TRANSPORTATION PLANNING REPORT

PROPOSED DICKSON SOUTHWEST BYPASS

FROM US-70 TO STATE ROUTE 46 AND/OR INTERSTATE 40
DICKSON COUNTY
PIN# 043152.00

PREPARED BY
Florence & Hutcheson
FOR THE
TENNESSEE DEPARTMENT OF TRANSPORTATION
PROJECT PLANNING DIVISION

Approved by:	Signature	DATE
CHIEF OF ENVIRONMENT AND PLANNING	Ed Cole	12/12/06
TRANSPORTATION DIRECTOR PROJECT PLANNING DIVISION		12.8.06
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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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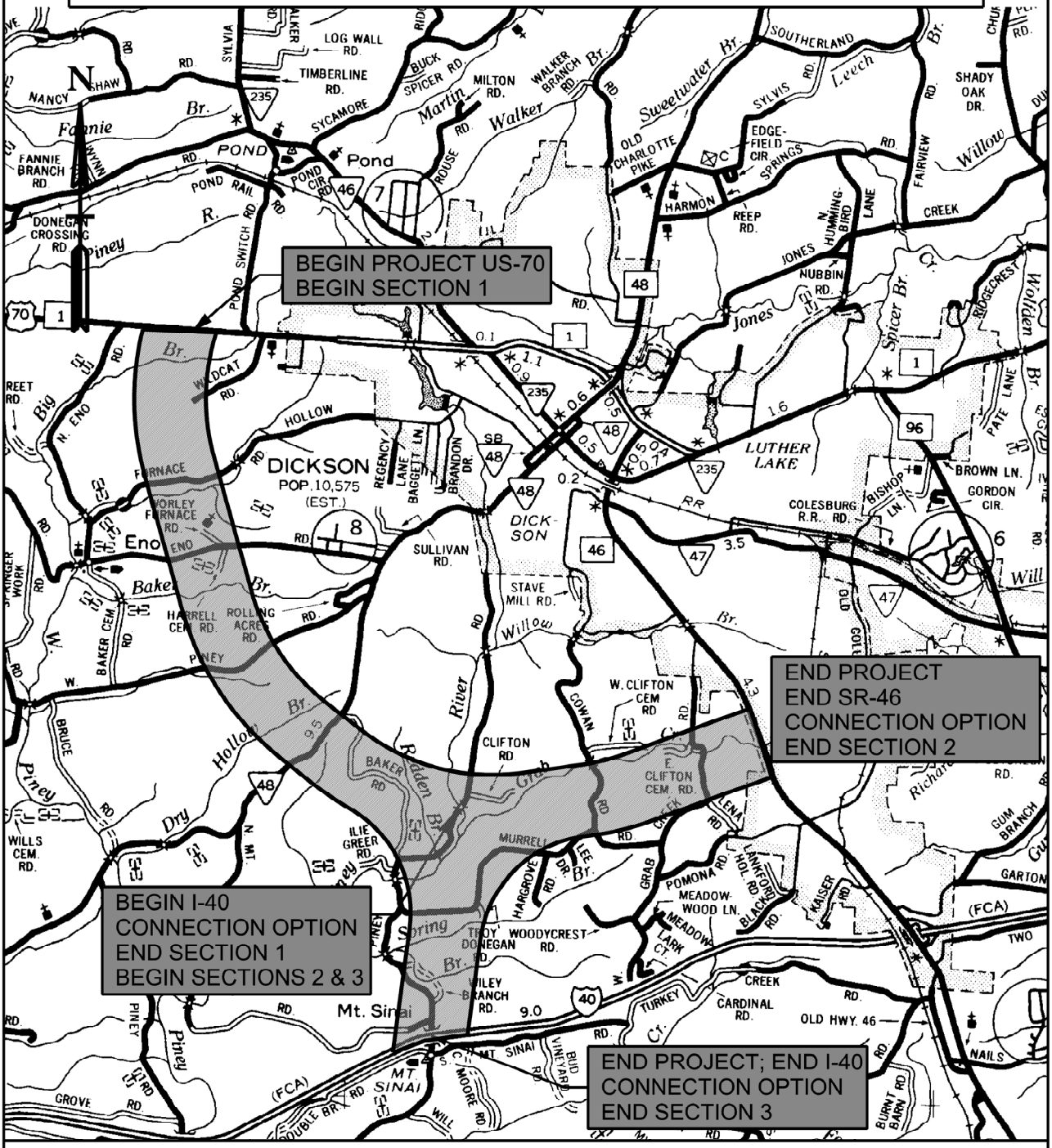
DICKSON COUNTY

TRANSPORTATION PLANNING REPORT

TO STUDY SOUTHWESTERN BYPASS



AREA MAP

DICKSON BYPASS

FROM US-70 TO SR-46/I-40

DICKSON, DICKSON COUNTY, TENNESSEE

PROJECT LOCATION MAP
PROPOSED DICKSON BYPASS
FROM US-70 TO STATE ROUTE 46 AND/OR INTERSTATE 40
USGS "DICKSON" AND "BURNS" QUAD
DICKSON, DICKSON COUNTY, TN

N

BEGIN PROJECT US-70
BEGIN SECTION 1

US-70

US-70

SR-235

DICKSON

US-70 BR

SR-46

US-70

SR-48

BEGIN I-40 CONNECTION OPTION
END SECTION 1, BEGIN SECTIONS 2 & 3

SR-46

END PROJECT SR-46
END SECTION 2

SCALE
1/2 1 MILE
1" = 2640 FT = ½ MILE

I-40

END PROJECT I-40
END SECTION 3

H:\05125\DGN\Location Map.sht 11/30/2006 02:17:22 PM

1.0 Project History and Background Information

1.1 Project History

This report examines three proposed routes for a bypass around the southwest of the city of Dickson, in Dickson County, Tennessee. Additionally, an option is examined that improves the SR-46 at I-40 Interchange. A "No Build" option is also examined. These options evaluate opportunities for meeting the traffic and economic development needs of the City of Dickson and Dickson County. The options examined are summarized below:

- No Build
- Improve the SR-46 at I-40 Interchange
- Bypass from US-70 to SR-46
- Bypass from US-70 to I-40
- Bypass from US-70 to both SR-46 and I-40

Traffic projections were calculated as part of this report for the design years 2011 and 2031. Traffic was generated for each option. For the "No Build" and "Improve the SR-46 at I-40 Interchange" Options, the traffic is estimated to grow at historical rates along the existing routes. For the three bypass options, traffic is different along the bypass for each of the different routes due to the different southern termini. Traffic growth along each bypass route is predicted to occur concurrent with development predicted by the Tennessee Department of Economic and Community Development (ECD) in the report titled *Land Use Projection/ Plan for Dickson, Tennessee Southern Highway Bypass*. Please refer to the **Traffic Study Appendix**, provided under separate cover, for detailed calculations and design hourly turning movement diagrams of the traffic. The adjusted average daily traffic (AADT) diagrams are provided both in the **Traffic Study Appendix** and in this document.

This report is a continuation of several previous studies and public meetings. A summary of previous activity concerning this project is provided below:

Date	Activity
March, 1998	*Dickson Urban Transportation Study of Existing Conditions* identifies the need for a proposed corridor for the purpose of alleviating traffic congestion in downtown Dickson
May, 1999	The city of Dickson hires Hart-Freeland-Roberts to prepare an alignment study for a bypass
August, 1999	The city of Dickson holds *Growth Plan Public Meetings*
February, 2000	Dickson City Mayor Don Weiss requests assistance with the project from the Tennessee Department of Transportation (TDOT)
May, 2000	Traffic generated by RPM Associates for a bypass study is approved by TDOT
July, 2001	A feasibility Study for a bypass is performed by Hart-Freeland-Roberts and approved by TDOT
July 2002	New traffic is generated by TDOT for an Advance Planning Report (APR)
April, 2004	An Advance Planning Report (APR) titled *Proposed Dickson South Bypass* is performed by TDOT that evaluates three route options (A, B, and C) and three bypass extensions. The three route options all connect US-70 to the west of Dickson to SR-46 to the south of Dickson. One of the bypass extensions studied connects to I-40 near Piney Road.
July, 2004	A coordination meeting including TDOT and both the city and county of Dickson is held. There is some discussion between the city and county concerning the southern termini for the bypass at either SR-46 or I-40.
November, 2004	A public meeting is held concerning the APR
March, 2006	Florence and Hutcheson is hired by TDOT to prepare a Transportation Planning Report (TPR) and to generate updated traffic projections that take into account development projections generated by the ECD

A meeting including representatives from the city of Dickson, Dickson County, TDOT, the Tennessee Department of Economic and Community Development (ECD) and Florence and Hutcheson was held in Dickson's City Hall on March 23, 2006. Minutes from the meeting are included in **Appendix A-7 Field Meeting Minutes**. The scope and schedule of this Transportation Planning Report (TPR) were discussed with Dickson's decision makers. The ECD then presented the findings of their report titled *Land Use Projection/Plan for Dickson, Tennessee Southern Highway Bypass*. The ECD report estimated the development likely to occur with the construction of a bypass around Dickson. This data was used to generate the traffic projections utilized in this TPR. The traffic projections, calculations, and a copy of the ECD report are included in the **Traffic Study Appendix**, included under separate cover. Mr. Gary King, with TDOT, and Mr. Jon Storey, with Florence and Hutcheson, then performed a field investigation of the study area.

A preliminary environmental survey has been conducted as part of this study. The findings of this survey are discussed in **Section 4.0 Assessment of Options** under the heading Guiding Principle 6: Promote Stewardship of the Environment. A detailed environmental study will be performed at a later date.

1.2 Project Study Area

The city of Dickson is located approximately 35 miles west of Nashville in Middle Tennessee. This report focuses on the areas south and west of the city of Dickson between US-70 to the north, I-40 to the south, and SR-46 to the east. Please refer to the **Area Vicinity Map**, **Project Location Map**, or the **Conceptual Plans** for visual representations of the study area.

1.3 Community Profile

Dickson County is part of the eight-county Nashville Metropolitan Statistical Area and covers 490 square miles. Montgomery Bell State Park is located in the southeastern part of the county. The city of Charlotte is the county seat and has a population of approximately 1,200.

The population of Dickson County is 45,339 (2004 U.S. Census estimate). The population of Dickson County grew 23.1% from 1990 to 2000. The civilian labor force of Dickson County is 22,750. The 2004 unemployment rate of Dickson County was reported to be 4.9% by the ECD. According to the Nashville Area Metropolitan Planning Organization (MPO), 26% of employees from Dickson County commute to Nashville.

The city of Dickson is Dickson County's most populous city with a population of 12,760. The population of the city grew 39.3% from 1990 to 2000. The 2005 unemployment rate of the city of Dickson was reported to be 3.6% by the Dickson County Chamber of Commerce.

The majority of the city of Dickson's existing development is east of the city. Areas with higher development range from Dickson's urban core eastward along US-70 and southward along SR-46 toward I-40. The 225-acre Dickson County Industrial Park is located southeast of the city of Dickson between US-70 to the north and SR-46 to the west. The industrial park accesses I-40 via SR-46. The industrial park is located four miles north of I-40. Many of Dickson County's largest employers are located in the industrial park including:

- Teksid Aluminum Foundry 500 employees
- Tennsco Corporation 500 employees
- Tennessee Odom 400 employees
- Masonite International 350 employees
- Shiloh Industries 310 employees

Dickson Municipal Airport is located north of the city on Sylvia Road (SR-235). This is a general aviation airport with no commercial service. The asphalt runway is 5,000 feet long and 75 feet wide. Hangars are available for rent and flight training is available.

The existing land use near the proposed bypass routes is generally farm, forested, or open land. The terrain is rolling hills. The terrain in the southern portion of the study area near I-40 and SR-46 is more pronounced than in the northern area near US-70. Most of the residential units in the area are single unit housing on large tracts of land. Near the possible termini of the bypass at SR-46, the land use is commercial. The Renaissance Center is located near this possible terminus. The Renaissance Center is an educational facility that offers classes in the visual arts, music, dance, theater, computer related subjects and multimedia programs.

The ECD report titled *Land Use Projection/ Plan for Dickson, Tennessee Southern Highway Bypass* reports the development likely to occur with the construction of a bypass around Dickson. Predicted developments near the proposed bypass routes include small general retail stores, convenience stores, restaurants, churches, apartment complexes, and additional single unit housing. For bypass route options that connect to

I-40, additional developments predicted by the ECD include an industrial park, gas stations, and fast food restaurants.

Several utilities are located within the study area. The utility service providers include:

- Water Authority of Dickson County (Water and Sewer)
- Pond Utility District (Water and Sewer)
- Bellsouth (Telephone)
- Comcast Cable (Television and Internet)
- Greater Dickson Gas Authority (Gas)
- Dickson Electric System (Electric)

It is not anticipated that water, sewer, or gas utilities serve many portions of the proposed bypass routes. Large tracts of land in rural areas typically utilize well water and septic tanks for their drinking water and sewer needs. The Pond Utility District and Water Authority of Dickson County were contacted for this report. The Pond Utility District only provides service (within the study area) to some areas adjacent to US-70 west of the city. Contact with the Water Authority of Dickson County Engineering Department was not made. However, it is assumed water and sewer service would be limited to the area near SR-46 south of the city. Several pipelines are noted on the USGS quad map "Dickson". The proposed bypass route will bisect the pipelines.

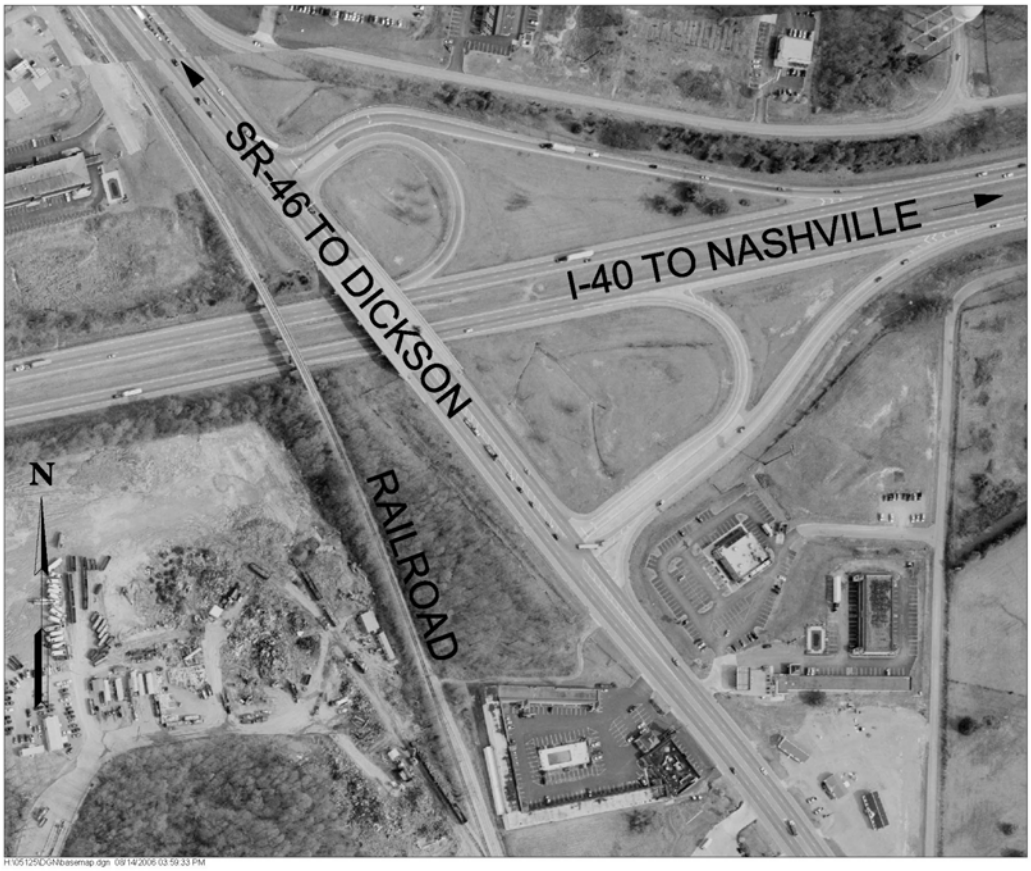
For economic development to occur along a proposed bypass route, a significant commitment to infrastructure improvements will need to be made by the local agencies and utility companies. For commercial, industrial, and high-density residential development to occur, electric, phone, water and sewer utilities must be provided along the route.

1.4 Existing Transportation Conditions

The existing primary route between the west and south of the city of Dickson is along US-70 and SR-46. US-70 in this area has either a four-lane divided or a five-lane roadway cross-section. SR-46 is a five-lane roadway cross-section within the study area. The land uses adjacent to these routes include several restaurants, businesses, and stores (including a Super Wal-Mart at Beasley Drive). The posted speed limit along US-70 and SR-46 in this area ranges between 35 and 45 mph. The peak hour travel speeds are considerably less than the posted speed limit. There are currently ten traffic signals and two school zones along US-70 and SR-46 within the study area.

The city of Dickson's primary connection to I-40 is via the interchange at SR-46. An aerial photograph of this interchange is provided in **Exhibit 1.1**. This interchange is a partial cloverleaf with all four ramps located on the east side of SR-46. This configuration is necessary due to railroad tracks that run adjacent to SR-46 on the west side. Major modifications to the west side of this interchange would be costly due to these railroad tracks. The adjacent interchanges connecting Dickson to I-40 are at SR-96 to the east and SR-48 to the west. The I-40 at SR-96 Interchange is located 10 miles to the east of the SR-46 Interchange. The I-40 at SR-48 Interchange is located 9 miles to the west of the SR-46 Interchange. The I-40 at SR-840 Interchange is located 4 miles to the east of the SR-46 Interchange. SR-840 currently terminates at I-40 and does not connect to Dickson.

Exhibit 1.1 Existing SR-46 at I-40 Interchange



2.0 Purpose and Need

2.1 Purpose

The purpose of a proposed bypass is to provide a transportation facility that improves mobility around the city of Dickson, supports economic development, and relieves traffic congestion in Dickson's urban core. Travel times will be reduced by up to 42% between the west and south of Dickson with the construction of a bypass.

Most of Dickson's existing development is east of the city. The bypass options studied in this report will improve accessibility to the sparsely developed land west and south of the city of Dickson. Economic development opportunities west and south of the city will therefore be improved.

Traffic volumes on the slow moving roadways in the urban center of Dickson will be reduced between 12% and 17% with the bypass options studied. Therefore, congestion in Dickson's urban core will be reduced.

2.2 Need

There is currently only one existing primary route between the west and south of the city of Dickson. This is along US-70 and SR-46. This route carries vehicles through the urban center of Dickson where travel speeds are low. Therefore, an alternate route will allow better mobility between the west and south of Dickson, while avoiding Dickson's urban center.

The existing SR-46 at I-40 Interchange is calculated to fail operationally in the year 2023. This is the primary access between the city of Dickson and I-40. The next closest interchanges linking Dickson to I-40 are at SR-48 to the west and SR-96 to the east. Both of these interchanges are approximately 10 miles from the SR-46 Interchange. Because the existing SR-46 Interchange is anticipated to fail by 2023, improvements to the SR-46 Interchange or new access to Dickson from I-40 will be needed.

2.3 Goals and Objectives

Additional goals of a bypass given by the city of Dickson and Dickson County include:

- Support economic development & aid Dickson's growth plan
- Relieve traffic congestion in Dickson's urban core
- Improved access to I-40 from areas west of Dickson
- Increase accessibility to Dickson's airport
- Increase accessibility to Dickson's industrial park.

3.0 Options Analyzed

3.1 Route Option Discussion

This report examines three proposed routes for a bypass around the southwest of the city of Dickson, in Dickson County, Tennessee. Additionally, an option is examined that improves the SR-46 at I-40 Interchange. A "No Build" option is also examined. These options evaluate opportunities for meeting the traffic and economic development needs of the city of Dickson and Dickson County. The options examined are summarized below:

- No Build
- Improve the SR-46 at I-40 Interchange
- Bypass from US-70 to SR-46
- Bypass from US-70 to I-40
- Bypass from US-70 to both SR-46 and I-40

A map of the study area, with the proposed bypass route options, is included in **Exhibit 3.1**. The posted speed limits of each of the existing State Routes in the area are labeled, along with the location of the existing traffic signals. The roadway cross-section of each existing route is noted. Anticipated future signal locations along the proposed bypass are also labeled in this exhibit.

