TRANSPORTATION PLANNING REPORT

STATE ROUTE 30

FROM SR-29 (US-27) TO 2000 FEET EAST OF THE TENNESSEE RIVER BRIDGE

RHEA & MEIGS COUNTIES

PIN# 109410.00

PREPARED BY

Florence & Hutcheson

FOR THE

TENNESSEE DEPARTMENT OF TRANSPORTATION

PROJECT PLANNING DIVISION

Approved by:	Signature	DATE
CHIEF OF ENVIRONMENT AND PLANNING		2/14/08
TRANSPORTATION DIRECTOR PROJECT PLANNING DIVISION		2-14-08
TRANSPORTATION MANAGER 2 PROJECT PLANNING DIVISION		1/23/08

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1.0 BACKGROUND INFORMATION

1.1 Project History

This transportation planning study examines six options for the improvement of SR-30 in Rhea and Meigs Counties in Southeast Tennessee. These options evaluate opportunities for meeting the mobility, safety, and economic development needs of Southeast Tennessee, including the city of Dayton and Rhea and Meigs Counties. The improvement options examined are summarized below:

- Option 1: Whites Flat Road Alignment
- Option 2: New Location Alignment
- Options 3 & 4: Walnut Grove Road Alignment
- Option 5: Improvements to Existing Alignment
- Option 6: No Build Option

This report is a continuation of several previous studies and meetings. A summary of previous activity concerning this project is provided in **Exhibit 1.1**:

EXHIBIT 1.1 PROJECT HISTORY

Date	Activity
June 29, 2006	Highway 30 Economic Development Coalition meeting in Dayton hosted by the City of Dayton. Twenty members attended the first meeting of the coalition to build consensus and map a strategy for building purpose and need for improvements along the route. The corridor was identified as an important east-west route through the interior of the southeast region for the efficient movement of goods and workforce/tourism/recreation access. Action steps identified included the further identification of stakeholders, development and adoption of a mission statement, obtaining letters of support, the development of a model resolution, and mapping and land use planning. The services of staff from the UT Center for Transportation Research were obtained.
September 21, 2006	The Technical Committee of the Southeast Tennessee Development District (RPO) met at the City of Athens Trade and Conference Center. Information concerning SR-30, including congestion, safety, and crash data, was discussed. It was determined that improvements to SR-30, from SR-29 (US-27) to the Tennessee River, were the RPO's highest roadway priority for study.

EXHIBIT 1.1 PROJECT HISTORY (CONT.)

Date	Activity
February 9, 2007	Highway 30 Economic Development Coalition Steering Committee meeting in Chattanooga hosted by the Southeast TN Development District. Thirteen people attended this meeting and included representatives from TDOT and staff from the UT Center for Transportation Research. Discussion items included: TDOT's Strategic Investments Plan; presentation of a draft Purpose and Need Statement with a corridor map; updated stakeholder list; balancing the protection of the environment with economic development; corridor assets (tourism, recreation, workforce); and research on other corridor planning entities. The following action steps were identified: identify and quantify corridor assets; schedule a day trip of the corridor; identify low-cost safety issues that could be addressed in the short-term; and identify funding sources for promotion of corridor assets.
April 10, 2007	Technical Committee of the Southeast TN Rural Planning Organization met in Ducktown. The committee created a purpose and need document relative to economic indicators to be sent to TDOT for the study priority segment (from SR-29 in Dayton to east of the TN River). Of the 27 new projects proposed during the RPO's first year, four of the top final six were SR-30 segments.
May 29, 2007	Highway 30 Economic Development Coalition meeting in Dayton hosted by the City of Dayton. Twenty-four people attended. TDEC was added as a stakeholder. A presentation by facilitator and staff from UT Center for Transportation Research discussed: current SR-30 conditions and uses; status of current SR-30 projects; and identification of corridor development strategies. The following action steps were identified: schedule TDOT for next meeting to give engineering report on Bledsoe County segment of SR-30; request assistance from the UT Center for Transportation Research in evaluating the benefits of an improved corridor; have stakeholders secure land use plans for all counties along the corridor; and add state legislators to the stakeholder list.
June 7, 2007	Florence & Hutcheson was hired by TDOT's Project Planning Division to assist in the development of a Transportation Planning Report (TPR) to examine improvements to SR-30.

EXHIBIT 1.1 PROJECT HISTORY (CONT.)

Date	Activity
June 14, 2007	A field review was held on site to determine and examine the routes to be studied in this TPR. Representatives from TDOT, The Rhea County Highway Department, The Rhea County Planning Commission, The Southeast Tennessee Development District, and Florence & Hutcheson were present. Minutes from the meeting are included in the **Appendix**.
July 11, 2007	TDOT's Systems Planning and Policy Office of the Long Range Planning Division prepared a "Preliminary Purpose and Needs Statement for SR-30 from US-27 (SR-29) in Dayton to Tennessee River, Rhea County". This document was prepared for the Southeast Tennessee Rural Planning Organization. The recommendation of this document is as follows: The Long Range Planning Division recommends that SR-30 from US27 (SR-29) in Dayton to the Tennessee River (Segment A and Segment B) be selected as a section of independent utility (SIU), and is requesting a TPR be undertaken for this section due to lane width and shoulder width deficiencies, and a crash rate that exceeds the statewide average.

1.2 Project Study Area

The limits of existing SR-30 under study extend from SR-29/US-27/Rhea County Highway (SR-29) at log mile (L.M.) 9.18 in Rhea County to 2000' east of the Tennessee River Bridge at L.M. 0.38 in Meigs County. The border between Rhea and Meigs Counties is located at the center of the Tennessee River Bridge (L.M. 17.62 Rhea County/L.M. 0.00 Meigs County). Therefore, 8.44 miles of the 8.82-mile section of SR-30 under study is located in Rhea County, with the remaining 0.38 miles located in Meigs County. SR-30 is within Dayton's city limits from the beginning of the project at L.M. 9.18 to L.M. 10.73 (1.55 miles). Dayton is located approximately 36 miles northeast of Chattanooga.

Multiple alignment options are studied in this report. Therefore, the study area extends from existing SR-30 to the southwest to Whites Flat Road to the northwest. Whites Flat Road intersects SR-29 approximately six miles to the north of SR-30. The study area's eastern terminus is located 2000' east of the SR-30 Bridge over the Tennessee River. Please refer to **Exhibit 1.2.1 Area Map** or **Exhibit 1.2.2 Location Map** for visual representations of the study area.

EXHIBIT 1.2.1 AREA MAP

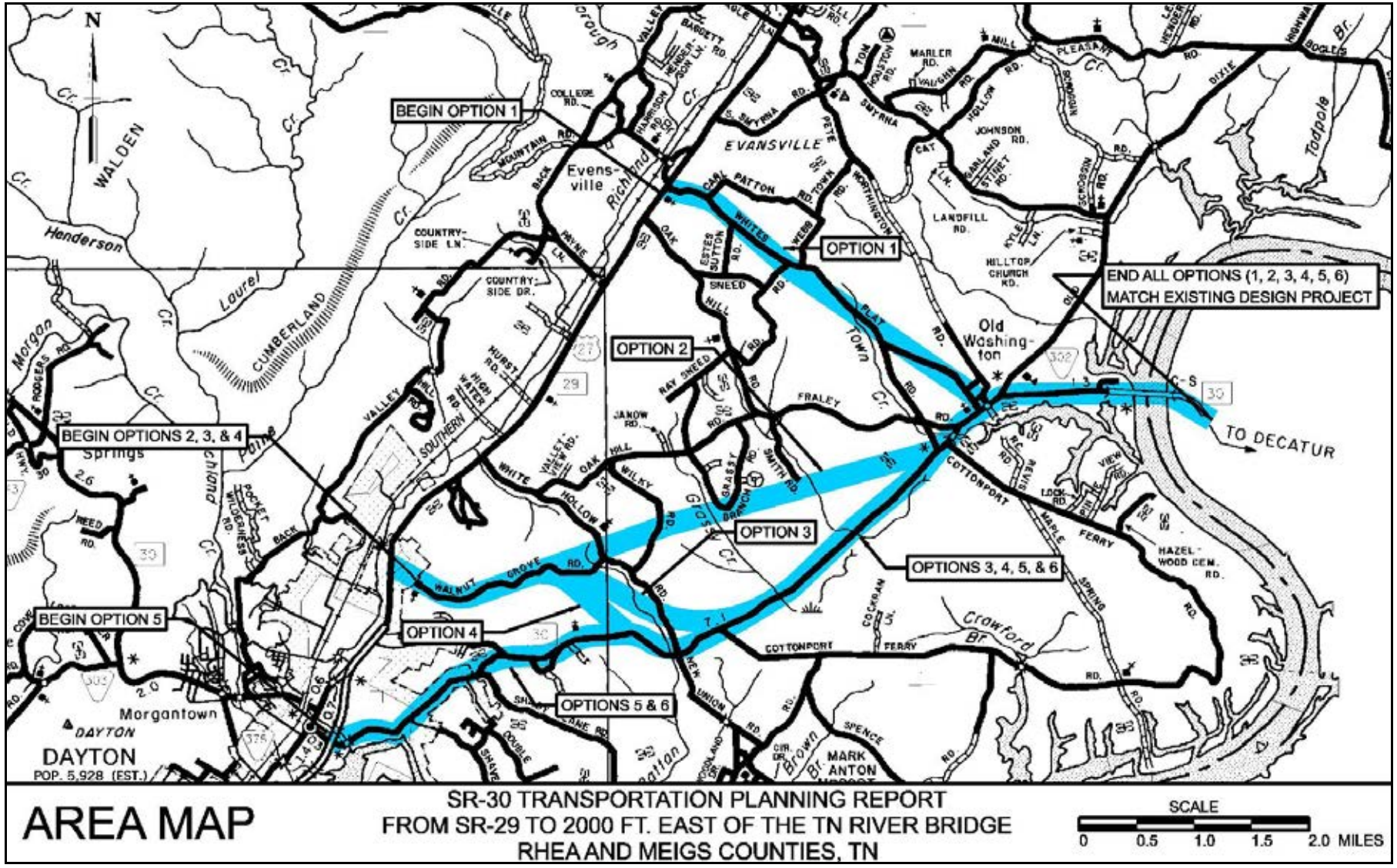


EXHIBIT 1.2.2 LOCATION MAP

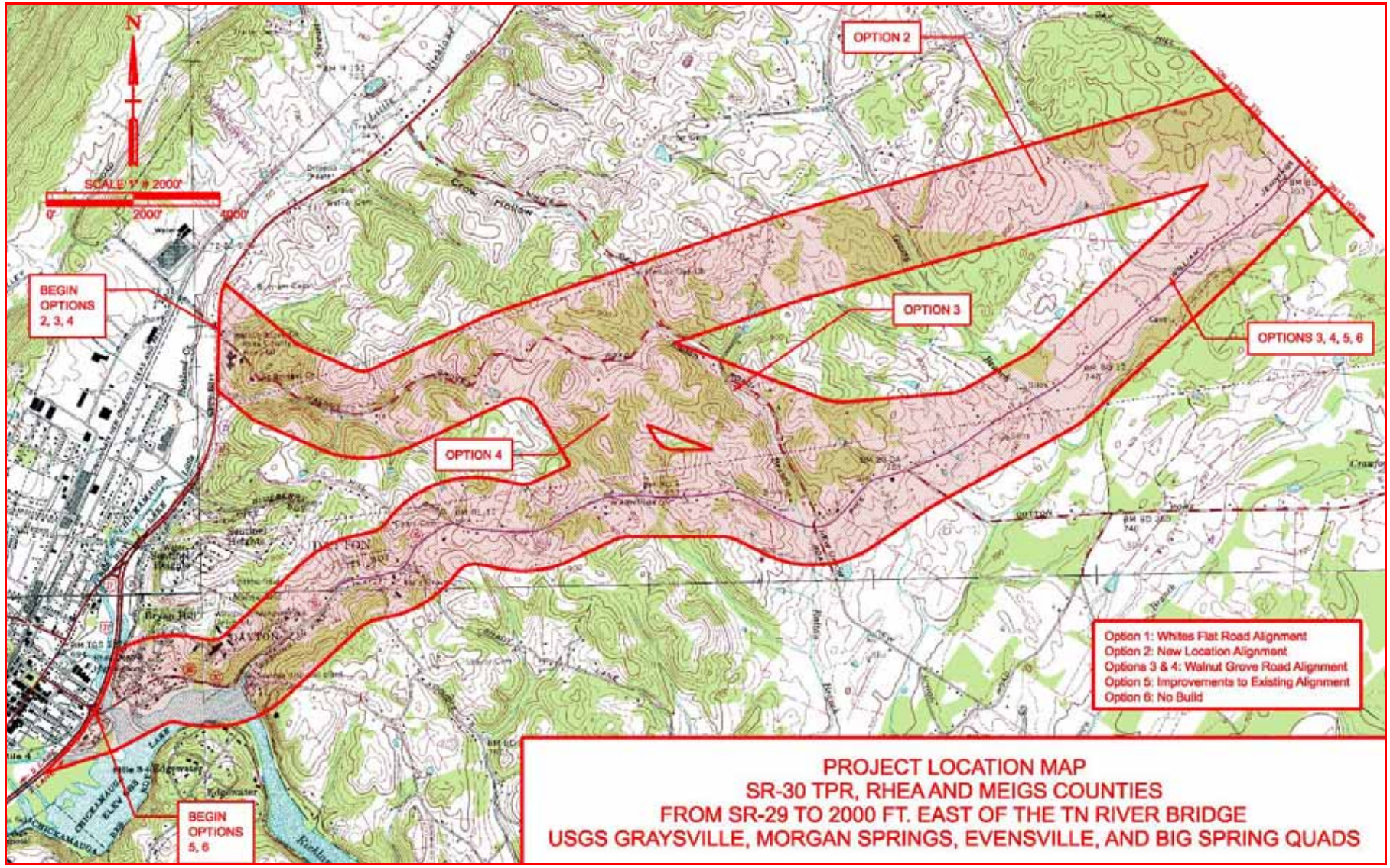
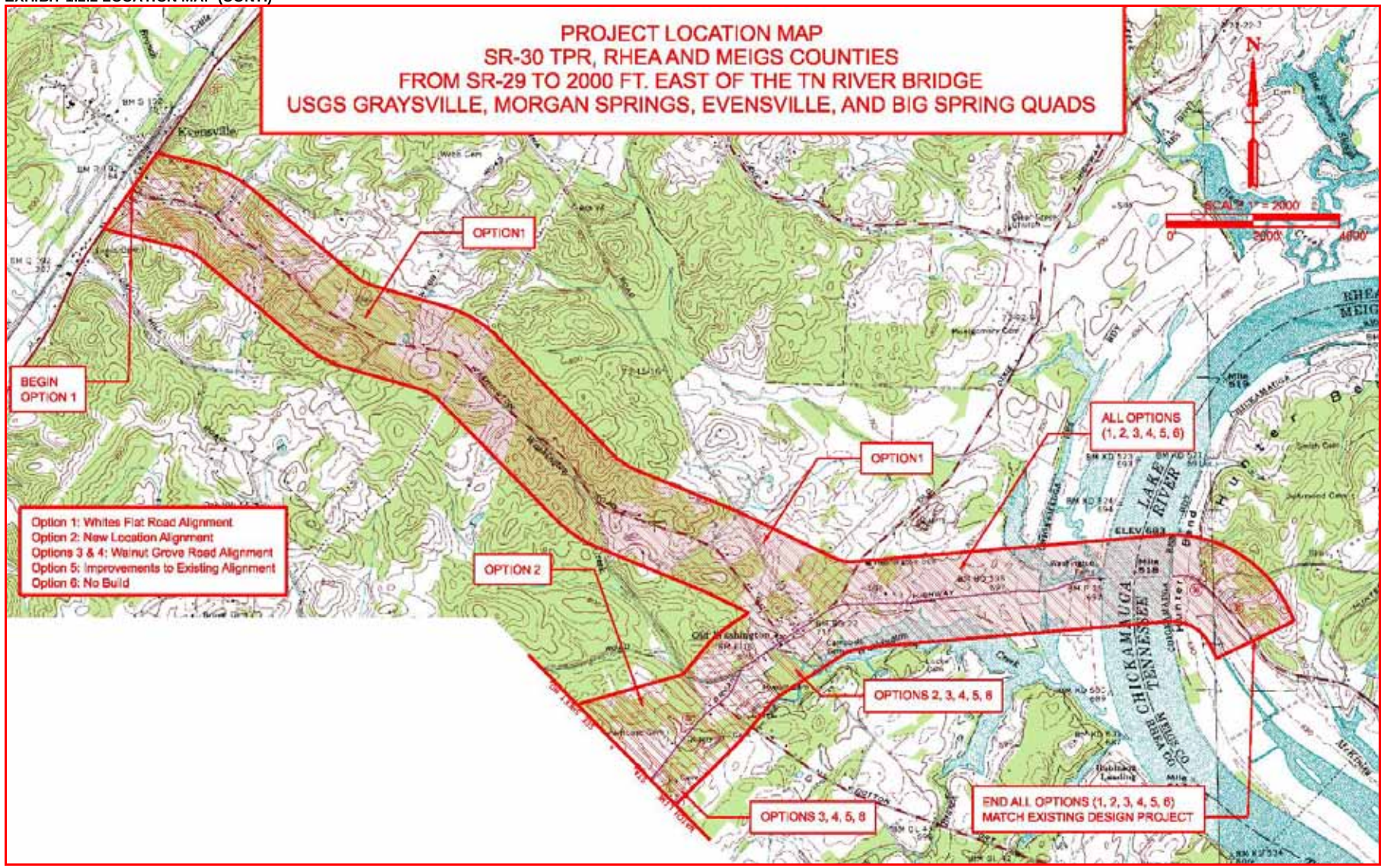


EXHIBIT 1.2.2 LOCATION MAP (CONT.)



