can not address the congestion. Local officials and field observations verify congestion limits mobility along SR 6 during AM and PM peak travel times.

#### **3.2.3 Meet Changing Social Demands**

Improvements to the transportation system are needed to meet the changing social demands of the area. The population of Williamson County grew by 56.3% from 1990 to 2000, and was the fastest growing county in Tennessee. The population of Maury County grew by 26.8% from 1990 to 2000. The City of Spring Hill has seen extraordinary growth since 2000. There are several major regional employers located within or near the study limits of this TPR, including the newly relocated North American Headquarters of Nissan in the Cool Springs area of

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Franklin. This formerly rural area has seen extensive changes in population and land use in recent years and the existing transportation system does not meet the demand.

**3.2.4 Improve Safety**

Improvements to SR 6 are needed to improve safety by addressing existing roadway deficiencies. The segment of SR 6 through the City of Spring Hill's CBD has a crash rate that is approximately one and a half (1.5) times higher than the statewide rate for similar roadways. High crash rates are also reported between Campbell Station Parkway and Thompson's Station Road, at the Goose Creek Bypass Intersection, and at the Mack Hatcher Parkway Intersection. The primary deficiency along the route is poor traffic operations.

**4.0 EXISTING CONDITIONS**

**4.1 COMMUNITY DESCRIPTION**

Over ninety percent (90%) of the project's limits are located in Williamson County, with the remainder being located in Maury County. Williamson and Maury Counties are located in Southern Middle Tennessee. Williamson and part of Maury County are part of the Nashville Area MPO. There are ninety-five (95) counties in Tennessee. Williamson and Maury County are the eleventh (11<sup>th</sup>) and seventeenth (17<sup>th</sup>) largest counties by population, with populations of 126,638 and 69,498 respectively (2000 US Census). The population of Williamson County grew by 56.3% from 1990 to 2000, and was the fastest growing county in Tennessee. The population of Maury County grew by 26.8% from 1990 to 2000.

- Williamson County is:
- The wealthiest county in TN
  - The fastest growing county in TN
  - Has numerous historic sites

Williamson County is the sixteenth (16<sup>th</sup>) largest County by land area in Tennessee with an area of 583 square miles. Williamson County is the wealthiest county in Tennessee and ranked as one of the wealthiest counties in the country. In 2004, the median household income was \$79,692 with a per capita income of \$44,298. Williamson County also had the lowest unemployment rate in the State in 2006 at 3.5%. This is below the 2006 unemployment rate for Tennessee of 5.2%.

Maury County is the tenth (10<sup>th</sup>) largest County by land area in Tennessee with an area of 613 square miles. In 2004, the median household income for the county was \$43,116 with a per capita income of \$28,126. Maury County had the twenty-ninth (29<sup>th</sup>) highest unemployment rate in the state in 2006 at 5.4%. The Nashville Area MPO reports that twelve percent (12%) of Maury County residents commute to work in Williamson County and nine percent (9%) commute to Davidson County. SR 6 is a primary commuting route between Maury County and southern Williamson County.

- The Project corridor crosses the following communities:
- Spring Hill
  - Thompson's Station
  - Franklin

Within the study limits, the land use is varied and includes commercial, industrial, agricultural and residential development. The study area crosses the Central Business District (CBD) of Spring Hill, Thompson's Station, and the southern urbanized area of Franklin, along with unincorporated areas of Williamson County. In the unincorporated areas, Williamson County zoning

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specifies a maximum residential building density of one (1) residential dwelling unit per acre, with no zoning for commercial development. The terrain in the study area is rolling. A map of Williamson County's land use zones is provided in **Figure 4.1.1 Land Use Zones**.

The City of Franklin is the county seat of Williamson County and is the most populous city with a population of 41,842 (2000 US Census). Franklin is located approximately nineteen (19) miles south of Nashville. The median household income in Franklin is \$65,506 with a per capita income of \$32,160. The northern terminus of the study corridor is located at Franklin's southern city limits. The land use in this area has a moderate building density with residential, public, and commercial developments.

Thompson's Station is located in Williamson County and is approximately twenty-five (25) miles south of Nashville, just south of the City of Franklin. Thompson's Station has a population of 1,283 (2000 US Census). The median household income is \$66,875 with a per capita income of \$24,143.

The portion of Thompson's Station adjacent to the study area has a moderate building density. The land use is generally residential, with some minor commercial development, including a service station. The Town's land use and zoning policy is designed to spur development on the east side of town, between SR 6 and Interstate 65. The Town's zoning calls for more condensed development along SR 6, residential development east of SR 6, and agricultural development west of the CSX Corporation rail line. Development along Critz Lane, which extends from SR 6 east to SR 106 (Lewisburg Avenue), is expected to see significant residential growth in the near future. Several large residential developments were zoned in this area, but are currently stalled due to current economic conditions. It is anticipated these areas will see growth when the economy rebounds.

The City of Spring Hill is located along the Maury and Williamson county border approximately thirty (30) miles south of Nashville. The City had a population of 7,715 in the 2000 US Census. The City has seen extraordinary growth since 2000. The median household income is \$60,872, with a per capita income of \$21,688.

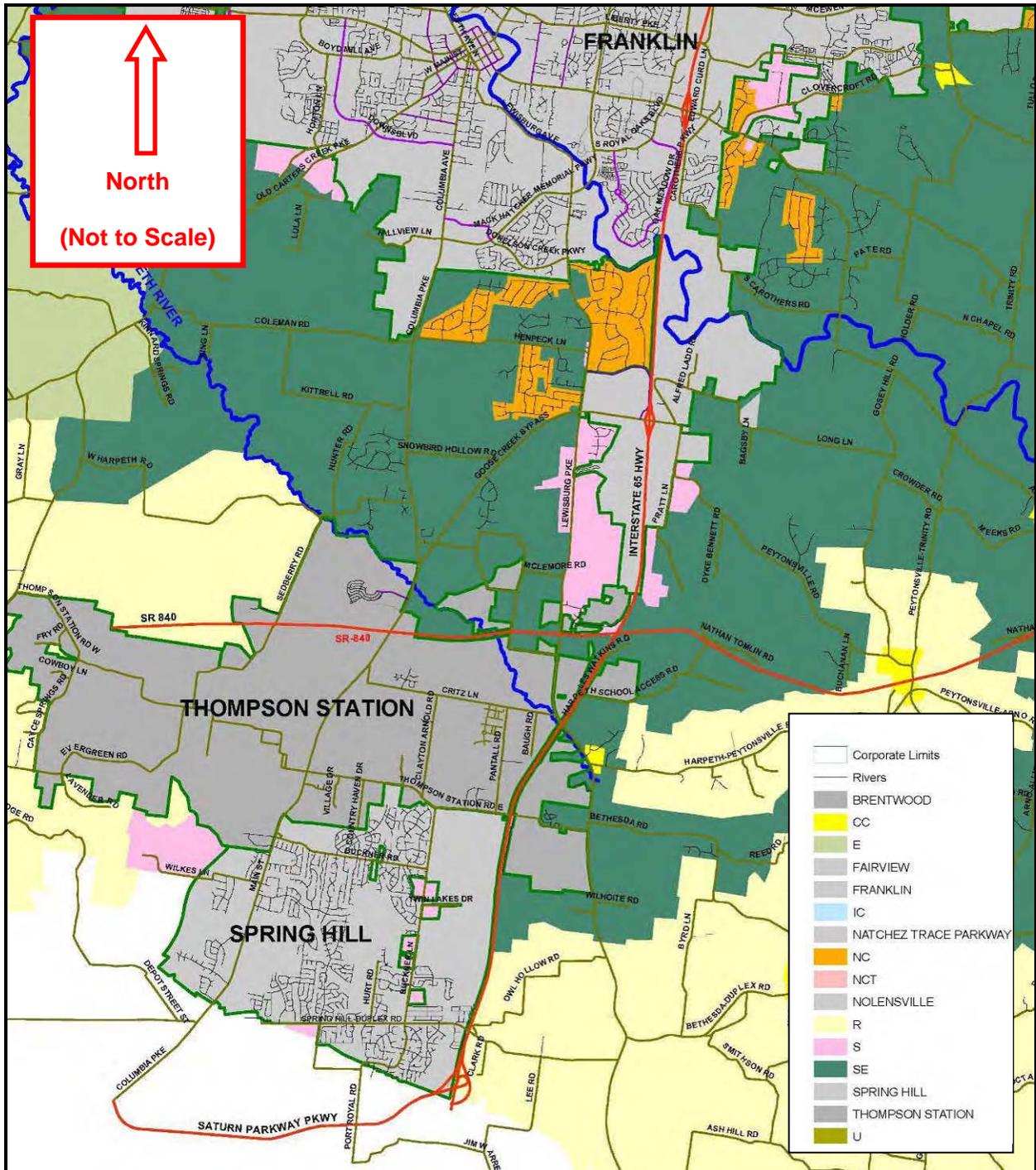
The CBD of Spring Hill has a compact building density and includes numerous historic properties. SR 6 bisects this urban environment with a narrow sixty (60) feet of existing right-of-way. Further north, the land use within Spring Hill's City Limits is predominantly residential or commercial with varying land use densities. Numerous commercial properties are located along SR 6. Many of these developments have features, including parking lots, retaining walls, and detention ponds, located adjacent to the existing right-of-way.

There are several major regional employers located within or near the study limits of this TPR. Industries that employ fifty (50) or more employees within the study area are listed in **Table 4.1.1**. These industries are mapped in **Figure 4.1.2**.

After the economic data discussed above was collected, the nation experienced an economic recession. During this economic downturn, Tennessee's unemployment rate increased and the GM (Saturn) automotive plant was idled. This plant is located just south of the study corridor in Spring Hill. There are currently no known plans to resume the assembly of automobiles at the plant. Until the production of automobiles is resumed there will be a considerable negative economic impact on Spring Hill and the adjacent communities.

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Several Utilities are located within the study area. The utility service providers are listed in Table 4.1.2.



**FIGURE 4.1.1 LAND USE ZONES**

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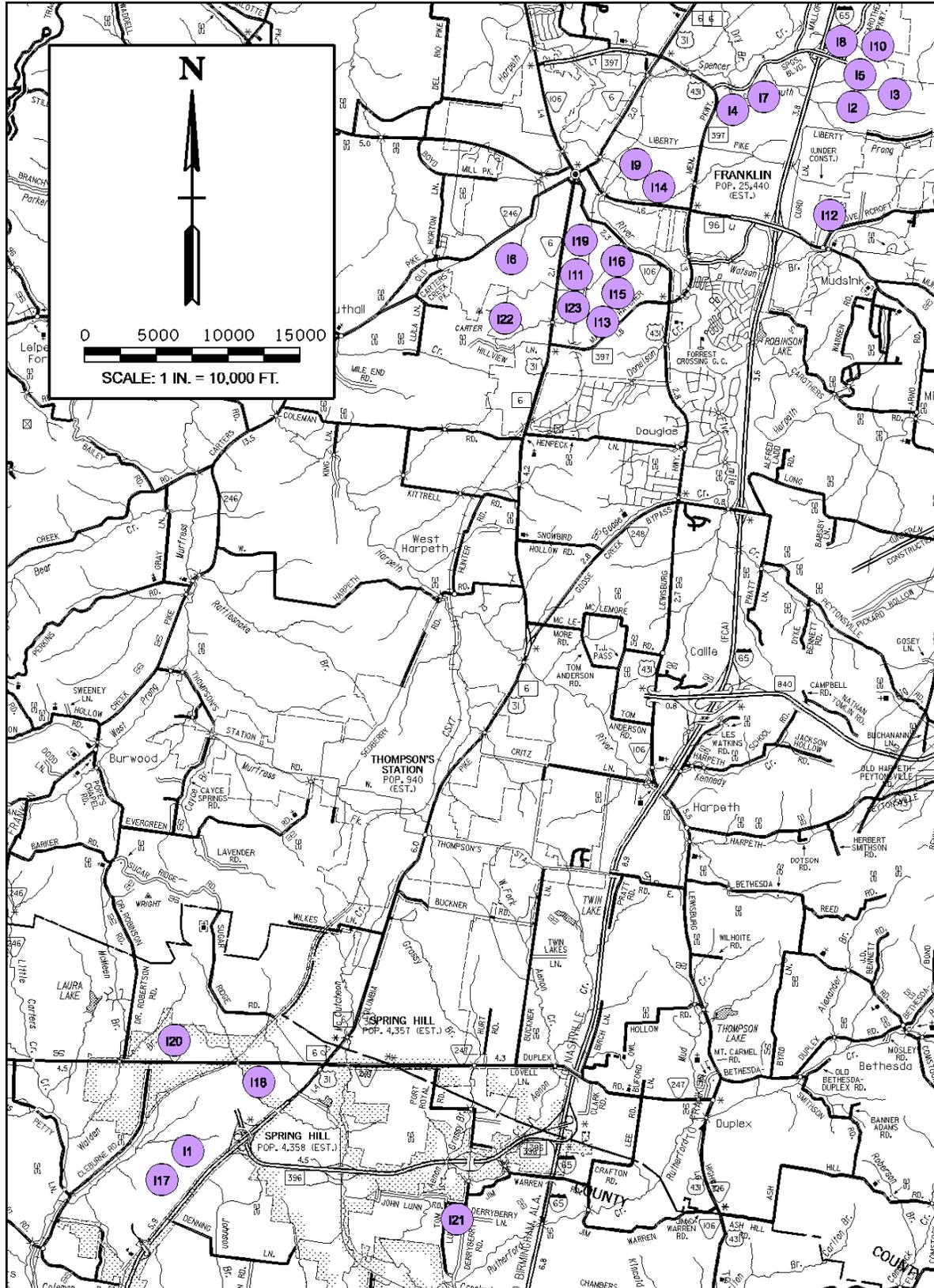
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**TABLE 4.1.1 MAJOR INDUSTRIES**

<b>ID</b>	<b>Name</b>	<b>Product</b>	<b>Number of Employees</b>
I1*	GM – Saturn*	Automobile Manufacturer*	4,295*
I2	Nissan – North American	Automobile Manufacturer Headquarters	1,600
I3	Healthways	Corporate Headquarters	1,000
I4	AIM Healthcare	Healthcare Industry	815
I5	Progeny Marketing Innovations	Marketing and Insurance	550
I6	Civil Constructors, Inc.	Construction Contractor	500
I7	Mars Petcare US	Pet Food Manufacturer Headquarters	500
I8	Affinion Group	Marketing	470
I9	LDM Technologies	Automotive Supplier	400
I10	CIMply	Medical Computer Information Management	370
I11	Lasko Metal Products	Fans, Humidifiers, and Heaters	350
I12	DA Vita	Dialysis Treatments	350
I13	Apcom, Inc.	Divisional Headquarters	350
I14	Plastech Engineered Products, Inc.	Plastic Injection Molding	230
I15	Essex Group, Inc.	Magnet Wire	209
I16	Husky Truss & Building Supplies	Wooden Floor Trusses	100
I17	Premier Mfg. Support Services	Janitorial Services	80
I18	US Engineering Company	Mechanical Contractors	79
I19	Spandek, Inc.	Hydraulic Cranes	75
I20	Pioneer Manufacturing	Loading Dock Equipment	60
I21	Phoenix Metals	Specialty Metals	54
I22	Haley Tool & Stamping, Inc.	Metal Stamping, Tool & Die	50
I23	Prime Colorants, Inc	Additives for Plastics	50

\* The GM automobile plant was idled in 2009. There are currently no known plans to resume the assembly of automobiles at the plant.

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**FIGURE 4.1.2 MAJOR INDUSTRIES MAP**

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**TABLE 4.1.2 UTILITY SERVICE PROVIDERS**

<b>Name</b>	<b>Utility Service</b>	<b>Source/Company</b>
Middle Tennessee Electric Membership Corporation	Electricity	TVA
Duck River Electric Membership Corporation	Electricity	TVA
Columbia Power Systems	Electricity	TVA
City of Franklin	Water	Harpeth Valley Utility District/Harpeth River
City of Spring Hill	Water	Duck River
Harpeth Valley Utility District	Water	Harpeth River
Columbia Water Systems	Water	Duck River
Hillsboro, Burwood & Thompson's Station (H.B. & T.S.) Utilities	Water	Duck and Cumberland Rivers
City of Franklin	Sewer	n/a
City of Spring Hill	Sewer	n/a
Harpeth Valley Utility District	Sewer	n/a
Columbia Wastewater Systems	Sewer	n/a
Town of Thompson's Station	Sewer	n/a
Atmos Energy	Natural Gas	Natural & Columbia Gulf Transmission, Texas Eastern, Columbia Gulf
AT&T	Telephone	n/a
Comcast	Cable	n/a

## **4.2 ENVIRONMENTAL SITES**

Williamson and Maury County are rich in history and were the location of several major Civil War battles including the Battles of Brentwood, Spring Hill, Thompson's Station, and Franklin. Williamson County has more properties on the National Register of Historic Places than any other County outside of the State of Virginia. Therefore, several environmentally sensitive locations and community resources are located within the study area. In addition to historic places, these areas include churches, cemeteries, schools, environmental sites, parks, major streams, utilities, and railroads. The environmentally sensitive locations were determined through an Early Environmental Screening and a Desktop Environmental Scan. The known environmentally sensitive locations along the study corridor are listed in **Table 4.2 Environmental and Community Resources** and mapped in **Figure 4.2 Environmentally Sensitive Locations**. Additionally, the locations are labeled in the **Conceptual Plans**.

### **4.2.1 Early Environmental Screening (EES)**

In preparation of Transportation Planning Reports (TPR), the Tennessee Department of Transportation (TDOT) has introduced an Early Environmental Screening (EES) process for the project study area. By screening the latest available Geographic Information Systems (GIS) environmental data during the early stages of project planning, TDOT and the public will be better prepared to anticipate potential environmental issues and mitigation requirements. This screening process involves using GIS to assess environmental data as it spatially relates to the project's Area of Potential Effect (APE). In broad terms, the GIS environmental data reviewed in this TPR include the following layers:

- Archaeological/Historic Architecture – Historic properties and cemetery sites;
- Community Impacts – Sensitive community populations;
- Ecology – Scenic Waterways, Natural Areas, large wetlands, protected species (bat, aquatic, terrestrial, plants);
- Hazardous Substances/Geology – Hazardous substance sites, pyritic rock/geotechnical, caves; and,
- Parks & Public Land – parks (federal/state/local), public land/buildings, railroads, wildlife management areas.
- As of the publication of this document, the GIS data within each layer was up to date relevant to date of its publication. This data will be updated as part of the ongoing project development process.

The TDOT EES Maps are provided in the **Appendix**.

### **4.2.2 Desktop Environmental Scan**

In addition to TDOT's GIS based EES, a desktop environmental/community resources scan was performed as part of this TPR. Sources utilized in this environmental/community resources scan include the following: Environmental Protection Agency Envirofacts, United States Geological Survey Topographic Mapping (Spring Hill, Leipers Fork, Carters Creek, Bethesda, and Franklin) aerial photography, TDOT maps, and the National Register of Historic Places.

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**TABLE 4.2 ENVIRONMENTAL AND COMMUNITY RESOURCES**

<b>Churches</b>	
<b>Name</b>	<b>Location</b>
Spring Hill Church of Christ	5351 Main Street, Spring Hill, TN, 37174
Spring Hill Presbyterian Church	5344 Main Street, Spring Hill, TN 37174
Grace Episcopal Church	5291 Main Street, Spring Hill TN 37174
Spring Hill United Methodist Church	5286 Main Street, Spring Hill, TN 37174
Mt. Hope Baptist Church	5276 Main Street, Spring Hill, TN 37174
Wesley Chapel United Methodist Church	511 McClemore Avenue, Spring Hill, TN 37174
New Town Church of Christ	2615 Duplex Road, Spring Hill, TN 37174
First Baptist Church	5219 Main Street, Spring Hill, TN 37174
Jehovah's Witness Church	4002 O'Hallorn Drive, Spring Hill, TN 37174
St. Mark United Primitive Baptist Church	518 Maury Hill Street, Spring Hill, TN 37174
Faith Lutheran Church	4738 Columbia Pike, Thompson's Station, TN 37179
Thompson's Station Baptist Church	2604 Thompson's Station Road, Thompson's Station, TN 37179
Thompson's Station Church of Christ	4721 Columbia Pike, Thompson's Station, TN 37179
Spring Meadow Baptist Church	4256 Columbia Pike, Franklin, TN 37064
New Birth Seventh Day Adventist Church	1336 Coleman Road, Franklin, TN 37064
West Harpeth Primitive Baptist Church	4141 Columbia Pike, Franklin, TN 37064

<b>Cemeteries</b>	
<b>Name</b>	<b>Location</b>
Spring Hill Memorial Park	5239 Main Street, Spring Hill, TN 37174
Williamson Memorial Gardens	3009 Columbia Pike, Franklin TN, 37064
Patton Cemetery	Thompson's Station Road W, Thompson's Station, TN 37179
Evergreen Cemetery	Evergreen Road, Spring Hill, TN 37174
Buford Cemetery	Columbia Pike, Thompson's Station, TN 37179 (south of Critz Lane)
Dodson Cemetery	Clayton Arnold Road, Thompson's Station, TN 37179
Baugh Cemetery	Columbia Pike, Franklin, TN 37064
Harrison Cemetery	Columbia Pike, Franklin, TN 37064
Hood Cemetery	Snowbird Hollow Road, Franklin, TN 37064
Turner Cemetery	Coleman Road, Franklin, TN 37064
Harrison Cemetery	Coleman Road, Franklin, TN 37064
Mathis Cemetery	Henpeck Lane, Franklin, TN 37064
Sweeney Cemetery	Columbia Pike, Franklin, TN 37064

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<b>Schools</b>	
<b>Name</b>	<b>Location</b>
Spring Hill Elementary	5359 Main Street, Spring Hill TN, 37174
Heritage Middle School	4803 Columbia Pike, Thompson's Station, TN 37179
Heritage Elementary School	4801 Columbia Pike, Thompson's Station, TN 37179
Independence High School	1776 Declaration Way, Thompson's Station, TN 37179
Winstead Elementary School	4080 Columbia Pike, Franklin, TN 37064

<b>Environmental Sites</b>	
<b>Name</b>	<b>Location</b>
Ryder Truck Rental (EPA Hazardous Waste)	3639 Royal Park Boulevard, Spring Hill, TN 37174
Spring Hill Water Treatment Plant (EPA Water Discharger)	199 Town Center Parkway, Spring Hill, TN 37174
Jimmy's Custom Cleaners and Alterations (EPA Air Emissions)	5317 Main Street, Spring Hill, TN 37174
CVS (EPA Hazardous Waste)	4805 Columbia Pike, Thompson's Station, TN 37179
Henry P. Minton Family Trust/Batey Property (EPA Hazardous Waste)	2762 Critz Lane, Thompson's Station Road, Thompson's Station, TN 37179

<b>Parks &amp; Recreation</b>	
<b>Name</b>	<b>Location</b>
Thompson's Station Park	Thompson's Station Road W, Thompson's Station, TN 37179
Winstead Hill Park	US 31, Franklin, TN 37064 (across from Mack Hatcher Parkway)

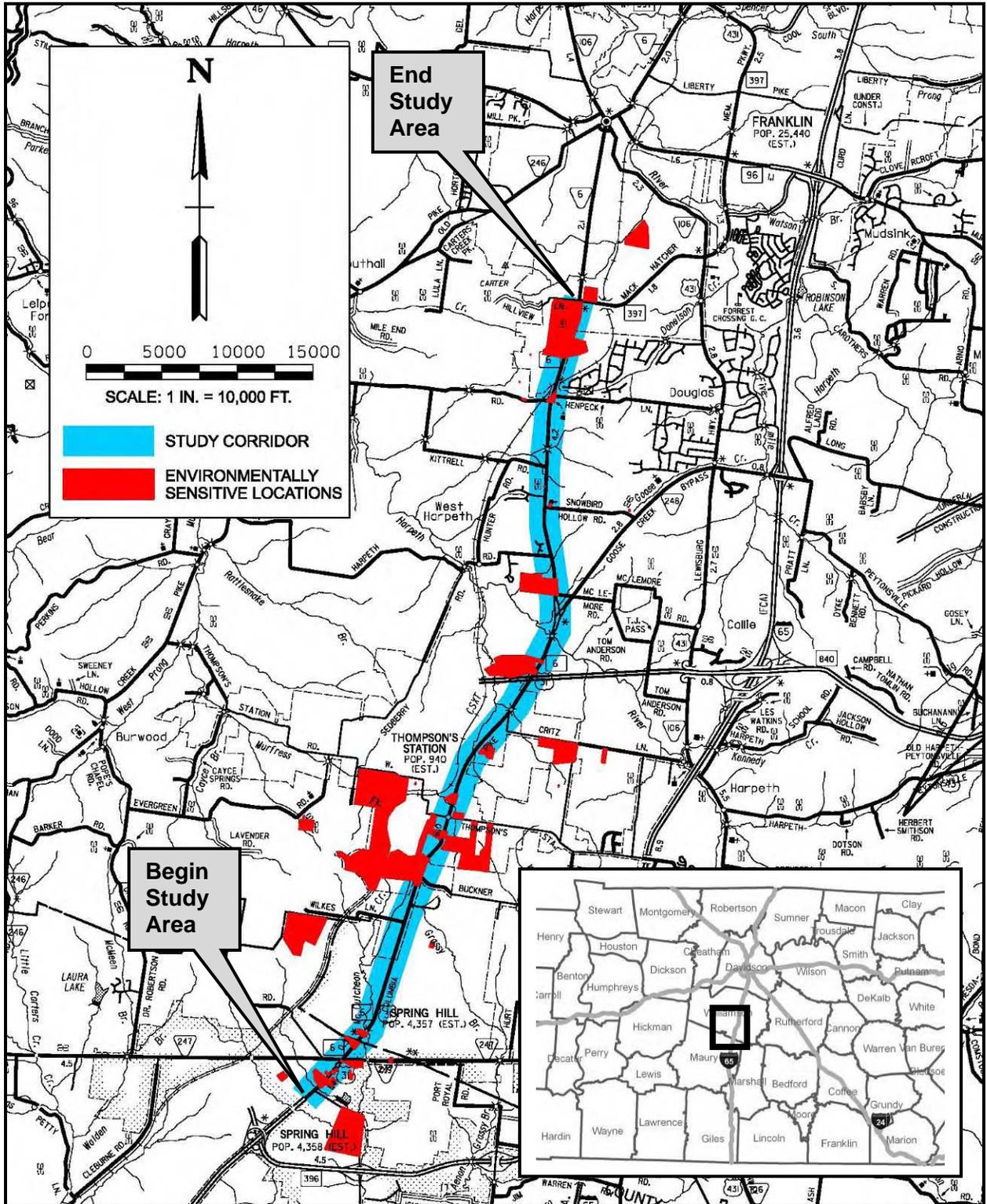
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<b>Historic Places</b>	
<b>Name</b>	<b>Location</b>
Ferguson Hall (aka Tennessee Orphan's Home, Martin Cheairs House, Branham and Hughes Military Academy)	5350 Main Street, Spring Hill, TN 37174
Spring Hill High School	Spring Hill
Cleburne Jersey Farm (aka Campbell Farm)	2319 Sugar Ridge Road, Spring Hill, TN 37174
Ewell Farm	Depot Lane, Spring Hill, TN 37174 (1 mile west of US 31)
Grace Episcopal Church	5291 Main Street, Spring Hill, TN 37174
Rippavilla	5700 Main Street, Spring Hill, TN 37174
Ritter-Morton House	McLemore Ave, Spring Hill, TN 37174
Spring Hill Battlefield	Junction of Kedron and Old Kedron Roads, Spring Hill, TN 37174
Spring Hill Presbyterian Church	5344 Main Street, Spring Hill, TN 37174
St. Mark United Primitive Baptist Church	518 Maury Hill Street, Spring Hill, TN 37174
White Hall	2536 Duplex Road, Spring Hill, TN 37174
Buford Spencer House	US 31, Thompson's Station, TN 37179 (1/2 mile south of Critz Lane)
Thomas Critz House	Critz Lane, Thompson's Station, TN 37179 (1 mile east of US 31)
Franklin Battlefield	South of Franklin along US 31
Harrison House	US 31, Franklin TN, 37064 (between railroad and Mack Hatcher, west side, with a red roof)
Homestead Manor	US 31, Thompson's Station, TN 37179 (south of SR 840 where the railroads splits from US 31)
James P Johnson House	US 31, Thompson's Station, TN 37179 (3/10 of a mile south of W. Harpeth Road)
Henry Pointer House	US 31, Thompson's Station, TN 37179
Thompson's Station Bank	Thompson' Station Road, Thompson's Station, TN 37179
James Giddens House	Thompson's Station, TN 37179
Winstead Hill	US 31, Franklin, TN 37064

<b>Utilities</b>	
<b>Name</b>	<b>Location</b>
Columbia Gulf Pipeline	Crosses US 31 south of Franklin

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**FIGURE 4.2 ENVIRONMENTALLY SENSITIVE LOCATIONS**

#### **4.3 EXISTING TRANSPORTATION CONDITIONS**

SR 6 is a critical arterial in south central Tennessee. Within the study limits of this TPR, SR 6 runs parallel to Interstate 65 and serves regional travel demand between Columbia, Spring Hill, Thompson's Station, and Franklin. Considerable commuter driving patterns occur between these cities, creating congestion during peak travel times. SR 6, along with Interstate 65 and SR 106 (Lewisburg Pike) are the primary north-south routes in the region. When traffic incidents occur on Interstate 65, SR 6 is a primary detour route.

SR 6 is the primary north-south arterial through the City of Spring Hill and Town of Thompson's Station, and one of the primary routes through the City of Franklin. The speed limit varies between 35 and 55 mph and the cross section varies from two (2) lanes to five (5) lanes along the route. There are nine (9) traffic signals and four (4) school zones located within the study area. The primary deficiency along the route is congested traffic operations. The existing geometric conditions and deficiencies of SR 6 are discussed in more detail on the following pages. The roadway segments are discussed from south to north and are based upon the cross section and functional classification of SR 6 within the study area. Photos along the route are provided in **Figures 4.3.1** through **4.3.6**. The existing geometric conditions of SR 6, along with the Segment ID's, are mapped in **Figure 4.3.7 Existing Geometric Conditions**. The segment ID's are also labeled in the **Conceptual Plan Sheets**.

##### Segment ID #1, Three (3) Lane Urban Other Principal Arterial, L.M. 32.47 to L.M. 33.31 Maury County

The City of Spring Hill's CBD is located in this 0.84 mile long segment of SR 6. This segment extends from Kedron Road to the Williamson/Maury County Line, near Witt Hill Drive. The speed limit of this segment is 35 mph. The 15 mph Spring Hill Elementary School Zone is located in this segment. Three (3) traffic signals are located in this segment. The entire segment is three (3) lanes wide and includes two (2) travel lanes and a center two way left turn lane (TWLTL).

The school zone and numerous private and commercial entrances adversely impact traffic operations in this area. The offset intersection created by SR 6 with Duplex Road (SR 247) and Beechcroft Road (SR 247) also affects traffic operations in this segment.

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L.M. 32.44 SR 6 at Kedron Road



L.M. 32.97 SR 6 at Duplex/Beechcroft Rd.

**FIGURE 4.3.1 SEGMENT ID #1 PHOTOS (JULY 2007)**

Segment ID #2, Two (2) Lane Urban Other Principal Arterial, L.M. 0 to L.M. 2.49 Williamson County

This 2.49 mile long segment of SR 6 is within Spring Hill's City Limits and includes rural and dense suburban development, including commercial development. This segment extends from the Williamson/Maury County Line, near Witt Hill Drive, to Thompson's Station's City Limits, north of Buckner Road. The speed limit of this segment is 45 mph. The 20 mph Heritage Elementary and Middle School Zone is located in this segment. Two (2) traffic signals are located in this segment. The cross section is primarily two (2) lanes wide, with left turn lanes at most major intersections or developments. The 0.9 mile-long section between Cemetery Road/O'Hallorn Drive and Buckner Road is effectively a three (3) lane section, as the left turn lanes are continuous through this commercial area.

The school zone adversely impacts traffic operations in this area. Representatives of the City of Spring Hill also noted that the intersections of SR 6 with Miles Johnson Parkway and Bellshire Way need to be signalized. It was also noted that turn lane improvements were needed at the intersections of SR 6 with Campbell Station Parkway and Buckner Road.



L.M. 0.43 SR 6

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L.M. 1.35 SR 6 Near Campbell Sta. Pkwy.



L.M. 1.79

**FIGURE 4.3.2 SEGMENT ID #2 PHOTOS (JULY 2007)**

Segment ID #3, Two (2) Lane Rural Minor Arterial, L.M. 2.5 to L.M. 4.75 Williamson County

This 2.25 mile-long segment of SR 6 is within the Town of Thompson’s Station’s Urban Growth Boundary. This segment extends from Thompson’s Station’s City Limits, north of Buckner Road, to south of SR 840, north of Critz Lane. The development along the route is primarily rural, with small commercial developments located adjacent to the intersection with Thompson’s Station Road. The speed limit of this section is 45 mph. One (1) traffic signal is located in this segment. The cross section is two (2) lanes wide, with left turn lanes located at the intersection of SR 6 with Thompson’s Station Road.

Representatives of the Town of Thompson’s Station noted that turn lane improvements are needed at the intersection of SR 6 with Thompson’s Station Road to improve traffic operations. Another geometric deficiency noted by the Town is the intersection of SR 6 with Critz Lane. Critz Lane meets SR 6 at a sharp skew. It is desired to realign Critz Lane to improve the skew.



L.M. 3.04 SR 6 at Thompson’s Station Rd.



L.M. 4.41 SR 6

**FIGURE 4.3.3 SEGMENT ID #3 PHOTOS (JULY 2007)**

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Segment ID #4, Five (5) Lane Rural Minor Arterial, L.M. 4.76 to L.M. 5.55 Williamson County

This 0.79 mile-long segment of SR 6 primarily consists of the functional area of the interchange of SR 6 with SR 840. This segment extends from south of SR 840, north of Critz Lane, to Tollgate Road. The development along the route is a mix of rural and high density residential. The speed limit of this section is 45 mph. The 20 mph Independence High School Zone is located in this segment. One (1) traffic signal is located in this segment. The cross section is five (5) lanes wide, with a two way center left turn lane (TWLTL). There are no observed geometric deficiencies in this segment. However, the school zone does adversely impact traffic operations during AM peak periods.



L.M. 4.97 SR 6 at SR 840

**FIGURE 4.3.4 SEGMENT ID #4 PHOTO (JULY 2007)**

Segment ID #5, Two (2) Lane Rural Minor Arterial, L.M. 5.56 to L.M. 8.67 Williamson County

This 3.11 mile-long segment of SR 6 is rural with low density residential developments. This segment extends from Tollgate Road to south of Coleman Road. The Goose Creek Bypass Intersection is located in this segment. The northern end of this segment is at Nashville's urban boundary near Franklin's City Limits. The speed limit of this section varies from 45 to 55 miles per hour. No traffic signals are located in this segment. The cross section is two (2) lanes wide.

Local officials noted the bridge over the West Harpeth River has limited sight distance. This bridge is located just south of the Goose Creek Bypass Intersection with SR 6. Local officials also noted the odd configuration of the Goose Creek Bypass intersection with SR 6 adversely affects safety and traffic operations in the area.



L.M. 5.79 SR 6 at Goose Creek Bypass



L.M. 6.69 SR 6

**FIGURE 4.3.5 SEGMENT ID #5 PHOTOS (JULY 2007)**

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Segment ID #6, Two (2) Lane Urban Other Principal Arterial, L.M. 8.68 to L.M. 10.03 Williamson County

This 1.35 mile-long segment of SR 6 is primarily rural with low density residential developments. This segment extends from south of Coleman Road to Mack Hatcher Parkway. The speed limit of this section is 40 miles per hour. The 20 mph Winstead Elementary School Zone is located in this segment. One (1) traffic signal is located in this segment. The cross section is two (2) lanes wide. SR 6 bridges over the CSX Railroad tracks in this segment. This bridge has a sharp vertical curve and limited shoulders.

The school zone adversely impacts traffic operations in this area during AM peak periods. The offset intersection created by SR 6 with Coleman Road and Henpeck Lane also affects traffic operations in this segment. It was noted by local officials that the right turn lane along SR 6 northbound approaching Mack Hatcher Parkway is deficient in length.



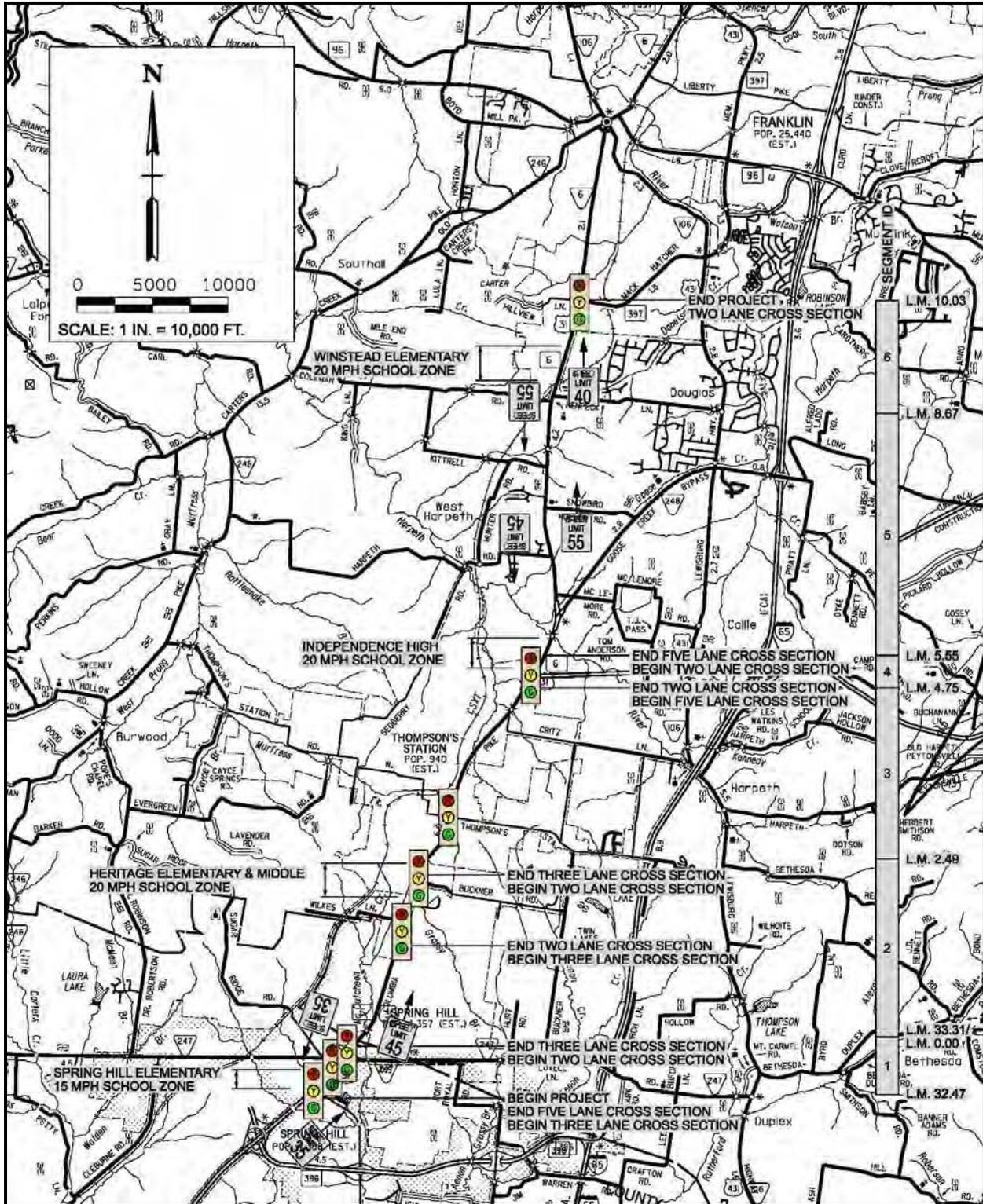
L.M. 8.79 SR 6 over CSX Railroad



L.M. 9.96 SR 6 at Mack Hatcher Pkwy.

**FIGURE 4.3.6 SEGMENT ID #6 PHOTOS (JUNE 2008)**

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**FIGURE 4.3.7 EXISTING GEOMETRIC CONDITIONS**

#### 4.4 CRASH HISTORY

SR 6 crash rates were provided by TDOT from crash data for the years 2002 through 2006. **Table 4.4 SR 6 Crash Data for 2002-2006** tabulates the crash data and **Figure 4.4 SR 6 Cumulative Crashes vs. Location** provides a visual representation of where the crashes are occurring. SR 6 is classified as an Urban Principal Arterial and as a Rural Minor Arterial within the study area. The crash data is summarized based upon the same roadway classification and cross section characteristics identified in **Section 4.3 Existing Transportation Conditions**, and compared to the statewide crash rates for similar roadway segments.

As can be seen in **Table 4.4**, the actual crash rate along SR 6 from Kedron Road to the Williamson County Line is higher than the statewide crash rate, indicating a safety concern. This segment includes the central business district (CBD) of Spring Hill. While the remaining segments of the study area have actual crash rates below the statewide crash rates for similar roadway segments, **Figure 4.4** indicates areas within those segments with safety concerns. The limits of these areas are as follows:

The crash rate in Spring Hill's CBD is 1.5 times higher than the statewide average rate.

61% of the crashes along the study corridor are rear end crashes, which may indicate congestion as a cause of many crashes

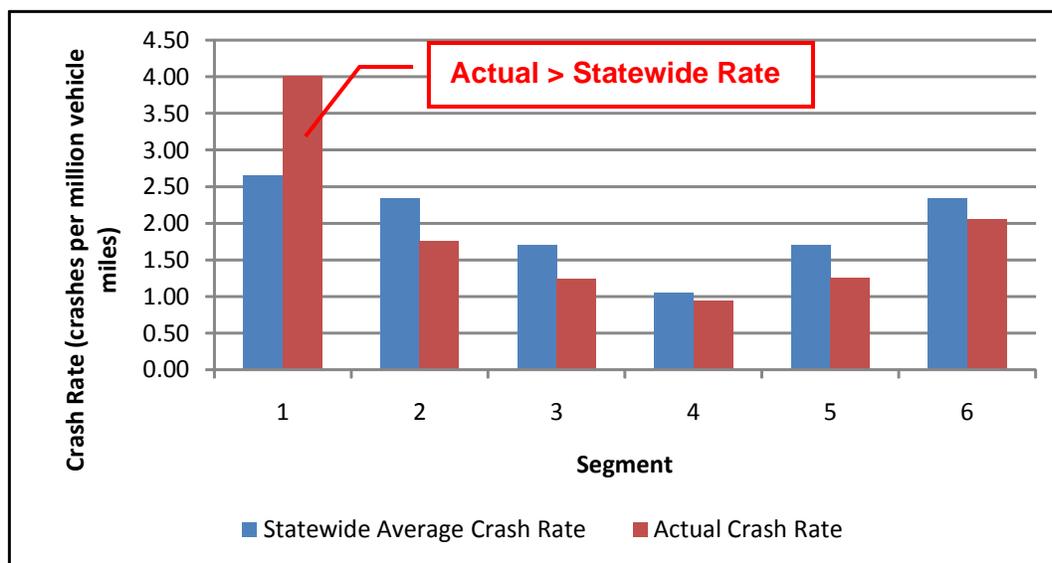
- Campbell Station Parkway to Thompson's Station Road
- The Goose Creek Bypass Area
- The intersection of SR 6 with Mack Hatcher Parkway

The crash data shows that 61% of the crashes along SR 6 are rear end crashes. This may indicate congestion as a cause of many crashes due to stop and go traffic. No other significant crash patterns were observed. Pavement conditions do not appear to have a significant impact on crashes, as 87% of the crashes occurred in fair weather conditions.

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**TABLE 4.4 SR 6 CRASH DATA FOR 2002-2006**

ID	Location/ Description	Roadway Classification	State-Wide Crash Rate	Actual Crash Rate
1	From Kedron Rd. to Maury/Williamson County Line (L.M. 32.47 to 33.31)	3-Lane Urban Other Principal Arterial	2.65	4.02
2	From Maury/Williamson County Line to Thompson's Station City Limits (L.M. 0 to 2.49)	2-Lane Urban Other Principal Arterial	2.34	1.77
3	From Thompson's Station City Limits to south of SR-840 (L.M. 2.5 to 4.75)	2-Lane Rural Minor Arterial	1.70	1.24
4	From south of SR-840 to Tollgate Rd. (L.M. 4.76 to 5.55)	5-Lane Rural Minor Arterial	1.05	0.95
5	From Tollgate Rd. to Nashville Urban Boundary (L.M. 5.56 to 8.67)	2-Lane Rural Minor Arterial	1.70	1.26
6	From Nashville Urban Boundary to SR-397 (Mack Hatcher Pkwy.) (L.M. 8.68 to 10.03)	2-Lane Urban Other Principal Arterial	2.34	2.06

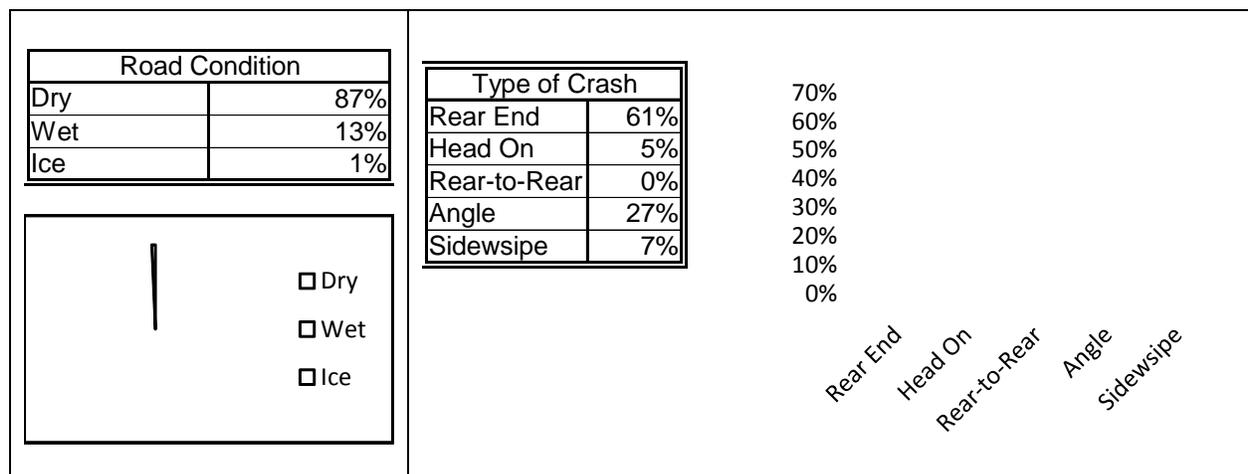


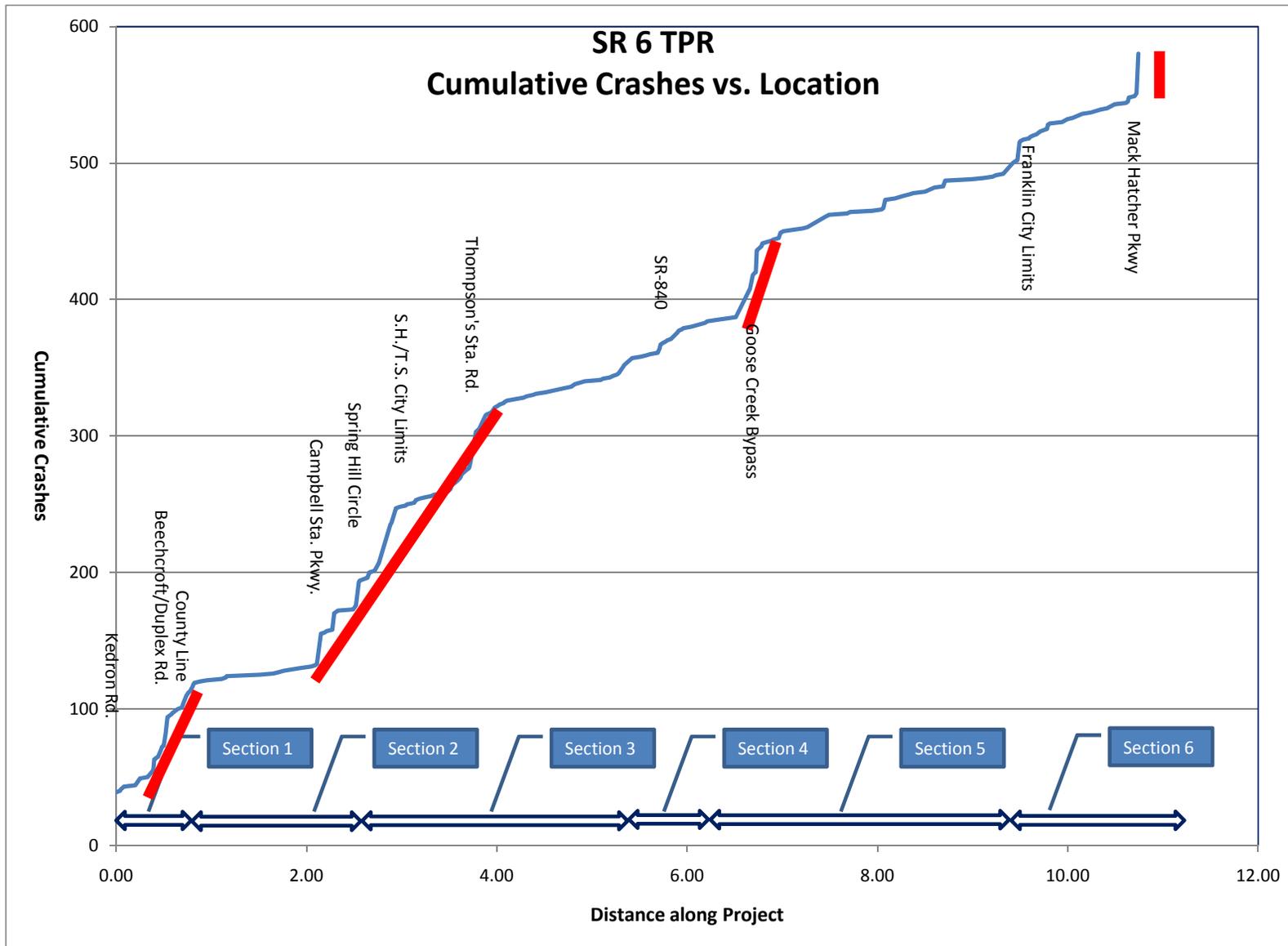
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**TABLE 4.4 SR 6 CRASH DATA FOR 2002-2006 (CONTINUED)**

ID	Location/ Description	Length of Segment (Miles)	Total Crashes	Fatal Crashes	Injury Crashes	Property Damage Only Crashes
1	From Kedron Rd. to Maury/Williamson County Line (L.M. 32.47 to 33.31)	0.84	103	1	25	77
2	From Maury/Williamson County Line to Thompson's Station City Limits (L.M. 0 to 2.49)	2.49	151	0	51	100
3	From Thompson's Station City Limits to south of SR-840 (L.M. 2.5 to 4.75)	2.25	102	3	19	80
4	From south of SR-840 to Tollgate Rd. (L.M. 4.76 to 5.55)	0.79	28	0	10	18
5	From Tollgate Rd. to Nashville Urban Boundary (L.M. 5.56 to 8.67)	3.11	110	1	40	69
6	From Nashville Urban Boundary to SR-397 (Mack Hatcher Pkwy.) (L.M. 8.68 to 10.03)	1.35	88	1	31	56
<b>Total</b>			<b>582</b>	<b>6</b>	<b>176</b>	<b>400</b>
<b>Percentage</b>				<b>1%</b>	<b>30%</b>	<b>69%</b>

**TABLE 4.4 SR 6 CRASH DATA FOR 2002-2006 (CONTINUED)**





**FIGURE 4.4 SR 6 CRASH DATA FOR 2002-2006**

#### **4.5 MULTIMODAL FACILITIES**

Sidewalks are present along SR 6 in Spring Hill's CBD. Sidewalks are not present elsewhere along SR 6 in the study area. Bike lanes are not present along SR 6. Thompson's Station and Spring Hill are developing greenways near the study area.

Several transit agencies and other modal options offer services in or near the study area. The services are described below.

Franklin Transit Authority (FTA): Trolley services are offered in Franklin's CBD between 8 am and 6 pm Monday through Friday and Saturday from 9 am to 6:30 pm. Fares are typically one dollar (\$1) per trip.

Transportation Management Association (TMA) Group: The TMA Group is a public-private partnership committed to providing environmentally friendly, affordable, reliable, and safe mobility options for Middle Tennesseans. Services offered include a van pool program.

Regional Transportation Authority (RTA): The mission of RTA is to offer the citizens of Middle Tennessee choices and alternatives on how they commute to work each day and to coordinate local regional transportation services. Services offered include rideshare and vanpool programs and commuter bus service from Spring Hill and Franklin to Nashville.

South Central TN Development District (SCTDD) Rural Public Transportation: SCTDD offers rural public transportation in Maury County.

Mid-Cumberland Human Resource Agency (MCHRA) Rural Transit System: MCHRA offers curb-to-curb rural public transportation service between Williamson and Davidson County for a fare of six dollars (\$6) each way.

CSX Corporation Rail: CSX Corporation railroad tracks are located parallel to SR 6 throughout the study corridor. The line offers freight service. It is desired by local officials for the rail line to eventually provide commuter rail service. There are currently no plans for this to occur. The Radnor Yard railroad yard, located in south Nashville, creates an impediment to commuter rail utilizing this track to Nashville's CBD.

Airports: The Maury Regional Airport is located approximately twenty (20) miles southwest of the southern terminus of the study area in Mount Pleasant, TN. Charter services for both passengers and freight are available at this airport. The nearest commercial airline services are available at Nashville International Airport, approximately thirty (30) miles northeast of the northern terminus of the study area.

## **5.0 PROPOSED IMPROVEMENTS**

Two improvement options are included in this TPR, the No Build Option and the Widen Along the Existing Alignment Option. The No Build Option provides no improvements and serves as a baseline option against which other options are compared. The Widen Along the Existing Alignment Option will improve the existing route from two (2) travel lanes to four (4) travel lanes. A center two way left turn lane (TWLTL) is anticipated along the majority of the route. This option resembles the improvements listed in the Nashville Area MPO's Long Range Transportation Plan (LRTP).

In discussions with the MPO and local officials, it is not desired for the exact improvements along SR 6 listed in the LRTP to be constructed. Different median options, travel lane options, and termini should be considered to limit impacts to environmentally sensitive areas along the route and to achieve logical termini. The MPO noted that new options are welcome. Several additional options were therefore studied as part of this TPR, including bypass options, reduced travel lane options, and spot improvements. Many of these options, including the bypass options, are significantly different from the improvements listed in the LRTP. These options need additional coordination with the MPO's planning process, which may include being subject to public review and comment. Furthermore, the additional options, in their current form, do not meet the purpose and need of the project. Further refinement of these additional options through the MPO's planning process could lead to them becoming viable improvement options. The additional improvement options studied are assessed in the **Options Requiring Additional Study Appendix**.

### **5.1 MEASURES OF EFFECTIVENESS**

Several measures of effectiveness are utilized in this TPR to assess the operational conditions of SR 6 for both the existing and proposed conditions. These measures of effectiveness are level of service, volume to capacity ratio, average travel speed, and travel time. A definition of these measures is provided in the following text.

#### **5.1.1 Level of Service**

Level of Service (LOS) is a qualitative measure describing operational conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. LOS range from A to F, with LOS A representing the best operating conditions and LOS F the worst. Each LOS represents a range of operating conditions and the driver's perception of those conditions. Please refer to **Table 5.1 LOS Table** for a description of each LOS.

The LOS of SR 6 was assessed utilizing the methodology outlined in the *Highway Capacity Manual 2000* (HCM) *Urban Streets, Two-Lane Highways, and Multilane Highways* Chapters. The calculations were performed with the Highway

It should be noted that the future use of the GM (Saturn) automotive plant will significantly alter traffic volumes in the area. The plant, which is located just south of the study corridor, was idled at the end of 2009. The traffic projections utilized in this report were performed prior to the opening of Miles Johnson Parkway and the idling of the GM plant.

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Capacity Software (HCS+T7F Version 5.3). HCS+ is developed and maintained as an implementation of the HCM procedures. HCS+ calculations assign a LOS along route segments with similar geometric and traffic characteristics.

The *Arterials Planning Level Analysis* routine in the HCS+ software was utilized to analyze SR 6 between Kedron Road and Thompson's Station's City Limits (Segments 1 and 2). This routine was chosen for these segments due to their urban nature, their low posted speed limit, and the presence of several traffic signals. The *Two-Lane Highway* or *Multilane Highway Operational Analysis* routines were utilized to analyze the remainder of the route (Segments 3 through 6). These highway routines were chosen for these remaining segments due to their more rural nature, higher posted speed limits, and fewer traffic signals. The segments are labeled in the **Conceptual Plan Sheets**. The *Arterials* and *Highway* routines have different inputs, including the existence of turn lanes and passing zones, and assign LOS differently. Therefore, the LOS are not consistent between Segments 2 and 3 because of the different HCS+ routines utilized. This is not an error and can be attributed to the HCS+ assigning different driver expectancies between the urban and more rural areas.

**TABLE 5.1 LOS TABLE**

LOS	Traffic Flow Conditions	Representative Photo
A	Free flow operations. Vehicles are almost completely unimpeded in their ability to maneuver with the traffic stream. The general level of physical and psychological comfort provided to the driver is high.	
B	Reasonable free flow operations. The ability to maneuver within the traffic stream is only slightly restricted and the general level of physical and psychological comfort provided to the driver is still high.	
C	Flow with speeds at or near free flow speeds. Freedom to maneuver within the traffic stream is noticeably restricted and lane changes require more vigilance on the part of the driver. The driver notices an increase in tension.	
D	Speeds decline with increasing traffic. Freedom to maneuver within the traffic stream is more noticeably limited. The driver experiences reduced physical and psychological comfort levels.	
E	At lower boundary, the facility is at capacity. Operations are volatile because there are virtually no gaps in the traffic stream. There is little room to maneuver. The driver experiences poor levels of physical and psychological comfort.	
F	Breakdowns in traffic flow. The number of vehicles entering the highway section exceed the capacity or ability of the highway to accommodate that number of vehicles. There is little room to maneuver. The driver experiences poor levels of physical and psychological comfort.	