For all three of the proposed bypass route options, the northern connection is anticipated to occur at US-70 west of the city of Dickson near Pond Switch Road. The potential SR-46 connection is anticipated to occur between the city of Dickson and I-40. The connection to I-40 is anticipated to occur between Piney Road and the rest area along I-40 south of the city of Dickson.

Because of the three route options studied, the alignment corridor is divided into three sections in this report. The Sections are as follows:

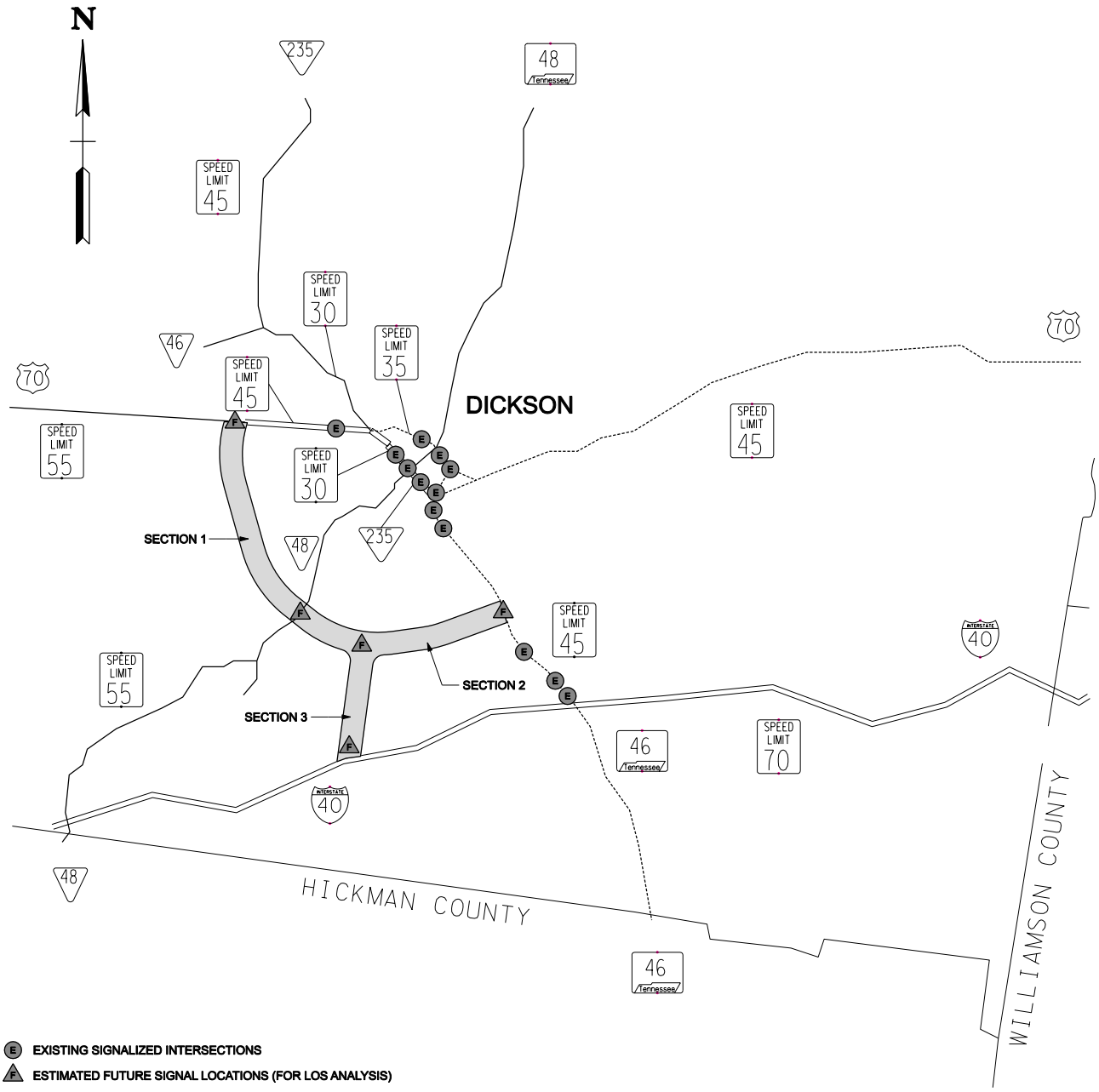
- **Section 1:** From US-70 to the Bypass Connection. Approximately 5 miles long.
- **Section 2:** From the Bypass Connection to SR-46. Approximately 2.5 miles long.
- **Section 3:** From the Bypass Connection to I-40. Approximately 2 miles long.

Section 1 will be built for all three route options. **Section 2** will be built for the two route options that connect to SR-46. **Section 3** will be built for the two route options that connect to I-40. Therefore, the bypass can range from approximately 7.0 to 9.5 miles long, dependent on the route option chosen.

The alignment corridors shown in this TPR are based on line sketches provided by the Tennessee Department of Economic and Community Development (ECD). The corridors shown are preliminary and subject to change.

EXHIBIT 3.1

DICKSON COUNTY
TRANSPORTATION PLANNING REPORT
TO STUDY SOUTHWESTERN BYPASS



1" = 3 MILES

ROADWAY CHARACTERISTICS

- 5 LANES
- 4 LANE DIVIDED
- 3 LANES
- 2 LANES

3.2 Cross Section Discussion

Number of Travel Lanes

For the "No Build" and "Improve the SR-46 at I-40 Interchange" options, calculations indicate the existing arterial streets within the study area have an adequate number of mainline lanes through the year 2031. Where deficient operations are observed, spot improvements including improved signal timing and intersection geometry (turn lanes) should be investigated. Widening existing roads for additional travel lanes is not calculated to be necessary through the year 2031.

For the bypass options, calculations indicate two travel lanes (one per direction) will be adequate for traffic operations of a southwest bypass around the city of Dickson. A two-travel lane bypass will reduce congestion in Dickson's urban core and decrease travel times from the west to the south of the city. Because it was determined that two travel lanes are adequate for the design year traffic, additional travel lane options are not included in this report. The calculations utilized to determine the number of required travel lanes are discussed in **Section 3.3 Measures of Effectiveness (MOE) Discussion**.

The determination that two travel lanes are adequate for a bypass is based upon the development projections generated by the ECD and the subsequent traffic projections performed for this report. Because of the uncertain nature of future development along a new route, and the relatively undeveloped existing condition of the land in the vicinity of the bypass options, it is recommended to purchase additional right-of-way (R.O.W.). The additional R.O.W. can be used to construct a four-travel lane bypass if future conditions warrant.

Rural vs. Urban Design

Operationally, either an urban cross-section with curb and gutter and enclosed drainage or a rural cross-section with paved shoulders and roadside ditches is acceptable. Urban cross-sections generally have higher paving and drainage costs associated with them due to the curb, gutter, and enclosed drainage systems. The rural cross-sections generally have higher earthwork and right-of-way costs associated with them due to their wider footprint. Due to design standards and safety concerns, an urban cross-section with curb and gutter would limit the maximum recommended speed limit of the bypass to 45 mph.

It is recommended to purchase additional R.O.W. than necessary for a two travel-lane bypass. The additional R.O.W. can be used to construct a four-travel lane bypass if future traffic conditions warrant. It should be noted that it is more difficult and expensive to add additional travel lanes to an urban cross-section than to a rural cross-section. This is because the curb and enclosed drainage system along one side of the roadway would have to be removed when the additional lanes are constructed.

Access Control

The need of the bypass to improve mobility by providing a relatively high-speed route around Dickson should be balanced with the goal of the city to support economic development. To achieve both of these goals it is recommended to implement partial access control at all but major intersections of the bypass. This could be performed with control-of-access fence. Access to the bypass would be allowed only at major intersections. Development could occur along the roadways intersecting the bypass, but not along the bypass. The bypass would then operate efficiently, with limited intersections and no direct access to private development.

The traffic volumes estimated for the bypass do not indicate a need for interchanges at major crossroads. Therefore, a full access-controlled (freeway) facility is not necessary for adequate traffic operations.

Pedestrians and Bicycles

The proposed cross-section for a bypass will have accommodations for pedestrians and/or bicycles. The minimum paved shoulder recommended for a two-lane bypass is ten-feet wide. This, in conjunction with the recommended twelve-foot wide travel lanes, is adequate for pedestrian and bicycle use. Sidewalks are not necessary because the sparse existing building density in the study area would generate negligible pedestrian activity. Except at major intersections, access control measures should be considered to maintain adequate travel speeds along the bypass. This would further negate the need for sidewalks.

3.3 Measures of Effectiveness (MOE) Discussion

Level of Service

The quality of service of US-70, SR-46, and the bypass options was analyzed utilizing the procedures outlined in the *Highway Capacity Manual 2000* (HCM) *Urban Streets* Chapter. The Level-of-Service (LOS) Calculations were performed with the Highway Capacity Software (HCS). These calculations assign a LOS along route segments with similar geometric and traffic characteristics.

LOS is a quality 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.

The *Urban Streets* Planning Analysis was chosen because it gives a mainline analysis of the relatively low speed streets studied in this report. Other mainline analysis methods in the HCM are for high speed facilities without traffic signals. Data inputs include:

- Free-Flow Speed
- Signal Density (signals per mile)
- Signal g/C Ratio (estimated green time divided by cycle length)
- Urban Street Class
- Traffic Volume

It is not necessary to analyze individual intersections as part of the *Urban Streets* Planning Analysis. It is probable the individual intersections along the routes analyzed operate at a lower LOS than the routes as a whole.

The *Urban Streets* analysis results can vary greatly with the signal density along a route. Therefore, adding additional signals along US-70 or SR-46 would negatively affect the results of the analysis. As signals are added to these routes, the quality of service will deteriorate.

For the "Improve the SR-46 at I-40 Interchange" option, the quality of service of the ramp termini along SR-46 was analyzed utilizing the Synchro software. Both of these intersections are signalized. The Level-of-Service (LOS) values reported in this text utilize Synchro's *Highway Capacity Manual* procedures for signalized intersections.

The LOS of each of the options is discussed in **Sections 3.5** through **3.9** of this report. These sections describe each option analyzed and are summarized below:

- 3.5. No Build
- 3.6. Improve the SR-46 at I-40 Interchange
- 3.7. Bypass from US-70 to SR-46
- 3.8. Bypass from US-70 to I-40
- 3.9. Bypass from US-70 to both SR-46 and I-40

A summary of the LOS calculations for all options is provided in **Exhibits 3.2 through 3.6**. The LOS calculations are located in **Appendix A-6 Level of Service Calculations**.

As noted previously, LOS is a quality measure describing operational conditions within a traffic stream, and represents the driver's perception of those conditions. Quantitative measures, such as congestion reduction and decreases in travel times are often better representatives for transportation improvement comparisons.

Congestion Reduction

For the options that include constructing a bypass, the traffic along US-70 and SR-46 through Dickson is reduced due to vehicles utilizing the bypass. Depending on the bypass route chosen, traffic is calculated to be reduced between 12% and 17% in Dickson's urban core. The congestion reduction benefits of each of the options are discussed in **Sections 3.5** through **3.9** of this report. A summary of the traffic reduction calculations for all options is provided in **Exhibit 3.7.**

Travel Time

For the options that include constructing a bypass, the travel times between US-70, SR-46, and I-40 are reduced. The travel time reduction of each of the route options is discussed in **Sections 3.5** through **3.9** of this report. The travel speeds utilized in this report are calculated in the *Urban Streets* analysis. A summary of the travel time reduction calculations for all options is provided in **Exhibit 3.8.**

3.4 Cost Estimate Discussion

Cost estimates are provided for all options analyzed. For the three options that include constructing a bypass, the alignment corridor is divided into three sections. Each of the three section's cost is given both per-mile and total cost per section. The costs are given per-mile due to the preliminary nature of the route corridor. If the route of any of the sections is altered, a new cost can easily be determined based upon the per-mile value. The cost per-mile varies within the three sections because the topography (earthwork), stream crossings (drainage), and estimated number of signalized intersections varies by section.

The costs are summarized in the **Summary Data Tables** and **Itemized Cost Estimates** provided in this report. The cost of each of the options is discussed in **Sections 3.5** through **3.9** of this report. The costs are also presented in schematic form in **Exhibit 3.9**. The cost estimate calculations are located in the appendix as follows:

Appendix A-1 Construction Item Cost Estimate Calculations
Appendix A-2 Mainline Paving Cost Estimate (Cost per S.F.)
Appendix A-3 Utility Cost Estimate Calculations
Appendix A-4 Earthwork Calculations
Appendix A-5 Right-Of-Way Cost Estimate Calculations

3.5 No Build

The "No Build" option provides no improvements and serves as a baseline option against which all other options are compared.

For the "No Build" option, the *Urban Streets* Planning Analysis calculates LOS of "C" or better for US-70 and SR-46 through the year 2031. US-70 and SR-46 are the primary routes between the west and south of Dickson. The SR-46 at I-40 Interchange is calculated to fail operationally in the year 2023. A summary of the LOS calculations for the "No Build" option is provided in a schematic in **Exhibit 3.2**.

One of the goals of a bypass is to relieve traffic congestion in Dickson's urban core. US-70 and SR-46 in the downtown area have considerable development with many adjacent land uses including restaurants, businesses, and stores.

The travel speeds along US-70 and SR-46 are calculated by the *Urban Streets* Planning Analysis to be as low as 23 mph through Dickson's urban core. The segment with the lowest calculated speeds is the 3.5-mile, seven traffic signal, segment of US-70 and SR-46 in the center of the city. The time to travel from US-70 west of the city of Dickson to SR-46 south of the city is estimated to take approximately 13 minutes. The time to travel from US-70 west of the city to I-40 is estimated to take approximately 18 minutes. A chart summarizing the travel speeds and calculated travel times of the roadway segments is presented in **Exhibit 3.8**.

Further reducing speeds along SR-46 and US-70 is the presence of two school zones. Therefore, the actual travel speeds and travel times through Dickson are likely less than what is reported in this text. There are currently limited route options between the south and west of Dickson to avoid the low operating speed within Dickson's urban core.

3.6 Improve the SR-46 at I-40 Interchange

This option improves the existing SR-46 at I-40 Interchange. This option could be constructed in conjunction with any other option. A schematic of the studied improvements at this interchange is provided in **Exhibit 3.10**. Improvements studied include:

- Add an auxiliary lane along SR-46 northbound for the right turning traffic from the I-40 westbound exit ramp. This will enable the right turning traffic to free-flow from the interchange north along SR-46. The lane should be carried through the Gum Branch Road (CR-1843) intersection located approximately 600' north of the interchange, adding an extra lane of capacity through this signalized intersection. The lane could be dropped as a right turn only lane at Robin Hood Road approximately 1/2 of a mile north of the interchange. This lane should be 12' wide with a 4' (minimum) shoulder to accommodate bicycles. The auxiliary lane should be an urban design with curb and gutter to reduce the R.O.W. needed along this developed section of SR-46. The existing 12' shoulder has curb and gutter along this section of SR-46.

- The existing left turn movement from the I-40 westbound exit ramp to SR-46 southbound is one lane. This left turn movement should have two lanes to meet future traffic demands.
- The existing left turn movement from SR-46 southbound to the I-40 eastbound entrance ramp is one lane. This left turn movement should have two lanes to meet future traffic demands. SR-46 is on a structure over I-40. This structure is wide enough to add the extra left turn lane without increasing the width of the bridge. The I-40 eastbound entrance ramp is wide enough to accept the double left turn movement. The SR-46 northbound to the I-40 eastbound entrance ramp movement is currently free-flow. This movement will have to yield to the left turning traffic from SR-46 southbound with this improvement.
- The three traffic signals along SR-46 at the I-40 eastbound ramps, I-40 westbound ramps, and CR-1843 will have to be modified to accommodate the lane improvements. Signing and striping will have to be modified accordingly, also.

For this option, the *Urban Streets* Planning Analysis calculates LOS of "C" or better for US-70 and SR-46 through the year 2031. US-70 and SR-46 are the primary routes between the west and south of Dickson. With the improvements recommended in this report, the SR-46 at I-40 Interchange is calculated to operate at a LOS of "D" or better through the year 2031. Without the improvements, the interchange is calculated to fail operationally in the year 2023. A summary of the LOS calculations for this option are provided in a schematic in **Exhibit 3.3**.

One of the goals of a bypass is to relieve traffic congestion in Dickson's urban core. US-70 and SR-46 in the downtown area have considerable development with many adjacent land uses including restaurants, businesses, and stores. This option will not reduce congestion in Dickson's urban core.

The travel speeds along US-70 and SR-46 are calculated by the *Urban Streets* Planning Analysis to be as low as 23 mph through Dickson's urban core. The time to travel from US-70 west of the city of Dickson to SR-46 south of the city is estimated to take approximately 13 minutes. The time to travel from US-70 west of the city to I-40 is estimated to take approximately 18 minutes. This option will not decrease travel times around Dickson. A chart summarizing the travel speeds and calculated travel times of the roadway segments is presented in **Exhibit 3.8**.

This option is estimated to cost $2.0 million. The costs of improvements are presented in **Exhibit 3.9**.

3.7 Bypass from US-70 to SR-46

This option constructs a two lane bypass between US-70 to the northwest and SR-46 to the southeast. The connection to US-70 is anticipated to occur near Pond Switch Road. The connection to SR-46 is anticipated to occur between the city of Dickson and I-40.

For this option, the *Urban Streets* Planning Analysis calculates LOS of "C" or better for US-70 and SR-46 through the year 2031. US-70 and SR-46 are the primary existing routes between the west and south of Dickson. Construction of a bypass from US-70 to SR-46 is expected to require the addition of new traffic signals along these routes where the bypass connects at the northern and southern termini. The bypass will reduce the traffic volumes along these routes. The net effect of the traffic reduction and added signals is a negligible difference in the calculated LOS along these existing routes with construction of the bypass.

This bypass option will operate at a LOS of "A" through the year 2031. Therefore, the bypass will provide better LOS between the north and south of Dickson than existing routes.

The SR-46 at I-40 Interchange is calculated to fail operationally in the year 2023. This option does not provide improved or additional access between the city of Dickson and I-40. A summary of the LOS calculations for this option is provided in a schematic in **Exhibit 3.4**.

One of the goals of a bypass is to relieve traffic congestion in Dickson's urban core. US-70 and SR-46 in the downtown area have considerable development with many adjacent land uses including restaurants, businesses, and stores. This option will reduce traffic volumes in Dickson's urban core by 16%. A summary of the traffic reduction calculations is provided in **Exhibit 3.7.**

The existing travel speeds along US-70 and SR-46 are calculated by the *Urban Streets* Planning Analysis to be as low as 23 mph through Dickson's urban core. The existing time to travel from US-70 west of the city of Dickson to SR-46 south of the city along SR-46 and US-70 is estimated to take approximately 13 minutes. With a bypass from US-70 to SR-46, this time is estimated to be reduced to 10.5 minutes. This is equivalent to a 21% reduction in travel time. The existing time to travel from US-70 west of the city to I-40 along US-70 and SR-46 is estimated to take approximately 18 minutes. With a bypass from US-70 to SR-46, this time is estimated to be reduced to 15 minutes. This is equivalent to a 16% reduction in travel time. A chart summarizing the travel speeds and calculated travel times of the roadway segments is presented in **Exhibit 3.8**.

This option is estimated to cost between $23.9 and $26.8 million. The lower value corresponds with purchasing the right-of-way (R.O.W.) necessary for a two-lane bypass. The higher value corresponds to purchasing enough R.O.W. for future expansion to a four-lane bypass. Because of the uncertain nature of future development along a new route and the relatively undeveloped existing condition of the land in the vicinity of this option, it is recommended to purchase the additional R.O.W. The costs of improvements are presented in **Exhibit 3.9**.

3.8 Bypass from US-70 to I-40

This option constructs a two-lane bypass between US-70 to the northwest and I-40 to the south. The connection to US-70 is anticipated to occur near Pond Switch Road. The connection to I-40 is anticipated to occur between Piney Road and the rest area along I-40.