1.3 Community Description

Rhea and Meigs Counties are part of the Southeast Tennessee Development District Rural Planning Organization. The Rural Planning Organizations (RPOs) were created through a partnership between the Tennessee Department of Transportation (TDOT) and the Tennessee Development Districts to provide input from rural local officials and interested transportation stakeholders. The RPOs provide for continuing, comprehensive, coordinated transportation planning and programming in the non-metropolitan areas of the state.

The majority of the study area is in Rhea County. There are 95 counties in Tennessee. Rhea County is the 69th largest County by land area in Tennessee with an area of 316 square miles. Rhea County is the 50th most populous county in Tennessee with 29,286 residents (2003 U.S. Census estimate). The population of Rhea County grew 16.7% from 1990 to 2000. The 2004 unemployment rate of Rhea County was 6.8%, which is higher than the 2004 unemployment rate for Tennessee of 5.4%. The 2002 median household income in Rhea County was $31,373, below the 2002 median household income for Tennessee of $37,129.

The 2003 total employment in Rhea County consisted of 10,690 jobs. Numerous industries are located in Rhea County with the majority of employment provided by manufacturing and government jobs. A summary of the industry classifications and their percentage of the workforce is provided in **Exhibit 1.3.1**.

EXHIBIT 1.3.1 RHEA COUNTY INDUSTRIES AND PERCENT EMPLOYMENT

Rhea County Industries	Percent Employment
Manufacturing	44.7%
Government	20.5%
Trade, transportation and Utilities	11.1%
Leisure and Hospitality	7.6%
Education and Health Services	6.3%
Construction	2.9%
Professional and Business Services	2.2%
Financial Activities	2.1%
Natural Resources and Mining	1.1%
Other Services	1.1%
Information	0.4%
Total	**100%**

The city of Dayton is the Rhea County Seat and the county's most populous city with a population of 6,180 (2000 U.S. Census). The western terminus of existing SR-30 studied in this report is within Dayton's city limits.

Several major traffic generators are located within or near the study limits of this TPR. The majority of the study area's industrial and commercial developments are located along the SR-29 Corridor within Dayton's city limits. Higher residential densities are located within the city limits, also. Inside the city limits, the residential density is 383

persons per square mile. Outside of Dayton's city limits, the land use is mostly residential or farmland with a density of 51 persons per square mile. The topography within the study limits is rolling to steep hills with steep bluffs adjacent to the Tennessee River. The topography within Dayton's city limits is generally flatter than the terrain outside of the city limits.

Major industries located within the study area, along with their total number of employees, are listed in **Exhibit 1.3.2**. These industries are also mapped in **Exhibit 1.3.3**.

EXHIBIT 1.3.2 MAJOR INDUSTRIES

Name	Product	Number of Employees
La-Z-Boy Chair Company	Furniture	2,350
Suburban Manufacturing Company	Heating Units	500
Lear Corporation	Automotive Parts	465
Robinson Manufacturing Company	Men's Apparel	460
Goodman Company	Air Conditioners	412
Kayser Roth Hosiery Company	Pantyhose	241
T.C. Thiolon USA	Yarn	160
Kinro	Windows and Doors	130
Fuji Specialty Products Company	Chemical Additives	100
S&S Sportswear	Sportswear	50
Rogers Group	Quarry	10
Vulcan Materials	Quarry	10

Several community facilities are located within the study area. These facilities include an airport, a landfill, a hospital, schools, and a park. These community facilities are mapped in **Exhibit 1.3.3**.

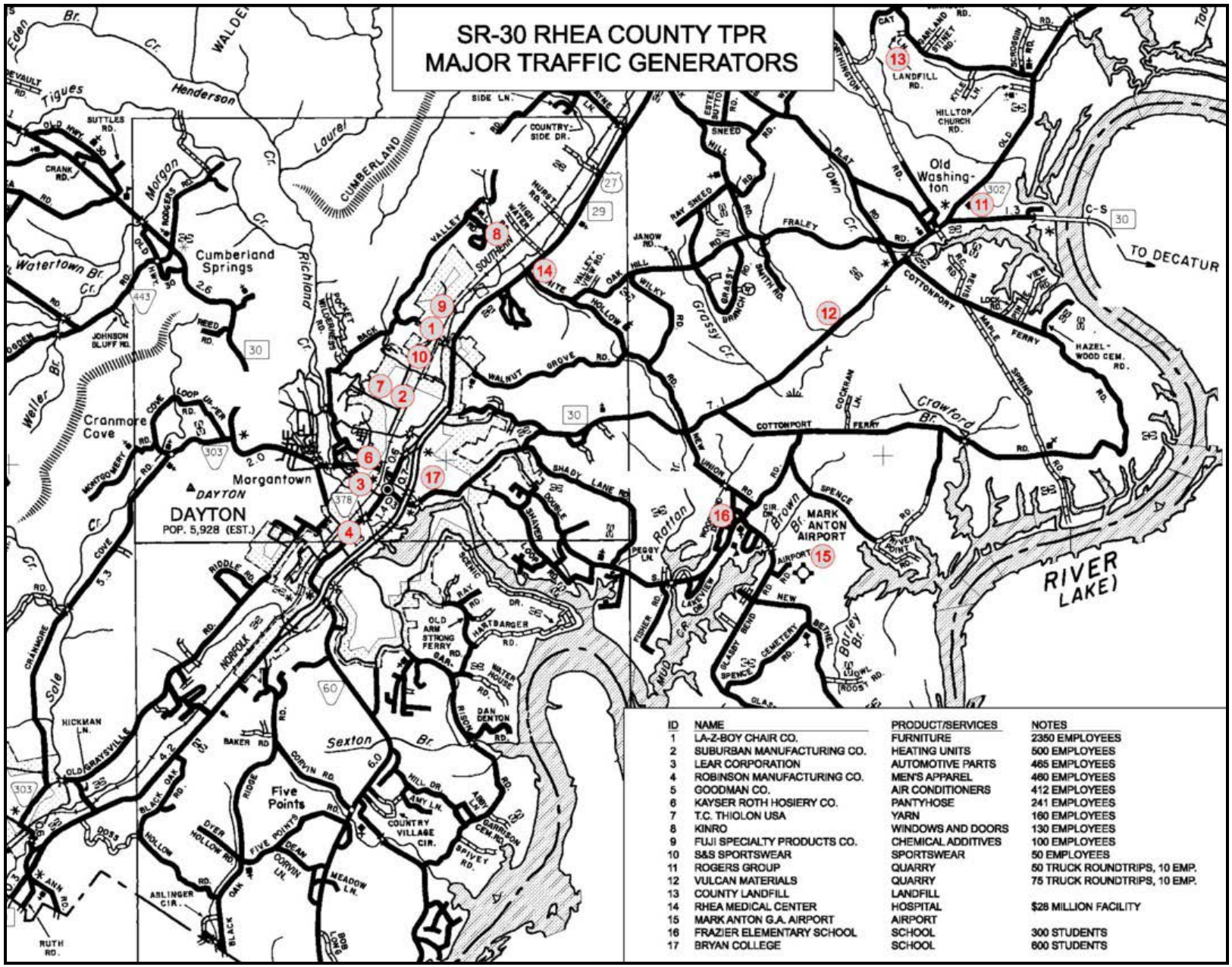
Mark Anton General Aviation Airport is located east of Dayton off New Union Road. The asphalt runway is 5000' long by 100' wide. No commercial service is provided at this airport. The closest commercial service airport is in Chattanooga.

The Rhea County landfill is located just north of Whites Flat Road. The landfill should be avoided with all improvement options.

Frazier Elementary School and Bryan College are located within or near the study area. Both schools contribute to traffic along existing SR-30. Frazier Elementary has 300 students. It is located off New Union Road. Bryan College has 600 students enrolled at its 118-acre campus. Bryan College is located within Dayton's city limits

Old Washington Park is located near the intersection of SR-30 with SR-302. The burial site of David Campbell, a Revolutionary War veteran, is located within this park.

EXHIBIT 1.3.3 MAJOR TRAFFIC GENERATORS



2.0 EXISTING TRANSPORTATION CONDITIONS

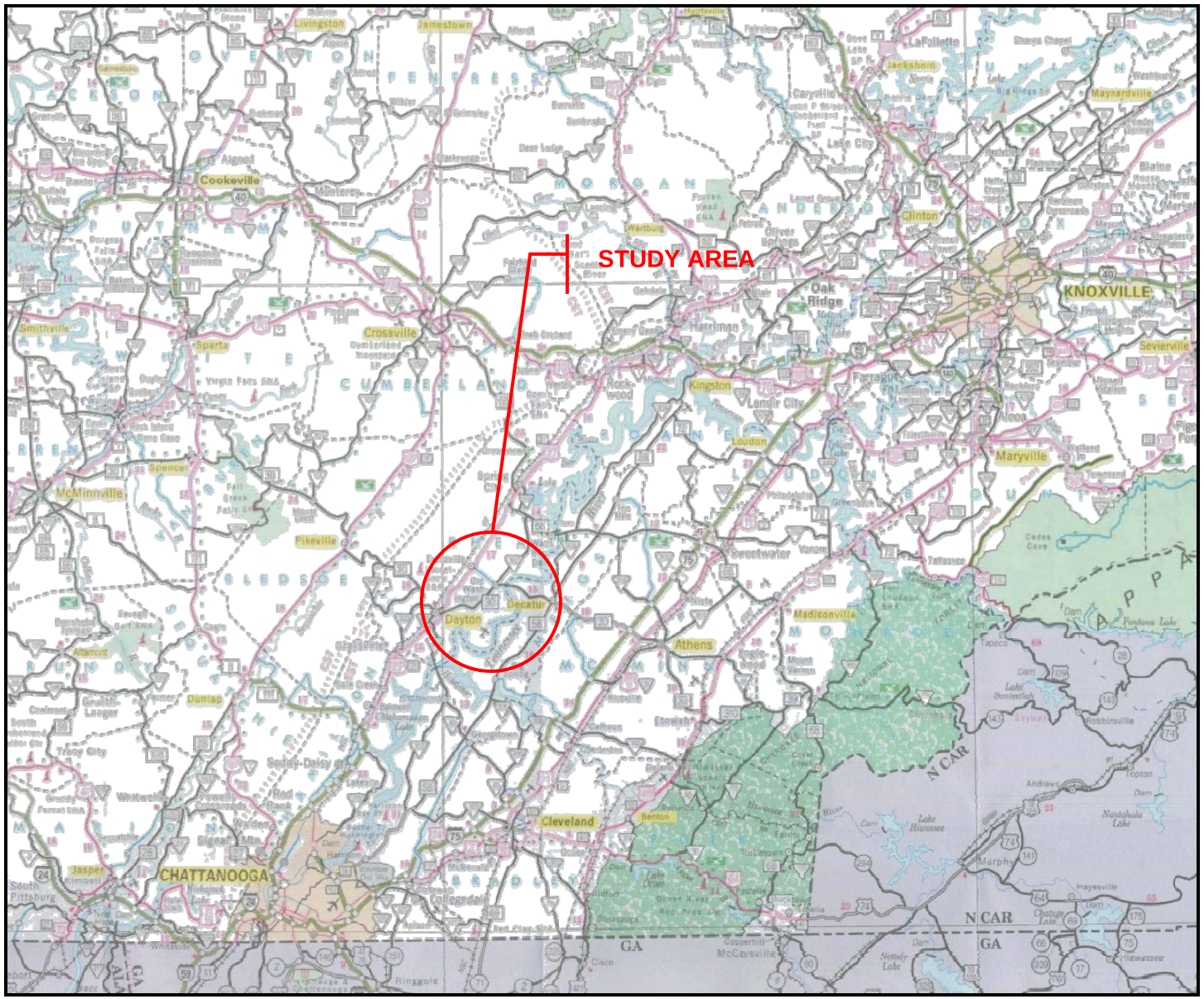
2.1 Regional Highway Network Discussion

There are several high quality north-south routes in Southeast Tennessee, including SR-29, I-75, US-11, and US-411. Due largely to the topography surrounding the confluences of the Tennessee River, there are few high quality east-west highways in Southeast Tennessee to connect these north-south routes. SR-30 is the primary east-west route for travel between the cities of Dayton and Athens and for travel to and from I-75. Freight going to and from Dayton's factories is shipped along SR-30 to access I-75. Local officials have expressed a desire for an improved SR-30 to become an east-west regional economic corridor. A highway map of Southeast Tennessee is provided in **Exhibit 2.1**.

Watts Bar Dam and Nuclear Plant is located northeast of the study area. Sequoyah Nuclear Plant is located southwest of the study area near Chattanooga. SR-30 is designated as the eastern evacuation route in case of a disaster at either plant. SR-30, in conjunction with SR-302, is used as a detour route when SR-29 is closed for any reason.

Other uses of SR-30 include providing access to Tennessee River recreation activities and serving as a commuter route between Dayton and the Watts Bar Nuclear Plant.

EXHIBIT 2.1 REGIONAL MAP



2.2 Planned and Recent Improvements

Improvements to SR-30 are currently under design by TDOT from 2000 feet east of the Tennessee River Bridge to SR-58 in Meigs County. This 5-mile design project constitutes the eastern terminus of this TPR. The designed cross section consists of two 12-foot wide lanes (one for each direction of travel) with 10-foot paved shoulders (12-foot total shoulder width). The design speed for the improvements is 60 miles per hour. The proposed right-of-way (R.O.W.) for the improvements is 150 feet wide (minimum). Additional R.O.W. will be purchased where necessary for miscellaneous design elements, including slopes and drainage. Additional R.O.W. is not being purchased for future widening of the roadway, however.

The bridge over the Tennessee River, and the roadway approaches to the bridge, currently have 12-foot wide lanes and shoulders. Therefore, improvements are not needed to the cross section of the bridge and bridge approaches. The bridge (#72SR0300013) was constructed in 1996. It has a 525-foot main span and a total length of 2,786 feet. The roadway width is 48-feet wide, and as previously discussed, consists of two 12-foot wide lanes and 12-foot shoulders.

East of the design project, from SR-58 to US-11, SR-30 has recently been widened to a four-lane divided highway. SR-30 crosses I-75 in this segment. The eastern terminus of the four lane divided section of SR-30 is near Athens, Tennessee.

2.3 SR-30 Existing Geometric Conditions & Deficiencies

The posted speed limit along SR-30, within the study area, varies from 40 mph to 55 mph. The speed limit is 45 mph from SR-29 to past Shady Lane Road. Dayton's city limits are included in this area. The speed limit then increases to 55 mph to Cottonport Road. The speed limit is decreased to 40 mph from Cottonport Road to the bridge over the Tennessee River. The speed limit returns to 55 mph from the bridge to the end of the study area. SR-30 is classified as an urban minor arterial within Dayton's city limits, and as a rural minor arterial for the remainder of the study area. Approximately 90% of SR-30 is marked as "no passing". A map with the existing roadway conditions labeled is provided in **Exhibit 2.3**.

It would be preferable if the posted speed limit along SR-30 were 55 miles per hour throughout the study area. This would improve regional mobility and provide Southeast Tennessee with a higher speed east-west corridor. Without improvements, existing geometric deficiencies do not allow for safely increasing the speed limit along SR-30.

SR-30, within the study area, primarily consists of 10-foot to 11-foot wide travel lanes with 2-foot wide gravel shoulders. Based on the existing and projected volume of traffic along SR-30, current design standards call for a minimum of 12-foot wide lanes with 10-foot wide graded shoulders (TDOT Standard Drawing RD-TS-3).

The grade along SR-30 just west of Shady Lane is 6.1%. This grade is deficient, based upon current design standards. There are also five deficient horizontal curves along SR-30. These curves have tighter radii than current design standards allow for the posted speeds along SR-30.

Improving SR-30 from SR-29 to New Union Road to meet current design standards would be challenging. This area is moderately developed. Development along SR-30 in this area includes Bryan College. The terrain is rolling, making improvements to the roadway difficult without considerable impact to the adjacent development. Further making improvements difficult, a bluff drops down to the Tennessee River along the eastbound lane of SR-30 within Dayton's City Limits. Improvements along existing SR-30 from New Union Road to the east appear feasible because the area is less developed and the existing roadway geometrics are better than those to the west.

Four of the six options presented in this report utilize a portion of existing SR-29 for use as SR-30. SR-29 is a four-lane arterial highway with no observed geometric deficiencies within the 6.1-mile study area. The lane widths are 12-feet wide. The minimum paved outside shoulder widths are 10-feet wide. The 1.0-mile segment from SR-30 to Blueberry Hill Road is composed of a four-lane divided highway cross section. The 3.1-mile segment from Blueberry Hill Road to Ashley Lane is composed of a five-lane highway cross section with two-way center left turn lane. The 2.1-mile segment from Ashley Lane to Whites Flat Road is composed of a four lane divided highway cross section. There are three traffic signals located along the 1.7-mile segment of SR-29 between SR-30 and Walnut Grove Road. The posted speed limit along the 4.1-mile segment between SR-30 and Ashley Lane is 45 mph. The posted speed limit along the 2.1-mile segment between Ashley Lane and Whites Flat Road is 55 mph. A map with SR-29's existing roadway conditions labeled is provided in **Exhibit 2.4**.