**5.1.2 Volume to Capacity Ratio & Congestion Reduction**

Unlike LOS, which is a qualitative measure, the volume to capacity ratio (v/c) is a quantitative measure. The v/c ratio is reported to demonstrate the magnitude of congestion for the options included in this TPR. The v/c ratio demonstrates how much reserve capacity along a roadway segment is available, or how much the segment is overcapacity. A v/c ratio near or above “1” indicates a roadway experiences congestion.

**5.1.3 Average Travel Speed**

Average travel speed is calculated in the LOS analysis. Speed, or its reciprocal travel time, is an important measure of congestion and the quality of the traffic service provided to the motorist.

**5.1.4 Travel Time**

The travel time along a route can be calculated by dividing the distance of the route by the average travel speed. As discussed above, travel time is an important measure of the quality of the traffic service provided to the motorist. In addition to the travel speed improvements associated with reduced congestion, travel time demonstrates the time savings of shorter route options.

**5.2 NO BUILD OPTION**

The No Build Option provides no improvements and serves as a baseline option against which all other options are compared. For a description of the geometric conditions associated with the No Build Option, please refer to Section **4.3 Existing Transportation Conditions**. Because improvements are not being constructed, there is no cost associated with the No Build Option. All local officials contacted for this TPR along the route acknowledge a need for improvements and therefore do not support a No Build Option.

For the No Build Option, the HCS’s analysis calculates LOS ranging from A to F along SR 6 through the year 2014 and from B to F through the year 2034. The LOS calculations do not take into effect the diminished traffic operations caused by the four (4) school zones along the route. A summary of the LOS calculations for the No Build Option is provided in schematic form in **Figures 5.2.1** and **5.2.2** and in table form in **Table 5.2**. The LOS are reported for the years 2014 and 2034.

The analysis indicates that the existing one (1) travel lane in each direction is generally not adequate for the projected traffic volumes.

For the No Build Option in the year 2014, the volume to capacity ratio (v/c) of SR 6 is calculated to range from 0.40 to 1.02, with a weighted average of 0.69. In 2034, the v/c ranges from 0.57 to 1.58 with a weighted average of 0.91. The average was weighted based upon the length of each segment analyzed. A v/c ratio near or above “1” indicates a roadway experiences congestion. Therefore, the volume to capacity ratios reported indicates that the existing one (1) travel lane in each direction is generally not adequate for the projected volumes. A summary of

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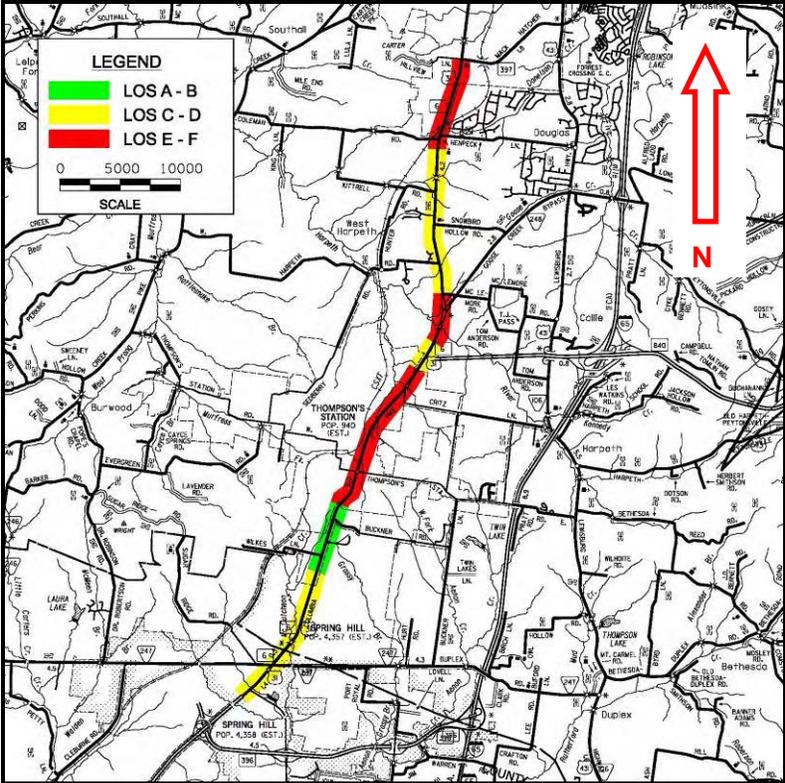
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the v/c calculations for the No Build Option is provided in table form in **Table 5.2**. The v/c are reported for the years 2014 and 2034.

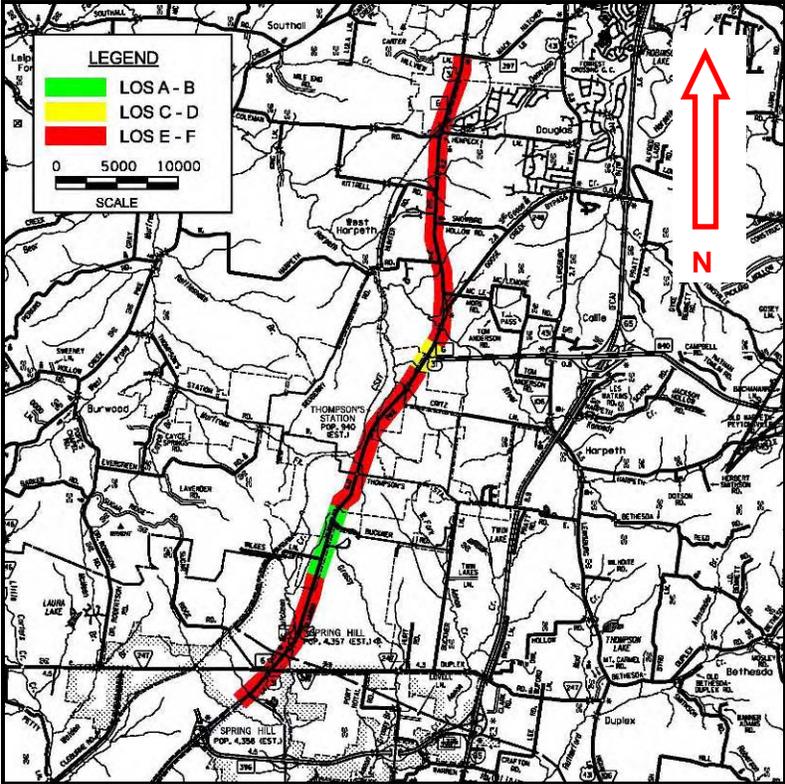
The posted speed limit ranges from 35 to 55 mph along SR 6 within the study area. For the No Build Option in the year 2014, travel speeds along the route are calculated by the HCS to range from 14.6 mph to 46.0 mph, with a weighted average of 27.0 mph. In 2034, the travel speed ranges from 3.5 mph to 46.0 mph with a weighted average of 15.8 mph. The average was weighted based upon the length of each segment analyzed. The weighted average of the speed limit along the route is 45.5 mph. The calculated average route speed is 59% and 35% of the posted speed limit in the years 2014 and 2034, respectively. The Nashville Area MPO's Congestion Management Process notes that if the average route speed is 70% or less of the free flow speed, the roadway is congested. Therefore, for the No Build Option, SR 6 is congested in both 2014 and 2034. A summary of the travel speed calculations for the No Build Option is provided in table form in **Table 5.2**. The travel speeds are reported for the years 2014 and 2034.

The existing SR 6 Corridor (No Build Option) between Kedron Road to the south and Mack Hatcher Parkway to the north is 10.9 miles in length. For the No Build Option in the year 2014, the travel time along SR 6 is calculated to be 24.1 minutes. In 2034, the travel time is calculated to be 41.3 minutes.

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**FIGURE 5.2.1 NO BUILD OPTION 2014 LOS**



**FIGURE 5.2.2 NO BUILD OPTION 2034 LOS**

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**TABLE 5.2 NO BUILD OPTION LOS TABLE**

ID	From		To		Dist. (mi)	Roadway Data			2014					2034						
	L.M.	Description	L.M.	Description		Posted Speed (mph)	# of Signals	Cross-Section Type	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)		
1	32.47	Kedron Road	33.31	County Line	0.84	35	3	3-Lane	22,400	D	0.92	14.6	3.5	36,700	F	1.50	3.5	14.4		
2A	0.00	County Line	1.30	Cemetery Road	1.30	45	2	2-Lane	25,000	C	1.02	26.4	3.0	36,700	F	1.58	11.4	6.8		
2B	1.30	Cemetery Road	2.17	Buckner Road	0.87	45		3-Lane	25,000	A	0.51	35.5	1.5	36,700	B	0.75	34.1	1.5		
2C	2.17	Buckner Road	2.49	Thompson's Station City Limits	0.32	45		2-Lane	25,000	A	0.54	35.4	0.5	36,700	B	0.79	33.8	0.6		
3	2.49	Thompson's Station City Limits	4.75	Between Critz Lane and SR-840	2.26	45	1	2-Lane	34,000	F	0.92	21.1	6.4	36,700	F	0.99	19.4	7.0		
4	4.75	Between Critz Lane and SR-840	5.55	Tollgate Road	0.80	45	1	5-Lane	34,000	C	0.52	46.0	1.0	36,700	C	0.57	46.0	1.0		
5A	5.55	Tollgate Road	6.60	near McLemore Road	1.05	45	0	2-Lane	24,000	E	0.65	29.5	2.1	27,600	E	0.74	27.1	2.3		
5B	6.60	near McLemore Road	8.67	near Coleman Road	2.07	55	0	2-Lane	15,000	D	0.40	44.7	2.8	18,300	E	0.49	42.9	2.9		
6	8.67	near Coleman Road	10.03	Mack Hatcher Parkway	1.36	40	1	2-Lane	20,800	E	0.56	24.5	3.3	32,200	F	0.87	17.2	4.7		
<b>Σ =</b>					<b>10.87</b>				<b>Avg= 0.69</b>					<b>Σ =</b>	<b>24.1</b>	<b>Avg= 0.91</b>			<b>Σ =</b>	<b>41.3</b>

Notes: Sections 1 & 2 analyzed with HCS+ Arterials Planning Analysis  
 Sections 3-6 analyzed with HCS+ Two Lane and Multi Lane Highway Analysis

Average Speed:	27.0	Average Speed:	15.8
Avg. Post. Spd.:	45.5	Avg. Post. Spd.:	45.5
% Spd vs Post.:	59%	% Spd vs Post.:	35%

**5.3 WIDEN ALONG THE EXISTING ALIGNMENT OPTION**

Widening SR 6 through Spring Hill’s CBD does not have the support of local officials due to how it would negatively impact:

- numerous religious properties
- historic properties
- commercial properties
- Impact their walkable community

This option will improve the existing route from two (2) travel lanes to four (4) travel lanes between Kedron Road and Mack Hatcher Parkway. A center two-way left turn lane (TWLTL) is desired along the majority of the route. This option is similar to the improvements listed in the Nashville Area MPO’s LRTP. The termini are altered slightly from the LRTP’s termini of Old Kedron Road to the south and Henpeck Lane to the north. The termini are altered for clarification to the south and to form a logical terminus at Mack Hatcher Parkway to the north. Additionally, the LRTP calls for a

five (5) lane cross section within the City of Spring Hill’s City Limits and a four (4) lane cross section outside of Spring Hill’s City Limits. As noted previously, a center TWLTL is desired where feasible along the majority of the route by local officials.

**TABLE 5.3.1 WIDEN ALONG THE EXISTING ALIGNMENT OPTION VS. LRTP IMPROVEMENTS**

<b>Feature</b>	<b>Widen Along the Existing Alignment Option</b>	<b>Improvements as listed in the LRTP (Project #'s 6001 and 6022)</b>	<b>Reason for Modification</b>
Northern Terminus	Mack Hatcher Parkway	Henpeck Lane	The LRTP’s northern terminus at Henpeck Lane is not logical. It would create a 1.25 mile long two (2) travel lane cross section between Henpeck Lane and Mack Hatcher Parkway.
Southern Terminus	Kedron Road	Old Kedron Road	The LRTP’s southern terminus of Old Kedron Road is likely a misprint. Old Kedron Road does not intersect SR 6. The existing four (4) travel lane cross section ends at Kedron Road, and is therefore a logical terminus.
Cross Section	Allow for flexibility in location of a TWLTL.	Notes five lanes inside Spring Hill’s City Limits and four lanes outside Spring Hill’s City Limits.	Modified to allow local stakeholders and the NEPA process to provide input on the location of a TWLTL.

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In addition to improving SR 6 from two (2) travel lanes to four (4) travel lanes, the following improvements are recommended to be incorporated into the Widen Along the Existing Alignment Option. These improvements were determined through coordination with local officials.

- Realign the following offset intersections with SR 6 to form traditional four (4) legged intersections:
  - SR 247 (Duplex Road and Beechcroft Road) located in Spring Hill
  - Coleman Road and Henpeck Lane located just south of Franklin
- Construct turn lane improvements at the following locations:
  - Campbell Station Road located in Spring Hill
  - Thompson's Station Road located in Thompson's Station
  - Mack Hatcher Parkway located in Franklin
- Signalize warranted intersections along SR 6
- Realign Critz Lane at its intersection with SR-6 located in Thompson's Station
- Improve sight distance along SR 6 at the bridge over the West Harpeth River located between SR 840 and the Goose Creek Bypass (SR 248). This can be accomplished by improving the shoulders on the bridge.
- Investigate a roundabout at the Goose Creek Bypass (SR 248) intersection with SR 6.
- Improve the grade and shoulders of the SR 6 Bridge over the CSX Corporation Railroad Tracks located just south of Franklin.

The Widen Along the Existing Alignment Option does not have the support of the City of Spring Hill due to the impact to their central business district (CBD). The existing R.O.W. within the CBD of Spring Hill is approximately sixty (60) feet wide. Improvements to SR 6 within the CBD will require impacts to numerous religious, historic, and commercial properties. Furthermore, the City wishes to revitalize their downtown and maintain their walkable community. They envision a future streetscape project that will maintain the existing three (3) lane cross section.

Example photographs of the development within Spring Hill's CBD are provided in **Figures 5.3.1** and **5.3.2**. A conceptual plan view of the CBD with a five (5) lane cross section is provided in **Figure 5.3.3**. The conceptual plan utilizes a five (5) lane cross section with twelve (12) foot wide lanes and five (5) foot wide sidewalks. This cross section is modeled after TDOT Standard Drawing RD01-TS-6A. This example cross section has no provisions for bicycle lanes and does not show the potential impacts of slope easements. The proposed R.O.W. is shown one (1) foot behind the sidewalks.

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**FIGURE 5.3.1 SR 6 APPROACHING MCLEMORE AVE./ DEPOT ST.**



**FIGURE 5.3.2 SR 6 APPROACHING SR 247**

Additionally, the Widen Along the Existing Alignment Option does not have the support of the Town of Thompson’s Station. A representative of the Town notes that future improvements along Interstate 65 may alleviate congestion along SR 6 within their town limits, and therefore eliminate the need to widen SR 6 to four (4) travel lanes within the town limits. Concern was expressed that widening SR 6 without improvements to Interstate 65 would increase traffic volumes through the town.

The existing R.O.W. outside of Spring Hill’s CBD is approximately sixty-six (66) feet wide, except where it expands at the SR 840 Interchange and Goose Creek Bypass. The narrow R.O.W. will create difficulties for improvements just north of the CBD of Spring Hill, where the land use is heavily developed commercial property, and wherever environmentally sensitive sites are located adjacent to the R.O.W.

The Widen Along the Existing Alignment Option is estimated to cost between \$90 and \$103 million in year 2014 dollars. The estimated cost was calculated to a planning level utilizing cost per mile data. The cost estimate summary is provided in **Table 5.3.2**. The cost estimate calculations are provided in the **Appendix**.

For the Widen Along the Existing Alignment Option, the HCS’s analysis calculates LOS ranging from A to D along SR 6 through the year 2034. The LOS calculations do not take into effect the diminished traffic operations caused by the four (4) school zones along the route. The LOS calculations utilize the cross section specified in the LRTP, which includes a five (5) lane cross section within Spring Hill’s City Limits and a four (4) lane cross section outside of Spring Hill’s City Limits. As noted previously, a center TWLTL is desired where feasible along the majority of the route by local officials. Due to the uncertainty of where a TWLTL is feasible or appropriate, the LRTP Cross Section was utilized in the calculations. A summary of the LOS calculations for the Widen Along the Existing Alignment Option is provided in schematic form in **Figures 5.3.4** and **5.3.5** and in table form in **Table 5.3.3**. The LOS are reported for the years 2014 and 2034.

For the Widen Along the Existing Alignment Option in the year 2014, the volume to capacity ratio (v/c) of SR 6 is calculated to range from 0.26 to 0.54, with a weighted average of 0.40. In 2034, the v/c ranges from 0.38 to 0.79 with a weighted average of 0.51. The average was weighted based upon the length of each segment analyzed. The volume to capacity ratios reported indicates that the proposed two (2) travel lanes in each direction are generally

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adequate for the projected volumes. A summary of the v/c calculations for the Widen Along the Existing Alignment Option is provided in table form in **Table 5.3.3**. The v/c are reported for the years 2014 and 2034.

The posted speed limit ranges from 35 to 55 mph along SR 6 within the study area. For the Widen Along the Existing Alignment Option in the year 2014, travel speeds along the route are calculated by the HCS to range from 17.7 mph to 54.5 mph, with a weighted average of 38.7 mph. In 2034, the travel speed ranges from 16.3 mph to 54.4 mph with a weighted average of 37.9 mph. The average was weighted based upon the length of each segment analyzed. The weighted average of the speed limit along the route is 45.5 mph. The calculated average route speed is 85% and 83% of the posted speed limit in the years 2014 and 2034, respectively. The Nashville Area MPO's Congestion Management Process notes that if the average route speed is 70% or less of the free flow speed, the roadway is congested. Therefore, for the Widen Along the Existing Alignment Option, SR 6 is not considered congested for both 2014 and 2034. A summary of the travel speed calculations for the Widen Along the Existing Alignment Option is provided in table form in **Table 5.3.3**. The travel speeds are reported for the years 2014 and 2034.

The existing SR 6 Corridor (Widen Along the Existing Alignment Option) between Kedron Road to the south and Mack Hatcher Parkway to the north is 10.9 miles in length. For the Widen along the Existing Alignment Option in the year 2014, the travel time along SR 6 is calculated to be 16.8 minutes. In 2034, the travel time is calculated to be 17.2 minutes.

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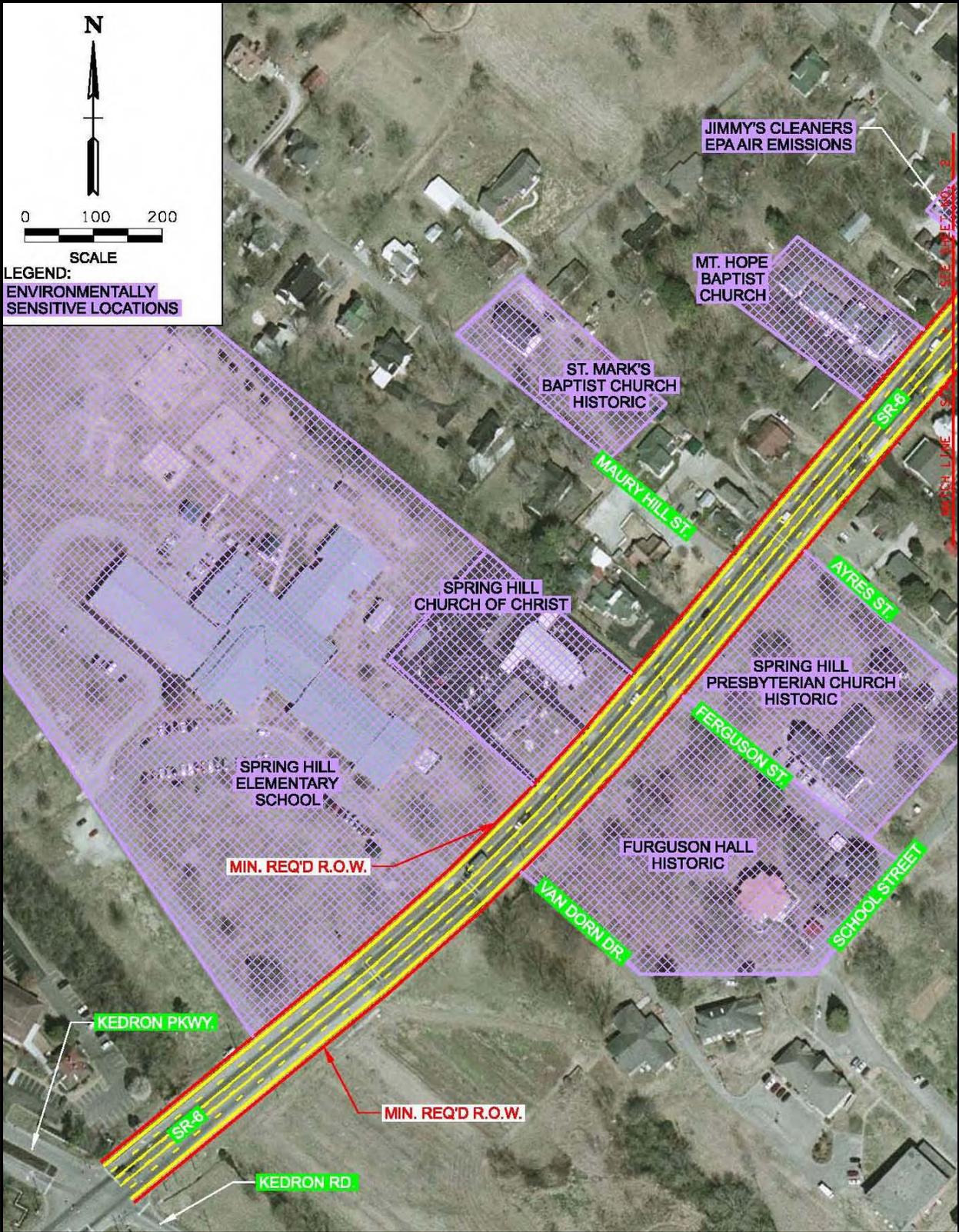
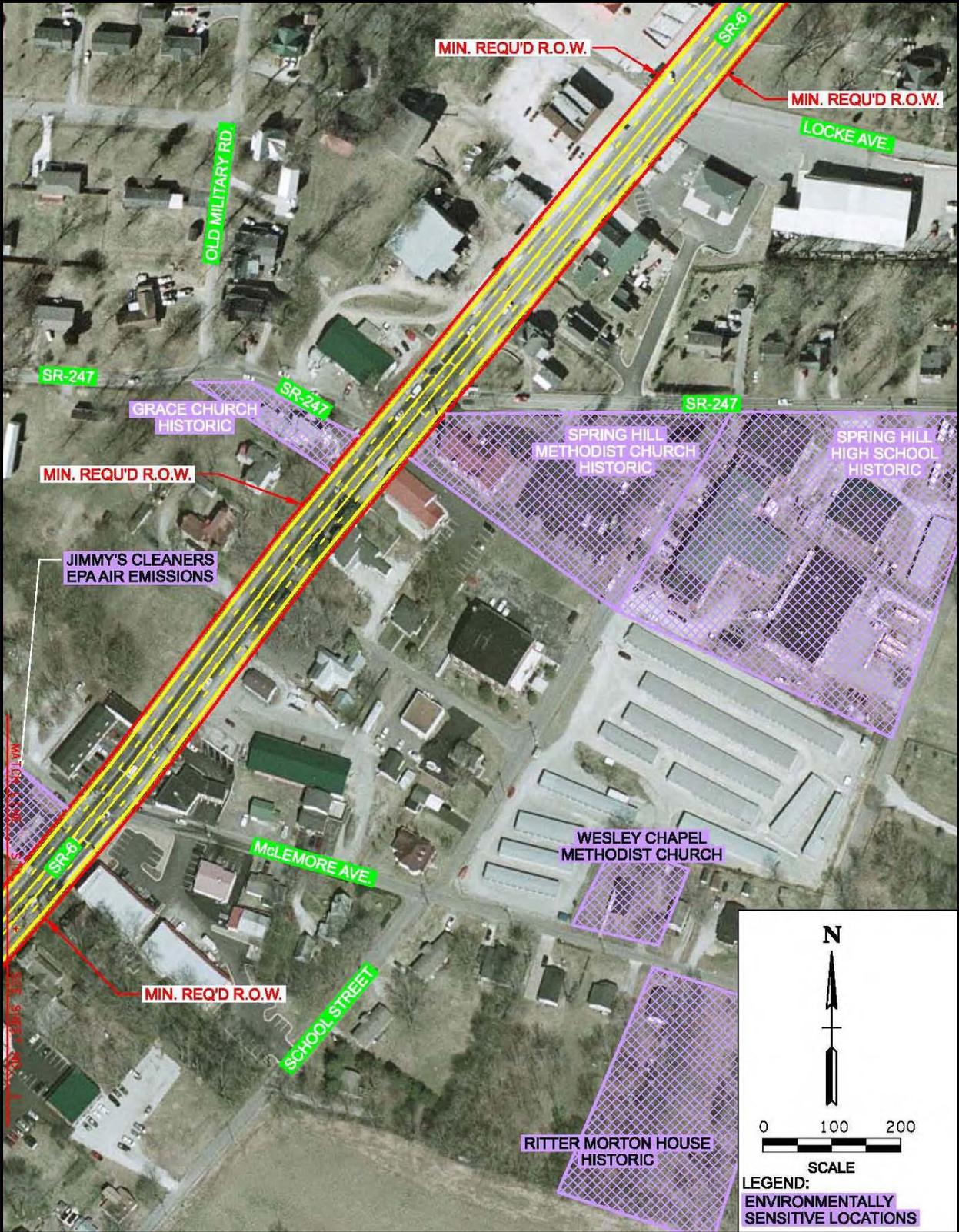


FIGURE 5.3.3 SPRING HILL CBD DETAIL (1 OF 2)

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**FIGURE 5.3.3 SPRING HILL CBD DETAIL (2 OF 2)**

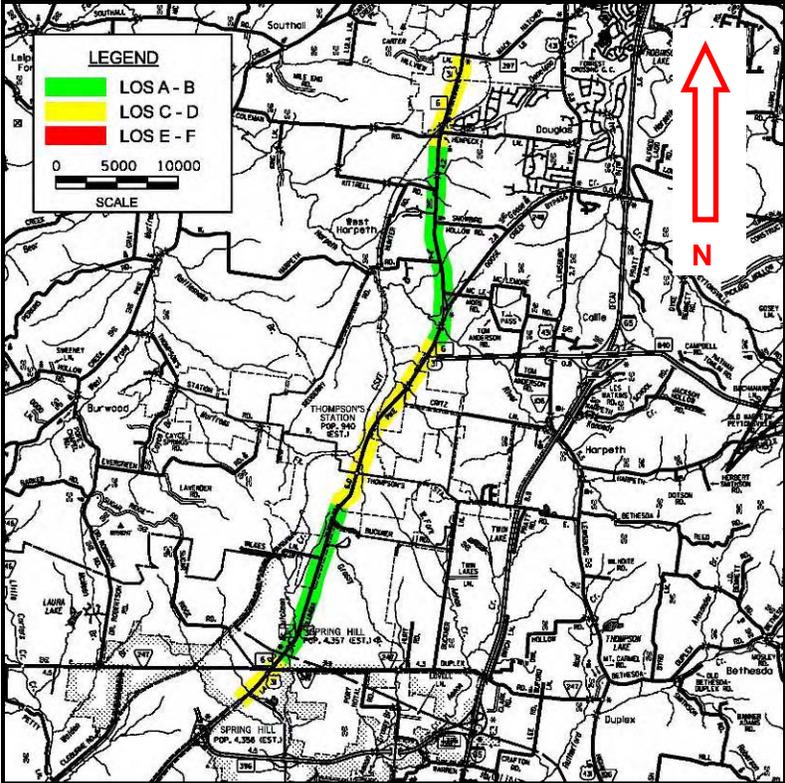
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**TABLE 5.3.2 WIDEN ALONG THE EXISTING ALIGNMENT COST ESTIMATE**

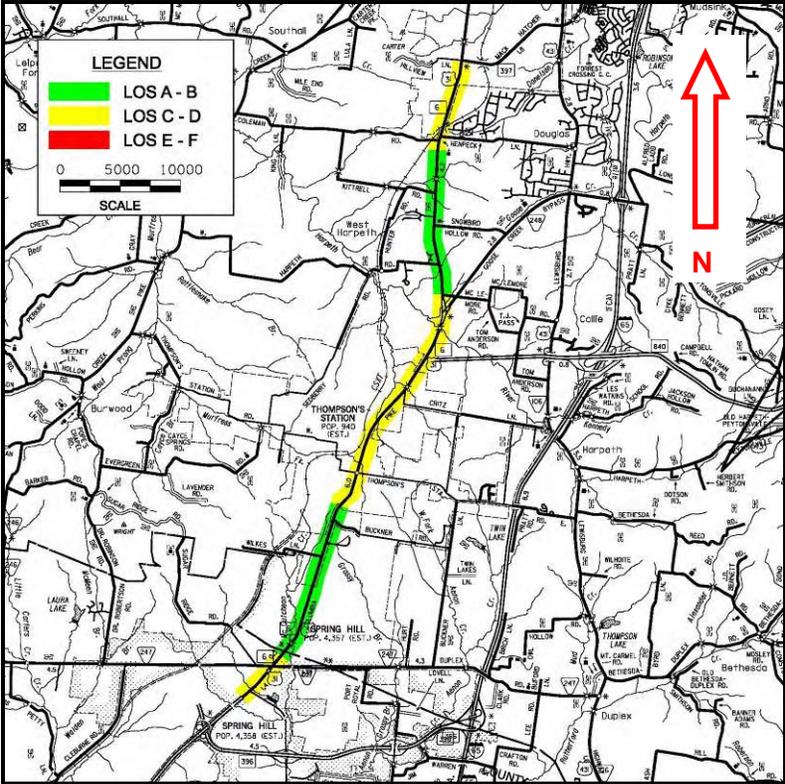
ID	Location/ Description	Existing Roadway Classification	Proposed Roadway Classification	Length of Const. (Miles)	Estimated Low Cost	Estimated High Cost
1	SR-6 from Kedron Rd. to Maury/Williamson County Line (L.M. 32.47 to 33.31)	3-Lane Urban Other Principal Arterial	4-Travel Lane Urban Other Principal Arterial	0.84	\$ 13,003,200	\$ 16,405,200
2	SR-6 from Maury/Williamson County Line to Thompson's Station City Limits (L.M. 0 to 2.49)	2-Lane Urban Other Principal Arterial	4 Travel-Lane Urban Other Principal Arterial	2.49	\$ 19,571,400	\$ 23,630,100
3	SR-6 from Thompson's Station City Limits to south of SR-840 (L.M. 2.5 to 4.75)	2-Lane Rural Minor Arterial	4 Travel-Lane Rural Minor Arterial	2.26	\$ 15,413,200	\$ 17,424,600
4	SR-6 from south of SR-840 to Tollgate Rd. (L.M. 4.76 to 5.55)	5-Lane Rural Minor Arterial	5-Lane Rural Minor Arterial	0.80	\$ -	\$ -
5	SR-6 from Tollgate Rd. to Nashville Urban Boundary (L.M. 5.56 to 8.67)	2-Lane Rural Minor Arterial	4 Travel-Lane Rural Minor Arterial	3.12	\$ 25,989,600	\$ 28,766,400
6	SR-6 from Nashville Urban Boundary to SR-397 (Mack Hatcher Pkwy.) (L.M. 8.68 to 10.03)	2-Lane Urban Other Principal Arterial	4 Travel-Lane Urban Other Principal Arterial	1.36	\$ 15,572,000	\$ 17,122,400
<b>Total</b>				<b>10.87</b>	<b>\$ 89,550,000</b>	<b>\$103,350,000</b>

Notes: Low estimate utilizes 4-lane rural cross-section, high estimate utilizes 5-lane urban cross-section.  
 Total route length is equal to the construction length of 10.9 miles.

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**FIGURE 5.3.4 WIDEN ALONG THE EXISTING ALIGNMENT OPTION 2014 LOS**



**FIGURE 5.3.5 WIDEN ALONG THE EXISTING ALIGNMENT OPTION 2034 LOS**

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**TABLE 5.3.3 WIDEN ALONG THE EXISTING ALIGNMENT OPTION LOS TABLE**

ID	From		To		Dist. (mi)	Roadway Data			2014					2034						
	L.M.	Description	L.M.	Description		Posted Speed (mph)	# of Signals	Cross-Section Type	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)		
1	32.47	Kedron Road	33.31	County Line	0.84	35	3	5-Lane	22,400	D	0.46	17.7	2.8	36,700	D	0.75	16.3	3.1		
2A	0.00	County Line	1.30	Cemetery Road	1.30	45	2	5-Lane	25,000	A	0.54	35.7	2.2	36,700	B	0.79	34.4	2.3		
2B	1.30	Cemetery Road	2.17	Buckner Road	0.87	45		5-Lane	25,000	A	0.26	36.9	1.4	36,700	A	0.38	36.4	1.4		
2C	2.17	Buckner Road	2.49	Thompson's Station City Limits	0.32	45		5-Lane	25,000	A	0.27	36.8	0.5	36,700	A	0.40	36.3	0.5		
3	2.49	Thompson's Station City Limits	4.75	Between Critz Lane and SR-840	2.26	45	1	4-Lane	34,000	C	0.52	44.4	3.1	36,700	C	0.57	44.4	3.1		
4	4.75	Between Critz Lane and SR-840	5.55	Tollgate Road	0.80	45	1	5-Lane	34,000	C	0.52	46.0	1.0	36,700	C	0.57	46.0	1.0		
5A	5.55	Tollgate Road	6.60	near McLemore Road	1.05	45	0	4-Lane	24,000	B	0.37	44.4	1.4	27,600	C	0.43	44.4	1.4		
5B	6.60	near McLemore Road	8.67	near Coleman Road	2.07	55	0	4-Lane	15,000	A	0.23	54.5	2.3	18,300	A	0.28	54.4	2.3		
6	8.67	near Coleman Road	10.03	Mack Hatcher Parkway	1.36	40	1	4-Lane	20,800	C	0.32	39.4	2.1	32,200	C	0.50	39.4	2.1		
<b>Σ =</b>					<b>10.87</b>				<b>Avg= 0.40</b>					<b>Σ =</b>	<b>16.8</b>	<b>Avg= 0.51</b>			<b>Σ =</b>	<b>17.2</b>

Notes: Sections 1 & 2 analyzed with HCS+ Arterials Planning Analysis  
Sections 3-6 analyzed with HCS+ Multi Lane Highway Analysis  
Proposed cross section type as described in the LRTP

Average Speed: 38.7      Average Speed: 37.9  
Avg. Post. Spd.: 45.5      Avg. Post. Spd.: 45.5  
% Spd vs Post.: 85%      % Spd vs Post.: 83%

## **6.0 ASSESSMENT OF OPTIONS**

### **6.1 TDOT'S SEVEN GUIDING PRINCIPLES**

The Tennessee Department of Transportation (TDOT) has adopted seven guiding principles against which all transportation projects are to be evaluated. These guiding principles address concerns for system management, mobility, economic growth, safety, community, environmental stewardship, and fiscal responsibility. These guiding principles are discussed in the following paragraphs as they relate to the options discussed **Section 5.0 Proposed Improvements**.

#### **6.1.1 Guiding Principle 1: Preserve and Manage the Existing Transportation System**

The Widen Along the Existing Alignment Option will reduce congestion and optimize service and operational efficiency along SR 6. It will improve the integration of the highway network in South Central Tennessee by providing an alternate route for Interstate 65 to serve sub-regional travel demand between Columbia, Spring Hill, Thompson's Station, and Franklin. Improvements along this route will preserve and manage the existing transportation system by providing a functional route with improved safety.

#### **6.1.2 Guiding Principle 2: Move a Growing, Diverse, and Active Population**

The Widen Along the Existing Alignment Option will reduce congestion and optimize service and operational efficiency along SR 6. SR 6 is utilized by a diverse constituency, including commuters, industrial, agricultural, and commercial interests. Within the study limits of this TPR, SR 6 runs parallel to Interstate 65 and serves sub-regional travel demand between Columbia, Spring Hill, Thompson's Station, and Franklin. When traffic incidents occur on Interstate 65, SR 6 is a primary detour route. This interrelation with Interstate 65 supports transportation technology advances through the use of Intelligent Transportation Systems (ITS) by providing an alternate route to Interstate 65.

#### **6.1.3 Guiding Principle 3: Support the State's Economy**

Improvements to SR 6 are needed to meet the changing social demands of the area. The population of the study area has seen extraordinary growth since 1990. There are several major regional employers located within or near the study limits of this TPR, including the newly relocated North American Headquarters of Nissan in the Cool Springs area of Franklin. This formerly rural area has seen extensive changes in population and land use in recent years and the existing transportation system does not meet the demand.

#### **6.1.4 Guiding Principle 4: Maximize Safety and Security**

Improvements to SR 6 are needed to improve safety by addressing existing roadway deficiencies along the route. The segment of SR 6 through the City of Spring Hill's CBD has a crash rate that is approximately 1.5 times higher than the statewide rate for similar roadways. High crash rates are also reported between Campbell Station Parkway and Thompson's Station Road, at the Goose Creek Bypass Intersection, and at the Mack Hatcher Parkway Intersection. The crash data shows that 61% of the crashes along SR 6 are rear end crashes. This may

indicate congestion as a cause of many crashes due to stop and go traffic. Improving traffic flow through the corridor by providing additional travel lanes may therefore improve the safety of the route. Additionally, several locations noted by local officials should be improved while widening SR 6. These locations are discussed in Section **5.3 Widen Along the Existing Alignment Option** and include realigning offset intersections, realigning skewed intersections, and improving sight distance at specific locations. Each of these measures should improve safety along SR 6.

#### **6.1.5 Guiding Principle 5: Build Partnerships for Livable Communities**

Throughout the development of this TPR, TDOT staff has coordinated with local leaders and the Nashville Area MPO to identify their concerns and objectives. Through this coordination it was determined that the improvements listed in the LRTP, which including widening SR 6 through the CBD of Spring Hill and the Town Limits of Thompson's Station, are not desired by local officials. Additional options to the improvements listed in the MPO's LRTP were therefore investigated to address local stakeholder's concerns. These additional options are included in the **Appendix**. Unfortunately, these additional options, in their current form, do not meet the purpose and need for improvements. Additional study is needed to determine a feasible option with limited impacts to environmentally sensitive sites that addresses local stakeholder's concerns. The public involvement process will continue as mandated by the provisions of the National Environmental Policy Act (NEPA).

#### **6.1.6 Guiding Principle 6: Promote Stewardship of the Environment**

Several environmentally sensitive locations and community resources within the study area should be avoided, if possible. Those that cannot be avoided should have their impact mitigated. These areas include communities, churches, cemeteries, environmental sites (including landfills), historic places, parks, schools, major streams, utilities, and railroads. The locations are discussed in Section **4.2 Environmental Sites**. Additional Options to the improvements listed in the MPO's LRTP were investigated to address local stakeholder's concerns. Additional study is needed to determine a feasible option with limited impacts to environmentally sensitive sites that addresses local stakeholder's concerns.

#### **6.1.7 Guiding Principle 7: Promote Financial Responsibility**

The need for improvements along SR 6 was determined through Tennessee's statewide long-range multi-modal transportation planning process. This process includes extensive interaction with citizens, local government officials, and the Metropolitan Planning Organizations and the Rural Planning Organizations.

This TPR was initiated by request of the Nashville Area MPO on behalf of Williamson County. The need for improvements was developed through coordination with local agencies, including the Nashville Area MPO, Williamson County, the City of Spring Hill, the Town of Thompson's Station, and the City of Franklin in concurrence with the MPO's planning process. The planning process has demonstrated a need for improvements along this corridor. Preliminary construction cost estimates were prepared. Improvements along the corridor will be evaluated for cost, among other criteria, during the NEPA process. The costs are discussed in Sections **5.0 Proposed Improvements** and **6.2 Summary of Proposed Options**.

## **6.2 SUMMARY OF PROPOSED OPTIONS**

Criteria for choosing an improvement option should incorporate the purpose and need discussed in Section **3.0 Purpose and Need for Improvements** and should address TDOT's Seven Guiding Principles against which all transportation projects are to be evaluated. A summary of the No Build Option and Widen Along the Existing Alignment Option is provided in **Table 6.2. Summary of Proposed Options**. Key measures of effectiveness (MOE) for each option are listed. For a detailed discussion of each option, please refer to Section **5.0 Proposed Improvements**. The cost for corridor wide improvements is estimated to range between \$90 and \$103 million in year 2014 dollars.

**TABLE 6.2 SUMMARY OF PROPOSED OPTIONS**

<b>Criteria</b>	<b>No Build</b>	<b>Widen Along Existing Alignment</b>
<b>TDOT's Seven Guiding Principles</b>		
Preserve and Manage the Existing Transportation System	No	Yes
Move a Growing , Diverse, and Active Population	No	Yes
Support the State's Economy	No	Yes
Maximize Safety and Security	No	Yes
Build Partnerships for Livable Communities	No	No <sup>1</sup>
Promote Stewardship of the Environment	No	No <sup>1</sup>
Promote Financial Responsibility	No	Yes
<b>Purpose and Need Criteria</b>		
Improve Regional Mobility	No	Yes
Reduce Congestion	No	Yes
Meet Changing Social Demands	No	Yes
Improve Safety	No	Yes
<b>Additional Criteria</b>		
Length of route (miles)	10.9	10.9
Low estimated cost of improvements (millions) - year 2014 dollars	\$ -	\$ 90
High estimated cost of improvements (millions) - year 2014 dollars	\$ -	\$ 103
Year 2034 LOS range	B to F	A to D
Year 2034 average v/c ratio	0.91	0.51
Year 2034 average v/c ratio improvement or congestion reduction (%)	n/a	78%
Year 2034 average travel speed (mph)	15.8	37.9
Year 2034 travel time (minutes)	41.3	17.2
Year 2034 travel time (minutes) reduction (%)	n/a	58%
Is the route considered congested in 2034?	Yes	No

1. Throughout the development of this TPR, TDOT staff has coordinated with local leaders and the Nashville Area MPO to identify their concerns and objectives. Through this coordination it was determined that the improvements listed in the LRTP are not desired by local officials. Additional study is needed to determine a feasible option with limited impacts to environmentally sensitive sites that addresses local stakeholder’s concerns.

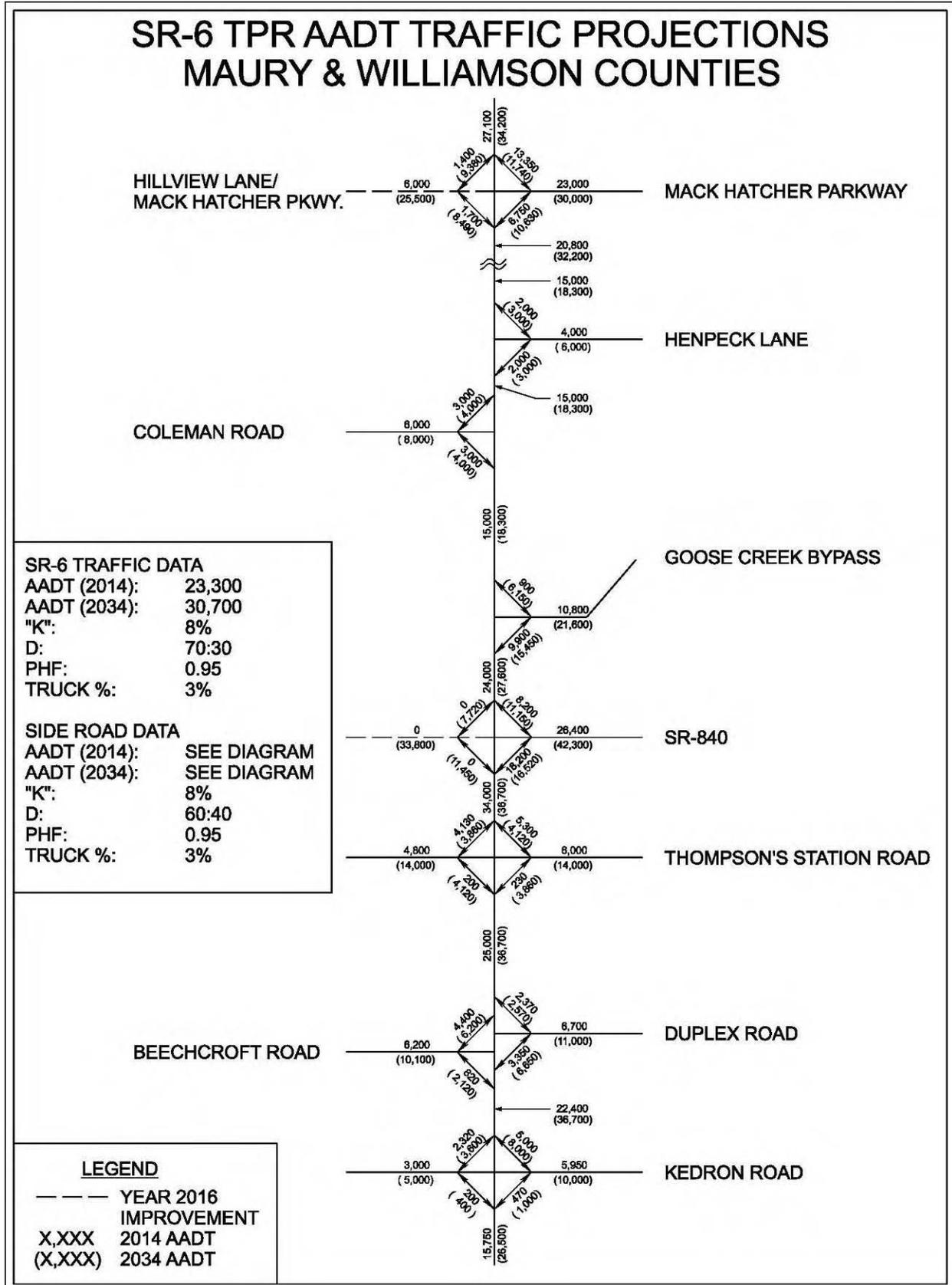
**Checklist of Determinants for Location Study**

**Location: SR 6, Maury and Williamson Counties**

If preliminary field reviews indicate the presence of any of the following facilities or ESE categories, place an "X" in the blank opposite the item. Where more than one alternate is to be considered, place its letter designation in the blank.

- 1. Agricultural land usage.....X
- 2. Airport (existing or proposed).....
- 3. Commercial area, shopping center.....X
- 4. Floodplains.....
- 5. Forested Land.....X
- 6. Historical, archaeological, cultural, or natural landmark  
or cemeteries.....X
- 7. Industrial park, factory.....
- 8. Institutional usage's
  - a. School or other educational institution.....X
  - b. Church or other religious institution.....X
  - c. Hospital or other medical facility.....
  - d. Public building, e.g., fire station.....X
  - e. Defense Installation.....
- 9. Recreational Usage's
  - a. Park or recreational area, State Natural Area.....X
  - b. Wildlife refuge or wildlife management area.....
- 10. Residential Establishment.....X
- 11. Urban area, town, city or community.....X  
Title 6, low income/minority community.....
- 12. Waterway, lake, pond, river, stream, spring, wetland.....X  
Permit required:
  - Coast Guard.....
  - Section 404.....X
  - Section 10.....
  - TVA Section 26a review.....X
  - NPDES.....X
  - Aquatic Resource Alteration Permit.....X
  - Class V Injection Wells.....
- 13. Location coordinated with local officials.....X
- 14. Railroad Crossings.....
- 15. Hazardous Material Site.....  
Underground Storage Tanks – U.S.T.).....X
- 16. Other.....

Traffic Schematic



**Tennessee Department of Transportation**  
 Design Criteria for Location and Design Phase

<b>Route:</b>	SR 6	<b>Option:</b>	N/A
<b>Section:</b>	1, L.M. 32.47 to L.M. 33.31	<b>Region:</b>	3
<b>County:</b>	Maury	<b>Project #</b>	

**Location**

<b>From:</b>	Kedron Road
<b>To:</b>	Williamson County Line

<b>Parameter</b>	<b>Criteria</b>
2014 AADT	22,400
2034 AADT	36,700
Percent Trucks (DHV)	3%
DHV (8% AADT 2034)	2,940
Functional Classification	Urban Other Principal Arterial
Minimum Design Speed	40 mph
Access Control	N/A
Minimum Radius	565 ft.
Maximum Grade	7%
Minimum Stopping Sight Distance	305 ft.
Surface Width	To be determined in the NEPA Process
Number of Lanes	To be determined in the NEPA Process – between three and five total lanes.
Usable Shoulder Width	To be determined in the NEPA Process – dependent upon rural or urban cross section.
Median Width	To be determined in the NEPA Process – dependent upon utilization of a center two-way left turn lane.
Minimum R.O.W.	To be determined in the NEPA Process – dependent upon cross section selection
Signalization	Yes

**Tennessee Department of Transportation**  
 Design Criteria for Location and Design Phase

<b>Route:</b>	SR 6	<b>Option:</b>	N/A
<b>Section:</b>	2, L.M. 0 to 2.49	<b>Region:</b>	3
<b>County:</b>	Williamson	<b>Project #</b>	

**Location**

<b>From:</b>	Maury County Line
<b>To:</b>	Thompson's Station City Limits

<b>Parameter</b>	<b>Criteria</b>
2014 AADT	22,400
2034 AADT	36,700
Percent Trucks (DHV)	3%
DHV (8% AADT 2034)	2,940
Functional Classification	Urban Other Principal Arterial
Minimum Design Speed	45 mph/50 mph To be determined in the NEPA Process – dependent upon rural or urban cross section.
Access Control	N/A
Minimum Radius	730 ft./930 ft.
Maximum Grade	6%
Minimum Stopping Sight Distance	360 ft./425 ft.
Surface Width	To be determined in the NEPA Process
Number of Lanes	To be determined in the NEPA Process – between three and five total lanes.
Usable Shoulder Width	To be determined in the NEPA Process – dependent upon rural or urban cross section.
Median Width	To be determined in the NEPA Process – dependent upon utilization of a center two-way left turn lane.
Minimum R.O.W.	To be determined in the NEPA Process – dependent upon cross section selection
Signalization	Yes

**Tennessee Department of Transportation**  
 Design Criteria for Location and Design Phase

<b>Route:</b>	SR 6	<b>Option:</b>	N/A
<b>Section:</b>	3, L.M. 2.5 to L.M. 4.75	<b>Region:</b>	3
<b>County:</b>	Williamson	<b>Project #</b>	

**Location**

<b>From:</b>	Thompson's Station City Limits
<b>To:</b>	South of SR 840

<b>Parameter</b>	<b>Criteria</b>
2014 AADT	34,000
2034 AADT	36,700
Percent Trucks (DHV)	3%
DHV (8% AADT 2034)	2,940
Functional Classification	Rural Minor Arterial
Minimum Design Speed	45 mph/60 mph To be determined in the NEPA Process – dependent upon rural or urban cross section.
Access Control	N/A
Minimum Radius	660 ft/1340 ft.
Maximum Grade	5%/4%
Minimum Stopping Sight Distance	360 ft./570 ft.
Surface Width	To be determined in the NEPA Process
Number of Lanes	To be determined in the NEPA Process – between three and five total lanes.
Usable Shoulder Width	To be determined in the NEPA Process – dependent upon rural or urban cross section.
Median Width	To be determined in the NEPA Process – dependent upon utilization of a center two-way left turn lane.
Minimum R.O.W.	To be determined in the NEPA Process – dependent upon cross section selection
Signalization	Yes

**Tennessee Department of Transportation**  
 Design Criteria for Location and Design Phase

<b>Route:</b>	SR 6	<b>Option:</b>	N/A
<b>Section:</b>	4, L.M. 4.76 to L.M. 5.55	<b>Region:</b>	3
<b>County:</b>	Williamson	<b>Project #</b>	

**Location**

<b>From:</b>	South of SR 840
<b>To:</b>	Tollgate Road

<b>Parameter</b>	<b>Criteria</b>
2014 AADT	34,000
2034 AADT	36,700
Percent Trucks (DHV)	3%
DHV (8% AADT 2034)	2,940
Functional Classification	Rural Minor Arterial
Minimum Design Speed	60 mph Estimated – utilize existing
Access Control	N/A
Minimum Radius	1340 ft.
Maximum Grade	4%
Minimum Stopping Sight Distance	570 ft.
Surface Width	Varies – utilize existing
Number of Lanes	Four travel lanes – utilize existing
Usable Shoulder Width	Varies – utilize existing
Median Width	Varies – utilize existing
Minimum R.O.W.	Varies – utilize existing
Signalization	Yes

Note: No improvements needed in this section

**Tennessee Department of Transportation**  
 Design Criteria for Location and Design Phase

<b>Route:</b>	SR 6	<b>Option:</b>	N/A
<b>Section:</b>	5, L.M. 5.56 to L.M. 8.67	<b>Region:</b>	3
<b>County:</b>	Williamson	<b>Project #</b>	

**Location**

<b>From:</b>	Tollgate Road
<b>To:</b>	Nashville Urban Boundary

<b>Parameter</b>	<b>Criteria</b>
2014 AADT	24,000
2034 AADT	27,600
Percent Trucks (DHV)	3%
DHV (8% AADT 2034)	2,210
Functional Classification	Rural Minor Arterial
Minimum Design Speed	45 mph/60 mph To be determined in the NEPA Process – dependent upon rural or urban cross section.
Access Control	N/A
Minimum Radius	660 ft/1340 ft.
Maximum Grade	5%/4%
Minimum Stopping Sight Distance	360 ft./570 ft.
Surface Width	To be determined in the NEPA Process
Number of Lanes	Four travel lanes
Usable Shoulder Width	To be determined in the NEPA Process – dependent upon rural or urban cross section.
Median Width	To be determined in the NEPA Process – dependent upon utilization of a center two-way left turn lane.
Minimum R.O.W.	To be determined in the NEPA Process – dependent upon cross section selection
Signalization	N/A

**Tennessee Department of Transportation**  
 Design Criteria for Location and Design Phase

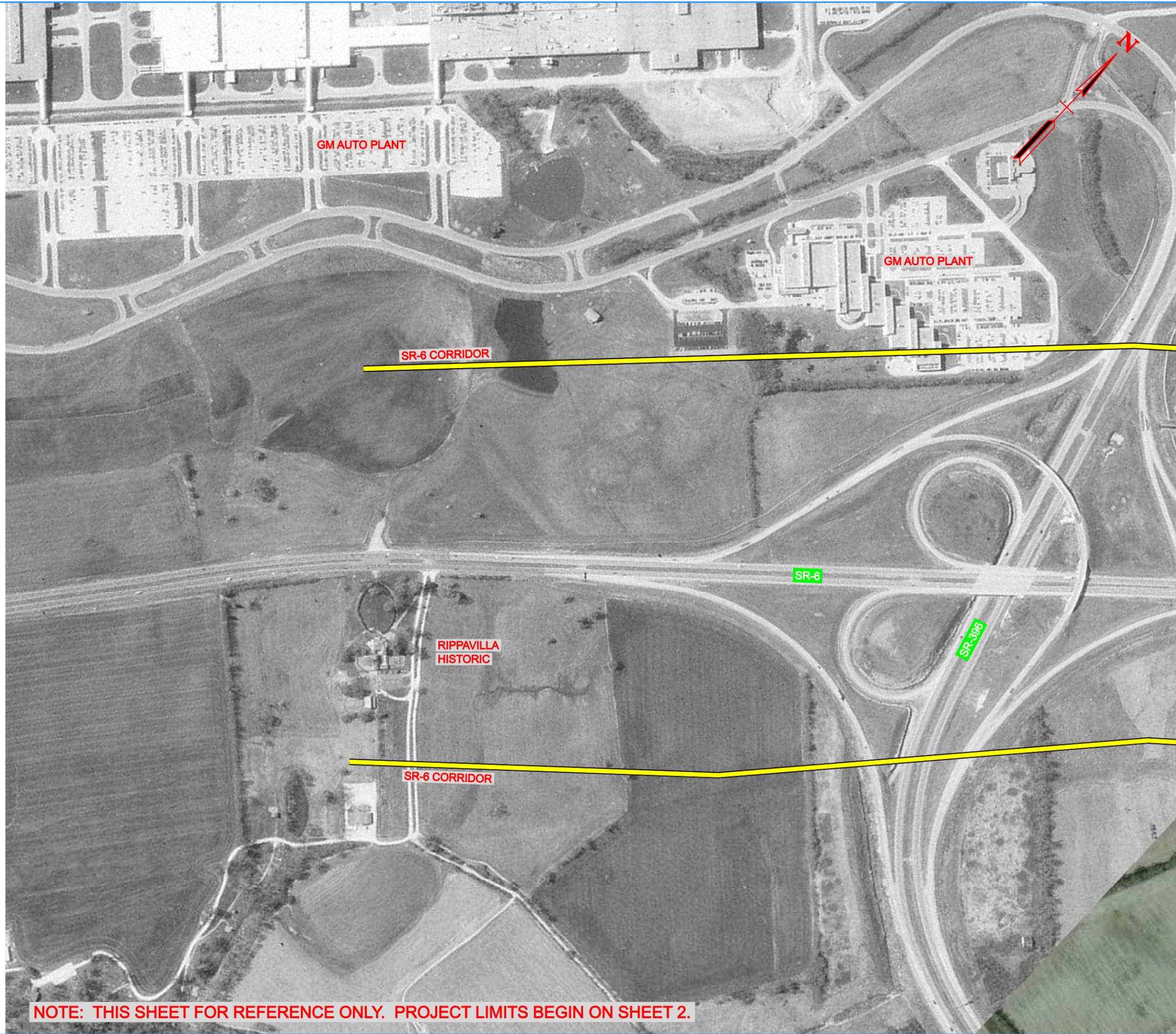
<b>Route:</b>	SR 6	<b>Option:</b>	N/A
<b>Section:</b>	6, L.M. 8.68 to L.M. 10.03	<b>Region:</b>	3
<b>County:</b>	Williamson	<b>Project #</b>	

**Location**

<b>From:</b>	Nashville Urban Boundary
<b>To:</b>	Mack Hatcher Parkway

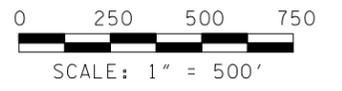
<b>Parameter</b>	<b>Criteria</b>
2014 AADT	20,800
2034 AADT	32,200
Percent Trucks (DHV)	3%
DHV (8% AADT 2034)	2,580
Functional Classification	Urban Other Principal Arterial
Minimum Design Speed	45 mph
Access Control	N/A
Minimum Radius	730 ft.
Maximum Grade	6%
Minimum Stopping Sight Distance	360 ft.
Surface Width	To be determined in the NEPA Process
Number of Lanes	Four travel lanes
Usable Shoulder Width	To be determined in the NEPA Process – dependent upon rural or urban cross section.
Median Width	To be determined in the NEPA Process – dependent upon utilization of a center two-way left turn lane.
Minimum R.O.W.	To be determined in the NEPA Process – dependent upon cross section selection
Signalization	Yes