For this option, the *Urban Streets* Planning Analysis calculates LOS of "C" or better for US-70 and SR-46 through the year 2031. US-70 and SR-46 are the primary existing routes between the west and south of Dickson. Construction of a Bypass from US-70 to I-40 is expected to require the addition of a new traffic signal along US-70 where the bypass connects at the northern termini. The bypass will reduce the traffic volumes along US-70 and SR-46. The net effect of the traffic reduction and added signal is a negligible difference in the calculated LOS along these existing routes with construction of the bypass.

This bypass option will operate at a LOS of "A" through the year 2031. Therefore, the bypass will provide better LOS between US-70 and I-40 than existing routes.

The SR-46 at I-40 Interchange is calculated to fail operationally in the year 2023. This option provides additional access between the city of Dickson and I-40. Therefore, the traffic demand at the SR-46 at I-40 Interchange should be reduced, prolonging its design life. The traffic volumes projected at the new interchange between the bypass and I-40 are not anticipated to create capacity issues. A summary of the LOS calculations for this option is provided in a schematic in **Exhibit 3.5**.

One of the goals of a bypass is to relieve traffic congestion in Dickson's urban core. US-70 and SR-46 in the downtown area have considerable development with many adjacent land uses including restaurants, businesses, and stores. This option will reduce traffic volumes in Dickson's urban core by 12%. A summary of the traffic reduction calculations is provided in **Exhibit 3.7.**

The existing travel speeds along US-70 and SR-46 are calculated by the *Urban Streets* Planning Analysis to be as low as 23 mph through Dickson's urban core. The existing time to travel from US-70 west of the city to I-40 along US-70 and SR-46 is estimated to take approximately 18 minutes. With a bypass from US-70 to I-40, this time is estimated to be reduced to 10 minutes. This is equivalent to a 42% reduction in travel time. A chart summarizing the travel speeds and calculated travel times of the roadway segments is presented in **Exhibit 3.8**.

This option is estimated to cost between $32.6 and $35.3 million. The lower value corresponds with purchasing the right-of-way (R.O.W.) necessary for a two-lane bypass. The higher value corresponds to purchasing enough R.O.W. for future expansion to a four-lane bypass. Because of the uncertain nature of future development along a new route and the relatively undeveloped existing condition of the land in the vicinity of this option, it is recommended to purchase the additional R.O.W. The costs of improvements are presented in **Exhibit 3.9**.

3.9 Bypass from US-70 to both SR-46 and I-40

This option constructs a two-lane bypass between US-70 to the northwest and both SR-46 to the southeast and I-40 to the south. The connection to US-70 is anticipated to occur near Pond Switch Road. The connection to SR-46 is anticipated to occur between the city of Dickson and I-40. The connection to I-40 is anticipated to occur between Piney Road and the rest area along I-40.

For this option, the *Urban Streets* Planning Analysis calculates LOS of "C" or better for US-70 and SR-46 through the year 2031. US-70 and SR-46 are the primary existing routes between the west and south of Dickson. Construction of a Bypass from US-70 to SR-46 is expected to require the addition of new traffic signals along these routes where the bypass connects at the northern and southern termini. The bypass will reduce the traffic volumes along these routes. The net effect of the traffic reduction and added signals is a negligible difference in the calculated LOS along these existing routes with construction of the bypass.

This bypass option will operate at a LOS of "B" or better through the year 2031. Therefore, the bypass will provide better LOS between the north and south of Dickson than existing routes.

The SR-46 at I-40 Interchange is calculated to fail operationally in the year 2023. This option provides additional access between the city of Dickson and I-40. Therefore, the traffic demand at the SR-46 at I-40 Interchange should be reduced, prolonging its design life. The traffic volumes projected at the new interchange between the bypass and I-40 are not anticipated to create capacity issues. A summary of the LOS calculations for this option is provided in a schematic in **Exhibit 3.6**.

One of the goals of a bypass is to relieve traffic congestion in Dickson's urban core. US-70 and SR-46 in the downtown area have considerable development with many adjacent land uses including restaurants, businesses, and stores. This option will reduce traffic volumes in Dickson's urban core by 17%. A summary of the traffic reduction calculations is provided in **Exhibit 3.7.**

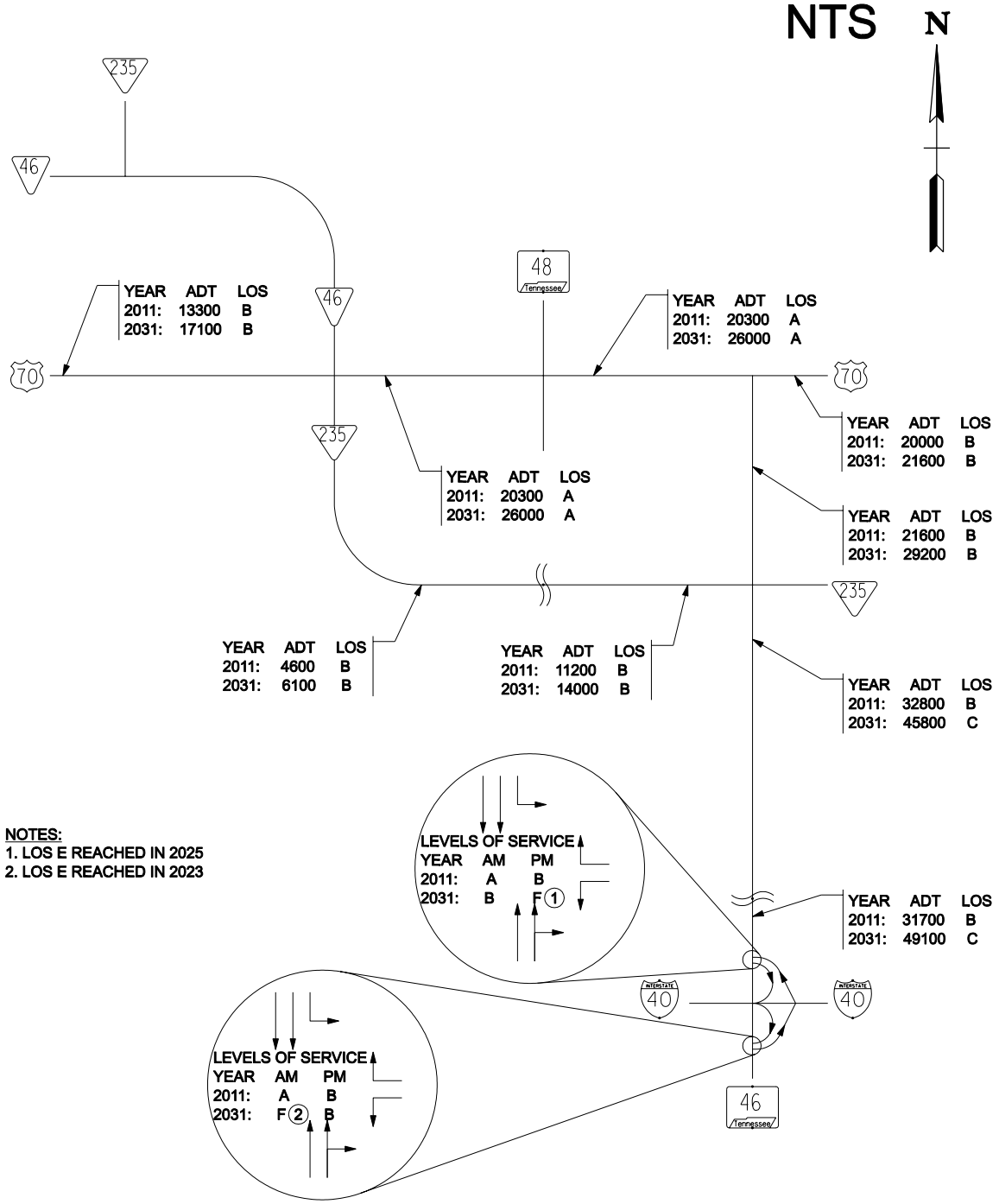
The existing travel speeds along US-70 and SR-46 are calculated by the *Urban Streets* Planning Analysis to be as low as 23 mph through Dickson's urban core. The existing time to travel from US-70 west of the city of Dickson to SR-46 south of the city along SR-46 and US-70 is estimated to take approximately 13 minutes. With a bypass from US-70 to SR-46, this time is estimated to be reduced to 10.5 minutes. This is equivalent to a 21% reduction in travel time. The existing time to travel from US-70 west of the city to I-40 along US-70 and SR-46 is estimated to take approximately 18 minutes. With this bypass option, the time is estimated to be reduced to 10 minutes. This is equivalent to a 42% reduction in travel time. A chart summarizing the travel speeds and calculated travel times of the roadway segments is presented in **Exhibit 3.8**.

This option is estimated to cost between $41.6 and $45.3 million. The lower value corresponds with purchasing the right-of-way (R.O.W.) necessary for a two-lane bypass. The higher value corresponds to purchasing enough R.O.W. for future expansion to a four-lane bypass. Because of the uncertain nature of future development along a new route and the relatively undeveloped existing condition of the land in the vicinity of this option, it is recommended to purchase the additional R.O.W. The costs of improvements are presented in **Exhibit 3.9**.