EXHIBIT 2.3 SR-30 EXISTING CONDITIONS

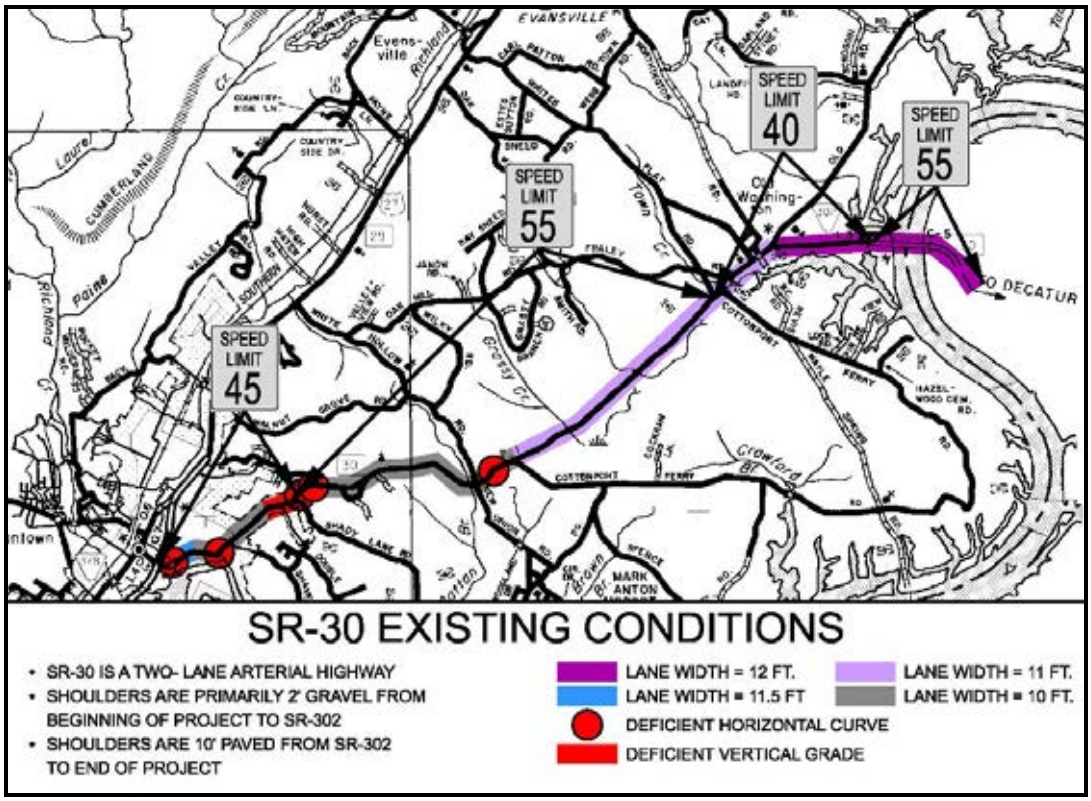
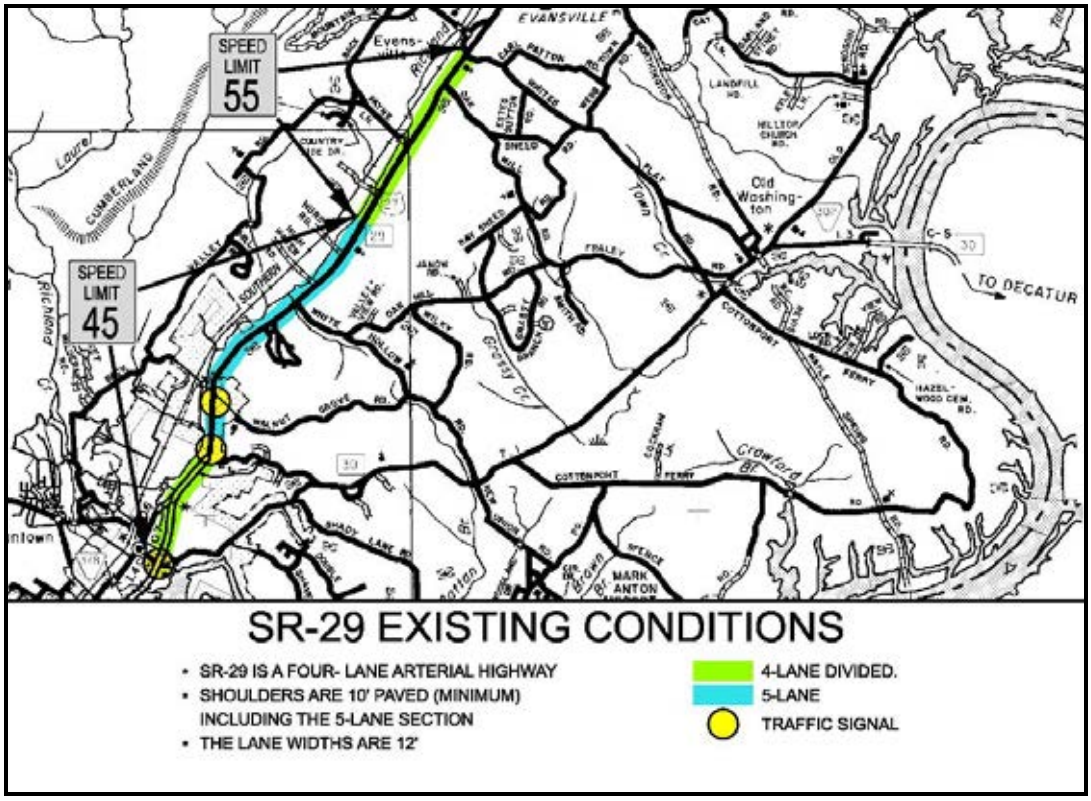


EXHIBIT 2.4 SR-29 EXISTING CONDITIONS



2.4 Safety

Traffic crash rates were provided by TDOT from crash data for the years 2003 through 2005. **Exhibit 2.4** summarizes the crash rates for SR-30 within the study area. SR-30 is classified as an urban minor arterial within Dayton's city limits, and as a rural minor arterial for the remainder of the study area. The crash data is summarized for each classification and compared to statewide averages.

EXHIBIT 2.4 SR-30 CRASH RATES FOR 2003-2005

Location	Roadway Classification	Statewide Crash Rate	Actual Crash Rate
From SR-29 to Dayton's City Limit	Urban Minor Arterial	2.341	1.944
From Dayton's City Limit to End of Project	Rural Minor Arterial	1.701	1.932

Within Dayton's City Limits between 2003 and 2005, there were 19 crashes along SR-30. Three of these were injury crashes. There were no fatalities or incapacitating injury crashes. This segment of highway is 1.55 miles long.

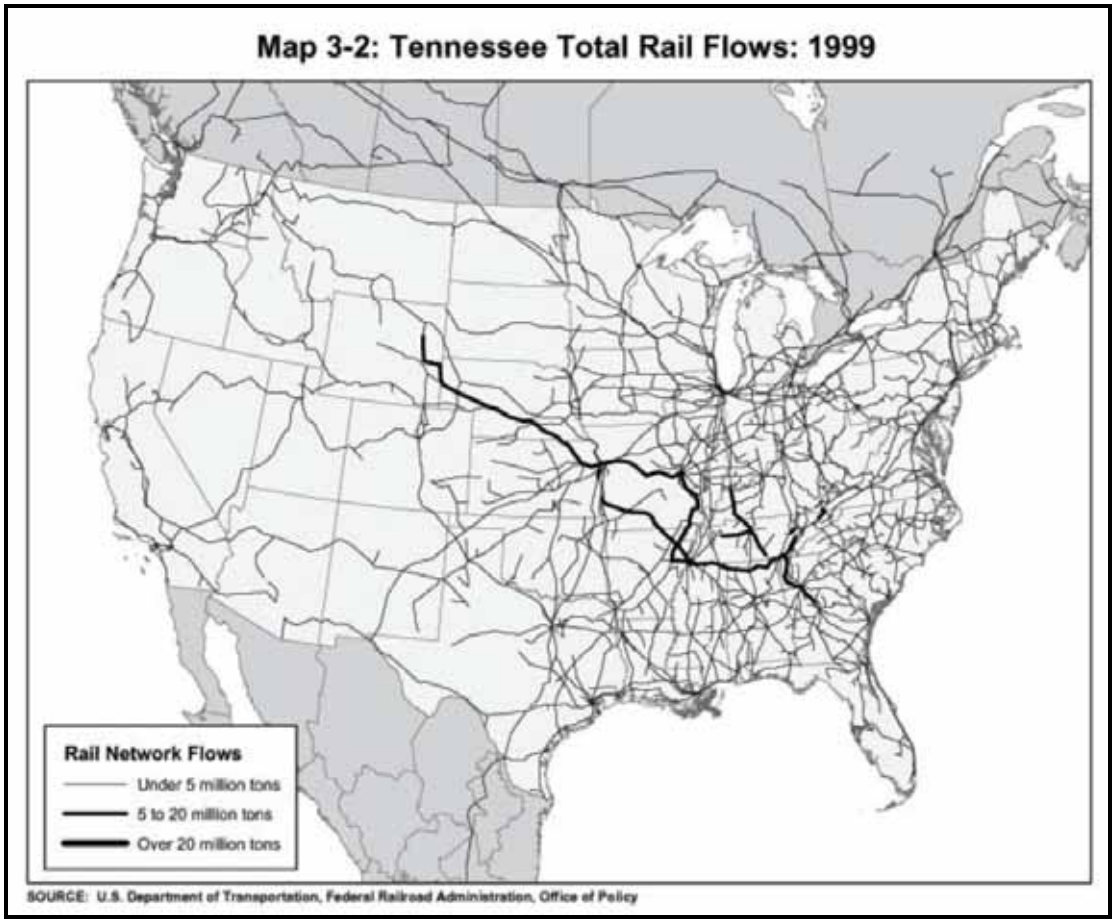
Outside of Dayton's city limits, within the study area, there were 68 crashes. Two of the crashes were fatality crashes. These crashes occurred at log miles 11.06 and 12.61. Log Mile 11.06 is at the intersection of SR-30 with Henry Mize Road. Log Mile 12.61 is at the intersection of SR-30 with New Union Road. Twenty-three of the 68 crashes were injury crashes, two of which were incapacitating injury crashes. This segment of highway is 6.88 miles long.

2.5 Alternative Transportation Modes in Study Area

The Southeast TN Human Resource Agency (SETHRA) offers rural public transportation service throughout Southeast Tennessee, including Rhea and Meigs Counties. SETHRA operates as a curb-to-curb service and requires reservations. This service is available Monday through Friday from 7:30 am to 4:00 pm. SETHRA public transportation is provided in association with TDOT and the Federal Transit Administration (FTA).

Alternative freight transportation modes are present near the study area. A map of nationwide rail tonnage is provided in **Exhibit 2.5.1**. This map is from the Bureau of Transportation Statistics *2007 Tennessee Transportation Profile* and references the Federal Railroad Administration (FRA). As can be seen in the exhibit, a major north-south rail corridor is located in Southeast Tennessee.

EXHIBIT 2.5.1 RAIL FREIGHT MAP



Another alternative freight transportation mode in the area is the Tennessee River. Freight transportation along the Tennessee River has contributed to the economic and industrial development of the Tennessee Valley. The largest tributary of the Ohio River, the Tennessee River is part of the nation's Inland Waterway System. These interconnected river routes cover 11,000 miles and serve to strategically link geographic areas, major markets, suppliers of raw materials, processors, and consumers. A map of the Inland Waterway System is provided in **Exhibit 2.5.2**. This map is from the Tennessee Valley Authority (TVA).

EXHIBIT 2.5.2 INLAND WATERWAY SYSTEM

3.0 PURPOSE AND NEED

3.1 Purpose and Need of Improvements to SR-30

The purpose of improvements to SR-30, within the study area, is to improve regional mobility, support economic development, and improve safety. Improvements, including potential realignment of the route, are needed to SR-30 due to existing geometric deficiencies, including narrow lane and shoulder widths, and the lack of high-quality east-west highway routes in the region. It should be noted that "SR-30" within this report includes any proposed alignment option that will be signed as "SR-30", and is not limited to the existing route. Improvements to SR-30 were selected by the Southeast Tennessee Development District (RPO) as a priority for the region. TDOT's Long Range Planning Division Needs Assessment recommends that SR-30 be selected as a Section of Independent Utility (SIU), and that a TPR be undertaken due to deficiencies in lane width, shoulder width, and a crash rate that exceeds the statewide average.

One purpose of improvements for SR-30 is to improve regional mobility. As discussed previously, there are several high quality north-south routes in Southeast Tennessee, including SR-29, I-75, US-11, and US-411. Due largely to topography, there are few high quality east-west highways in Southeast Tennessee to connect these north-south routes. SR-30 is the primary east-west route for travel between the cities of Dayton and Athens and for travel to and from I-75. SR-30 is also a commuter route for Rhea County residents working at TVA's Watts Bar Reservation. Improvements to SR-30 could enhance connectivity to the existing alternative freight transportation modes of rail and waterways in the area. SR-30 is also the primary bicycling corridor from SR-29 across the Tennessee River to SR-58, US-11, and Athens, providing access for multi-modal use.

Another purpose of improvements for SR-30 is to support economic development. Freight from Dayton's factories is shipped along SR-30 to access I-75. Local officials have expressed a desire for an improved SR-30 to become an east-west regional economic corridor. Many industries, schools, and a hospital (among other community facilities) are located along SR-30 or within the study area.

The final purpose of improvements is to improve safety. Existing SR-30 contains several geometric deficiencies, including narrow lane and shoulder widths. The crash rate along the majority of the project exceeds the statewide average. SR-30 is designated as the eastern evacuation route in the event of a disaster at Watts Bar and/or Sequoyah nuclear plants, further reinforcing the need for improvements along the route.

3.2 Purpose and Need Justification

The Tennessee Department of Transportation's Tennessee Environmental Procedures Manual outlines several topics to be discussed in Planning Reports to justify a project's Purpose and Need Statement. These topics include Project Status, System Linkage, Existing and Future Conditions, Transportation Demand, Legislation, Social or Economic Conditions, Land Use, Modal Relationships, Safety, and Roadway Deficiencies. A discussion of how these topics were addressed is provided below in the following text.

Project Status: Provide a brief project history, including all actions taken, other state and federal agencies involved, and project schedule. Discuss the history of transportation planning in the area. Describe the actions taken and the governmental units or agencies involved. Discuss any existing transportation plans or other relevant studies.

Project status is discussed in Section **1.1 Project History** of this TPR.

System Linkage: Is the project a needed connecting link in a transportation system? How does the project fit into the system-existing and future? If the project is a needed link in a roadway network, describe the existing lack of connectivity. Explain how the proposed improvement would address the needs of the community and the roadway system. Even if system linkage is not a primary justification, it may still be beneficial to provide an overview of the overall roadway network and the function the subject road serves within the system.

If applicable, discuss the relationship of the subject roadway to any other designated systems such as the National Highway System, Strategic Highway Network (STRAHNET), National Truck Network, and emergency evacuation roads (e.g., for roadways near nuclear facilities).

System linkage is discussed in Section **2.1 Regional Highway Network Discussion** of this TPR.

Existing and Future Conditions: Identify TDOT's roadway classification. What roadway capacity is needed, existing and future? What is the level of service for the existing and future facility? Give data for existing and future (projected) annual average daily traffic (AADT), peak hour characteristics and truck percentages and capacity and level of service (LOS). Include a brief explanation of LOS ratings, as described in the Highway Capacity Manual.

Existing and future conditions are discussed in Sections **4.0 Measures of Effectiveness** and **5.0 Proposed Improvements** of this TPR.

Transportation Demand: Discuss relationship to the state's transportation plan or plans adopted by the MPO; include traffic forecasts generated by the state or MPOs.

The study area is not within an MPO's boundaries. The Southeast Tennessee Development District RPO has been involved in the development of this project. Their involvement is documented in Section **1.1 Project History** of this TPR. TDOT provided traffic projections for each alignment option. The traffic projections are provided at the end this TPR, following the *Checklist of Determinants for Location Study*.

Social or Economic Conditions: Identify whether the subject facility may significantly impact any identified groups. Explain how the benefits and adverse impacts to these groups were considered during the planning process. Is the new or upgraded facility needed to serve a new school, a new factory, etc.? Is unemployment high in the area and is the road needed to promote economic development and provide jobs?

No identified groups were observed during the environmental scan of the study area discussed in Section **6.1.6 Guiding Principle 6: Promote Stewardship of the Environment**. Prior to any right-of-way acquisition or construction, an appropriate

environmental document will be prepared in accordance with the provisions outlined by the National Environmental Protection Act (NEPA).

Unemployment and economic development is discussed in Section **1.3 Community Description** of this TPR.

Land Use: If applicable, describe projected changes in land use that spur the need for improving the area's highway capacity. Reference the local area's land use plan and describe how it was considered in the transportation planning process. Explain how the project may impact major existing or planned development.

The study area is primarily rural and outside of Dayton's city limits. Rhea County does not have zoning in its unincorporated areas. Therefore, land use plans were not consulted as part of this study. Industries in the area are discussed in Section 1.3 **Community Description** of this TPR.

Modal Relationships: Describe relationships to other transportation modes such as airports, rail and port facilities and how the project may affect other transportation modes. Is the road needed or is an upgrade warranted to get traffic to an airport. To get trucks to a port or rail terminal?

Modal relationships are discussed in Section **2.5 Alternative Transportation Modes in Study Area**.