TYPE	YEAR	PROJECT NO.	SHEET NO.
CONCEPT.	08		1



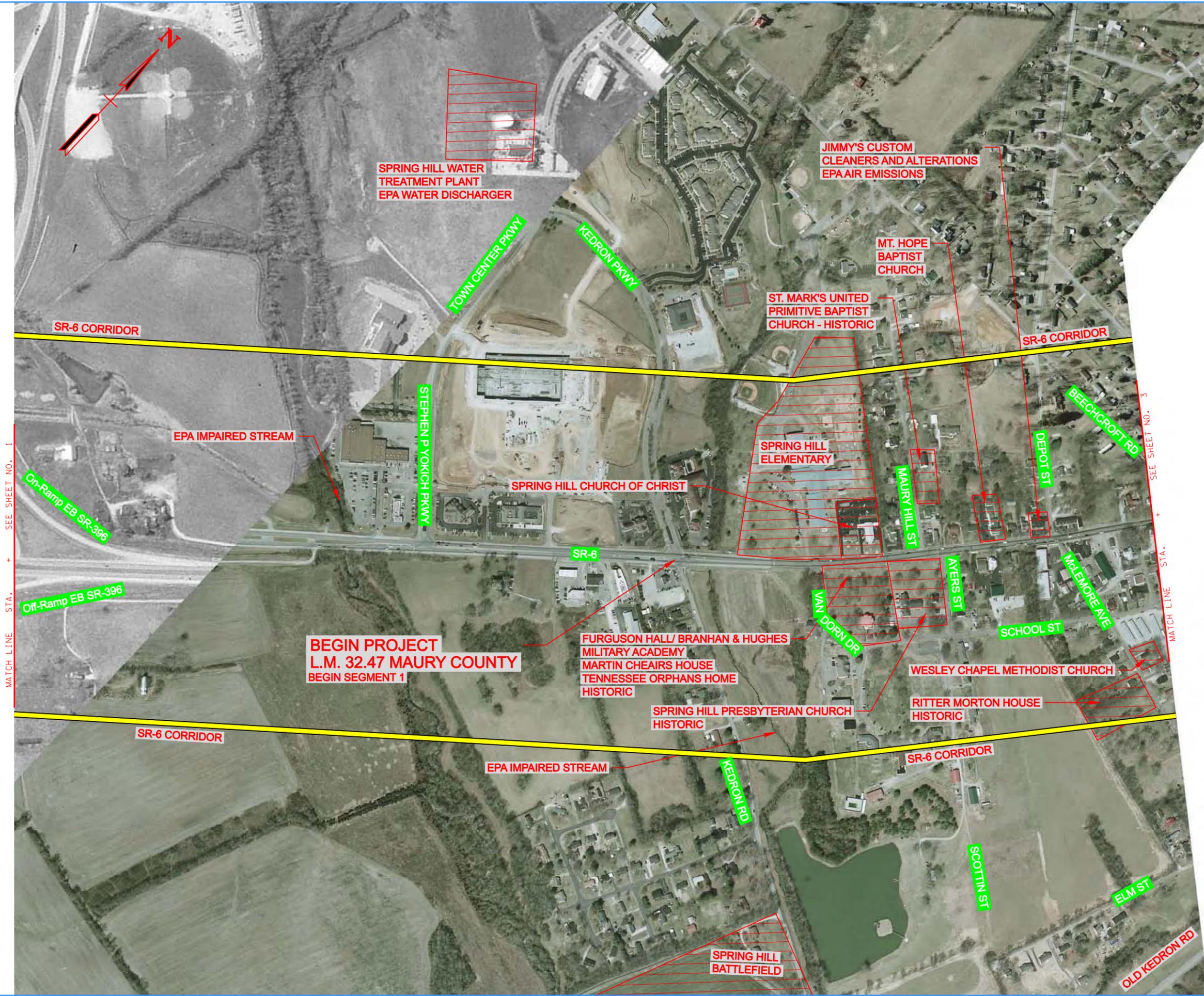
**LEGEND**

- STUDY CORRIDOR
- ENVIRONMENTAL SITES
- PROPERTY LINES



**NOTE: THIS SHEET FOR REFERENCE ONLY. PROJECT LIMITS BEGIN ON SHEET 2.**

TYPE	YEAR	PROJECT NO.	SHEET NO.
CONCEPT	08		2

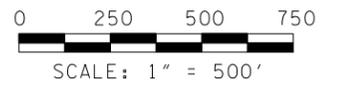


MATCH LINE STA. + SEE SHEET NO. 1

MATCH LINE STA. + SEE SHEET NO. 3

**LEGEND**

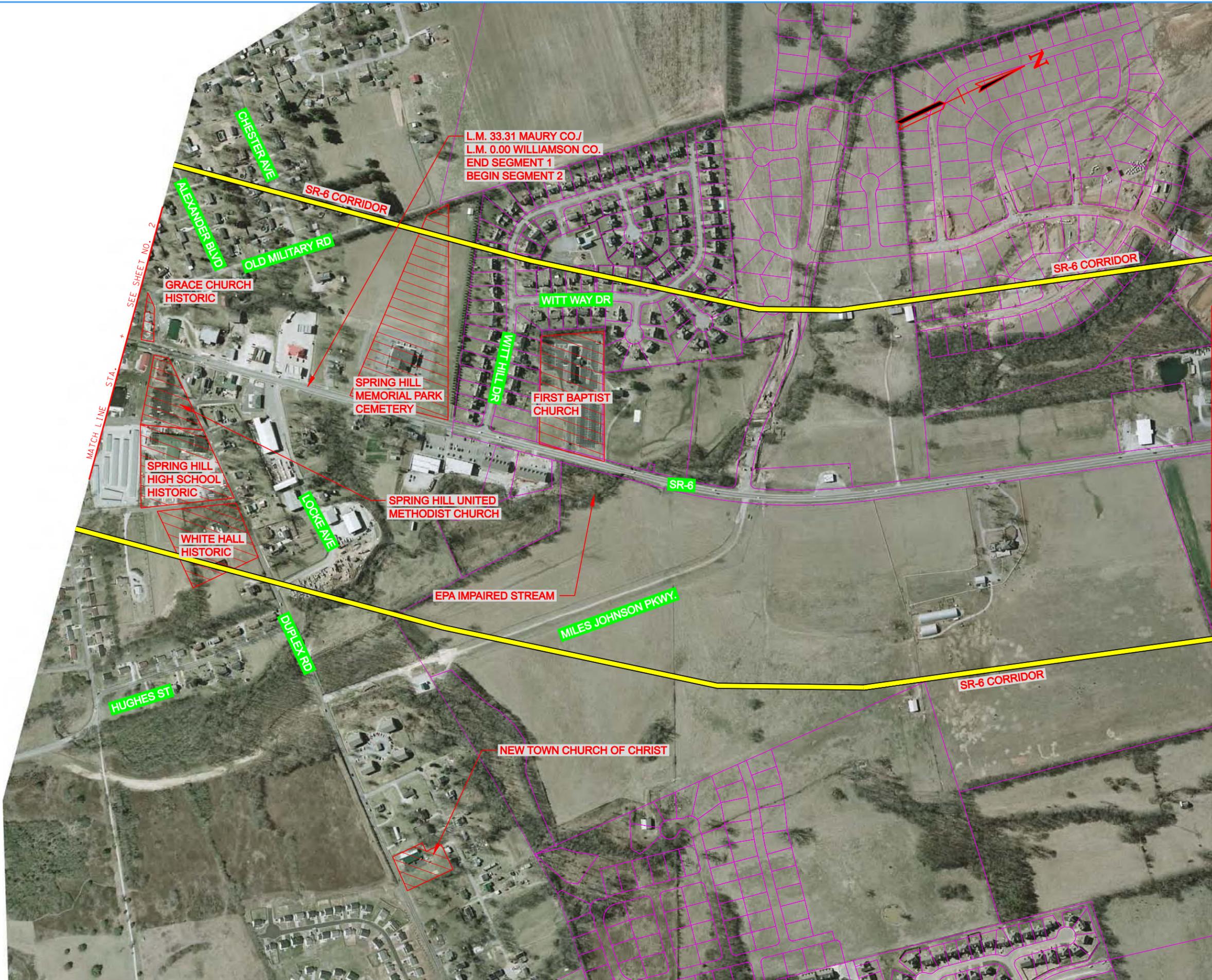
- STUDY CORRIDOR
- ENVIRONMENTAL SITES
- PROPERTY LINES



STATE OF TENNESSEE  
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CONCEPTUAL  
 LAYOUT

TYPE	YEAR	PROJECT NO.	SHEET NO.
CONCEPT.	08		3

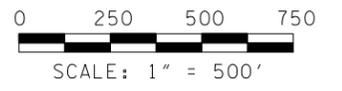


MATCH LINE STA. + SEE SHEET NO. 2

MATCH LINE STA. + SEE SHEET NO. 4

**LEGEND**

- STUDY CORRIDOR
- ENVIRONMENTAL SITES
- PROPERTY LINES

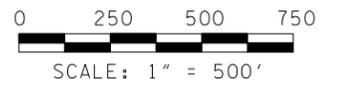


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CONCEPT	08		4



**LEGEND**

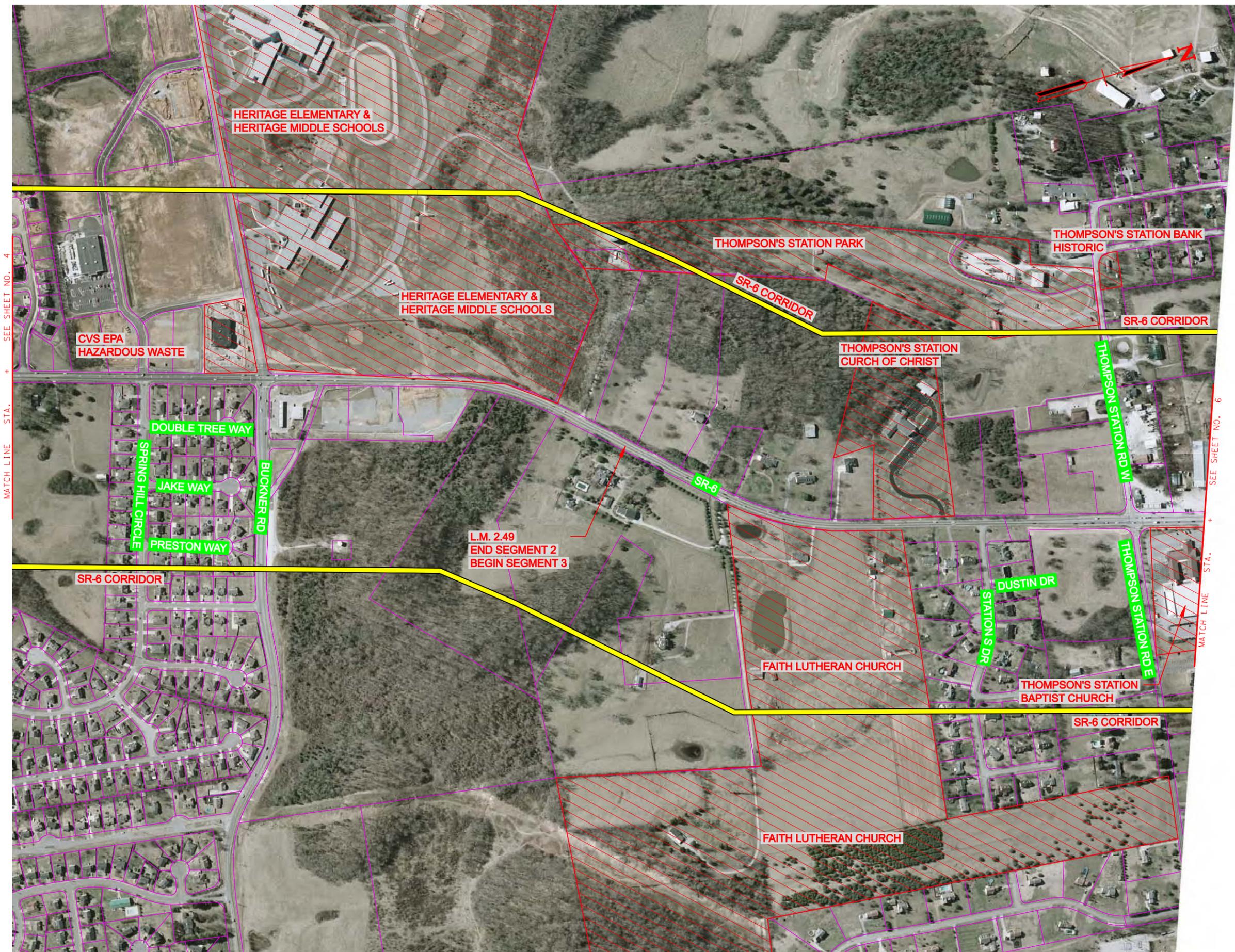
- STUDY CORRIDOR
- ENVIRONMENTAL SITES
- PROPERTY LINES



STATE OF TENNESSEE  
 DEPARTMENT OF TRANSPORTATION

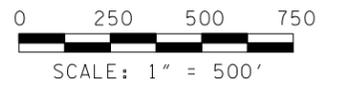
**CONCEPTUAL LAYOUT**

TYPE	YEAR	PROJECT NO.	SHEET NO.
CONCEPT.	08		5



**LEGEND**

- STUDY CORRIDOR
- ENVIRONMENTAL SITES
- PROPERTY LINES

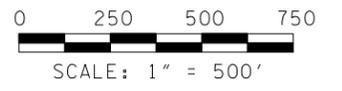


TYPE	YEAR	PROJECT NO.	SHEET NO.
CONCEPT.	08		6



**LEGEND**

- STUDY CORRIDOR
- ENVIRONMENTAL SITES
- PROPERTY LINES

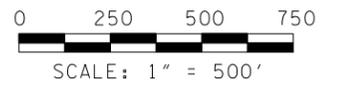


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CONCEPT.	08		7



**LEGEND**

-  STUDY CORRIDOR
-  ENVIRONMENTAL SITES
-  PROPERTY LINES

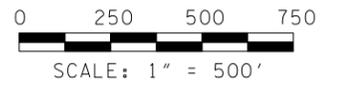


TYPE	YEAR	PROJECT NO.	SHEET NO.
CONCEPT.	08		8



**LEGEND**

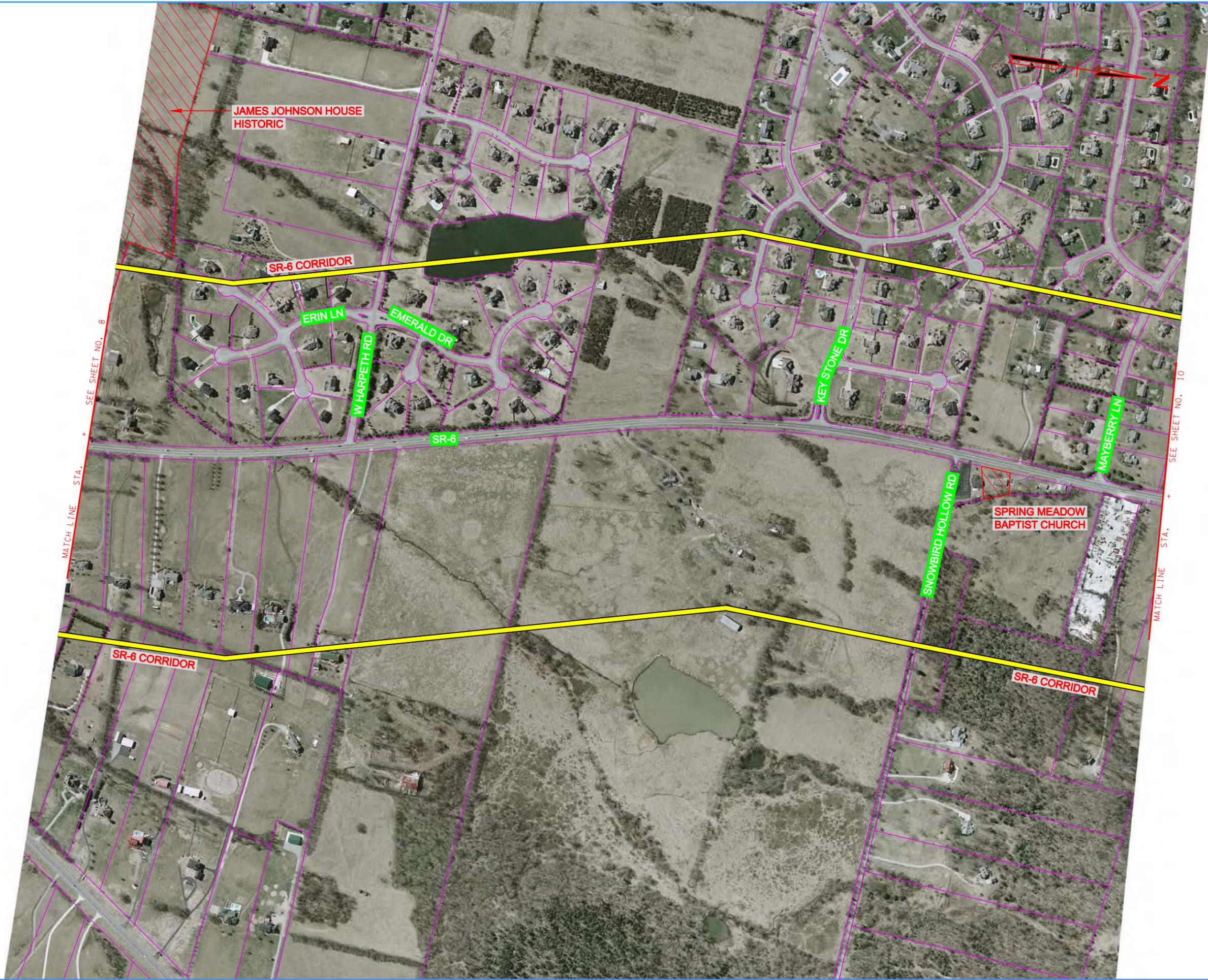
- STUDY CORRIDOR
- ENVIRONMENTAL SITES
- PROPERTY LINES



STATE OF TENNESSEE  
 DEPARTMENT OF TRANSPORTATION

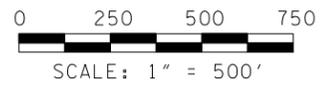
**CONCEPTUAL LAYOUT**

TYPE	YEAR	PROJECT NO.	SHEET NO.
CONCEPT.	08		9



**LEGEND**

-  STUDY CORRIDOR
-  ENVIRONMENTAL SITES
-  PROPERTY LINES

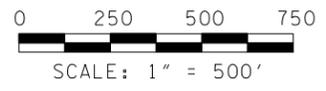


TYPE	YEAR	PROJECT NO.	SHEET NO.
CONCEPT.	08		10



**LEGEND**

-  STUDY CORRIDOR
-  ENVIRONMENTAL SITES
-  PROPERTY LINES

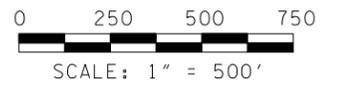


TYPE	YEAR	PROJECT NO.	SHEET NO.
CONCEPT.	08		11



**LEGEND**

- STUDY CORRIDOR
- ENVIRONMENTAL SITES
- PROPERTY LINES



TYPE	YEAR	PROJECT NO.	SHEET NO.
CONCEPT.	08		12



MATCH LINE STA. + SEE SHEET NO. 11

**LEGEND**

- STUDY CORRIDOR
- ENVIRONMENTAL SITES
- PROPERTY LINES

0 250 500 750  
SCALE: 1" = 500'

## **APPENDIX**

### **CORRESPONDENCE**

### **OPTIONS REQUIRING ADDITIONAL STUDY**

### **COST ESTIMATES**

- Cost calculation summaries
- Cost per mile calculations
- Construction and engineering cost per mile calculations
- Construction item cost per mile calculations
- Structures calculations
- Utility calculations
- R.O.W. calculations
- Paving cost calculations

### **TRAFFIC CALCULATIONS**

### **TDOT EES MAPS**

### **HCS+ CALCULATIONS**

- No Build Option
- Widen Along the Existing Alignment Option
- Three Lane Spring Hill Option
- Three Lane Thompson's Station Option

**CORRESPONDENCE**



800 Second Avenue South | Nashville, Tennessee 37201 | (615) 862-7204 | [www.nashvillempo.org](http://www.nashvillempo.org)  
Mayor Ernest Burgess, Chairman

April 4, 2008

Ms. Angie Midgett  
Long Range Planning Division  
Tennessee Department of Transportation  
505 Deaderick Street, Suite 1000  
James K. Polk State Office Building  
Nashville, TN 37243-0334

Dear Ms. Midgett:

On behalf of Williamson County Government and the Executive Board of the Nashville Area MPO, I am requesting that the Tennessee Department of Transportation complete a Transportation Planning Report for State Route 6, from Old Kedron Road to Mack Hatcher Memorial Parkway. Per TDOT guidelines, our formal request is included as part of our FY 2008 Unified Planning Work Program, as amended on March 19, 2008. A copy of that request and other project-related information is enclosed with this letter.

Please contact me or Max Baker at the MPO if you need any additional information.

Best,

  
Michael Skipper  
Executive Director

enclosures

CC: Mayor Ernest Burgess, MPO Executive Board Chair  
Mr. Joe Horne, MPO Technical Coordinating Committee Chair  
Mayor Rogers Anderson, Williamson County

## APPENDIX

### TPR Requests

#1. On behalf of Williamson County, the Nashville Area MPO requests that the Tennessee Department of Transportation complete a Transportation Planning Report (TPR) for the portion of State Route 6 from South Old Kedron Road to Mack Hatcher Memorial Parkway. Project details follow:

- LRTP#: 6022, 6001
- TIP#: 2008-64-068
- Horizon Year: 2016
- State Route: SR-6
- Termini: South Old Kedron Rd. to Mack Hatcher Memorial Pkwy.
- Length: 14.8 Miles
- Locally Used: US-31, Columbia Pike, Main St., Andrew Jackson
- Local Governments: Williamson County, Maury County  
Cities of Franklin, Thompson Station, and Spring Hill
- Description: Continued high rates of growth and the opening of SR-840 interchange have led to an AADT growth rate is at 7.7% per annum. Thus, the LOS of SR-6 has changed from C to D.

**Termini:** South Old Kedron Rd. to Mack Hatcher Memorial Pkwy.

**Length:** 14.8 Miles

**State Route:** SR-6

**Locally Used:** US-31, Columbia Pike, Main St., Andrew Jackson

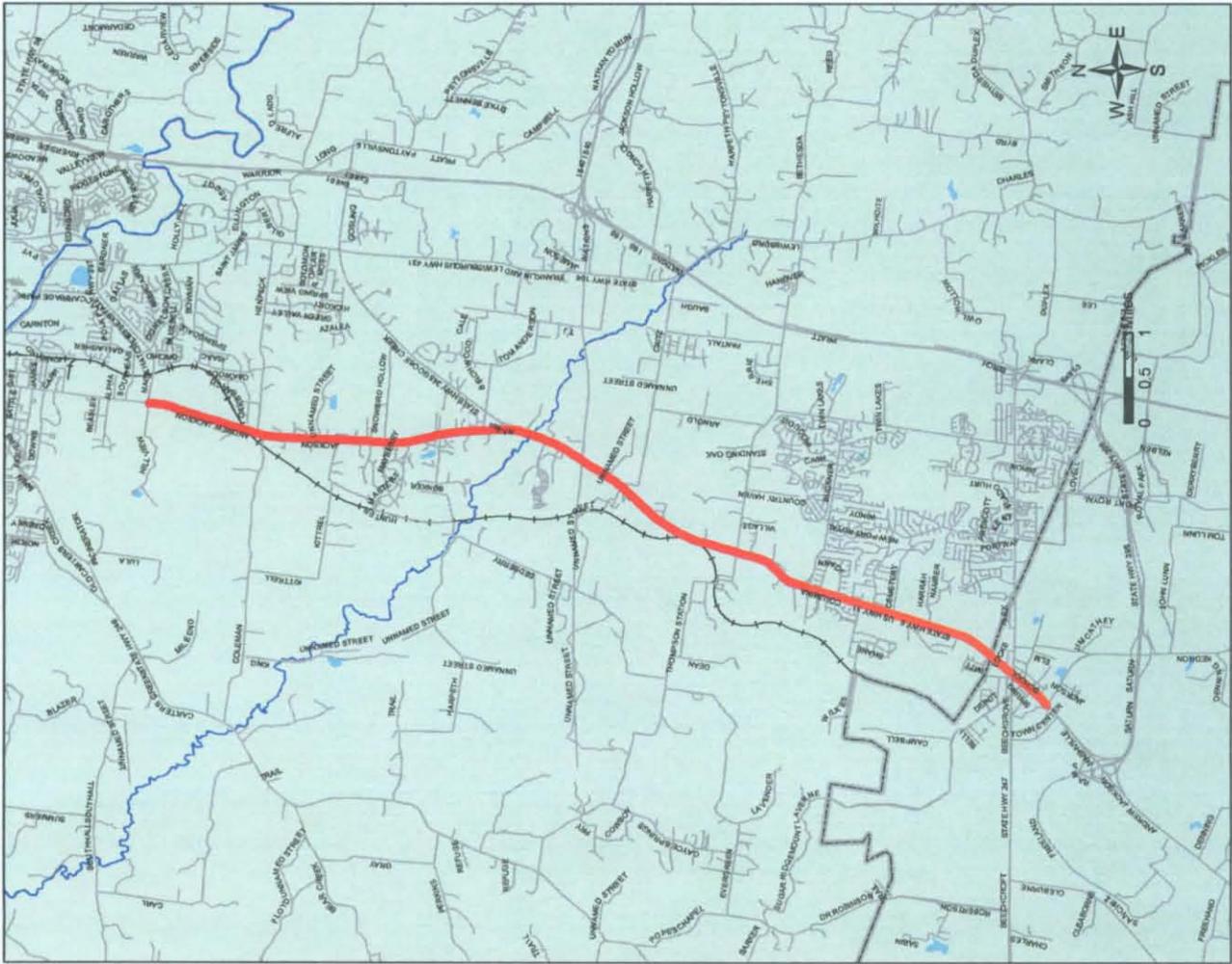
**L RTP:** 6022, 6001

**TIP:** 2008-64-068

**Horizon Year:** 2016

**Local Governments:** Williamson County, Maury County  
Cities of Franklin, Thompson Station, and Spring Hill

**Description:** Continued high rates of growth and the opening of SR-840 interchange have led to an AADT growth rate is at 7.7% per annum. Thus, the LOS of SR-6 has changed from C to D. About 50% of crashes were rear-ends and about 22% were angle. About 39% of crashes occurred along the roadway.



NASHVILLE AREA MPO  
TPR REQUEST  
MAP  
MARCH 2008





# Florence & Hutcheson, Inc.

CONSULTING ENGINEERS

August 29, 2008

Mr. Chris Armstrong  
Tennessee Department of Transportation  
Project Planning Division  
1000 JKP Building  
505 Deaderick Street  
Nashville, TN 37243-0334

## RE: SR-6 TPR Site Visit Meeting Minutes

Dear Mr. Armstrong,

A Site Visit was held Friday 8/29/08 at 10:00, meeting at Winstead Hill Park in Franklin, TN, concerning the SR-6 TPR in Maury and Williamson Counties. The study bisects Williamson County, a portion of Maury County, the City of Spring Hill, the Town of Thompson's Station, and the City of Franklin. The project limits are from Kedron Road to the South to Mack Hatcher Parkway to the north. A handout was provided to those in attendance that listed environmental constraints (including historic properties) along the route and mapped them on USGS Quad Maps. Crashes were also mapped along the route. Aerial photography of the route was included in the handout. The meeting began with a short discussion of the project limits and the status of the study. The meeting was then opened up for questions, comments, recommendations for improvements (including spot improvements), and closed by driving the project. Those in attendance are listed on below:

### Attendance List:

Name		Agency	Title/Department	E-mail	Phone
William	Banks	City of Franklin	Engineering	<a href="mailto:william.banks@franklin-gov.com">william.banks@franklin-gov.com</a>	615-791-3218
Eric	Gardner	City of Franklin	Engineering Dir.	<a href="mailto:ericg@franklin-gov.com">ericg@franklin-gov.com</a>	615-791-3218
Ben	Worley	City of Franklin	R.O.W.	<a href="mailto:ben.worley@franklin-gov.com">ben.worley@franklin-gov.com</a>	615-791-3218
Joe	York	City of Franklin	Streets Director	<a href="mailto:joey@franklin-gov.com">joey@franklin-gov.com</a>	615-791-3254
Jon	Storey	Florence & Hutcheson		<a href="mailto:jstorey@flohut.com">jstorey@flohut.com</a>	615-399-9090
Matt	Meservy	Nashville MPO		<a href="mailto:meservy@nashvillempo.org">meservy@nashvillempo.org</a>	615-862-6887
Bob	Allen	TDOT	Environmental	<a href="mailto:bob.allen@state.tn.us">bob.allen@state.tn.us</a>	615-253-2468
Chris	Armstrong	TDOT	Project Planning	<a href="mailto:christopher.armstrong@state.tn.us">christopher.armstrong@state.tn.us</a>	615-741-3216
Holly	Barnett	TDOT	Environmental	<a href="mailto:holly.barnett@state.tn.us">holly.barnett@state.tn.us</a>	615-253-2467
Tyler	King	TDOT	Project Planning	<a href="mailto:tyler.king@state.tn.us">tyler.king@state.tn.us</a>	615-253-2781
Greg	Langeliers	Thompson's Station	Town Administrator	<a href="mailto:glangeliers@thompsonsstation.com">glangeliers@thompsonsstation.com</a>	615-794-4333
Floyd	Hefflin	Williamson County	County Engineer	<a href="mailto:floydh@williamson-tn.org">floydh@williamson-tn.org</a>	615-790-5731
Joe	Horne	Williamson County	Community Dev.	<a href="mailto:joeh@williamson-tn.org">joeh@williamson-tn.org</a>	615-790-5725



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## Items discussed concerning the SR-6 TPR included:

- No representative from the City of Spring Hill was present. Representatives from the City of Franklin called to see if Spring Hill would be in attendance prior to the meeting starting. Spring Hill had been contacted by e-mail and a voice message prior to the site visit.
- The MPO has a 5-lane cross section for the entire route in the LRTP, but is not opposed to other ideas.
- The Town of Thompson's Station is interested in improved access to I-65, along with improvements to I-65, if this option could reduce the cross section through their town. One idea discussed was a new interchange at Buckner Lane and I-65.
- It was asked if the improvements discussed above could be included in the MPO model for use in the TPR. "What If" scenarios could be included in the MPO model, but would be of limited benefit due to the regional nature of the model. Therefore, the improvements currently in the LRTP that provide improvements along I-65, along with a new interchange between Thompson's Station Road and I-65, are included in the traffic projections, but no further "what-if" scenarios will be performed at this time.
- It was agreed that the Town of Thompson's Station recommendation should be discussed in the TPR without a traffic analysis.
- The extent of what a "spot improvement" could be was discussed.
- All local officials present appeared in agreement that improvements to the Goose Creek bypass intersection with SR-6 should be included as part of a spot improvement.
- A roundabout was discussed at the Goose Creek Bypass intersection with SR-6. This intersection is within Franklin's growth boundary. Franklin was in favor of studying this improvement. They are comfortable with multilane roundabouts along reasonably high speed facilities. They cited a roundabout along Mack Hatcher as an example. Eric Gardner will provide F&H with copies of the plans as a reference.
- Williamson County requested improvements to SR-6 be included in the LRTP to get options "on the table" and address the area's sub regional travel demands. The goal is to get input from Franklin, Thompson's Station, and Spring Hill to find a common solution to the region's traffic issue concerning SR-6.
- Historic properties will be an issue along this route. Williamson County noted that in the past historic groups have requested sizeable setbacks along road improvements to historic properties.
- It was discussed that input from interest groups (in this case historic societies) is generally not solicited during this early TPR stage of a roadway project. Input will be sought as the NEPA process continues and the project enters more formal stages.
- Thompson's Station has plans to realign Critz Lane at SR-6 and would welcome help as a spot improvement. R.O.W. has already been dedicated for this project. It was also noted that the intersection between SR-6 and Thompson's Station Road needs improvement.
- Thompson's Station is in agreement that the segment of SR-6 within their town growth boundary should be 5 lanes between Critz Lane and the Goose Creek Bypass.
- Improvements around Spring Hill are the most challenging segment of this project due to tight R.O.W. and extensive environmental locations.
- It was noted that the City of Spring Hill is currently attempting to construct the Miles Johnson Parkway as a bypass for the City. They may be interested in handing this project over to TDOT to be utilized as a bypass for SR-6. The Miles Johnson Parkway site was driven to investigate its application. The location is adequate from Kedron Road north, but



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reconnecting it south to SR-6 will be a challenge due to the Battle of Spring Hill location and the extended project limits south of Kedron Road this will require. It would negate a large segment of 5-lane highway along SR-6. It was agreed that this option should be studied further in the TPR.

- It was discussed to include an option that would proceed to the west along the railroad tracks as a bypass for the City of Spring Hill.
- An option to utilize School Road in Spring Hill as a part of a one-way pair with SR-6 was discussed and will be included as an option. This option was more appealing on aerial mapping than in the field. A children's home/school would be impacted, and School Road is narrow and located in a primarily residential/well developed area. Significant impacts would be expected.
- The City of Franklin would like the extension of the right turn lane along SR-6 approaching Mack Hatcher Parkway included as a spot improvement in the study.
- The City of Franklin would like the realignment of the intersection between Coleman and Henpeck Lanes included as a spot improvement. These intersections are currently offset.
- It was discussed that the intersection of Duplex Road and Beechcroft Road should also be included as a spot improvement. These intersections are currently offset. A farmer's COOP would likely be impacted by this improvement.

### **Action Items**

- Coordination between F&H and the City of Spring Hill to gain their input.
- Coordination between F&H and Eric Gardner for multilane roundabout plans.
- Coordination between F&H and the MPO to determine if the southern limit of study can be extended to allow connection of a bypass option around Spring Hill to SR-6.

As always, if you have any questions or comments, please do not hesitate to call or e-mail.

Thank you,

**Florence & Hutcheson, Inc.**

Jon Storey, P.E.



# Florence & Hutcheson, Inc.

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September 10, 2008

Mr. Chris Armstrong  
Tennessee Department of Transportation  
Project Planning Division  
1000 JKP Building  
505 Deaderick Street  
Nashville, TN 37243-0334

## RE: SR-6 TPR Spring Hill Meeting Minutes

Dear Mr. Armstrong,

A meeting was held with the City of Spring Hill Wednesday 9/10/08 at 11:00, meeting at Spring Hill's City Hall, concerning the SR-6 TPR in Maury and Williamson Counties. This meeting was held to gain input from the City concerning the study. The study bisects Williamson County, a portion of Maury County, the City of Spring Hill, the Town of Thompson's Station, and the City of Franklin. The project limits are from Kedron Road to the South to Mack Hatcher Parkway to the north. A handout was provided to those in attendance that listed environmental constraints (including historic properties) along the route and mapped them on USGS Quad Maps. Crashes were also mapped along the route. Aerial photography of the route was included in the handout. The meeting began with a short discussion of what occurred at the Site Visit on 8/29/08. The meeting was then opened up for questions, comments, recommendations for improvements (including spot improvements). Those in attendance are listed on below:

### Attendance List:

Name	Agency	Title/Department	E-mail	Phone
Chris Armstrong	TDOT	Project Planning	<a href="mailto:christopher.armstrong@state.tn.us">christopher.armstrong@state.tn.us</a>	615-741-3216
Danny Leverette	Spring Hill	Mayor		931-384-0500
John McCord	Spring Hill	Director of Public Works		931-486-1265
Jamie Pierce	Spring Hill	Deputy Director of Public Works		931-384-0640
Jon Storey	Florence & Hutcheson		<a href="mailto:jstorey@flohut.com">jstorey@flohut.com</a>	615-399-9090
Ken Weaver	Spring Hill	City Administrator		931-797-4447



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## Items discussed concerning the SR-6 TPR included:

- The city is concerned with widening SR-6/US-31 through the city and does not support this option. They wish to revitalize downtown and maintain a walkable community. It appears a streetscape is desired in the future. A 5-lane section is not desirable. The existing 3-lane section is what they envision through the city.
- The City would like the LRTP amended to show a 3-lane segment through the city.
- They are currently studying a signal coordination system through the city and were curious how this study could affect this. It was not believed the TPR would affect their current signal coordination efforts.
- The historic locations along the route and crashes were discussed.
- Improvements to the existing route, an east, and a west bypass option were discussed.
- If a bypass is chosen, ownership of existing SR-6 was discussed. It was noted it would likely become their responsibility. This did not appear to be a major hurdle as it may allow them more flexibility with improving the aesthetics of the route and more freedom in the design. It was noted that prior to turning over the route TDOT would perform needed maintenance, likely including an overlay. The financial aspect of SR-6 becoming local responsibility in the future was discussed as a minus, but was not a deal breaker.
- The city has some issues with the Saturn Parkway Interchange with SR-6. It appears the flyover ramp from Saturn Pkwy to SR-6 Southbound has a history of crashes and should possibly be improved to 2 lanes.
- If no bypass is built, the city would like to see 5 lanes extended along the south terminus of the project to Spring Hill Elementary, then tapered to 3 lanes. The three lanes would continue north until just south of a bridge that is located south of Miles Johnson Parkway. The 5 lanes would continue throughout the city's growth boundary.
- The City is receptive to studying a bypass along Miles Johnson Parkway (an east bypass). The bypass would follow existing Saturn Parkway, exit at what is currently Kedron Parkway and continue north along Miles Johnson Parkway until tying back into existing SR-6. With this option, the city would like to see improvements to the Saturn Parkway Interchange with SR-6.
- A 53 bed hospital will be located along the Proposed Miles Johnson Parkway. The City is concerned by the time the SR-6 Bypass would be constructed, the development in the area will no longer be receptive to a wider Bypass footprint, but still would like this option studied.
- There are wetlands around the proposed Miles Johnson Parkway route.
- The City did not appear interested in continuing the Bypass south of Saturn Parkway. It was noted SR-6 already has 5 lanes south of Saturn Parkway and the limits would extend well south of Spring Hill.
- The City was also interested in studying a west bypass as an option. They currently have a line in their Major Thoroughfare Plan for a similar facility. The route would extend from Town Center Parkway (Yockovich Pkwy.) north to Thompson's Ridge Road. This option would extend west of the railroad tracks to avoid existing development. It was discussed



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that two issues with this route may be the at-grade intersection and turning movements at Town Center Parkway and the long length of existing SR-6 that would become the responsibility of the City. It was also discussed that Thompson's Station may not like the route tying in close to schools within their growth limits. Another issue not discussed could be the railroad crossings. Grade separation would likely be required.

- Spot improvements were discussed. Spot improvements desired by the City included:
  - Turning lanes are desired at the Buckner Road and Campbell Station Road Intersections.
  - Realignment is desired at the Duplex Road/Beechcroft Road Intersection to align these two routes.
  - Signalization is desired at Miles Johnson Parkway and Bellshire Way.
- F&H was provided a copy of the City's Major Thoroughfare Plan.
- A one-way pair option with existing SR-6 and School Road was briefly discussed. The City does not support this option.
- The City is interested in an interchange between Buckner Road and I-65. The LRTP currently has an interchange at Thompson's Station Road. The City would like this interchange moved to Buckner Road due to a large tract of land that is proposed to be developed into a large retail area.

As always, if you have any questions or comments, please do not hesitate to call or e-mail.

Thank you,

**Florence & Hutcheson, Inc.**

Jon Storey, P.E.



# Florence & Hutcheson, Inc.

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January 28, 2009

Mr. Chris Armstrong  
Tennessee Department of Transportation  
Project Planning Division  
1000 JKP Building  
505 Deaderick Street  
Nashville, TN 37243-0334

## RE: SR-6 TPR Meeting

Mr. Armstrong,

A meeting was held on Tuesday 1/27/09, at 2:00 PM in TDOT's 10<sup>th</sup> floor conference room. Those in attendance included:

<b>Name</b>	<b>Organization/Title</b>	<b>Phone</b>
Steve Allen	TDOT Project Planning Division	741-2208
Chris Armstrong	TDOT Project Planning Division	741-3216
Bill Hart	TDOT Project Planning Division	741-3688
Jeanne Stevens	TDOT Long Range Planning Division	741-3421
Matt Meservy (via teleconference)	Nashville Metropolitan Planning Organization	862-6887
Jon Storey	Florence & Hutcheson, Inc.	399-9090

The primary focus of the meeting was to determine if the options included in the SR-6 TPR should be strictly limited by what is listed in the MPO's LRTP, or if additional options requested by local agencies should also be included. The Draft SR-6 TPR currently includes bypass options in addition to an option to widen along the existing alignment. The LRTP only lists widening along the existing alignment. The discussion proceeded to include the interrelation between the MPO planning process and the TPR process for all projects, not just the SR-6 project. The items listed below were discussed.

- The northern terminus was discussed. The Draft SR-6 TPR utilizes Mack Hatcher Parkway as the northern terminus, but notes that the LRTP projects along SR-6 end at Henpeck Lane. After the meeting, it was confirmed that the LRTP has a discrepancy concerning the 1.25-mile segment between Henpeck Lane and Mack Hatcher Parkway. The LRTP map notes Project Number 6032 along this segment of SR-6. However, the LRTP project list notes that Project Number 6032 is for SR-106 (Lewisburg Pike) from Henpeck Lane to Mack Hatcher Parkway, and includes widening from two lanes to four lanes with bike lanes. Confirmation from the MPO is needed if Project Number 6032 is actually for SR-6 and not SR-106. How to document this in the TPR will be discussed with TDOT.



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- The LRTP notes the southern terminus of the project at Old Kedron Road. However, Old Kedron Road does not intersect SR-6. Kedron Road intersects SR-6. The LRTP may need to be revised for this. Also, the bypass options intersect SR-6 south of Kedron Road. The LRTP may need to be revised to account for the extended project limits.
- The LRTP notes the improvements will include 4 lanes along SR-6 in Williamson County and 5 lanes along SR-6 within Spring Hill's City Limits. Stakeholders outside of Spring Hill appear to be in favor of a 5-lane cross section. Stakeholders in Spring Hill do not want the existing 3-lane cross section widened within their CBD and desire a bypass. Thompson's Station noted they would favor a 3-lane cross section through their city limits instead of 4 lanes. The Draft TPR provides the cross section options noted by the local stakeholders.
- It was understood by F&H that it is acceptable to provide bypass and cross section options in the SR-6 TPR, as currently shown. F&H submitted the Draft TPR on 12/12/08. If the bypass options are acceptable, F&H will await TDOT's review of the draft. F&H will coordinate with the Project Planning Division to determine what revisions are desired. Revisions concerning issues discussed in these meeting minutes are anticipated.

As always, if you have any questions or comments, please do not hesitate to call or e-mail.

Thank you,

**Florence & Hutcheson, Inc.**

Jon Storey, P.E.



# Florence & Hutcheson, Inc.

CONSULTING ENGINEERS

October 21, 2009

Mr. Chris Armstrong  
Tennessee Department of Transportation  
Project Planning Division  
1000 JKP Building  
505 Deaderick Street  
Nashville, TN 37243

**RE: SR-6/US-31 TPR Meeting Minutes**

Dear Mr. Armstrong,

A meeting was held today in TDOT's 10<sup>th</sup> Floor Conference Room. Those in attendance included:

Chris Armstrong	TDOT
Steve Allen	TDOT
Gary Webber	TDOT
Eric Gardner	City of Franklin
Ben Worley	City of Franklin
Gillian Fischbach	Fischbach Transportation Company
Jon Storey	Florence & Hutcheson

Items discussed included:

An MPO retreat was held a week ago concerning the role of a TPR in relation to the LRTP. It was agreed at the MPO retreat that the improvement recommendations in the LRTP are an initial guide, and not set in stone. The TPR can therefore still look at other reasonable options. It must be noted in the executive summary of the TPR where these options deviate from the LRTP. This is especially critical when the termini in the TPR deviate from the termini in the LRTP.

Concerning the SR-6 TPR, TDOT is open to looking at bypass options, but wants to ensure they are options that meet TDOT's needs. It is likely if bypass options are to be included, they will not be the same options currently in the TPR. If no feasible bypass option is available, we may simply discuss widening along the existing centerline and note all the constraints. Chris Armstrong and Jon Storey will coordinate with Bill Hart concerning bypass options and how to proceed with the SR-6 TPR.



**Florence & Hutcheson, Inc.**

CONSULTING ENGINEERS

If there are any questions, comments, or omissions concerning these minutes, please do not hesitate to call.

Thank you,

**Florence & Hutcheson, Inc.**

Jon Storey, P.E.



# Florence & Hutcheson, Inc.

CONSULTING ENGINEERS

November 3, 2009

Mr. Chris Armstrong  
Tennessee Department of Transportation  
Project Planning Division  
1000 JKP Building  
505 Deaderick Street  
Nashville, TN 37243

## RE: SR-6/US-31 TPR Meeting Minutes

Dear Mr. Armstrong,

A meeting was held yesterday in TDOT's 10<sup>th</sup> Floor Conference Room on 11/2/09. Those in attendance included:

Chris Armstrong	TDOT
Steve Allen	TDOT
Bill Hart	TDOT
Jon Storey	Florence & Hutcheson

Items discussed included:

The SR-6 TPR should be revised to include the following options:

1. Widening along the existing corridor as described in the LRTP
2. Reasonable options along the existing corridor taking into account environmental constraints and stakeholder input.
3. The bypass options around Spring Hill will be placed in a section titled "options previously considered but rejected". Why the bypass options are rejected will be discussed, including access control issues, not meeting the State's Purpose and Need or standards for a bypass, the regional significance of a bypass, intersection issues at existing SR-6, and the reallocation of truck traffic through residential areas surrounding the bypass routes.

How the different options affect the project's termini and will be discussed in the TPR and executive summary. Additionally, all options not following the LRTP will be summarized in the executive summary. Also discussed at the meeting was how a city's Major Thoroughfare Plan (MTP) doesn't control the LRTP or options in a TPR. The MTP is to be considered when mutual benefits are achievable, but is not a controlling factor.



**Florence & Hutcheson, Inc.**

CONSULTING ENGINEERS

If there are any questions, comments, or omissions concerning these minutes, please do not hesitate to call.

Thank you,

**Florence & Hutcheson, Inc.**

Jon Storey, P.E.

**OPTIONS REQUIRING ADDITIONAL STUDY**

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## **1.0 OPTIONS REQUIRING ADDITIONAL STUDY SUMMARY**

This Transportation Planning Report (TPR) examines the improvements listed in the Nashville Area Metropolitan Planning Organization's (MPO) Long Range Transportation Plan (LRTP) for 10.87 miles of State Route 6 (SR 6) from the City of Spring Hill to the southern limits of the City of Franklin in south-central Tennessee. The improvements widen the existing route from two (2) travel lanes to four (4) travel lanes.

The Widen Along the Existing Alignment Option does not have the support of the City of Spring Hill due to the impact to their central business district (CBD). The existing R.O.W. within the CBD of Spring Hill is approximately sixty (60) feet wide. Improvements to SR 6 within the CBD will require impacts to numerous religious, historic, and commercial properties. Furthermore, the City wishes to revitalize their downtown and maintain their walkable community. They envision a future streetscape project that will maintain the existing three (3) lane cross section.

Additionally, the Widen Along the Existing Alignment Option does not have the support of the Town of Thompson's Station. A representative of the Town notes that future improvements along Interstate 65 may alleviate congestion along SR 6 within their town limits, and therefore eliminate the need to widen SR 6 to four (4) travel lanes within the town limits. Concern was expressed that widening SR 6 without improvements to Interstate 65 would increase traffic volumes through the town.

As a result of the lack of support from local officials for the improvements listed in the LRTP, spot improvements, travel lane options, and bypass options were studied to limit impacts to sensitive areas along the route. The MPO noted that new options are welcome. It was noted that changes in the project, especially changes to the project termini, will need to be coordinated with the MPO and incorporated into the LRTP. The additional options studied are summarized as follows:

- Spot Improvements
- Three (3) Lane Spring Hill Option
- Three (3) Lane Thompson's Station Option
- Three (3) Lane Spring Hill and Thompson's Station Option
- Spring Hill One-Way Pair Option
- Eastern Spring Hill Bypass Option
- Western Spring Hill Bypass Option

Each of these options require additional study due to one or more of the following reasons: not meeting the purpose and need of the project, not having the support of local officials; not currently being included in the MPO's planning process; not providing acceptable access control measures; not meeting the regional significance or providing for a continuous route for a bypass; the existence of an existing parallel route (Interstate 65) which, if improved, negates the need for a bypass; impacts to environmentally sensitive locations; and due to the reallocation of truck traffic to residential areas along the option's routes. Therefore, these options were not included in the TPR's main body. It should be noted that further refinement of any of these options through the MPO's planning process may create a viable option to meet the Purpose and Need of the project.

## **2.0 SPOT IMPROVEMENTS**

Due to limited funding and in consideration that corridor wide improvements would have considerable costs, locations for spot improvements were solicited from local officials. These improvements should be considered interim improvements to address the most urgent needs along the route, but they do not meet the Purpose and Need of the project due to their limited ability to improve capacity through the corridor. These improvements can be incorporated into future corridor wide improvement options, including the Widen Along the Existing Alignment Option. The Spot Improvements identified are listed below, from south to north along SR 6.

- Realign the offset intersection of Duplex Road (SR 247) and Beechcroft Road (SR 247) at SR 6 to create a standard four (4) legged intersection. Estimated cost is \$740,000.
- Signalization of the intersection of SR 6 with Miles Johnson Parkway. Estimated cost in year 2014 dollars is \$150,000.
- Signalization of the intersection of SR 6 with Bellshire Way. Estimated cost in year 2014 dollars is \$150,000.
- Turn lane improvements at the intersection of SR 6 with Campbell Station Parkway. Estimated cost in year 2014 dollars is \$300,000.
- Turn lane improvements at the intersection of SR 6 with Buckner Road. Estimated cost in year 2014 dollars is \$300,000.
- Turn lane improvements at the intersection of SR 6 with Thompson's Station Road. Estimated cost in year 2014 dollars is \$300,000.
- Realign Critz Lane at the intersection with SR 6. Estimated cost in year 2014 dollars is \$950,000.
- Improve the bridge over a branch of the Harpeth River located just south of the Goose Creek Bypass Intersection with SR 6. Estimated cost in year 2014 dollars is \$1,512,000.
- Construct a roundabout at the Goose Creek Bypass intersection with SR 6. Estimated cost in year 2014 dollars is \$5,680,000.
- Realign the offset intersection of Coleman Road and Henpeck Lane at SR 6 to create a standard four (4) legged intersection. Estimated cost in year 2014 dollars is \$1,950,000.
- Extend the right turn lane of SR 6 Northbound at the intersection with Mack Hatcher Parkway. Estimated cost in year 2014 dollars is \$200,000.

No HCS LOS analysis or order of priority analysis was developed for the Spot Improvement Options. These options were developed as a result of feedback received during stakeholder meetings that occurred during the development of this TPR. Analysis of the Spot Improvement Options requires detailed traffic and geometric information that is currently not available. The cost of all eleven (11) Spot Improvement Options is estimated to be \$12.2 million in year 2014 dollars. The Spot Improvement Options are mapped in **Figure 2 Spot Improvement Options**.

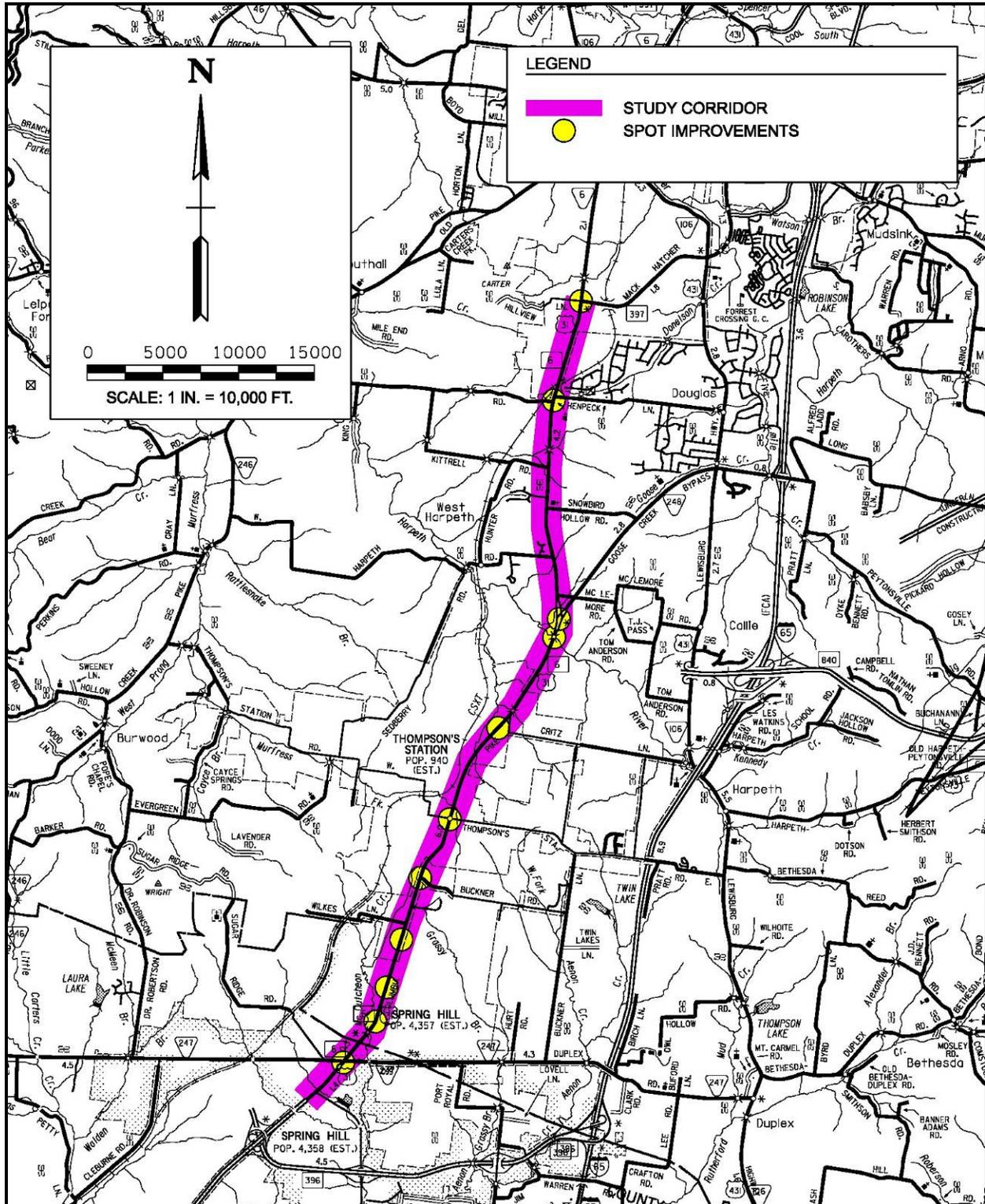


FIGURE 2 SPOT IMPROVEMENT OPTIONS

### **2.1 SR 6 AT SR 247**

This spot improvement will realign the offset intersection of Duplex Road (SR 247) and Beechcroft Road (SR 247) at SR 6 to create a standard four (4) legged intersection. These intersections are signalized and operate with one (1) traffic controller. This option will improve traffic operations along SR 6 by eliminating one (1) signal along the route and simplifying the signal timing within the City of Spring Hill's congested CBD. This improvement will likely require one (1) commercial property to be relocated. This spot improvement is programmed in the MPO's Transportation Improvement Program (TIP) for the year 2011. The estimated cost of the improvements is provided in the TIP to be \$740,000.

### **2.2 SR 6 AT MILES JOHNSON PARKWAY**

This spot improvement will provide signalization at the intersection of SR 6 with Miles Johnson Parkway. Although an additional signal along SR 6 will create additional mainline delays, it will improve the operation of the intersection, and possibly improve the safety of the intersection. A signal may also promote use of Miles Johnson Parkway as an alternate route for SR 6 by enabling improved access to the route. A signal warrant analysis will need to be performed prior to signalization of the intersection. The cost of signalizing this intersection is estimated to a planning level to be \$150,000.

### **2.3 SR 6 AT BELLSHIRE WAY**

This spot improvement will provide signalization at the intersection of SR 6 with Bellshire Way. Although an additional signal along SR 6 will create additional mainline delays, it will improve the operation of the intersection, and possibly improve the safety of the intersection. A new Lowe's Home Improvement Center, medical office building, and several outparcel commercial developments have recently been constructed at this intersection. A signal warrant analysis will need to be performed prior to signalization of the intersection. The cost of signalizing this intersection is estimated to a planning level to be \$150,000.

### **2.4 SR 6 AT CAMPBELL STATION PARKWAY**

This spot improvement will provide turn lane improvements at the intersection of SR 6 with Campbell Station Parkway. This intersection is signalized and each approach includes left turn bays. The surrounding land use is commercial, with a Publix Grocery Store anchoring the development. Local officials noted the need for turn lane improvements. A detailed traffic analysis is needed to determine the need for right turn bays and/or to determine the length to increase the left turn bays. Turn lane improvements could improve operations and safety along SR 6 by reducing or eliminating queued vehicles from the mainline, therefore improving traffic flow. With the limited available information, the cost of providing turn lane improvements is estimated at \$300,000.

### **2.5 SR 6 AT BUCKNER ROAD**

This spot improvement will provide turn lane improvements at the intersection of SR 6 with Buckner Road. This intersection is signalized and each approach includes left turn bays. The surrounding land use is commercial, educational, and residential. Local officials noted the need

for turn lane improvements. A detailed traffic analysis is needed to determine the need for right turn bays and/or to determine the length to increase the left turn bays. Turn lane improvements could improve operations and safety along SR 6 by reducing or eliminating queued vehicles from the mainline, therefore improving traffic flow. With the limited available information, the cost of providing turn lane improvements is estimated to be \$300,000.

## **2.6 SR 6 AT THOMPSON'S STATION ROAD**

This spot improvement will provide turn lane improvements at the intersection of SR 6 with Thompson's Station Road. This intersection is signalized and each approach includes left turn bays. The surrounding land use is commercial, religious, and residential/vacant. Local officials noted the need for turn lane improvements. A detailed traffic analysis is needed to determine the need for right turn bays and/or to determine the length to increase the left turn bays. Turn lane improvements could improve operations and safety along SR 6 by reducing or eliminating queued vehicles from the mainline, therefore improving traffic flow. With the limited available information, the cost of providing turn lane improvements is estimated to be \$300,000.