EXHIBIT 3.2

DICKSON COUNTY

TRANSPORTATION PLANNING REPORT
TO STUDY SOUTHWESTERN BYPASS



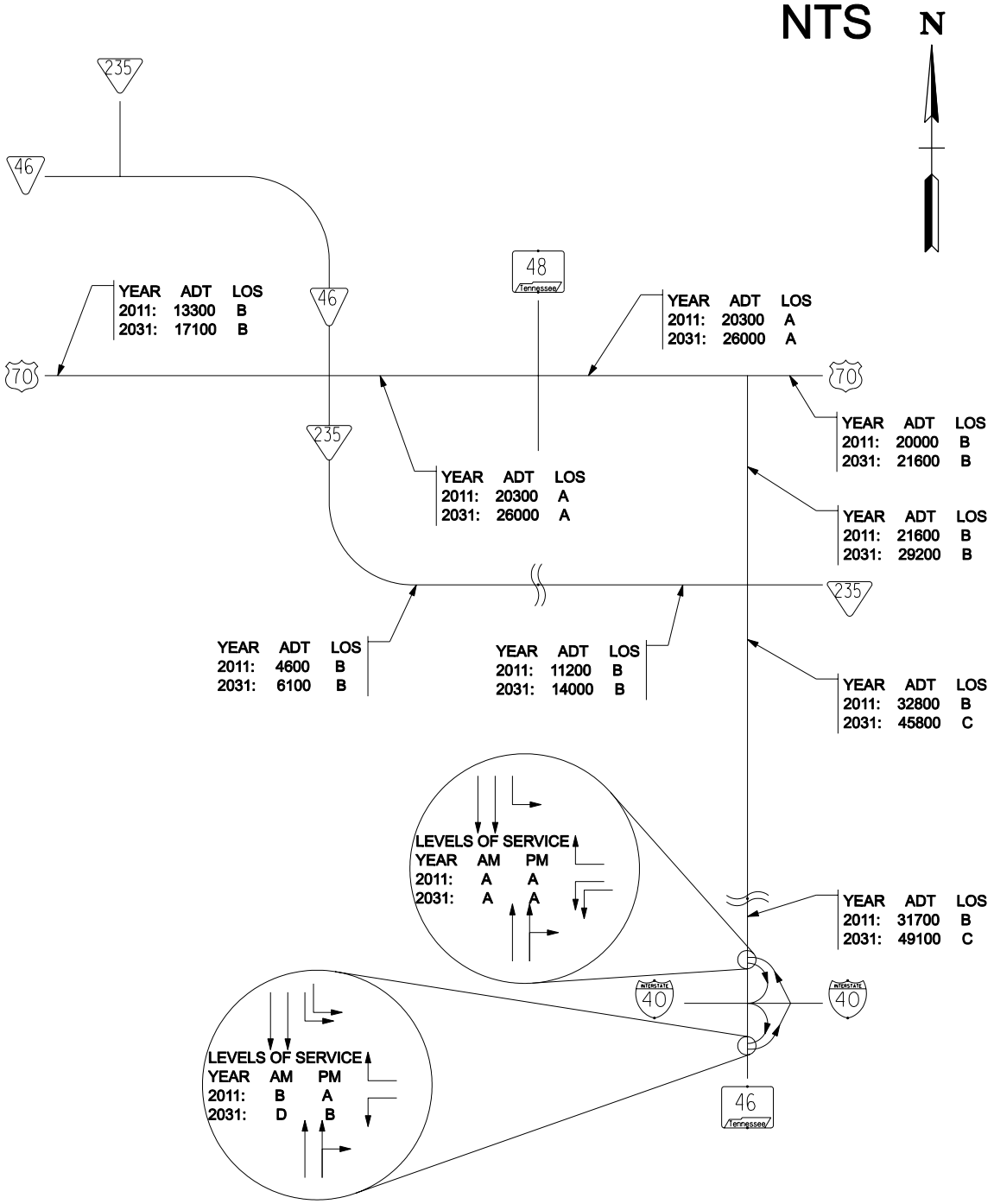
LEVEL OF SERVICE DIAGRAM

NO BUILD OPTION

EXHIBIT 3.3

DICKSON COUNTY

TRANSPORTATION PLANNING REPORT
TO STUDY SOUTHWESTERN BYPASS

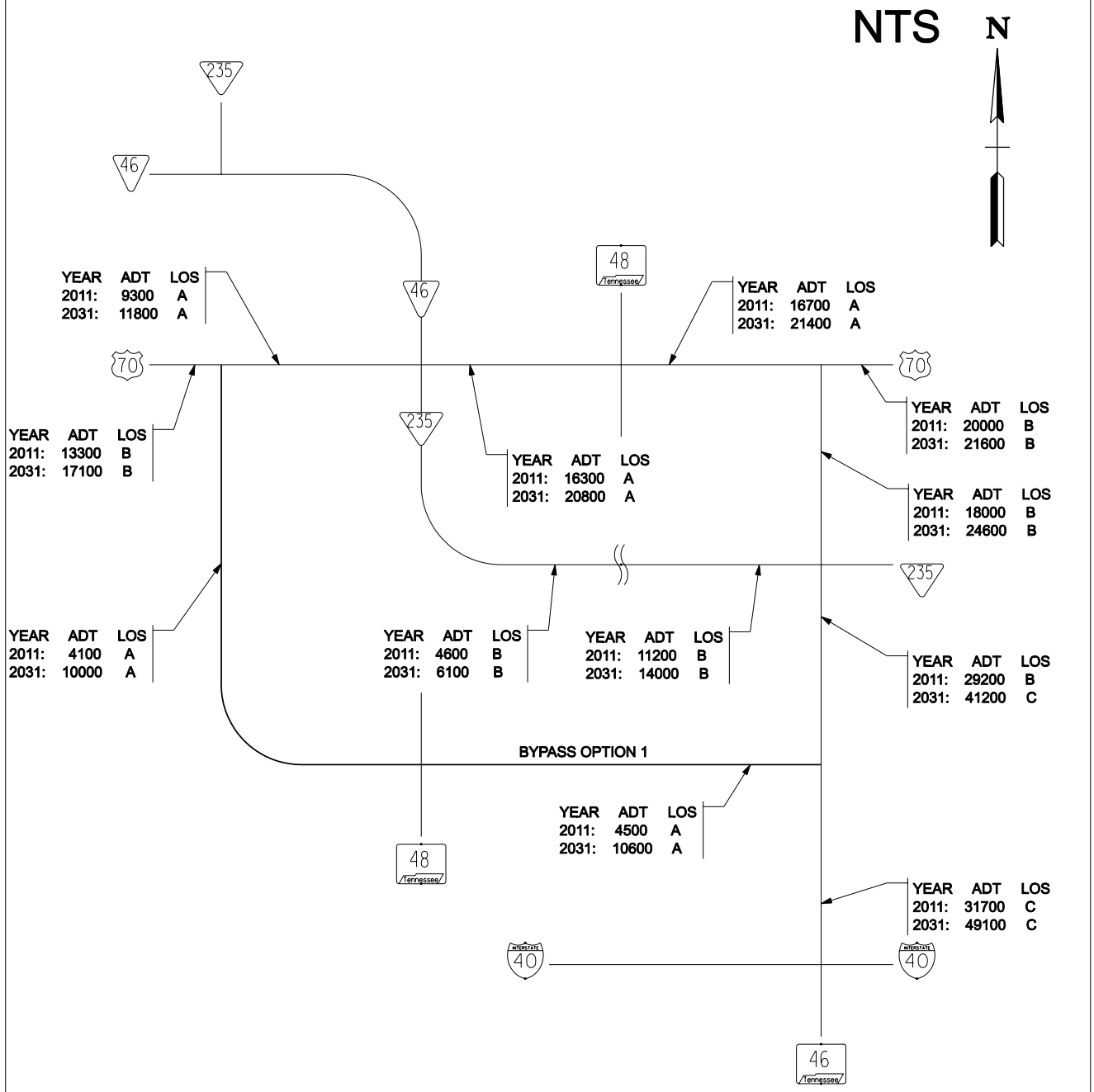


LEVEL OF SERVICE DIAGRAM	IMPROVE THE SR-46 AT I-40 INTERCHANGE

EXHIBIT 3.4

DICKSON COUNTY

TRANSPORTATION PLANNING REPORT
TO STUDY SOUTHWESTERN BYPASS



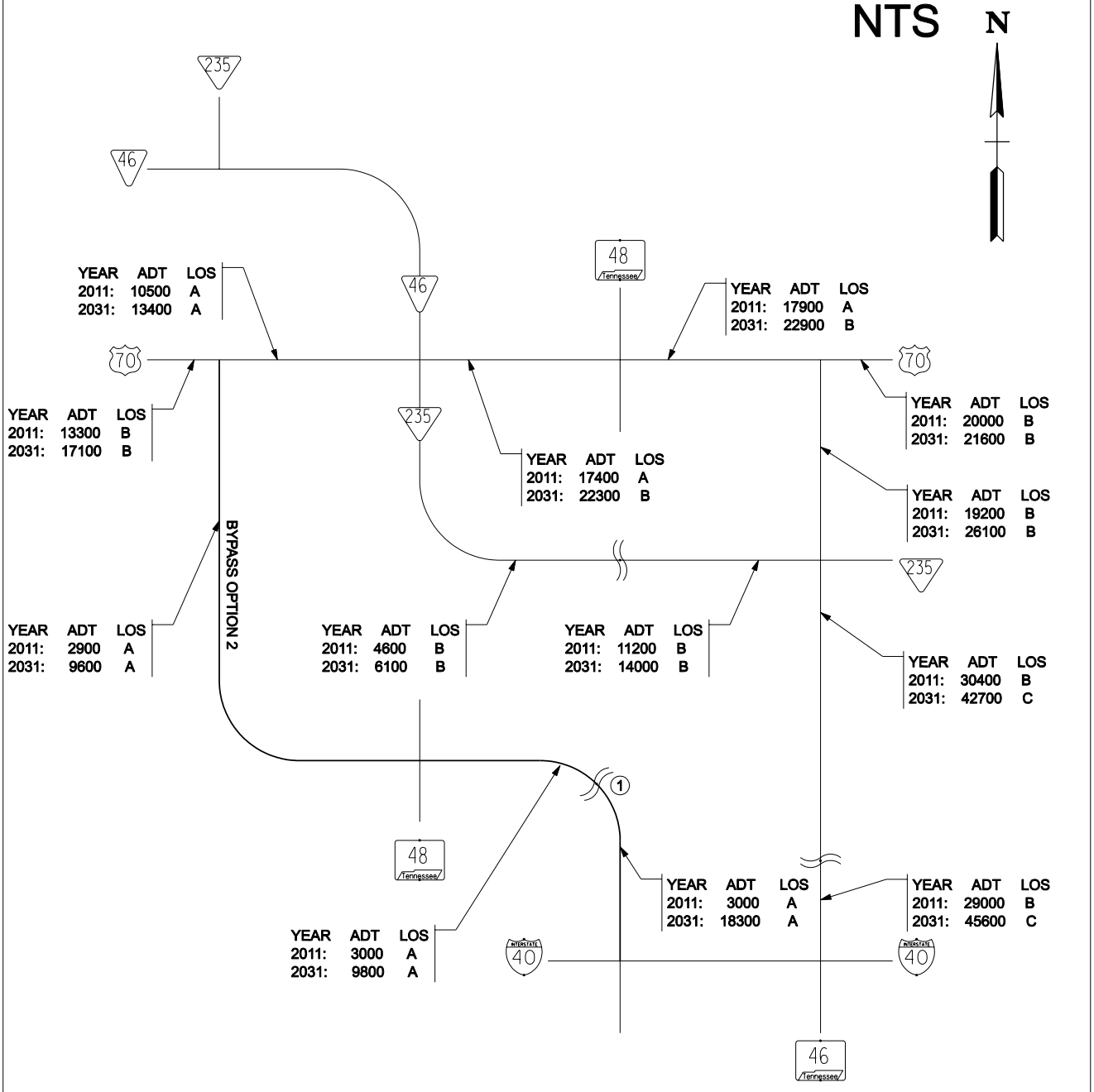
LEVEL OF SERVICE DIAGRAM

ROUTE OPTION 1
US-70 TO SR-46

EXHIBIT 3.5

DICKSON COUNTY

TRANSPORTATION PLANNING REPORT
TO STUDY SOUTHWESTERN BYPASS



(1) ESTIMATED LIMIT OF INTERCHANGE GENERATED TRAFFIC

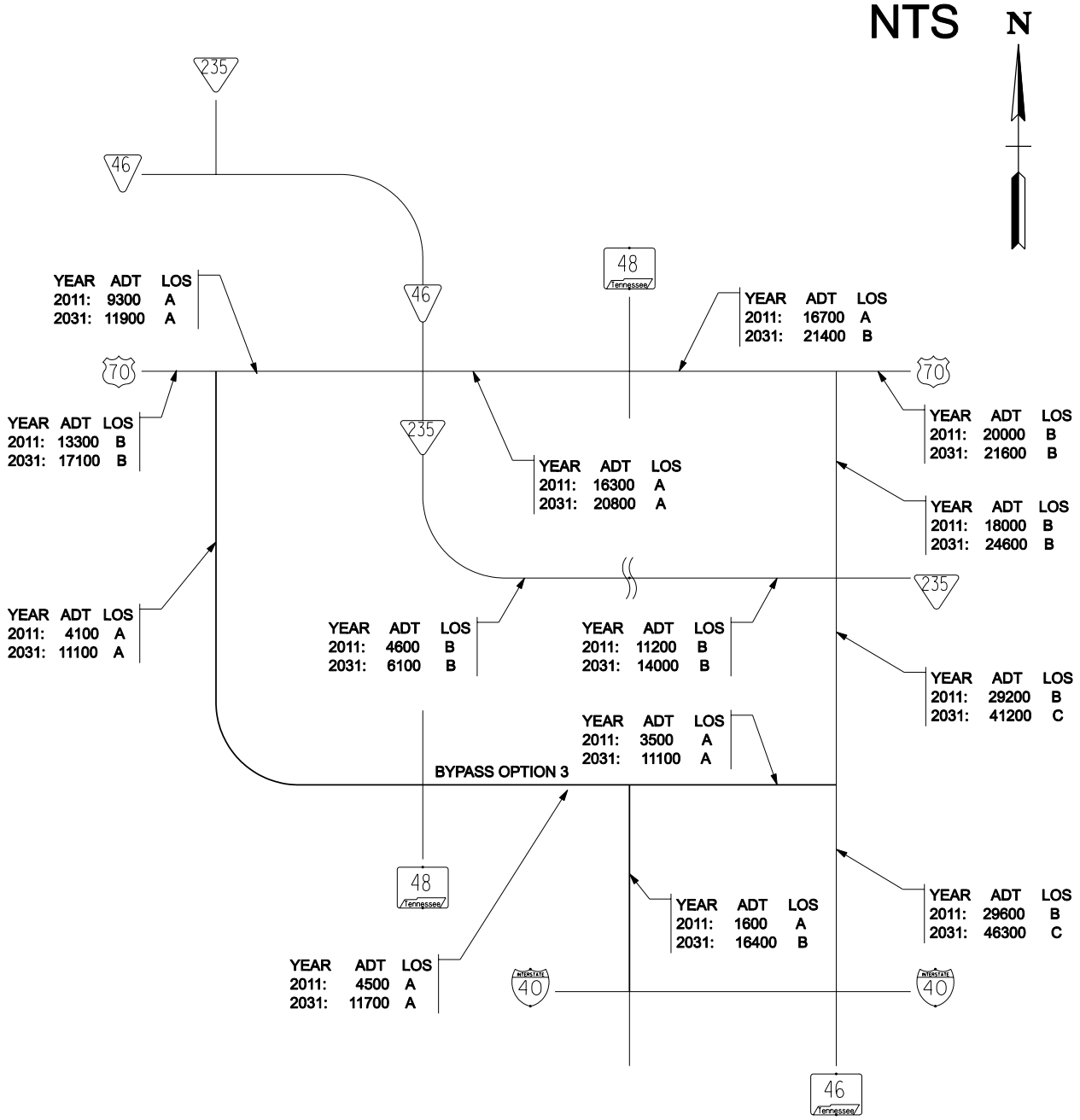
LEVEL OF SERVICE DIAGRAM

ROUTE OPTION 2
US-70 TO I-40

EXHIBIT 3.6

DICKSON COUNTY

TRANSPORTATION PLANNING REPORT
TO STUDY SOUTHWESTERN BYPASS



LEVEL OF SERVICE DIAGRAM

ROUTE OPTION 3
US-70 TO SR-46 AND I-40

Dickson Bypass Congestion Reduction Summary

Exhibit 3.7 Traffic Reduction in the Urban Core per Route Option

Location			2011 Traffic Volume (ADT)						
	From	To	No Build Option	Route Option 1	% Reduction	Route Option 2	% Reduction	Route Option 3	% Reduction
US-70	Bypass	SR-235	13,300	9,300	30%	10,500	21%	9,300	30%
	SR-235	SR-48	20,300	16,300	20%	17,400	14%	16,300	20%
	SR-48	SR-46	20,300	16,700	18%	17,900	12%	16,700	18%
SR-46	US-70	SR-235	21,600	18,000	17%	19,200	11%	18,000	17%
	SR-235	Bypass	32,800	29,200	11%	30,400	7%	29,200	11%
	Bypass	I-40	31,700	31,700	0%	29,000	9%	29,600	7%
Weighted Average:					**16%**		**12%**		**17%**

Location			2031 Traffic Volume (ADT)						
	From	To	No Build Option	Route Option 1	% Reduction	Route Option 2	% Reduction	Route Option 3	% Reduction
US-70	Bypass	SR-235	17,100	11,800	31%	13,400	22%	11,900	30%
	SR-235	SR-48	26,000	20,800	20%	22,300	14%	20,800	20%
	SR-48	SR-46	26,000	21,400	18%	22,900	12%	21,400	18%
SR-46	US-70	SR-235	29,200	24,600	16%	26,100	11%	24,600	16%
	SR-235	Bypass	45,800	41,200	10%	42,700	7%	41,200	10%
	Bypass	I-40	49,100	49,100	0%	45,600	7%	46,300	6%
Weighted Average:					**16%**		**12%**		**17%**

Dickson Bypass Travel Time Summary

Exhibit 3.8 HCS+ Arterials Analysis - Calculated Travel Speed

Year: 2011

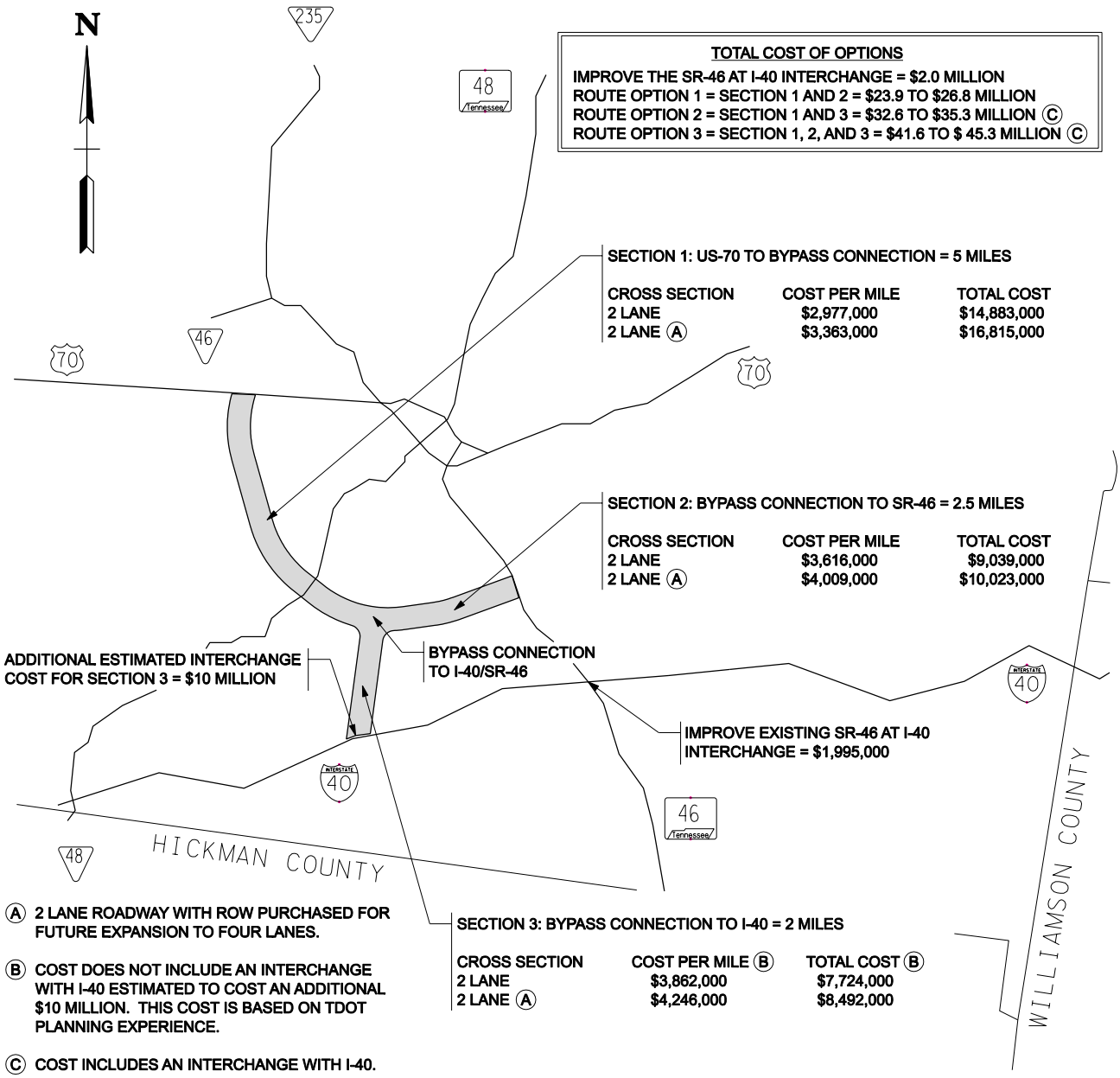
Roadway Name	Roadway Segment		Length	Free Flow Speed	No Build			Option 1			Option 2			Option 3		
	From	To	(Miles)	(MPH)	Calc. Travel Speed (MPH)	Segment Travel Time (Minutes)	Total Route Time (Minutes)	Calc. Travel Speed (MPH)	Segment Travel Time (Minutes)	Total Route Time (Minutes)	Calc. Travel Speed (MPH)	Segment Travel Time (Minutes)	Total Route Time (Minutes)	Calc. Travel Speed (MPH)	Segment Travel Time (Minutes)	Total Route Time (Minutes)
Bypass	US-70	SR-48	3.5	45	n/a		n/a	40	5.25	10.50	40	5.25	10.20	40	5.25	10.50
	SR-48	SR-46	3.5		n/a			40	5.25		n/a			40	5.25	or
	SR-48	I-40	3.3		n/a			n/a			40	4.95		40	4.95	10.20
US-70	Bypass	SR-235	2.5	45	38.8	3.87	6.97	37.8	3.97	7.15	37.7	3.98	7.16	37.8	3.97	7.15
	SR-235	SR-48	1.1	35	30.9	2.14		30.2	2.19		30.2	2.19		30.2	2.19	
	SR-48	SR-46	0.5		30.9	0.97		30.2	0.99		30.2	0.99		30.2	0.99	
SR-46	US-70	SR-235	0.5	35	26.3	1.14	10.66	25.7	1.17	10.82	26.5	1.13	10.07	25.7	1.17	10.79
	SR-235	Bypass	2.5	45	29.2	5.14		28.1	5.34		30.7	4.89		28.1	5.34	
	Bypass	I-40	2		27.4	4.38		27.8	4.32		29.6	4.05		28	4.29	
Travel Time from US-70 to I-40							17.63			14.82			10.20			10.20
Percent Time Saving from "No Build"							0%			16%			42%			42%
Travel Time from US-70 to SR-46							13.25			10.50			n/a			10.50
Percent Time Saving from "No Build"							0%			21%			n/a			21%

Year: 2031

Roadway Name	Roadway Segment		Length	Free Flow Speed	No Build			Option 1			Option 2			Option 3		
	From	To	(Miles)	(MPH)	Calc. Travel Speed (MPH)	Segment Travel Time (Minutes)	Total Route Time (Minutes)	Calc. Travel Speed (MPH)	Segment Travel Time (Minutes)	Total Route Time (Minutes)	Calc. Travel Speed (MPH)	Segment Travel Time (Minutes)	Total Route Time (Minutes)	Calc. Travel Speed (MPH)	Segment Travel Time (Minutes)	Total Route Time (Minutes)
Bypass	US-70	SR-48	3.5	45	n/a		n/a	40	5.25	10.50	40	5.25	10.20	40	5.25	10.50
	SR-48	SR-46	3.5		n/a			40	5.25		n/a			40	5.25	or
	SR-48	I-40	3.3		n/a			n/a			40	4.95		40	4.95	10.20
US-70	Bypass	SR-235	2.5	45	38.5	3.90	7.02	37.2	4.03	7.23	37.5	4.00	7.21	37.6	3.99	7.19
	SR-235	SR-48	1.1	35	30.7	2.15		30	2.20		29.9	2.21		30	2.20	
	SR-48	SR-46	0.5		30.9	0.97		30	1.00		29.9	1.00		30	1.00	
SR-46	US-70	SR-235	0.5	35	25.7	1.17	11.14	25.2	1.19	11.63	24.1	1.24	11.00	25.2	1.19	11.52
	SR-235	Bypass	2.5	45	27.4	5.47		26.5	5.66		27.9	5.38		26.5	5.66	
	Bypass	I-40	2		26.7	4.49		25.1	4.78		27.4	4.38		25.7	4.67	
Travel Time from US-70 to I-40							18.15			15.28			10.20			10.20
Percent Time Saving from "No Build"							0%			16%			44%			44%
Travel Time from US-70 to SR-46							13.66			10.50			n/a			10.50
Percent Time Saving from "No Build"							0%			23%			n/a			23%

EXHIBIT 3.9

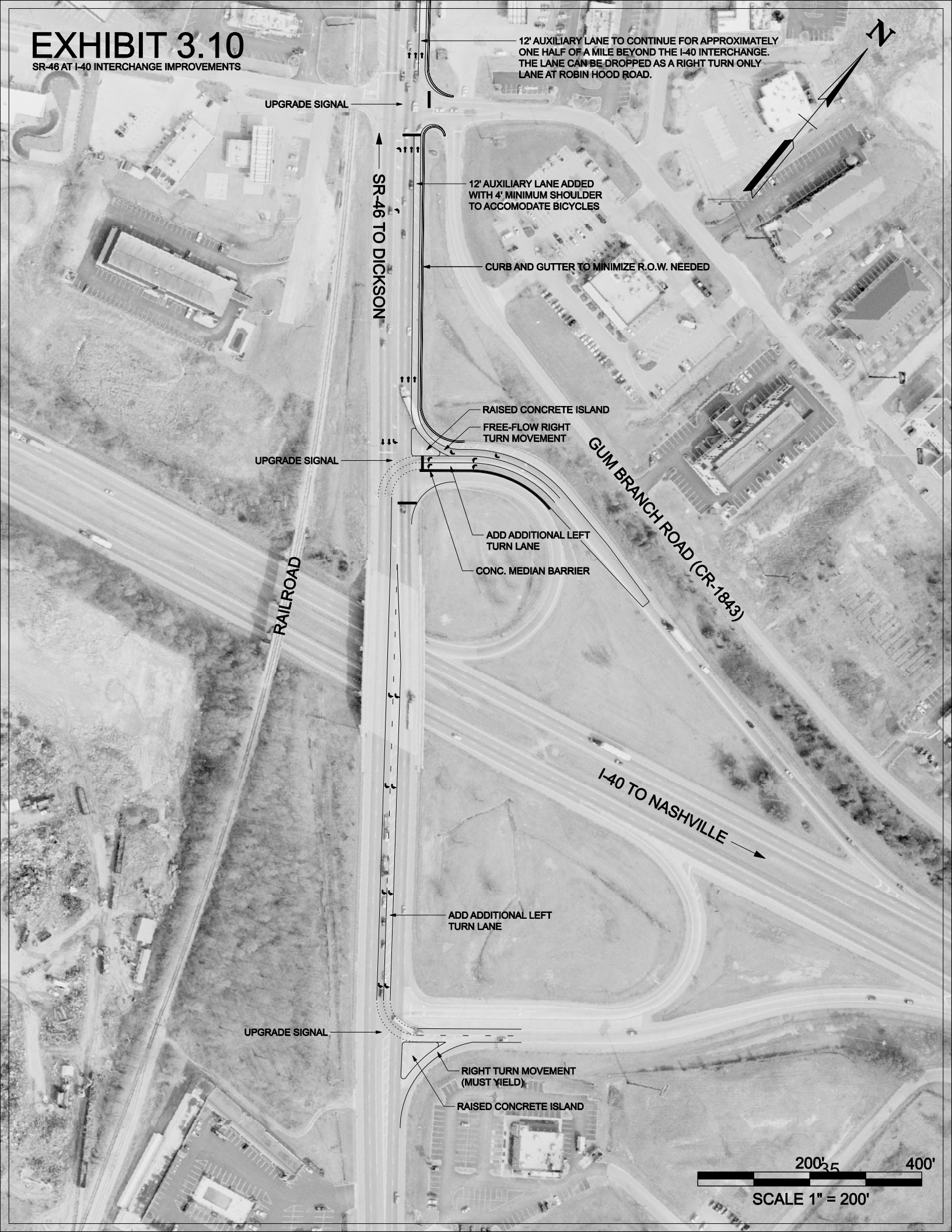
DICKSON COUNTY
TRANSPORTATION PLANNING REPORT
TO STUDY SOUTHWESTERN BYPASS



PROPOSED BYPASS COST DATA

EXHIBIT 3.10

SR-46 AT I-40 INTERCHANGE IMPROVEMENTS



4.0 Assessment of Options

4.1 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 in this report.

Guiding Principle 1: Preserve and Manage the Existing Transportation System

The existing interchange at SR-46 and I-40 is calculated to fail in the year 2023. Either improvements to this interchange or additional access to I-40 from Dickson will need to be addressed. If a bypass is constructed, traffic is estimated to be reduced by as much as 17% in the city of Dickson's urban core. By diverting traffic from US-70 and SR-46, the bypass options have an indirect positive influence on peak traffic density and flow rate on these existing primary routes. Therefore, the bypass options indirectly help to preserve the existing transportation system.

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

The options discussed in this report will provide the capacity needed to address Dickson County's travel demands. With the options studied, the travel time to reach I-40 from US-70 west of the city of Dickson are estimated to be reduced by up to 42%. Twenty-six percent of Dickson County's population commutes to Nashville. I-40 is the primary route between Dickson and Nashville. Dickson County's population grew by over 23% between 1990 and 2000. Improved access to I-40 is beneficial to Dickson County's labor force.

One of the goals of a bypass is to relieve traffic congestion in Dickson's urban core. US-70 and SR-46 in the downtown area have considerable development and low travel speeds. With the options studied, congestion in Dickson's urban core will be reduced by up to 17%.