Safety: Is the project needed to correct an existing safety hazard? For areas with high crash rates, provide data on the frequency, type, conditions, cause and increase or decrease over time in rate of crashes in comparison to the critical crash rates. Discuss any other type of safety hazard, such as substandard design or geometric deficiencies. Describe any design deficiencies, such as substandard cross section or horizontal or vertical alignment.

Safety is discussed in Section **2.4 Safety** of this TPR.

Roadway Deficiencies: Are improvements necessary to correct existing roadway deficiencies, for example, substandard geometry or lane width? How will the project correct these deficiencies? Describe any design deficiencies, such as substandard cross section or horizontal or vertical alignment.

Existing roadway deficiencies are discussed in Section **2.3 SR-30 Existing Geometric Conditions and Deficiencies** of this TPR. How the options will correct these deficiencies is discussed in Section **5.0 Proposed Improvements**.

4.0 MEASURES OF EFFECTIVENESS

Several different measures of effectiveness are utilized in this TPR to assess the operational conditions of each of the improvement options. These measures of effectiveness are level of service, volume to capacity ratio, average travel speed, and travel time. A definition of these measures is provided in the following text. The value associated with each of these measures for each alignment option is provided in Section **5.0 Proposed Improvements**. For options that utilize a portion of existing SR-29 for use as SR-30, the measures of effectiveness are tabulated for each segment of the route and totaled to provide a comparison of the routes from the same beginning and end locations.

4.1 Level of Service

Level of Service (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 quality of service of SR-30 was analyzed utilizing the procedures outlined in the *Highway Capacity Manual 2000* (HCM) *Two-Lane Highways* 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.

In addition to geometric and traffic characteristics, the highway classification must be determined for the *Two-Lane Highways* procedures. The classes of two-lane roads closely relate to their functions. Most arterials are considered Class I, and most collectors and local roads are considered Class II. The calculations included in this TPR categorize SR-30 as a Class I Two-Lane Highway. The HCM definition for a Class I Highway is as follows (pg. 12-12):

Class I – These are two-lane highways on which motorists expect to travel at relatively high speeds. Two-lane highways that are major intercity routes, primary arterials connecting major traffic generators, daily commuter routes, or primary links in state or national highway networks generally are assigned to Class I. Class I facilities most often serve long-distance trips or provide connecting links between facilities that serve long-distance trips.

As per the HCM (pg. 20-3): *On Class I highways, efficient mobility is paramount, and LOS is defined in terms of both percent time-spent-following and average travel speed*. The HCM descriptions of LOS for Class I Two Lane Highways are as follows (pg. 12-16):

LOS A describes the highest quality of traffic service, when motorists are able to travel at their desired speed. Without strict enforcement, this highest quality would result in average speeds of 55 mi/h or more on two-lane highways in Class I. The passing frequency required to maintain these speeds has not reached a demanding level, so that passing demand is well below passing capacity, and platoons of three or more vehicles

are rare. Drivers are delayed no more than 35 percent of their travel time by slow moving vehicles. A maximum flow rate of 490 pc/h total in both directions may be achieved with base conditions.

LOS B characterizes traffic flow with speeds of 50 mi/h or slightly higher on level terrain Class I highways. The demand for passing to maintain desired speeds becomes significant and approximates the passing capacity at the lower boundary of LOS B. Drivers are delayed in platoons up to 50 percent of the time. Service flow rates of 780 pc/h total in both directions can be achieved under base conditions. Above this flow rate, the number of platoons increases dramatically.

LOS C describes further increases in flow, resulting in noticeable increases in platoon formation, platoon size, and frequency of passing impediments. The average speed still exceeds 45 mi/h on level terrain Class I highways, even though unrestricted passing demand exceeds passing capacity. At higher volumes the chaining of platoons and significant reductions in passing capacity occur. Although traffic flow is stable, it is susceptible to congestion due to turning traffic and slow-moving vehicles. Percent time-spent-following may reach 65 percent. A service flow rate of up to 1,190 pc/h total in both directions can be accommodated under base conditions.

LOS D describes unstable traffic flow. The two opposing traffic streams begin to operate separately at higher volume levels, as passing becomes extremely difficult. Passing demand is high, but passing capacity approaches zero. Mean platoon sizes of 5 to 10 vehicles are common, although speeds of 40 mi/h still can be maintained under base conditions on Class I highways. The proportion of no-passing zones along the roadway section usually has little influence on passing. Turning vehicles and roadside distractions cause major shock waves in the traffic stream. Motorists are delayed in platoons for nearly 80 percent of their travel time. Maximum service flow rates of 1,830 pc/h total in both directions can be maintained under base conditions.

At LOS E, traffic flow conditions have a percent time-spent-following greater than 80 percent on Class I highways. Even under base conditions, speeds may drop below 40 mi/h. Average travel speeds on highways with less than base conditions will be slower, even down to 25 mi/h on sustained upgrades. Passing is virtually impossible at LOS E, and platooning becomes intense, as slower vehicles or other interruptions are encountered.

LOS F represents heavily congested flow with traffic demand exceeding capacity. Volumes are lower than capacity and speeds are highly variable.

For options that utilize a portion of existing SR-29 for use as SR-30, the quality of service of existing SR-29 was analyzed utilizing the procedures outlined in the *Highway Capacity Manual 2000* (HCM) *Urban Streets and Multilane Highways* Chapters. The Level-of-Service (LOS) Calculations were performed with the Highway Capacity Software (HCS). The 1.7-mile segment of SR-29 from existing SR-30 to Walnut Grove Road was analyzed with the *Urban Streets* procedures due to the presence of traffic signals. The remaining 4.4 miles of existing SR-29 was analyzed with the *Multilane Highways* procedures.

4.2 Volume to Capacity Ratio

The volume to capacity (v/c) ratio is a quantitative measure and is reported to demonstrate the magnitude of congestion for the various improvement options for SR-30 included in this TPR. As discussed above, the LOS for a two-lane highway is based primarily upon percent time-spent-following and average travel speed. The HCM discussion of capacity for a two-lane highway is as follows (pg. 20-3):

The capacity of a two-lane highway is 1,700 pc/h (passenger cars per hour) *for each direction of travel. The capacity is nearly independent of the directional distribution of traffic on the facility, except that for extended lengths of two-lane highway, the capacity will not exceed 3,200 pc/h for both directions of travel combined.*

The v/c ratio was also calculated along existing SR-29 for options that utilize a portion of this roadway. SR-29 is a four-lane highway. The v/c ratio quantifies if congestion is an issue for many types of facilities, including rural two-lane highways, urban streets, and multilane highways.

4.3 Average Travel Speed

Average travel speed is calculated in the LOS analysis. Speed, or its reciprocal of travel time, is an important measure of the quality of the traffic service provided to the motorist. It is an important measure of effectiveness defining levels of service for many types of facilities, including rural two-lane highways, urban streets, and multilane highways.

4.4 Travel Time

The travel time along a route can be calculated by dividing the distance of the route by the average travel speed. As discussed above, travel time, is an important measure of the quality of the traffic service provided to the motorist.

5.0 PROPOSED IMPROVEMENTS

5.1 Design Criteria

Several design features, or criteria, should be incorporated into any SR-30 improvement option that is chosen. Design criteria that should be implemented consistently with all improvement options includes the number of travel lanes, roadside design, access control, design speed, pedestrian and bicycle accommodations, passing zones, and the disposition of the existing route. With this criteria consistently implemented, the difference between the improvement options can be condensed to selecting an alignment option. The different improvement options, including a No Build Option, are discussed in Section **5.2 Alignment Options** of this TPR. The No Build Option does not include implementation of the design criteria discussed below. As discussed previously, several of the options utilize a portion of existing SR-29 for use as SR-30. SR-29 consists of four travel lanes and has no observed geometric deficiencies. Therefore, improvements along SR-29 are not needed or included in this study.

5.1.1 Number of Travel Lanes

Improvements to SR-30 are currently under design by TDOT from 2000 feet east of the Tennessee River Bridge to SR-58 in Meigs County. This 5-mile design project constitutes the eastern terminus of this TPR. The designed cross section consists of two 12-foot wide lanes (one for each direction of travel) with 10-foot paved shoulders (12-foot total shoulder width). The bridge over the Tennessee River is 48-feet wide and consists of two 12-foot wide travel lanes and 12-foot wide shoulders. The bridge was constructed in 1996.

Calculations indicate two travel lanes (one per direction) will be adequate to meet the projected design year (2032) traffic volumes. For the No Build Option (Option 6, existing SR-30), the volume to capacity ratio (v/c) for 2012 and 2032 are 0.22 and 0.32, respectively. These v/c ratios indicate congestion is not a major issue along the existing two-lane route. The calculations utilized to determine the v/c were discussed in Section **4.0 Measures of Effectiveness**.

Because the volume to capacity ratio for two travel lanes is well below capacity for the design-year traffic volumes, multi-lane highway options are not analyzed in this report. Additional reasons not to consider multi-lane highway options for SR-30 include:

- The improvements to SR-30 east of the study area are for a two-lane roadway
- The relatively new bridge over the Tennessee River is two travel lanes wide. This bridge is within the limits of this TPR.

Despite these reasons, it may still be desirable to improve SR-30, or a segment of SR-30, to a multi-lane highway or a three-lane cross-section. Some portions of the proposed improvements are calculated to have less than ideal levels of service (LOS) with two travel lanes. These LOS are a result of the methodology in the *Two-Lane Highways* Analysis, and not due to capacity constraints or poor calculated operating speeds. The calculations decrease the LOS due to the time vehicles will spend following

other vehicles. Analyzed with different methodologies, the LOS would be improved with the two travel lanes.

A location where a multi-lane highway or three-lane cross-section segment may be more desirable includes areas within or near the city limits of Dayton, where speeds are lower and the number of turning movements will increase. A three-lane cross section should not be considered outside an urbanized area due to the risk of crashes caused by motorists passing in the two-way center left turn lane.

A multi-lane highway option will provide higher levels of service than those reported in this TPR. As discussed previously, a two-lane highway is calculated to provide adequate capacity for the projected design-year traffic volumes. Regardless of the final cross section option(s) chosen, adequate turn bays at intersections should be incorporated into the final design to improve traffic operations and safety.

5.1.2 Roadside Design

A roadside environment free of fixed objects, with stable flattened slopes, enhances the opportunity for reducing lane departure crash severity and should be incorporated into any improvement option chosen. Including an adequate clearzone into the roadside design allows for errant vehicles leaving the roadway and supports a roadside design where the serious consequences of such an incident are reduced. Where roadside obstacles exist, design options include (in order of preference):

1. Remove the obstacle.
2. Redesign the obstacle so it can be safely transversed.
3. Relocate the obstacle to a point where it is less likely to be struck.
4. Reduce impact severity by using an appropriate breakaway device.
5. Shield the obstacle with a longitudinal traffic barrier designed for redirection or use a crash cushion.
6. Delineate the obstacle if the above alternatives are not appropriate.

The roadside design concepts outlined in the American Association of State Highway and Transportation Officials (AASHTO) Roadside Design Guide should be incorporated into any SR-30 improvement option that is chosen.

5.1.3 Access Control

The need to improve regional east-west mobility by providing a relatively high-speed route should be balanced with the area's need to support economic development. To achieve both of these needs, limited access control measures should be implemented along improved sections of SR-30. Access control measures could include limiting driveways and consolidation or realignment of side roads, where applicable. Consolidation or realignment of side roads would limit and improve the intersections along SR-30. SR-30 would then operate efficiently, with limited intersections and limited direct access to private development.

5.1.4 Design Speed

To improve east-west mobility, the design speed for the improvements should be 60 mph. This would enable SR-30 to have a posted speed limit of 55 mph from SR-29 to the east terminus of this study. The adjacent improvements to SR-30 east of the study area (currently under design by TDOT) have a 60 mph design speed. With the improvements, SR-30 could be signed at 55 mph between the cities of Dayton and Athens. This east-west segment of SR-30 is 29 miles long.

5.1.5 Pedestrian and Bicycle Accommodations

Any selected cross-section for improvement will meet AASHTO design standards. The minimum graded shoulder recommended for a two-lane rural arterial highway is ten feet wide, with eight feet of the shoulder paved. The paved shoulder, in combination with the recommended twelve-foot wide travel lanes, will accommodate pedestrian and bicycle use. Sidewalks are not necessary along the majority of the project because of the rural nature of the surrounding area and lack of foot travel destinations.

5.1.6 Passing Zones

Approximately 90% of existing SR-30 within the study area is a no passing zone. The improvement options will increase the percentage of safe passing areas, improving the quality of service of SR-30.

5.1.7 Disposition of Existing Route

Four of the six options studied in this TPR relocate some segment of existing SR-30 to new location. All segments of existing SR-30 not utilized in the proposed improvements will be removed from the State Highway System and become the responsibility of local government.

5.2 Alignment Options

This TPR examines four new alignment options for SR-30 in Rhea and Meigs Counties in Southeast Tennessee. An option to improve the existing route and a No Build option are also examined. These options evaluate opportunities for meeting the mobility, safety, and economic development needs of Southeast Tennessee, including the city of Dayton and Rhea and Meigs Counties. The route options examined are summarized below:

- Option 1: Whites Flat Road Alignment
- Option 2: New Location Alignment
- Options 3 & 4: Walnut Grove Road Alignment
- Option 5: Improvements to Existing Alignment
- Option 6: No Build

5.2.1 Option 1: Whites Flat Road Alignment

The Option 1 Alignment will follow existing SR-29 for approximately six miles between SR-30 to the south and Whites Flat Road to the north. It will then approximately follow existing Whites Flat Road, connecting to existing SR-30 near SR-302. The alignment will follow existing SR-30 from SR-302 to the eastern terminus of the study area 2000' east of the Tennessee River Bridge. The total length of the corridor is 10.6 miles, including the segment of SR-29 to be utilized. No improvements will be constructed along existing SR-29. The length of improvements is approximately 4.5 miles long. Compared to SR-30's existing alignment, Option 1 will reduce the State Highway System mileage by 3.4 miles. Improvements to this corridor are estimated to cost $24.7 million. A map of the corridor is provided in **Exhibits 5.2.1.1** and **5.2.1.2**.

Option 1 will reduce traffic volumes, including truck traffic, along existing SR-30 through the city of Dayton. The segment of existing SR-30 not utilized in this option, between SR-29 and SR-302, will continue to provide local access. Through volumes will be directed to the relocated segment of SR-30.

The majority of Dayton's manufacturing plants are located north of the city, including Dayton's industrial park that is located near the intersection of Walnut Grove Road with SR-29 (see **Exhibit 1.3.3 Major Traffic Generators**). It is doubtful that the reduced traffic volumes within Dayton would have an adverse economic impact on the city, but this concern may need to be addressed with the city during the improvement selection process.

This option connects to SR-29 approximately six miles north of the existing intersection of SR-30 with SR-29. Route continuity with SR-30 west of SR-29 will be harmed unless SR-30 west of SR-29 is relocated in the future. Local officials noted their desire for improvements to SR-30 west of SR-29. It was noted that improvements to existing SR-30 west of SR-29 would be difficult and relocating it to new location would likely be necessary. Due to topography and existing development, the local officials believe relocating SR-30 west of SR-29 to near the intersection of White Flat Road with SR-29 would be preferred. If this occurs, SR-30's route continuity would eventually be preserved.

To improve east-west mobility, the design speed for the improvements should be 60 mph. This would enable the improved section of SR-30 to have a posted speed limit of 55 mph throughout the study area. For Option 1, a LOS of B is calculated along the route through the year 2012. The LOS are calculated to range from B to C through the year 2032. A summary of the LOS calculations for Option 1 is provided in schematic form in **Exhibits 5.2.1.1** and **5.2.1.2** and in table form in **Exhibits 5.2.1.3**, **5.2.1.4** and **5.2.1.5**. The LOS are reported for the years 2012 and 2032.

For Option 1 in the year 2012, the volume to capacity ratio (v/c) of the route is calculated to range from 0.11 to 0.16, with a weighted average of 0.13. In 2032, the v/c ranges from 0.17 to 0.20 with a weighted average of 0.18. The average was weighted based upon the length of each segment analyzed. The volume to capacity ratios reported indicates that a two-lane roadway is generally adequate for the projected volumes along the segments to be improved. A summary of the v/c calculations for Option 1 is provided in table form in **Exhibits 5.2.1.3**, **5.2.1.4** and **5.2.1.5**. The v/c are reported for the years 2012 and 2032.

Travel speeds along Option 1's route in 2012 are calculated to range from 45.0 mph to 54.8 mph, with a weighted average of 50.4 mph. In 2032, the travel speed ranges from 45.0 to 53.2 mph with a weighted average of 49.8 mph. The average was weighted based upon the length of each segment analyzed. A summary of the travel speed calculations for Option 1 is provided in table form in **Exhibits 5.2.1.3**, **5.2.1.4** and **5.2.1.5**. The travel speeds are reported for the years 2012 and 2032.

Option 1 is 10.6 miles long. For Option 1 in the year 2012, the travel time along the route is calculated to be 12.6 minutes. In 2032, the travel time is calculated to be 12.8 minutes.