## **2.7 SR 6 AT CRITZ LANE**

This spot improvement will realign Critz Lane at the intersection with SR 6. Critz Lane currently makes a 90-degree bend 0.2 miles before intersecting SR 6. The intersection of Critz Lane with SR 6 is skewed. Realigning Critz Lane will improve safety by eliminating the 90-degree bend in Critz Lane and improving the skew of the intersection with SR 6. Realigning Critz Lane will also extend the distance from this intersection to the SR 840 Interchange, potentially improving sight distance, safety and traffic operations. R.O.W. has been dedicated for this improvement, but design and construction funds are currently not available. The cost of the improvements is estimated to a planning level to be \$950,000.

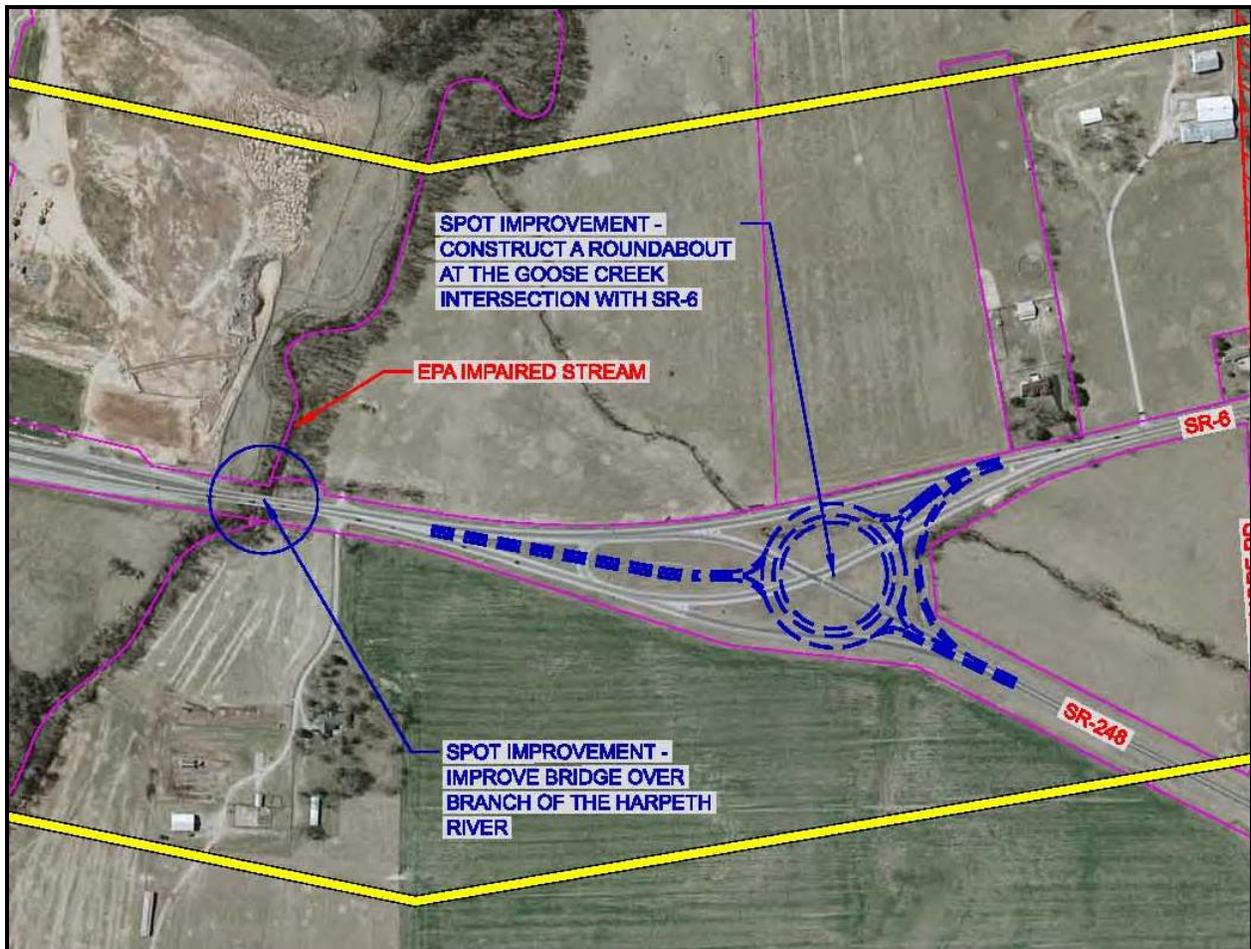
## **2.8 HARPETH RIVER BRIDGE**

This spot improvement will improve the SR 6 Bridge over The West Harpeth River located just south of the Goose Creek Bypass Intersection with SR 6. The bridge has no shoulders and substandard bridge rails. Sight distance is restricted due to these factors. Replacing the bridge will improve safety by providing shoulders and improving sight distance. The cost to replace the bridge is estimated to a planning level to be \$1,512,000. This estimate assumes the bridge would be constructed to accommodate a future five (5) lane cross section with shoulders.

## **2.9 SR 6 AT THE GOOSE CREEK BYPASS**

This spot improvement recommends constructing a roundabout at the Goose Creek Bypass intersection with SR 6. Numerous local officials noted the need for improvements at this intersection due to operational and safety deficiencies. The proposed improvements are within the City of Franklin's Urban Growth Boundary. Officials from the City of Franklin noted their support for a roundabout at this location. The roundabout should be constructed to accommodate two (2) travel lanes within the roundabout. This will enable the roundabout to be modified when SR 6 and/or the Goose Creek Bypass are widened. A roundabout could serve as a "gateway" into Franklin from the south and Thompson's Station from the north. Roundabouts eliminate all left turn movements within the intersection. All approaches will operate under yield condition. Because of this, safety benefits can be anticipated compared to the existing configuration. It is estimated that no additional R.O.W. will be needed to construct a

roundabout. The cost to construct a roundabout is estimated to a planning level to be \$5,680,000.



**FIGURE 2.9 GOOSE CREEK BYPASS CONCEPT**

### **2.10 SR 6 AT COLEMAN ROAD/HENPECK LANE**

This spot improvement will realign the offset intersection of Coleman Road and Henpeck Lane at SR 6 to create a standard four (4) legged intersection. These intersections are unsignalized. This option will improve traffic operations along SR 6 by eliminating one (1) intersection along the route. A church, cemetery, and CSX Railroad are in the study area of the improvements. The cost of the improvements is estimated to a planning level to be \$1,950,000. This cost estimate assumes the church and CSX Railroad can be accommodated, and the cemetery can be avoided. The cost will increase significantly if any of these properties cannot be accommodated.

## **2.11 SR 6 AT MACK HATCHER PARKWAY**

This option will extend the length of the right turn lane of SR 6 Northbound at the intersection with Mack Hatcher Parkway. This intersection is signalized. The adjacent land use is vacant. Local officials noted the need for the turn lane improvement. A detailed traffic analysis is needed to determine the length to increase the right turn bay. Extending the right turn lane will improve operations and safety along SR 6 by allowing right turning vehicles to bypass queued vehicles along SR 6 northbound. With the limited available information, the cost of extending the turn lane is estimated to be \$200,000.

## **3.0 THREE (3) LANE SPRING HILL OPTION**

This option presents a three (3) lane cross section through the City of Spring Hill's CBD. Numerous historic structures, places of worship, and businesses are located adjacent to the narrow right-of-way in the CBD. SR 6 is currently three (3) lanes in the CBD. Widening the route to add additional lanes does not have the support of the City due to the negative impact to adjacent developments and pedestrians.

Miles Johnson Parkway was recently constructed to the east of SR 6. Miles Johnson Parkway provides an alternate route for SR 6 between Kedron Road, Duplex Road, and SR 6. Additionally, a new interchange at Interstate 65 and Thompson's Station Road is currently in the MPO's LRTP, along with widening Interstate 65 from SR 840 to SR 96. These improvements may alleviate congestion along SR 6, and therefore eliminate the need to widen SR 6 to four (4) travel lanes through Spring Hill's CBD. This option could be implemented as an interim option to investigate the congestion improvements created by the planned and current roadway improvements in the area.

With this option, SR 6 would be improved to four (4) travel lanes outside the CBD. Within the CBD (between Kedron Road and Miles Johnson Parkway), it is desirable to provide pavement and sidewalk rehabilitation along the existing and proposed three (3) lane section. Approximately 1/3 of a mile of roadway between Witt Hill Drive and Miles Johnson Parkway will be improved from a two (2) lane cross section to a three (3) lane cross section. It is also desired by the city to construct 700 feet of roadway improvements from the study corridor's southern terminus at Kedron Road to Spring Hill Elementary School. Providing additional capacity between Spring Hill Elementary School and the existing four (4) travel lane cross section south of the study corridor will mitigate congestion associated with this large traffic generator. It is also desired by the city for this project to rehabilitate the McCutcheon Creek Culvert. This culvert is located approximately 600 feet south of Miles Johnson Parkway. The four (4) travel lane cross section is anticipated to begin at Miles Johnson Parkway due to this being a logical terminus and proceed north. A detail of the area is provided in **Figure 3.1**.

Because the MPO's LRTP currently includes improvements to I-65 and a new interchange along Interstate 65 at Thompson's Station Road, the effects of these improvements are included in the MPO's travel demand model. As directed by TDOT, and as standard practice within MPO areas, the travel demand model was utilized in the traffic projections included in this report. Therefore the LOS calculations performed in this report include the effects of these improvements. However, The traffic projections utilized in this report were performed prior to the opening of Miles Johnson Parkway and the idling of the GM plant, neither of which would have been predicted or included in the MPO's travel demand model.

The Three (3) Lane Spring Hill Option is estimated to cost between \$74 and \$84 million in year 2014 dollars. The estimated cost was calculated to a planning level utilizing cost per mile data. The cost estimate summary is provided in **Table 3.1**. The cost estimate calculations are provided in the **Appendix**.

For the Three (3) Lane Spring Hill Option, the HCS's analysis calculates LOS ranging from A to D along SR 6 through the year 2014 and A to F through the year 2034. The LOS calculations do not take into effect the diminished traffic operations caused by the four (4) school zones along the route. A summary of the LOS calculations for the Three (3) Lane Spring Hill Option is provided in schematic form in **Figures 3.2** and **3.3** and in table form in **Table 3.2**. The LOS are reported for the years 2014 and 2034. The LOS calculations demonstrate that four (4) travel lanes are necessary along the route. Two travel lanes within Spring Hill's CBD are not adequate to meet the projected design year traffic demand.

For the Three (3) Lane Spring Hill Option in the year 2014, the volume to capacity ratio (v/c) of SR 6 is calculated to range from 0.23 to 1.02, with a weighted average of 0.44. In 2034, the v/c ranges from 0.28 to 1.50 with a weighted average of 0.58. The average was weighted based upon the length of each segment analyzed. A v/c ratio near or above "1" indicates a roadway experiences congestion. The v/c calculations demonstrate that four (4) travel lanes are necessary along the route to meet the projected traffic demand. A summary of the v/c calculations for the Three (3) Lane Spring Hill Option is provided in table form in **Table 3.2**. The v/c are reported for the years 2014 and 2034.

The posted speed limit ranges from 35 to 55 mph along SR 6 within the study area. For the Three (3) Lane Spring Hill Option in the year 2014, travel speeds along the route are calculated by the HCS to range from 14.6 mph to 54.5 mph, with a weighted average of 37.3 mph. In 2034, the travel speed ranges from 3.5 mph to 54.4 mph with a weighted average of 22.4 mph. The average was weighted based upon the length of each segment analyzed. The weighted average of the speed limit along the route is 45.5 mph. The calculated average route speed is 82% and 49% of the posted speed limit in the years 2014 and 2034, respectively. The Nashville Area MPO's Congestion Management Process notes that if the average route speed is 70% or less of the free flow speed, the roadway is congested. Therefore, for the Three (3) Lane Spring Hill Option, SR 6 is congested in 2034. A summary of the travel speed calculations for the Three (3) Lane Thompson's Station Option is provided in table form in **Table 3.2**. The travel speeds are reported for the years 2014 and 2034.

The existing SR 6 Corridor (Three (3) Lane Spring Hill Option) between Kedron Road to the south and Mack Hatcher Parkway to the north is 10.9 miles in length. For the Three (3) Lane Spring Hill Option in the year 2014, the travel time along SR 6 is calculated to be 17.5 minutes. In 2034, the travel time is calculated to be 29.1 minutes.

The traffic analysis demonstrates that four (4) travel lanes are necessary along the route. Two travel lanes within Spring Hill's CBD are not adequate to meet the projected design year traffic demand. Therefore, this option does not adequately address the purpose and need of the project.

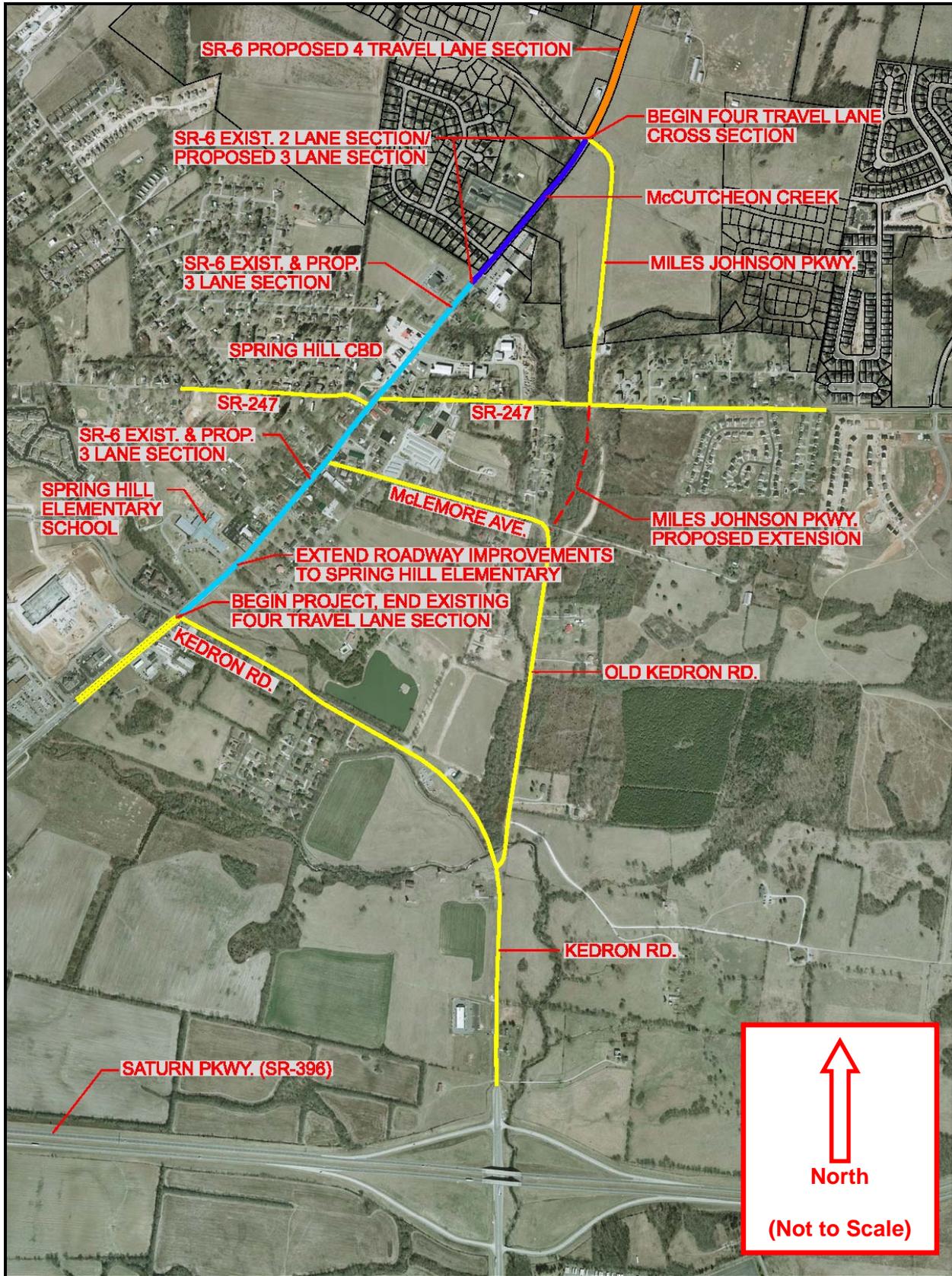


FIGURE 3.1 THREE (3) LANE SPRING HILL OPTION DETAIL

**TABLE 3.1 THREE (3) LANE SPRING HILL OPTION COST ESTIMATE**

ID	Location/ Description	Existing Roadway Classification	Proposed Roadway Classification	Length of Const. (Miles)	Estimated Low Cost	Estimated High Cost
1	SR-6 from Kedron Rd. to Maury/ Williamson County Line (L.M. 32.47 to 33.31)	3-Lane Urban Other Principal Arterial	3-Lane Urban Other Principal Arterial	0.84	\$ 722,400	\$ 722,400
2A	SR-6 from Maury/ Williamson County Line to Miles Johnson Pkwy.	2-Lane Urban Other Principal Arterial	3-Lane Urban Other Principal Arterial	0.20	\$ -	\$ -
2	SR-6 from Miles Johnson Pkwy. to Thompson's Station City Limits (L.M. 0.20 to 2.49)	2-Lane Urban Other Principal Arterial	4 Travel-Lane Urban Other Principal Arterial	2.29	\$ 16,281,900	\$ 19,991,700
3	SR-6 from Thompson's Station City Limits to south of SR-840 (L.M. 2.5 to 4.75)	2-Lane Rural Minor Arterial	4 Travel-Lane Rural Minor Arterial	2.26	\$ 15,413,200	\$ 17,424,600
4	SR-6 from south of SR-840 to Tollgate Rd. (L.M. 4.76 to 5.55)	5-Lane Rural Minor Arterial	5-Lane Rural Minor Arterial	0.80	\$ -	\$ -
5	SR-6 from Tollgate Rd. to Nashville Urban Boundary (L.M. 5.56 to 8.67)	2-Lane Rural Minor Arterial	4 Travel-Lane Rural Minor Arterial	3.12	\$ 25,989,600	\$ 28,766,400
6	SR-6 from Nashville Urban Boundary to SR-397 (Mack Hatcher Pkwy.) (L.M. 8.68 to 10.03)	2-Lane Urban Other Principal Arterial	4 Travel-Lane Urban Other Principal Arterial	1.36	\$ 15,572,000	\$ 17,122,400
<b>Total</b>				<b>10.87</b>	<b>\$ 73,980,000</b>	<b>\$ 84,030,000</b>

Notes: Existing and proposed 3-lane sections are urban x-section. Multilane sections as described below.  
 Low estimate utilizes 4-lane rural x-section, high estimate utilizes 5-lane urban x-section.  
 Total route length is equal to the construction length of 10.9 miles.

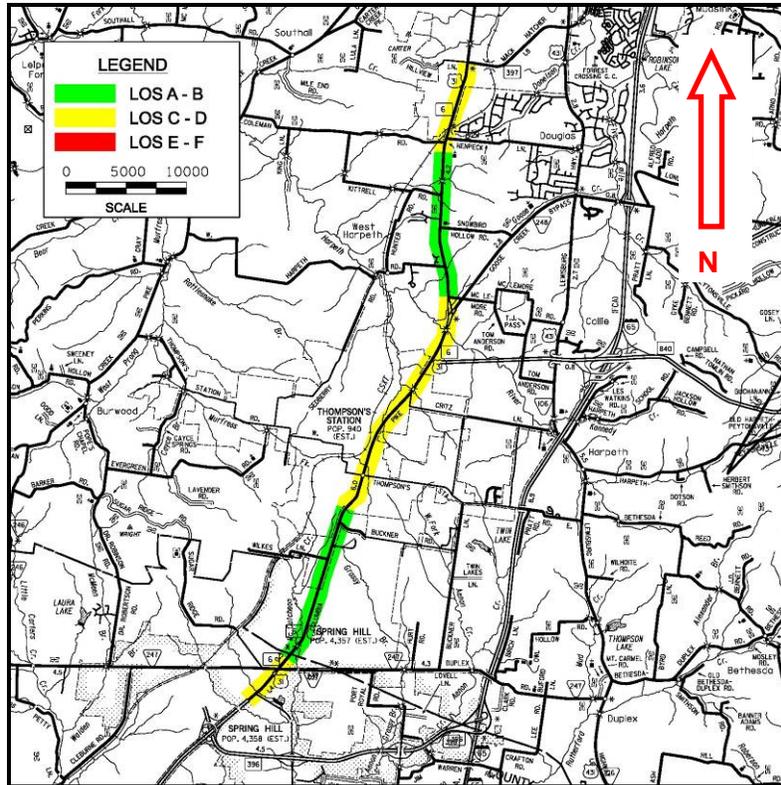


FIGURE 3.2 THREE (3) LANE SPRING HILL OPTION 2014 LOS

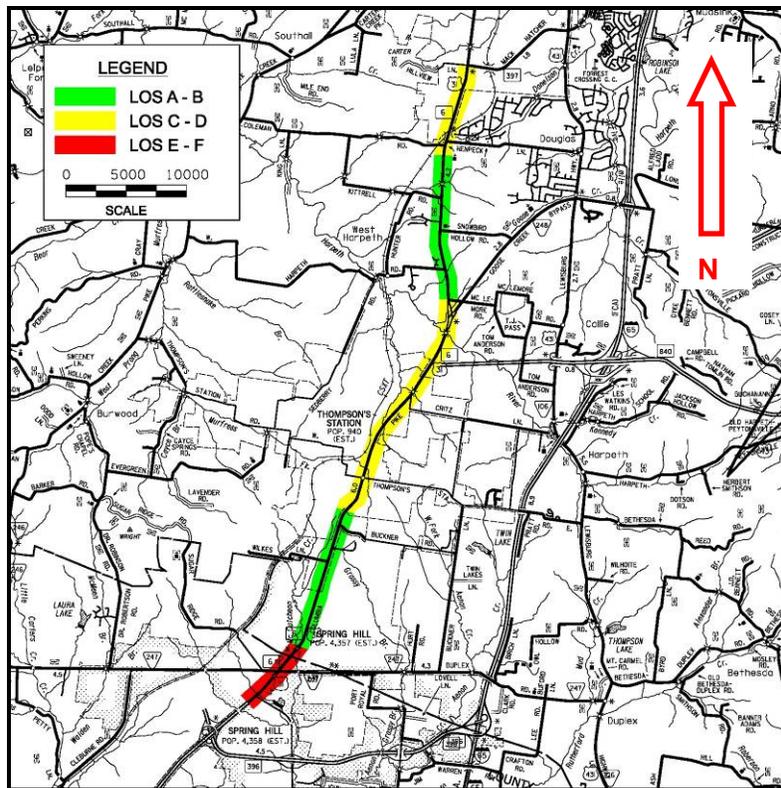


FIGURE 3.3 THREE (3) LANE SPRING HILL OPTION 2034 LOS

TABLE 3.2 THREE (3) LANE SPRING HILL OPTION LOS TABLE

ID	From		To		Dist. (mi)	Roadway Data			2014					2034				
	L.M.	Description	L.M.	Description		Posted Speed (mph)	# of Signals	Cross-Section Type	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)
1	32.47	Kedron Road	33.31	County Line	0.84	35	3	3-Lane	22,400	D	0.92	14.6	3.5	36,700	F	1.50	3.5	14.4
2A	0.00	County Line	0.20	Miles Johnson	0.20	45	2	3-Lane	25,000	B	1.02	30.3	0.4	36,700	F	1.50	12.5	1.0
2A	0.20	Miles Johnson	1.30	Cemetery Road	1.10	45		5-Lane	25,000	A	0.54	35.7	1.8	36,700	B	0.79	34.4	1.9
2B	1.30	Cemetery Road	2.17	Buckner Road	0.87	45		5-Lane	25,000	A	0.26	36.9	1.4	36,700	A	0.38	36.4	1.4
2C	2.17	Buckner Road	2.49	Thompson's Station City Limits	0.32	45		5-Lane	25,000	A	0.27	36.8	0.5	36,700	A	0.40	36.3	0.5
3	2.49	Thompson's Station City Limits	4.75	Between Critz Lane and SR-840	2.26	45	1	4-Lane	34,000	C	0.52	44.4	3.1	36,700	C	0.57	44.4	3.1
4	4.75	Between Critz Lane and SR-840	5.55	Tollgate Road	0.80	45	1	5-Lane	34,000	C	0.52	46.0	1.0	36,700	C	0.57	46.0	1.0
5A	5.55	Tollgate Road	6.60	near McLemore Road	1.05	45	0	4-Lane	24,000	B	0.37	44.4	1.4	27,600	C	0.43	44.4	1.4
5B	6.60	near McLemore Road	8.67	near Coleman Road	2.07	55	0	4-Lane	15,000	A	0.23	54.5	2.3	18,300	A	0.28	54.4	2.3
6	8.67	near Coleman Road	10.03	Mack Hatcher Parkway	1.36	40	1	4-Lane	20,800	C	0.32	39.4	2.1	32,200	C	0.50	39.4	2.1
<b>Σ =</b>					<b>10.87</b>				<b>Avg= 0.44</b>		<b>Σ =</b>	<b>17.5</b>	<b>Avg= 0.58</b>		<b>Σ =</b>	<b>29.1</b>		

Notes: Sections 1 & 2 analyzed with HCS+ Arterials Planning Analysis  
 Sections 3-6 analyzed with HCS+ Multi Lane Highway Analysis  
 Proposed cross section type as described in the LRTP

Average Speed: 37.3      Average Speed: 22.4  
 Avg. Post. Spd.: 45.5      Avg. Post. Spd.: 45.5  
 % Spd vs Post.: 82%      % Spd vs Post.: 49%

## **4.0 THREE (3) LANE THOMPSON'S STATION OPTION**

This option presents a three (3) lane cross section through the Town of Thompson's Station. A new interchange at Interstate 65 and Thompson's Station Road is currently in the MPO's LRTP, along with widening Interstate 65 from SR 840 to SR 96. The Town notes that these improvements may alleviate congestion along SR 6, and therefore eliminate the need to widen SR 6 to four (4) travel lanes through Thompson's Station. It is possible the proposed interchange will be relocated to a proposed Buckner Road extension at Interstate 65. It is desired by the town to improve SR 6 to three (3) lanes between either Buckner Road or Thompson's Station Road and Critz Lane. The remainder of SR 6 will be improved to four (4) travel lanes. This option could be implemented as an interim option to investigate the congestion improvements created by the planned improvements along I-65. However, the traffic calculations discussed below demonstrate that a three (3) lane cross section through the Town of Thompson's Station will not meet the projected traffic demand.

Because the MPO's LRTP currently includes improvements to Interstate 65 and a new interchange along Interstate 65 at Thompson's Station Road, the effects of these improvements are included in the MPO's travel demand model. As directed by TDOT, and as standard practice within MPO areas, the travel demand model was utilized in the traffic projections included in this report. Therefore the LOS calculations performed in this report include the effects of these improvements.

The Three (3) Lane Thompson's Station Option is estimated to cost between \$88 and \$100 million in year 2014 dollars. The cost estimate includes widening along SR 6. The estimate does not include a new interchange or widening along Interstate 65. The costs of these improvements are not included in the estimate since these improvements are currently programmed in separate projects in the LRTP. The estimated cost was calculated to a planning level utilizing cost per mile data. The cost estimate summary is provided in **Table 4.1**. The cost estimate calculations are provided in the **Appendix**.

For the Three (3) Lane Thompson's Station Option, the HCS's analysis calculates LOS ranging from A to F along SR 6 through the year 2034. The LOS calculations do not take into effect the diminished traffic operations caused by the four (4) school zones along the route. A summary of the LOS calculations for the Three (3) Lane Thompson's Station Option is provided in schematic form in **Figures 4.1** and **4.2** and in table form in **Table 4.2**. The LOS are reported for the years 2014 and 2034. The LOS calculations demonstrate that four (4) travel lanes are necessary along the route, and that two (2) travel lanes within Thompson's Station's Town Limits are not adequate to meet the traffic demand.

For the Three (3) Lane Thompson's Station Option in the year 2014, the volume to capacity ratio (v/c) of SR 6 is calculated to range from 0.23 to 0.92, with a weighted average of 0.49. In 2034, the v/c ranges from 0.28 to 0.99 with a weighted average of 0.61. The average was weighted based upon the length of each segment analyzed. A v/c ratio near or above "1" indicates a roadway experiences congestion. The v/c calculations demonstrate that four (4) travel lanes are necessary along the route, and that two (2) travel lanes within Thompson's Station's Town Limits are not adequate to meet the traffic demand. A summary of the v/c calculations for the Three (3) Lane Thompson's Station Option is provided in table form in **Table 4.2**. The v/c are reported for the years 2014 and 2034.

The posted speed limit ranges from 35 to 55 mph along SR 6 within the study area. For the Three (3) Lane Thompson's Station Option in the year 2014, travel speeds along the route are calculated by the HCS to range from 17.7 mph to 54.5 mph, with a weighted average of 32.2 mph. In 2034, the travel speed ranges from 16.3 mph to 54.4 mph with a weighted average of 30.8 mph. The average was weighted based upon the length of each segment analyzed. The weighted average of the speed limit along the route is 45.5 mph. The calculated average route speed is 71% and 68% of the posted speed limit in the years 2014 and 2034, respectively. The Nashville Area MPO's Congestion Management Process notes that if the average route speed is 70% or less of the free flow speed, the roadway is congested. Therefore, for the Three (3) Lane Thompson's Station Option, SR 6 is congested in 2034. A summary of the travel speed calculations for the Three (3) Lane Thompson's Station Option is provided in table form in **Table 5.4.2**. The travel speeds are reported for the years 2014 and 2034.

The existing SR 6 Corridor (Three (3) Lane Thompson's Station Option) between Kedron Road to the south and Mack Hatcher Parkway to the north is 10.9 miles in length. For the Three (3) Lane Thompson's Station Option in the year 2014, the travel time along SR 6 is calculated to be 20.2 minutes. In 2034, the travel time is calculated to be 21.2 minutes.

The traffic analysis demonstrates that four (4) travel lanes are necessary along the route. Two travel lanes within Thompson's Station Town Limits are not adequate to meet the projected design year traffic demand. Therefore, this option does not adequately address the purpose and need of the project.

**TABLE 4.1 THREE (3) LANE THOMPSON'S STATION COST ESTIMATE**

<b>ID</b>	<b>Location/ Description</b>	<b>Existing Roadway Classification</b>	<b>Proposed Roadway Classification</b>	<b>Length of Const. (Miles)</b>	<b>Estimated Low Cost</b>	<b>Estimated High Cost</b>
1	SR-6 from Kedron Rd. to Maury/ Williamson County Line (L.M. 32.47 to 33.31)	3-Lane Urban Other Principal Arterial	4-Travel Lane Urban Other Principal Arterial	0.84	\$ 13,003,200	\$ 16,405,200
2	SR-6 from Maury/ Williamson County Line to Thompson's Station City Limits (L.M. 0 to 2.49)	2-Lane Urban Other Principal Arterial	4 Travel-Lane Urban Other Principal Arterial	2.49	\$ 19,571,400	\$ 23,630,100
3	SR-6 from Thompson's Station City Limits to south of SR-840 (L.M. 2.5 to 4.75)	2-Lane Rural Minor Arterial	3-Lane Rural Minor Arterial	2.26	\$ 13,605,200	\$ 14,373,600
4	SR-6 from south of SR-840 to Tollgate Rd. (L.M. 4.76 to 5.55)	5-Lane Rural Minor Arterial	5-Lane Rural Minor Arterial	0.80	\$ -	\$ -
5	SR-6 from Tollgate Rd. to Nashville Urban Boundary (L.M. 5.56 to 8.67)	2-Lane Rural Minor Arterial	4 Travel-Lane Rural Minor Arterial	3.12	\$ 25,989,600	\$ 28,766,400
6	SR-6 from Nashville Urban Boundary to SR-397 (Mack Hatcher Pkwy.) (L.M. 8.68 to 10.03)	2-Lane Urban Other Principal Arterial	4 Travel-Lane Urban Other Principal Arterial	1.36	\$ 15,572,000	\$ 17,122,400
<b>Total</b>				<b>10.87</b>	<b>\$ 87,740,000</b>	<b>\$100,300,000</b>

Notes: Low estimate utilizes 4-lane rural x-section, high estimate utilizes 5-lane urban x-section.  
Total route length is equal to the construction length of 10.9 miles.

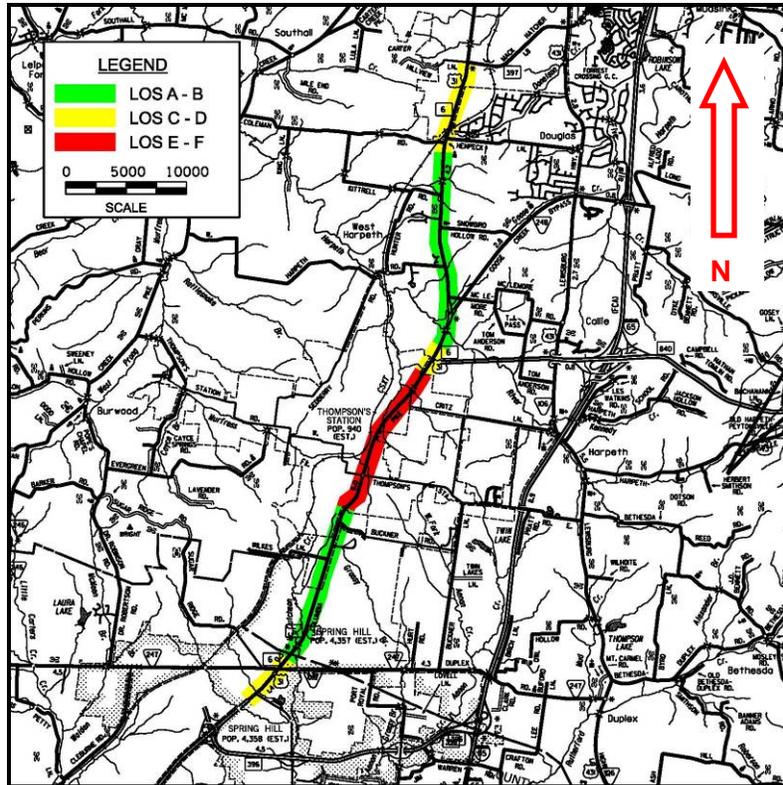


FIGURE 4.1 THREE (3) LANE THOMPSON'S STATION 2014 LOS

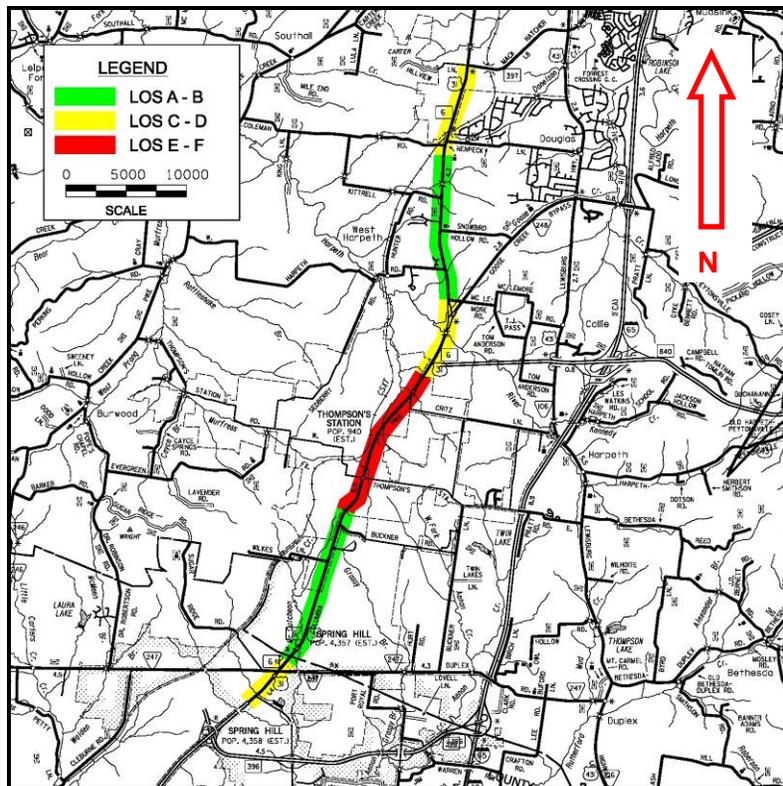


FIGURE 4.2 THREE (3) LANE THOMPSON'S STATION 2034 LOS

TABLE 4.2 THREE (3) LANE THOMPSON'S STATION LOS TABLE

ID	From		To		Dist. (mi)	Roadway Data			2014					2034																
	L.M.	Description	L.M.	Description		Posted Speed (mph)	# of Signals	Cross-Section Type	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)												
1	32.47	Kedron Road	33.31	County Line	0.84	35	3	5-Lane	22,400	D	0.46	17.7	2.8	36,700	D	0.75	16.3	3.1												
2A	0.00	County Line	1.30	Cemetery Road	1.30	45	2	5-Lane	25,000	A	0.54	35.7	2.2	36,700	B	0.79	34.4	2.3												
2B	1.30	Cemetery Road	2.17	Buckner Road	0.87	45		5-Lane	25,000	A	0.26	36.9	1.4	36,700	A	0.38	36.4	1.4												
2C	2.17	Buckner Road	2.49	Thompson's Station City Limits	0.32	45		3-Lane	25,000	A	0.51	35.5	0.5	36,700	B	0.75	34.1	0.6												
3	2.49	Thompson's Station City Limits	4.75	Between Critz Lane and SR-840	2.26	45	1	3-Lane	34,000	F	0.92	21.1	6.4	36,700	F	0.99	19.4	7.0												
4	4.75	Between Critz Lane and SR-840	5.55	Tollgate Road	0.80	45	1	5-Lane	34,000	C	0.52	46.0	1.0	36,700	C	0.57	46.0	1.0												
5A	5.55	Tollgate Road	6.60	near McLemore Road	1.05	45	0	4-Lane	24,000	B	0.37	44.4	1.4	27,600	C	0.43	44.4	1.4												
5B	6.60	near McLemore Road	8.67	near Coleman Road	2.07	55	0	4-Lane	15,000	A	0.23	54.5	2.3	18,300	A	0.28	54.4	2.3												
6	8.67	near Coleman Road	10.03	Mack Hatcher Parkway	1.36	40	1	4-Lane	20,800	C	0.32	39.4	2.1	32,200	C	0.50	39.4	2.1												
<b>Σ =</b>					<b>10.87</b>				<b>Avg= 0.49</b>					<b>Σ =</b>	<b>20.2</b>					<b>Avg= 0.61</b>					<b>Σ =</b>	<b>21.2</b>				

Notes: Sections 1 & 2 analyzed with HCS+ Arterials Planning Analysis  
 Sections 3-6 analyzed with HCS+ Two Lane and Multi Lane Highway Analysis  
 Sections 1-2B, 4-6 from Widen the Existing Alignment Option, Section 3 from No Build Option, Section 2C calculated specific to New Access to I-65 Option

Average Speed: 32.2      Average Speed: 30.8  
 Avg. Post. Spd.: 45.5      Avg. Post. Spd.: 45.5  
 % Spd vs Post.: 71%      % Spd vs Post.: 68%

## **5.0 THREE (3) LANE SPRING HILL & THOMPSON'S STATION OPTION**

This option combines the Three (3) Lane Spring Hill and Three (3) Lane Thompson's Station Options to present a three (3) lane cross section through the City of Spring Hill's CBD and through the Town of Thompson's Station. The remainder of SR 6 will be improved to four (4) travel lanes. This option could be implemented as an interim option to investigate the congestion improvements created by the planned improvements adjacent to the study corridor.

The Three (3) Lane Spring Hill and Thompson's Station Option is estimated to cost between \$77 and \$81 million in year 2014 dollars. The estimated cost was calculated to a planning level utilizing cost per mile data. The cost estimate summary is provided in **Table 5.1**. The cost estimate calculations are provided in the **Appendix**.

For the Three (3) Lane Spring Hill and Thompson's Station Option, the HCS's analysis calculates LOS ranging from A to F along SR 6 through the year 2034. The LOS calculations do not take into effect the diminished traffic operations caused by the four (4) school zones along the route. A summary of the LOS calculations for the Three (3) Lane Spring Hill and Thompson's Station Option is provided in schematic form in **Figures 5.1** and **5.2** and in table form in **Table 5.2**. The LOS are reported for the years 2014 and 2034. The LOS calculations demonstrate that four (4) travel lanes are necessary along the route. Two (2) travel lanes within Spring Hill's CBD and the Town of Thompson's Station are not adequate to meet the projected design year traffic demand.

For the Three (3) Lane Spring Hill and Thompson's Station Option in the year 2014, the volume to capacity ratio (v/c) of SR 6 is calculated to range from 0.23 to 1.02, with a weighted average of 0.53. In 2034, the v/c ranges from 0.28 to 1.50 with a weighted average of 0.68. The average was weighted based upon the length of each segment analyzed. A v/c ratio near or above "1" indicates a roadway experiences congestion. The v/c calculations demonstrate that four (4) travel lanes are necessary along the route to meet the projected traffic demand. A summary of the v/c calculations for the Three Lane Spring Hill and Thompson's Station Option is provided in table form in **Table 5.2**. The v/c are reported for the years 2014 and 2034.

The posted speed limit ranges from 35 to 55 mph along SR 6 within the study area. For the Three (3) Lane Spring Hill and Thompson's Station Option in the year 2014, travel speeds along the route are calculated by the HCS to range from 14.6 mph to 54.5 mph, with a weighted average of 31.2 mph. In 2034, the travel speed ranges from 3.5 mph to 54.4 mph with a weighted average of 33.1 mph. The average was weighted based upon the length of each segment analyzed. The weighted average of the speed limit along the route is 45.5 mph. The calculated average route speed is 69% and 43% of the posted speed limit in the years 2014 and 2034, respectively. The Nashville Area MPO's Congestion Management Process notes that if the average route speed is 70% or less of the free flow speed, the roadway is congested. Therefore, for the Three (3) Lane Spring Hill and Thompson's Station Option, SR 6 is congested in 2034. A summary of the travel speed calculations for this option is provided in table form in **Table 5.2**. The travel speeds are reported for the years 2014 and 2034.

The existing SR 6 Corridor (Three (3) Lane Spring Hill and Thompson's Station Option) between Kedron Road to the south and Mack Hatcher Parkway to the north is 10.9 miles in length. For the Three (3) Lane Spring Hill and Thompson's Station Option in the year 2014, the travel time

along SR 6 is calculated to be 20.9 minutes. In 2034, the travel time is calculated to be 33.1 minutes.

The traffic analysis demonstrates that four (4) travel lanes are necessary along the route. Two travel lanes within Spring Hill's City Limits and Thompson's Station Town Limits are not adequate to meet the projected design year traffic demand. Therefore, this option does not adequately address the purpose and need of the project.

**TABLE 5.1 THREE (3) LANE SPRING HILL AND THOMPSON'S STATION OPTION COST ESTIMATE**

ID	Location/ Description	Existing Roadway Classification	Proposed Roadway Classification	Length of Const. (Miles)	Estimated Low Cost	Estimated High Cost
1	SR-6 from Kedron Rd. to Maury/ Williamson County Line (L.M. 32.47 to 33.31)	3-Lane Urban Other Principal Arterial	3-Lane Urban Other Principal Arterial	0.84	\$ 722,400	\$ 722,400
2A	SR-6 from Maury/ Williamson County Line to Miles Johnson Pkwy.	2-Lane Urban Other Principal Arterial	3-Lane Urban Other Principal Arterial	0.20	\$ -	\$ -
2	SR-6 from Miles Johnson Pkwy. to Thompson's Station City Limits (L.M. 0.20 to 2.49)	2-Lane Urban Other Principal Arterial	4 Travel-Lane Urban Other Principal Arterial	2.29	\$ 16,281,900	\$ 19,991,700
3	SR-6 from Thompson's Station City Limits to south of SR-840 (L.M. 2.5 to 4.75)	2-Lane Rural Minor Arterial	4 Travel-Lane Rural Minor Arterial	2.26	\$ 13,605,200	\$ 14,373,600
4	SR-6 from south of SR-840 to Tollgate Rd. (L.M. 4.76 to 5.55)	5-Lane Rural Minor Arterial	5-Lane Rural Minor Arterial	0.80	\$ -	\$ -
5	SR-6 from Tollgate Rd. to Nashville Urban Boundary (L.M. 5.56 to 8.67)	2-Lane Rural Minor Arterial	4 Travel-Lane Rural Minor Arterial	3.12	\$ 25,989,600	\$ 28,766,400
6	SR-6 from Nashville Urban Boundary to SR-397 (Mack Hatcher Pkwy.) (L.M. 8.68 to 10.03)	2-Lane Urban Other Principal Arterial	4 Travel-Lane Urban Other Principal Arterial	1.36	\$ 15,572,000	\$ 17,122,400
<b>Total</b>				<b>10.87</b>	<b>\$ 72,170,000</b>	<b>\$ 80,980,000</b>

Notes: Existing and proposed 3-lane sections are urban x-section. Multilane sections as described below.  
 Low estimate utilizes 4-lane rural x-section, high estimate utilizes 5-lane urban x-section.  
 Total route length is equal to the construction length of 10.9 miles.

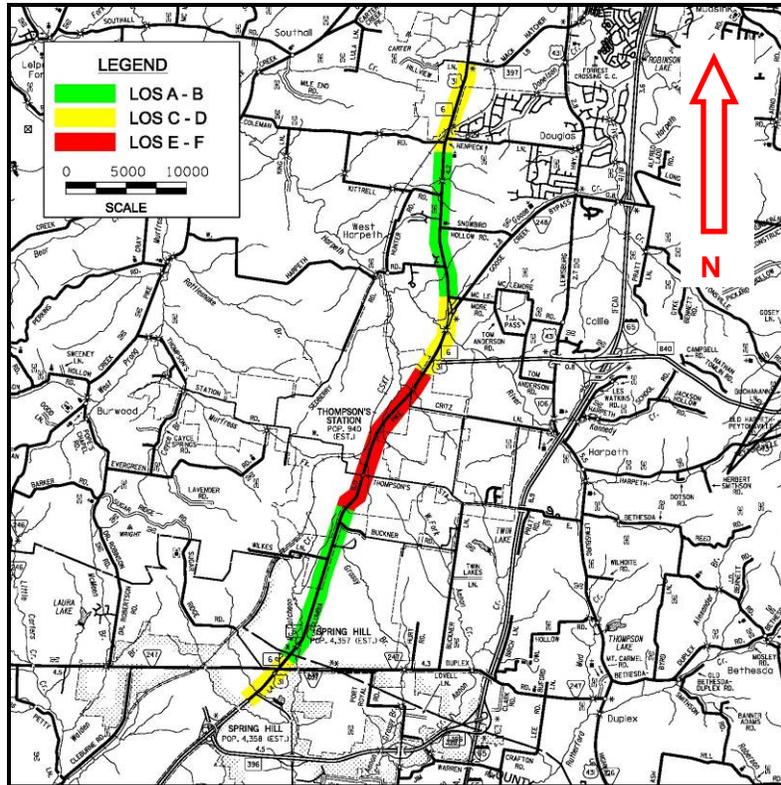


FIGURE 5.1 THREE (3) LANE SPRING HILL AND THOMPSON'S STATION OPTION 2014 LOS

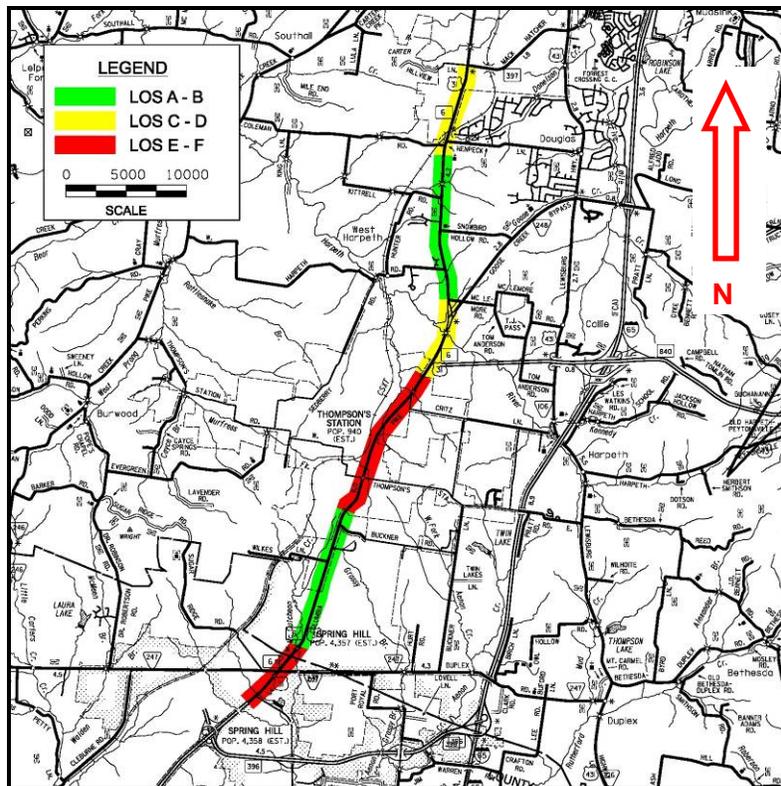


FIGURE 5.2 THREE (3) LANE SPRING HILL AND THOMPSON'S STATION OPTION 2034 LOS

TABLE 5.2 THREE (3) LANE SPRING HILL AND THOMPSON'S STATION OPTION LOS TABLE

ID	From		To		Dist. (mi)	Roadway Data			2014					2034				
	L.M.	Description	L.M.	Description		Posted Speed (mph)	# of Signals	Cross-Section Type	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)
1	32.47	Kedron Road	33.31	County Line	0.84	35	3	3-Lane	22,400	D	0.92	14.6	3.5	36,700	F	1.50	3.5	14.4
2A	0.00	County Line	0.20	Miles Johnson	0.20	45	2	3-Lane	25,000	B	1.02	30.3	0.4	36,700	F	1.50	12.5	1.0
2A	0.20	Miles Johnson	1.30	Cemetery Road	1.10	45		5-Lane	25,000	A	0.54	35.7	1.8	36,700	B	0.79	34.4	1.9
2B	1.30	Cemetery Road	2.17	Buckner Road	0.87	45		5-Lane	25,000	A	0.26	36.9	1.4	36,700	A	0.38	36.4	1.4
2C	2.17	Buckner Road	2.49	Thompson's Station City Limits	0.32	45		3-Lane	25,000	A	0.51	35.5	0.5	36,700	B	0.75	34.1	0.6
3	2.49	Thompson's Station City Limits	4.75	Between Critz Lane and SR-840	2.26	45	1	3-Lane	34,000	F	0.92	21.1	6.4	36,700	F	0.99	19.4	7.0
4	4.75	Between Critz Lane and SR-840	5.55	Tollgate Road	0.80	45	1	5-Lane	34,000	C	0.52	46.0	1.0	36,700	C	0.57	46.0	1.0
5A	5.55	Tollgate Road	6.60	near McLemore Road	1.05	45	0	4-Lane	24,000	B	0.37	44.4	1.4	27,600	C	0.43	44.4	1.4
5B	6.60	near McLemore Road	8.67	near Coleman Road	2.07	55	0	4-Lane	15,000	A	0.23	54.5	2.3	18,300	A	0.28	54.4	2.3
6	8.67	near Coleman Road	10.03	Mack Hatcher Parkway	1.36	40	1	4-Lane	20,800	C	0.32	39.4	2.1	32,200	C	0.50	39.4	2.1
<b>Σ =</b>					<b>10.87</b>				<b>Avg= 0.53</b>		<b>Σ =</b>	<b>20.9</b>	<b>Avg= 0.68</b>		<b>Σ =</b>	<b>33.1</b>		

Notes: Sections 1 & 2 analyzed with HCS+ Arterials Planning Analysis  
 Sections 3-6 analyzed with HCS+ Multi Lane Highway Analysis  
 Proposed cross section type as described in the LRTP

Average Speed: 31.2      Average Speed: 19.7  
 Avg. Post. Spd.: 45.5      Avg. Post. Spd.: 45.5  
 % Spd vs Post.: 69%      % Spd vs Post.: 43%

## 6.0 SPRING HILL ONE-WAY PAIR OPTION

It was briefly investigated to utilize School Street in a one-way pair configuration with SR 6 through Spring Hill's CBD. Existing SR 6 would provide southern travel lanes and School Street would provide northern travel lanes. This option did not have the support of the City of Spring Hill. Furthermore, upon site inspection, School Street is a poor candidate for improvements. The vertical geometry and the cross-section of the route are poor, being the functional equivalent of an alley. Numerous historic and religious properties are adjacent to the route. A connector to provide access to Existing SR 6 would intersect The Tennessee Orphans home Historic Site. Therefore, this option was not investigated further.

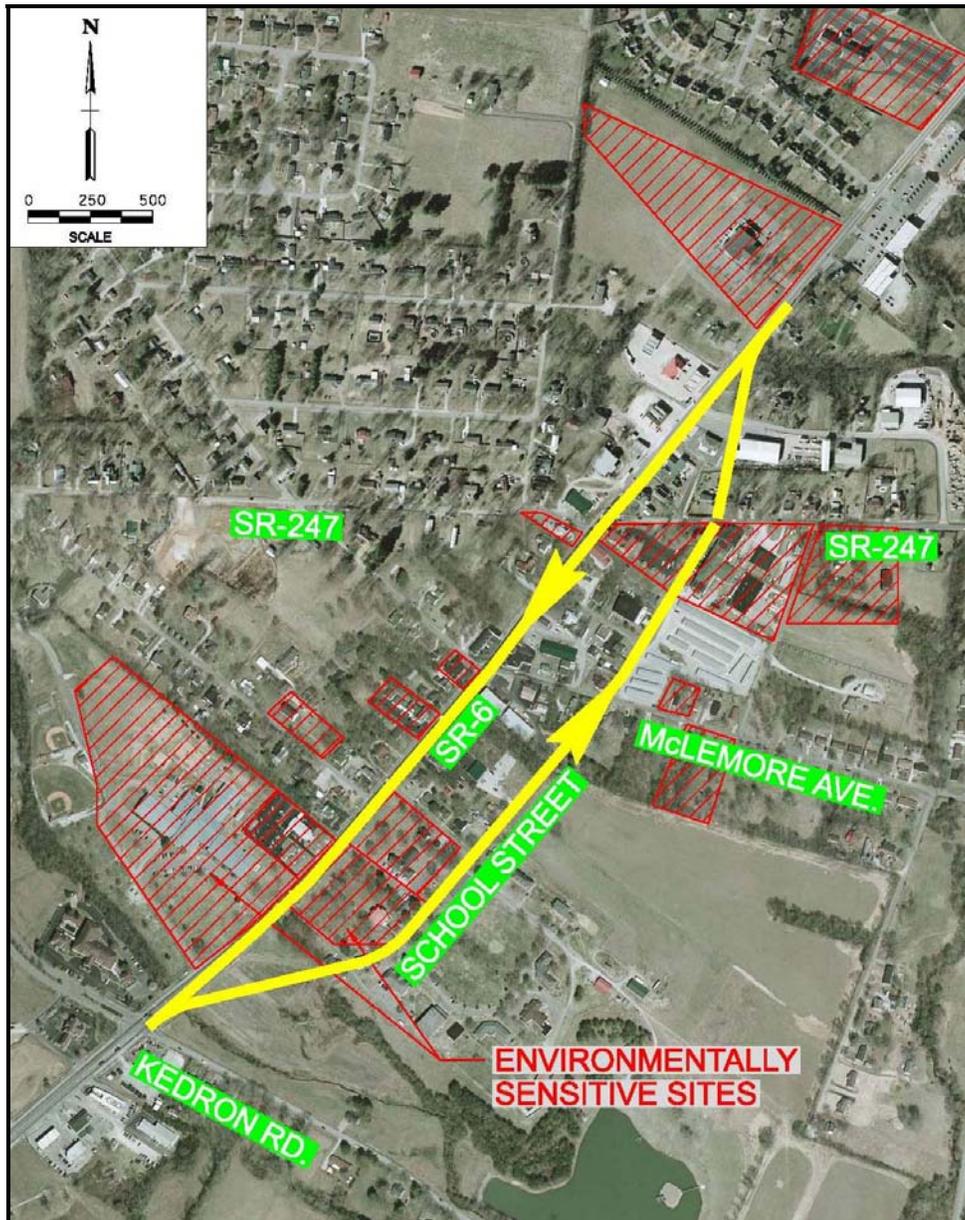


FIGURE 6 ONE-WAY PAIR DETAIL

## **7.0 SPRING HILL BYPASS OPTIONS**

An Eastern and a Western Spring Hill Bypass Option were studied. The Bypass Options were developed through a relatively informal stakeholder's meeting without public participation or input. Significant changes to the project, including a proposed Bypass Option, should originate through the local, county, or MPO planning process. Additionally, there are several functional issues that led to the Bypass options not being included in the TPR, including lack of route continuity and access control issues. It should be noted that further refinement of the Bypass Options through the MPO's planning process may create a viable option to meet the Purpose and Need of the project.