Guiding Principle 3: Support the State's Economy

The 225-acre Dickson County Industrial Park is a major employer in Dickson County. The park is located southeast of the city of Dickson between US-70 to the north and SR-46 to the west. The industrial park accesses I-40 via SR-46. The industrial park is located four miles north of I-40. The existing interchange at SR-46 and I-40 is calculated to fail in the year 2023. Either improvements to this interchange or additional access to I-40 from Dickson will be needed. Access to the park from areas west of Dickson will be improved if a bypass option is chosen that connects US-70 west of the city to SR-46.

County officials and The Tennessee Department of Economic and Community Development (ECD) outline potential for a new industrial park to be developed if a new interchange between a bypass and I-40 is constructed. The new industrial park is discussed in the ECD report titled *Land Use Projection/ Plan for Dickson, Tennessee Southern Highway Bypass*. The ECD does not anticipate the development of a new industrial park if a new interchange is not constructed. Construction of a new interchange will likely decrease traffic volumes at the SR-46 at I-40 Interchange. This may harm existing businesses located adjacent to the SR-46 at I-40 Interchange.

Construction of a bypass will improve development opportunities to the sparsely developed land west and south of the city. However, a bypass is calculated to reduce traffic volumes by up to 17% in Dickson's urban core. This may have an adverse effect on existing businesses located downtown.

Guiding Principle 4: Maximize Safety and Security

All options considered would meet or exceed current design standards and provide for safe operations. If a bypass is constructed, traffic is estimated to be reduced by as much as 17% along existing routes in the city of Dickson's urban core. Two school zones are located along these routes. A reduction in traffic could potentially improve safety in the school zones. Furthermore, a bypass will reduce travel times between the west and south of the city. This will likely benefit fire and police response times.

Guiding Principle 5: Build Partnerships for Livable Communities

Throughout the development of this Transportation Planning Report, TDOT staff has coordinated with local leaders and the Tennessee Department of Economic and Community Development (ECD) to identify their concerns and objectives. Many of these meetings are discussed in **Section 1.1 Project History** of this report. The public involvement process will continue as mandated by the provisions of the National Environmental Policy Act (NEPA).

Guiding Principle 6: Promote Stewardship of the Environment

Several areas within the study area should be avoided, if possible. These areas include cemeteries, churches, a possibly historic African American School, and the Dickson County Landfill. The areas are noted in the **Conceptual Plans** and listed below.

Name	Street	Note
England Cemetery	Adcock Rd.	Located in Section 1
First Assembly of God Church	US-70 at Wildcat Rd.	Located in Section 1
Worley Furnace Baptist Church	Worley Furnace Road at Eno Road	Located in Section 1: Potentially Historic African American Church
Adcox Cemetery	Harrell Cemetery Road at Eno Road	Located in Section 1: Potentially Historic African American Cemetery
Coaling School	Eno Road	Located in Section 1: Potentially Historic segregation era African American school
Dickson County Landfill	Virgil Bellar Road near Eno and Furnace Hollow Roads	Located in Section 1
Clifton Cemetery	Clifton Cemetery Road	Located in Section 2
Weems Cemetery	Piney Road at Baker Road	Located in Section 3

The study area contains several blue line streams. Depending on the route option chosen, it is estimated up to 17 stream crossings will be required. **Section 1** contains an estimated eight stream crossings. **Section 2** contains an estimated five crossings. **Section 3** contains an estimated four crossings. The exact number of stream crossings is not known with certainty due to the preliminary nature of the alignment corridor.

Please refer to **The Checklist of Determinants for Location Study** provided in this report for a listing of the potential environmentally sensitive locations present within the study area.

Guiding Principle 7: Promote Financial Responsibility

Preliminary construction cost estimates were prepared for each option considered. The estimated cost of options discussed in this report range from $0 to $45.3 million. How the options address the purpose, needs, and goals are discussed in **Section 5.0 Summary** of this report. The options and their associated costs (in millions) are listed below. The lower value corresponds with purchasing the R.O.W. necessary for a two-lane bypass. The higher value corresponds to purchasing enough R.O.W. for future expansion to a four-lane bypass. Because of the uncertain nature of future development along a new route and the relatively undeveloped existing condition of the land in the vicinity of the bypass options, it is recommended to purchase the additional R.O.W.

No Build	$0
Improve the SR-46 at I-40 Interchange	$2.0
Bypass from US-70 to SR-46	$23.9 to $26.8
Bypass from US-70 to I-40	$32.6 to $35.3
Bypass from US-70 to both SR-46 and I-40	$41.6 to $45.3

5.0 Summary

Criteria for choosing a route option should incorporate the purpose, needs, and goals listed in **Section 2.0 Purpose and Need** of this report. A discussion of each route option is discussed below and a chart is provided in **Exhibit 5.1** to display the adequacy of each option to meet the purpose, needs and goals of the project. The costs of each option are also summarized in **Exhibit 5.1**.

The "No Build" option does not address the purpose, needs, or goals discussed in this report. Future improvements to the existing I-40 at SR-46 Interchange are necessary for the "Bypass from US-70 to SR-46" option to address the purpose, needs, or goals. This interchange is calculated to fail in the year 2023.

5.1 No Build Option

- The No Build option will not increase mobility between the west and south of Dickson.
- The No Build option will not address the need for improved or additional access between the city of Dickson and I-40. The existing interchange at SR-46 and I-40 is calculated to fail in the year 2023.
- The No Build option will not aid Dickson's growth plan.
- The No Build option will not relieve traffic congestion in Dickson's urban core.
- The No Build option will not improve access to I-40 from areas west of Dickson.
- The No Build option will not increase accessibility to Dickson's airport.
- The No Build option will not increase accessibility to Dickson's industrial park. Trucks traveling from west of Dickson have to travel through Dickson's urban core to access the industrial park.
- No cost is associated with this option

5.2 Improve the SR-46 at I-40 Interchange

- This option will not increase mobility between the west and south of Dickson.
- This option will address the need for improved access between the city of Dickson and I-40. The existing interchange at SR-46 and I-40 is calculated to fail in the year 2023. The improvements recommended in this option will create acceptable LOS past the design year of 2031.
- This option will moderately aid Dickson's growth plan by improving access between SR-46 and I-40.
- This option will not relieve traffic congestion in Dickson's urban core.
- This option will not improve access to I-40 from areas west of Dickson.
- This option will not increase accessibility to Dickson's airport.
- This option will increase accessibility to Dickson's industrial park by improving access between SR-46 and I-40.
- This option is estimated to cost $2.0 million.

5.3 Bypass from US-70 to SR-46

- The US-70 to SR-46 option will increase mobility between the west and south of Dickson. Travel speeds along the bypass are calculated to be approximately 40 mph, including delays at likely signal locations. This is compared to calculated travel speeds of less than 25 mph along existing routes in Dickson. A bypass from US-70 to SR-46 will reduce travel times by approximately 20% from US-70 west of the city of Dickson to SR-46 south of Dickson.
- The US-70 to SR-46 option will not address the need for improved or additional access between the city of Dickson and I-40. The existing interchange at SR-46 and I-40 is calculated to fail in the year 2023. However, the SR-46 at I-40 Interchange could be improved, as discussed in this report, to maintain acceptable LOS past the design year of 2031.
- The US-70 to SR-46 option will aid Dickson's growth plan by enhancing the opportunity for additional development of Dickson's west side. Most development is currently located centrally and on Dickson's east side.
- The US-70 to SR-46 option is estimated to reduce traffic volumes along US-70 and SR-46 by 16%. Therefore, traffic congestion in the city of Dickson's urban core will be improved.
- The US-70 to SR-46 option will improve access to I-40 from areas west of Dickson. This route would decrease the travel time by 16% to the existing interchange located at SR-46. This interchange is calculated to fail in the year 2023. The SR-46 at I-40 Interchange could be improved as discussed in this report to maintain acceptable LOS through the year 2031, however.
- The US-70 to SR-46 option will marginally increase accessibility to Dickson's airport. If the route is eventually extended approximately 1.5 miles north from US-70 to SR-235, accessibility to Dickson's airport will be improved. An extension to the bypass route is not included in this study and is not currently under consideration.
- The US-70 to SR-46 option will increase accessibility to Dickson's industrial park from the west side of town. Trucks originating from west of town could reach the existing industrial park, located near SR-46, without traveling through Dickson's urban core. This will decrease both travel time and distance for the truck traffic while improving traffic operations in the city of Dickson.
- This option is estimated to cost between $23.9 and $26.8 million.

5.4 Bypass from US-70 to I-40

- The US-70 to I-40 option will increase mobility between the west and south of Dickson. Travel speeds along the bypass are calculated to be approximately 40 mph, including delays at likely signal locations. This is compared to calculated travel speeds of less than 25 mph along existing routes in Dickson. A bypass is calculated to reduce travel times by 42% from US-70 west of the city of Dickson to I-40 south of Dickson.
- The US-70 to I-40 option will provide additional access between the city of Dickson and I-40. The existing interchange at SR-46 and I-40 is calculated to fail in the year 2023. This option provides additional access between the city of Dickson and I-40. Therefore, the traffic demand at the SR-46 at I-40 Interchange should be reduced, prolonging its design life.

- The US-70 to I-40 option will aid Dickson's growth plan by enhancing the opportunity for additional development of Dickson's west side. Most development is currently located centrally and on Dickson's east side. Furthermore, county officials and The Tennessee Department of Economic and Community Development (ECD) outline potential for a new industrial park to be developed at the connection of the bypass to I-40. The new industrial park is discussed in the ECD report titled *Land Use Projection/ Plan for Dickson, Tennessee Southern Highway Bypass*.
- The US-70 to I-40 option is estimated to reduce traffic volumes along US-70 and SR-46 by 12%. Therefore, traffic congestion in the city of Dickson's urban core will be improved.
- The US-70 to I-40 option will improve access to I-40 from areas west of Dickson. This route is calculated to decrease the travel time by 42% and provide a new interchange with I-40.
- The US-70 to I-40 option will marginally increase accessibility to Dickson's airport. If the route is eventually extended approximately 1.5 miles north from US-70 to SR-235, accessibility to Dickson's airport will be improved. An extension to the bypass route is not included in this study and is not currently under consideration.
- The US-70 to I-40 option will not increase accessibility to Dickson's industrial park from the west side of town. This option does not connect to SR-46. Trucks traveling from west of Dickson will still have to travel through Dickson's urban core to access the industrial park.
- This option is estimated to cost between $32.6 and $35.3 million.

5.5 Bypass from US-70 to Both SR-46 and I-40

- The US-70 to both SR-46 and I-40 option will increase mobility between the west and south of Dickson. Travel speeds along the bypass are calculated to be approximately 40 mph, including delays at likely signal locations. This is compared to calculated travel speeds of less than 25 mph along existing routes in Dickson. A bypass from US-70 to both SR-46 and I-40 is calculated to reduce travel times by 16% from US-70 west of the city of Dickson to SR-46 south of Dickson and reduce travel times by 42% from US-70 to I-40.
- The US-70 to both SR-46 and I-40 option will provide additional access between the city of Dickson and I-40. The existing interchange at SR-46 and I-40 is calculated to fail by the year 2023. The US-70 to I-40 option will provide additional access between the city of Dickson and I-40. Therefore, the traffic demand at the SR-46 at I-40 Interchange should be reduced, prolonging its design life.
- The US-70 to both SR-46 and I-40 option will aid Dickson's growth plan by enhancing the opportunity for additional development of Dickson's west side. Most development is currently located centrally and on Dickson's east side. Furthermore, county officials and The Tennessee Department of Economic and Community Development (ECD) outline potential for a new industrial park to be developed at the connection of the bypass to I-40. The new industrial park is discussed in the ECD report titled *Land Use Projection/ Plan for Dickson, Tennessee Southern Highway Bypass*.

- The US-70 to both SR-46 and I-40 option is estimated to reduce traffic volumes along US-70 and SR-46 by 17%. Therefore, traffic congestion in the city of Dickson's urban core will be improved.
- The US-70 to both SR-46 and I-40 option will improve access to I-40 from areas west of Dickson. This route would decrease the travel time and distance to I-40 and provide a new interchange with I-40.
- The US-70 to both SR-46 and I-40 option will marginally increase accessibility to Dickson's airport. If the route is eventually extended approximately 1.5 miles north from US-70 to SR-235, accessibility to Dickson's airport will be improved. An extension to the bypass route is not included in this study and is not currently under consideration.
- The US-70 to both SR-46 and I-40 option will increase accessibility to Dickson's industrial park from the west side of town. Trucks originating from west of town could reach the existing industrial park, located near SR-46, without traveling through Dickson's urban core. This will decrease both travel time and distance for the truck traffic while improving traffic operations in the city of Dickson.
- This option is estimated to cost between $41.6 and $45.3 million.

Exhibit 5.1 Route Option Summary – Based Upon Purpose, Needs, and Goals

ROUTE OPTION / PURPOSE, NEED, OR GOAL	NO BUILD	IMPROVE SR-46 INTERCHANGE	FROM US-70 TO SR-46	FROM US-70 TO I-40	FROM US-70 TO SR-46 & I-40
Improves mobility between the west and south of Dickson	○	○	◕	◑	●
Provides improved or additional access to I-40	○	◕	○	●	●
Supports economic development	○	◔	◑	◕	●
Decreases traffic congestion in Dickson's urban core[a]	0%	0%	16%	12%	17%
Improves access to I-40 from areas west of Dickson[b]	0%	0%	16%	42%	42%
Increases accessibility to Dickson's airport	○	○	◔	◔	◔
Increases accessibility to Dickson's industrial park	○	●	●	○	●
Cost of Improvements[c]	$0	$2.0	$26.8	$35.3	$45.3
AVERAGE OF RESULTS	○	◔	◑	◑	◔

LEGEND: ● = BEST ○ = WORST

a: % Reduction in traffic on SR-46 and US-70 in Dickson
b: % Reduction in travel time between US-70 west of Dickson and I-40
c: Estimated construction costs (in millions) for recommended improvements includes additional R.O.W. for future expansion to four lanes

Checklist of Determinants for Location Study

Location: Proposed Dickson Southwest Bypass

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

Section 1 = US-70 to Bypass Connection
Section 2 = Bypass Connection to SR-46
Section 3 = Bypass Connection to I-40

Data Table

Proposed Southwest Dickson Bypass - Dickson County
From US-70 to SR-46 and/or I-40

Section 1
From: US-70
To: Bypass Connection[A]

Item	Existing	Proposed Bypass	
		2-Lane	2-Lane[B]
Functional Class	N/A	Urban Arterial	
System Class	N/A	STP	
Length - Miles	N/A	5	
Cross Section - Feet[C]	N/A	44/150	44/300
Base Year ADT (2011)[D]	N/A	Opt.1: 4,100 Opt. 2: 2,900 Opt 3: 4,100	
Design Year ADT (2031)[D]	N/A	Opt.1: 10,000 Opt. 2: 9,600 Opt 3: 11,100	
Design Year DHV (2031)[D] (8%)	N/A	Opt.1: 800 Opt. 2: 768 Opt 3: 888	
Percent Trucks (DHV)	N/A	5%	
Estimated Right-of-Way Cost	N/A	$ 4,800,000	$ 6,720,000
Estimated Utility Cost	N/A	$ 70,000	$ 82,000
Estimated Construction Cost	N/A	$ 9,103,000	$ 9,103,000
Estimated Preliminary Engineering Cost	N/A	$ 910,000	$ 910,000
Total Estimated Cost per Mile	N/A	$ 2,977,000	$ 3,363,000
Total Estimated Cost	N/A	$ 14,883,000	$ 16,815,000

A: Bypass Connection is the same location as shown in Route Option 3 that connects to both SR-46 and I-40. Only connects to SR-46 or I-40 in Options 1 & 2.
B: 2-Lane Cross Section with additional R.O.W. purchased for future expansion to 4-Lane Cross Section
C: Pavement width (including shoulders)/R.O.W. width
D: ADT varies by Route Option: Option 1 is from US-70 to SR-46, Option 2 is from US-70 to I-40, Option 3 is from US-70 to SR-46 and I-40

Data Table

Proposed Southwest Dickson Bypass - Dickson County
From US-70 to SR-46 and/or I-40

Section 2
From: Bypass Connection[A]
To: SR-46

Item	Existing	Proposed Bypass	
		2-Lane	2-Lane[B]
Functional Class	N/A	Urban Arterial	
System Class	N/A	STP	
Length - Miles	N/A	2.5	
Cross Section - Feet[C]	N/A	44/150	44/300
Base Year ADT (2011)[D]	N/A	Opt.1: n/a Opt. 2: 3,000 Opt 3: 1,600	
Design Year ADT (2031)[D]	N/A	Opt.1: n/a Opt. 2: 18,300 Opt 3: 16,400	
Design Year DHV (2031)[D] (8%)		Opt.1: n/a Opt. 2: 1,464 Opt 3: 1,312	
Percent Trucks (DHV)	N/A	5%	
Estimated Right-of-Way Cost	N/A	$ 2,400,000	$ 3,360,000
Estimated Utility Cost	N/A	$ 53,000	$ 77,000
Estimated Construction Cost	N/A	$ 5,987,000	$ 5,987,000
Estimated Preliminary Engineering Cost	N/A	$ 599,000	$ 599,000
Total Estimated Cost per Mile	N/A	$ 3,616,000	$ 4,009,000
Total Estimated Cost	N/A	$ 9,039,000	$ 10,023,000

A: Bypass Connection is the same location as shown in Route Option 3 that connects to both SR-46 and I-40. Only connects to SR-46 or I-40 in Options 1 & 2.
B: 2-Lane Cross Section with additional R.O.W. purchased for future expansion to 4-Lane Cross Section
C: Pavement width (including shoulders)/R.O.W. width
D: ADT varies by Route Option: Option 1 is from US-70 to SR-46, Option 2 is from US-70 to I-40, Option 3 is from US-70 to SR-46 and I-40

Data Table

Proposed Southwest Dickson Bypass - Dickson County
From US-70 to SR-46 and/or I-40

Section 3
From: Bypass Connection[A]
To: I-40

Item	Existing	Proposed Bypass	
		2-Lane	2-Lane[B]
Functional Class	N/A	Urban Arterial	
System Class	N/A	STP	
Length - Miles	N/A	2.0	
Cross Section - Feet[C]	N/A	44/150	44/300
Base Year ADT (2011)[D]	N/A	Opt.1: 4,500 Opt. 2: n/a Opt 3: 3,500	
Design Year ADT (2031)[D]	N/A	Opt.1: 10,600 Opt. 2: n/a Opt 3: 11,100	
Design Year DHV (2031)[D] (8%)		Opt.1: 848 Opt. 2: n/a Opt 3: 888	
Percent Trucks (DHV)	N/A	5%	
Estimated Right-of-Way Cost	N/A	$ 1,920,000	$ 2,688,000
Estimated Utility Cost	N/A	$ 22,000	$ 22,000
Estimated Construction Cost	N/A	$ 5,256,000	$ 5,256,000
Estimated Preliminary Engineering Cost	N/A	$ 526,000	$ 526,000
Total Estimated Cost per Mile	N/A	$ 3,862,000	$ 4,246,000
Total Estimated Cost[E]	N/A	$ 7,724,000	$ 8,492,000

A: Bypass Connection is the same location as shown in Route Option 3 that connects to both SR-46 and I-40. Only connects to SR-46 or I-40 in Options 1 & 2.
B: 2-Lane Cross Section with additional R.O.W. purchased for future expansion to 4-Lane Cross Section
C: Pavement width (including shoulders)/R.O.W. width
D: ADT varies by Route Option: Option 1 is from US-70 to SR-46, Option 2 is from US-70 to I-40, Option 3 is from US-70 to SR-46 and I-40
E: Cost does not include an interchange with I-40 estimated to cost an additional $10 million.