EXHIBIT 5.2.1.1 OPTION 1: WHITES FLAT ROAD ALIGNMENT LOS 2012

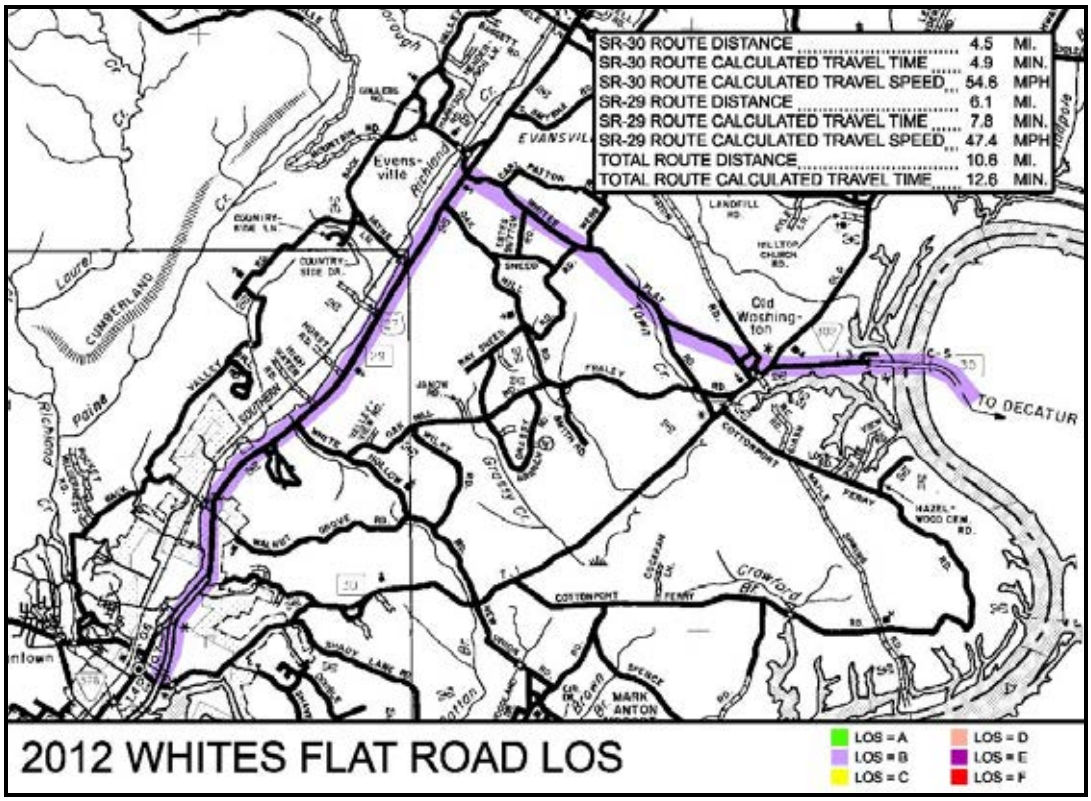


EXHIBIT 5.2.1.2 OPTION 1: WHITES FLAT ROAD ALIGNMENT LOS 2032

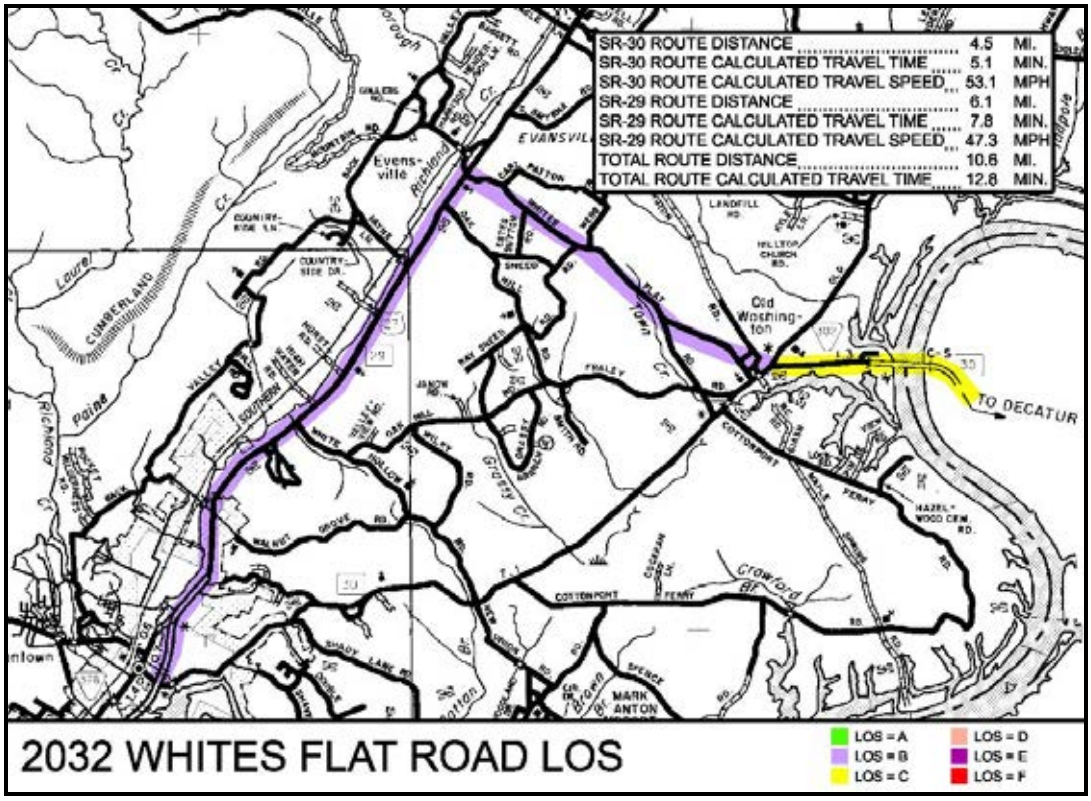


EXHIBIT 5.2.1.3 OPTION 1: WHITES FLAT ROAD ALIGNMENT LOS TABLE

Whites Flat Road Alignment - SR-30 Data

From		To		Dist.	Roadway Data			2012					2032				
L.M.	Description	L.M.	Description	(mi)	Posted Speed (mph)	Lane Width (ft)	Shldr. Width (ft)	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)
	Beg. Project		SR-302	3.69	55	12	10	1,960	B	0.11	54.8	4.0	3,000	B	0.17	53.2	4.2
	SR-302	17.6	TN River Bridge	0.81	55	12	10	2,460	B	0.14	53.9	0.9	4,360	C	0.19	52.9	0.9
17.6	TN River Bridge	0.37	EOP	0.00	55	12	10	2,460	B	0.14	53.9	0.0	4,360	C	0.19	52.9	0.0
			Σ =	4.50					**Avg=**	0.12	**Σ =**	4.9		**Avg=**	0.17	**Σ =**	5.1

Average Speed: 54.6 Average Speed: 53.1

EXHIBIT 5.2.1.4 OPTION 1: WHITES FLAT ROAD ALIGNMENT LOS TABLE

Whites Flat Road Alignment - SR-29 Data

From		To		Dist.	Roadway Data			2012					2032				
L.M.	Description	L.M.	Description	(mi)	Posted Speed (mph)	Lane Width (ft)	Shldr. Width (ft)	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)
6.07	Exist. SR-30	7.08	Blueberry Hill Rd.	1.01	45	12	10	20,440	B	0.10	35.9	1.7	27,350	B	0.13	35.7	1.7
7.08	Blueberry Hill Rd.	7.80	Walnut Grove Rd.	0.72	45	12	10	24,980	B	0.12	35.8	1.2	33,190	B	0.16	35.6	1.2
7.80	Walnut Grove Rd.	10.2	Ashley Lane	2.35	45	12	12	16,420	B	0.16	50	2.8	20,250	B	0.20	50.0	2.8
10.2	Ashley Lane	12.2	Whites Flat Rd.	2.05	55	12	12	16,420	B	0.16	60	2.1	20,250	B	0.20	60.0	2.1
			Σ =	6.13					**Avg=**	0.15	**Σ =**	7.8		**Avg=**	0.18	**Σ =**	7.8

Average Speed: 47.37 Average Speed: 47.27

Note: L.M. 6.07 to 7.80 analyzed as an arterial due to presence of traffic signals
L.M. 7.80 to 12.2 analyzed as a multilane segment

EXHIBIT 5.2.1.5 OPTION 1: WHITES FLAT ROAD ALIGNMENT LOS TABLE

Whites Flat Road Alignment - Entire Route (SR-29 and SR-30)

From		To		Dist.	Roadway Data			2012					2032				
L.M.	Description	L.M.	Description	(mi)	Posted Speed (mph)	Lane Width (ft)	Shldr. Width (ft)	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)
	Beg. Project		EOP	10.6	45-55	12	10-12		B	0.13	50.4	12.6		B-C	0.18	49.8	12.8

5.2.2 Option 2: New Location Alignment

The Option 2 Alignment is mostly on new location. Option 2 will follow existing SR-29 for approximately two miles between SR-30 to the south and Walnut Grove Road to the north. It will then follow Walnut Grove Road's existing alignment for approximately two miles. Option 2 departs from Walnut Grove Road's existing alignment west of White Hollow Road and proceeds on new alignment until it connects to existing SR-30 west of Whites Flat Road. Option 2 follows existing SR-30 west of Whites Flat Road to the eastern terminus of the study area 2000' east of the Tennessee River Bridge. Because the majority of Option 2 is on new alignment, it is anticipated environmental issues may be more of a concern for this alignment than the other options. The total length of the corridor is 8.3 miles, including the segment of SR-29 to be utilized. No improvements will be constructed along existing SR-29. The length of improvements is 6.6 miles long. Compared to SR-30's existing alignment, Option 2 will reduce the State Highway System mileage by 1.3 miles. Improvements to this corridor are estimated to cost $33.0 million. A map of the corridor is provided in **Exhibits 5.2.2.1** and **5.2.2.2**.

Of the four alignment relocations studied, Options 2, 3 and 4 creates the least impact to the existing route continuity with SR-30 west of SR-29. These options connect to SR-29 approximately two miles north of the existing intersection of SR-30 with SR-29. As discussed previously, it was noted that improvements to existing SR-30 west of SR-29 are desired, and would be difficult without realignment. Due to topography and existing development, the local officials believe relocating SR-30 west of SR-29 to near the intersection of Whites Flat Road with SR-29 would be preferred. This would be approximately four miles north of Option 2's western terminus at SR-29.

Option 2 will reduce traffic volumes, including truck traffic, along existing SR-30 through the city of Dayton. The segment of existing SR-30 not utilized in this option, between SR-29 and SR-302, will continue to provide local access. Through volumes will be directed to the relocated segment of SR-30.

Dayton's industrial park is located west of SR-29 near Walnut Grove Road. Option 2 provides close access between SR-30 and the industrial park.

To improve east-west mobility, the design speed for the improvements should be 60 mph. This would enable the improved section of SR-30 to have a posted speed limit of 55 mph throughout the study area. For Option 2, the LOS are calculated to range from A to B along the route through the year 2012. The LOS are calculated to range from B to C through the year 2032. A summary of the LOS calculations for Option 1 is provided in schematic form in **Exhibits 5.2.2.1** and **5.2.2.2** and in table form in **Exhibits 5.2.2.3, 5.2.2.4, and 5.2.2.5**. The LOS are reported for the years 2012 and 2032.

For Option 2 in the year 2012, the volume to capacity ratio (v/c) of the route is calculated to range from 0.08 to 0.14, with a weighted average of 0.09. In 2032, the v/c ranges from 0.13 to 0.19 with a weighted average of 0.14. The average was weighted based upon the length of each segment analyzed. The volume to capacity ratios reported indicates that a two-lane roadway is generally adequate for the projected volumes along the segments to be improved. A summary of the v/c calculations for Option 2 is provided in table form in **Exhibits 5.2.2.3, 5.2.2.4, and 5.2.2.5**. The v/c are reported for the years 2012 and 2032.

Travel speeds along Option 2's route in 2012 are calculated to range from 35.8 mph to 56.3 mph, with a weighted average of 51.8 mph. In 2032, the travel speed ranges from 35.6 to 54.2 mph with a weighted average of 50.2 mph. The average was weighted based upon the length of each segment analyzed. A summary of the travel speed calculations for Option 2 is provided in table form in **Exhibits 5.2.2.3, 5.2.2.4, and 5.2.2.5**. The travel speeds are reported for the years 2012 and 2032.

Option 2 is 8.3 miles long. For Option 2 in the year 2012, the travel time along the route is calculated to be 9.6 minutes. In 2032, the travel time is calculated to be 9.9 minutes.

EXHIBIT 5.2.2.1 OPTION 2: NEW LOCATION ALIGNMENT LOS 2012

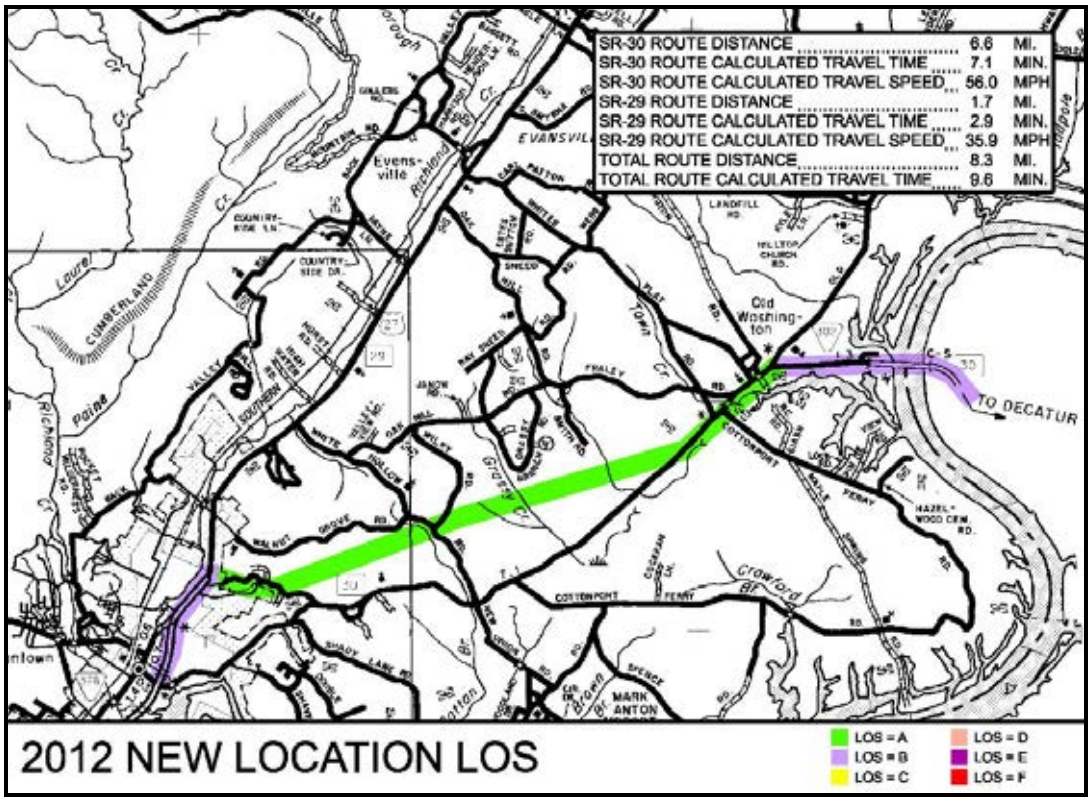


EXHIBIT 5.2.2.2 OPTION 2: NEW LOCATION ALIGNMENT LOS 2032

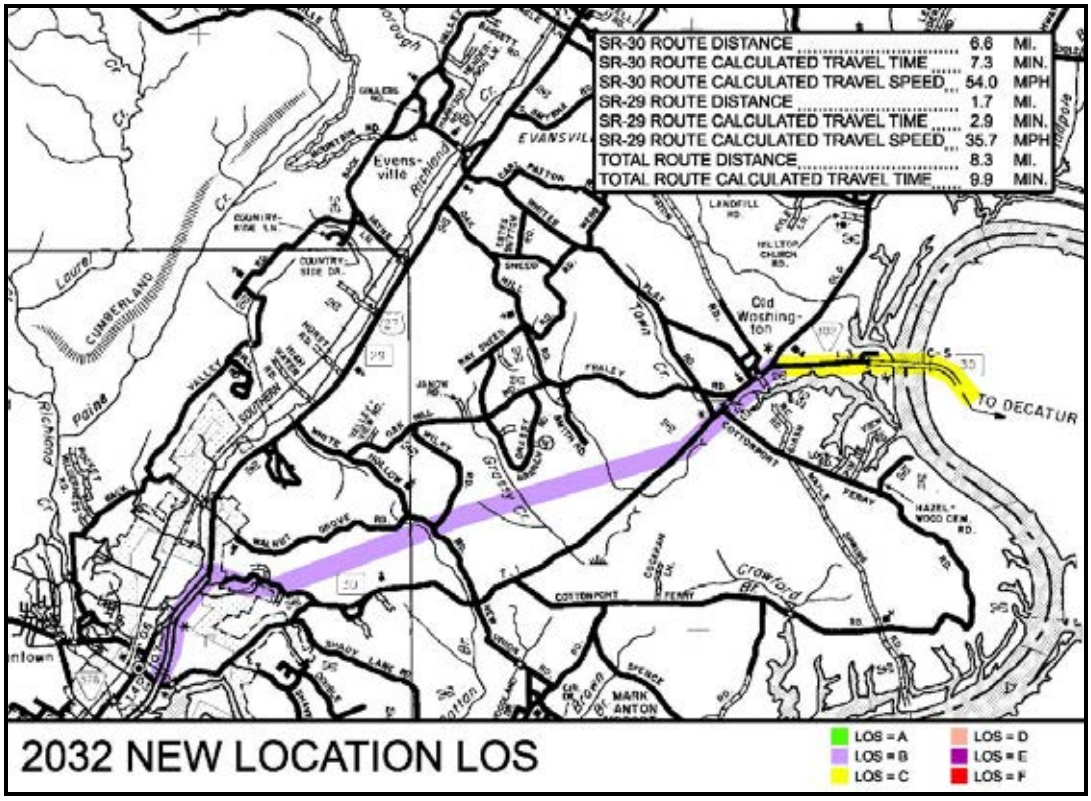


EXHIBIT 5.2.2.3 OPTION 2: NEW LOCATION ALIGNMENT LOS TABLE

New Location Alignment - SR-30 Data

From		To		Dist.	Roadway Data			2012					2032				
					Posted	Lane	Shldr.	ADT	LOS	v/c	Calc.	Travel	ADT	LOS	v/c	Calc.	Travel
L.M.	Description	L.M.	Description		Speed	Width	Width				Speed	Time				Speed	Time
				(mi)	(mph)	(ft)	(ft)	(vpd)			(mph)	(min.)	(vpd)			(mph)	(min.)
	Beg. Project	16.3	SR-302	5.77	55	12	10	1,370	A	0.08	56.3	6.1	2,200	B	0.13	54.2	6.4
16.3	SR-302	17.6	TN River Bridge	0.81	55	12	10	2,460	B	0.14	53.9	0.9	4,360	C	0.19	52.9	0.9
17.6	TN River Bridge	0.37	EOP	0.00	55	12	10	2,460	B	0.14	53.9	0.0	4,360	C	0.19	52.9	0.0
			Σ =	6.58					**Avg=**	0.09	**Σ =**	7.1		**Avg=**	0.14	**Σ =**	7.3