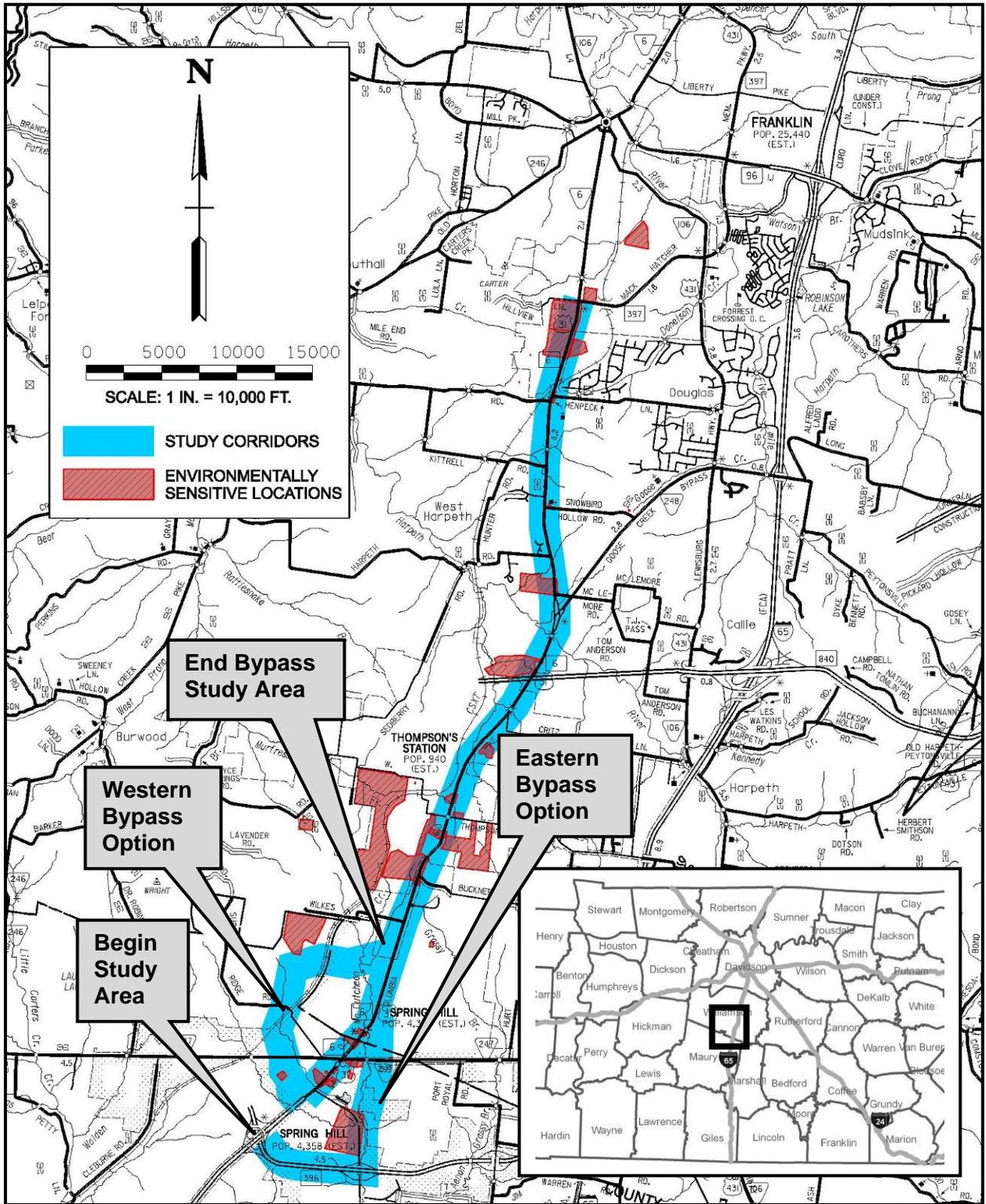


FIGURE 7 BYPASS OPTIONS MAP

## **7.1 EASTERN SPRING HILL BYPASS OPTION**

This option would provide an eastern bypass around the CBD of the City of Spring Hill. The option would originate along SR 6 at the existing five (5) lane cross section south of Saturn Parkway (SR 396). The option would utilize existing Saturn Parkway (SR 396), Kedron Road, Old Kedron Road, and proposed Miles Johnson Parkway to route SR 6 around the CBD. The rejected Eastern Spring Hill Bypass is 3.3 miles long. The distance along existing SR 6 that would be bypassed is 2.1 miles long. This option was developed due to the City of Spring Hill not being in support of widening SR 6 within the CBD. Widening SR 6 within the CBD will require impacts to numerous religious, historic, and commercial properties and harm the City's efforts to create a more walkable downtown community.

The Eastern Spring Hill Bypass Option would improve Kedron Road, Old Kedron Road, and Miles Johnson Parkway to form a continuous route. Saturn Parkway (SR 396) would be utilized without improvements. The existing three (3) lane cross section of SR 6 in the CBD would not be impacted. The remainder of SR 6 would be improved to four (4) travel lanes. This option was developed in coordination with representatives from the City of Spring Hill to eliminate impacts to their CBD.

The option would utilize 1.4 miles of Saturn Parkway (SR 396) from SR 6 to the Kedron Road Interchange. The option would then provide improvements along 1.9 miles of Kedron Road, Old Kedron Road, and proposed Miles Johnson Parkway. The improvements along these three (3) routes would create a continuous route and are estimated to require widening these routes from their existing two (2) travel lanes to four (4) travel lanes. The southern terminus of the bypass would utilize the existing interchange between SR 6 and Saturn Parkway (SR 396). Local officials noted a need to improve the existing flyover ramp from Saturn Parkway (SR 396) Westbound to SR 6 Southbound for safety reasons. Improvements to this ramp are not included in this option and could be investigated in a separate project. The northern terminus of the bypass could be adjusted to create a continuous route between SR 6 to the north and the proposed bypass to the south, or maintain the existing configuration where existing SR 6 is the continuous route. Constructing a roundabout at this intersection is another option. It is anticipated that the existing interchange between Saturn Parkway (SR 396) and Kedron Road could be utilized with only minor improvements at the ramp termini.

Several environmentally sensitive locations and community resources are located, or are planned to be located, within the Eastern Spring Hill Bypass Corridor. A segment of The Spring Hill Civil War Battlefield is located within the Corridor. The battlefield is located north of Saturn Parkway (SR 396) and west and south of Kedron Road. It was also noted by local officials that wetlands are present in the area. A new fifty-three (53) bed hospital will be located within the Eastern Spring Hill Bypass Corridor adjacent to the proposed Miles Johnson Parkway. Additional development in the area is anticipated with construction of the Miles Johnson Parkway.

The Eastern Spring Hill Bypass Option is estimated to cost between \$91 and \$105 million in year 2014 dollars. The estimated cost was calculated to a planning level utilizing cost per mile data. The cost estimate includes between \$17 and \$20 million to improve Kedron

Road, Old Kedron Road, and Miles Johnson Parkway to create the bypass; and between \$74 and \$85 million to widen SR 6 from Miles Johnson Parkway to Mack Hatcher Parkway to four (4) travel lanes. The cost calculations for the improvements to Kedron Road, Old Kedron Road, and proposed Miles Johnson Parkway include widening these roads from their existing two (2) travel lanes to four (4) travel lanes. The cost estimate does not include improvements along Saturn Parkway (SR 396) or improvements at the interchanges between Saturn Parkway (SR 396) and SR 6 and Kedron Road, because improvements are not anticipated to be needed at these locations for adequate traffic operations. The cost estimate summary is provided in **Table 7.1**. The cost estimate calculations are provided in the **Appendix**.

No HCS LOS analysis was performed for the Eastern Spring Hill Bypass Option. This option was developed as a result of feedback received during stakeholder meetings that occurred during the development of this TPR. As discussed in the TPR, representatives of the City of Spring Hill are not in favor of widening SR 6 through the City's CBD. An Eastern Spring Hill Bypass Option is not in the Nashville MPO's LRTP. Therefore, this improvement is not in their Travel Demand Model and traffic projections are not currently available for this option.

This option was not included in the main body of the TPR in part because it is not currently included in the MPO's planning process. The bypass option was developed through a relatively informal stakeholder's meeting without public participation or input. Significant changes to the project, including a proposed bypass option, should originate through the local, county, or MPO planning process. Additionally, there are several functional issues that led to this option being rejected, including route continuity and access control issues. Even with improvements along the bypass corridor, the Eastern Spring Hill Bypass Option would not be continuous, routing SR 6 traffic along Saturn Parkway. It would be infeasible to provide access control measures along the bypass due to the existing development along the proposed route. Additionally, rerouting SR 6 along the existing Kedron Road, Old Kedron Road, and Miles Johnson Parkway corridors would reallocate truck traffic to these primarily residential areas. Several environmentally sensitive locations are also located adjacent to the route. Finally, the existence of I-65 less than 3.5 miles to the east of SR 6 creates questions concerning the regional significance of a bypass at this location. Due to these concerns, the Spring Hill community may be better served by maintaining Kedron Road, Old Kedron Road, and Miles Johnson Parkway as local routes, and not utilizing them as a bypass.

TABLE 7.1 EASTERN SPRING HILL BYPASS COST ESTIMATE

ID	Location/ Description	Existing Roadway Classification	Proposed Roadway Classification	Length of Const. (Miles)	Estimated Low Cost	Estimated High Cost
Byp.	Eastern Bypass from Saturn Parkway (SR-396) to SR-6 at Miles Johnson Parkway	n/a	4-Travel Lane Urban Other Principal Arterial	1.90	\$ 16,511,000	\$ 19,836,000
1	SR-6 from Kedron Rd. to Maury/ Williamson County Line (L.M. 32.47 to 33.31)	3-Lane Urban Other Principal Arterial	2-Travel Lane Urban Other Principal Arterial	0.00	\$ -	\$ -
2	SR-6 from Maury/ Williamson County Line to Thompson's Station City Limits (L.M. 0 to 2.49)	2-Lane Urban Other Principal Arterial	2/4 Travel-Lane Urban Other Principal Arterial	2.29	\$ 17,999,400	\$ 21,732,100
3	SR-6 from Thompson's Station City Limits to south of SR-840 (L.M. 2.5 to 4.75)	2-Lane Rural Minor Arterial	4 Travel-Lane Rural Minor Arterial	2.26	\$ 15,413,200	\$ 17,424,600
4	SR-6 from south of SR-840 to Tollgate Rd. (L.M. 4.76 to 5.55)	5-Lane Rural Minor Arterial	5-Lane Rural Minor Arterial	0.80	\$ -	\$ -
5	SR-6 from Tollgate Rd. to Nashville Urban Boundary (L.M. 5.56 to 8.67)	2-Lane Rural Minor Arterial	4 Travel-Lane Rural Minor Arterial	3.12	\$ 25,989,600	\$ 28,766,400
6	SR-6 from Nashville Urban Boundary to SR-397 (Mack Hatcher Pkwy.) (L.M. 8.68 to 10.03)	2-Lane Urban Other Principal Arterial	4 Travel-Lane Urban Other Principal Arterial	1.36	\$ 15,572,000	\$ 17,122,400
<b>Total</b>				11.73	\$ 91,490,000	\$104,880,000

Notes: Low estimate utilizes 4-lane rural x-section, high estimate utilizes 5-lane urban x-section.  
Total route length is equal to 13.1 miles. 1.4 miles of existing Saturn Parkway is utilized.

## 7.2 WESTERN SPRING HILL BYPASS OPTION

This option would provide a western bypass around the CBD of the City of Spring Hill. The option would originate at the intersection of SR 6 with Stephen P. Yokich Parkway/Town Center Parkway. The option would utilize the 0.7 mile long Stephen P. Yokich/Town Center Parkway to its existing terminus with Beechcroft Road (SR 247), then proceed north on new alignment for 2.53 miles, and terminate near the intersection of SR 6 with Cemetery Road. The section of existing SR 6 between Stephen P. Yokich

Parkway/Town Center Parkway and the northern terminus of the bypass would not be improved. The remainder of SR 6 would be improved to four (4) travel lanes.

The proposed Western Spring Hill Bypass is 3.2 miles long. The 3.2-mile long bypass route includes 0.7 miles along existing Stephen P. Yokich Parkway/Town Center Parkway and 2.5 miles along new location. The distance along existing SR 6 that is being bypassed is 2.4 miles long.

As discussed in **Section 5.2**, the City of Spring Hill does not support widening SR 6 within the CBD. Widening SR 6 within the CBD will require impacts to numerous religious, historic, and commercial properties and harm the City's efforts to create a more walkable downtown community.

Stephen P. Yokich Parkway/Town Center Parkway would be utilized as a segment of the proposed Western Spring Hill Bypass. Stephen P. Yokich Parkway/Town Center Parkway is four (4) travel lanes wide with a raised median, curb and gutter, and no shoulders. The existing speed limit of Stephen P. Yokich Parkway/Town Center Parkway is 35 miles per hour.

This option is similar to improvements noted in the City of Spring Hill's Major Thoroughfare Plan (MTP). The route listed in the MTP extends from Stephen P. Yokich Parkway/Town Center Parkway to Buckner Road. This route would bisect the Campbell Farm. The Campbell Farm is listed in the National Register of Historic Places and is a Tennessee Century Farm. The MTP Route would also bisect the historic James Giddens House property and be located adjacent to Heritage Elementary and Middle Schools. Due to these environmentally sensitive locations, the northern terminus of the route in the MTP was modified as shown in this TPR to connect to SR 6 near Cemetery Road, instead of Buckner Road.

The Western Spring Hill Bypass is estimated to require four (4) travel lanes. The intersections created by the termini of the Western Spring Hill Bypass with SR 6 would require improvements to ensure that the anticipated heavy turning movement volumes are addressed. Potential intersection improvements at these locations could include multilane roundabouts.

A couple of environmentally sensitive locations and community resources are located within or adjacent to the Western Spring Hill Bypass Corridor. The Spring Hill Water Treatment Plant is located within the corridor, but will not be impacted due to its location adjacent to the existing segment of Town Center Parkway. The Campbell farm is located adjacent to the corridor. The Belshire Village commercial development, which is anchored by a Lowe's Home Improvement Store, is located within the study corridor at the northern terminus. It is believed the existing commercial developments can be avoided by the proposed bypass. The Western Spring Hill Bypass Corridor crosses the CSX Corporation Railroad in two (2) locations. These locations will need to be grade separated.

The Western Spring Hill Bypass Option is estimated to cost between \$114 and \$127 million in year 2014 dollars. The estimated cost was calculated to a planning level utilizing cost per mile data. The cost estimate includes between \$47 and \$52 million to construct the four travel lane Western Spring Hill Bypass on new location and between \$67 and \$75 million to widen SR 6 from Cemetery Road to Mack Hatcher Parkway to four (4) travel lanes. The cost estimate includes structures to bridge the two (2) CSX Corporation

railroad crossings located along the Western Bypass route. The cost estimate does not include improvements along the existing segment of Stephen P. Yokich/Town Center Parkway that is utilized by the Western Bypass. The cost estimate summary is provided in **Table 7.2**. The cost estimate calculations are provided in the **Appendix**.

No HCS LOS analysis was performed for the Western Spring Hill Bypass Option. This option was developed as a result of feedback received during stakeholder meetings that occurred during the development of this TPR. As discussed in the TPR, representatives of the City of Spring Hill are not in favor of widening SR 6 through the City's CBD. A Western Spring Hill Bypass Option is not in the Nashville MPO's LRTP. Therefore, this improvement is not in their Travel Demand Model and traffic projections are not currently available for this option.

This option was not included in the main body of the TPR in part because it is not currently included in the MPO's planning process. The bypass option was developed through a relatively informal stakeholder's meeting without public participation or input. Significant changes to the project, including a proposed bypass option, should originate through the local, county, or MPO planning process. Additionally, there are several functional issues that led to this option being rejected. SR 6 would not be a continuous route if redirected to this bypass and the pavement design and geometrics of Stephen P. Yokich Parkway/Town Center Parkway to be utilized in the bypass may not be sufficient for a State Route. The intersections formed between the bypass and SR 6 would likely not operate well due to the large turning volumes. A couple of environmentally sensitive locations are also located along the route. Finally, the existence of I-65 less than 3.5 miles to the east of SR 6 creates questions concerning the regional significance of a bypass at this location. Due to these concerns, this option was not included in the main body of the TPR.

TABLE 7.2 WESTERN SPRING HILL BYPASS COST ESTIMATE

ID	Location/ Description	Existing Roadway Classification	Proposed Roadway Classification	Length of Const. (Miles)	Estimated Low Cost	Estimated High Cost
Byp.	Western Bypass from Stephen P. Yokich Parkway/Town Center Parkway to Cemetery Road	n/a	4-Travel Lane Urban Other Principal Arterial	2.53	\$ 47,488,100	\$ 51,915,600
1	SR-6 from Kedron Rd. to Maury/ Williamson County Line (L.M. 32.47 to 33.31)	3-Lane Urban Other Principal Arterial	2-Travel Lane Urban Other Principal Arterial	0.00	\$ -	\$ -
2	SR-6 from Maury/ Williamson County Line to Thompson's Station City Limits (L.M. 0 to 2.49)	2-Lane Urban Other Principal Arterial	2/4 Travel-Lane Urban Other Principal Arterial	1.19	\$ 9,353,400	\$ 11,293,100
3	SR-6 from Thompson's Station City Limits to south of SR-840 (L.M. 2.5 to 4.75)	2-Lane Rural Minor Arterial	4 Travel-Lane Rural Minor Arterial	2.26	\$ 15,413,200	\$ 17,424,600
4	SR-6 from south of SR-840 to Tollgate Rd. (L.M. 4.76 to 5.55)	5-Lane Rural Minor Arterial	5-Lane Rural Minor Arterial	0.80	\$ -	\$ -
5	SR-6 from Tollgate Rd. to Nashville Urban Boundary (L.M. 5.56 to 8.67)	2-Lane Rural Minor Arterial	4 Travel-Lane Rural Minor Arterial	3.12	\$ 25,989,600	\$ 28,766,400
6	SR-6 from Nashville Urban Boundary to SR-397 (Mack Hatcher Pkwy.) (L.M. 8.68 to 10.03)	2-Lane Urban Other Principal Arterial	4 Travel-Lane Urban Other Principal Arterial	1.36	\$ 15,572,000	\$ 17,122,400
<b>Total</b>				11.26	\$113,820,000	\$126,520,000

Notes: Low estimate utilizes 4-lane rural x-section, high estimate utilizes 5-lane urban x-section.  
Total route length is equal to 11.9 miles. 0.65 miles of existing Town Center Parkway is utilized.

**COST ESTIMATES**

Cost calculation summaries  
Cost per mile calculations  
Construction and engineering cost per mile calculations  
Construction item cost per mile calculations  
Structures calculations  
Utility calculations  
R.O.W. calculations  
Paving cost calculations

**Widen Along the Existing Alignment**

<b>ID</b>	<b>Location/ Description</b>	<b>Existing Roadway Classification</b>	<b>Proposed Roadway Classification</b>	<b>Length of Const. (Miles)</b>	<b>Estimated Low Cost</b>	<b>Estimated High Cost</b>
1	SR-6 from Kedron Rd. to Williamson County Line (L.M. 32.47 to 33.31)	3-Lane Urban Other Principal Arterial	4-Travel Lane Urban Other Principal Arterial	0.84	\$ 13,003,200	\$ 16,405,200
2	SR-6 from Maury County Line to Thompson's Station City Limits (L.M. 0 to 2.49)	2-Lane Urban Other Principal Arterial	4 Travel-Lane Urban Other Principal Arterial	2.49	\$ 19,571,400	\$ 23,630,100
3	SR-6 from Thompson's Station City Limits to south of SR-840 (L.M. 2.5 to 4.75)	2-Lane Rural Minor Arterial	4 Travel-Lane Rural Minor Arterial	2.26	\$ 15,413,200	\$ 17,424,600
4	SR-6 from south of SR-840 to Tollgate Rd. (L.M. 4.76 to 5.55)	5-Lane Rural Minor Arterial	5-Lane Rural Minor Arterial	0.80	\$ -	\$ -
5	SR-6 from Tollgate Rd. to Nashville Urban Boundary (L.M. 5.56 to 8.67)	2-Lane Rural Minor Arterial	4 Travel-Lane Rural Minor Arterial	3.12	\$ 25,989,600	\$ 28,766,400
6	SR-6 from Nashville Urban Boundary to SR-397 (Mack Hatcher Pkwy.) (L.M. 8.68 to 10.03)	2-Lane Urban Other Principal Arterial	4 Travel-Lane Urban Other Principal Arterial	1.36	\$ 15,572,000	\$ 17,122,400
<b>Total</b>				<b>10.87</b>	<b>\$ 89,550,000</b>	<b>\$103,350,000</b>

Notes: Low estimate utilizes 4-lane rural x-section, high estimate utilizes 5-lane urban x-section.

Total route length is equal to the construction length of 10.9 miles.

**Three Lane Spring Hill Option**

<b>ID</b>	<b>Location/ Description</b>	<b>Existing Roadway Classification</b>	<b>Proposed Roadway Classification</b>	<b>Length of Const. (Miles)</b>	<b>Estimated Low Cost</b>	<b>Estimated High Cost</b>
1	SR-6 from Kedron Rd. to Williamson County Line (L.M. 32.47 to 33.31)	3-Lane Urban Other Principal Arterial	3-Lane Urban Other Principal Arterial	0.84	\$ 722,400	\$ 722,400
2A	SR-6 from Maury County Line to Miles Johnson Pkwy.	2-Lane Urban Other Principal Arterial	3-Lane Urban Other Principal Arterial	0.20	\$ -	\$ -
2	SR-6 from Miles Johnson Pkwy. to Thompson's Station City Limits (L.M. 0.20 to 2.49)	2-Lane Urban Other Principal Arterial	4 Travel-Lane Urban Other Principal Arterial	2.29	\$ 16,281,900	\$ 19,991,700
3	SR-6 from Thompson's Station City Limits to south of SR-840 (L.M. 2.5 to 4.75)	2-Lane Rural Minor Arterial	4 Travel-Lane Rural Minor Arterial	2.26	\$ 15,413,200	\$ 17,424,600
4	SR-6 from south of SR-840 to Tollgate Rd. (L.M. 4.76 to 5.55)	5-Lane Rural Minor Arterial	5-Lane Rural Minor Arterial	0.80	\$ -	\$ -
5	SR-6 from Tollgate Rd. to Nashville Urban Boundary (L.M. 5.56 to 8.67)	2-Lane Rural Minor Arterial	4 Travel-Lane Rural Minor Arterial	3.12	\$ 25,989,600	\$ 28,766,400
6	SR-6 from Nashville Urban Boundary to SR-397 (Mack Hatcher Pkwy.) (L.M. 8.68 to 10.03)	2-Lane Urban Other Principal Arterial	4 Travel-Lane Urban Other Principal Arterial	1.36	\$ 15,572,000	\$ 17,122,400
<b>Total</b>				<b>10.87</b>	<b>\$ 73,980,000</b>	<b>\$ 84,030,000</b>

Notes: Existing and proposed 3-lane sections are urban x-section. Multilane sections as described below.

Low estimate utilizes 4-lane rural x-section, high estimate utilizes 5-lane urban x-section.

Total route length is equal to the construction length of 10.9 miles.

### Three Lane Thompson's Station Option

ID	Location/ Description	Existing Roadway Classification	Proposed Roadway Classification	Length of Const. (Miles)	Estimated Low Cost	Estimated High Cost
1	SR-6 from Kedron Rd. to Williamson County Line (L.M. 32.47 to 33.31)	3-Lane Urban Other Principal Arterial	4-Travel Lane Urban Other Principal Arterial	0.84	\$ 13,003,200	\$ 16,405,200
2	SR-6 from Maury County Line to Thompson's Station City Limits (L.M. 0 to 2.49)	2-Lane Urban Other Principal Arterial	4 Travel-Lane Urban Other Principal Arterial	2.49	\$ 19,571,400	\$ 23,630,100
3	SR-6 from Thompson's Station City Limits to south of SR-840 (L.M. 2.5 to 4.75)	2-Lane Rural Minor Arterial	3-Lane Rural Minor Arterial	2.26	\$ 13,605,200	\$ 14,373,600
4	SR-6 from south of SR-840 to Tollgate Rd. (L.M. 4.76 to 5.55)	5-Lane Rural Minor Arterial	5-Lane Rural Minor Arterial	0.80	\$ -	\$ -
5	SR-6 from Tollgate Rd. to Nashville Urban Boundary (L.M. 5.56 to 8.67)	2-Lane Rural Minor Arterial	4 Travel-Lane Rural Minor Arterial	3.12	\$ 25,989,600	\$ 28,766,400
6	SR-6 from Nashville Urban Boundary to SR-397 (Mack Hatcher Pkwy.) (L.M. 8.68 to 10.03)	2-Lane Urban Other Principal Arterial	4 Travel-Lane Urban Other Principal Arterial	1.36	\$ 15,572,000	\$ 17,122,400
<b>Total</b>				<b>10.87</b>	<b>\$ 87,740,000</b>	<b>\$100,300,000</b>

Notes: Low estimate utilizes 4-lane rural x-section, high estimate utilizes 5-lane urban x-section.  
 Total route length is equal to the construction length of 10.9 miles.

**Three Lane Spring Hill & Thompson's Station Option**

ID	Location/ Description	Existing Roadway Classification	Proposed Roadway Classification	Length of Const. (Miles)	Estimated Low Cost	Estimated High Cost
1	SR-6 from Kedron Rd. to Williamson County Line (L.M. 32.47 to 33.31)	3-Lane Urban Other Principal Arterial	3-Lane Urban Other Principal Arterial	0.84	\$ 722,400	\$ 722,400
2A	SR-6 from Maury County Line to Miles Johnson Pkwy.	2-Lane Urban Other Principal Arterial	3-Lane Urban Other Principal Arterial	0.20	\$ -	\$ -
2	SR-6 from Miles Johnson Pkwy. to Thompson's Station City Limits (L.M. 0.20 to 2.49)	2-Lane Urban Other Principal Arterial	4 Travel-Lane Urban Other Principal Arterial	2.29	\$ 16,281,900	\$ 19,991,700
3	SR-6 from Thompson's Station City Limits to south of SR-840 (L.M. 2.5 to 4.75)	2-Lane Rural Minor Arterial	4 Travel-Lane Rural Minor Arterial	2.26	\$ 13,605,200	\$ 14,373,600
4	SR-6 from south of SR-840 to Tollgate Rd. (L.M. 4.76 to 5.55)	5-Lane Rural Minor Arterial	5-Lane Rural Minor Arterial	0.80	\$ -	\$ -
5	SR-6 from Tollgate Rd. to Nashville Urban Boundary (L.M. 5.56 to 8.67)	2-Lane Rural Minor Arterial	4 Travel-Lane Rural Minor Arterial	3.12	\$ 25,989,600	\$ 28,766,400
6	SR-6 from Nashville Urban Boundary to SR-397 (Mack Hatcher Pkwy.) (L.M. 8.68 to 10.03)	2-Lane Urban Other Principal Arterial	4 Travel-Lane Urban Other Principal Arterial	1.36	\$ 15,572,000	\$ 17,122,400
<b>Total</b>				<b>10.87</b>	<b>\$ 72,170,000</b>	<b>\$ 80,980,000</b>

Notes: Existing and proposed 3-lane sections are urban x-section. Multilane sections as described below.

Low estimate utilizes 4-lane rural x-section, high estimate utilizes 5-lane urban x-section.

Total route length is equal to the construction length of 10.9 miles.

### Eastern Spring Hill Bypass

ID	Location/ Description	Existing Roadway Classification	Proposed Roadway Classification	Length of Const. (Miles)	Estimated Low Cost	Estimated High Cost
By.	Eastern Bypass from Saturn Parkway (SR-396) to SR-6 at Miles Johnson Parkway	n/a	4-Travel Lane Urban Other Principal Arterial	1.90	\$ 16,511,000	\$ 19,836,000
1	SR-6 from Kedron Rd. to Williamson County Line (L.M. 32.47 to 33.31)	3-Lane Urban Other Principal Arterial	2-Travel Lane Urban Other Principal Arterial	0.00	\$ -	\$ -
2	SR-6 from Maury County Line to Thompson's Station City Limits (L.M. 0 to 2.49)	2-Lane Urban Other Principal Arterial	2/4 Travel-Lane Urban Other Principal Arterial	2.29	\$ 17,999,400	\$ 21,732,100
3	SR-6 from Thompson's Station City Limits to south of SR-840 (L.M. 2.5 to 4.75)	2-Lane Rural Minor Arterial	4 Travel-Lane Rural Minor Arterial	2.26	\$ 15,413,200	\$ 17,424,600
4	SR-6 from south of SR-840 to Tollgate Rd. (L.M. 4.76 to 5.55)	5-Lane Rural Minor Arterial	5-Lane Rural Minor Arterial	0.80	\$ -	\$ -
5	SR-6 from Tollgate Rd. to Nashville Urban Boundary (L.M. 5.56 to 8.67)	2-Lane Rural Minor Arterial	4 Travel-Lane Rural Minor Arterial	3.12	\$ 25,989,600	\$ 28,766,400
6	SR-6 from Nashville Urban Boundary to SR-397 (Mack Hatcher Pkwy.) (L.M. 8.68 to 10.03)	2-Lane Urban Other Principal Arterial	4 Travel-Lane Urban Other Principal Arterial	1.36	\$ 15,572,000	\$ 17,122,400
<b>Total</b>				11.73	\$ 91,490,000	\$104,880,000

Notes: Low estimate utilizes 4-lane rural x-section, high estimate utilizes 5-lane urban x-section.  
 Total route length is equal to 13.1 miles. 1.4 miles of existing Saturn Parkway is utilized.

**Western Spring Hill Bypass**

ID	Location/ Description	Existing Roadway Classification	Proposed Roadway Classification	Length of Const. (Miles)	Estimated Low Cost	Estimated High Cost
Byp.	Western Bypass from Stephen P. Yokich Parkway/Town Center Parkway to Cemetery Road	n/a	4-Travel Lane Urban Other Principal Arterial	2.53	\$ 47,488,100	\$ 51,915,600
1	SR-6 from Kedron Rd. to Williamson County Line (L.M. 32.47 to 33.31)	3-Lane Urban Other Principal Arterial	2-Travel Lane Urban Other Principal Arterial	0.00	\$ -	\$ -
2	SR-6 from Maury County Line to Thompson's Station City Limits (L.M. 0 to 2.49)	2-Lane Urban Other Principal Arterial	2/4 Travel-Lane Urban Other Principal Arterial	1.19	\$ 9,353,400	\$ 11,293,100
3	SR-6 from Thompson's Station City Limits to south of SR-840 (L.M. 2.5 to 4.75)	2-Lane Rural Minor Arterial	4 Travel-Lane Rural Minor Arterial	2.26	\$ 15,413,200	\$ 17,424,600
4	SR-6 from south of SR-840 to Tollgate Rd. (L.M. 4.76 to 5.55)	5-Lane Rural Minor Arterial	5-Lane Rural Minor Arterial	0.80	\$ -	\$ -
5	SR-6 from Tollgate Rd. to Nashville Urban Boundary (L.M. 5.56 to 8.67)	2-Lane Rural Minor Arterial	4 Travel-Lane Rural Minor Arterial	3.12	\$ 25,989,600	\$ 28,766,400
6	SR-6 from Nashville Urban Boundary to SR-397 (Mack Hatcher Pkwy.) (L.M. 8.68 to 10.03)	2-Lane Urban Other Principal Arterial	4 Travel-Lane Urban Other Principal Arterial	1.36	\$ 15,572,000	\$ 17,122,400
<b>Total</b>				<b>11.26</b>	<b>\$113,820,000</b>	<b>\$126,520,000</b>

Notes: Low estimate utilizes 4-lane rural x-section, high estimate utilizes 5-lane urban x-section.  
 Total route length is equal to 11.9 miles. 0.65 miles of existing Town Center Parkway is utilized.

## Spot Improvements

ID	Location/ Description	Existing Roadway Classification	Proposed Roadway Classification	Length of Const. (Miles)	Estimated Cost
n/a	Signalization	n/a	n/a	0.00	\$ 150,000
n/a	Signalization	n/a	n/a	0.00	\$ 150,000
n/a	Turn Lane Improvements	n/a	n/a	0.00	\$ 300,000
n/a	Turn Lane Improvements	n/a	n/a	0.00	\$ 300,000
n/a	Turn Lane Improvements	n/a	n/a	0.00	\$ 300,000
n/a	Bridge over Harpeth	n/a	n/a	0.00	\$ 1,512,000
n/a	SR-6 at SR-247	n/a	n/a	0.00	\$ 740,000
n/a	SR-6 at Critz Lane	n/a	n/a	0.19	\$ 950,000
n/a	SR-6 at Goose Creek Bypass	n/a	n/a	0.57	\$ 5,680,000
n/a	SR-6 at Coleman Road/Henpeck Lane	n/a	n/a	0.28	\$ 1,950,000
n/a	SR-6 at Mack Hatcher Parkway	n/a	n/a	3.12	\$ 200,000
<b>Total</b>				<b>4.16</b>	<b>\$ 12,232,000</b>

Notes: Low estimate utilizes 4-lane rural x-section, high estimate utilizes 5-lane urban x-section.

Total route length is equal to 11.9 miles. 0.7 miles of existing Town Center Parkway is utilized.

**Widen Along the Existing Alignment**

**Cost per mile Calculations**

<b>ID</b>	<b>Low Roadway Construction &amp; Engineering Cost</b>	<b>High Roadway Construction &amp; Engineering Cost</b>	<b>Low ROW Cost</b>	<b>High ROW Cost</b>	<b>Structures Cost</b>	<b>Low Total Estimated Cost</b>	<b>High Total Estimated Cost</b>
1	\$ 5,594,000	\$ 6,165,000	\$ 9,881,000	\$ 13,369,000	\$ -	\$ 15,480,000	\$ 19,530,000
2	\$ 5,594,000	\$ 6,165,000	\$ 1,511,000	\$ 2,569,000	\$ 756,000	\$ 7,860,000	\$ 9,490,000
3	\$ 5,594,000	\$ 6,165,000	\$ 465,000	\$ 791,000	\$ 756,000	\$ 6,820,000	\$ 7,710,000
4	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
5	\$ 5,594,000	\$ 6,165,000	\$ 465,000	\$ 791,000	\$ 2,268,000	\$ 8,330,000	\$ 9,220,000
6	\$ 5,594,000	\$ 6,165,000	\$ 814,000	\$ 1,383,000	\$ 5,040,000	\$ 11,450,000	\$ 12,590,000

**Three Lane Spring Hill Option**

**Cost per mile Calculations**

<b>ID</b>	<b>Low Roadway Construction &amp; Engineering Cost</b>	<b>High Roadway Construction &amp; Engineering Cost</b>	<b>Low ROW Cost</b>	<b>High ROW Cost</b>	<b>Structures Cost</b>	<b>Low Total Estimated Cost</b>	<b>High Total Estimated Cost</b>
1	\$ 857,000	\$ 857,000	\$ -	\$ -	\$ -	\$ 860,000	\$ 860,000
2A	\$ 4,797,000	\$ 4,812,000	\$ 465,000	\$ 791,000	\$ 756,000	\$ 6,020,000	\$ 6,360,000
2	\$ 5,594,000	\$ 6,165,000	\$ 1,511,000	\$ 2,569,000	\$ -	\$ 7,110,000	\$ 8,730,000
3	\$ 5,594,000	\$ 6,165,000	\$ 465,000	\$ 791,000	\$ 756,000	\$ 6,820,000	\$ 7,710,000
4	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
5	\$ 5,594,000	\$ 6,165,000	\$ 465,000	\$ 791,000	\$ 2,268,000	\$ 8,330,000	\$ 9,220,000
6	\$ 5,594,000	\$ 6,165,000	\$ 814,000	\$ 1,383,000	\$ 5,040,000	\$ 11,450,000	\$ 12,590,000

**Three Lane Thompson's Station Option**

**Cost per mile Calculations**

<b>ID</b>	<b>Low Roadway Construction &amp; Engineering Cost</b>	<b>High Roadway Construction &amp; Engineering Cost</b>	<b>Low ROW Cost</b>	<b>High ROW Cost</b>	<b>Structures Cost</b>	<b>Low Total Estimated Cost</b>	<b>High Total Estimated Cost</b>
1	\$ 5,594,000	\$ 6,165,000	\$ 9,881,000	\$ 13,369,000	\$ -	\$ 15,480,000	\$ 19,530,000
2	\$ 5,594,000	\$ 6,165,000	\$ 1,511,000	\$ 2,569,000	\$ 756,000	\$ 7,860,000	\$ 9,490,000
3	\$ 4,797,000	\$ 4,812,000	\$ 465,000	\$ 791,000	\$ 756,000	\$ 6,020,000	\$ 6,360,000
4	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
5	\$ 5,594,000	\$ 6,165,000	\$ 465,000	\$ 791,000	\$ 2,268,000	\$ 8,330,000	\$ 9,220,000
6	\$ 5,594,000	\$ 6,165,000	\$ 814,000	\$ 1,383,000	\$ 5,040,000	\$ 11,450,000	\$ 12,590,000

**Three Lane Spring Hill & Thompson's Station Option**

**Cost per mile Calculations**

<b>ID</b>	<b>Low Roadway Construction &amp; Engineering Cost</b>	<b>High Roadway Construction &amp; Engineering Cost</b>	<b>Low ROW Cost</b>	<b>High ROW Cost</b>	<b>Structures Cost</b>	<b>Low Total Estimated Cost</b>	<b>High Total Estimated Cost</b>
1	\$ 857,000	\$ 857,000	\$ -	\$ -	\$ -	\$ 860,000	\$ 860,000
2A	\$ 4,797,000	\$ 4,812,000	\$ 465,000	\$ 791,000	\$ 756,000	\$ 6,020,000	\$ 6,360,000
2	\$ 5,594,000	\$ 6,165,000	\$ 1,511,000	\$ 2,569,000	\$ -	\$ 7,110,000	\$ 8,730,000
3	\$ 4,797,000	\$ 4,812,000	\$ 465,000	\$ 791,000	\$ 756,000	\$ 6,020,000	\$ 6,360,000
4	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
5	\$ 5,594,000	\$ 6,165,000	\$ 465,000	\$ 791,000	\$ 2,268,000	\$ 8,330,000	\$ 9,220,000
6	\$ 5,594,000	\$ 6,165,000	\$ 814,000	\$ 1,383,000	\$ 5,040,000	\$ 11,450,000	\$ 12,590,000

**Eastern Spring Hill Bypass**

**Cost per mile Calculations**

<b>ID</b>	<b>Low Roadway Construction &amp; Engineering Cost</b>	<b>High Roadway Construction &amp; Engineering Cost</b>	<b>Low ROW Cost</b>	<b>High ROW Cost</b>	<b>Structures Cost</b>	<b>Low Total Estimated Cost</b>	<b>High Total Estimated Cost</b>
Byp.	\$ 7,894,000	\$ 9,368,000	\$ 791,000	\$ 1,070,000	\$ -	\$ 8,690,000	\$ 10,440,000
1	\$ 5,594,000	\$ 6,165,000	\$ 9,881,000	\$ 13,369,000	\$ -	\$ 15,480,000	\$ 19,530,000
2	\$ 5,594,000	\$ 6,165,000	\$ 1,511,000	\$ 2,569,000	\$ 756,000	\$ 7,860,000	\$ 9,490,000
3	\$ 5,594,000	\$ 6,165,000	\$ 465,000	\$ 791,000	\$ 756,000	\$ 6,820,000	\$ 7,710,000
4	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
5	\$ 5,594,000	\$ 6,165,000	\$ 465,000	\$ 791,000	\$ 2,268,000	\$ 8,330,000	\$ 9,220,000
6	\$ 5,594,000	\$ 6,165,000	\$ 814,000	\$ 1,383,000	\$ 5,040,000	\$ 11,450,000	\$ 12,590,000

**Western Spring Hill Bypass**

**Cost per mile Calculations**

<b>ID</b>	<b>Low Roadway Construction &amp; Engineering Cost</b>	<b>High Roadway Construction &amp; Engineering Cost</b>	<b>Low ROW Cost</b>	<b>High ROW Cost</b>	<b>Structures Cost</b>	<b>Low Total Estimated Cost</b>	<b>High Total Estimated Cost</b>
Byp.	\$ 7,894,000	\$ 9,368,000	\$ 791,000	\$ 1,070,000	\$ 10,080,000	\$ 18,770,000	\$ 20,520,000
1	\$ 5,594,000	\$ 6,165,000	\$ 9,881,000	\$ 13,369,000	\$ -	\$ 15,480,000	\$ 19,530,000
2	\$ 5,594,000	\$ 6,165,000	\$ 1,511,000	\$ 2,569,000	\$ 756,000	\$ 7,860,000	\$ 9,490,000
3	\$ 5,594,000	\$ 6,165,000	\$ 465,000	\$ 791,000	\$ 756,000	\$ 6,820,000	\$ 7,710,000
4	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
5	\$ 5,594,000	\$ 6,165,000	\$ 465,000	\$ 791,000	\$ 2,268,000	\$ 8,330,000	\$ 9,220,000
6	\$ 5,594,000	\$ 6,165,000	\$ 814,000	\$ 1,383,000	\$ 5,040,000	\$ 11,450,000	\$ 12,590,000

**Spot Improvements**

**Cost per mile Calculations**

ID	Location/ Description	Roadway Construction & Engineering Cost	ROW Cost	Structures Cost	Total Estimated Cost
n/a	Signalization	n/a	\$ -	\$ -	\$ -
n/a	Signalization	n/a	\$ -	\$ -	\$ -
n/a	Turn Lane	n/a	\$ -	\$ -	\$ -
n/a	Turn Lane	n/a	\$ -	\$ -	\$ -
n/a	Turn Lane	n/a	\$ -	\$ -	\$ -
n/a	SR-6 at SR-	n/a	\$ -	\$ -	\$ -
n/a	SR-6 at Critz Lane	\$ 5,000,000	\$0 - Dedicated	\$ -	\$ 5,000,000
n/a	SR-6 at Goose Creek Bypass	\$ 10,000,000	\$ 0 fits in exist	\$ -	\$ 10,000,000
n/a	SR-6 at Coleman Road/Henpeck Lane	\$ 5,000,000	\$ 1,872,000	\$ -	\$ 6,870,000
n/a	SR-6 at Mack Hatcher Parkway	n/a	\$ -	\$ -	\$ -

## Route Construction & Engineering Cost Data Sheet

**Option:** 2 lane existing to 3 lane rural cross section

**Length:** 1 Mile

### Right-of-Way

TDOT cost per mile data utilized & varies by adjacent land use. Please see ROW cost calculations

### Utility Relocation

Reimbursable	\$ -	
Non-reimbursable	\$ 260,000	
<b>Total Utility Cost</b>		<b>\$ 260,000</b>

### Construction

Clear and Grubbing	\$ 20,000	
Earthwork	\$ 478,500	
Pavement Removal	\$ 5,000	
Drainage	\$ 60,000	
Structures	\$ -	Structures estimated separately
Railroad Crossing or Separation	\$ -	
Paving	\$ 957,000	
Retaining Walls	\$ 71,000	
Maintenance of Traffic	\$ 100,000	
Topsoil	\$ 20,000	
Seeding	\$ 7,000	
Sodding	\$ -	
Signing	\$ 5,000	
Lighting	\$ 25,000	
Signalization	\$ 150,000	
Fence	\$ -	
Guardrail	\$ 54,000	
Rip Rap or Slope Protection	\$ 6,000	
Construction Item Subtotal	\$ 1,958,500	
Other Construction Items (15%)	\$ 294,000	
Erosion Control (3.5%)	\$ 69,000	
Mobilization (5%)	\$ 98,000	
Construction Cost		\$ 2,419,500
10% Engineering & Cont.		\$ 242,000
<b>Total Construction Cost</b>		<b>\$ 2,661,500</b>
<b>Preliminary Engineering (10%)</b>		<b>\$ 266,000</b>

<b>Total Cost (Rounded) Present Year AUP (2007)</b>	<b>\$ 3,190,000</b>
<b>Total Cost (Rounded) Construction Year (2014) at 6% Inflation for 7 Years</b>	<b>\$ 4,797,000</b>

## Route Construction & Engineering Cost Data Sheet

**Option:** 2 lane existing to 3 lane urban cross section

**Length:** 1 Mile

### Right-of-Way

TDOT cost per mile data utilized & varies by adjacent land use. Please see ROW cost calculations

### Utility Relocation

Reimbursable	\$ -	
Non-reimbursable	\$ 260,000	
<b>Total Utility Cost</b>		<b>\$ 260,000</b>

### Construction

Clear and Grubbing	\$ 20,000	
Earthwork	\$ 214,000	
Pavement Removal	\$ 5,000	
Drainage	\$ 435,000	
Structures	\$ -	Structures estimated separately
Railroad Crossing or Separation	\$ -	
Paving	\$ 856,000	
Retaining Walls	\$ 71,000	
Maintenance of Traffic	\$ 100,000	
Topsoil	\$ 20,000	
Seeding	\$ 7,000	
Sodding	\$ -	
Signing	\$ 5,000	
Lighting	\$ 25,000	
Signalization	\$ 150,000	
Fence	\$ -	
Guardrail	\$ 54,000	
Rip Rap or Slope Protection	\$ 6,000	
Construction Item Subtotal	\$ 1,968,000	
Other Construction Items (15%)	\$ 295,000	
Erosion Control (3.5%)	\$ 69,000	
Mobilization (5%)	\$ 98,000	
Construction Cost		\$ 2,430,000
10% Engineering & Cont.		\$ 243,000
<b>Total Construction Cost</b>		<b>\$ 2,673,000</b>
<b>Preliminary Engineering (10%)</b>		<b>\$ 267,000</b>

<b>Total Cost (Rounded) Present Year AUP (2007)</b>	<b>\$ 3,200,000</b>
<b>Total Cost (Rounded) Construction Year (2014) at 6% Inflation for 7 Years</b>	<b>\$ 4,812,000</b>

## Route Construction & Engineering Cost Data Sheet

**Option:** 2 lane existing to 4 lane rural cross section

**Length:** 1 Mile

### Right-of-Way

TDOT cost per mile data utilized & varies by adjacent land use. Please see ROW cost calculations

### Utility Relocation

Reimbursable	\$ -	
Non-reimbursable	\$ 260,000	
<b>Total Utility Cost</b>		<b>\$ 260,000</b>

### Construction

Clear and Grubbing	\$ 20,000	
Earthwork	\$ 598,500	
Pavement Removal	\$ 5,000	
Drainage	\$ 60,000	
Structures	\$ -	Structures estimated separately
Railroad Crossing or Separation	\$ -	
Paving	\$ 1,197,000	
Retaining Walls	\$ 71,000	
Maintenance of Traffic	\$ 100,000	
Topsoil	\$ 20,000	
Seeding	\$ 7,000	
Sodding	\$ -	
Signing	\$ 5,000	
Lighting	\$ 25,000	
Signalization	\$ 150,000	
Fence	\$ -	
Guardrail	\$ 54,000	
Rip Rap or Slope Protection	\$ 6,000	
Construction Item Subtotal	\$ 2,318,500	
Other Construction Items (15%)	\$ 348,000	
Erosion Control (3.5%)	\$ 81,000	
Mobilization (5%)	\$ 116,000	
Construction Cost	\$ 2,863,500	
10% Engineering & Cont.	\$ 286,000	
<b>Total Construction Cost</b>		<b>\$ 3,149,500</b>
<b>Preliminary Engineering (10%)</b>		<b>\$ 315,000</b>

<b>Total Cost (Rounded) Present Year AUP (2007)</b>	<b>\$ 3,720,000</b>
<b>Total Cost (Rounded) Construction Year (2014) at 6% Inflation for 7 Years</b>	<b>\$ 5,594,000</b>

## Route Construction & Engineering Cost Data Sheet

**Option:** 2 lane existing to 5 lane urban cross section

**Length:** 1 Mile

### Right-of-Way

TDOT cost per mile data utilized & varies by adjacent land use. Please see ROW cost calculations

### Utility Relocation

Reimbursable	\$ -	
Non-reimbursable	\$ 260,000	
<b>Total Utility Cost</b>		<b>\$ 260,000</b>

### Construction

Clear and Grubbing	\$ 20,000	
Earthwork	\$ 333,750	
Pavement Removal	\$ 5,000	
Drainage	\$ 435,000	
Structures	\$ -	Structures estimated separately
Railroad Crossing or Separation	\$ -	
Paving	\$ 1,335,000	
Retaining Walls	\$ 71,000	
Maintenance of Traffic	\$ 100,000	
Topsoil	\$ 20,000	
Seeding	\$ 7,000	
Sodding	\$ -	
Signing	\$ 5,000	
Lighting	\$ 25,000	
Signalization	\$ 150,000	
Fence	\$ -	
Guardrail	\$ 54,000	
Rip Rap or Slope Protection	\$ 6,000	
Construction Item Subtotal	\$ 2,566,750	
Other Construction Items (15%)	\$ 385,000	
Erosion Control (3.5%)	\$ 90,000	
Mobilization (5%)	\$ 128,000	
Construction Cost		\$ 3,169,750
10% Engineering & Cont.		\$ 317,000
<b>Total Construction Cost</b>		<b>\$ 3,486,750</b>
<b>Preliminary Engineering (10%)</b>		<b>\$ 349,000</b>

<b>Total Cost (Rounded) Present Year AUP (2007)</b>	<b>\$ 4,100,000</b>
<b>Total Cost (Rounded) Construction Year (2014) at 6% Inflation for 7 Years</b>	<b>\$ 6,165,000</b>

## Route Construction & Engineering Cost Data Sheet

**Option:** 3 lane existing to 4 lane rural cross section

**Length:** 1 Mile

### Right-of-Way

TDOT cost per mile data utilized & varies by adjacent land use. Please see ROW cost calculations

### Utility Relocation

Reimbursable	\$ -	
Non-reimbursable	\$ 260,000	
<b>Total Utility Cost</b>		<b>\$ 260,000</b>

### Construction

Clear and Grubbing	\$ 20,000	
Earthwork	\$ 598,500	
Pavement Removal	\$ 5,000	
Drainage	\$ 60,000	
Structures	\$ -	Structures estimated separately
Railroad Crossing or Separation	\$ -	
Paving	\$ 1,197,000	
Retaining Walls	\$ 71,000	
Maintenance of Traffic	\$ 100,000	
Topsoil	\$ 20,000	
Seeding	\$ 7,000	
Sodding	\$ -	
Signing	\$ 5,000	
Lighting	\$ 25,000	
Signalization	\$ 150,000	
Fence	\$ -	
Guardrail	\$ 54,000	
Rip Rap or Slope Protection	\$ 6,000	
Construction Item Subtotal	\$ 2,318,500	
Other Construction Items (15%)	\$ 348,000	
Erosion Control (3.5%)	\$ 81,000	
Mobilization (5%)	\$ 116,000	
Construction Cost	\$ 2,863,500	
10% Engineering & Cont.	\$ 286,000	
<b>Total Construction Cost</b>		<b>\$ 3,149,500</b>
<b>Preliminary Engineering (10%)</b>		<b>\$ 315,000</b>

<b>Total Cost (Rounded) Present Year AUP (2007)</b>	<b>\$ 3,720,000</b>
<b>Total Cost (Rounded) Construction Year (2014) at 6% Inflation for 7 Years</b>	<b>\$ 5,594,000</b>

## Route Construction & Engineering Cost Data Sheet

**Option:** 3 lane existing to 5 lane urban cross section

**Length:** 1 Mile

### Right-of-Way

TDOT cost per mile data utilized & varies by adjacent land use. Please see ROW cost calculations

### Utility Relocation

Reimbursable	\$ -	
Non-reimbursable	\$ 260,000	
<b>Total Utility Cost</b>		<b>\$ 260,000</b>

### Construction

Clear and Grubbing	\$ 20,000	
Earthwork	\$ 333,750	
Pavement Removal	\$ 5,000	
Drainage	\$ 435,000	
Structures	\$ -	Structures estimated separately
Railroad Crossing or Separation	\$ -	
Paving	\$ 1,335,000	
Retaining Walls	\$ 71,000	
Maintenance of Traffic	\$ 100,000	
Topsoil	\$ 20,000	
Seeding	\$ 7,000	
Sodding	\$ -	
Signing	\$ 5,000	
Lighting	\$ 25,000	
Signalization	\$ 150,000	
Fence	\$ -	
Guardrail	\$ 54,000	
Rip Rap or Slope Protection	\$ 6,000	
Construction Item Subtotal	\$ 2,566,750	
Other Construction Items (15%)	\$ 385,000	
Erosion Control (3.5%)	\$ 90,000	
Mobilization (5%)	\$ 128,000	
Construction Cost		\$ 3,169,750
10% Engineering & Cont.		\$ 317,000
<b>Total Construction Cost</b>		<b>\$ 3,486,750</b>
<b>Preliminary Engineering (10%)</b>		<b>\$ 349,000</b>

<b>Total Cost (Rounded) Present Year AUP (2007)</b>	<b>\$ 4,100,000</b>
<b>Total Cost (Rounded) Construction Year (2014) at 6% Inflation for 7 Years</b>	<b>\$ 6,165,000</b>

## Route Construction & Engineering Cost Data Sheet

**Option:** New 4 lane rural cross section  
**Length:** 1 Mile

### Right-of-Way

TDOT cost per mile data utilized & varies by adjacent land use. Please see ROW cost calculations

### Utility Relocation

Reimbursable	\$ -	
Non-reimbursable	\$ 260,000	
<b>Total Utility Cost</b>		<b>\$ 260,000</b>

### Construction

Clear and Grubbing	\$ 20,000	
Earthwork	\$ 1,408,000	
Pavement Removal	\$ 5,000	
Drainage	\$ 60,000	
Structures	\$ -	Structures estimated separately
Railroad Crossing or Separation	\$ -	
Paving	\$ 1,408,000	
Retaining Walls	\$ 71,000	
Maintenance of Traffic	\$ 100,000	
Topsoil	\$ 20,000	
Seeding	\$ 7,000	
Sodding	\$ -	
Signing	\$ 5,000	
Lighting	\$ 25,000	
Signalization	\$ 150,000	
Fence	\$ -	
Guardrail	\$ 54,000	
Rip Rap or Slope Protection	\$ 6,000	
Construction Item Subtotal	\$ 3,339,000	
Other Construction Items (15%)	\$ 501,000	
Erosion Control (3.5%)	\$ 117,000	
Mobilization (5%)	\$ 167,000	
Construction Cost		\$ 4,124,000
10% Engineering & Cont.		\$ 412,000
<b>Total Construction Cost</b>		<b>\$ 4,536,000</b>
<b>Preliminary Engineering (10%)</b>		<b>\$ 454,000</b>

<b>Total Cost (Rounded) Present Year AUP (2007)</b>	<b>\$ 5,250,000</b>
<b>Total Cost (Rounded) Construction Year (2014) at 6% Inflation for 7 Years</b>	<b>\$ 7,894,000</b>

## Route Construction & Engineering Cost Data Sheet

**Option:** New 5 lane urban cross Section  
**Length:** 1 Mile

### Right-of-Way

TDOT cost per mile data utilized & varies by adjacent land use. Please see ROW cost calculations

### Utility Relocation

Reimbursable	\$ -	
Non-reimbursable	\$ 260,000	
<b>Total Utility Cost</b>		<b>\$ 260,000</b>

### Construction

Clear and Grubbing	\$ 20,000	
Earthwork	\$ 1,547,000	
Pavement Removal	\$ 5,000	
Drainage	\$ 435,000	
Structures	\$ -	Structures estimated separately
Railroad Crossing or Separation	\$ -	
Paving	\$ 1,547,000	
Retaining Walls	\$ 71,000	
Maintenance of Traffic	\$ 100,000	
Topsoil	\$ 20,000	
Seeding	\$ 7,000	
Sodding	\$ -	
Signing	\$ 5,000	
Lighting	\$ 25,000	
Signalization	\$ 150,000	
Fence	\$ -	
Guardrail	\$ 54,000	
Rip Rap or Slope Protection	\$ 6,000	
Construction Item Subtotal	\$ 3,992,000	
Other Construction Items (15%)	\$ 599,000	
Erosion Control (3.5%)	\$ 140,000	
Mobilization (5%)	\$ 200,000	
Construction Cost		\$ 4,931,000
10% Engineering & Cont.		\$ 493,000
<b>Total Construction Cost</b>		<b>\$ 5,424,000</b>
<b>Preliminary Engineering (10%)</b>		<b>\$ 542,000</b>

<b>Total Cost (Rounded) Present Year AUP (2007)</b>	<b>\$ 6,230,000</b>
<b>Total Cost (Rounded) Construction Year (2014) at 6% Inflation for 7 Years</b>	<b>\$ 9,368,000</b>

## Route Construction & Engineering Cost Data Sheet

**Option:** Rehabilitate 3 lane urban cross Section  
**Length:** 1 Mile

### Right-of-Way

No R.O.W. Cost for Rehabilitated Section

### Utility Relocation

Reimbursable	\$ -
Non-reimbursable	

<b>Total Utility Cost</b>	<b>\$ -</b>
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### Construction

Clear and Grubbing	\$ -
Earthwork	\$ -
Pavement Removal	\$ 82,000
Drainage	\$ -
Structures	\$ -
Railroad Crossing or Separation	\$ -
Paving	\$ 169,000
Retaining Walls	\$ -
Maintenance of Traffic	\$ 100,000
Topsoil	\$ -
Seeding	\$ -
Sodding	\$ -
Signing	\$ 5,000
Lighting	\$ 25,000
Signalization	\$ -
Fence	\$ -
Guardrail	\$ -
Rip Rap or Slope Protection	\$ -

Structures estimated separately

Construction Item Subtotal	\$ 381,000	
Other Construction Items (15%)	\$ 57,000	
Erosion Control (3.5%)	\$ 13,000	
Mobilization (5%)	\$ 19,000	
Construction Cost	\$ 470,000	
10% Engineering & Cont.	\$ 47,000	
<b>Total Construction Cost</b>		<b>\$ 517,000</b>
<b>Preliminary Engineering (10%)</b>		<b>\$ 52,000</b>

<b>Total Cost (Rounded) Present Year AUP (2007)</b>	<b>\$ 570,000</b>
<b>Total Cost (Rounded) Construction Year (2014) at 6% Inflation for 7 Years</b>	<b>\$ 857,000</b>

**Route:**  
**County:** Maury and Williamson  
**Section:** n/a - cost per mile estimate  
**Length:** 1 Miles  
**X-Section:** 2 lane existing to 3 lane rural cross section