Data Table

Proposed Southwest Dickson Bypass - Dickson County
From US-70 to SR-46 and/or I-40

Route Option 1 = Section 1& 2
From: US-70
To: SR-46

Item	Existing	Proposed Bypass	
		2-Lane	2-Lane[A]
Functional Class	N/A	Urban Arterial	
System Class	N/A	STP	
Length - Miles	N/A	7.5	
Cross Section - Feet[B]	N/A	44/150	44/300
Base Year ADT (2011)	N/A	4,200	
Design Year ADT (2031)	N/A	10,200	
Design Year DHV (2031) (8%)		820	
Percent Trucks (DHV)	N/A	5%	
Estimated Right-of-Way Cost	N/A	$ 7,200,000	$ 10,080,000
Estimated Utility Cost	N/A	$ 123,000	$ 159,000
Estimated Construction Cost	N/A	$ 15,090,000	$ 15,090,000
Estimated Preliminary Engineering Cost	N/A	$ 1,509,000	$ 1,509,000
Total Estimated Cost per Mile	N/A	$ 3,189,600	$ 3,578,400
Total Estimated Cost	N/A	$ 23,922,000	$ 26,838,000

A: 2-Lane Cross Section with additional R.O.W. purchased for future expansion to 4-Lane Cross Section
B: Pavement width (including shoulders)/R.O.W. width

Data Table

Proposed Southwest Dickson Bypass - Dickson County
From US-70 to SR-46 and/or I-40

Route Option 2 = Section 1 & 3
From: US-70
To: I-40

Item	Existing	Proposed Bypass	
		2-Lane	2-Lane[A]
Functional Class	N/A	Urban Arterial	
System Class	N/A	STP	
Length - Miles	N/A	7.0	
Cross Section - Feet[B]	N/A	44/150	44/300
Base Year ADT (2011)	N/A	2,900	
Design Year ADT (2031)	N/A	12,100	
Design Year DHV (2031) (8%)		970	
Percent Trucks (DHV)	N/A	5%	
Estimated Right-of-Way Cost	N/A	$ 6,720,000	$ 9,408,000
Estimated Utility Cost	N/A	$ 92,000	$ 104,000
Estimated Construction Cost	N/A	$ 14,359,000	$ 14,359,000
Estimated Preliminary Engineering Cost	N/A	$ 1,436,000	$ 1,436,000
Total Estimated Cost per Mile	N/A	$ 4,658,143	$ 5,043,857
Total Estimated Cost[C]	N/A	$ 32,607,000	$ 35,307,000

A: 2-Lane Cross Section with additional R.O.W. purchased for future expansion to 4-Lane Cross Section
B: Pavement width (including shoulders)/R.O.W. width
C: Cost includes an interchange with I-40 estimated to cost $10 million.

Data Table

Proposed Southwest Dickson Bypass - Dickson County
From US-70 to SR-46 and/or I-40

Route Option 3 = Section 1, 2, & 3
From: US-70
To: SR-46 and I-40

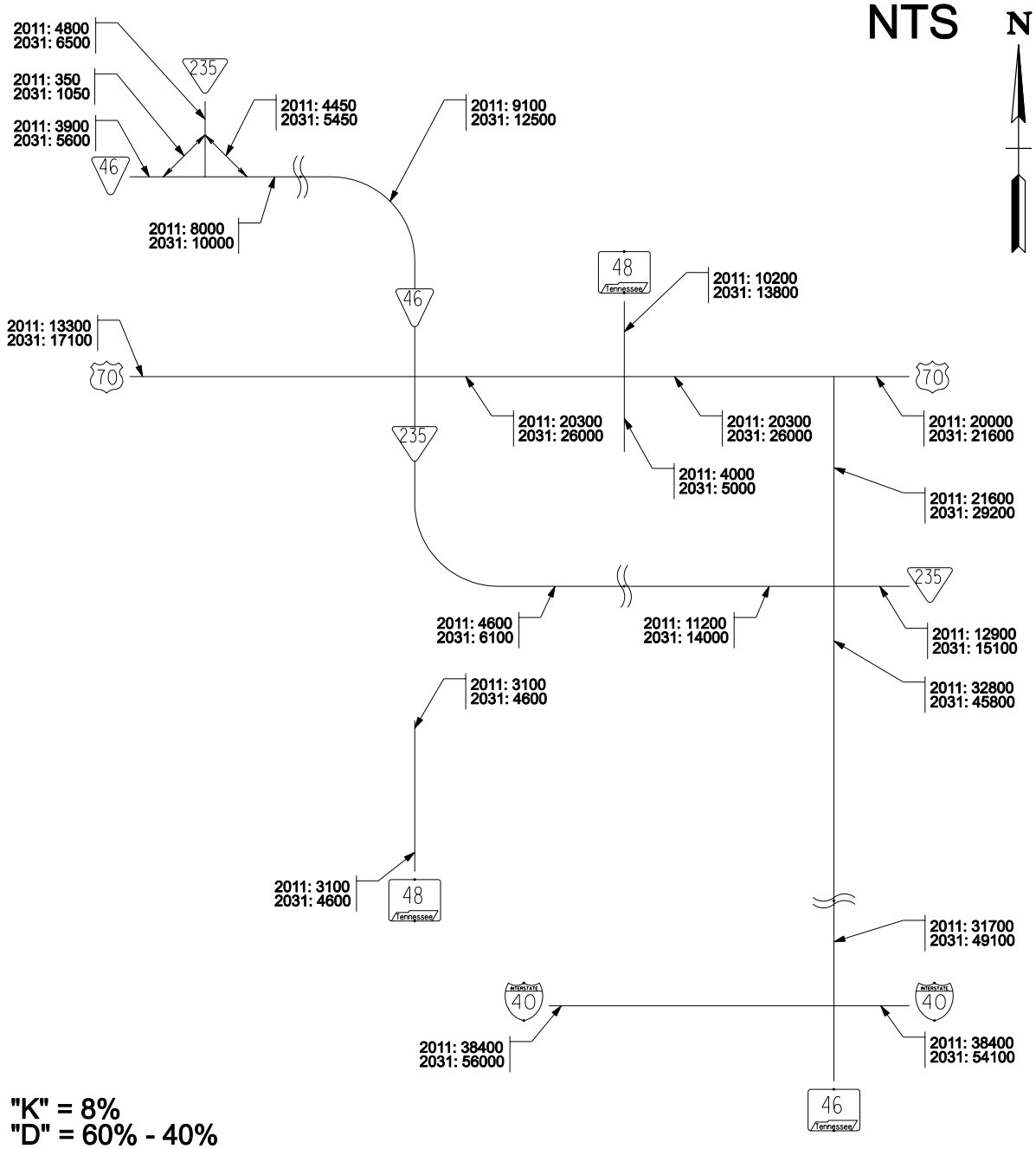
Item	Existing	Proposed Bypass	
		2-Lane	2-Lane[A]
Functional Class	N/A	Urban Arterial	
System Class	N/A	STP	
Length - Miles	N/A	9.5	
Cross Section - Feet[B]	N/A	44/150	44/300
Base Year ADT (2011)	N/A	3,400	
Design Year ADT (2031)	N/A	12,200	
Design Year DHV (2031) (8%)		980	
Percent Trucks (DHV)	N/A	5%	
Estimated Right-of-Way Cost	N/A	$ 9,120,000	$ 12,768,000
Estimated Utility Cost	N/A	$ 145,000	$ 181,000
Estimated Construction Cost	N/A	$ 20,346,000	$ 20,346,000
Estimated Preliminary Engineering Cost	N/A	$ 2,035,000	$ 2,035,000
Total Estimated Cost per Mile	N/A	$ 4,383,789	$ 4,771,579
Total Estimated Cost[C]	N/A	$ 41,646,000	$ 45,330,000

A: 2-Lane Cross Section with additional R.O.W. purchased for future expansion to 4-Lane Cross Section
B: Pavement width (including shoulders)/R.O.W. width
C: Cost includes an interchange with I-40 estimated to cost $10 million.

DICKSON COUNTY

TRANSPORTATION PLANNING REPORT
TO STUDY SOUTHWESTERN BYPASS

NTS



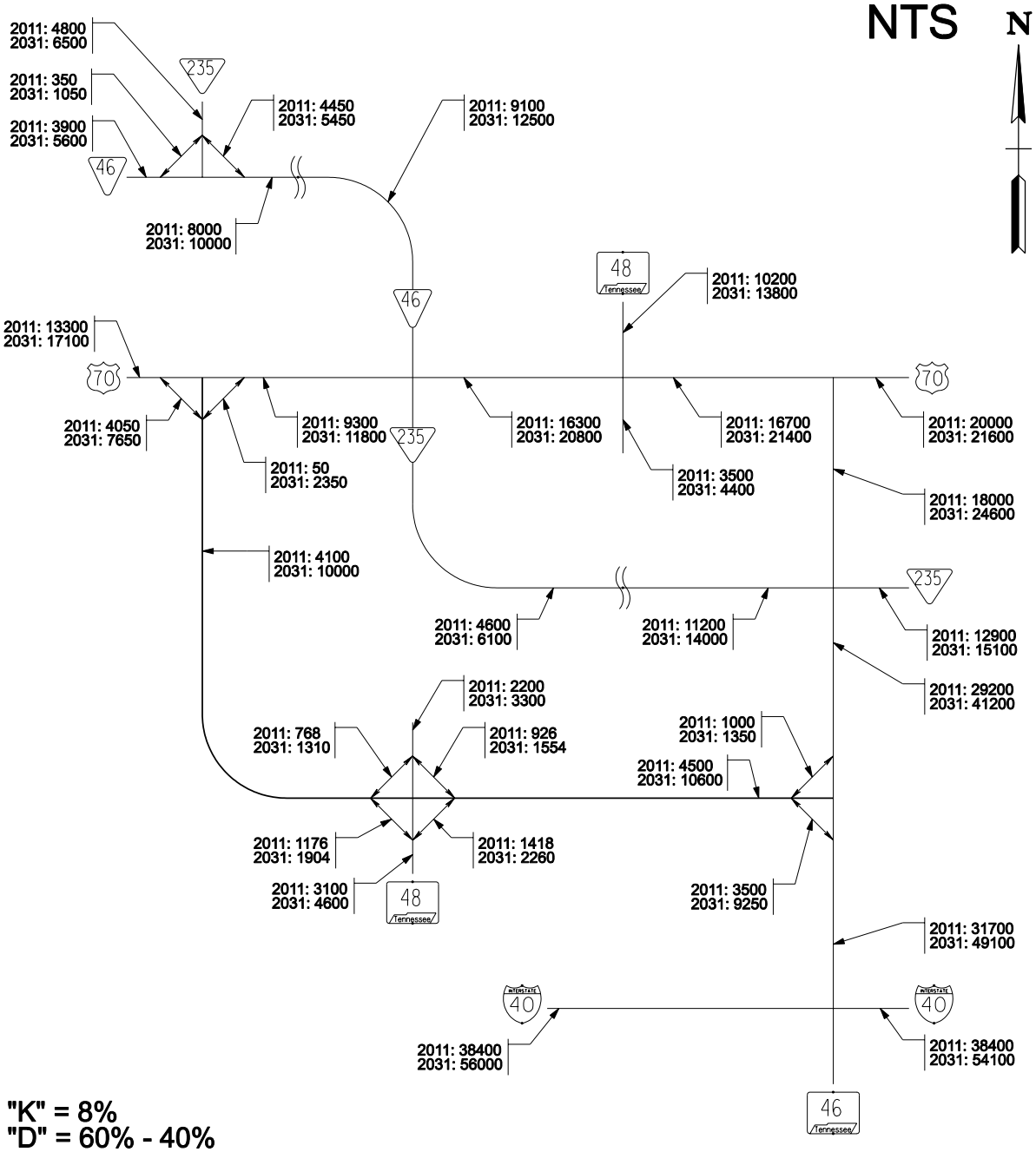
"K" = 8%
"D" = 60% - 40%

ANNUAL (ADJUSTED) AVERAGE DAILY TRAFFIC	TRAFFIC SCHEMATIC NO BUILD OPTION

DICKSON COUNTY

TRANSPORTATION PLANNING REPORT
TO STUDY SOUTHWESTERN BYPASS

NTS



"K" = 8%
"D" = 60% - 40%

TRAFFIC VOLUMES FROM FUTURE DEVELOPMENT ALONG BYPASS INCLUDED IN 2031 ESTIMATES

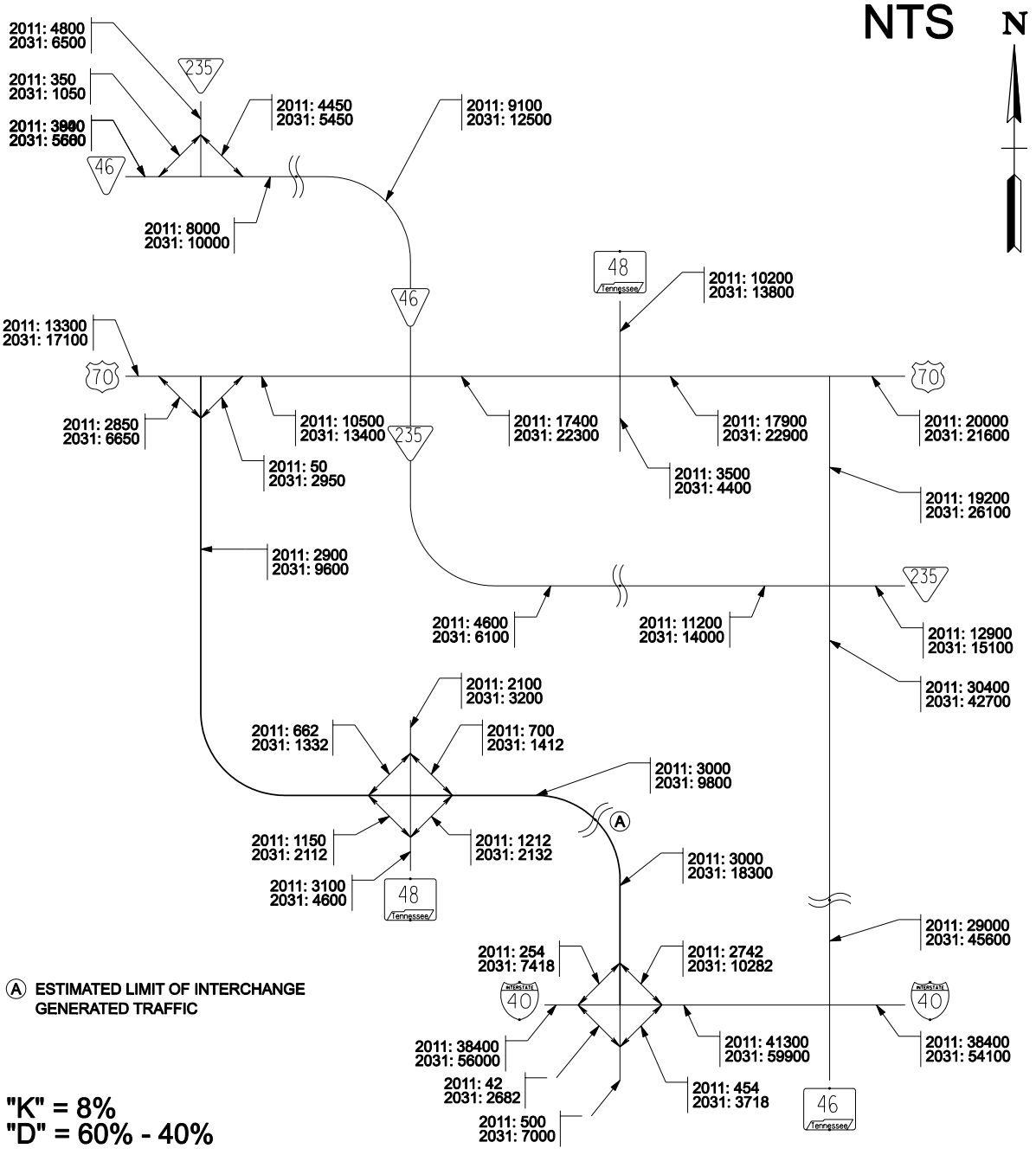
ANNUAL (ADJUSTED) AVERAGE DAILY TRAFFIC

TRAFFIC SCHEMATIC

ROUTE OPTION 1
US-70 TO SR-46

DICKSON COUNTY

TRANSPORTATION PLANNING REPORT
TO STUDY SOUTHWESTERN BYPASS



TRAFFIC VOLUMES FROM FUTURE DEVELOPMENT ALONG BYPASS INCLUDED IN 2031 ESTIMATES

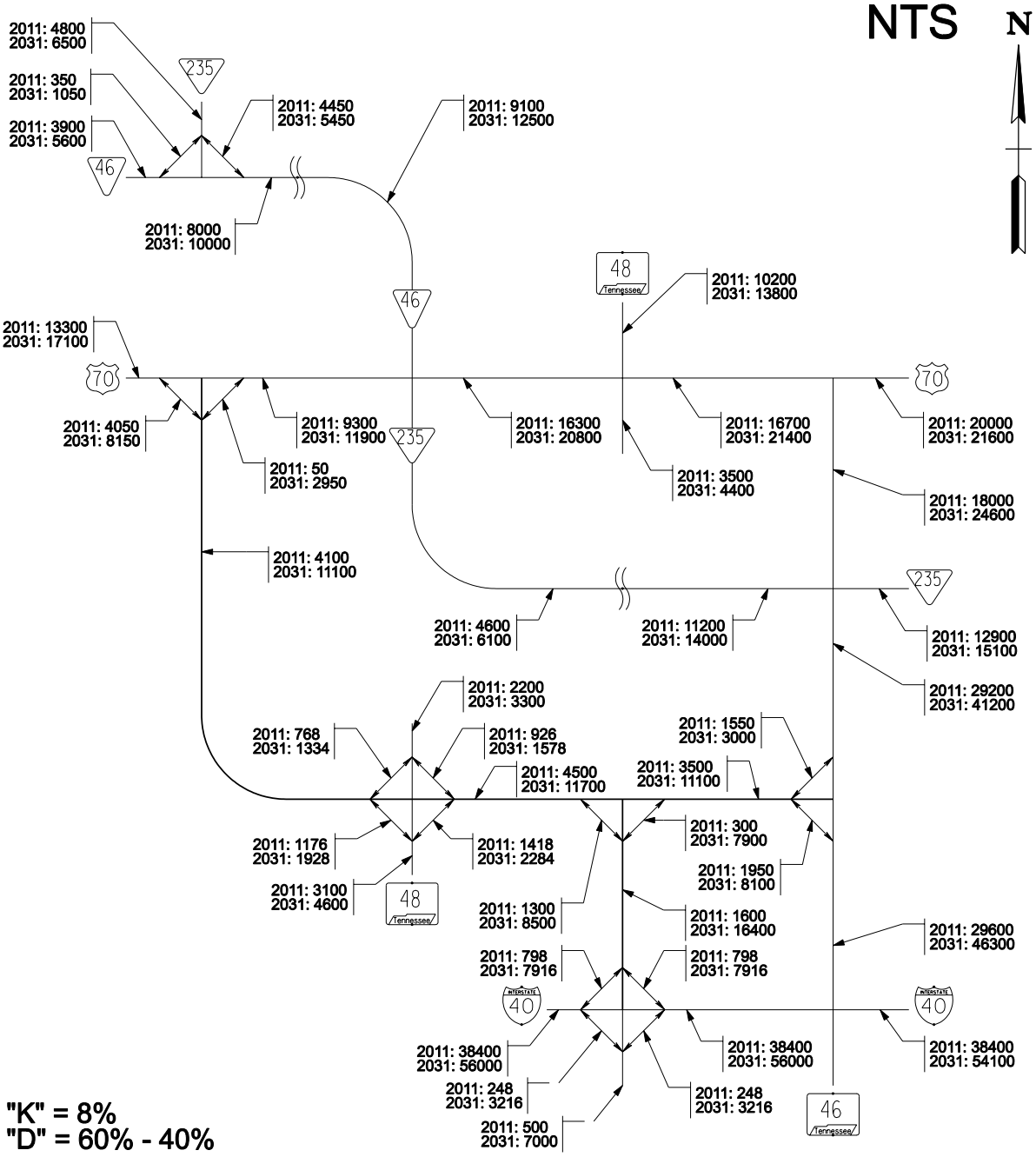
ANNUAL (ADJUSTED) AVERAGE DAILY TRAFFIC

TRAFFIC SCHEMATIC

ROUTE OPTION 2
US-70 TO I-40

DICKSON COUNTY

TRANSPORTATION PLANNING REPORT
TO STUDY SOUTHWESTERN BYPASS



"K" = 8%
"D" = 60% - 40%

TRAFFIC VOLUMES FROM FUTURE DEVELOPMENT ALONG BYPASS INCLUDED IN 2031 ESTIMATES

ANNUAL (ADJUSTED) AVERAGE DAILY TRAFFIC

TRAFFIC SCHEMATIC

ROUTE OPTION 3
US-70 TO SR-46 AND I-40

Tennessee Department of Transportation
Design Criteria for Location and Design Phase