Average Speed: 56.0 Average Speed: 54.0

EXHIBIT 5.2.2.4 OPTION 2: NEW LOCATION ALIGNMENT LOS TABLE

New Location Alignment - SR-29 Data

From		To		Dist.	Roadway Data			2012					2032				
					Posted	Lane	Shldr.	ADT	LOS	v/c	Calc.	Travel	ADT	LOS	v/c	Calc.	Travel
L.M.	Description	L.M.	Description		Speed	Width	Width				Speed	Time				Speed	Time
				(mi)	(mph)	(ft)	(ft)	(vpd)			(mph)	(min.)	(vpd)			(mph)	(min.)
6.07	Exist. SR-30	7.08	Blueberry Hill Rd.	1.01	45	12	10	20,320	B	0.10	35.9	1.7	26,980	B	0.13	35.7	1.7
7.08	Blueberry Hill Rd.	7.80	Walnut Grove Rd.	0.72	45	12	10	24,860	B	0.12	35.8	1.2	32,820	B	0.16	35.6	1.2
			Σ =	1.73					**Avg=**	0.11	**Σ =**	2.9		**Avg=**	0.14	**Σ =**	2.9

Average Speed: 35.86 Average Speed: 35.66

Note: L.M. 6.07 to 7.80 analyzed as an arterial due to presence of traffic signals
L.M. 7.80 to 12.2 analyzed as a multilane segment

EXHIBIT 5.2.2.5 OPTION 2: NEW LOCATION ALIGNMENT LOS TABLE

New Location Alignment - Entire Route (SR-29 and SR-30)

From		To		Dist.	Roadway Data			2012					2032				
L.M.	Description	L.M.	Description	(mi)	Posted Speed (mph)	Lane Width (ft)	Shldr. Width (ft)	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)
	Beg. Project		EOP	8.3	45-55	12	10-12		A-B	0.09	51.8	9.6		B-C	0.14	50.2	9.9

5.2.3 Options 3 & 4: Walnut Grove Road Alignments

The Option 3 and 4 Alignments will follow existing SR-29 for approximately two miles between SR-30 to the south and Walnut Grove Road to the north. The Option 3 and 4 Alignments will then approximately follow existing portions of Walnut Grove Road and SR-30. Both options depart from Walnut Grove Road's existing alignment west of White Hollow Road. Option 3 connects to existing SR-30 east of New Union Road. Option 4 connects to existing SR-30 west of New Union Road. Both alignment options follow existing SR-30 from Cottonport Ferry Road to the eastern terminus of the study area 2000' east of the Tennessee River Bridge. The total length of the corridor is 8.9 miles for Option 3 and 9.1 miles for Option 4. No improvements will be constructed along existing SR-29. The length of the improvements is approximately 7.2 miles for Option 3 and 7.4 miles for Option 4. Compared to SR-30's existing alignment, Option 3 will reduce the State Highway System mileage by 0.7 miles. Option 4 will reduce the length by 0.5 miles. Improvements to this corridor are estimated to cost $39.6 million for Option 3 and $40.4 million for Option 4.

Of the four alignment relocations studied, Options 2, 3 and 4 creates the least impact to the existing route continuity with SR-30 west of SR-29. These options connect to SR-29 approximately two miles north of the existing intersection of SR-30 with SR-29. As discussed previously, it was noted that improvements to existing SR-30 west of SR-29 are desired, and would be difficult without realignment. Due to topography and existing development, the local officials believe relocating SR-30 west of SR-29 to near the intersection of White Flat Road with SR-29 would be preferred. This would be approximately four miles north of Option 3 and 4's western terminus at SR-29.

Options 3 and 4 will reduce traffic volumes, including truck traffic, along existing SR-30 through the city of Dayton. The segments of existing SR-30 not utilized in this option, between SR-29 and New Union Road, will continue to provide local access. Through volumes will be directed to the relocated segment of SR-30.

Dayton's industrial park is located west of SR-29 near Walnut Grove Road. Options 3 and 4 provide close access between SR-30 and the industrial park.

Caves are noted on the USGS Topographic Maps within the alignment corridors of Options 3, 4, and 5. The caves are located along existing SR-30 in the vicinity of the Cottonport Ferry Road loop. These caves could create environmental issues if they are impacted by the roadway improvements.

The existing intersection of SR-30 with New Union Road/Walnut Grove Road is noted by local officials to have a relatively high crash rate. Option 4 will include geometric improvements at this intersection, improving safety. The other alignment options included in this TPR confer this section of disposed SR-30 to Rhea County. The Rhea County Highway Superintendent expressed a willingness to provide safety improvements at this intersection if this segment of roadway becomes the responsibility of Rhea County.

To improve east-west mobility, the design speed for the improvements should be 60 mph. This would enable the improved section of SR-30 to have a posted speed limit of 55 mph throughout the study area. For Options 3 and 4, the LOS are calculated to range from B to C along the route through the year 2012, and from B to D through the

year 2032. A summary of the LOS calculations for Options 3 and 4 is provided in schematic form in **Exhibits 5.2.3.1** through **5.2.3.4** and in table form in **Exhibit 5.2.3.5** and **5.2.3.6**. The LOS are reported for the years 2012 and 2032.

For Options 3 and 4 in the year 2012, the volume to capacity ratio (v/c) of the route is calculated to range from 0.10 to 0.23, with a weighted average of 0.14 for Option 3 and 0.15 for Option 4. In 2032, the v/c ranges from 0.13 to 0.35 with a weighted average of 0.21 for Option 3 and 0.23 for Option 4. The average was weighted based upon the length of each segment analyzed. The volume to capacity ratios reported indicates that a two-lane roadway is generally adequate for the projected volumes along the segments to be improved. A summary of the v/c calculations for Options 3 and 4 is provided in table form in **Exhibits 5.2.3.5** and **5.2.3.6**. The v/c are reported for the years 2012 and 2032.

Travel speeds along Option 3 and 4's route in 2012 are calculated to range from 35.8 mph to 54.8 mph, with a weighted average of 50.3 mph for Option 3 and 50.1 mph for Option 4. In 2032, the travel speed ranges from 35.6 to 53.6 mph with a weighted average of 48.9 mph for Option 3 and 48.6 mph for Option 4. The average was weighted based upon the length of each segment analyzed. A summary of the travel speed calculations for Options 3 and 4 is provided in table form in **Exhibit 5.2.3.5**. The travel speeds are reported for the years 2012 and 2032.

Option 3 is 8.9 miles long and Option 4 is 9.1 miles long. For Option 3 in the year 2012, the travel time along the route is calculated to be 10.6 minutes. In 2032, the travel time is calculated to be 11.0 minutes. For Option 4 in the year 2012, the travel time along the route is calculated to be 11.0 minutes. In 2032, the travel time is calculated to be 11.3 minutes.