**Stream Crossings:** Estimate 2 per mile

Item	Quantity	Unit	2007 Unit Cost	Sub-Total	Total Cost	Rounded Cost	Description/Quantity Calculation
Clear and Grubbing	20	Acres	\$ 1,000.00		\$ 20,000	\$ 20,000	area inside prop. R.O.W.
Earthwork							
Excavation (Cut)	118000	CY	\$ 4.05	\$ -			Item # 203-01
Borrow (Fill)	0	CY	\$ 5.89	\$ -			Item # 203-03
		Total			\$ -	\$ 478,500	Est. based upon 1/2 paving cost for rural widening, 1/4 paving cost for C&G, and 1.0 paving cost for new location.
Pavement Removal	500	SY	\$ 3.88	\$ 1,940	\$ 1,940	\$ 5,000	Item #202-03.01 removal of asphalt pavement.
Drainage	0	FT Pipe	\$ 44.21	\$ -			24" pipe assumed length of project (C&G) Item # 607-05.02
	0	Catchbasins	\$ 2,691.27	\$ -			611-12.02, Type 12 CB 4-8' depth, 1 every 300' on each side of the street affected
	400	FT Pipe	\$ 136.19	\$ 54,476			48" pipe assumed at each stream crossings Item #607-09.02
	0	Medianbasin	\$ 2,691.27	\$ -			1 every 800' when have a median, estimate same price as catchbasins
	0	Medianpipe	\$ 37.74	\$ -			18" pipe every 800', length = 80' Item #607-03.02
		10% Factor		\$ 5,448			
		Total			\$ 59,924	\$ 60,000	
Structures	0	SF	\$ 150.00	\$ -	\$ -	\$ -	Estimate for simple bridges
Railroad Crossing	0	Each	\$ 50,000.00	\$ -			common equipment
	0	FT	\$ 200.00	\$ -			per foot runaround
	0	SF	\$ 70.00	\$ -			vehicular bridge
	0	SF	\$ 250.00	\$ -			RR bridge
	0	LF	\$ 200.00	\$ -			at grade pad
	0	Each	\$ 50,000.00	\$ -			gates and signals
		Total			\$ -	\$ -	
Paving	190080	SF	\$ 4.45	\$ 845,856		\$ -	arterial street asphalt paving - see separate calcs
	105600	SF	\$ 2.65	\$ 279,840		\$ -	asphalt shoulder - see separate calcs
		15% Reduct.		\$ (168,854)		\$ -	if widening, cost = 85% of total paving
Curb and Gutter	0	FT	\$ 202.57	\$ -		\$ -	concrete cost Item # 702-03, 0.06409 CY/LF (DWG RP-NMC-10) Unit price in CY
		Total			\$ 956,842	\$ 957,000	
Concrete	0	SF	\$ 3.37	\$ -	\$ -	\$ -	Sidewalks, Item # 701-01.01
Retaining Walls	660	FT	\$ 107.89	\$ 71,206	\$ 71,206	\$ 71,000	Item #604-10.01 concrete and Std. Dwg. EL-W-2 for a 4' tall gravity
Maintenance of Traffic	4	Each	\$ 25,000.00	\$ 100,000	\$ 100,000	\$ 100,000	estimate \$25,000 per existing road crossed
Topsoil	8000	CY	\$ 2.51	\$ 20,080	\$ 20,080	\$ 20,000	Item # 203-04
Seeding	211200	s.f.	\$ 26.92	\$ 7,107	\$ 7,107	\$ 7,000	Item # 801-01 sq. ft to be seeded/1000 x 1.25 = units. Unit price in units
Sodding	0	SY	\$ 2.41	\$ -	\$ -	\$ -	Item # 803-01
Signing	1	Mile	\$ 1,000.00	\$ 1,000	\$ 1,000	\$ 5,000	\$1000/mile rural or \$2000/mile urban (or \$250/sign for standard signs)
Lighting	10	Each	\$ 2,450.00	\$ 24,500	\$ 24,500	\$ 25,000	Item # 714-08
Signalization	1	Each	\$150,000.00	\$ 150,000	\$ 150,000	\$ 150,000	per signalized intersection
Fence	0	LF	\$ 8.64	\$ -	\$ -	\$ -	Chain Link 6', Item # 707-01.11
Guardrail	2640	LF	\$ 20.30	\$ 53,592	\$ 53,592	\$ 54,000	Item 705-02.03
Median Barrier	0	LF	\$ 155.10	\$ -	\$ -	\$ -	Item #711-04 Conc glare screen median barrier
		Total			\$ 53,592	\$ 54,000	
Rip Rap Slope Prot.	200	Ton	\$ 27.67	\$ 5,534	\$ 5,534	\$ 6,000	Item # 709-05.06 1.5 ft deep, 1.75 Tons/CY

**Total:** **\$ 1,959,000**

**Route:**  
**County:** Maury and Williamson  
**Section:** n/a - cost per mile estimate  
**Length:** 1 Miles  
**X-Section:** 2 lane existing to 3 lane urban cross section

**Stream Crossings:** Estimate 2 per mile

Item	Quantity	Unit	2007 Unit Cost	Sub-Total	Total Cost	Rounded Cost	Description/Quantity Calculation
Clear and Grubbing	20	Acres	\$ 1,000.00		\$ 20,000	\$ 20,000	area inside prop. R.O.W.
Earthwork							
Excavation (Cut)	53000	CY	\$ 4.05	\$ -			Item # 203-01
Borrow (Fill)	0	CY	\$ 5.89	\$ -			Item # 203-03
		Total			\$ -	\$ 214,000	Est. based upon 1/2 paving cost for rural widening, 1/4 paving cost for C&G, and 1.0 paving cost for new location.
Pavement Removal	500	SY	\$ 3.88	\$ 1,940	\$ 1,940	\$ 5,000	Item #202-03.01 removal of asphalt pavement.
Drainage	5280	FT Pipe	\$ 44.21	\$ 233,429			24" pipe assumed length of project (C&G) Item # 607-05.02
	40	Catchbasins	\$ 2,691.27	\$ 107,651			611-12.02, Type 12 CB 4-8' depth, 1 every 300' on each side of the street affected
	400	FT Pipe	\$ 136.19	\$ 54,476			48" pipe assumed at each stream crossings Item #607-09.02
	0	Medianbasin	\$ 2,691.27	\$ -			1 every 800' when have a median, estimate same price as catchbasins
	0	Medianpipe	\$ 37.74	\$ -			18" pipe every 800', length = 80' Item #607-03.02
		10% Factor		\$ 39,556			
		Total			\$ 435,111	\$ 435,000	
Structures	0	SF	\$ 150.00	\$ -	\$ -	\$ -	Estimate for simple bridges
Railroad Crossing	0	Each	\$ 50,000.00	\$ -			common equipment
	0	FT	\$ 200.00	\$ -			per foot runaround
	0	SF	\$ 70.00	\$ -			vehicular bridge
	0	SF	\$ 250.00	\$ -			RR bridge
	0	LF	\$ 200.00	\$ -			at grade pad
	0	Each	\$ 50,000.00	\$ -			gates and signals
		Total			\$ -	\$ -	
Paving	190080	SF	\$ 4.45	\$ 845,856			arterial street asphalt paving - see separate calcs
	0	SF	\$ 2.65	\$ -			asphalt shoulder - see separate calcs
		15% Reduct.		\$ (126,878)	\$ -	\$ -	if widening, cost = 85% of total paving
Curb and Gutter	10560	FT	\$ 202.57	\$ 137,097			concrete cost Item # 702-03, 0.06409 CY/LF (DWG RP-NMC-10) Unit price in CY
		Total			\$ 856,075	\$ 856,000	
Concrete	42240	SF	\$ 3.37	\$ 142,349			Sidewalks, Item # 701-01.01
Retaining Walls	660	FT	\$ 107.89	\$ 71,206	\$ 71,206	\$ 71,000	Item #604-10.01 concrete and Std. Dwg. EL-W-2 for a 4' tall gravity
Maintenance of Traffic	4	Each	\$ 25,000.00	\$ 100,000	\$ 100,000	\$ 100,000	estimate \$25,000 per existing road crossed
Topsoil	8000	CY	\$ 2.51	\$ 20,080	\$ 20,080	\$ 20,000	Item # 203-04
Seeding	211200	s.f.	\$ 26.92	\$ 7,107	\$ 7,107	\$ 7,000	Item # 801-01 sq. ft to be seeded/1000 x 1.25 = units. Unit price in units
Sodding	0	SY	\$ 2.41	\$ -	\$ -	\$ -	Item # 803-01
Signing	1	Mile	\$ 1,000.00	\$ 1,000	\$ 1,000	\$ 5,000	\$1000/mile rural or \$2000/mile urban (or \$250/sign for standard signs)
Lighting	10	Each	\$ 2,450.00	\$ 24,500	\$ 24,500	\$ 25,000	Item # 714-08
Signalization	1	Each	\$150,000.00	\$ 150,000	\$ 150,000	\$ 150,000	per signalized intersection
Fence	0	LF	\$ 8.64	\$ -	\$ -	\$ -	Chain Link 6', Item # 707-01.11
Guardrail	2640	LF	\$ 20.30	\$ 53,592			Item 705-02.03
Median Barrier	0	LF	\$ 155.10	\$ -			Item #711-04 Conc glare screen median barrier
		Total			\$ 53,592	\$ 54,000	
Rip Rap Slope Prot.	200	Ton	\$ 27.67	\$ 5,534	\$ 5,534	\$ 6,000	Item # 709-05.06 1.5 ft deep, 1.75 Tons/CY

**Total:** **\$ 2,110,000**

**Route:**  
**County:** Maury and Williamson  
**Section:** n/a - cost per mile estimate  
**Length:** 1 Miles  
**X-Section:** 2 lane existing to 4 lane rural cross section

**Stream Crossings:** Estimate 2 per mile

Item	Quantity	Unit	2007 Unit Cost	Sub-Total	Total Cost	Rounded Cost	Description/Quantity Calculation
Clear and Grubbing	20	Acres	\$ 1,000.00		\$ 20,000	\$ 20,000	area inside prop. R.O.W.
Earthwork							
Excavation (Cut)	148000	CY	\$ 4.05	\$ -			Item # 203-01
Borrow (Fill)	0	CY	\$ 5.89	\$ -			Item # 203-03
		Total			\$ -	\$ 598,500	Est. based upon 1/2 paving cost for rural widening, 1/4 paving cost for C&G, and 1.0 paving cost for new location.
Pavement Removal	500	SY	\$ 3.88	\$ 1,940	\$ 1,940	\$ 5,000	Item #202-03.01 removal of asphalt pavement.
Drainage	0	FT Pipe	\$ 44.21	\$ -			24" pipe assumed length of project (C&G) Item # 607-05.02
	0	Catchbasins	\$ 2,691.27	\$ -			611-12.02, Type 12 CB 4-8' depth, 1 every 300' on each side of the street affected
	400	FT Pipe	\$ 136.19	\$ 54,476			48" pipe assumed at each stream crossings Item #607-09.02
	0	Medianbasin	\$ 2,691.27	\$ -			1 every 800' when have a median, estimate same price as catchbasins
	0	Medianpipe	\$ 37.74	\$ -			18" pipe every 800', length = 80' Item #607-03.02
		10% Factor		\$ 5,448			
		Total			\$ 59,924	\$ 60,000	
Structures	0	SF	\$ 150.00	\$ -	\$ -	\$ -	Estimate for simple bridges
Railroad Crossing	0	Each	\$ 50,000.00	\$ -			common equipment
	0	FT	\$ 200.00	\$ -			per foot runaround
	0	SF	\$ 70.00	\$ -			vehicular bridge
	0	SF	\$ 250.00	\$ -			RR bridge
	0	LF	\$ 200.00	\$ -			at grade pad
	0	Each	\$ 50,000.00	\$ -			gates and signals
		Total			\$ -	\$ -	
Paving	253440	SF	\$ 4.45	\$ 1,127,808		\$ -	arterial street asphalt paving - see separate calcs
	105600	SF	\$ 2.65	\$ 279,840		\$ -	asphalt shoulder - see separate calcs
		15% Reduct.		\$ (211,147)		\$ -	if widening, cost = 85% of total paving
Curb and Gutter	0	FT	\$ 202.57	\$ -		\$ -	concrete cost Item # 702-03, 0.06409 CY/LF (DWG RP-NMC-10) Unit price in CY
		Total			\$ 1,196,501	\$ 1,197,000	
Concrete	0	SF	\$ 3.37	\$ -	\$ -	\$ -	Sidewalks, Item # 701-01.01
Retaining Walls	660	FT	\$ 107.89	\$ 71,206	\$ 71,206	\$ 71,000	Item #604-10.01 concrete and Std. Dwg. EL-W-2 for a 4' tall gravity
Maintenance of Traffic	4	Each	\$ 25,000.00	\$ 100,000	\$ 100,000	\$ 100,000	estimate \$25,000 per existing road crossed
Topsoil	8000	CY	\$ 2.51	\$ 20,080	\$ 20,080	\$ 20,000	Item # 203-04
Seeding	211200	s.f.	\$ 26.92	\$ 7,107	\$ 7,107	\$ 7,000	Item # 801-01 sq. ft to be seeded/1000 x 1.25 = units. Unit price in units
Sodding	0	SY	\$ 2.41	\$ -	\$ -	\$ -	Item # 803-01
Signing	1	Mile	\$ 1,000.00	\$ 1,000	\$ 1,000	\$ 5,000	\$1000/mile rural or \$2000/mile urban (or \$250/sign for standard signs)
Lighting	10	Each	\$ 2,450.00	\$ 24,500	\$ 24,500	\$ 25,000	Item # 714-08
Signalization	1	Each	\$150,000.00	\$ 150,000	\$ 150,000	\$ 150,000	per signalized intersection
Fence	0	LF	\$ 8.64	\$ -	\$ -	\$ -	Chain Link 6', Item # 707-01.11
Guardrail	2640	LF	\$ 20.30	\$ 53,592	\$ 53,592	\$ 54,000	Item 705-02.03
Median Barrier	0	LF	\$ 155.10	\$ -	\$ -	\$ -	Item #711-04 Conc glare screen median barrier
		Total			\$ 53,592	\$ 54,000	
Rip Rap Slope Prot.	200	Ton	\$ 27.67	\$ 5,534	\$ 5,534	\$ 6,000	Item # 709-05.06 1.5 ft deep, 1.75 Tons/CY

**Total:** **\$ 2,319,000**

**Route:**  
**County:** Maury and Williamson  
**Section:** n/a - cost per mile estimate  
**Length:** 1 Miles  
**X-Section:** 2 lane existing to 5 lane urban cross section

**Stream Crossings:** Estimate 2 per mile

Item	Quantity	Unit	2007 Unit Cost	Sub-Total	Total Cost	Rounded Cost	Description/Quantity Calculation
Clear and Grubbing	20	Acres	\$ 1,000.00		\$ 20,000	\$ 20,000	area inside prop. R.O.W.
Earthwork							
Excavation (Cut)	82000	CY	\$ 4.05	\$ -			Item # 203-01
Borrow (Fill)	0	CY	\$ 5.89	\$ -			Item # 203-03
		Total			\$ -	\$ 333,750	Est. based upon 1/2 paving cost for rural widening, 1/4 paving cost for C&G, and 1.0 paving cost for new location.
Pavement Removal	500	SY	\$ 3.88	\$ 1,940	\$ 1,940	\$ 5,000	Item #202-03.01 removal of asphalt pavement.
Drainage	5280	FT Pipe	\$ 44.21	\$ 233,429			24" pipe assumed length of project (C&G) Item # 607-05.02
	40	Catchbasins	\$ 2,691.27	\$ 107,651			611-12.02, Type 12 CB 4-8' depth, 1 every 300' on each side of the street affected
	400	FT Pipe	\$ 136.19	\$ 54,476			48" pipe assumed at each stream crossings Item #607-09.02
	0	Medianbasin	\$ 2,691.27	\$ -			1 every 800' when have a median, estimate same price as catchbasins
	0	Medianpipe	\$ 37.74	\$ -			18" pipe every 800', length = 80' Item #607-03.02
		10% Factor		\$ 39,556			
		Total			\$ 435,111	\$ 435,000	
Structures	0	SF	\$ 150.00	\$ -	\$ -	\$ -	Estimate for simple bridges
Railroad Crossing	0	Each	\$ 50,000.00	\$ -			common equipment
	0	FT	\$ 200.00	\$ -			per foot runaround
	0	SF	\$ 70.00	\$ -			vehicular bridge
	0	SF	\$ 250.00	\$ -			RR bridge
	0	LF	\$ 200.00	\$ -			at grade pad
	0	Each	\$ 50,000.00	\$ -			gates and signals
		Total			\$ -	\$ -	
Paving	316800	SF	\$ 4.45	\$ 1,409,760			arterial street asphalt paving - see separate calcs
	0	SF	\$ 2.65	\$ -			asphalt shoulder - see separate calcs
		15% Reduct.		\$ (211,464)			if widening, cost = 85% of total paving
Curb and Gutter	10560	FT	\$ 202.57	\$ 137,097			concrete cost Item # 702-03, 0.06409 CY/LF (DWG RP-NMC-10)
		Total			\$ 1,335,393	\$ 1,335,000	Unit price in CY
Concrete	42240	SF	\$ 3.37	\$ 142,349			Sidewalks, Item # 701-01.01
Retaining Walls	660	FT	\$ 107.89	\$ 71,206			Item #604-10.01 concrete and Std. Dwg. EL-W-2 for a 4' tall gravity
Maintenance of Traffic	4	Each	\$ 25,000.00	\$ 100,000			estimate \$25,000 per existing road crossed
Topsoil	8000	CY	\$ 2.51	\$ 20,080			Item # 203-04
Seeding	211200	s.f.	\$ 26.92	\$ 7,107			Item # 801-01 sq. ft to be seeded/1000 x 1.25 = units. Unit price in units
Sodding	0	SY	\$ 2.41	\$ -			Item # 803-01
Signing	1	Mile	\$ 1,000.00	\$ 1,000			\$1000/mile rural or \$2000/mile urban (or \$250/sign for standard signs)
Lighting	10	Each	\$ 2,450.00	\$ 24,500			Item # 714-08
Signalization	1	Each	\$150,000.00	\$ 150,000			per signalized intersection
Fence	0	LF	\$ 8.64	\$ -			Chain Link 6', Item # 707-01.11
Guardrail	2640	LF	\$ 20.30	\$ 53,592			Item 705-02.03
Median Barrier	0	LF	\$ 155.10	\$ -			Item #711-04 Conc glare screen median barrier
		Total			\$ 53,592	\$ 54,000	
Rip Rap Slope Prot.	200	Ton	\$ 27.67	\$ 5,534			Item # 709-05.06 1.5 ft deep, 1.75 Tons/CY

**Total: \$ 2,709,000**

**Route:**  
**County:** Maury and Williamson  
**Section:** n/a - cost per mile estimate  
**Length:** 1 Miles  
**X-Section:** 3 lane existing to 4 lane rural cross section

**Stream Crossings:** Estimate 2 per mile

Item	Quantity	Unit	2007 Unit Cost	Sub-Total	Total Cost	Rounded Cost	Description/Quantity Calculation
Clear and Grubbing	20	Acres	\$ 1,000.00		\$ 20,000	\$ 20,000	area inside prop. R.O.W.
Earthwork							
Excavation (Cut)	148000	CY	\$ 4.05	\$ -			Item # 203-01
Borrow (Fill)	0	CY	\$ 5.89	\$ -			Item # 203-03
		Total			\$ -	\$ 598,500	Est. based upon 1/2 paving cost for rural widening, 1/4 paving cost for C&G, and 1.0 paving cost for new location.
Pavement Removal	500	SY	\$ 3.88	\$ 1,940	\$ 1,940	\$ 5,000	Item #202-03.01 removal of asphalt pavement.
Drainage	0	FT Pipe	\$ 44.21	\$ -			24" pipe assumed length of project (C&G) Item # 607-05.02
	0	Catchbasins	\$ 2,691.27	\$ -			611-12.02, Type 12 CB 4-8' depth, 1 every 300' on each side of the street affected
	400	FT Pipe	\$ 136.19	\$ 54,476			48" pipe assumed at each stream crossings Item #607-09.02
	0	Medianbasin	\$ 2,691.27	\$ -			1 every 800' when have a median, estimate same price as catchbasins
	0	Medianpipe	\$ 37.74	\$ -			18" pipe every 800', length = 80' Item #607-03.02
		10% Factor		\$ 5,448			
		Total			\$ 59,924	\$ 60,000	
Structures	0	SF	\$ 150.00	\$ -	\$ -	\$ -	Estimate for simple bridges
Railroad Crossing	0	Each	\$ 50,000.00	\$ -			common equipment
	0	FT	\$ 200.00	\$ -			per foot runaround
	0	SF	\$ 70.00	\$ -			vehicular bridge
	0	SF	\$ 250.00	\$ -			RR bridge
	0	LF	\$ 200.00	\$ -			at grade pad
	0	Each	\$ 50,000.00	\$ -			gates and signals
		Total			\$ -	\$ -	
Paving	253440	SF	\$ 4.45	\$ 1,127,808		\$ -	arterial street asphalt paving - see separate calcs
	105600	SF	\$ 2.65	\$ 279,840		\$ -	asphalt shoulder - see separate calcs
		15% Reduct.		\$ (211,147)		\$ -	if widening, cost = 85% of total paving
Curb and Gutter	0	FT	\$ 202.57	\$ -		\$ -	concrete cost Item # 702-03, 0.06409 CY/LF (DWG RP-NMC-10) Unit price in CY
		Total			\$ 1,196,501	\$ 1,197,000	
Concrete	0	SF	\$ 3.37	\$ -	\$ -	\$ -	Sidewalks, Item # 701-01.01
Retaining Walls	660	FT	\$ 107.89	\$ 71,206	\$ 71,206	\$ 71,000	Item #604-10.01 concrete and Std. Dwg. EL-W-2 for a 4' tall gravity
Maintenance of Traffic	4	Each	\$ 25,000.00	\$ 100,000	\$ 100,000	\$ 100,000	estimate \$25,000 per existing road crossed
Topsoil	8000	CY	\$ 2.51	\$ 20,080	\$ 20,080	\$ 20,000	Item # 203-04
Seeding	211200	s.f.	\$ 26.92	\$ 7,107	\$ 7,107	\$ 7,000	Item # 801-01 sq. ft to be seeded/1000 x 1.25 = units. Unit price in units
Sodding	0	SY	\$ 2.41	\$ -	\$ -	\$ -	Item # 803-01
Signing	1	Mile	\$ 1,000.00	\$ 1,000	\$ 1,000	\$ 5,000	\$1000/mile rural or \$2000/mile urban (or \$250/sign for standard signs)
Lighting	10	Each	\$ 2,450.00	\$ 24,500	\$ 24,500	\$ 25,000	Item # 714-08
Signalization	1	Each	\$150,000.00	\$ 150,000	\$ 150,000	\$ 150,000	per signalized intersection
Fence	0	LF	\$ 8.64	\$ -	\$ -	\$ -	Chain Link 6', Item # 707-01.11
Guardrail	2640	LF	\$ 20.30	\$ 53,592	\$ 53,592	\$ 54,000	Item 705-02.03
Median Barrier	0	LF	\$ 155.10	\$ -	\$ -	\$ -	Item #711-04 Conc glare screen median barrier
		Total			\$ 53,592	\$ 54,000	
Rip Rap Slope Prot.	200	Ton	\$ 27.67	\$ 5,534	\$ 5,534	\$ 6,000	Item # 709-05.06 1.5 ft deep, 1.75 Tons/CY

**Total:** **\$ 2,319,000**

**Route:**  
**County:** Maury and Williamson  
**Section:** n/a - cost per mile estimate  
**Length:** 1 Miles  
**X-Section:** 3 lane existing to 5 lane urban cross section

**Stream Crossings:** Estimate 2 per mile

Item	Quantity	Unit	2007 Unit Cost	Sub-Total	Total Cost	Rounded Cost	Description/Quantity Calculation
Clear and Grubbing	20	Acres	\$ 1,000.00		\$ 20,000	\$ 20,000	area inside prop. R.O.W.
Earthwork							
Excavation (Cut)	82000	CY	\$ 4.05	\$ -			Item # 203-01
Borrow (Fill)	0	CY	\$ 5.89	\$ -			Item # 203-03
		Total			\$ -	\$ 333,750	Est. based upon 1/2 paving cost for rural widening, 1/4 paving cost for C&G, and 1.0 paving cost for new location.
Pavement Removal	500	SY	\$ 3.88	\$ 1,940	\$ 1,940	\$ 5,000	Item #202-03.01 removal of asphalt pavement.
Drainage	5280	FT Pipe	\$ 44.21	\$ 233,429			24" pipe assumed length of project (C&G) Item # 607-05.02
	40	Catchbasins	\$ 2,691.27	\$ 107,651			611-12.02, Type 12 CB 4-8' depth, 1 every 300' on each side of the street affected
	400	FT Pipe	\$ 136.19	\$ 54,476			48" pipe assumed at each stream crossings Item #607-09.02
	0	Medianbasin	\$ 2,691.27	\$ -			1 every 800' when have a median, estimate same price as catchbasins
	0	Medianpipe	\$ 37.74	\$ -			18" pipe every 800', length = 80' Item #607-03.02
		10% Factor		\$ 39,556			
		Total			\$ 435,111	\$ 435,000	
Structures	0	SF	\$ 150.00	\$ -	\$ -	\$ -	Estimate for simple bridges
Railroad Crossing	0	Each	\$ 50,000.00	\$ -			common equipment
	0	FT	\$ 200.00	\$ -			per foot runaround
	0	SF	\$ 70.00	\$ -			vehicular bridge
	0	SF	\$ 250.00	\$ -			RR bridge
	0	LF	\$ 200.00	\$ -			at grade pad
	0	Each	\$ 50,000.00	\$ -			gates and signals
		Total			\$ -	\$ -	
Paving	316800	SF	\$ 4.45	\$ 1,409,760			arterial street asphalt paving - see separate calcs
	0	SF	\$ 2.65	\$ -			asphalt shoulder - see separate calcs
		15% Reduct.		\$ (211,464)			if widening, cost = 85% of total paving
Curb and Gutter	10560	FT	\$ 202.57	\$ 137,097			concrete cost Item # 702-03, 0.06409 CY/LF (DWG RP-NMC-10)
		Total			\$ 1,335,393	\$ 1,335,000	Unit price in CY
Concrete	42240	SF	\$ 3.37	\$ 142,349			Sidewalks, Item # 701-01.01
Retaining Walls	660	FT	\$ 107.89	\$ 71,206			Item #604-10.01 concrete and Std. Dwg. EL-W-2 for a 4' tall gravity
Maintenance of Traffic	4	Each	\$ 25,000.00	\$ 100,000			estimate \$25,000 per existing road crossed
Topsoil	8000	CY	\$ 2.51	\$ 20,080			Item # 203-04
Seeding	211200	s.f.	\$ 26.92	\$ 7,107			Item # 801-01 sq. ft to be seeded/1000 x 1.25 = units. Unit price in units
Sodding	0	SY	\$ 2.41	\$ -			Item # 803-01
Signing	1	Mile	\$ 1,000.00	\$ 1,000			\$1000/mile rural or \$2000/mile urban (or \$250/sign for standard signs)
Lighting	10	Each	\$ 2,450.00	\$ 24,500			Item # 714-08
Signalization	1	Each	\$150,000.00	\$ 150,000			per signalized intersection
Fence	0	LF	\$ 8.64	\$ -			Chain Link 6', Item # 707-01.11
Guardrail	2640	LF	\$ 20.30	\$ 53,592			Item 705-02.03
Median Barrier	0	LF	\$ 155.10	\$ -			Item #711-04 Conc glare screen median barrier
		Total			\$ 53,592	\$ 54,000	
Rip Rap Slope Prot.	200	Ton	\$ 27.67	\$ 5,534			Item # 709-05.06 1.5 ft deep, 1.75 Tons/CY

**Total:** **\$ 2,709,000**

**Route:**  
**County:** Maury and Williamson  
**Section:** n/a - cost per mile estimate  
**Length:** 1 Miles  
**X-Section:** New 4 lane rural cross section

**Stream Crossings:** Estimate 2 per mile

Item	Quantity	Unit	2007 Unit Cost	Sub-Total	Total Cost	Rounded Cost	Description/Quantity Calculation
Clear and Grubbing	20	Acres	\$ 1,000.00		\$ 20,000	\$ 20,000	area inside prop. R.O.W.
Earthwork							
Excavation (Cut)	348000	CY	\$ 4.05	\$ -			Item # 203-01
Borrow (Fill)	0	CY	\$ 5.89	\$ -			Item # 203-03
		Total			\$ -	\$ 1,408,000	Est. based upon 1/2 paving cost for rural widening, 1/4 paving cost for C&G, and 1.0 paving cost for new location.
Pavement Removal	500	SY	\$ 3.88	\$ 1,940	\$ 1,940	\$ 5,000	Item #202-03.01 removal of asphalt pavement.
Drainage	0	FT Pipe	\$ 44.21	\$ -			24" pipe assumed length of project (C&G) Item # 607-05.02
	0	Catchbasins	\$ 2,691.27	\$ -			611-12.02, Type 12 CB 4-8' depth, 1 every 300' on each side of the street affected
	400	FT Pipe	\$ 136.19	\$ 54,476			48" pipe assumed at each stream crossings Item #607-09.02
	0	Medianbasin	\$ 2,691.27	\$ -			1 every 800' when have a median, estimate same price as catchbasins
	0	Medianpipe	\$ 37.74	\$ -			18" pipe every 800', length = 80' Item #607-03.02
		10% Factor		\$ 5,448			
		Total			\$ 59,924	\$ 60,000	
Structures	0	SF	\$ 150.00	\$ -	\$ -	\$ -	Estimate for simple bridges
Railroad Crossing	0	Each	\$ 50,000.00	\$ -			common equipment
	0	FT	\$ 200.00	\$ -			per foot runaround
	0	SF	\$ 70.00	\$ -			vehicular bridge
	0	SF	\$ 250.00	\$ -			RR bridge
	0	LF	\$ 200.00	\$ -			at grade pad
	0	Each	\$ 50,000.00	\$ -			gates and signals
		Total			\$ -	\$ -	
Paving	253440	SF	\$ 4.45	\$ 1,127,808		\$ -	arterial street asphalt paving - see separate calcs
	105600	SF	\$ 2.65	\$ 279,840		\$ -	asphalt shoulder - see separate calcs
		15% Reduct.		\$ -		\$ -	if widening, cost = 85% of total paving
							concrete cost Item # 702-03, 0.06409 CY/LF (DWG RP-NMC-10)
Curb and Gutter	0	FT	\$ 202.57	\$ -		\$ -	Unit price in CY
		Total			\$ 1,407,648	\$ 1,408,000	
Concrete	0	SF	\$ 3.37	\$ -	\$ -	\$ -	Sidewalks, Item # 701-01.01
Retaining Walls	660	FT	\$ 107.89	\$ 71,206	\$ 71,206	\$ 71,000	Item #604-10.01 concrete and Std. Dwg. EL-W-2 for a 4' tall gravity
Maintenance of Traffic	4	Each	\$ 25,000.00	\$ 100,000	\$ 100,000	\$ 100,000	estimate \$25,000 per existing road crossed
Topsoil	8000	CY	\$ 2.51	\$ 20,080	\$ 20,080	\$ 20,000	Item # 203-04
							Item # 801-01 sq. ft to be seeded/1000 x 1.25 = units. Unit price in units
Seeding	211200	s.f.	\$ 26.92	\$ 7,107	\$ 7,107	\$ 7,000	
Sodding	0	SY	\$ 2.41	\$ -	\$ -	\$ -	Item # 803-01
							\$1000/mile rural or \$2000/mile urban (or \$250/sign for standard signs)
Signing	1	Mile	\$ 1,000.00	\$ 1,000	\$ 1,000	\$ 5,000	
Lighting	10	Each	\$ 2,450.00	\$ 24,500	\$ 24,500	\$ 25,000	Item # 714-08
Signalization	1	Each	\$150,000.00	\$ 150,000	\$ 150,000	\$ 150,000	per signalized intersection
Fence	0	LF	\$ 8.64	\$ -	\$ -	\$ -	Chain Link 6', Item # 707-01.11
Guardrail	2640	LF	\$ 20.30	\$ 53,592	\$ 53,592	\$ 54,000	Item 705-02.03
Median Barrier	0	LF	\$ 155.10	\$ -	\$ -	\$ -	Item #711-04 Conc glare screen median barrier
		Total			\$ 53,592	\$ 54,000	
Rip Rap Slope Prot.	200	Ton	\$ 27.67	\$ 5,534	\$ 5,534	\$ 6,000	Item # 709-05.06 1.5 ft deep, 1.75 Tons/CY

**Total:** **\$ 3,339,000**

**Route:**  
**County:** Maury and Williamson  
**Section:** n/a - cost per mile estimate  
**Length:** 1 Miles  
**X-Section:** New 5 lane urban cross Section

**Stream Crossings:** Estimate 2 per mile

Item	Quantity	Unit	2007 Unit Cost	Sub-Total	Total Cost	Rounded Cost	Description/Quantity Calculation
Clear and Grubbing	20	Acres	\$ 1,000.00		\$ 20,000	\$ 20,000	area inside prop. R.O.W.
Earthwork							
Excavation (Cut)	382000	CY	\$ 4.05	\$ -			Item # 203-01
Borrow (Fill)	0	CY	\$ 5.89	\$ -			Item # 203-03
		Total			\$ -	\$ 1,547,000	Est. based upon 1/2 paving cost for rural widening, 1/4 paving cost for C&G, and 1.0 paving cost for new location.
Pavement Removal	500	SY	\$ 3.88	\$ 1,940	\$ 1,940	\$ 5,000	Item #202-03.01 removal of asphalt pavement.
Drainage	5280	FT Pipe	\$ 44.21	\$ 233,429			24" pipe assumed length of project (C&G) Item # 607-05.02
	40	Catchbasins	\$ 2,691.27	\$ 107,651			611-12.02, Type 12 CB 4-8' depth, 1 every 300' on each side of the street affected
	400	FT Pipe	\$ 136.19	\$ 54,476			48" pipe assumed at each stream crossings Item #607-09.02
	0	Medianbasin	\$ 2,691.27	\$ -			1 every 800' when have a median, estimate same price as catchbasins
	0	Medianpipe	\$ 37.74	\$ -			18" pipe every 800', length = 80' Item #607-03.02
		10% Factor		\$ 39,556			
		Total			\$ 435,111	\$ 435,000	
Structures	0	SF	\$ 150.00	\$ -	\$ -	\$ -	Estimate for simple bridges
Railroad Crossing	0	Each	\$ 50,000.00	\$ -			common equipment
	0	FT	\$ 200.00	\$ -			per foot runaround
	0	SF	\$ 70.00	\$ -			vehicular bridge
	0	SF	\$ 250.00	\$ -			RR bridge
	0	LF	\$ 200.00	\$ -			at grade pad
	0	Each	\$ 50,000.00	\$ -			gates and signals
		Total			\$ -	\$ -	
Paving	316800	SF	\$ 4.45	\$ 1,409,760			arterial street asphalt paving - see separate calcs
	0	SF	\$ 2.65	\$ -			asphalt shoulder - see separate calcs
		15% Reduct.		\$ -			if widening, cost = 85% of total paving
Curb and Gutter	10560	FT	\$ 202.57	\$ 137,097			concrete cost Item # 702-03, 0.06409 CY/LF (DWG RP-NMC-10)
		Total			\$ 1,546,857	\$ 1,547,000	Unit price in CY
Concrete	42240	SF	\$ 3.37	\$ 142,349			Sidewalks, Item # 701-01.01
Retaining Walls	660	FT	\$ 107.89	\$ 71,206			Item #604-10.01 concrete and Std. Dwg. EL-W-2 for a 4' tall gravity
Maintenance of Traffic	4	Each	\$ 25,000.00	\$ 100,000			estimate \$25,000 per existing road crossed
Topsoil	8000	CY	\$ 2.51	\$ 20,080			Item # 203-04
Seeding	211200	s.f.	\$ 26.92	\$ 7,107			Item # 801-01 sq. ft to be seeded/1000 x 1.25 = units. Unit price in units
Sodding	0	SY	\$ 2.41	\$ -			Item # 803-01
Signing	1	Mile	\$ 1,000.00	\$ 1,000			\$1000/mile rural or \$2000/mile urban (or \$250/sign for standard signs)
Lighting	10	Each	\$ 2,450.00	\$ 24,500			Item # 714-08
Signalization	1	Each	\$150,000.00	\$ 150,000			per signalized intersection
Fence	0	LF	\$ 8.64	\$ -			Chain Link 6', Item # 707-01.11
Guardrail	2640	LF	\$ 20.30	\$ 53,592			Item 705-02.03
Median Barrier	0	LF	\$ 155.10	\$ -			Item #711-04 Conc glare screen median barrier
		Total			\$ 53,592	\$ 54,000	
Rip Rap Slope Prot.	200	Ton	\$ 27.67	\$ 5,534			Item # 709-05.06 1.5 ft deep, 1.75 Tons/CY

**Total:** **\$ 4,134,000**

**Route:**  
**County:** Maury and Williamson  
**Section:** n/a - cost per mile estimate  
**Length:** 1 Miles  
**X-Section:** Rehabilitate 3 lane urban cross Section

**Stream Crossings:** Estimate 2 per mile

Item	Quantity	Unit	2007 Unit Cost	Sub-Total	Total Cost	Rounded Cost	Description/Quantity Calculation
Clear and Grubbing	0	Acres	\$ 1,000.00		\$ -	\$ -	area inside prop. R.O.W.
Earthwork							
Excavation (Cut)	0	CY	\$ 4.05	\$ -			Item # 203-01
Borrow (Fill)	0	CY	\$ 5.89	\$ -			Item # 203-03
		Total			\$ -	\$ -	Est. based upon 1/2 paving cost for rural widening, 1/4 paving cost for C&G, and 1.0 paving cost for new location.
Pavement Removal	21120	SY	\$ 3.88	\$ 81,946	\$ 81,946	\$ 82,000	Item #202-03.01 removal of asphalt pavement.
Drainage	0	FT Pipe	\$ 44.21	\$ -			24" pipe assumed length of project (C&G) Item # 607-05.02
	0	Catchbasins	\$ 2,691.27	\$ -			611-12.02, Type 12 CB 4-8' depth, 1 every 300' on each side of the street affected
	0	FT Pipe	\$ 136.19	\$ -			48" pipe assumed at each stream crossings Item #607-09.02
	0	Medianbasin	\$ 2,691.27	\$ -			1 every 800' when have a median, estimate same price as catchbasins
	0	Medianpipe	\$ 37.74	\$ -			18" pipe every 800', length = 80' Item #607-03.02
		10% Factor		\$ -			
		Total			\$ -	\$ -	
Structures	0	SF	\$ 150.00	\$ -	\$ -	\$ -	Estimate for simple bridges
Railroad Crossing	0	Each	\$ 50,000.00	\$ -			common equipment
	0	FT	\$ 200.00	\$ -			per foot runaround
	0	SF	\$ 70.00	\$ -			vehicular bridge
	0	SF	\$ 250.00	\$ -			RR bridge
	0	LF	\$ 200.00	\$ -			at grade pad
	0	Each	\$ 50,000.00	\$ -			gates and signals
		Total			\$ -	\$ -	
Paving	190080	SF	\$ 0.89	\$ 169,171		\$ -	arterial street asphalt paving - see separate calcs
	0	SF	\$ 2.65	\$ -		\$ -	asphalt shoulder - see separate calcs
		15% Reduct.		\$ -		\$ -	if widening, cost = 85% of total paving
							concrete cost Item # 702-03, 0.06409 CY/LF (DWG RP-NMC-10)
Curb and Gutter	0	FT	\$ 202.57	\$ -		\$ -	Unit price in CY
		Total			\$ 169,171	\$ 169,000	
Concrete	42240	SF	\$ 3.37	\$ 142,349		\$ 142,000	Sidewalks, Item # 701-01.01
Retaining Walls	0	FT	\$ 107.89	\$ -	\$ -	\$ -	Item #604-10.01 concrete and Std. Dwg. EL-W-2 for a 4' tall gravity
Maintenance of Traffic	4	Each	\$ 25,000.00	\$ 100,000	\$ 100,000	\$ 100,000	estimate \$25,000 per existing road crossed
Topsoil	0	CY	\$ 2.51	\$ -	\$ -	\$ -	Item # 203-04
Seeding	0	s.f.	\$ 26.92	\$ -	\$ -	\$ -	\$1000/mile rural or \$2000/mile urban (or \$250/sign for standard signs)
Sodding	0	SY	\$ 2.41	\$ -	\$ -	\$ -	Item # 803-01
Signing	1	Mile	\$ 1,000.00	\$ 1,000	\$ 1,000	\$ 5,000	
Lighting	10	Each	\$ 2,450.00	\$ 24,500	\$ 24,500	\$ 25,000	Item # 714-08
Signalization	0	Each	\$150,000.00	\$ -	\$ -	\$ -	per signalized intersection
Fence	0	LF	\$ 8.64	\$ -	\$ -	\$ -	Chain Link 6', Item # 707-01.11
Guardrail	0	LF	\$ 20.30	\$ -	\$ -	\$ -	Item 705-02.03
Median Barrier	0	LF	\$ 155.10	\$ -	\$ -	\$ -	Item #711-04 Conc glare screen median barrier
		Total			\$ -	\$ -	
Rip Rap Slope Prot.	0	Ton	\$ 27.67	\$ -	\$ -	\$ -	Item # 709-05.06 1.5 ft deep, 1.75 Tons/CY

**Total:** \$ 523,000

## SR-6 TPR Structures Cost Data Sheet

Route	Log Mile	Section ID	Description	Estimated Length (ft.)	Estimated Width (ft.)	Cost per S.F.	Estimated Structure Cost
SR-6	0.17	2	Crossing McCutcheon Creek	60	84	\$ 150	\$ 756,000
SR-6	4.66	3	Crossing Branch	60	84	\$ 150	\$ 756,000
SR-6	5.72	5	Crossing West Harpeth River	120	84	\$ 150	\$ 1,512,000
SR-6	8.11	5	Crossing Branch	60	84	\$ 150	\$ 756,000
SR-6	8.89	6	Exist. Crossing CSX	200	84	\$ 300	\$ 5,040,000
W. Bypass	n/a	n/a	Prop. Crossing CSX	200	84	\$ 300	\$ 5,040,000
W. Bypass	n/a	n/a	Prop. Crossing CSX	200	84	\$ 300	\$ 5,040,000



## 2008 COST DATA SHEET

Base Per Mile ROW Cost

\$930,000

Right Of Way (ROW) Factor

Area	Factor	TDOT Estimated Cost per Mile	For Widening		For New Const.	
			Low Estimate (50%)	High Estimate (85%)	Low Estimate (85%)	High Estimate (1.15%)
CBD	3.25	\$3,022,500	\$1,511,000	\$2,569,000	\$2,569,000	\$3,476,000
CBD Urbanized	12.50	\$11,625,000	\$5,813,000	\$9,881,000	\$9,881,000	\$13,369,000
Heavy Commercial (High Rise, Large Building)	3.25	\$3,022,500	\$1,511,000	\$2,569,000	\$2,569,000	\$3,476,000
Strip Commercial	3.25	\$3,022,500	\$1,511,000	\$2,569,000	\$2,569,000	\$3,476,000
Fringe (Mixed, Residential/Commercial)	1.75	\$1,627,500	\$814,000	\$1,383,000	\$1,383,000	\$1,872,000
Industries (Factories, Warehouse)	1.75	\$1,627,500	\$814,000	\$1,383,000	\$1,383,000	\$1,872,000
Light Residential (1/4- Acres)	1.75	\$1,627,500	\$814,000	\$1,383,000	\$1,383,000	\$1,872,000
Medium Residential (Acres+)	1.75	\$1,627,500	\$814,000	\$1,383,000	\$1,383,000	\$1,872,000
Heavy Residential (Apartments)	1.75	\$1,627,500	\$814,000	\$1,383,000	\$1,383,000	\$1,872,000
Public Use (Parks, School)	1.75	\$1,627,500	\$814,000	\$1,383,000	\$1,383,000	\$1,872,000
Rural	1.00	\$930,000	\$465,000	\$791,000	\$791,000	\$1,070,000

**Note:** TDOT provided estimated cost per mile for new construction. Percentages of the cost per mile taken into account for New Construction (Bypass) and widening (SR-6) Sections.

For SR-6 widening, Section 1 utilizes "CBD Urbanized" (for new construction due to compact adjacent development), Section 2 utilizes "Strip Commercial", Section 3-5 utilizes "Rural".

For the Bypass Options, "Rural" for new construction is utilized.

**Paving Cost by Cross Section**  
**JHS**

**City Street Mainline:**

Item No.	Description	Units	2007 Unit Cost	Thickness (Inches)	Cost per S.F.	Based On
411-01.10	Surface AC (PG64-22) GR "D"	Ton	\$ 60.66	1.25	\$ 0.45	Design Guidelines 4-411.00
307-01.08	Binder AC (PG64-22) GR "B-M2"	Ton	\$ 56.40	2	\$ 0.71	Design Guidelines 4-307.00
307-01.01	Black Base AC (PG64-22) GR "A"	Ton	\$ 57.18	3	\$ 1.10	Design Guidelines 4-307.00
303-01	Mineral Agg Base GRA "D"	Ton	\$ 14.18	8	\$ 0.71	Design Guidelines 4-303.00
<b>Total:</b>				<b>14.25</b>	<b>\$ 2.96</b>	

**Arterial (Asphalt) Mainline:**

Item No.	Description	Units	2007 Unit Cost	Thickness (Inches)	Cost per S.F.	Based On
411-02.10	Bituminous Surface	Tons	\$ 62.68	1.25	\$ 0.46	Design Guidelines 4-411.00
403-01	Tack Coat	Tons	\$ 339.50	0.00	\$ 0.00	Design Guidelines 4-403.00
307-02.08	Bituminous Binder	Tons	\$ 57.47	2.00	\$ 0.72	Design Guidelines 4-307.00
307-02.01	Bituminous Base	Tons	\$ 55.79	6.50	\$ 2.32	Design Guidelines 4-307.00
402-01	Prime Coat	Tons	\$ 382.39	0.00	\$ 0.06	Design Guidelines 4-402.00
402-02		Tons	\$ 18.19		\$ 0.01	Design Guidelines 4-402.00
303-01	Mineral Aggregate Base	Tons	\$ 14.18	10.00	\$ 0.89	Design Guidelines 4-303.00
<b>Total:</b>				<b>19.75</b>	<b>\$ 4.45</b>	

**City Street Overlay (Assume Double Layer of Surface AC)**

Item No.	Description	Units	2007 Unit Cost	Thickness (Inches)	Cost per S.F.	Based On
411-01.10	Surface AC (PG64-22) GR "D"	Ton	\$ 60.66	2.5	\$ 0.89	Design Guidelines 4-411.00
<b>Total:</b>				<b>2.5</b>	<b>\$ 0.89</b>	

**Ramp (Concrete) Mainline:**

Item No.	Description	Units	2007 Unit Cost	Thickness (Inches)	Cost per S.F.	Based On
501-01.03	Portland Cement Concrete PVMT (Plain)	S.Y.	\$ 41.91	10.00	\$ 4.66	
313-03	Treated Permeable Base	S.Y.	\$ 9.63	4.00	\$ 1.07	
303-01	Mineral Aggregate Base	Tons	\$ 14.18	4.00	\$ 0.36	Design Guidelines 4-303.00
<b>Total:</b>				<b>18</b>	<b>\$ 6.08</b>	

**City Street Shoulder:**

Item No.	Description	Units	2007 Unit Cost	Thickness (Inches)	Cost per S.F.	Based On
411-01.07	Surface AC (PG64-22) GR "E"	Ton	\$ 56.92	1.5	\$ 0.49	Design Guidelines 4-411.00
303-01	Mineral Agg Base GRA "D"	Ton	\$ 14.18	12.75	\$ 1.13	Design Guidelines 4-303.00
<b>Total:</b>				<b>14.25</b>	<b>\$ 1.62</b>	

**Arterial and Ramp (Asphalt) Shoulder:**

Item No.	Description	Units	2007 Unit Cost	Thickness (Inches)	Cost per S.F.	Based On
411-01.07	Bituminous Surface	Tons	\$ 56.92	1.25	\$ 0.41	Design Guidelines 4-411.00
403-01	Tack Coat	Tons	\$ 339.50	0.00	\$ 0.00	Design Guidelines 4-403.00
307-01.08	Bituminous Binder	Tons	\$ 56.40	2.00	\$ 0.71	Design Guidelines 4-307.00
402-01	Prime Coat	Tons	\$ 382.39	0.00	\$ 0.06	Design Guidelines 4-402.00
402-02		Tons	\$ 18.19		\$ 0.01	Design Guidelines 4-402.00
303-01	Mineral Aggregate Base	Tons	\$ 14.18	16.50	\$ 1.47	Design Guidelines 4-303.00
<b>Total:</b>				<b>19.75</b>	<b>\$ 2.65</b>	

= referenced from previous input price

**TRAFFIC CALCULATIONS**

# Appendix

## SR-6 (US-31) TRAFFIC STUDY

MAURY AND WILLIAMSON COUNTIES, TENNESSEE  
L.M. 32.47(MAURY COUNTY) TO 10.03 (WILLIAMSON COUNTY)

PIN # 111040.00

PREPARED BY:



**Florence & Hutcheson, Inc.**

CONSULTING ENGINEERS

FOR:



TENNESSEE DEPARTMENT OF TRANSPORTATION  
PROJECT PLANNING DIVISION

Updated 8/08

## **TRAFFIC PROJECTIONS**

County: Maury and Williamson  
Location: SR-6 (US-31) from Log Mile (L.M.) 32.47 (Kedron Road) to L.M. 10.03 (Mack Hatcher Parkway)  
Date of Counts: June, 2008

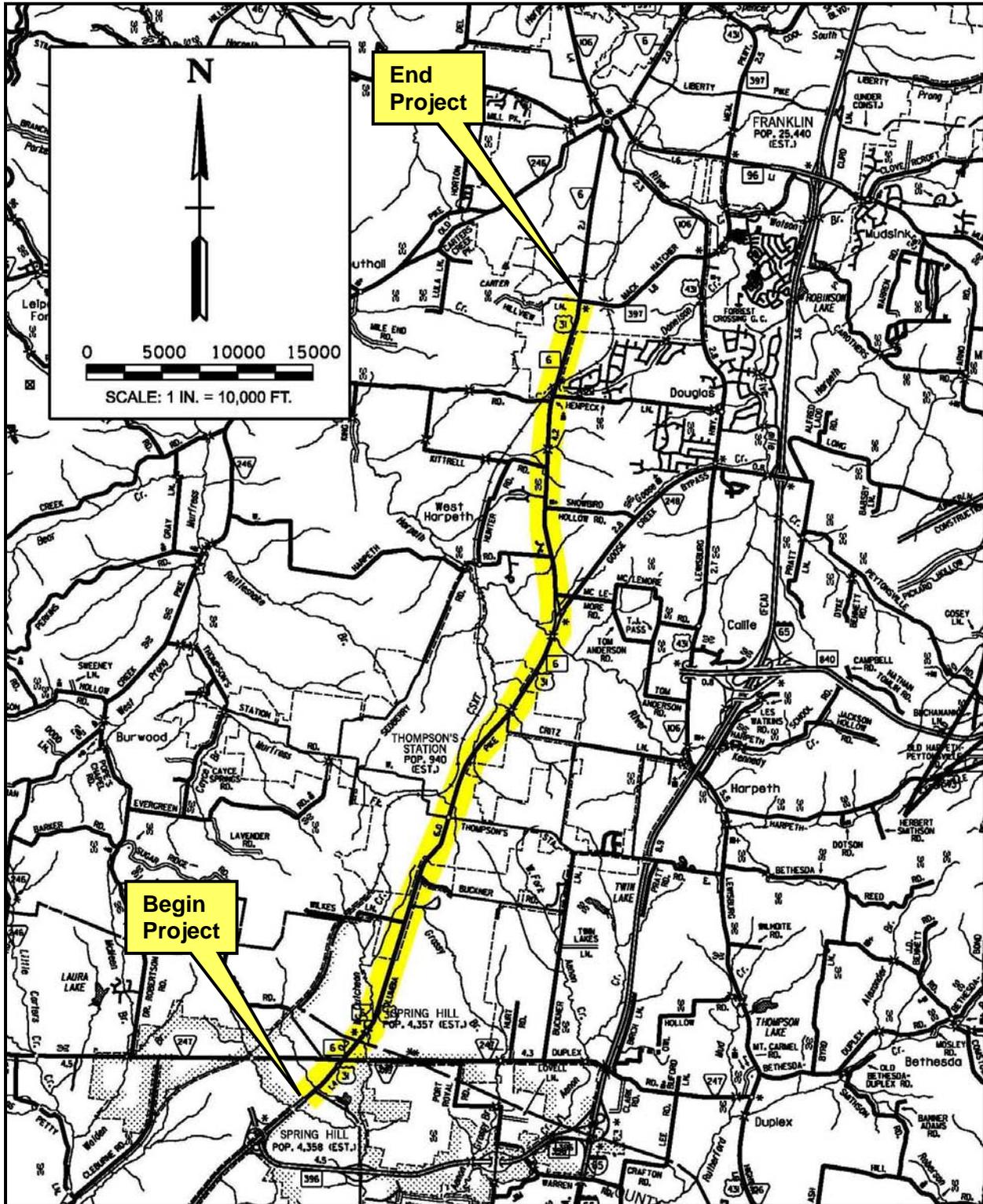
### **1.0 DESCRIPTION OF PROJECT AND BACKGROUND**

The traffic projections provided in this Appendix are utilized in the SR-6 (US-31) Transportation Planning Report (TPR) in Maury and Williamson Counties, Tennessee. The Annual Average Daily Traffic (AADT) are projected for the years 2014 and 2034. The AADT turning volumes are included in these projections.

A map of the study area is provided in **Exhibit 1.1. Vicinity Map**. The results of the traffic projections are provided in the form of a line sketch following the Vicinity Map. A discussion of the traffic projection calculations is provided.

SR-6 (US-31) TPR  
Maury and Williamson Counties

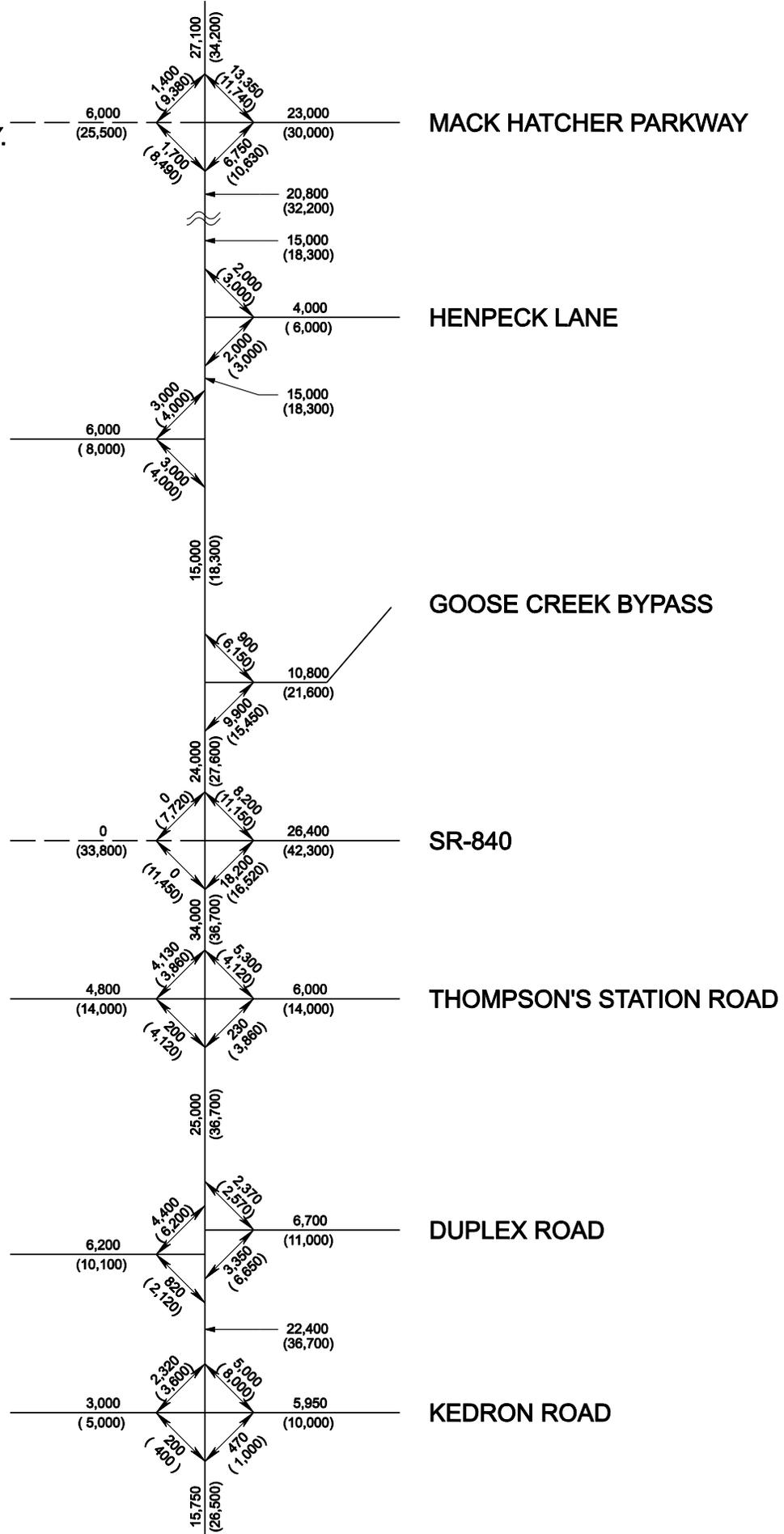
EXHIBIT 1.1 VICINITY MAP



# SR-6 TPR AADT TRAFFIC PROJECTIONS MAURY & WILLIAMSON COUNTIES

<b>SR-6 TRAFFIC DATA</b>	
AADT (2014):	23,300
AADT (2034):	30,700
"K":	8%
D:	70:30
PHF:	0.95
TRUCK %:	3%
<b>SIDE ROAD DATA</b>	
AADT (2014):	SEE DIAGRAM
AADT (2034):	SEE DIAGRAM
"K":	8%
D:	60:40
PHF:	0.95
TRUCK %:	3%

<b>LEGEND</b>	
---	YEAR 2016 IMPROVEMENT
X,XXX	2014 AADT
(X,XXX)	2034 AADT



## **2.0 INFORMATION USED IN THE PROJECTIONS**

### **8-HOUR TURNING MOVEMENT TRAFFIC COUNTS**

The counts were collected in June of 2008 between the hours of: 6-9 am, 11 am – 1 pm, 3 pm to 6 pm at the following locations along SR-6:

1. L.M. 32.47 Kedron Road
2. L.M. 32.99 Beechcroft/Duplex (collected 11/28/2006)
3. L.M. 3.07 Thompson's Station Road
4. L.M. 6.00 Goose Creek Bypass
5. L.M. 8.71 Coleman Road
6. L.M. 8.78 Henpeck Lane
7. L.M. 10.03 Hillview Lane/Mack Hatcher Parkway

The count data collected is provided in the **Calculations and Data Collection** portion of this **Appendix**.

### **TDOT 24-HOUR AADT HISTORICAL DATA**

Count data was attained from TDOT's Tennessee Roadway Information Management System (TRIMS) database. Historical growth rate data was also attained from TDOT's Traffic History GIS system available online at the following address:

<http://ww3.tdot.state.tn.us/traffichistory/>

The following count locations within the study area were utilized:

1. SR-6 Maury County Station 007
2. SR-6 Maury County Station 009
3. SR-6 Williamson County Station 67
4. SR-6 Williamson County Station 94
5. SR-6 Williamson County Station 197
6. SR-6 Williamson County Station 35
7. Kedron Road Maury County Station 170
8. Beechcroft Road Maury County Station 169
9. Duplex Road Maury County Station 010
10. Thompson Station Williamson County Stations 068 and 066
11. SR-840 Williamson County Station 201
12. Goose Creek Bypass Williamson County Station 095
13. Henpeck Lane Williamson County Station 036
14. Mack Hatcher Parkway Williamson County Station 142

The TDOT count data is provided in the **Calculations and Data Collection** portion of this **Appendix**.