Route:	Proposed Southwest Dickson Bypass	**Alternate:**	N/A
Section:	All	**Region:**	III
County:	Dickson	**Project #**	99106-1084-04

Location

From:	U.S. 70 near Pond Switch Road
To:	S.R. 46 near Old Columbia Road and/or I-40 near Piney Road

Parameter	Criteria
2011 ADT – Bypass from US-70 to SR-46 Option	4,200
2031 ADT – Bypass from US-70 to SR-46 Option	10,200
2011 ADT – Bypass from US-70 to I-40 Option	2,900
2031 ADT – Bypass from US-70 to I-40 Option	12,100
2011 ADT – Bypass from US-70 to SR-46 & I-40 Option	3,400
2031 ADT – Bypass from US-70 to SR-46 & I-40 Option	12,200
Percent Trucks (DHV)	5%
DHV (8% ADT 2031) Bypass from US-70 to SR-46 Option)	850
DHV (8% ADT 2031) Bypass from US-70 to I-40 Option)	1,000
DHV (8% ADT 2031) Bypass from US-70 to SR-46 & I-40 Option)	1,000
Functional Classification	Urban Arterial
Minimum Design Speed	45 MPH
Access Control	N/A
Maximum Curve	660’ = 8°30’ (S.E. = 0.06 ‘/’)
Maximum Grade	7%
Minimum Stopping Sight Distance	360’
Surface Width	2 @ 12’
Number of Lanes	2
Usable Shoulder Width	2 @ 12’
Median Width	N/A
Minimum R.O.W.	150’ or 300’
Signalization	3 to 5 Signals Anticipated, Varies by Option

Cost Data Sheet

Proposed Southwest Dickson Bypass

Section: US-70 to Bypass Connection
X-Sect: 2 Lane
Length: 5

Right-of-Way

Land	x	acres	Included in Total R.O.W. Cost	
Incidentals	x	tracts	Included in Total R.O.W. Cost	
Relocation Payments	x	residences	Included in Total R.O.W. Cost	
		business & farm		
		non-profits		
Total Right-of-Way Cost				**$ 4,800,000**

Utility Relocation

Reimbursable	$ -	
Non-reimbursable	$ 70,000	
Total Utility Cost		**$ 70,000**

Construction

Clear and Grubbing		$ 91,000		
Earthwork		$ 2,484,000		
Pavement Removal		$ -		
Drainage		$ 223,000		
Structures		$ -		
Railroad Crossing or Separation		$ -		
Paving		$ 3,318,000		
Retaining Walls		$ -		
Maintenance of Traffic		$ 200,000		
Topsoil		$ 48,000		
Seeding		$ 72,000		
Sodding		$ -		
Signing		$ 10,000		
Lighting		$ -		
Signalization		$ 150,000		
Fence		$ 581,000		
Guardrail		$ 211,000		
Rip Rap or Slope Protection		$ -		
Construction Item Subtotal	$ 7,388,000			
Other Construction Items (8.5%)		$ 628,000		
Erosion Control (3.5%)		$ 259,000		
Mobilization		$ -		
Construction Cost			$ 8,275,000	
10% Engineering & Cont.			$ 828,000	
Total Construction Cost				**$ 9,103,000**
Preliminary Engineering (10%)				**$ 910,000**

Total Cost	**$ 14,883,000**
Cost per Mile	$ 2,977,000

Cost Data Sheet

Proposed Southwest Dickson Bypass

Section: US-70 to Bypass Connection
X-Sect: 2 Lane - ROW Purchased for 4 Lane
Length: 5

Right-of-Way

Land	x	acres	Included in Total R.O.W. Cost	
Incidentals	x	tracts	Included in Total R.O.W. Cost	
Relocation Payments	x	residences	Included in Total R.O.W. Cost	
		business & farm		
		non-profits		
Total Right-of-Way Cost				**$ 6,720,000**

Utility Relocation

Reimbursable	$ -	
Non-reimbursable	$ 82,000	
Total Utility Cost		**$ 82,000**

Construction

Clear and Grubbing		$ 91,000		
Earthwork		$ 2,484,000		
Pavement Removal		$ -		
Drainage		$ 223,000		
Structures		$ -		
Railroad Crossing or Separation		$ -		
Paving		$ 3,318,000		
Retaining Walls		$ -		
Maintenance of Traffic		$ 200,000		
Topsoil		$ 48,000		
Seeding		$ 72,000		
Sodding		$ -		
Signing		$ 10,000		
Lighting		$ -		
Signalization		$ 150,000		
Fence		$ 581,000		
Guardrail		$ 211,000		
Rip Rap or Slope Protection		$ -		
Construction Item Subtotal	$ 7,388,000			
Other Construction Items (8.5%)		$ 628,000		
Erosion Control (3.5%)		$ 259,000		
Mobilization		$ -		
Construction Cost			$ 8,275,000	
10% Engineering & Cont.			$ 828,000	
Total Construction Cost				**$ 9,103,000**
Preliminary Engineering (10%)				**$ 910,000**

Total Cost	**$ 16,815,000**
Cost per Mile	$ 3,363,000

Cost Data Sheet

Proposed Southwest Dickson Bypass

Section: Bypass Connection to SR-46
X-Sect: 2 Lane
Length: 2.5

Right-of-Way

Land	x	acres	Included in Total R.O.W. Cost	
Incidentals	x	tracts	Included in Total R.O.W. Cost	
Relocation Payments	x	residences	Included in Total R.O.W. Cost	
		business & farm		
		non-profits		
Total Right-of-Way Cost				**$ 2,400,000**

Utility Relocation

Reimbursable	$ -	
Non-reimbursable	$ 53,000	
Total Utility Cost		**$ 53,000**

Construction

Clear and Grubbing		$ 46,000		
Earthwork		$ 2,391,000		
Pavement Removal		$ -		
Drainage		$ 139,000		
Structures		$ -		
Railroad Crossing or Separation		$ -		
Paving		$ 1,659,000		
Retaining Walls		$ -		
Maintenance of Traffic		$ 100,000		
Topsoil		$ 30,000		
Seeding		$ 44,000		
Sodding		$ -		
Signing		$ 5,000		
Lighting		$ -		
Signalization		$ -		
Fence		$ 50,000		
Guardrail		$ 290,000		
Rip Rap or Slope Protection		$ 106,000		
Construction Item Subtotal	$ 4,860,000			
Other Construction Items (8.5%)		$ 413,000		
Erosion Control (3.5%)		$ 170,000		
Mobilization		$ -		
Construction Cost			$ 5,443,000	
10% Engineering & Cont.			$ 544,000	
Total Construction Cost				**$ 5,987,000**
Preliminary Engineering (10%)				**$ 599,000**

Total Cost	**$ 9,039,000**
Cost per Mile	$ 3,616,000

Cost Data Sheet

Proposed Southwest Dickson Bypass

Section: Bypass Connection to SR-46
X-Sect: 2 Lane - ROW Purchased for 4 Lane
Length: 2.5

Right-of-Way

Land	x	acres	Included in Total R.O.W. Cost	
Incidentals	x	tracts	Included in Total R.O.W. Cost	
Relocation Payments	x	residences	Included in Total R.O.W. Cost	
		business & farm		
		non-profits		
Total Right-of-Way Cost				**$ 3,360,000**

Utility Relocation

Reimbursable	$ -	
Non-reimbursable	$ 77,000	
Total Utility Cost		**$ 77,000**

Construction

Clear and Grubbing		$ 46,000		
Earthwork		$ 2,391,000		
Pavement Removal		$ -		
Drainage		$ 139,000		
Structures		$ -		
Railroad Crossing or Separation		$ -		
Paving		$ 1,659,000		
Retaining Walls		$ -		
Maintenance of Traffic		$ 100,000		
Topsoil		$ 30,000		
Seeding		$ 44,000		
Sodding		$ -		
Signing		$ 5,000		
Lighting		$ -		
Signalization		$ -		
Fence		$ 50,000		
Guardrail		$ 290,000		
Rip Rap or Slope Protection		$ 106,000		
Construction Item Subtotal	$ 4,860,000			
Other Construction Items (8.5%)		$ 413,000		
Erosion Control (3.5%)		$ 170,000		
Mobilization		$ -		
Construction Cost			$ 5,443,000	
10% Engineering & Cont.			$ 544,000	
Total Construction Cost				**$ 5,987,000**
Preliminary Engineering (10%)				**$ 599,000**

Total Cost	**$ 10,023,000**
Cost per Mile	$ 4,009,000

Cost Data Sheet

Proposed Southwest Dickson Bypass

Section: Bypass Connection to I-40
X-Sect: 2 Lane
Length: 2

Right-of-Way

Land	x	acres	Included in Total R.O.W. Cost	
Incidentals	x	tracts	Included in Total R.O.W. Cost	
Relocation Payments	x	residences	Included in Total R.O.W. Cost	
		business & farm		
		non-profits		
Total Right-of-Way Cost				**$ 1,920,000**

Utility Relocation

Reimbursable	$ -	
Non-reimbursable	$ 22,000	
Total Utility Cost		**$ 22,000**

Construction

Clear and Grubbing		$ 36,000		
Earthwork		$ 2,291,000		
Pavement Removal		$ -		
Drainage		$ 112,000		
Structures		$ -		
Railroad Crossing or Separation		$ -		
Paving		$ 1,327,000		
Retaining Walls		$ -		
Maintenance of Traffic		$ 75,000		
Topsoil		$ 22,000		
Seeding		$ 32,000		
Sodding		$ -		
Signing		$ 4,000		
Lighting		$ -		
Signalization		$ 50,000		
Fence		$ 232,000		
Guardrail		$ 85,000		
Rip Rap or Slope Protection		$ -		
Construction Item Subtotal	$ 4,266,000			
Other Construction Items (8.5%)		$ 363,000		
Erosion Control (3.5%)		$ 149,000		
Mobilization		$ -		
Construction Cost			$ 4,778,000	
10% Engineering & Cont.			$ 478,000	
Total Construction Cost				**$ 5,256,000**
Preliminary Engineering (10%)				**$ 526,000**

Total Cost[A]	**$ 7,724,000**
Cost per Mile[A]	$ 3,862,000

Note A: Cost does not include an interchange with I-40 estimated to cost an additional $10 million.

Cost Data Sheet

Proposed Southwest Dickson Bypass

Section: Bypass Connection to I-40
X-Sect: 2 Lane - ROW Purchased for 4 Lane
Length: 2

Right-of-Way

Land	x	acres	Included in Total R.O.W. Cost	
Incidentals	x	tracts	Included in Total R.O.W. Cost	
Relocation Payments	x	residences	Included in Total R.O.W. Cost	
		business & farm		
		non-profits		
Total Right-of-Way Cost				**$ 2,688,000**

Utility Relocation

Reimbursable	$ -	
Non-reimbursable	$ 22,000	
Total Utility Cost		**$ 22,000**

Construction

Clear and Grubbing		$ 36,000		
Earthwork		$ 2,291,000		
Pavement Removal		$ -		
Drainage		$ 112,000		
Structures		$ -		
Railroad Crossing or Separation		$ -		
Paving		$ 1,327,000		
Retaining Walls		$ -		
Maintenance of Traffic		$ 75,000		
Topsoil		$ 22,000		
Seeding		$ 32,000		
Sodding		$ -		
Signing		$ 4,000		
Lighting		$ -		
Signalization		$ 50,000		
Fence		$ 232,000		
Guardrail		$ 85,000		
Rip Rap or Slope Protection		$ -		
Construction Item Subtotal	$ 4,266,000			
Other Construction Items (8.5%)		$ 363,000		
Erosion Control (3.5%)		$ 149,000		
Mobilization		$ -		
Construction Cost			$ 4,778,000	
10% Engineering & Cont.			$ 478,000	
Total Construction Cost				**$ 5,256,000**
Preliminary Engineering (10%)				**$ 526,000**

Total Cost[A]	**$ 8,492,000**
Cost per Mile[A]	$ 4,246,000

Note A: Cost does not include an interchange with I-40 estimated to cost an additional $10 million.

TENNESSEE D.O.T. | DESIGN DIVISION | FILE NO.

Index Of Sheets

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING

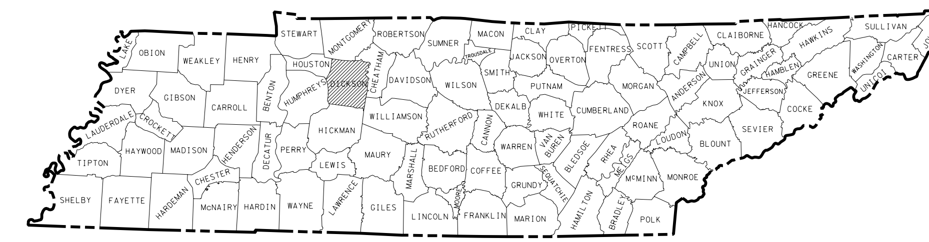
DICKSON COUNTY

PROPOSED DICKSON
SOUTHWEST BYPASS

T.P.R.

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

TENN.	YEAR	SHEET NO.
	2006	1
FED. AID PROJ. NO.		
STATE PROJ. NO.		



BEGIN PROJECT US-70
BEGIN SECTION I

N

BEGIN I-40 CONNECTION OPTION
END SECTION I, BEGIN SECTIONS 2 & 3

END PROJECT SR-46
END SECTION 2

END PROJECT I-40
END SECTION 3

SCALE: 1"= 6000'

0 6000 12000 18000

TRAFFIC VOLUMES AND LENGTH
OF ROUTE VARIES BY OPTION

APPROVED: ______________________
CHIEF ENGINEER

DATE: ______________________

APPROVED: ______________________
COMMISSIONER

SPECIAL NOTES

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

THIS PROJECT TO BE CONSTRUCTED UNDER THE STANDARD SPECIFICATIONS OF THE TENNESSEE DEPARTMENT OF TRANSPORTATION DATED MARCH 1, 1995 AND ADDITIONAL SPECIFICATIONS AND SPECIAL PROVISIONS CONTAINED IN THE PLANS AND IN THE PROPOSAL CONTRACT

TDOT ROAD SP. SV. 2 ______________________

DESIGNER ______________________ CHECKED BY ______________________

P.E. NO. ______________________

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED:

______________________ DIVISION ADMINISTRATOR ______ DATE

$$$$SYTIME$$$$$$
$$$DGNSPEC$$$

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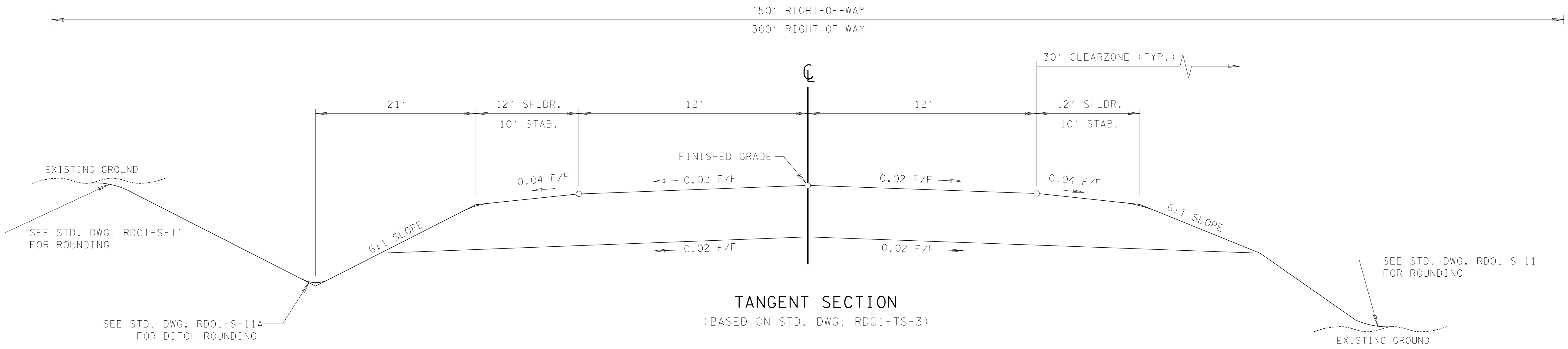
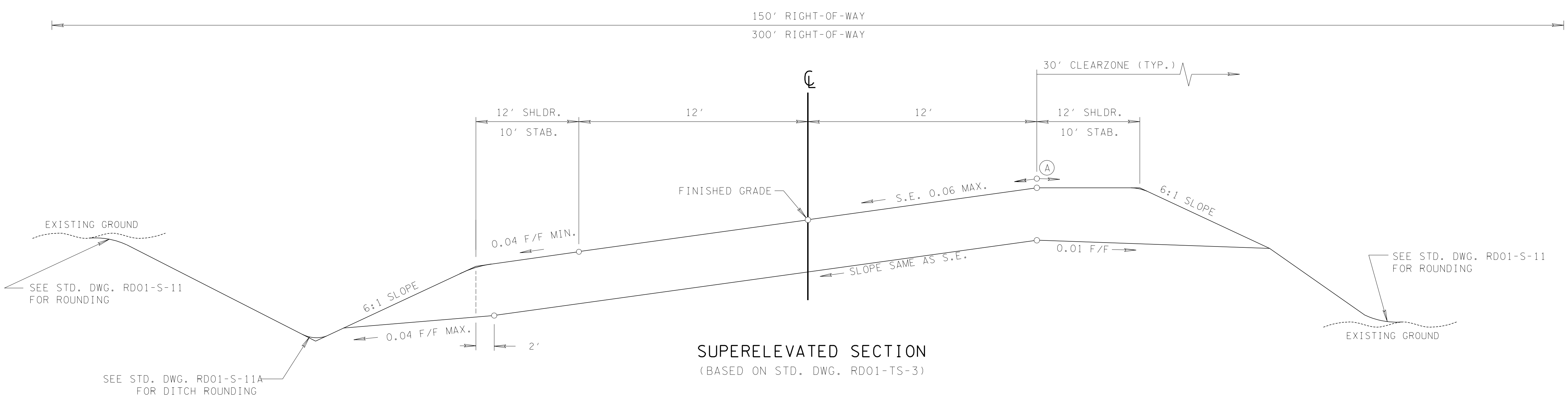
TYPE	YEAR	PROJECT NO.	SHEET NO.
CONCEPT	2006	DICKSON BYPASS	2



TANGENT SECTION

(BASED ON STD. DWG. RD01-TS-3)



SUPERELEVATED SECTION

(BASED ON STD. DWG. RD01-TS-3)

NOTE: 150 FT. R.O.W. ADEQUATE FOR 2-LANE TYPICAL SECTION
300 FT. R.O.W. ADEQUATE FOR FUTURE EXPANSION TO 4-LANE TYPICAL SECTION

(A) THE SLOPES OF THE ROADWAY AND SHOULDER PAVEMENT SHALL NOT EXCEED AN ALGEBRAIC DIFFERENCE OF 0.07 FOOT PER FOOT

TYPICAL SECTION
TWO-LANE RURAL SECTION

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

TYPICAL SECTIONS

BASED ON RD01-TS-3

$$$$SYTIME$$$$$$
$$$DGNSPEC$$$

TENNESSEE D.O.T.
DESIGN DIVISION

FILE NO.