EXHIBIT 5.2.3.1 OPTION 3: WALNUT GROVE ROAD ALIGNMENTS LOS 2012

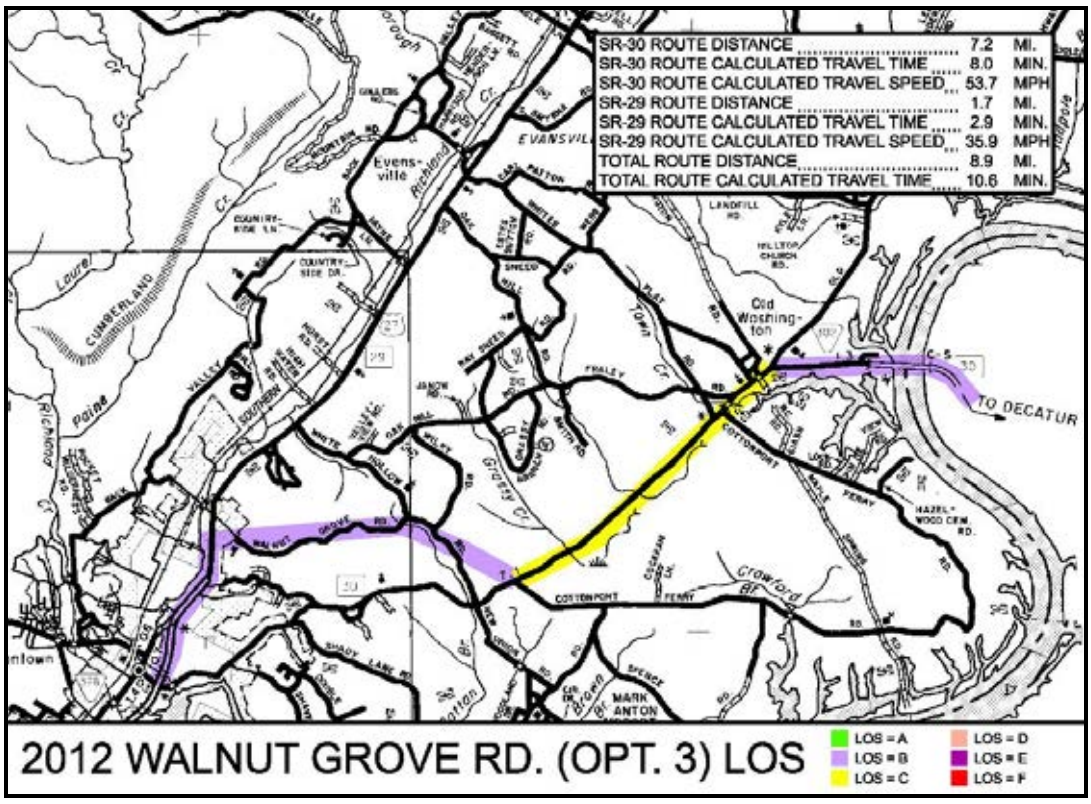


EXHIBIT 5.2.3.2 OPTION 3: WALNUT GROVE ROAD ALIGNMENTS LOS 2032

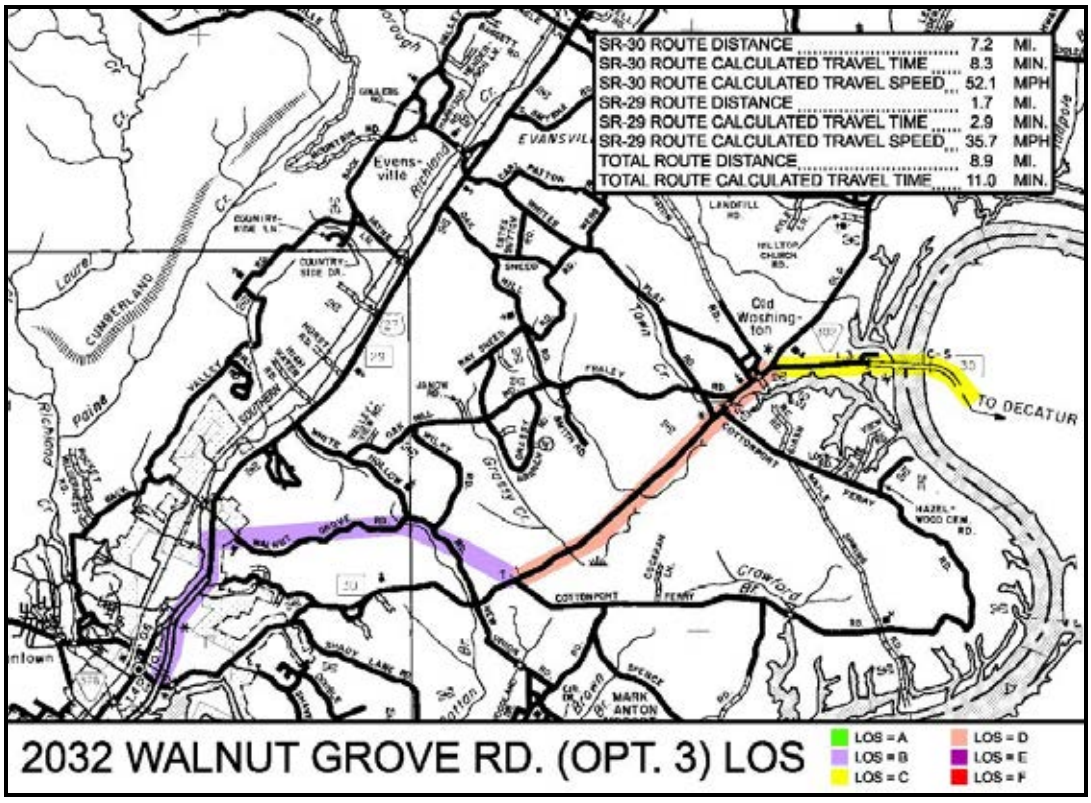


EXHIBIT 5.2.3.3 OPTION 4: WALNUT GROVE ROAD ALIGNMENTS LOS 2012

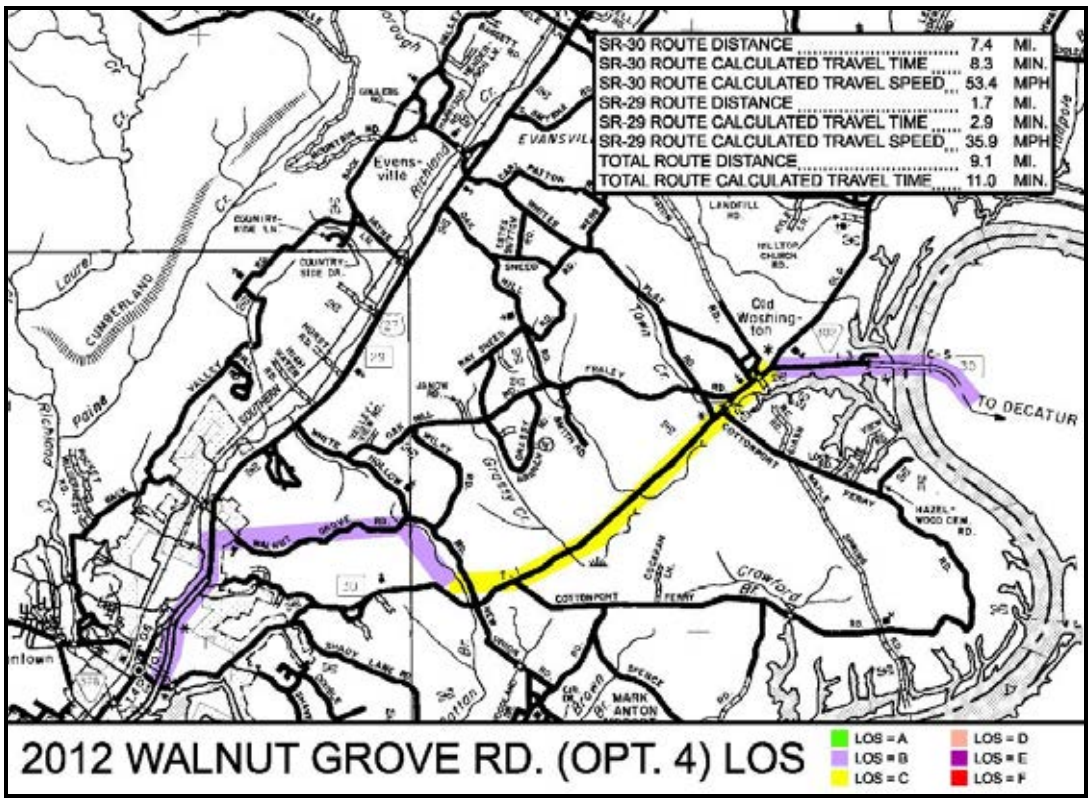


EXHIBIT 5.2.3.4 OPTION 4: WALNUT GROVE ROAD ALIGNMENTS LOS 2032

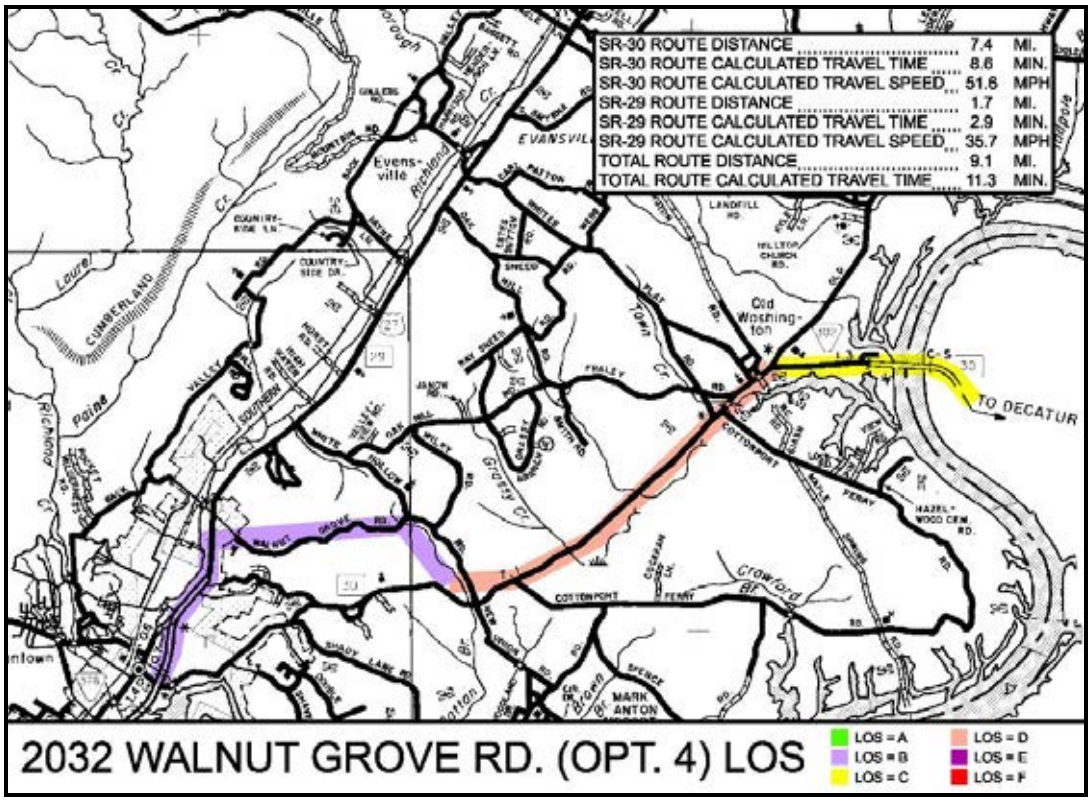


EXHIBIT 5.2.3.5 OPTIONS 3 & 4: WALNUT GROVE ROAD ALIGNMENT LOS TABLE

Walnut Grove Road Alignment (Option 3) - SR-30 Data

From		To		Dist.	Roadway Data			2012					2032				
L.M.	Description	L.M.	Description	(mi)	Posted Speed (mph)	Lane Width (ft)	Shldr. Width (ft)	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)
	Beg. Project		Cottonport F. Rd.	3.18	55	12	10	1,940	B	0.11	54.8	3.5	2,690	B	0.15	53.6	3.6
13.1	Cottonport F. Rd.	16.3	SR-302	3.20	55	12	10	4,550	C	0.19	52.7	3.6	7,320	D	0.31	50.4	3.8
16.3	SR-302	17.6	TN River Bridge	0.81	55	12	10	2,460	B	0.14	53.9	0.9	4,360	C	0.19	52.9	0.9
17.6	TN River Bridge	0.37	EOP	0.00	55	12	10	2,460	B	0.14	53.9	0.0	4,360	C	0.19	52.9	0.0
			Σ =	7.19					**Avg=**	0.15	**Σ =**	8.0		**Avg=**	0.23	**Σ =**	8.3

Average Speed: 53.7 Average Speed: 52.1

Walnut Grove Road Alignment (Option 4) - SR-30 Data

From		To		Dist.	Roadway Data			2012					2032				
L.M.	Description	L.M.	Description	(mi)	Posted Speed (mph)	Lane Width (ft)	Shldr. Width (ft)	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)
	Beg. Project		Exist. SR-30	2.40	55	12	10	1,940	B	0.11	54.8	2.6	2,690	B	0.15	53.6	2.7
	Exist. SR-30	13.1	Cottonport F. Rd.	1.00	55	12	10	5,390	C	0.23	52.0	1.2	8,240	D	0.35	49.7	1.2
13.1	Cottonport F. Rd.	16.3	SR-302	3.20	55	12	10	4,550	C	0.19	52.7	3.6	7,320	D	0.31	50.4	3.8
16.3	SR-302	17.6	TN River Bridge	0.81	55	12	10	2,460	B	0.14	53.9	0.9	4,360	C	0.19	52.9	0.9
17.6	TN River Bridge	0.37	EOP	0.00	55	12	10	2,460	B	0.14	53.9	0.0	4,360	C	0.19	52.9	0.0
			Σ =	7.41					**Avg=**	0.16	**Σ =**	8.3		**Avg=**	0.25	**Σ =**	8.6

Average Speed: 53.4 Average Speed: 51.6

EXHIBIT 5.2.3.6 OPTIONS 3 & 4: WALNUT GROVE ROAD ALIGNMENT LOS TABLE

Walnut Grove Road Alignment (Options 3 & 4) - SR-29 Data

From		To		Dist.	Roadway Data			2012					2032				
L.M.	Description	L.M.	Description	(mi)	Posted Speed (mph)	Lane Width (ft)	Shldr. Width (ft)	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)
6.07	Exist. SR-30	7.08	Blueberry Hill Rd.	1.01	45	12	10	20,320	B	0.10	35.9	1.7	26,980	B	0.13	35.7	1.7
7.08	Blueberry Hill Rd.	7.80	Walnut Grove Rd.	0.72	45	12	10	24,860	B	0.12	35.8	1.2	32,820	B	0.16	35.6	1.2
			Σ =	1.73					**Avg=**	0.11	**Σ =**	2.9		**Avg=**	0.14	**Σ =**	2.9

Average Speed: 35.86 Average Speed: 35.66

Note: L.M. 6.07 to 7.80 analyzed as an arterial due to presence of traffic signals
L.M. 7.80 to 12.2 analyzed as a multilane segment

EXHIBIT 5.2.3.6 OPTIONS 3 & 4: WALNUT GROVE ROAD ALIGNMENT LOS TABLE

Walnut Grove Road Alignment (Options 3) - Entire Route (SR-29 and SR-30)

From		To		Dist.	Roadway Data			2012					2032				
L.M.	Description	L.M.	Description	(mi)	Posted Speed (mph)	Lane Width (ft)	Shldr. Width (ft)	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)
	Beg. Project		EOP	8.92	45-55	12	10-12		B-C	0.14	50.28	10.6		B-D	0.21	48.9	11.0

Walnut Grove Road Alignment (Options 4) - Entire Route (SR-29 and SR-30)

From		To		Dist.	Roadway Data			2012					2032				
L.M.	Description	L.M.	Description	(mi)	Posted Speed (mph)	Lane Width (ft)	Shldr. Width (ft)	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)
	Beg. Project		EOP	9.14	45-55	12	10-12		B-C	0.15	50.08	11.0		B-D	0.23	48.6	11.3

5.2.4 Option 5: Improvements to Existing Alignment

The Option 5 Alignment will follow existing SR-30. Improvements along existing SR-30 from SR-29 to New Union Road to meet current design standards will be challenging. This area is reasonably developed. Development along SR-30 in this area includes Bryan College. The terrain is rolling, making improvements to the profile difficult without considerable impact to the adjacent development. Further making improvements difficult, a bluff drops down to the Tennessee River along the eastbound lane of SR-30 within Dayton's City Limits. The length of improvements to this corridor is approximately 7.9 miles long. Improvements to this corridor are estimated to cost $46.8 million.

Option 5 creates no impact to the existing route continuity with SR-30 west of SR-29. Option 5 connects to SR-29 at its existing location. As discussed previously, it was noted that improvements to existing SR-30 west of SR-29 are desired, and would be difficult without realignment. Due to topography and existing development, the local officials believe relocating SR-30 west of SR-29 to near the intersection of White Flat Road with SR-29 would be preferred. This would be approximately six miles north of Option 5's western terminus at SR-29.

Caves are noted on the USGS Topographic Maps within the alignment corridors of Options 3, 4, and 5. The caves are located along existing SR-30 in the vicinity of the Cottonport Ferry Road loop. These caves could create environmental issues if they are impacted by the roadway improvements.

To improve east-west mobility, the design speed for the improvements should be 60 mph. This would enable SR-30 to have a posted speed limit of 55 mph throughout the study area. It is unlikely, due to the existing development, that the portion of existing SR-30 between SR-29 and Shady Lane can safely be signed at 55 mph regardless of the design speed of the highway. Despite this observation, the capacity analysis assumes 55 mph is attainable. This allows for consistency with the other options analysis. For Option 5 (with a posted speed limit of 55 mph), the HCS's *Two Lane Highways* analysis calculates LOS ranging from B to D along the route through the year 2012, and from C to D through the year 2032. A summary of the LOS calculations for Option 5 is provided in schematic form in **Exhibits 5.2.4.1** and **5.2.4.2** and in table form in **Exhibit 5.2.4.3**. The LOS are reported for the years 2012 and 2032.

For Option 5 in the year 2012, the volume to capacity ratio (v/c) of the route is calculated to range from 0.14 to 0.37, with a weighted average of 0.23. In 2032, the v/c ranges from 0.19 to 0.52 with a weighted average of 0.33. The average was weighted based upon the length of each segment analyzed. The volume to capacity ratios reported indicates that a two-lane roadway is generally adequate for the projected volumes. A summary of the v/c calculations for Option 5 is provided in table form in **Exhibit 5.2.4.3**. The v/c are reported for the years 2012 and 2032.

With a posted speed limit of 55 mph, travel speeds along Option 5's route in 2012 are calculated to range from 49.2 mph to 53.9 mph, with a weighted average of 52.0 mph. In 2032, the travel speed ranges from 46.0 to 52.9 mph with a weighted average of 50.0 mph. The average was weighted based upon the length of each segment analyzed. A summary of the travel speed calculations for Option 5 is provided in table form in **Exhibit 5.2.4.3**. The travel speeds are reported for the years 2012 and 2032.

Option 5 is 7.9 miles long. For Option 5 in the year 2012, the travel time along the route is calculated to be 9.2 minutes. In 2032, the travel time is calculated to be 9.5 minutes.

EXHIBIT 5.2.4.1 OPTION 5: IMPROVEMENTS TO EXISTING ALIGNMENT LOS 2012

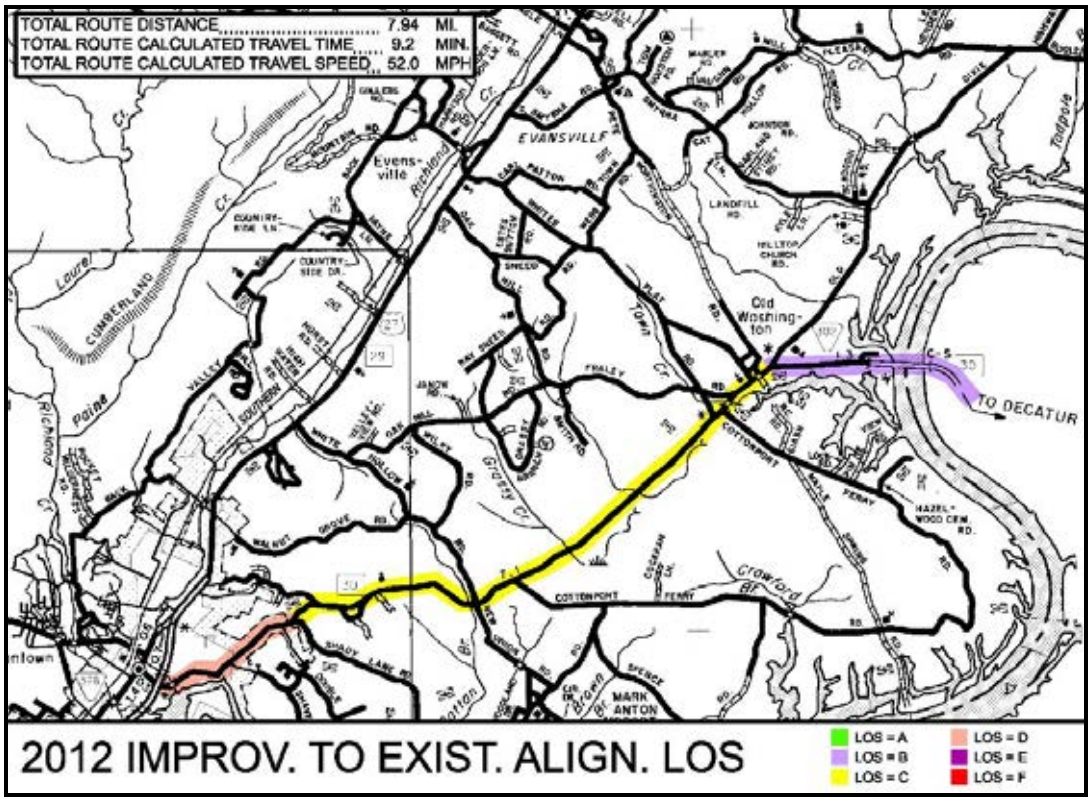


EXHIBIT 5.2.4.1 OPTION 5: IMPROVEMENTS TO EXISTING ALIGNMENT LOS 2012

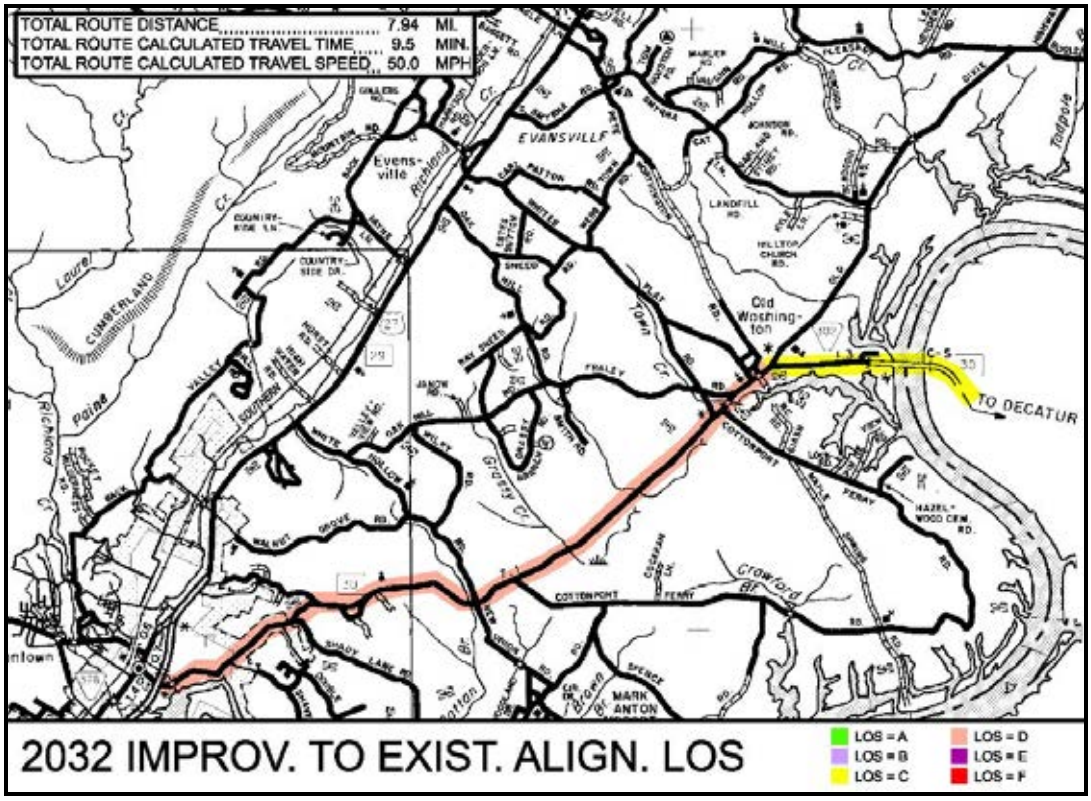


EXHIBIT 5.2.4.3 OPTION 5: IMPROVEMENTS TO EXISTING ALIGNMENT LOS TABLE

Improvements to Existing Alignment LOS Table - SR-30 Data

From		To		Dist.	Roadway Data			2012					2032				
L.M.	Description	L.M.	Description	(mi)	Posted Speed (mph)	Lane Width (ft)	Shldr. Width (ft)	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)
9.18	Beg. Project	9.34	Bryan Dr.	0.16	55	12	10	9,460	D	0.37	49.2	0.2	13,160	D	0.52	46.0	0.2
9.34	Bryan Dr.	9.89	Double S. Rd.	0.55	55	12	10	7,570	D	0.32	50.2	0.7	10,540	D	0.41	48.4	0.7
9.89	Double S. Rd.	13.1	Cottonport F. Rd.	3.21	55	12	10	6,230	C	0.26	51.3	3.8	9,150	D	0.36	49.5	3.9
13.1	Cottonport F. Rd.	15.6	Mynatt Rd.	2.50	55	12	10	4,550	C	0.19	52.7	2.8	7,320	D	0.31	50.4	3.0
15.6	Mynatt Rd.	16.3	SR-302	0.71	55	12	10	4,550	C	0.19	52.7	0.8	7,320	D	0.31	50.4	0.8
16.3	SR-302	17.6	TN River Bridge	0.81	55	12	10	2,460	B	0.14	53.9	0.9	4,360	C	0.19	52.9	0.9
17.6	TN River Bridge	0.37	EOP	0.00	55	12	10	2,460	B	0.14	53.9	0.0	4,360	C	0.19	52.9	0.0
			Σ =	7.94					**Avg=**	0.23	**Σ =**	9.2		**Avg=**	0.33	**Σ =**	9.5

Average Speed: 52.0 Average Speed: 50.0

Note: Improvements not required from bridge approach to end of project due to previous bridge project.