## **STAKEHOLDER INTERVIEWS**

Interviews were conducted to determine known proposed traffic generators of significant size, zoning information, and to attain traffic data from the Metropolitan Planning Organization (MPO) Traffic Model. The following people were contacted:

### Nashville Area MPO

Michael Skipper, Director (615) 862-7204

Matt Meservy (615) 862-6887

### Williamson County

Mike Matteson, Director of Planning (615) 790-5725

Joe Horne, Community Development Director (615) 790-5725

### City of Spring Hill

Ferrell White, Director of Planning (931) 486-2242x212

### City of Franklin

Eric Gardner, Engineering Director (615) 791-3218

### Town of Thompson's Station

Greg Langeliers, Town Administrator (615) 794-4333

## **MPO TRAFFIC MODEL**

The output from the MPO's Traffic Model was provided for the years 2006, 2016, and 2030. The MPO noted that the travel demand model information is regional in nature and not necessarily intended for corridors. It was recommended to utilize the model as a tool, but not to take the numbers directly as traffic projections. The model should primarily be utilized to observe trends related to roadway improvements and create factors or orders of magnitude to adjust field counts. It was also noted that the model includes future improvements as programmed in the Long Range Transportation Plan (LRTP). The MPO Traffic Model output is provided in the **Calculations and Data Collection** portion of this **Appendix**.

**3.0 METHODOLOGY AND PROJECTIONS**

**DATA COLLECTION**

The following data was collected to create the traffic projections along the route. The traffic projections were created for the years 2014 and 2034. The year 2014 was determined as the “existing” year due to it being 5 years from the year the TPR is scheduled to be approved. The year 2034 was determined as the “design” year due to it being 20 years from the “existing” date.

Base AADT	The 2006 base Annual Average Daily Traffic (AADT) was determined from TRIMS, TDOT AADT Traffic Maps, and the MPO Traffic Model. Year 2006 traffic was utilized due to that being a year in the MPO model (there is no 2008 MPO traffic model).
Base Turning Movement Volumes	The base turning movement volumes were determined from field-collected data along the route.
Growth Rate	Growth rates were attained from TDOT’s website and the MPO Traffic Model.
Directional Split	The directional split, or “D”, was attained from field collected turning movement counts taken along the route and from TRIMS traffic reports. A “D” of 70:30 was observed.
Truck Percentages	The truck percentages were determined from field collected turning movement counts and from TDOT’s TRIMS traffic report. A truck percentage of 3% was observed.
“K” Factor	The percentage of traffic in the peak hour compared to the AADT was determined from TRIMS traffic reports and by comparing the observed peak hours collected in the turning movement counts with the 2006 AADT data in TDOT’s TRIMS database. A “K” factor of 0.08 was observed.
PHF	The Peak Hour Factor (PHF) was determined from field collected turning movement counts. The PHF observed was 0.95.
Future Traffic Generators	Interviews determined that although considerable development is occurring in the vicinity of the corridor, no planned generators are known that would warrant separate consideration for traffic projections. In other words, historical and MPO Traffic Model growth rates are estimated to account for the future growth in traffic along the corridor. Williamson County noted that the area along the corridor in the county’s jurisdiction is zoned 1 dwelling unit per acre (max density), with no commercial development. It was also noted that the primary development was occurring within the cities and towns along the route. These developments are primarily residential.

**METHODOLOGY**

**AADT Calculations**

The AADT calculations were performed in two iterations. In the first iteration, the 2006 TDOT AADT traffic data was compared to the 2006 MPO Traffic Model AADT data. A factor comparing the TDOT to the MPO data was attained. This factor was applied to the 2016 and 2030 MPO AADT model information. The 1<sup>st</sup> iteration 2014 and 2034 AADT was interpolated/extrapolated directly from this data, with no engineering judgment being applied.

The 1<sup>st</sup> iteration AADT volumes were examined and compared to the MPO models, and to expected volumes utilizing historic growth rates. Engineering judgment was utilized to smooth the AADT volumes along the route and to eliminate unrealistic projections. The 2<sup>nd</sup> iteration AADT volumes are what appear on the provided Traffic Volume Line Sketch. The procedures described here were utilized for both SR-6 and the side roads. A chart summarizing the various AADT data points utilized in the calculations is provided in **Exhibit 3.1 AADT Traffic Volumes**. The traffic calculations are provided in the **Calculations and Data Collection** portion of this **Appendix**.

**EXHIBIT 3.1 AADT TRAFFIC VOLUMES**

SR-6 AADT Projections		MPO 2006 AADT	TDOT 2006 AADT	Factor	MPO 2016 AADT	MPO 2030 AADT	2 <sup>nd</sup> Iter. AADT	
From	To						2014	2034
Beginning	Kedron	7,482	14,621	1.95	8,179	12,305	<b>15,750</b>	<b>26,500</b>
Kedron	Duplex/Beechcroft	13,252	18,007	1.36	17,289	28,315	<b>22,400</b>	<b>36,700</b>
Duplex/Beechcroft	Thompson's Sta.	18,195	18,007	0.99	27,114	34,843	<b>25,000</b>	<b>36,700</b>
Thompson's Sta.	SR-840	17,602	21,645	1.23	30,173	35,346	<b>34,000</b>	<b>36,700</b>
SR-840	Goose Creek	13,341	21,645	1.62	14,912	21,558	<b>24,000</b>	<b>27,600</b>
Goose Creek	Coleman/Henpeck	13,622	12,646	0.93	14,816	18,643	<b>15,000</b>	<b>18,300</b>
Coleman/Henpeck	Mack Hatcher	12,027	16,682	1.39	15,715	21,532	<b>20,800</b>	<b>32,200</b>
MackHatcher	End	8,620	21,835	2.53	14,620	18,435	<b>27,100</b>	<b>34,200</b>

Side Road	Side of SR-6		MPO 2006 AADT	TDOT 2006 AADT	Factor	MPO 2016 AADT	MPO 2030 AADT	2 <sup>nd</sup> Iter. AADT	
	West	East						2014	2034
Kedron Parkway	x							<b>3,000</b>	<b>5,000</b>
Kedron Road		x	2254	5,239	2.32	4,613	8,611	<b>5,950</b>	<b>10,000</b>
Beechcroft Road	x		3922	4,353	1.11	5,979	8,361	<b>6,200</b>	<b>10,100</b>
Duplex Road		x	3992	6,126	1.53	4,485	6,552	<b>6,700</b>	<b>11,000</b>
Thompson's Sta. Rd.	x		6543	2,858	0.44	4,806	13,637	<b>4,800</b>	<b>14,000</b>
Thompson's Sta. Rd.		x	3719	2,571	0.69	4,910	5,083	<b>6,000</b>	<b>14,000</b>
SR-840	x		n/a	n/a	n/a	14,055	20,639	<b>0</b>	<b>33,800</b>
SR-840		x	6222	10,060	1.62	18,836	24,583	<b>26,400</b>	<b>42,300</b>
Goose Creek Byp.		x	1096	8,447	7.71	1,570	4,709	<b>10,800</b>	<b>21,600</b>
Coleman Road	x		6626			1,254	3,318	<b>6,000</b>	<b>8,000</b>
Henpeck Lane		x	1770	3,335	1.88	1,541	1,788	<b>4,000</b>	<b>6,000</b>
Mack Hatcher Pkwy.	x		n/a	n/a	n/a	12,355	16,196	<b>6,000</b>	<b>25,500</b>
Mack Hatcher Pkwy.		x	5994	19,207	3.20	13,791	18,485	<b>23,000</b>	<b>30,000</b>

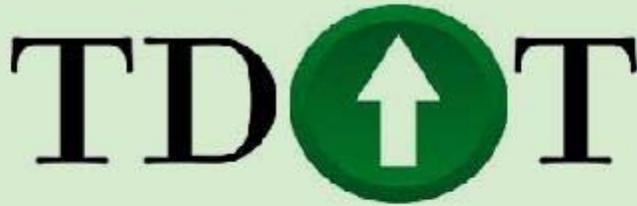
### **AADT Turning Movements**

After the AADT mainline volumes were projected, the AADT turning movements were calculated. The turning volumes were estimated by using software that performed the calculations outlined in Chapter 8, *Turning Movement Procedures*, of NCHRP 255 *Highway Traffic Data for Urbanized Area Project Planning and Design*. These calculations utilize the field-collected counts as the basis of the turning volumes. The results of the AADT turning movement calculations are provided in the Traffic Schematics. The traffic calculations are provided in the **Calculations and Data Collection** portion of this **Appendix**.

## **CALCULATIONS AND DATA COLLECTIONS**

AADT Calculations	A-1
AADT Turning Movement Calculations	A-7
“D” & “K” Calculations	A-26
Field Collected Traffic Counts	A-31
MPO Traffic Model Data	A-66
TRIMS Traffic Data	A-70

**TDOT EES MAPS**



**Tennessee Department of Transportation**  
 EARLY ENVIRONMENTAL SCREENING PROCESS (EES)  
 PROJECT SCORING

**Project Score Factors**

	Total Impacts Evaluated	Total Impacts to Evaluate	EES Evaluation
<b>Project Impact Areas:</b>	<b>15</b>	<b>15</b>	<b>Complete</b>
<b>Date of Evaluation:</b>	December 30, 2008		
<b>Evaluation done by:</b>	Chris Armstrong		
	Transportation Planner 4		
<b>County:</b>	Maury-Williamson		
<b>Route:</b>	State Route 6 (US-31)		
<b>PIN:</b>	111040.00		
<b>Termini:</b>	From Old Kedron Road in Maury Co. to Mack Hatcher Pkwy. in Williamson Co.		

**Impact Ranking of Features Evaluated:                      Total by Rank**

<b>Features with No Impact</b>	<b>9</b>
Bat	
Terrestrial Species	
TDEC Conservation Sites & TDEC Scenic Waterways	
Superfund Sites	
Caves	
Pyritic Rock	
Tennessee Natural Areas Program	
Wildlife Management Areas	
TWRA Lakes & Other Public Lands	
<b>Features with Low Impact</b>	<b>0</b>
<b>Features with Moderate Impact</b>	<b>3</b>
Cemetery Sites & Cemetery Properties	
Aquatic Species	

Railroads

---

**Features with Substantial Impact**

2

National Register Sites

Large Wetland Impacts

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**Community Impacts Present:**

---

**Institutions:**

School

Church

---

**Populations:**

No population present

Linguistically isolated populations

---

**EES Project Impact:**

Complete

---

## Community Impact Group

### INSTITUTIONS & SENSITIVE COMMUNITY POPULATIONS

**Sensitive Populations Project Impact:****Present****Not Present**

	Present	Not Present
<b>Institutions:</b>		
Hospital	<input type="checkbox"/>	<input checked="" type="checkbox"/>
School	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Church	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Public Building	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>Populations:</b>		
No population present	<input checked="" type="checkbox"/>	<input type="checkbox"/>
65 and older populations	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Disability populations	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Households without a vehicle	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Minority populations 24%	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Linguistically isolated populations	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Populations below poverty - State average - 13%	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Populations below poverty - State average - 27%	<input type="checkbox"/>	<input checked="" type="checkbox"/>

## Historic Architecture/Archaeology Group

### NATIONAL REGISTER SITES

**Impact**

---

<b>Project Impact (Environmental, Time, Cost, Design, and Maintenance)</b>	<input checked="" type="checkbox"/> <b>Substantial</b> - A substantial impact on the project is anticipated as there is a National Register historic property within the project study area or corridor. It is not possible to avoid a taking or impact of the surveyed site and/or the historic property. Other concerns are the visual or audible effects upon the survey site and/or historic property that need to be considered and minimized. An environmental impact will likely result and necessitate coordination with State Historic Preservation Office as part of NEPA. Additional project alternatives may be needed to minimize the amount of takings. Indirect effects (visual and audible) may occur, and may require one of more of the following: vegetative plantings, a noise wall and/or beautification of the roadway/bridges. Design efforts that may be required to include coordination, negotiation and planning mitigation measures for any taking.
--	---

## CEMETERY SITES & CEMETERY PROPERTIES

### Impact

<b>Project Impact (Environmental, Time, Cost, Design, and Maintenance)</b>	<input checked="" type="checkbox"/> <b>Moderate</b> – Medium impact on environment is anticipated as there is a cemetery within the project study area or corridor. It is possible to avoid impacts to the cemetery. Although the cemetery site is present in the study area or corridor, it is possible to avoid impacts to the cemetery. An environmental impact may still result and necessitate an archaeological review as part of NEPA. A moderate level of environmental documentation and time will be required to proceed with development of the project, including steps reach ‘no adverse effect’ and/or <i>de minimus</i> impact determination on the impacts to the cemetery.
--	---

## Ecology Group

### RARE AND PROTECTED SPECIES

#### BAT

### Impact

<b>Project Impact (Environment, Time, Cost, Design, and Maintenance)</b>	<input checked="" type="checkbox"/> <b>None</b> – No project impact is anticipated. There is no occurrence of Indiana or gray bats within 4 miles of the proposed project study area or corridor.
--	---

### TERRESTRIAL SPECIES

### Impact

<b>Project Impact (Environment, Time, Cost, Design, and Maintenance)</b>	<input checked="" type="checkbox"/> <b>None</b> - No impact to the project is anticipated. There is no known occurrence of a rare, state, or federally-protected terrestrial species within the proposed transportation study area or corridor.
--	---

### AQUATIC SPECIES

### Impact

<b>Project Impact (Environment, Time, Cost, Design, and Maintenance)</b>	<input checked="" type="checkbox"/> <b>Moderate</b> – Medium impact on the project is expected as there is a known occurrence of federally-protected aquatic species or a state protected species with a status of threatened or endangered located within the project study area or corridor. Additional alternatives could likely reduce species impacts. Consultation with the US Fish and Wildlife Service and/or the Tennessee Wildlife Resources Agency will be required possibly resulting in a survey for the species. Special construction considerations may be required.
--	---

# TDEC CONSERVATION SITES & TDEC SCENIC WATERWAYS

## Impact

<b>Project Impact (Environment, Time, Cost, Design, Maintenance)</b>	<input checked="" type="checkbox"/> <b>None</b> – No project impact is expected as there are no scenic waterways or TDEC Conservation Sites within project study area or corridor.
--	--

# LARGE WETLAND IMPACTS

## Impact

<b>Project Impact (Environment, Time, Cost, Design, Maintenance)</b>	<input checked="" type="checkbox"/> <b>Substantial</b> – Regions 1, 2, and 3: A substantial impact to the project is probable as there is greater than 2 acres of wetlands within the project study area or corridor. Compensatory mitigation will be required. Design effort will be needed to avoid and minimize impacts to wetlands to the maximum extent practicable. If a floodplain is crossed by the project, floodplain culverts may be necessary.
--	--

# Hazardous Substances/Geology Group

# SUPERFUND SITES

## Impact

<b>Project Impact (Environment, Time, Cost, Design, and Maintenance)</b>	<input checked="" type="checkbox"/> <b>None</b> – No project impact is anticipated as there are no known contaminated land tracts abutting or within the project study area or corridor.
--	--

# CAVES

## Impact

<b>Project Impact (Environment, Time, Cost, Design, and Maintenance)</b>	<input checked="" type="checkbox"/> <b>None</b> – No project impact is anticipated as there are no caves in the project study area or corridor.
--	---

# PYRITIC ROCK

## Impact

<b>Project Impact (Environment, Time, Cost, Design, and Maintenance)</b>	<input checked="" type="checkbox"/> <b>None</b> – No project impact is anticipated. Pyritic rock is not known to occur in the study area/corridor or project does not involve excavation. Limestone (symbolized as dark green) and dolomite (symbolized as light green) are present.
--	--

# Railroad & Public Lands Group

## RAILROADS

### Impact

<b>Project Impact (Environment, Time, Cost, Design, and Maintenance)</b>	<input checked="" type="checkbox"/> <b>Moderate</b> – Medium impact on the project is anticipated as a railroad lies within the project study area or corridor. An impact on the railroad cannot be avoided through more detailed planning or the railroad will be within 200 feet of the proposed transportation project. The initial idea is that there will be an existing at-grade crossing, and coordination with the Tennessee DOT Safety Planning and Travel Data Office and the Tennessee DOT Right-Of-Way Division - Utilities Section should be initiated. An impact on the project is likely due to the need to resolve major drainage issues, grade crossing mitigation, grade separations, railroad property acquisition, and railroad relocations. Coordination with the railroad on right of way issues is anticipated which may require much time, including a maintenance agreement. Additional design effort to avoid/minimize impacts may be needed and to create additional alternatives. Maintenance agreements with the railroad may need to be resolved, and any maintenance will be dependent upon these agreements. Typical maintenance includes mowing and clearing of the right of way and/or repairs of signalized at-grade intersection.
--	---

## TENNESSEE NATURAL AREAS PROGRAM

### Impact

<b>Project Impact (Environment, Time, Cost, Design, and Maintenance)</b>	<input checked="" type="checkbox"/> <b>None</b> – No impact on the project is anticipated as the project study area or corridor does not include a Natural Area.
--	--

## WILDLIFE MANAGEMENT AREAS

### Impact

<b>Project Impact (Environment, Time, Cost, Design, and Maintenance)</b>	<input checked="" type="checkbox"/> <b>None</b> – No project impact is anticipated as a WMA does not abut nor is located within the project study area or corridor.
--	---

## TWRA LAKES & OTHER PUBLIC LANDS

### Impact

<b>Project Impact (Environment, Time, Cost, Design, and Maintenance)</b>	<input checked="" type="checkbox"/> <b>None</b> – No impact on the project is anticipated as there area no parks located within or abutting the project study area or corridor.
--	---

# EES Report

PIN 111040.00  
10,000 Foot Corridor  
December 30, 2008

## Ecology

### Rare & Protected Species

Aquatic Species	<u>Total=</u> 5	USESA	SPROT
Etheostoma luteovinctum			D

## Hazardous Substances & Geology

### Geology

Caves

There are none.

# EES Report

PIN 111040.00  
4,000 Foot Corridor  
December 30, 2008

## Ecology

### Rare & Protected Species

Terrestrial Species

There are none.

TDEC Conservation Sites

There are none.

TDEC Scenic Waterways

There are none.

### Large Wetland Impacts

Total= 134

POWHh

POWHx

PFO1A

POWHx

POWHx

POWHx

POWHh

POWHx

POWHh

POWHx

POWHh

POWHh

POWHh

POWHh

POWHh

POWHh

POWHh

POWHx

PEM1Cx

POWHh

POWHh

POWHx

POWHh

PEM1C

POWHx

POWHh

POWHh

POWHh

POWHx

POWHh

PIN 111040.00  
4,000 Foot Corridor  
December 30, 2008

POWHx  
POWHh  
POWHh  
POWHx  
POWHh  
POWHh  
POWH  
POWHh  
POWHh  
POWHh  
POWHh  
POWHx  
POWHh  
POWHh  
POWHh  
POWHx  
POWHh  
POWHh  
POWHh  
POWHh  
PUSCh  
POWHh  
POWHh  
POWHh  
POWHh  
PEM1Ax  
POWHx  
POWHh  
POWHh  
POWHh  
POWHh  
POWHh  
POWHh  
POWHh  
POWHh  
POWHh  
POWHx  
POWHh  
PEM1F  
POWHx  
POWHx  
POWHh  
POWHx  
POWHh  
POWHh







PIN 111040.00  
2,000 Foot Corridor  
December 30, 2008

Sequatchie Formation, Liepers Formation, Inman Formation, Catheys Formation	Limestone
Sequatchie Formation, Liepers Formation, Inman Formation, Catheys Formation	Limestone
Sequatchie Formation, Liepers Formation, Inman Formation, Catheys Formation	Limestone

Railroads & Public Lands

Public Lands

TWRA Lakes	There are none.
Other Public Lands	There are none.

# EES Report

PIN 111040.00  
1,000 Foot Corridor  
December 29, 2008

## Community Impact

### Cemetery Sites

Cemetery	<u>Total= 3</u>
Williamson Memorial Gardens	
Lavender Cemetery	
Harrison Cemetery	

Cemetery Property	<u>Total= 1</u>
Williamson Memorial Gardens	

Institutions	<u>Total= 4</u>
Heritage Elem	School
Spring Hill Elementary School	School
West Harpeth Church	Church
Heritage Middle School	School

### Sensitive Community Populations

No Population Present	Present
Population 65 & Over	Not Present
Disability	Not Present
Households without Vehicle	Not Present
Minority Population-24%	Not Present
Linguistically Isolated	Present
Below Poverty-13.5%	Not Present
Below Poverty-27%	Not Present

## Ecology

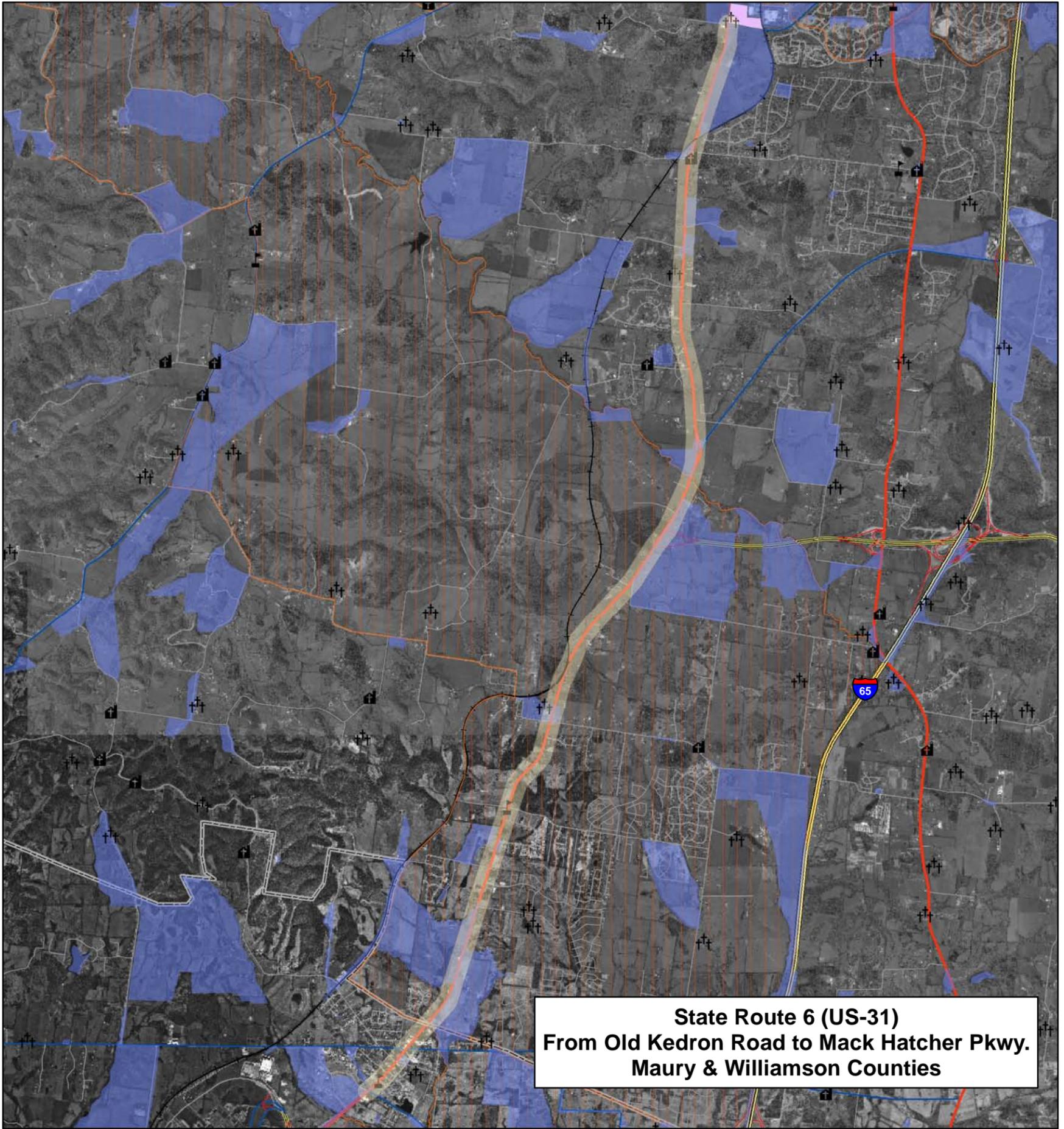
### Rare & Protected Species

Bats	There are none.
------	-----------------

## Railroads & Public Lands

Railroads	Present
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EES Map with 1,000 ft Corridor

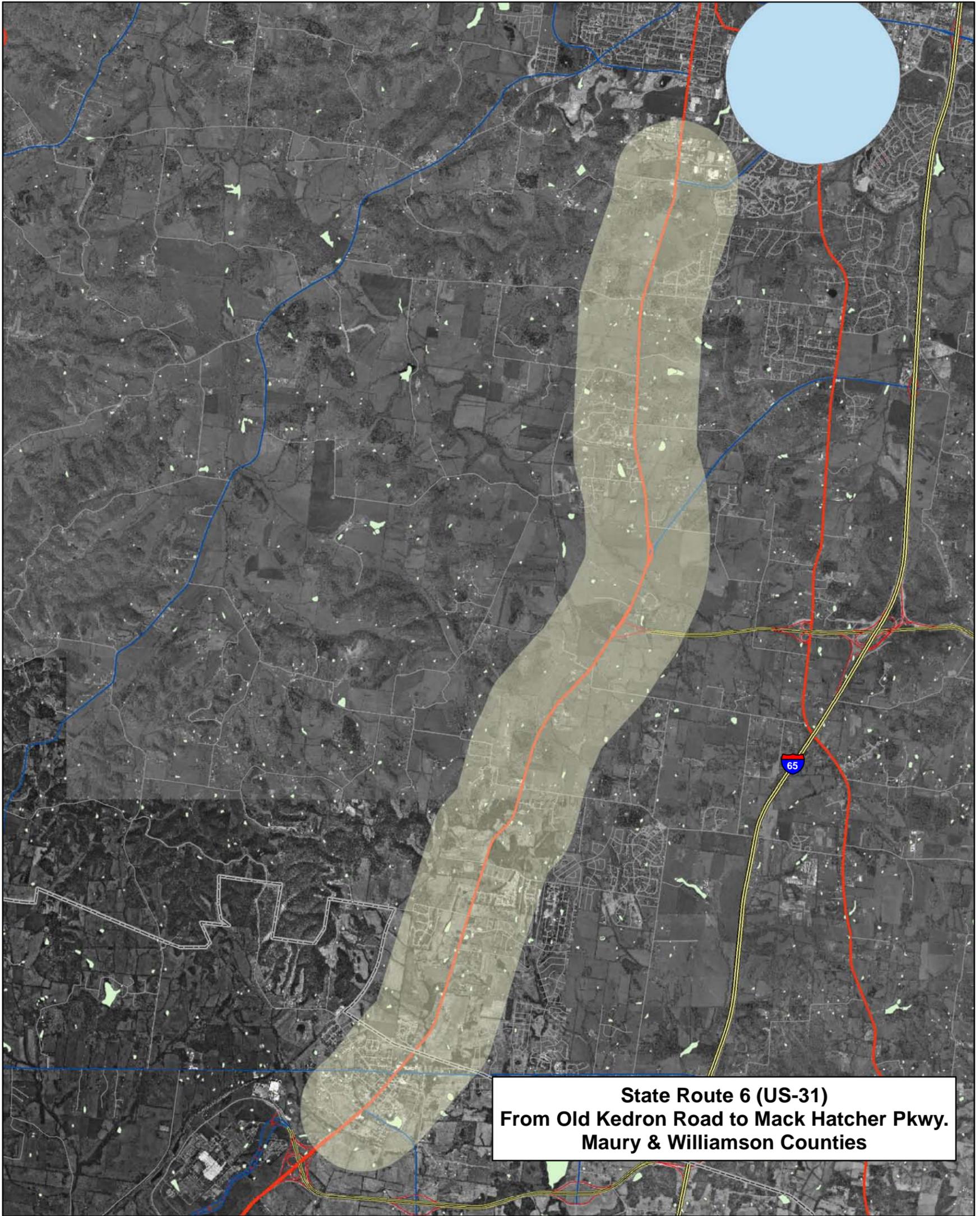


0 0.5 1 2 Miles

**Legend**

- |    |                        |       |                              |
|----|------------------------|-------|------------------------------|
| †† | Cemetery               | ♿ ♿   | Disability                   |
| ■  | Cemetery Property      | 👴 👵   | Households without a vehicle |
| 🏥  | Hospital               | 👤     | Minority Population - 24%    |
| 🎓  | School                 | 🏠     | Linguistically Isolated      |
| 🏛️ | Church                 | 📊     | Below Poverty - 13.5%        |
| 🏛️ | Public Building        | 📊     | Below Poverty - 27%          |
| ■  | No Population Present  | ■     | Bat                          |
| 👴  | Population 65 and Over | —+—+— | Railroads                    |

EES Map with 4,000 ft Corridor

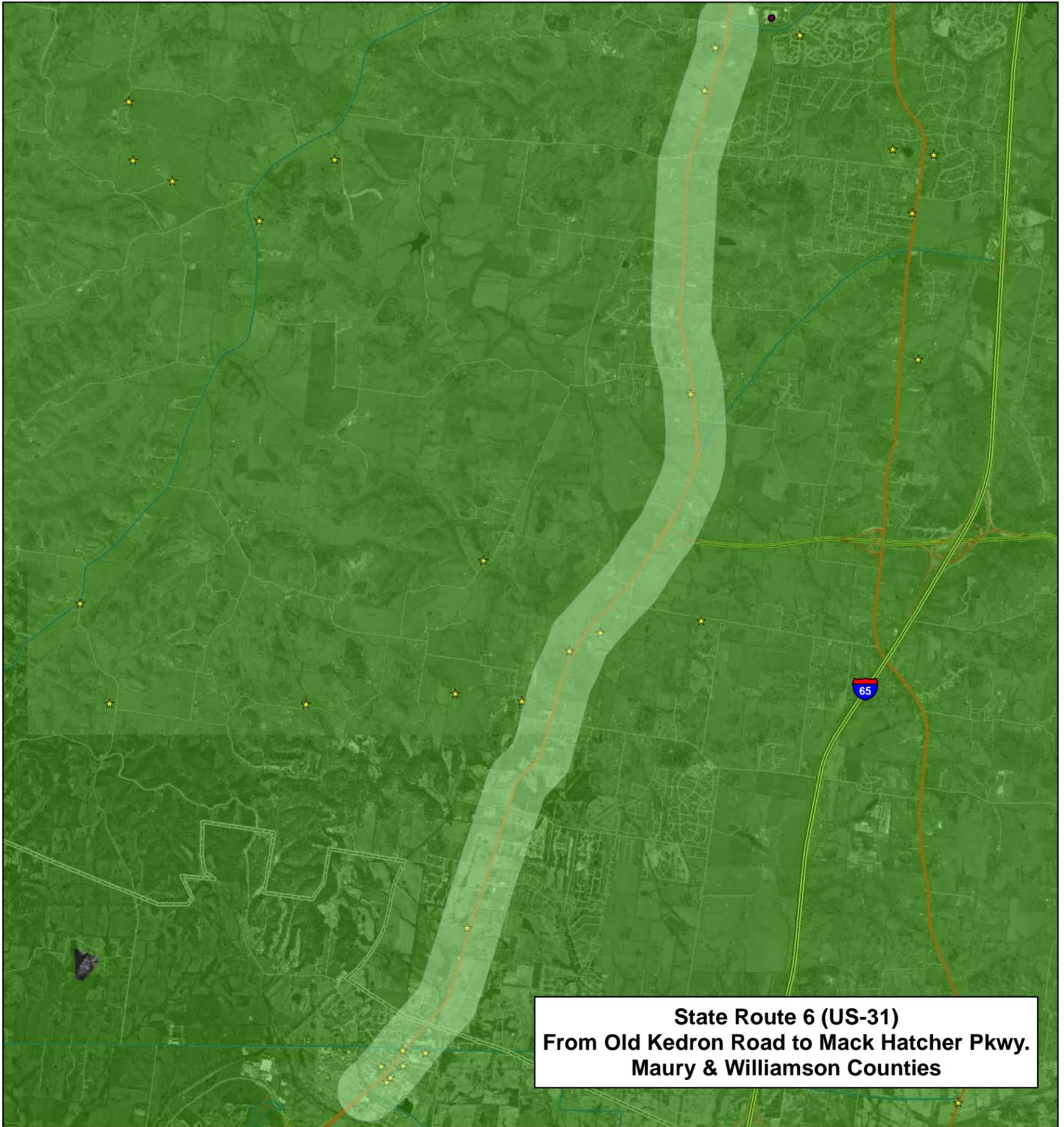


**Legend**

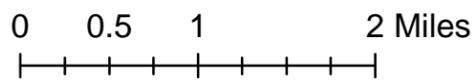


-  Terrestrial Species
-  TDEC Conservation Sites
-  TDEC Scenic Waterways
-  Large Wetland Impacts
-  Tennessee Natural Areas Program
-  Wildlife Management Areas
-  Rivers and Waterways

EES Map with 2,000 ft Corridor



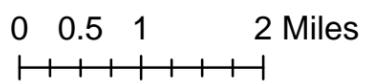
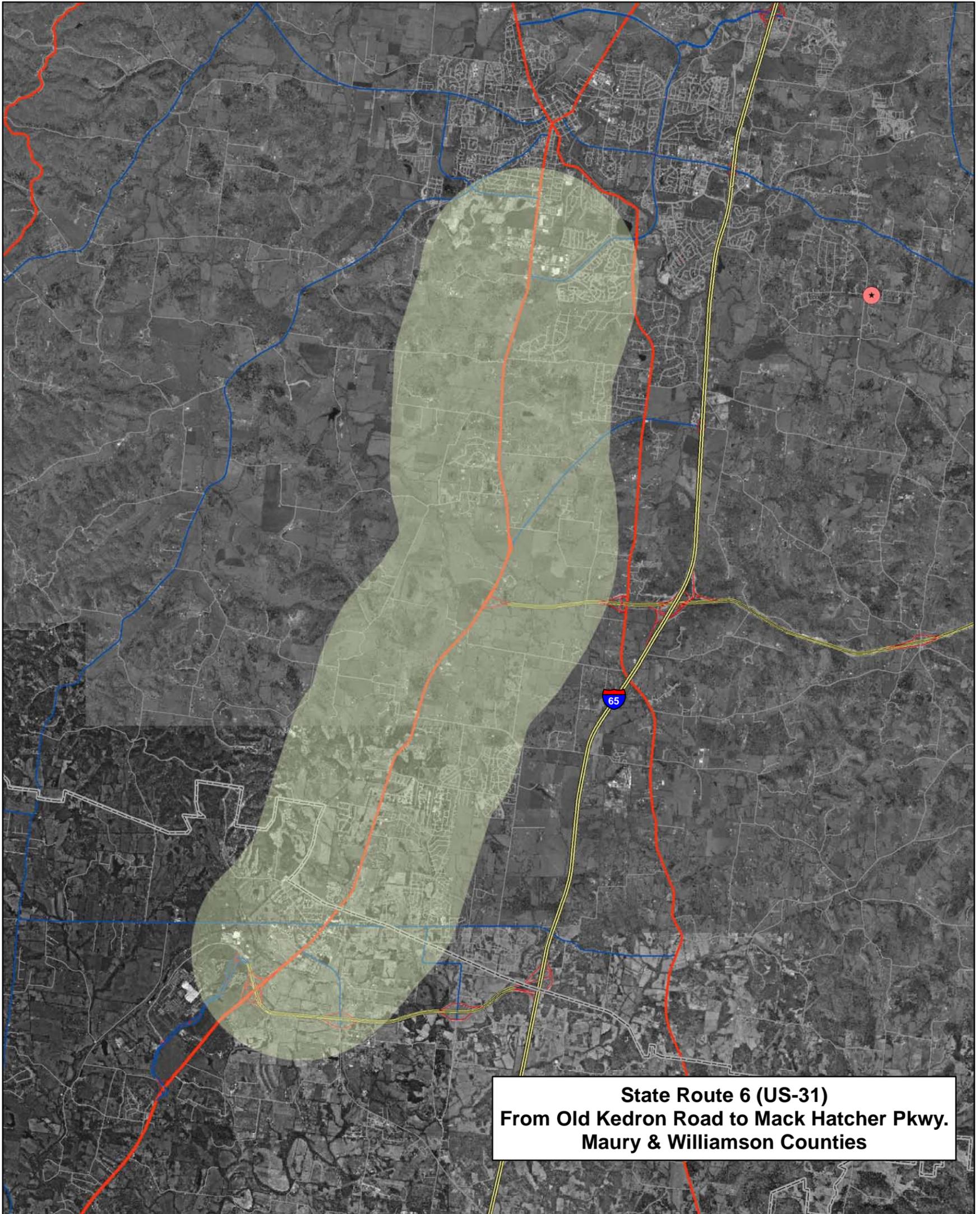
**State Route 6 (US-31)  
From Old Kedron Road to Mack Hatcher Pkwy.  
Maury & Williamson Counties**



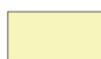
**Legend**

- |  |  |
|--|--|
| ★ National Register Sites                            | Formation that may contain potentially acid producing rock |
| ● Superfund Sites                                    | Includes formations that may contain acid producing rock   |
| Formation that contains acid producing rock          | <i>Formation that contains acid</i>                        |
| Includes formations that contain acid producing rock | Limestone  |
|  | Dolomite   |
|  | TWRA Lakes   |
|  | Recreation   |
|  | Nature   |
|  | Federal  |
|  | State  |
|  | Rivers and Waterways                                       |

EES Map with 10,000 ft Corridor



**Legend**

-  Aquatic Species
-  Caves
-  Rivers and Waterways

**HCS+ CALCULATIONS**

No Build Option  
Widen Along the Existing Alignment Option  
Three Lane Thompson's Station Option

Maury and Williamson Counties

---

**NO BUILD OPTION**

**HCS+ ANALYSIS**

Segment 1 L.M. 32.47 to 33.31 Year 2014  
Segment 1 L.M. 32.47 to 33.31 Year 2034  
Segment 2A L.M. 0.00 to 1.20 Year 2014  
Segment 2A L.M. 0.00 to 1.20 Year 2034  
Segment 2B L.M. 1.30 to 2.17 Year 2014  
Segment 2B L.M. 1.30 to 2.17 Year 2034  
Segment 2C L.M. 2.17 to 2.49 Year 2014  
Segment 2C L.M. 2.17 to 2.49 Year 2034  
Segment 3 L.M. 2.49 to 4.75 Year 2014  
Segment 3 L.M. 2.49 to 4.75 Year 2034  
Segment 4 L.M. 4.15 to 5.55 Year 2014  
Segment 4 L.M. 4.15 to 5.55 Year 2034  
Segment 5A L.M. 5.55 to 6.60 Year 2014  
Segment 5A L.M. 5.55 to 6.60 Year 2034  
Segment 5B L.M. 6.60 to 8.67 Year 2014  
Segment 5B L.M. 6.60 to 8.67 Year 2034  
Segment 6 L.M. 8.67 to 10.03 Year 2014  
Segment 6 L.M. 8.67 to 10.03 Year 2034

HCS+: Urban Streets Release 5.3

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PLANNING ANALYSIS

Analyst:  
 Agency/Co.:  
 Date Performed: 11/6/2008  
 Analysis Time Period: 2014  
 Urban Street: SR-6  
 Direction of Travel:  
 Jurisdiction: Segment 1  
 Analysis Year: 2014  
 Project ID: SR-6 TPR

Traffic Characteristics

Annual average daily traffic, AADT 22400 vpd  
 Planning analysis hour factor, K 0.080  
 Directional distribution factor, D 0.700  
 Peak-hour factor, PHF 0.950  
 Adjusted saturation flow rate 1800 pcphgpl  
 Percent turns from exclusive lanes 50 %

Roadway Characteristics

Number of through lanes one direction, N 1  
 Free flow speed, FFS 35 mph  
 Urban class 3  
 Section length 0.84 miles  
 Median Yes  
 Left-turn bays Yes

Signal Characteristics

Signalized intersections 3  
 Arrival type, AT 4  
 Signal type (k = 0.5 for planning) Actuated  
 Cycle length, C 120.0 sec  
 Effective green ratio, g/C 0.400

Results

Annual average daily traffic, AADT 22400 vpd  
 Two-way hourly volume 1791 vph  
 Hourly directional volume 1253 vph  
 Through-volume 15-min. flow rate 659 v  
 Running time 96.8 sec  
 v/c ratio 0.92  
 Through capacity 720 vph  
 Progression factor, PF 0.895  
 Uniform delay 34.1 sec  
 Filtering/metering factor, I 0.282  
 Incremental delay 6.5 sec  
 Control delay 37.0 sec/v  
 Total travel speed, Sa 14.6 mph  
 Total urban street LOS D

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PLANNING ANALYSIS

Analyst:  
 Agency/Co.:  
 Date Performed: 11/6/2008  
 Analysis Time Period: 2014  
 Urban Street: SR-6  
 Direction of Travel:  
 Jurisdiction: Segment 1  
 Analysis Year: 2014  
 Project ID: SR-6 TPR

Traffic Characteristics

Annual average daily traffic, AADT 36700 vpd  
 Planning analysis hour factor, K 0.080  
 Directional distribution factor, D 0.700  
 Peak-hour factor, PHF 0.950  
 Adjusted saturation flow rate 1800 pcphgpl  
 Percent turns from exclusive lanes 50 %

Roadway Characteristics

Number of through lanes one direction, N 1  
 Free flow speed, FFS 35 mph  
 Urban class 3  
 Section length 0.84 miles  
 Median Yes  
 Left-turn bays Yes

Signal Characteristics

Signalized intersections 3  
 Arrival type, AT 4  
 Signal type (k = 0.5 for planning) Actuated  
 Cycle length, C 120.0 sec  
 Effective green ratio, g/C 0.400

Results

Annual average daily traffic, AADT 36700 vpd  
 Two-way hourly volume 2935 vph  
 Hourly directional volume 2054 vph  
 Through-volume 15-min. flow rate 1081 v  
 Running time 96.8 sec  
 v/c ratio 1.50  
 Through capacity 720 vph  
 Progression factor, PF 0.895  
 Uniform delay 36.0 sec  
 Filtering/metering factor, I 0.090  
 Incremental delay 226.3 sec  
 Control delay 258.5 sec/v  
 Total travel speed, Sa 3.5 mph  
 Total urban street LOS F

HCS+: Urban Streets Release 5.3

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PLANNING ANALYSIS

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Analyst:  
 Agency/Co.:  
 Date Performed: 11/6/2008  
 Analysis Time Period: 2014  
 Urban Street: SR-6  
 Direction of Travel:  
 Jurisdiction: Segment 2A  
 Analysis Year: 2014  
 Project ID: SR-6 TPR LM 0.00 to 1.30

---

Traffic Characteristics

---

Annual average daily traffic, AADT	25000	vpd
Planning analysis hour factor, K	0.080	
Directional distribution factor, D	0.700	
Peak-hour factor, PHF	0.950	
Adjusted saturation flow rate	1800	pcphgpl
Percent turns from exclusive lanes	50	%

---

Roadway Characteristics

---

Number of through lanes one direction, N	1	
Free flow speed, FFS	45	mph
Urban class	2	
Section length	2.49	miles
Median	No	
Left-turn bays	Yes	

---

Signal Characteristics

---

Signalized intersections	2	
Arrival type, AT	4	
Signal type (k = 0.5 for planning)	Actuated	
Cycle length, C	120.0	sec
Effective green ratio, g/C	0.400	

---

Results

---

Annual average daily traffic, AADT	25000	vpd
Two-way hourly volume	1999	vph
Hourly directional volume	1399	vph
Through-volume 15-min. flow rate	736	v
Running time	199.2	sec
v/c ratio	1.08	
Through capacity	683	vph
Progression factor, PF	0.895	
Uniform delay	36.0	sec
Filtering/metering factor, I	0.090	
Incremental delay	38.0	sec
Control delay	70.2	sec/v
Total travel speed, Sa	26.4	mph
Total urban street LOS	C	

HCS+: Urban Streets Release 5.3

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---

PLANNING ANALYSIS

---

Analyst:  
 Agency/Co.:  
 Date Performed: 11/6/2008  
 Analysis Time Period: 2014  
 Urban Street: SR-6  
 Direction of Travel:  
 Jurisdiction: Segment 2A  
 Analysis Year: 2034  
 Project ID: SR-6 TPR LM 0.00 to 1.30

---

Traffic Characteristics

---

Annual average daily traffic, AADT	36700	vpd
Planning analysis hour factor, K	0.080	
Directional distribution factor, D	0.700	
Peak-hour factor, PHF	0.950	
Adjusted saturation flow rate	1800	pcphgpl
Percent turns from exclusive lanes	50	%

---

Roadway Characteristics

---

Number of through lanes one direction, N	1	
Free flow speed, FFS	45	mph
Urban class	2	
Section length	2.49	miles
Median	No	
Left-turn bays	Yes	

---

Signal Characteristics

---

Signalized intersections	2	
Arrival type, AT	4	
Signal type (k = 0.5 for planning)	Actuated	
Cycle length, C	120.0	sec
Effective green ratio, g/C	0.400	

---

Results

---

Annual average daily traffic, AADT	36700	vpd
Two-way hourly volume	2935	vph
Hourly directional volume	2054	vph
Through-volume 15-min. flow rate	1081	v
Running time	199.2	sec
v/c ratio	1.58	
Through capacity	683	vph
Progression factor, PF	0.895	
Uniform delay	36.0	sec
Filtering/metering factor, I	0.090	
Incremental delay	262.9	sec
Control delay	295.1	sec/v
Total travel speed, Sa	11.4	mph
Total urban street LOS	F	

HCS+: Urban Streets Release 5.3

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PLANNING ANALYSIS

---

Analyst:  
 Agency/Co.:  
 Date Performed: 11/6/2008  
 Analysis Time Period: 2014  
 Urban Street: SR-6  
 Direction of Travel:  
 Jurisdiction: Segment 2B  
 Analysis Year: 2014  
 Project ID: SR-6 TPR LM 1.30 to 2.17

Traffic Characteristics

---

Annual average daily traffic, AADT	25000	vpd
Planning analysis hour factor, K	0.080	
Directional distribution factor, D	0.700	
Peak-hour factor, PHF	0.950	
Adjusted saturation flow rate	1800	pcphgpl
Percent turns from exclusive lanes	75	%

Roadway Characteristics

---

Number of through lanes one direction, N	1	
Free flow speed, FFS	45	mph
Urban class	2	
Section length	2.49	miles
Median	Yes	
Left-turn bays	Yes	

Signal Characteristics

---

Signalized intersections	2	
Arrival type, AT	4	
Signal type (k = 0.5 for planning)	Actuated	
Cycle length, C	120.0	sec
Effective green ratio, g/C	0.400	

Results

---

Annual average daily traffic, AADT	25000	vpd
Two-way hourly volume	1999	vph
Hourly directional volume	1399	vph
Through-volume 15-min. flow rate	368	v
Running time	199.2	sec
v/c ratio	0.51	
Through capacity	720	vph
Progression factor, PF	0.895	
Uniform delay	27.2	sec
Filtering/metering factor, I	0.849	
Incremental delay	2.2	sec
Control delay	26.5	sec/v
Total travel speed, Sa	35.5	mph
Total urban street LOS	A	

HCS+: Urban Streets Release 5.3

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PLANNING ANALYSIS

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Analyst:  
 Agency/Co.:  
 Date Performed: 11/6/2008  
 Analysis Time Period: 2034  
 Urban Street: SR-6  
 Direction of Travel:  
 Jurisdiction: Segment 2B  
 Analysis Year: 2034  
 Project ID: SR-6 TPR LM 1.30 to 2.17

---

Traffic Characteristics

---

Annual average daily traffic, AADT	36700	vpd
Planning analysis hour factor, K	0.080	
Directional distribution factor, D	0.700	
Peak-hour factor, PHF	0.950	
Adjusted saturation flow rate	1800	pcphgpl
Percent turns from exclusive lanes	75	%

---

Roadway Characteristics

---

Number of through lanes one direction, N	1	
Free flow speed, FFS	45	mph
Urban class	2	
Section length	2.49	miles
Median	Yes	
Left-turn bays	Yes	

---

Signal Characteristics

---

Signalized intersections	2	
Arrival type, AT	4	
Signal type (k = 0.5 for planning)	Actuated	
Cycle length, C	120.0	sec
Effective green ratio, g/C	0.400	

---

Results

---

Annual average daily traffic, AADT	36700	vpd
Two-way hourly volume	2935	vph
Hourly directional volume	2054	vph
Through-volume 15-min. flow rate	540	v
Running time	199.2	sec
v/c ratio	0.75	
Through capacity	720	vph
Progression factor, PF	0.895	
Uniform delay	30.9	sec
Filtering/metering factor, I	0.579	
Incremental delay	4.2	sec
Control delay	31.8	sec/v
Total travel speed, Sa	34.1	mph
Total urban street LOS	B	

HCS+: Urban Streets Release 5.3

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---

PLANNING ANALYSIS

---

Analyst:  
 Agency/Co.:  
 Date Performed: 11/6/2008  
 Analysis Time Period: 2014  
 Urban Street: SR-6  
 Direction of Travel:  
 Jurisdiction: Segment 2C  
 Analysis Year: 2014  
 Project ID: SR-6 TPR LM 2.17 to 2.49

---

Traffic Characteristics

---

Annual average daily traffic, AADT	25000	vpd
Planning analysis hour factor, K	0.080	
Directional distribution factor, D	0.700	
Peak-hour factor, PHF	0.950	
Adjusted saturation flow rate	1800	pcphgpl
Percent turns from exclusive lanes	75	%

---

Roadway Characteristics

---

Number of through lanes one direction, N	1	
Free flow speed, FFS	45	mph
Urban class	2	
Section length	2.49	miles
Median	No	
Left-turn bays	Yes	

---

Signal Characteristics

---

Signalized intersections	2	
Arrival type, AT	4	
Signal type (k = 0.5 for planning)	Actuated	
Cycle length, C	120.0	sec
Effective green ratio, g/C	0.400	

---

Results

---

Annual average daily traffic, AADT	25000	vpd
Two-way hourly volume	1999	vph
Hourly directional volume	1399	vph
Through-volume 15-min. flow rate	368	v
Running time	199.2	sec
v/c ratio	0.54	
Through capacity	683	vph
Progression factor, PF	0.895	
Uniform delay	27.5	sec
Filtering/metering factor, I	0.827	
Incremental delay	2.5	sec
Control delay	27.1	sec/v
Total travel speed, Sa	35.4	mph
Total urban street LOS	A	

HCS+: Urban Streets Release 5.3

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PLANNING ANALYSIS

---

Analyst:  
 Agency/Co.:  
 Date Performed: 11/6/2008  
 Analysis Time Period: 2034  
 Urban Street: SR-6  
 Direction of Travel:  
 Jurisdiction: Segment 2C  
 Analysis Year: 2034  
 Project ID: SR-6 TPR LM 2.17 to 2.49

Traffic Characteristics

---

Annual average daily traffic, AADT	36700	vpd
Planning analysis hour factor, K	0.080	
Directional distribution factor, D	0.700	
Peak-hour factor, PHF	0.950	
Adjusted saturation flow rate	1800	pcphgpl
Percent turns from exclusive lanes	75	%

Roadway Characteristics

---

Number of through lanes one direction, N	1	
Free flow speed, FFS	45	mph
Urban class	2	
Section length	2.49	miles
Median	No	
Left-turn bays	Yes	

Signal Characteristics

---

Signalized intersections	2	
Arrival type, AT	4	
Signal type (k = 0.5 for planning)	Actuated	
Cycle length, C	120.0	sec
Effective green ratio, g/C	0.400	

Results

---

Annual average daily traffic, AADT	36700	vpd
Two-way hourly volume	2935	vph
Hourly directional volume	2054	vph
Through-volume 15-min. flow rate	540	v
Running time	199.2	sec
v/c ratio	0.79	
Through capacity	683	vph
Progression factor, PF	0.895	
Uniform delay	31.6	sec
Filtering/metering factor, I	0.515	
Incremental delay	4.9	sec
Control delay	33.1	sec/v
Total travel speed, Sa	33.8	mph
Total urban street LOS	B	

HCS+: Two-Lane Highways Release 5.3

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Two-Way Two-Lane Highway Segment Analysis

Analyst  
 Agency/Co.  
 Date Performed 11/6/2008  
 Analysis Time Period 2014  
 Highway SR-6  
 From/To LM 2.49 to LM 4.75  
 Jurisdiction TDOT  
 Analysis Year 2014  
 Description SR-6 TPR

Input Data

Highway class	Class 1				
Shoulder width	5.0	ft	Peak-hour factor, PHF	0.95	
Lane width	12.0	ft	% Trucks and buses	3	%
Segment length	2.3	mi	% Recreational vehicles	0	%
Terrain type	Rolling		% No-passing zones	100	%
Grade: Length		mi	Access points/mi	16	/mi
Up/down		%			
Two-way hourly volume, V	2720	veh/h			
Directional split	70 / 30	%			

Average Travel Speed

Grade adjustment factor, fG	0.99	
PCE for trucks, ET	1.5	
PCE for RVs, ER	1.1	
Heavy-vehicle adjustment factor,	0.985	
Two-way flow rate,(note-1) vp	2935	pc/h
Highest directional split proportion (note-2)	2055	pc/h
Free-Flow Speed from Field Measurement:		
Field measured speed, SFM	-	mi/h
Observed volume, Vf	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed, BFFS	50.0	mi/h
Adj. for lane and shoulder width, fLS	1.3	mi/h
Adj. for access points, fA	4.0	mi/h
Free-flow speed, FFS	44.7	mi/h
Adjustment for no-passing zones, fnp	0.8	mi/h
Average travel speed, ATS	21.1	mi/h

---

Percent Time-Spent-Following

---

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.0	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor, fHV	1.000	
Two-way flow rate,(note-1) vp	2863	pc/h
Highest directional split proportion (note-2)	2004	
Base percent time-spent-following, BPTSF	91.9	%
Adj.for directional distribution and no-passing zones, fd/np	4.2	
Percent time-spent-following, PTSF	96.1	%

---

Level of Service and Other Performance Measures

---

Level of service, LOS	F	
Volume to capacity ratio, v/c	0.92	
Peak 15-min vehicle-miles of travel, VMT15	1618	veh-mi
Peak-hour vehicle-miles of travel, VMT60	6147	veh-mi
Peak 15-min total travel time, TT15	76.7	veh-h

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Notes:

1. If  $vp \geq 3200$  pc/h, terminate analysis-the LOS is F.
2. If highest directional split  $vp \geq 1700$  pc/h, terminate analysis-the LOS is F.

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---

Two-Way Two-Lane Highway Segment Analysis

---

Analyst  
 Agency/Co.  
 Date Performed 11/6/2008  
 Analysis Time Period 2034  
 Highway SR-6  
 From/To LM 2.49 to LM 4.75  
 Jurisdiction TDOT  
 Analysis Year 2034  
 Description SR-6 TPR

---

Input Data

---

Highway class	Class 1				
Shoulder width	5.0	ft	Peak-hour factor, PHF	0.95	
Lane width	12.0	ft	% Trucks and buses	3	%
Segment length	2.3	mi	% Recreational vehicles	0	%
Terrain type	Rolling		% No-passing zones	100	%
Grade: Length		mi	Access points/mi	16	/mi
Up/down		%			
Two-way hourly volume, V	2936	veh/h			
Directional split	70 / 30	%			

---

Average Travel Speed

---

Grade adjustment factor, fG	0.99	
PCE for trucks, ET	1.5	
PCE for RVs, ER	1.1	
Heavy-vehicle adjustment factor,	0.985	
Two-way flow rate,(note-1) vp	3169	pc/h
Highest directional split proportion (note-2)	2218	pc/h
Free-Flow Speed from Field Measurement:		
Field measured speed, SFM	-	mi/h
Observed volume, Vf	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed, BFFS	50.0	mi/h
Adj. for lane and shoulder width, fLS	1.3	mi/h
Adj. for access points, fA	4.0	mi/h
Free-flow speed, FFS	44.7	mi/h
Adjustment for no-passing zones, fnp	0.7	mi/h
Average travel speed, ATS	19.4	mi/h

---

Percent Time-Spent-Following

---

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.0	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor, fHV	1.000	
Two-way flow rate,(note-1) vp	3091	pc/h
Highest directional split proportion (note-2)	2164	
Base percent time-spent-following, BPTSF	93.4	%
Adj.for directional distribution and no-passing zones, fd/np	4.2	
Percent time-spent-following, PTSF	97.6	%

---

Level of Service and Other Performance Measures

---

Level of service, LOS	F	
Volume to capacity ratio, v/c	0.99	
Peak 15-min vehicle-miles of travel, VMT15	1746	veh-mi
Peak-hour vehicle-miles of travel, VMT60	6635	veh-mi
Peak 15-min total travel time, TT15	90.0	veh-h

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Notes:

1. If  $vp \geq 3200$  pc/h, terminate analysis-the LOS is F.
2. If highest directional split  $vp \geq 1700$  pc/h, terminate analysis-the LOS is F.

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OPERATIONAL ANALYSIS

Analyst:  
 Agency/Co:  
 Date: 11/6/2008  
 Analysis Period: 2014  
 Highway: SR-6  
 From/To: Seg. 4 LM 4.75 to LM 5.55  
 Jurisdiction: TDOT  
 Analysis Year: 2014  
 Project ID: SR-6 TPR

FREE-FLOW SPEED

	Direction	1		2	
Lane width		12.0	ft	12.0	ft
Lateral clearance:					
Right edge		6.0	ft	6.0	ft
Left edge		6.0	ft	6.0	ft
Total lateral clearance		12.0	ft	12.0	ft
Access points per mile		16		0	
Median type		Divided			
Free-flow speed:		Base		Measured	
FFS or BFFS		50.0	mph	60.0	mph
Lane width adjustment, FLW		0.0	mph	0.0	mph
Lateral clearance adjustment, FLC		0.0	mph	0.0	mph
Median type adjustment, FM		0.0	mph	0.0	mph
Access points adjustment, FA		4.0	mph	0.0	mph
Free-flow speed		46.0	mph	60.0	mph

VOLUME

	Direction	1		2	
Volume, V		1904	vph	816	vph
Peak-hour factor, PHF		0.95		0.95	
Peak 15-minute volume, v15		501		215	
Trucks and buses		3	%	3	%
Recreational vehicles		0	%	0	%
Terrain type		Rolling		Rolling	
Grade		0.00	%	0.00	%
Segment length		0.00	mi	0.00	mi
Number of lanes		2		2	
Driver population adjustment, fP		1.00		1.00	
Trucks and buses PCE, ET		2.5		2.5	
Recreational vehicles PCE, ER		2.0		2.0	
Heavy vehicle adjustment, fHV		0.957		0.957	
Flow rate, vp		1047	pcphpl	448	pcphpl

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RESULTS

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	Direction	1		2	
Flow rate, vp		1047	pcphpl	448	pcphpl
Free-flow speed, FFS		46.0	mph	60.0	mph
Avg. passenger-car travel speed, S		46.0	mph	60.0	mph
Level of service, LOS		C		A	
Density, D		22.8	pc/mi/ln	7.5	pc/mi/ln

Overall results are not computed when free-flow speed is less than 45 mph.