TYPE	YEAR	PROJECT NO.	SHEET NO.
CONCEPT	2006	DICKSON BYPASS	3

400′ 800′ 1200′

SCALE 1″ = 400′

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

CONCEPTUAL PLANS

SCALE: 1″ = 400′

$$$$SYTIME$$$$$$$
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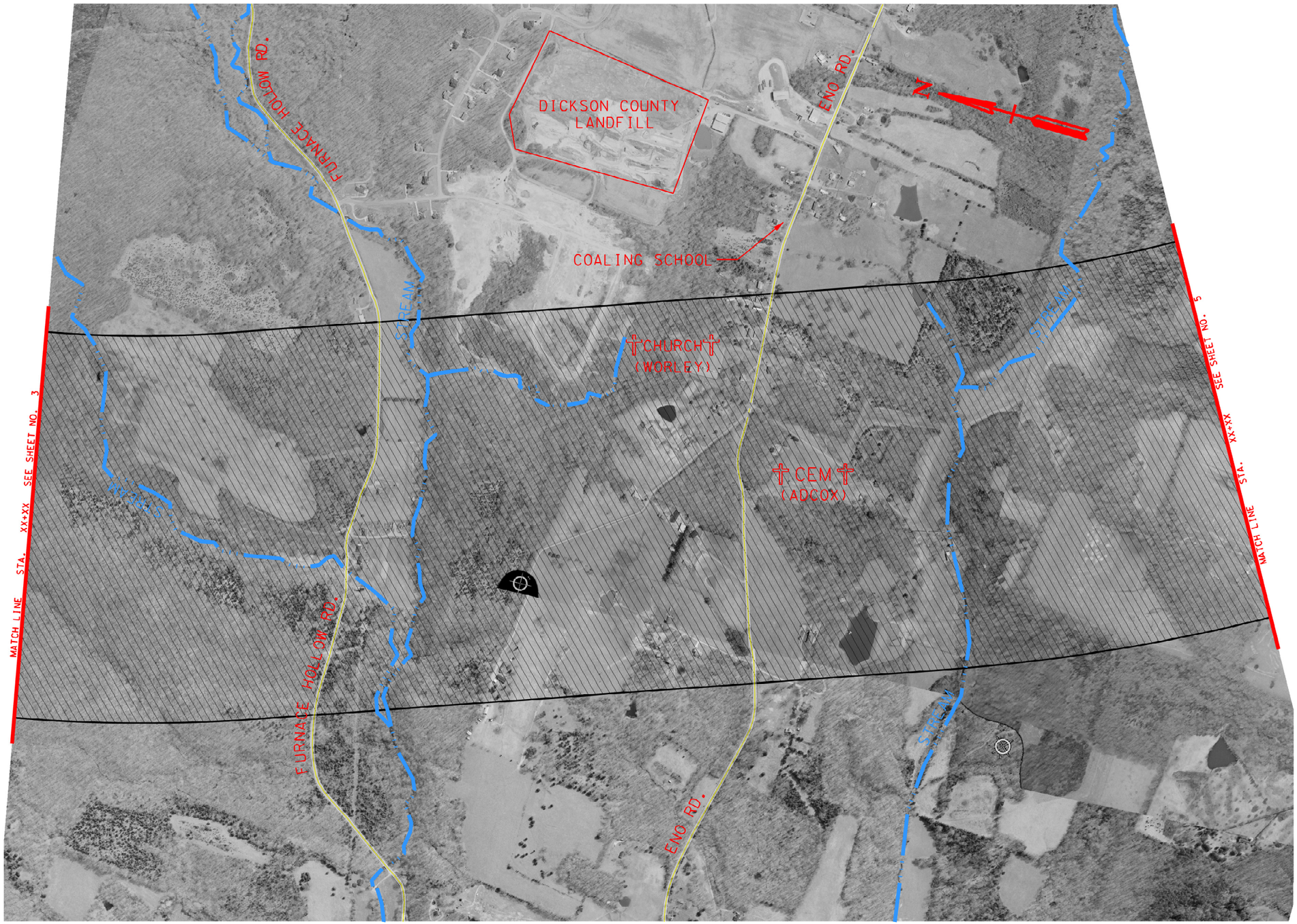
TENNESSEE D.O.T.
DESIGN DIVISION
FILE NO.

TYPE	YEAR	PROJECT NO.	SHEET NO.
CONCEPT	2006	DICKSON BYPASS	4



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SCALE 1″ = 400′

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

CONCEPTUAL PLANS

SCALE: 1″ = 400′

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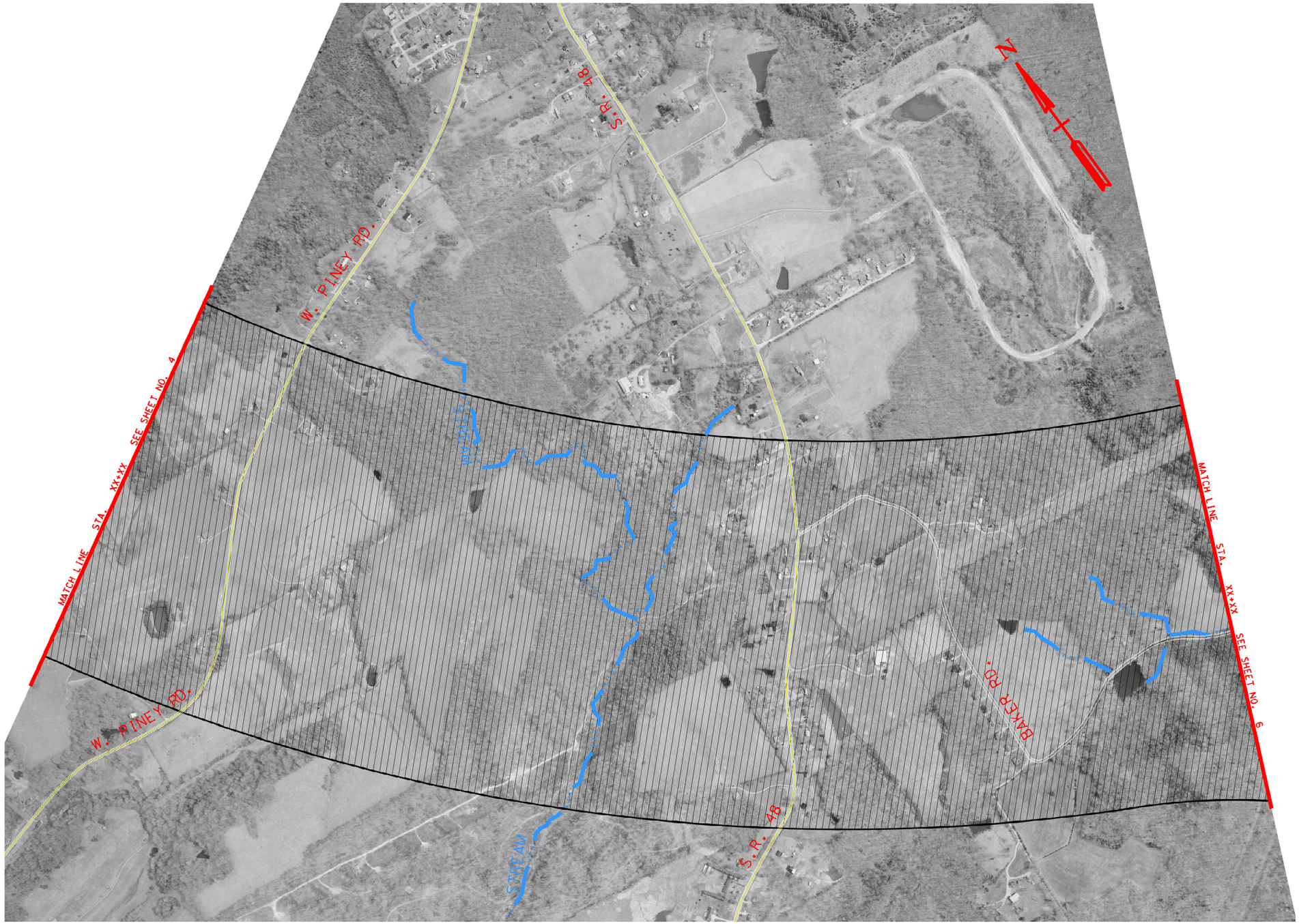
TENNESSEE D.O.T.
DESIGN DIVISION
FILE NO.

TYPE	YEAR	PROJECT NO.	SHEET NO.
CONCEPT	2006	DICKSON BYPASS	5



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SCALE 1" = 400'

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

CONCEPTUAL PLANS

SCALE: 1" = 400'

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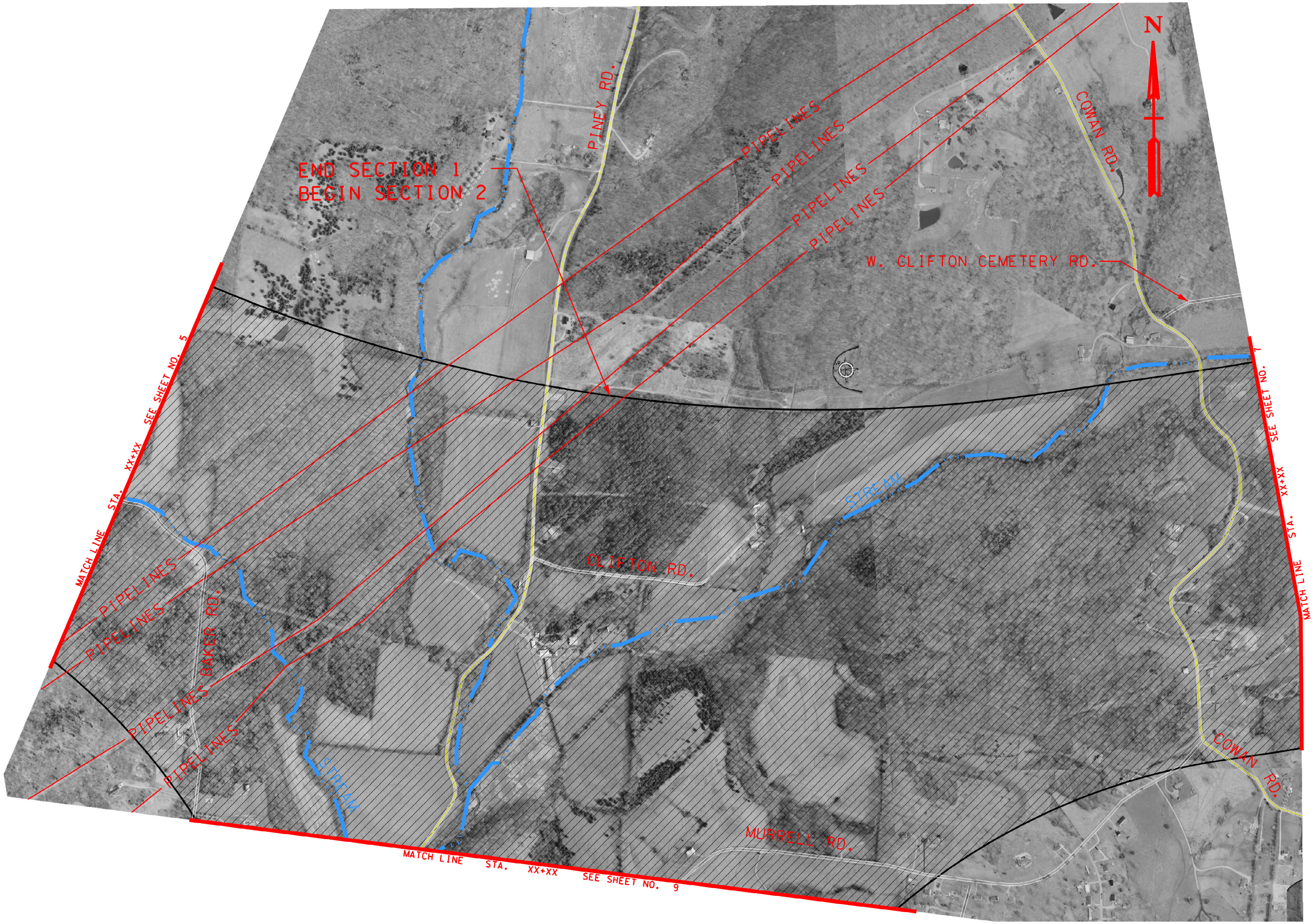
TYPE	YEAR	PROJECT NO.	SHEET NO.
CONCEPT	2006	DICKSON BYPASS	6

TENNESSEE D.O.T.
DESIGN DIVISION
FILE NO.



400′ 800′ 1200′
SCALE 1″ = 400′

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

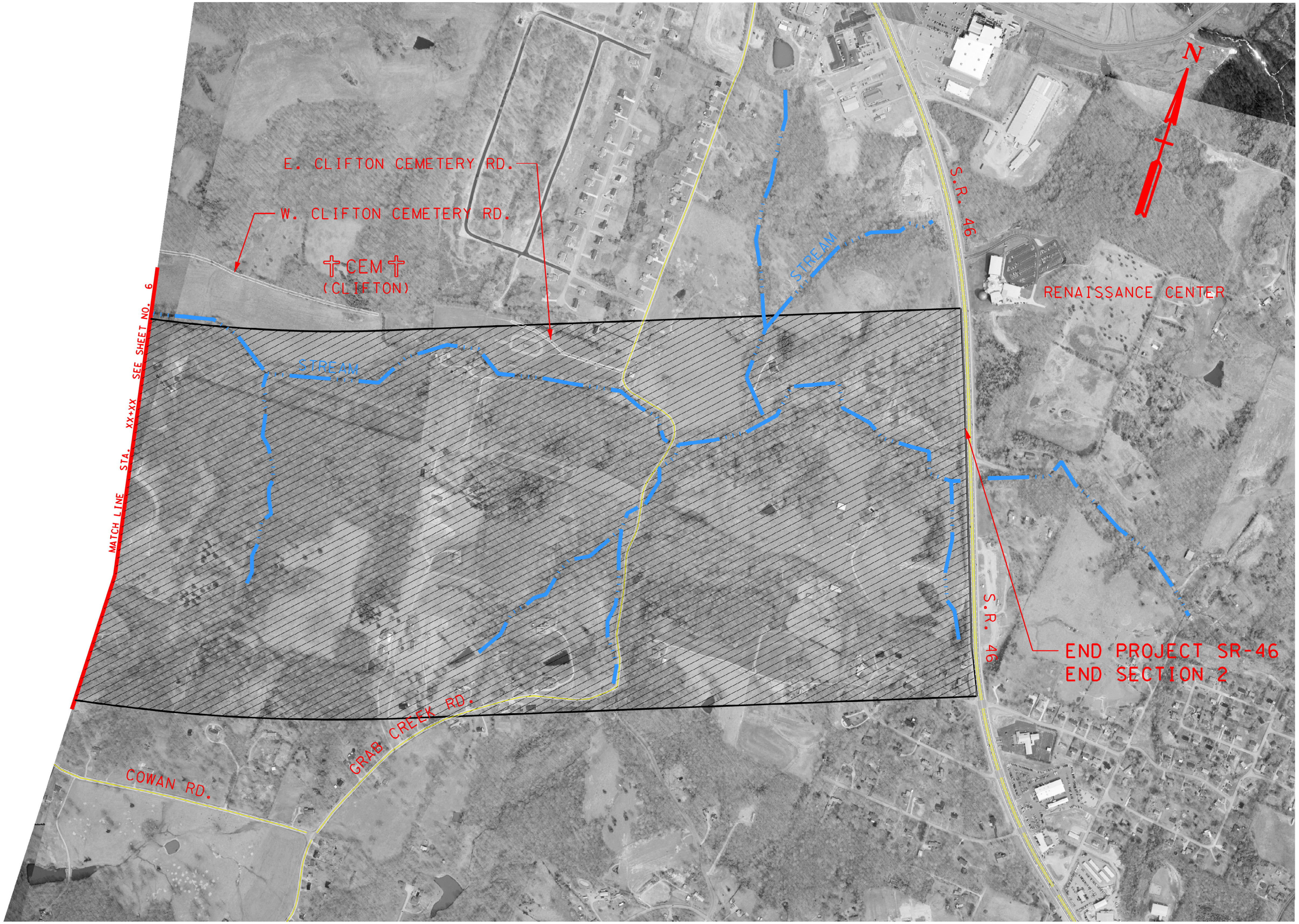
CONCEPTUAL PLANS

SCALE: 1″ = 400′

$$$$SYTIME$$$$$$
$$$$DGNSPEC$$

TENNESSEE D.O.T.
DESIGN DIVISION
FILE NO.

TYPE	YEAR	PROJECT NO.	SHEET NO.
CONCEPT	2006	DICKSON BYPASS	7



400′ 800′ 1200′
SCALE 1″ = 400′

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

CONCEPTUAL PLANS

SCALE: 1″ = 400′

$$$$SYTIME$$$$$$
$$$$DGNSPEC$$$

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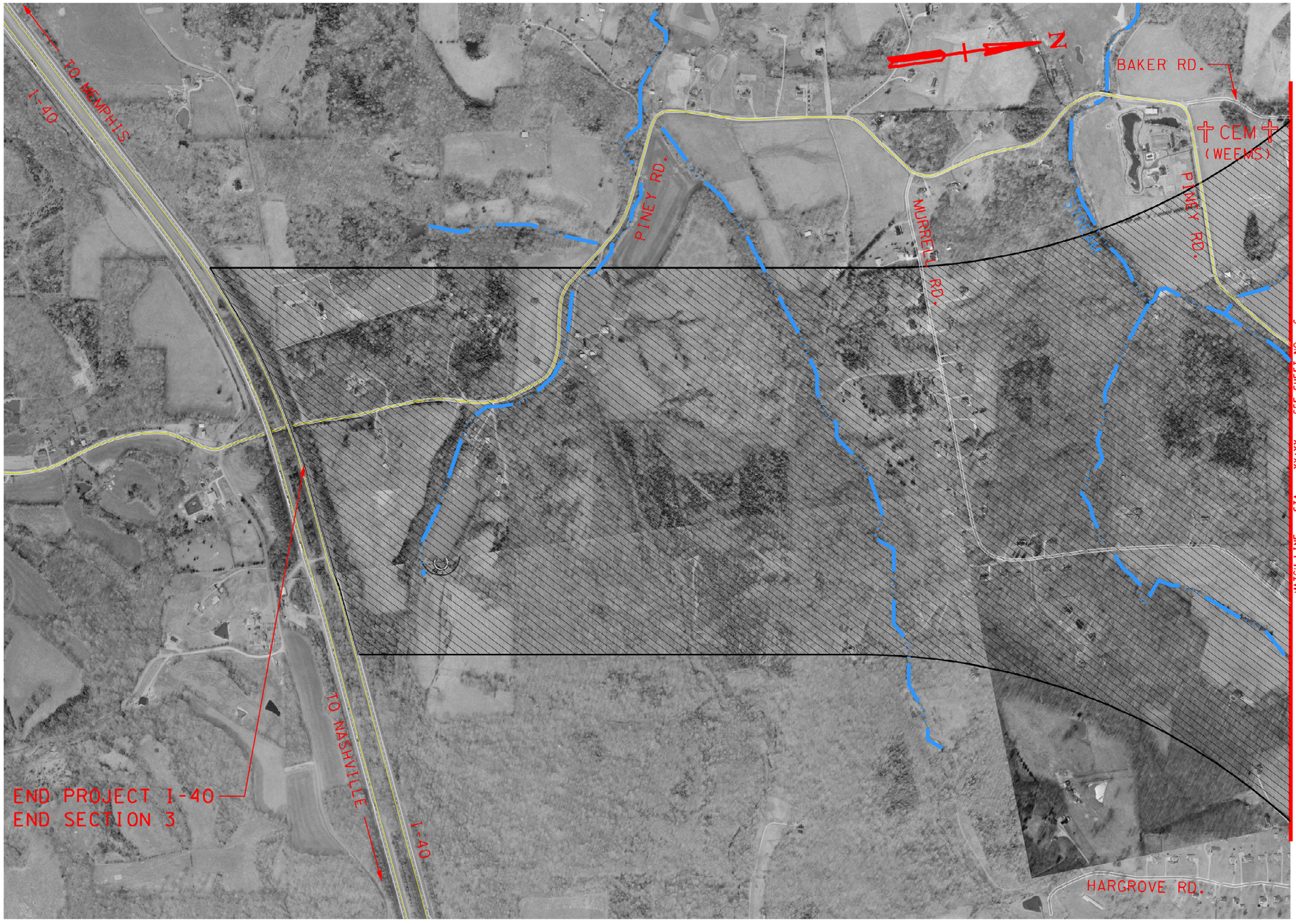
TENNESSEE D.O.T.
DESIGN DIVISION
FILE NO.

TYPE	YEAR	PROJECT NO.	SHEET NO.
CONCEPT	2006	DICKSON BYPASS	8



400′ 800′ 1200′
SCALE 1" = 400′

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

CONCEPTUAL PLANS

SCALE: 1" = 400′

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