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OPERATIONAL ANALYSIS

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 Agency/Co:  
 Date: 11/6/2008  
 Analysis Period: 2034  
 Highway: SR-6  
 From/To: Seg. 4 LM 4.75 to LM 5.55  
 Jurisdiction: TDOT  
 Analysis Year: 2034  
 Project ID: SR-6 TPR

FREE-FLOW SPEED

	Direction	1		2	
Lane width		12.0	ft	12.0	ft
Lateral clearance:					
Right edge		6.0	ft	6.0	ft
Left edge		6.0	ft	6.0	ft
Total lateral clearance		12.0	ft	12.0	ft
Access points per mile		16		0	
Median type		Divided			
Free-flow speed:		Base		Measured	
FFS or BFFS		50.0	mph	60.0	mph
Lane width adjustment, FLW		0.0	mph	0.0	mph
Lateral clearance adjustment, FLC		0.0	mph	0.0	mph
Median type adjustment, FM		0.0	mph	0.0	mph
Access points adjustment, FA		4.0	mph	0.0	mph
Free-flow speed		46.0	mph	60.0	mph

VOLUME

	Direction	1		2	
Volume, V		2055	vph	881	vph
Peak-hour factor, PHF		0.95		0.95	
Peak 15-minute volume, v15		541		232	
Trucks and buses		3	%	3	%
Recreational vehicles		0	%	0	%
Terrain type		Rolling		Rolling	
Grade		0.00	%	0.00	%
Segment length		0.00	mi	0.00	mi
Number of lanes		2		2	
Driver population adjustment, fP		1.00		1.00	
Trucks and buses PCE, ET		2.5		2.5	
Recreational vehicles PCE, ER		2.0		2.0	
Heavy vehicle adjustment, fHV		0.957		0.957	
Flow rate, vp		1130	pcphpl	484	pcphpl

---

RESULTS

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	Direction	1		2	
Flow rate, vp		1130	pcphpl	484	pcphpl
Free-flow speed, FFS		46.0	mph	60.0	mph
Avg. passenger-car travel speed, S		46.0	mph	60.0	mph
Level of service, LOS		C		A	
Density, D		24.6	pc/mi/ln	8.1	pc/mi/ln

Overall results are not computed when free-flow speed is less than 45 mph.

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Two-Way Two-Lane Highway Segment Analysis

Analyst  
 Agency/Co.  
 Date Performed 11/6/2008  
 Analysis Time Period 2014  
 Highway SR-6  
 From/To LM 5.55 to LM 6.60  
 Jurisdiction TDOT  
 Analysis Year 2014  
 Description SR-6 TPR

Input Data

Highway class	Class 1				
Shoulder width	5.0	ft	Peak-hour factor, PHF	0.95	
Lane width	12.0	ft	% Trucks and buses	3	%
Segment length	1.0	mi	% Recreational vehicles	0	%
Terrain type	Rolling		% No-passing zones	100	%
Grade: Length		mi	Access points/mi	8	/mi
Up/down		%			
Two-way hourly volume, V	1920	veh/h			
Directional split	70 / 30	%			

Average Travel Speed

Grade adjustment factor, fG	0.99	
PCE for trucks, ET	1.5	
PCE for RVs, ER	1.1	
Heavy-vehicle adjustment factor,	0.985	
Two-way flow rate,(note-1) vp	2072	pc/h
Highest directional split proportion (note-2)	1450	pc/h
Free-Flow Speed from Field Measurement:		
Field measured speed, SFM	-	mi/h
Observed volume, Vf	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed, BFFS	50.0	mi/h
Adj. for lane and shoulder width, fLS	1.3	mi/h
Adj. for access points, fA	2.0	mi/h
Free-flow speed, FFS	46.7	mi/h
Adjustment for no-passing zones, fnp	1.1	mi/h
Average travel speed, ATS	29.5	mi/h

---

Percent Time-Spent-Following

---

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.0	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor, fHV	1.000	
Two-way flow rate,(note-1) vp	2021	pc/h
Highest directional split proportion (note-2)	1415	
Base percent time-spent-following, BPTSF	83.1	%
Adj.for directional distribution and no-passing zones, fd/np	4.2	
Percent time-spent-following, PTSF	87.3	%

---

Level of Service and Other Performance Measures

---

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.65	
Peak 15-min vehicle-miles of travel, VMT15	531	veh-mi
Peak-hour vehicle-miles of travel, VMT60	2016	veh-mi
Peak 15-min total travel time, TT15	18.0	veh-h

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Notes:

1. If  $vp \geq 3200$  pc/h, terminate analysis-the LOS is F.
2. If highest directional split  $vp \geq 1700$  pc/h, terminate analysis-the LOS is F.

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Two-Way Two-Lane Highway Segment Analysis

---

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 Analysis Time Period 2034  
 Highway SR-6  
 From/To LM 5.55 to LM 6.60  
 Jurisdiction TDOT  
 Analysis Year 2034  
 Description SR-6 TPR

---

Input Data

---

Highway class	Class 1				
Shoulder width	5.0	ft	Peak-hour factor, PHF	0.95	
Lane width	12.0	ft	% Trucks and buses	3	%
Segment length	1.0	mi	% Recreational vehicles	0	%
Terrain type	Rolling		% No-passing zones	100	%
Grade: Length		mi	Access points/mi	8	/mi
Up/down		%			
Two-way hourly volume, V	2208	veh/h			
Directional split	70 / 30	%			

---

Average Travel Speed

---

Grade adjustment factor, fG	0.99	
PCE for trucks, ET	1.5	
PCE for RVs, ER	1.1	
Heavy-vehicle adjustment factor,	0.985	
Two-way flow rate,(note-1) vp	2383	pc/h
Highest directional split proportion (note-2)	1668	pc/h
Free-Flow Speed from Field Measurement:		
Field measured speed, SFM	-	mi/h
Observed volume, Vf	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed, BFFS	50.0	mi/h
Adj. for lane and shoulder width, fLS	1.3	mi/h
Adj. for access points, fA	2.0	mi/h
Free-flow speed, FFS	46.7	mi/h
Adjustment for no-passing zones, fnp	1.1	mi/h
Average travel speed, ATS	27.1	mi/h

---

Percent Time-Spent-Following

---

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.0	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor, fHV	1.000	
Two-way flow rate,(note-1) vp	2324	pc/h
Highest directional split proportion (note-2)	1627	
Base percent time-spent-following, BPTSF	87.0	%
Adj.for directional distribution and no-passing zones, fd/np	4.2	
Percent time-spent-following, PTSF	91.2	%

---

Level of Service and Other Performance Measures

---

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.74	
Peak 15-min vehicle-miles of travel, VMT15	610	veh-mi
Peak-hour vehicle-miles of travel, VMT60	2318	veh-mi
Peak 15-min total travel time, TT15	22.5	veh-h

---

Notes:

1. If  $vp \geq 3200$  pc/h, terminate analysis-the LOS is F.
2. If highest directional split  $vp \geq 1700$  pc/h, terminate analysis-the LOS is F.

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Two-Way Two-Lane Highway Segment Analysis

Analyst

Agency/Co.

Date Performed 11/6/2008  
 Analysis Time Period 2014  
 Highway SR-6  
 From/To LM 6.60 to 8.67  
 Jurisdiction TDOT  
 Analysis Year 2014  
 Description SR-6 TPR

Input Data

Highway class	Class 1				
Shoulder width	5.0	ft	Peak-hour factor, PHF	0.95	
Lane width	12.0	ft	% Trucks and buses	3	%
Segment length	1.0	mi	% Recreational vehicles	0	%
Terrain type	Rolling		% No-passing zones	100	%
Grade: Length		mi	Access points/mi	8	/mi
Up/down		%			
Two-way hourly volume, V	1200	veh/h			
Directional split	70 / 30	%			

Average Travel Speed

Grade adjustment factor, fG	0.99	
PCE for trucks, ET	1.5	
PCE for RVs, ER	1.1	
Heavy-vehicle adjustment factor,	0.985	
Two-way flow rate,(note-1) vp	1295	pc/h
Highest directional split proportion (note-2)	907	pc/h
Free-Flow Speed from Field Measurement:		
Field measured speed, SFM	-	mi/h
Observed volume, Vf	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed, BFFS	60.0	mi/h
Adj. for lane and shoulder width, fLS	1.3	mi/h
Adj. for access points, fA	2.0	mi/h
Free-flow speed, FFS	56.7	mi/h
Adjustment for no-passing zones, fnp	1.9	mi/h
Average travel speed, ATS	44.7	mi/h

---

Percent Time-Spent-Following

---

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.0	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor, fHV	1.000	
Two-way flow rate,(note-1) vp	1263	pc/h
Highest directional split proportion (note-2)	884	
Base percent time-spent-following, BPTSF	67.0	%
Adj.for directional distribution and no-passing zones, fd/np	9.7	
Percent time-spent-following, PTSF	76.8	%

---

Level of Service and Other Performance Measures

---

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.40	
Peak 15-min vehicle-miles of travel, VMT15	332	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1260	veh-mi
Peak 15-min total travel time, TT15	7.4	veh-h

---

Notes:

1. If  $vp \geq 3200$  pc/h, terminate analysis-the LOS is F.
2. If highest directional split  $vp \geq 1700$  pc/h, terminate analysis-the LOS is F.

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Two-Way Two-Lane Highway Segment Analysis

Analyst

Agency/Co.

Date Performed 11/6/2008

Analysis Time Period 2034

Highway SR-6

From/To LM 6.60 to 8.67

Jurisdiction TDOT

Analysis Year 2034

Description SR-6 TPR

Input Data

Highway class Class 1

Shoulder width	5.0	ft	Peak-hour factor, PHF	0.95	
Lane width	12.0	ft	% Trucks and buses	3	%
Segment length	1.0	mi	% Recreational vehicles	0	%
Terrain type	Rolling		% No-passing zones	100	%
Grade: Length		mi	Access points/mi	8	/mi
Up/down		%			

Two-way hourly volume, V 1464 veh/h

Directional split 70 / 30 %

Average Travel Speed

Grade adjustment factor, fG	0.99	
PCE for trucks, ET	1.5	
PCE for RVs, ER	1.1	
Heavy-vehicle adjustment factor,	0.985	
Two-way flow rate,(note-1) vp	1580	pc/h
Highest directional split proportion (note-2)	1106	pc/h
Free-Flow Speed from Field Measurement:		
Field measured speed, SFM	-	mi/h
Observed volume, Vf	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed, BFFS	60.0	mi/h
Adj. for lane and shoulder width, fLS	1.3	mi/h
Adj. for access points, fA	2.0	mi/h
Free-flow speed, FFS	56.7	mi/h
Adjustment for no-passing zones, fnp	1.5	mi/h
Average travel speed, ATS	42.9	mi/h

---

Percent Time-Spent-Following

---

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.0	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor, fHV	1.000	
Two-way flow rate,(note-1) vp	1541	pc/h
Highest directional split proportion (note-2)	1079	
Base percent time-spent-following, BPTSF	74.2	%
Adj.for directional distribution and no-passing zones, fd/np	7.3	
Percent time-spent-following, PTSF	81.5	%

---

Level of Service and Other Performance Measures

---

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.49	
Peak 15-min vehicle-miles of travel, VMT15	405	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1537	veh-mi
Peak 15-min total travel time, TT15	9.4	veh-h

---

Notes:

1. If  $vp \geq 3200$  pc/h, terminate analysis-the LOS is F.
2. If highest directional split  $vp \geq 1700$  pc/h, terminate analysis-the LOS is F.

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Two-Way Two-Lane Highway Segment Analysis

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Analyst

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 Analysis Time Period 2014  
 Highway SR-6  
 From/To LM 6.60 to 8.67  
 Jurisdiction TDOT  
 Analysis Year 2014  
 Description SR-6 TPR

---

Input Data

---

Highway class	Class 1				
Shoulder width	5.0	ft	Peak-hour factor, PHF	0.95	
Lane width	12.0	ft	% Trucks and buses	3	%
Segment length	1.0	mi	% Recreational vehicles	0	%
Terrain type	Rolling		% No-passing zones	100	%
Grade: Length		mi	Access points/mi	16	/mi
Up/down		%			
Two-way hourly volume, V	1664	veh/h			
Directional split	70 / 30	%			

---

Average Travel Speed

---

Grade adjustment factor, fG	0.99	
PCE for trucks, ET	1.5	
PCE for RVs, ER	1.1	
Heavy-vehicle adjustment factor,	0.985	
Two-way flow rate,(note-1) vp	1796	pc/h
Highest directional split proportion (note-2)	1257	pc/h
Free-Flow Speed from Field Measurement:		
Field measured speed, SFM	-	mi/h
Observed volume, Vf	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed, BFFS	45.0	mi/h
Adj. for lane and shoulder width, fLS	1.3	mi/h
Adj. for access points, fA	4.0	mi/h
Free-flow speed, FFS	39.7	mi/h
Adjustment for no-passing zones, fnp	1.3	mi/h
Average travel speed, ATS	24.5	mi/h

---

Percent Time-Spent-Following

---

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.0	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor, fHV	1.000	
Two-way flow rate,(note-1) vp	1752	pc/h
Highest directional split proportion (note-2)	1226	
Base percent time-spent-following, BPTSF	78.6	%
Adj.for directional distribution and no-passing zones, fd/np	5.9	
Percent time-spent-following, PTSF	84.5	%

---

Level of Service and Other Performance Measures

---

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.56	
Peak 15-min vehicle-miles of travel, VMT15	460	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1747	veh-mi
Peak 15-min total travel time, TT15	18.8	veh-h

---

Notes:

1. If  $vp \geq 3200$  pc/h, terminate analysis-the LOS is F.
2. If highest directional split  $vp \geq 1700$  pc/h, terminate analysis-the LOS is F.

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Two-Way Two-Lane Highway Segment Analysis

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---

Input Data

---

Highway class	Class 1				
Shoulder width	5.0	ft	Peak-hour factor, PHF	0.95	
Lane width	12.0	ft	% Trucks and buses	3	%
Segment length	1.0	mi	% Recreational vehicles	0	%
Terrain type	Rolling		% No-passing zones	100	%
Grade: Length		mi	Access points/mi	16	/mi
Up/down		%			
Two-way hourly volume, V	2576	veh/h			
Directional split	70 / 30	%			

---

Average Travel Speed

---

Grade adjustment factor, fG	0.99	
PCE for trucks, ET	1.5	
PCE for RVs, ER	1.1	
Heavy-vehicle adjustment factor,	0.985	
Two-way flow rate,(note-1) vp	2780	pc/h
Highest directional split proportion (note-2)	1946	pc/h
Free-Flow Speed from Field Measurement:		
Field measured speed, SFM	-	mi/h
Observed volume, Vf	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed, BFFS	45.0	mi/h
Adj. for lane and shoulder width, fLS	1.3	mi/h
Adj. for access points, fA	4.0	mi/h
Free-flow speed, FFS	39.7	mi/h
Adjustment for no-passing zones, fnp	0.9	mi/h
Average travel speed, ATS	17.2	mi/h

---

Percent Time-Spent-Following

---

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.0	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor, fHV	1.000	
Two-way flow rate,(note-1) vp	2712	pc/h
Highest directional split proportion (note-2)	1898	
Base percent time-spent-following, BPTSF	90.8	%
Adj.for directional distribution and no-passing zones, fd/np	4.2	
Percent time-spent-following, PTSF	95.0	%

---

Level of Service and Other Performance Measures

---

Level of service, LOS	F	
Volume to capacity ratio, v/c	0.87	
Peak 15-min vehicle-miles of travel, VMT15	712	veh-mi
Peak-hour vehicle-miles of travel, VMT60	2705	veh-mi
Peak 15-min total travel time, TT15	41.4	veh-h

---

Notes:

1. If  $vp \geq 3200$  pc/h, terminate analysis-the LOS is F.
2. If highest directional split  $vp \geq 1700$  pc/h, terminate analysis-the LOS is F.

Maury and Williamson Counties

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**WIDEN ALONG THE EXISTING ALIGNMENT OPTION**

**HCS+ ANALYSIS**

Segment 1 L.M. 32.47 to 33.31 Year 2014  
Segment 1 L.M. 32.47 to 33.31 Year 2034  
Segment 2A L.M. 0.00 to 1.20 Year 2014  
Segment 2A L.M. 0.00 to 1.20 Year 2034  
Segment 2B L.M. 1.30 to 2.17 Year 2014  
Segment 2B L.M. 1.30 to 2.17 Year 2034  
Segment 2C L.M. 2.17 to 2.49 Year 2014  
Segment 2C L.M. 2.17 to 2.49 Year 2034  
Segment 3 L.M. 2.49 to 4.75 Year 2014  
Segment 3 L.M. 2.49 to 4.75 Year 2034  
Segment 4 L.M. 4.15 to 5.55 Year 2014  
Segment 4 L.M. 4.15 to 5.55 Year 2034  
Segment 5A L.M. 5.55 to 6.60 Year 2014  
Segment 5A L.M. 5.55 to 6.60 Year 2034  
Segment 5B L.M. 6.60 to 8.67 Year 2014  
Segment 5B L.M. 6.60 to 8.67 Year 2034  
Segment 6 L.M. 8.67 to 10.03 Year 2014  
Segment 6 L.M. 8.67 to 10.03 Year 2034

HCS+: Urban Streets Release 5.3

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PLANNING ANALYSIS

Analyst:  
 Agency/Co.:  
 Date Performed: 11/6/2008  
 Analysis Time Period: 2014  
 Urban Street: SR-6  
 Direction of Travel:  
 Jurisdiction: Segment 1  
 Analysis Year: 2014  
 Project ID: SR-6 TPR

Traffic Characteristics

Annual average daily traffic, AADT 22400 vpd  
 Planning analysis hour factor, K 0.080  
 Directional distribution factor, D 0.700  
 Peak-hour factor, PHF 0.950  
 Adjusted saturation flow rate 1800 pcphgpl  
 Percent turns from exclusive lanes 50 %

Roadway Characteristics

Number of through lanes one direction, N 2  
 Free flow speed, FFS 35 mph  
 Urban class 3  
 Section length 0.84 miles  
 Median Yes  
 Left-turn bays Yes

Signal Characteristics

Signalized intersections 3  
 Arrival type, AT 4  
 Signal type (k = 0.5 for planning) Actuated  
 Cycle length, C 120.0 sec  
 Effective green ratio, g/C 0.400

Results

Annual average daily traffic, AADT 22400 vpd  
 Two-way hourly volume 1791 vph  
 Hourly directional volume 1253 vph  
 Through-volume 15-min. flow rate 659 v  
 Running time 96.8 sec  
 v/c ratio 0.46  
 Through capacity 1440 vph  
 Progression factor, PF 0.895  
 Uniform delay 26.4 sec  
 Filtering/metering factor, I 0.888  
 Incremental delay 0.9 sec  
 Control delay 24.6 sec/v  
 Total travel speed, Sa 17.7 mph  
 Total urban street LOS D

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PLANNING ANALYSIS

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 Agency/Co.:  
 Date Performed: 11/6/2008  
 Analysis Time Period: 2034  
 Urban Street: SR-6  
 Direction of Travel:  
 Jurisdiction: Segment 1  
 Analysis Year: 2034  
 Project ID: SR-6 TPR

Traffic Characteristics

Annual average daily traffic, AADT 36700 vpd  
 Planning analysis hour factor, K 0.080  
 Directional distribution factor, D 0.700  
 Peak-hour factor, PHF 0.950  
 Adjusted saturation flow rate 1800 pcphgpl  
 Percent turns from exclusive lanes 50 %

Roadway Characteristics

Number of through lanes one direction, N 2  
 Free flow speed, FFS 35 mph  
 Urban class 3  
 Section length 0.84 miles  
 Median Yes  
 Left-turn bays Yes

Signal Characteristics

Signalized intersections 3  
 Arrival type, AT 4  
 Signal type (k = 0.5 for planning) Actuated  
 Cycle length, C 120.0 sec  
 Effective green ratio, g/C 0.400

Results

Annual average daily traffic, AADT 36700 vpd  
 Two-way hourly volume 2935 vph  
 Hourly directional volume 2054 vph  
 Through-volume 15-min. flow rate 1081 v  
 Running time 96.8 sec  
 v/c ratio 0.75  
 Through capacity 1440 vph  
 Progression factor, PF 0.895  
 Uniform delay 30.9 sec  
 Filtering/metering factor, I 0.578  
 Incremental delay 2.1 sec  
 Control delay 29.8 sec/v  
 Total travel speed, Sa 16.3 mph  
 Total urban street LOS D

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PLANNING ANALYSIS

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Analyst:  
 Agency/Co.:  
 Date Performed: 11/6/2008  
 Analysis Time Period: 2014  
 Urban Street: SR-6  
 Direction of Travel:  
 Jurisdiction: Segment 2A  
 Analysis Year: 2014  
 Project ID: SR-6 TPR LM 0.00 to 1.30

---

Traffic Characteristics

---

Annual average daily traffic, AADT	25000	vpd
Planning analysis hour factor, K	0.080	
Directional distribution factor, D	0.700	
Peak-hour factor, PHF	0.950	
Adjusted saturation flow rate	1800	pcphgpl
Percent turns from exclusive lanes	50	%

---

Roadway Characteristics

---

Number of through lanes one direction, N	2	
Free flow speed, FFS	45	mph
Urban class	2	
Section length	2.49	miles
Median	No	
Left-turn bays	Yes	

---

Signal Characteristics

---

Signalized intersections	2	
Arrival type, AT	4	
Signal type (k = 0.5 for planning)	Actuated	
Cycle length, C	120.0	sec
Effective green ratio, g/C	0.400	

---

Results

---

Annual average daily traffic, AADT	25000	vpd
Two-way hourly volume	1999	vph
Hourly directional volume	1399	vph
Through-volume 15-min. flow rate	736	v
Running time	199.2	sec
v/c ratio	0.54	
Through capacity	1367	vph
Progression factor, PF	0.895	
Uniform delay	27.5	sec
Filtering/metering factor, I	0.827	
Incremental delay	1.3	sec
Control delay	25.9	sec/v
Total travel speed, Sa	35.7	mph
Total urban street LOS	A	

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PLANNING ANALYSIS

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Analyst:  
 Agency/Co.:  
 Date Performed: 11/6/2008  
 Analysis Time Period: 2014  
 Urban Street: SR-6  
 Direction of Travel:  
 Jurisdiction: Segment 2A  
 Analysis Year: 2034  
 Project ID: SR-6 TPR LM 0.00 to 1.30

---

Traffic Characteristics

---

Annual average daily traffic, AADT	36700	vpd
Planning analysis hour factor, K	0.080	
Directional distribution factor, D	0.700	
Peak-hour factor, PHF	0.950	
Adjusted saturation flow rate	1800	pcphgpl
Percent turns from exclusive lanes	50	%

---

Roadway Characteristics

---

Number of through lanes one direction, N	2	
Free flow speed, FFS	45	mph
Urban class	2	
Section length	2.49	miles
Median	No	
Left-turn bays	Yes	

---

Signal Characteristics

---

Signalized intersections	2	
Arrival type, AT	4	
Signal type (k = 0.5 for planning)	Actuated	
Cycle length, C	120.0	sec
Effective green ratio, g/C	0.400	

---

Results

---

Annual average daily traffic, AADT	36700	vpd
Two-way hourly volume	2935	vph
Hourly directional volume	2054	vph
Through-volume 15-min. flow rate	1081	v
Running time	199.2	sec
v/c ratio	0.79	
Through capacity	1367	vph
Progression factor, PF	0.895	
Uniform delay	31.6	sec
Filtering/metering factor, I	0.515	
Incremental delay	2.5	sec
Control delay	30.8	sec/v
Total travel speed, Sa	34.4	mph
Total urban street LOS	B	

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PLANNING ANALYSIS

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Analyst:  
 Agency/Co.:  
 Date Performed: 11/6/2008  
 Analysis Time Period: 2014  
 Urban Street: SR-6  
 Direction of Travel:  
 Jurisdiction: Segment 2B  
 Analysis Year: 2014  
 Project ID: SR-6 TPR LM 1.30 to 2.17

Traffic Characteristics

---

Annual average daily traffic, AADT	25000	vpd
Planning analysis hour factor, K	0.080	
Directional distribution factor, D	0.700	
Peak-hour factor, PHF	0.950	
Adjusted saturation flow rate	1800	pcphgpl
Percent turns from exclusive lanes	75	%

Roadway Characteristics

---

Number of through lanes one direction, N	2	
Free flow speed, FFS	45	mph
Urban class	2	
Section length	2.49	miles
Median	Yes	
Left-turn bays	Yes	

Signal Characteristics

---

Signalized intersections	2	
Arrival type, AT	4	
Signal type (k = 0.5 for planning)	Actuated	
Cycle length, C	120.0	sec
Effective green ratio, g/C	0.400	

Results

---

Annual average daily traffic, AADT	25000	vpd
Two-way hourly volume	1999	vph
Hourly directional volume	1399	vph
Through-volume 15-min. flow rate	368	v
Running time	199.2	sec
v/c ratio	0.26	
Through capacity	1440	vph
Progression factor, PF	0.895	
Uniform delay	24.1	sec
Filtering/metering factor, I	0.976	
Incremental delay	0.4	sec
Control delay	21.9	sec/v
Total travel speed, Sa	36.9	mph
Total urban street LOS	A	

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PLANNING ANALYSIS

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 Agency/Co.:  
 Date Performed: 11/6/2008  
 Analysis Time Period: 2034  
 Urban Street: SR-6  
 Direction of Travel:  
 Jurisdiction: Segment 2B  
 Analysis Year: 2034  
 Project ID: SR-6 TPR LM 1.30 to 2.17

---

Traffic Characteristics

---

Annual average daily traffic, AADT	36700	vpd
Planning analysis hour factor, K	0.080	
Directional distribution factor, D	0.700	
Peak-hour factor, PHF	0.950	
Adjusted saturation flow rate	1800	pcphgpl
Percent turns from exclusive lanes	75	%

---

Roadway Characteristics

---

Number of through lanes one direction, N	2	
Free flow speed, FFS	45	mph
Urban class	2	
Section length	2.49	miles
Median	Yes	
Left-turn bays	Yes	

---

Signal Characteristics

---

Signalized intersections	2	
Arrival type, AT	4	
Signal type (k = 0.5 for planning)	Actuated	
Cycle length, C	120.0	sec
Effective green ratio, g/C	0.400	

---

Results

---

Annual average daily traffic, AADT	36700	vpd
Two-way hourly volume	2935	vph
Hourly directional volume	2054	vph
Through-volume 15-min. flow rate	540	v
Running time	199.2	sec
v/c ratio	0.38	
Through capacity	1440	vph
Progression factor, PF	0.895	
Uniform delay	25.4	sec
Filtering/metering factor, I	0.934	
Incremental delay	0.7	sec
Control delay	23.4	sec/v
Total travel speed, Sa	36.4	mph
Total urban street LOS	A	

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PLANNING ANALYSIS

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 Date Performed: 11/6/2008  
 Analysis Time Period: 2014  
 Urban Street: SR-6  
 Direction of Travel:  
 Jurisdiction: Segment 2C  
 Analysis Year: 2014  
 Project ID: SR-6 TPR LM 2.17 to 2.49

---

Traffic Characteristics

---

Annual average daily traffic, AADT	25000	vpd
Planning analysis hour factor, K	0.080	
Directional distribution factor, D	0.700	
Peak-hour factor, PHF	0.950	
Adjusted saturation flow rate	1800	pcphgpl
Percent turns from exclusive lanes	75	%

---

Roadway Characteristics

---

Number of through lanes one direction, N	2	
Free flow speed, FFS	45	mph
Urban class	2	
Section length	2.49	miles
Median	No	
Left-turn bays	Yes	

---

Signal Characteristics

---

Signalized intersections	2	
Arrival type, AT	4	
Signal type (k = 0.5 for planning)	Actuated	
Cycle length, C	120.0	sec
Effective green ratio, g/C	0.400	

---

Results

---

Annual average daily traffic, AADT	25000	vpd
Two-way hourly volume	1999	vph
Hourly directional volume	1399	vph
Through-volume 15-min. flow rate	368	v
Running time	199.2	sec
v/c ratio	0.27	
Through capacity	1367	vph
Progression factor, PF	0.895	
Uniform delay	24.2	sec
Filtering/metering factor, I	0.973	
Incremental delay	0.5	sec
Control delay	22.1	sec/v
Total travel speed, Sa	36.8	mph
Total urban street LOS	A	

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PLANNING ANALYSIS

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 Date Performed: 11/6/2008  
 Analysis Time Period: 2034  
 Urban Street: SR-6  
 Direction of Travel:  
 Jurisdiction: Segment 2C  
 Analysis Year: 2034  
 Project ID: SR-6 TPR LM 2.17 to 2.49

---

Traffic Characteristics

---

Annual average daily traffic, AADT	36700	vpd
Planning analysis hour factor, K	0.080	
Directional distribution factor, D	0.700	
Peak-hour factor, PHF	0.950	
Adjusted saturation flow rate	1800	pcphgpl
Percent turns from exclusive lanes	75	%

---

Roadway Characteristics

---

Number of through lanes one direction, N	2	
Free flow speed, FFS	45	mph
Urban class	2	
Section length	2.49	miles
Median	No	
Left-turn bays	Yes	

---

Signal Characteristics

---

Signalized intersections	2	
Arrival type, AT	4	
Signal type (k = 0.5 for planning)	Actuated	
Cycle length, C	120.0	sec
Effective green ratio, g/C	0.400	

---

Results

---

Annual average daily traffic, AADT	36700	vpd
Two-way hourly volume	2935	vph
Hourly directional volume	2054	vph
Through-volume 15-min. flow rate	540	v
Running time	199.2	sec
v/c ratio	0.40	
Through capacity	1367	vph
Progression factor, PF	0.895	
Uniform delay	25.7	sec
Filtering/metering factor, I	0.924	
Incremental delay	0.8	sec
Control delay	23.7	sec/v
Total travel speed, Sa	36.3	mph
Total urban street LOS	A	

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OPERATIONAL ANALYSIS

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Analyst:  
 Agency/Co:  
 Date: 11/6/2008  
 Analysis Period: 2014  
 Highway: SR-6  
 From/To: Seg. 3 LM 2.49 to LM 4.75  
 Jurisdiction: TDOT  
 Analysis Year: 2014  
 Project ID: SR-6 TPR

FREE-FLOW SPEED

---

	Direction	1		2	
Lane width		12.0	ft	12.0	ft
Lateral clearance:					
Right edge		6.0	ft	6.0	ft
Left edge		6.0	ft	6.0	ft
Total lateral clearance		12.0	ft	12.0	ft
Access points per mile		16		0	
Median type		Undivided			
Free-flow speed:		Base		Measured	
FFS or BFFS		50.6	mph	50.0	mph
Lane width adjustment, FLW		0.0	mph	0.0	mph
Lateral clearance adjustment, FLC		0.0	mph	0.0	mph
Median type adjustment, FM		1.6	mph	0.0	mph
Access points adjustment, FA		4.0	mph	0.0	mph
Free-flow speed		45.0	mph	50.0	mph

VOLUME

---

	Direction	1		2	
Volume, V		1904	vph	816	vph
Peak-hour factor, PHF		0.95		0.95	
Peak 15-minute volume, v15		501		215	
Trucks and buses		3	%	3	%
Recreational vehicles		0	%	0	%
Terrain type		Rolling		Rolling	
Grade		0.00	%	0.00	%
Segment length		0.00	mi	0.00	mi
Number of lanes		2		2	
Driver population adjustment, fP		1.00		1.00	
Trucks and buses PCE, ET		2.5		2.5	
Recreational vehicles PCE, ER		2.0		2.0	
Heavy vehicle adjustment, fHV		0.957		0.957	
Flow rate, vp		1047	pcphpl	448	pcphpl

---

RESULTS

---

	Direction	1		2	
Flow rate, vp		1047	pcphpl	448	pcphpl
Free-flow speed, FFS		45.0	mph	50.0	mph
Avg. passenger-car travel speed, S		45.0	mph	50.0	mph
Level of service, LOS		C		A	
Density, D		23.3	pc/mi/ln	9.0	pc/mi/ln

Overall results are not computed when free-flow speed is less than 45 mph.

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OPERATIONAL ANALYSIS

Analyst:  
 Agency/Co:  
 Date: 11/6/2008  
 Analysis Period: 2034  
 Highway: SR-6  
 From/To: Seg. 3 LM 2.49 to LM 4.75  
 Jurisdiction: TDOT  
 Analysis Year: 2034  
 Project ID: SR-6 TPR

FREE-FLOW SPEED

	Direction	1		2	
Lane width		12.0	ft	12.0	ft
Lateral clearance:					
Right edge		6.0	ft	6.0	ft
Left edge		6.0	ft	6.0	ft
Total lateral clearance		12.0	ft	12.0	ft
Access points per mile		16		0	
Median type		Undivided			
Free-flow speed:		Base		Measured	
FFS or BFFS		50.6	mph	50.0	mph
Lane width adjustment, FLW		0.0	mph	0.0	mph
Lateral clearance adjustment, FLC		0.0	mph	0.0	mph
Median type adjustment, FM		1.6	mph	0.0	mph
Access points adjustment, FA		4.0	mph	0.0	mph
Free-flow speed		45.0	mph	50.0	mph

VOLUME

	Direction	1		2	
Volume, V		2055	vph	881	vph
Peak-hour factor, PHF		0.95		0.95	
Peak 15-minute volume, v15		541		232	
Trucks and buses		3	%	3	%
Recreational vehicles		0	%	0	%
Terrain type		Rolling		Rolling	
Grade		0.00	%	0.00	%
Segment length		0.00	mi	0.00	mi
Number of lanes		2		2	
Driver population adjustment, fP		1.00		1.00	
Trucks and buses PCE, ET		2.5		2.5	
Recreational vehicles PCE, ER		2.0		2.0	
Heavy vehicle adjustment, fHV		0.957		0.957	
Flow rate, vp		1130	pcphpl	484	pcphpl

---

RESULTS

---

	Direction	1		2	
Flow rate, vp		1130	pcphpl	484	pcphpl
Free-flow speed, FFS		45.0	mph	50.0	mph
Avg. passenger-car travel speed, S		45.0	mph	50.0	mph
Level of service, LOS		C		A	
Density, D		25.1	pc/mi/ln	9.7	pc/mi/ln

Overall results are not computed when free-flow speed is less than 45 mph.

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OPERATIONAL ANALYSIS

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 Agency/Co:  
 Date: 11/6/2008  
 Analysis Period: 2014  
 Highway: SR-6  
 From/To: Seg. 4 LM 4.75 to LM 5.55  
 Jurisdiction: TDOT  
 Analysis Year: 2014  
 Project ID: SR-6 TPR

FREE-FLOW SPEED

	Direction	1		2	
Lane width		12.0	ft	12.0	ft
Lateral clearance:					
Right edge		6.0	ft	6.0	ft
Left edge		6.0	ft	6.0	ft
Total lateral clearance		12.0	ft	12.0	ft
Access points per mile		16		0	
Median type		Divided			
Free-flow speed:		Base		Measured	
FFS or BFFS		50.0	mph	60.0	mph
Lane width adjustment, FLW		0.0	mph	0.0	mph
Lateral clearance adjustment, FLC		0.0	mph	0.0	mph
Median type adjustment, FM		0.0	mph	0.0	mph
Access points adjustment, FA		4.0	mph	0.0	mph
Free-flow speed		46.0	mph	60.0	mph

VOLUME

	Direction	1		2	
Volume, V		1904	vph	816	vph
Peak-hour factor, PHF		0.95		0.95	
Peak 15-minute volume, v15		501		215	
Trucks and buses		3	%	3	%
Recreational vehicles		0	%	0	%
Terrain type		Rolling		Rolling	
Grade		0.00	%	0.00	%
Segment length		0.00	mi	0.00	mi
Number of lanes		2		2	
Driver population adjustment, fP		1.00		1.00	
Trucks and buses PCE, ET		2.5		2.5	
Recreational vehicles PCE, ER		2.0		2.0	
Heavy vehicle adjustment, fHV		0.957		0.957	
Flow rate, vp		1047	pcphpl	448	pcphpl

---

RESULTS

---

	Direction	1		2	
Flow rate, vp		1047	pcphpl	448	pcphpl
Free-flow speed, FFS		46.0	mph	60.0	mph
Avg. passenger-car travel speed, S		46.0	mph	60.0	mph
Level of service, LOS		C		A	
Density, D		22.8	pc/mi/ln	7.5	pc/mi/ln

Overall results are not computed when free-flow speed is less than 45 mph.

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OPERATIONAL ANALYSIS

Analyst:  
 Agency/Co:  
 Date: 11/6/2008  
 Analysis Period: 2034  
 Highway: SR-6  
 From/To: Seg. 4 LM 4.75 to LM 5.55  
 Jurisdiction: TDOT  
 Analysis Year: 2034  
 Project ID: SR-6 TPR

FREE-FLOW SPEED

	Direction	1		2	
Lane width		12.0	ft	12.0	ft
Lateral clearance:					
Right edge		6.0	ft	6.0	ft
Left edge		6.0	ft	6.0	ft
Total lateral clearance		12.0	ft	12.0	ft
Access points per mile		16		0	
Median type		Divided			
Free-flow speed:		Base		Measured	
FFS or BFFS		50.0	mph	60.0	mph
Lane width adjustment, FLW		0.0	mph	0.0	mph
Lateral clearance adjustment, FLC		0.0	mph	0.0	mph
Median type adjustment, FM		0.0	mph	0.0	mph
Access points adjustment, FA		4.0	mph	0.0	mph
Free-flow speed		46.0	mph	60.0	mph

VOLUME

	Direction	1		2	
Volume, V		2055	vph	881	vph
Peak-hour factor, PHF		0.95		0.95	
Peak 15-minute volume, v15		541		232	
Trucks and buses		3	%	3	%
Recreational vehicles		0	%	0	%
Terrain type		Rolling		Rolling	
Grade		0.00	%	0.00	%
Segment length		0.00	mi	0.00	mi
Number of lanes		2		2	
Driver population adjustment, fP		1.00		1.00	
Trucks and buses PCE, ET		2.5		2.5	
Recreational vehicles PCE, ER		2.0		2.0	
Heavy vehicle adjustment, fHV		0.957		0.957	
Flow rate, vp		1130	pcphpl	484	pcphpl

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RESULTS

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	Direction	1		2	
Flow rate, vp		1130	pcphpl	484	pcphpl
Free-flow speed, FFS		46.0	mph	60.0	mph
Avg. passenger-car travel speed, S		46.0	mph	60.0	mph
Level of service, LOS		C		A	
Density, D		24.6	pc/mi/ln	8.1	pc/mi/ln

Overall results are not computed when free-flow speed is less than 45 mph.

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OPERATIONAL ANALYSIS

Analyst:  
 Agency/Co:  
 Date: 11/6/2008  
 Analysis Period: 2014  
 Highway: SR-6  
 From/To: Seg. 5A LM 5.55 to LM 6.60  
 Jurisdiction: TDOT  
 Analysis Year: 2014  
 Project ID: SR-6 TPR

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	16		0	
Median type	Undivided			
Free-flow speed:	Base		Measured	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	1.6	mph	0.0	mph
Access points adjustment, FA	4.0	mph	0.0	mph
Free-flow speed	44.4	mph	50.0	mph

VOLUME

Direction	1		2	
Volume, V	1344	vph	576	vph
Peak-hour factor, PHF	0.95		0.95	
Peak 15-minute volume, v15	354		152	
Trucks and buses	3	%	3	%
Recreational vehicles	0	%	0	%
Terrain type	Rolling		Rolling	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	2.5		2.5	
Recreational vehicles PCE, ER	2.0		2.0	
Heavy vehicle adjustment, fHV	0.957		0.957	
Flow rate, vp	739	pcphpl	316	pcphpl

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RESULTS

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	Direction	1		2	
Flow rate, vp		739	pcphpl	316	pcphpl
Free-flow speed, FFS		44.4	mph	50.0	mph
Avg. passenger-car travel speed, S			mph	50.0	mph
Level of service, LOS				A	
Density, D			pc/mi/ln	6.3	pc/mi/ln

Overall results are not computed when free-flow speed is less than 45 mph.

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OPERATIONAL ANALYSIS

Analyst:  
 Agency/Co:  
 Date: 11/6/2008  
 Analysis Period: 2034  
 Highway: SR-6  
 From/To: Seg. 5A LM 5.55 to LM 6.60  
 Jurisdiction: TDOT  
 Analysis Year: 2034  
 Project ID: SR-6 TPR

FREE-FLOW SPEED

	Direction	1		2	
Lane width		12.0	ft	12.0	ft
Lateral clearance:					
Right edge		6.0	ft	6.0	ft
Left edge		6.0	ft	6.0	ft
Total lateral clearance		12.0	ft	12.0	ft
Access points per mile		16		0	
Median type		Undivided			
Free-flow speed:		Base		Measured	
FFS or BFFS		50.0	mph	50.0	mph
Lane width adjustment, FLW		0.0	mph	0.0	mph
Lateral clearance adjustment, FLC		0.0	mph	0.0	mph
Median type adjustment, FM		1.6	mph	0.0	mph
Access points adjustment, FA		4.0	mph	0.0	mph
Free-flow speed		44.4	mph	50.0	mph

VOLUME

	Direction	1		2	
Volume, V		1546	vph	662	vph
Peak-hour factor, PHF		0.95		0.95	
Peak 15-minute volume, v15		407		174	
Trucks and buses		3	%	3	%
Recreational vehicles		0	%	0	%
Terrain type		Rolling		Rolling	
Grade		0.00	%	0.00	%
Segment length		0.00	mi	0.00	mi
Number of lanes		2		2	
Driver population adjustment, fP		1.00		1.00	
Trucks and buses PCE, ET		2.5		2.5	
Recreational vehicles PCE, ER		2.0		2.0	
Heavy vehicle adjustment, fHV		0.957		0.957	
Flow rate, vp		850	pcphpl	364	pcphpl

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RESULTS

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	Direction	1		2	
Flow rate, vp		850	pcphpl	364	pcphpl
Free-flow speed, FFS		44.4	mph	50.0	mph
Avg. passenger-car travel speed, S			mph	50.0	mph
Level of service, LOS				A	
Density, D			pc/mi/ln	7.3	pc/mi/ln

Overall results are not computed when free-flow speed is less than 45 mph.

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OPERATIONAL ANALYSIS

Analyst:  
 Agency/Co:  
 Date: 11/6/2008  
 Analysis Period: 2014  
 Highway: SR-6  
 From/To: Seg. 5B LM 6.60 to LM 8.67  
 Jurisdiction: TDOT  
 Analysis Year: 2014  
 Project ID: SR-6 TPR

FREE-FLOW SPEED

	Direction	1		2	
Lane width		12.0	ft	12.0	ft
Lateral clearance:					
Right edge		6.0	ft	6.0	ft
Left edge		6.0	ft	6.0	ft
Total lateral clearance		12.0	ft	12.0	ft
Access points per mile		16		0	
Median type		Undivided			
Free-flow speed:		Base		Measured	
FFS or BFFS		60.0	mph	50.0	mph
Lane width adjustment, FLW		0.0	mph	0.0	mph
Lateral clearance adjustment, FLC		0.0	mph	0.0	mph
Median type adjustment, FM		1.6	mph	0.0	mph
Access points adjustment, FA		4.0	mph	0.0	mph
Free-flow speed		54.4	mph	50.0	mph

VOLUME

	Direction	1		2	
Volume, V		840	vph	360	vph
Peak-hour factor, PHF		0.95		0.95	
Peak 15-minute volume, v15		221		95	
Trucks and buses		3	%	3	%
Recreational vehicles		0	%	0	%
Terrain type		Rolling		Rolling	
Grade		0.00	%	0.00	%
Segment length		0.00	mi	0.00	mi
Number of lanes		2		2	
Driver population adjustment, fP		1.00		1.00	
Trucks and buses PCE, ET		2.5		2.5	
Recreational vehicles PCE, ER		2.0		2.0	
Heavy vehicle adjustment, fHV		0.957		0.957	
Flow rate, vp		462	pcphpl	198	pcphpl

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RESULTS

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	Direction	1		2	
Flow rate, vp		462	pcphpl	198	pcphpl
Free-flow speed, FFS		54.4	mph	50.0	mph
Avg. passenger-car travel speed, S		54.4	mph	50.0	mph
Level of service, LOS		A		A	
Density, D		8.5	pc/mi/ln	4.0	pc/mi/ln

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OPERATIONAL ANALYSIS

Analyst:  
 Agency/Co:  
 Date: 11/6/2008  
 Analysis Period: 2034  
 Highway: SR-6  
 From/To: Seg. 5B LM 6.60 to LM 8.67  
 Jurisdiction: TDOT  
 Analysis Year: 2034  
 Project ID: SR-6 TPR

FREE-FLOW SPEED

	Direction	1		2	
Lane width		12.0	ft	12.0	ft
Lateral clearance:					
Right edge		6.0	ft	6.0	ft
Left edge		6.0	ft	6.0	ft
Total lateral clearance		12.0	ft	12.0	ft
Access points per mile		16		0	
Median type		Undivided			
Free-flow speed:		Base		Measured	
FFS or BFFS		60.0	mph	50.0	mph
Lane width adjustment, FLW		0.0	mph	0.0	mph
Lateral clearance adjustment, FLC		0.0	mph	0.0	mph
Median type adjustment, FM		1.6	mph	0.0	mph
Access points adjustment, FA		4.0	mph	0.0	mph
Free-flow speed		54.4	mph	50.0	mph

VOLUME

	Direction	1		2	
Volume, V		1025	vph	439	vph
Peak-hour factor, PHF		0.95		0.95	
Peak 15-minute volume, v15		270		116	
Trucks and buses		3	%	3	%
Recreational vehicles		0	%	0	%
Terrain type		Rolling		Rolling	
Grade		0.00	%	0.00	%
Segment length		0.00	mi	0.00	mi
Number of lanes		2		2	
Driver population adjustment, fP		1.00		1.00	
Trucks and buses PCE, ET		2.5		2.5	
Recreational vehicles PCE, ER		2.0		2.0	
Heavy vehicle adjustment, fHV		0.957		0.957	
Flow rate, vp		563	pcphpl	241	pcphpl

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RESULTS

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	Direction	1		2	
Flow rate, vp		563	pcphpl	241	pcphpl
Free-flow speed, FFS		54.4	mph	50.0	mph
Avg. passenger-car travel speed, S		54.4	mph	50.0	mph
Level of service, LOS		A		A	
Density, D		10.3	pc/mi/ln	4.8	pc/mi/ln

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OPERATIONAL ANALYSIS

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Analyst:  
 Agency/Co:  
 Date: 11/6/2008  
 Analysis Period: 2014  
 Highway: SR-6  
 From/To: Seg. 6 LM 8.67 to 10.03  
 Jurisdiction: TDOT  
 Analysis Year: 2014  
 Project ID: SR-6 TPR

FREE-FLOW SPEED

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	Direction	1		2	
Lane width		12.0	ft	12.0	ft
Lateral clearance:					
Right edge		6.0	ft	6.0	ft
Left edge		6.0	ft	6.0	ft
Total lateral clearance		12.0	ft	12.0	ft
Access points per mile		16		0	
Median type		Undivided			
Free-flow speed:		Base		Measured	
FFS or BFFS		45.0	mph	45.0	mph
Lane width adjustment, FLW		0.0	mph	0.0	mph
Lateral clearance adjustment, FLC		0.0	mph	0.0	mph
Median type adjustment, FM		1.6	mph	0.0	mph
Access points adjustment, FA		4.0	mph	0.0	mph
Free-flow speed		39.4	mph	45.0	mph

VOLUME

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	Direction	1		2	
Volume, V		1165	vph	499	vph
Peak-hour factor, PHF		0.95		0.95	
Peak 15-minute volume, v15		307		131	
Trucks and buses		3	%	3	%
Recreational vehicles		0	%	0	%
Terrain type		Rolling		Rolling	
Grade		0.00	%	0.00	%
Segment length		0.00	mi	0.00	mi
Number of lanes		2		2	
Driver population adjustment, fP		1.00		1.00	
Trucks and buses PCE, ET		2.5		2.5	
Recreational vehicles PCE, ER		2.0		2.0	
Heavy vehicle adjustment, fHV		0.957		0.957	
Flow rate, vp		640	pcphpl	274	pcphpl

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RESULTS

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	Direction	1		2	
Flow rate, vp		640	pcphpl	274	pcphpl
Free-flow speed, FFS		39.4	mph	45.0	mph
Avg. passenger-car travel speed, S			mph	45.0	mph
Level of service, LOS				A	
Density, D			pc/mi/ln	6.1	pc/mi/ln

Overall results are not computed when free-flow speed is less than 45 mph.

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OPERATIONAL ANALYSIS

Analyst:  
 Agency/Co:  
 Date: 11/6/2008  
 Analysis Period: 2034  
 Highway: SR-6  
 From/To: Seg. 6 LM 8.67 to 10.03  
 Jurisdiction: TDOT  
 Analysis Year: 2034  
 Project ID: SR-6 TPR

FREE-FLOW SPEED

	Direction	1		2	
Lane width		12.0	ft	12.0	ft
Lateral clearance:					
Right edge		6.0	ft	6.0	ft
Left edge		6.0	ft	6.0	ft
Total lateral clearance		12.0	ft	12.0	ft
Access points per mile		16		0	
Median type		Undivided			
Free-flow speed:		Base		Measured	
FFS or BFFS		45.0	mph	45.0	mph
Lane width adjustment, FLW		0.0	mph	0.0	mph
Lateral clearance adjustment, FLC		0.0	mph	0.0	mph
Median type adjustment, FM		1.6	mph	0.0	mph
Access points adjustment, FA		4.0	mph	0.0	mph
Free-flow speed		39.4	mph	45.0	mph

VOLUME

	Direction	1		2	
Volume, V		1803	vph	773	vph
Peak-hour factor, PHF		0.95		0.95	
Peak 15-minute volume, v15		474		203	
Trucks and buses		3	%	3	%
Recreational vehicles		0	%	0	%
Terrain type		Rolling		Rolling	
Grade		0.00	%	0.00	%
Segment length		0.00	mi	0.00	mi
Number of lanes		2		2	
Driver population adjustment, fP		1.00		1.00	
Trucks and buses PCE, ET		2.5		2.5	
Recreational vehicles PCE, ER		2.0		2.0	
Heavy vehicle adjustment, fHV		0.957		0.957	
Flow rate, vp		991	pcphpl	425	pcphpl

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RESULTS

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	Direction	1		2	
Flow rate, vp		991	pcphpl	425	pcphpl
Free-flow speed, FFS		39.4	mph	45.0	mph
Avg. passenger-car travel speed, S			mph	45.0	mph
Level of service, LOS				A	
Density, D			pc/mi/ln	9.4	pc/mi/ln

Overall results are not computed when free-flow speed is less than 45 mph.

*Maury and Williamson Counties*

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**THREE LANE SPRING HILL OPTION**

**HCS+ ANALYSIS**

Segment 2A L.M. 0.00 to 0.20 Year 2014

Segment 2A L.M. 0.00 to 0.20 Year 2034

HCS+: Urban Streets Release 5.3

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PLANNING ANALYSIS

Analyst:  
 Agency/Co.:  
 Date Performed: 11/6/2008  
 Analysis Time Period: 2014  
 Urban Street: SR-6  
 Direction of Travel:  
 Jurisdiction: Segment 2A  
 Analysis Year: 2014  
 Project ID: SR-6 TPR LM 0.00 to 0.20 (SH 3 Lane Option)

Traffic Characteristics

Annual average daily traffic, AADT 25000 vpd  
 Planning analysis hour factor, K 0.080  
 Directional distribution factor, D 0.700  
 Peak-hour factor, PHF 0.950  
 Adjusted saturation flow rate 1800 pcphgpl  
 Percent turns from exclusive lanes 50 %

Roadway Characteristics

Number of through lanes one direction, N 1  
 Free flow speed, FFS 45 mph  
 Urban class 2  
 Section length 2.49 miles  
 Median Yes  
 Left-turn bays Yes

Signal Characteristics

Signalized intersections 2  
 Arrival type, AT 4  
 Signal type (k = 0.5 for planning) Actuated  
 Cycle length, C 120.0 sec  
 Effective green ratio, g/C 0.400

Results

Annual average daily traffic, AADT 25000 vpd  
 Two-way hourly volume 1999 vph  
 Hourly directional volume 1399 vph  
 Through-volume 15-min. flow rate 736 v  
 Running time 199.2 sec  
 v/c ratio 1.02  
 Through capacity 720 vph  
 Progression factor, PF 0.895  
 Uniform delay 36.0 sec  
 Filtering/metering factor, I 0.090  
 Incremental delay 16.3 sec  
 Control delay 48.5 sec/v  
 Total travel speed, Sa 30.3 mph  
 Total urban street LOS B

HCS+: Urban Streets Release 5.3

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PLANNING ANALYSIS

Analyst:  
 Agency/Co.:  
 Date Performed: 11/6/2008  
 Analysis Time Period: 2014  
 Urban Street: SR-6  
 Direction of Travel:  
 Jurisdiction: Segment 2A  
 Analysis Year: 2034  
 Project ID: SR-6 TPR LM 0.00 to 0.20

Traffic Characteristics

Annual average daily traffic, AADT 36700 vpd  
 Planning analysis hour factor, K 0.080  
 Directional distribution factor, D 0.700  
 Peak-hour factor, PHF 0.950  
 Adjusted saturation flow rate 1800 pcphgpl  
 Percent turns from exclusive lanes 50 %

Roadway Characteristics

Number of through lanes one direction, N 1  
 Free flow speed, FFS 45 mph  
 Urban class 2  
 Section length 2.49 miles  
 Median Yes  
 Left-turn bays Yes

Signal Characteristics

Signalized intersections 2  
 Arrival type, AT 4  
 Signal type (k = 0.5 for planning) Actuated  
 Cycle length, C 120.0 sec  
 Effective green ratio, g/C 0.400

Results

Annual average daily traffic, AADT 36700 vpd  
 Two-way hourly volume 2935 vph  
 Hourly directional volume 2054 vph  
 Through-volume 15-min. flow rate 1081 v  
 Running time 199.2 sec  
 v/c ratio 1.50  
 Through capacity 720 vph  
 Progression factor, PF 0.895  
 Uniform delay 36.0 sec  
 Filtering/metering factor, I 0.090  
 Incremental delay 226.3 sec  
 Control delay 258.5 sec/v  
 Total travel speed, Sa 12.5 mph  
 Total urban street LOS F

**THREE LANE THOMPSON'S STATION OPTION**

**HCS+ ANALYSIS**

Segment 2C L.M. 2.17 to 2.49 Year 2014

Segment 2C L.M. 2.17 to 2.49 Year 2034

HCS+: Urban Streets Release 5.3

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PLANNING ANALYSIS

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Analyst:  
 Agency/Co.:  
 Date Performed: 11/6/2008  
 Analysis Time Period: 2014  
 Urban Street: SR-6  
 Direction of Travel:  
 Jurisdiction: Segment 2C  
 Analysis Year: 2014  
 Project ID: SR-6 TPR LM 2.17 to 2.49

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Traffic Characteristics

---

Annual average daily traffic, AADT	25000	vpd
Planning analysis hour factor, K	0.080	
Directional distribution factor, D	0.700	
Peak-hour factor, PHF	0.950	
Adjusted saturation flow rate	1800	pcphgpl
Percent turns from exclusive lanes	75	%

---

Roadway Characteristics

---

Number of through lanes one direction, N	1	
Free flow speed, FFS	45	mph
Urban class	2	
Section length	2.49	miles
Median	Yes	
Left-turn bays	Yes	

---

Signal Characteristics

---

Signalized intersections	2	
Arrival type, AT	4	
Signal type (k = 0.5 for planning)	Actuated	
Cycle length, C	120.0	sec
Effective green ratio, g/C	0.400	

---

Results

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Annual average daily traffic, AADT	25000	vpd
Two-way hourly volume	1999	vph
Hourly directional volume	1399	vph
Through-volume 15-min. flow rate	368	v
Running time	199.2	sec
v/c ratio	0.51	
Through capacity	720	vph
Progression factor, PF	0.895	
Uniform delay	27.2	sec
Filtering/metering factor, I	0.849	
Incremental delay	2.2	sec
Control delay	26.5	sec/v
Total travel speed, Sa	35.5	mph
Total urban street LOS	A	

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PLANNING ANALYSIS

---

Analyst:  
 Agency/Co.:  
 Date Performed: 11/6/2008  
 Analysis Time Period: 2034  
 Urban Street: SR-6  
 Direction of Travel:  
 Jurisdiction: Segment 2C  
 Analysis Year: 2034  
 Project ID: SR-6 TPR LM 2.17 to 2.49

Traffic Characteristics

---

Annual average daily traffic, AADT	36700	vpd
Planning analysis hour factor, K	0.080	
Directional distribution factor, D	0.700	
Peak-hour factor, PHF	0.950	
Adjusted saturation flow rate	1800	pcphgpl
Percent turns from exclusive lanes	75	%

Roadway Characteristics

---

Number of through lanes one direction, N	1	
Free flow speed, FFS	45	mph
Urban class	2	
Section length	2.49	miles
Median	Yes	
Left-turn bays	Yes	

Signal Characteristics

---

Signalized intersections	2	
Arrival type, AT	4	
Signal type (k = 0.5 for planning)	Actuated	
Cycle length, C	120.0	sec
Effective green ratio, g/C	0.400	

Results

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Annual average daily traffic, AADT	36700	vpd
Two-way hourly volume	2935	vph
Hourly directional volume	2054	vph
Through-volume 15-min. flow rate	540	v
Running time	199.2	sec
v/c ratio	0.75	
Through capacity	720	vph
Progression factor, PF	0.895	
Uniform delay	30.9	sec
Filtering/metering factor, I	0.579	
Incremental delay	4.2	sec
Control delay	31.8	sec/v
Total travel speed, Sa	34.1	mph
Total urban street LOS	B	