5.2.5 Option 6: No Build Option

The No Build option provides no improvements and serves as a baseline option against which all other options can be compared. For a description of the geometric conditions associated with the No Build option, please refer to Section **2.3 SR-30 Existing Geometric Conditions & Deficiencies** of this TPR. Because improvements are not being constructed, there is no cost associated with the No Build option.

For the No Build option, the HCS's *Two Lane Highways* analysis calculates LOS ranging from C to E along the route through the year 2032. A summary of the LOS calculations for the No Build option is provided in schematic form in **Exhibits 5.2.5.1** and **5.2.5.2** and in table form in **Exhibit 5.2.5.3**. The LOS are reported for the years 2012 and 2032.

For the No Build option in the year 2012, the volume to capacity ratio (v/c) of the route is calculated to range from 0.14 to 0.37, with a weighted average of 0.23. In 2032, the v/c ranges from 0.19 to 0.52 with a weighted average of 0.33. The average was weighted based upon the length of each segment analyzed. The volume to capacity ratios reported indicates that a two-lane roadway is generally adequate for the projected volumes, but other geometric features of the roadway limit the levels of service. A summary of the v/c calculations for the No Build option is provided in table form in **Exhibit 5.2.5.3**. The v/c are reported for the years 2012 and 2032.

The posted speed limit ranges from 40 to 55 mph along the route. For the No Build option in the year 2012, travel speeds along the route are calculated to range from 33.1 mph to 51.9 mph, with a weighted average of 41.9 mph. In 2032, the travel speed ranges from 31.4 to 51.2 mph with a weighted average of 40.3 mph. The average was weighted based upon the length of each segment analyzed. A summary of the travel speed calculations for the No Build option is provided in table form in **Exhibit 5.2.5.3**. The travel speeds are reported for the years 2012 and 2032.

The existing SR-30 Corridor (No Build option) is anticipated to require 7.9 miles of improvements. The bridge over the Tennessee River, and its approaches, were previously improved and appear to meet current design standards. For the No Build option in the year 2012, the travel time along the route is calculated to be 11.4 minutes. In 2032, the travel time is calculated to be 11.8 minutes.

EXHIBIT 5.2.5.1 NO BUILD LOS 2012

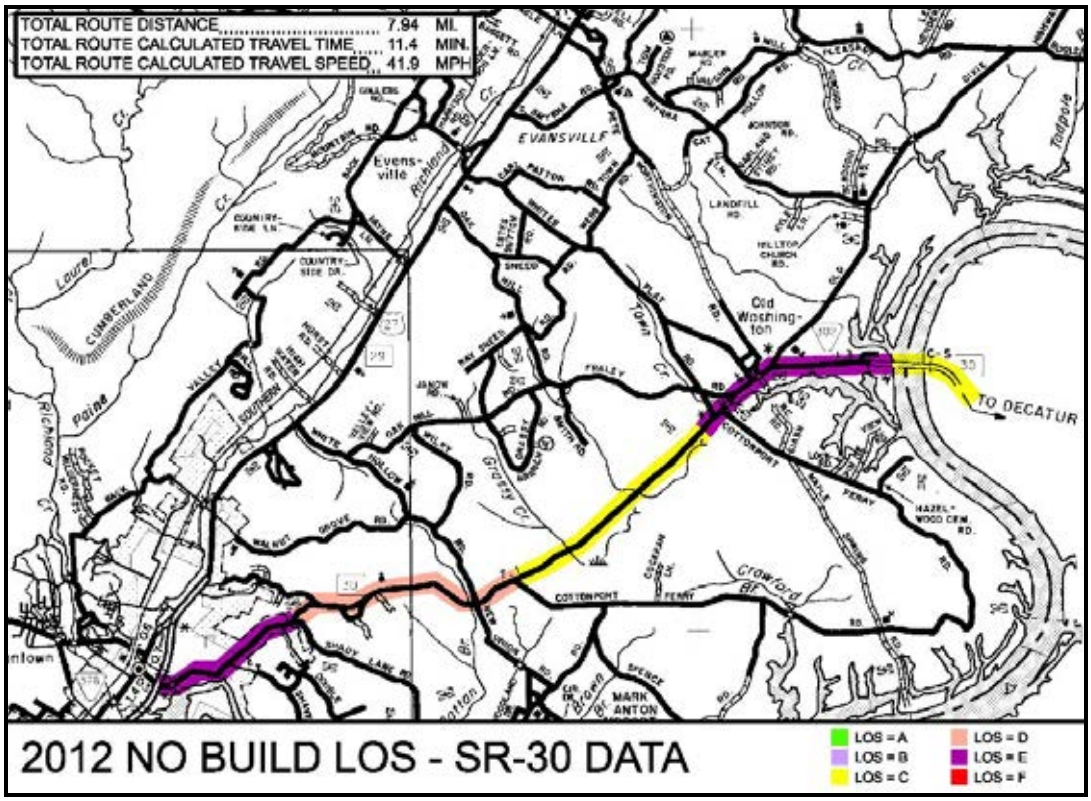


EXHIBIT 5.2.5.2 NO BUILD LOS 2032

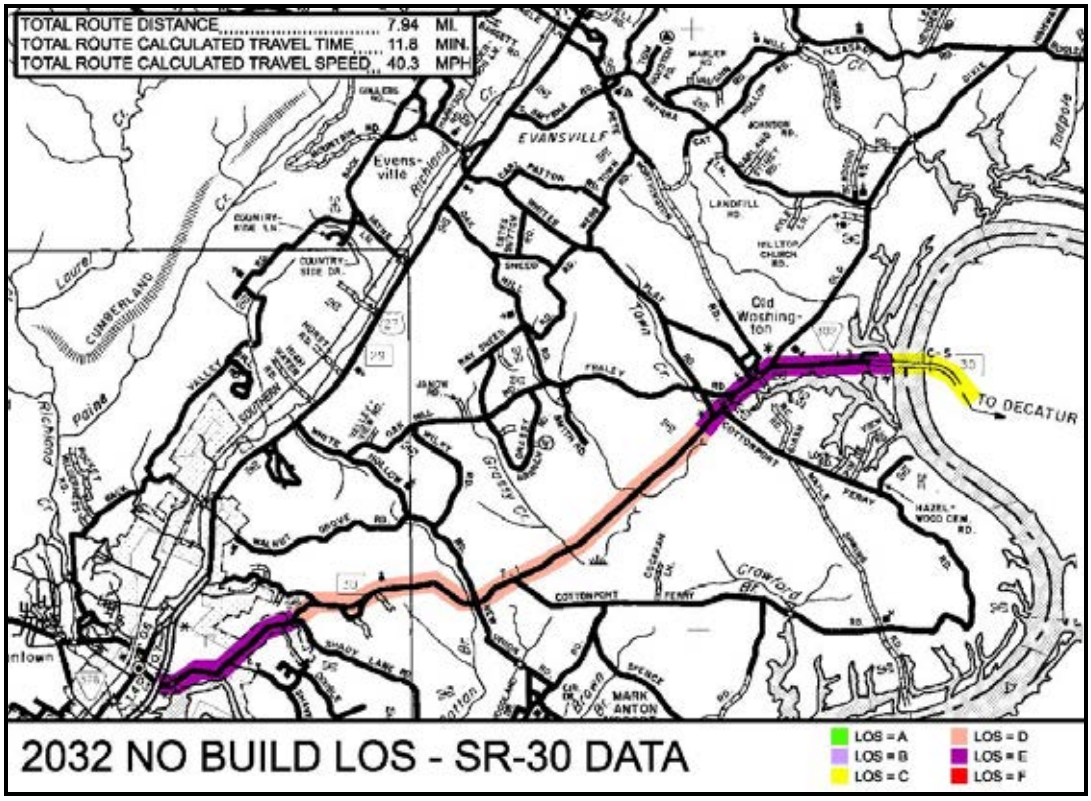


EXHIBIT 5.2.5.3 NO BUILD LOS 2012 – SR-29 DATA

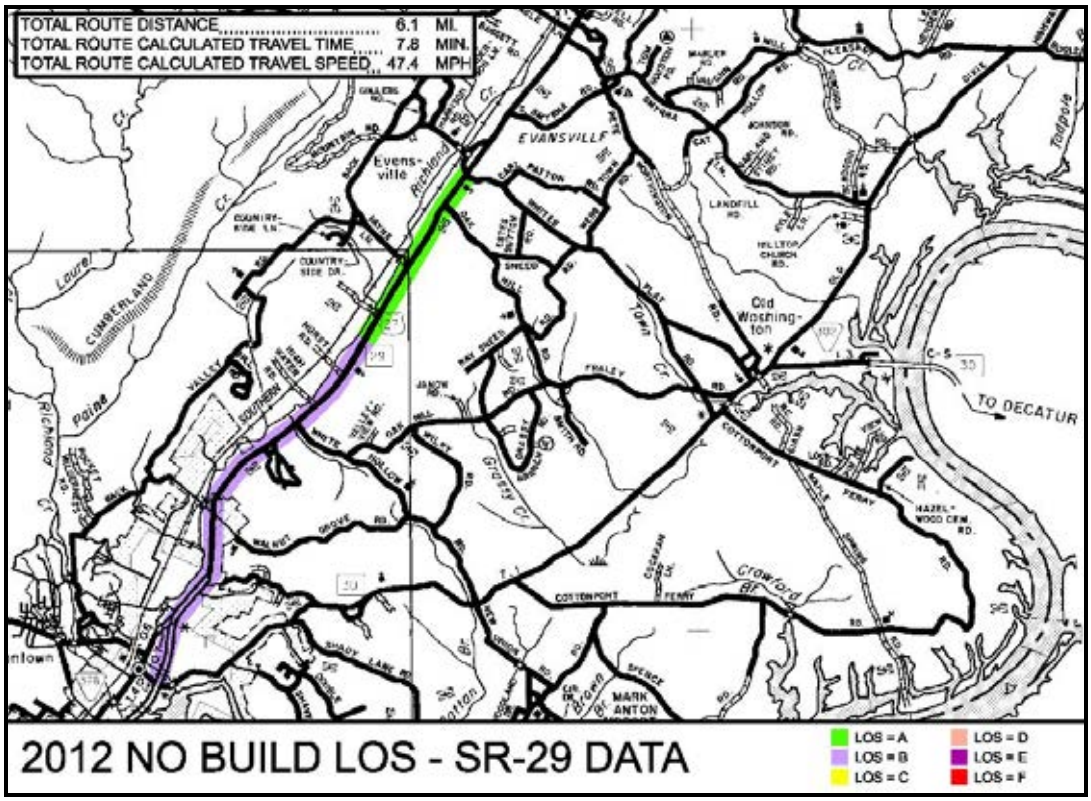


EXHIBIT 5.2.5.4 NO BUILD LOS 2032 – SR-29 DATA

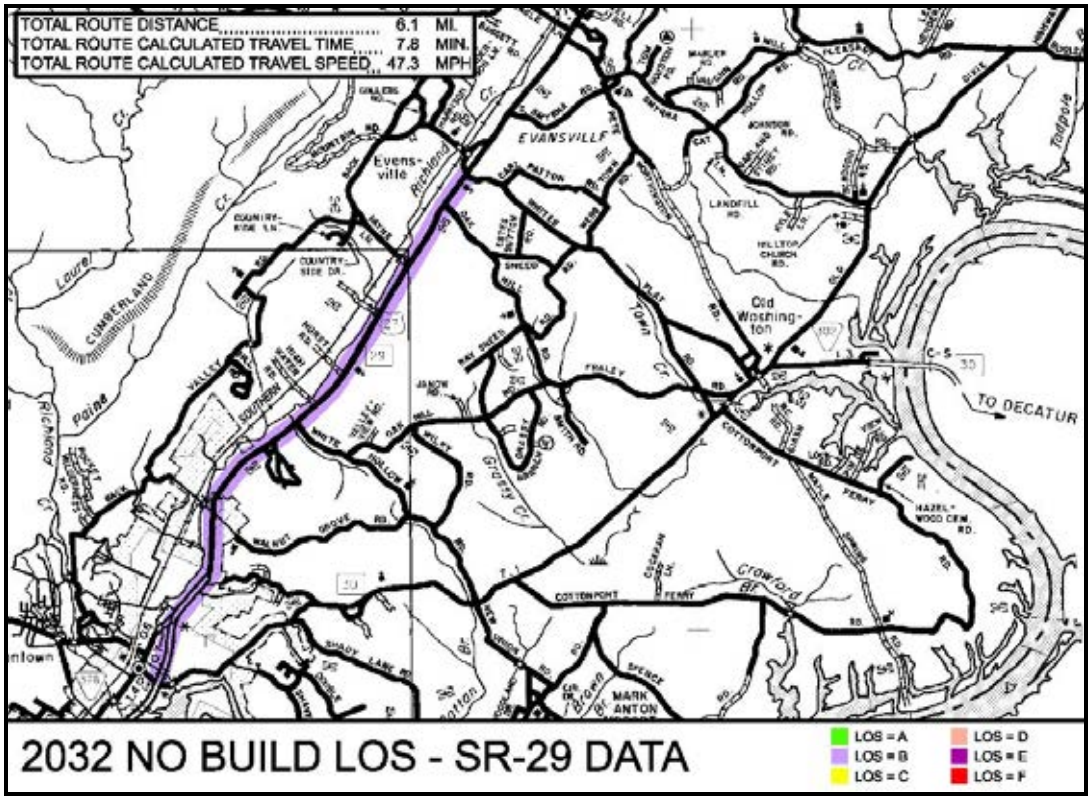


EXHIBIT 5.2.5.5 NO BUILD LOS TABLE

SR-30 No Build LOS - SR-30 Data

From		To		Dist.	Roadway Data			2012					2032				
L.M.	Description	L.M.	Description	(mi)	Posted Speed (mph)	Lane Width (ft)	Shldr. Width (ft)	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)
9.18	Beg. Project	9.34	Bryan Dr.	0.16	45	11.5	2	9,460	E	0.37	35.2	0.3	13,160	E	0.52	32.3	0.3
9.34	Bryan Dr.	9.89	Double S. Rd.	0.55	45	10	2	7,570	E	0.32	35.5	0.9	10,540	E	0.41	33.8	1.0
9.89	Double S. Rd.	10.7	Shady Ln. Rd.	0.85	45	10	2	6,230	E	0.26	36.5	1.4	9,150	E	0.36	34.8	1.5
10.7	Shady Ln. Rd.	13.1	Cottonport F. Rd.	2.35	55	10	3	6,230	D	0.26	46.5	3.0	9,150	D	0.36	44.8	3.1
13.1	Cottonport F. Rd.	15.6	Mynatt Rd.	2.51	55	11	2	4,550	C	0.19	48.1	3.1	7,320	D	0.31	46.4	3.2
15.6	Mynatt Rd.	16.3	SR-302	0.71	40	11	2	4,550	E	0.19	33.1	1.3	7,320	E	0.31	31.4	1.4
16.3	SR-302	17.6	TN River Bridge	0.81	40	12	10	2,460	E	0.14	36.9	1.3	4,360	E	0.19	36.2	1.3
17.6	TN River Bridge	0.37	EOP	0.00	55	12	10	2,460	C	0.14	51.9	0.0	4,360	C	0.19	51.2	0.0
			Σ =	7.94					**Avg=**	0.23	**Σ =**	11.4		**Avg=**	0.33	**Σ =**	11.8

Average Speed: 41.91 Average Speed: 40.27

Note: Improvements not required from TN River Bridge approach to end of project due to previous bridge project.

EXHIBIT 5.2.5.6 NO BUILD LOS TABLE

SR-30 No Build LOS - SR-29 Data

From		To		Dist.	Roadway Data			2012					2032				
L.M.	Description	L.M.	Description	(mi)	Posted Speed (mph)	Lane Width (ft)	Shldr. Width (ft)	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)
6.07	Exist. SR-30	7.08	Blueberry Hill Rd.	1.01	45	12	10	19,070	B	0.09	35.9	1.7	25,150	B	0.12	35.8	1.7
7.08	Blueberry Hill Rd.	7.80	Walnut Grove Rd.	0.72	45	12	10	23,610	B	0.12	35.8	1.2	30,990	B	0.15	35.7	1.2
7.80	Walnut Grove Rd.	10.2	Ashley Lane	2.35	45	12	12	15,050	B	0.15	50	2.8	18,050	B	0.18	50.0	2.8
10.2	Ashley Lane	12.2	Whites Flat Rd.	2.05	55	12	12	15,050	A	0.15	60	2.1	18,050	B	0.18	60.0	2.1
			Σ =	6.13					**Avg=**	0.14	**Σ =**	7.8		**Avg=**	0.16	**Σ =**	7.8

Average Speed: 47.37 Average Speed: 47.32

Note: L.M. 6.07 to 7.80 analyzed as an arterial due to presence of traffic signals
L.M. 7.80 to 12.2 analyzed as a multilane segment

6.0 ASSESSMENT OF OPTIONS

6.1 TDOT's Seven Guiding Principles

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

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

Many aspects of SR-30 are deficient by current design standards. Improving SR-30 from the beginning of the project to New Union Road to meet current design standards would be difficult due to topography and existing development.

The options for improvement discussed in this report, in addition to improvements to SR-30 currently constructed or under design outside the study area, will improve the integration of the highway network in Southeast Tennessee by connecting several high quality north-south routes including SR-29, I-75, US-11, and US-411.

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

The improvements to SR-30 discussed in this report will reduce congestion, optimize service and operational efficiency, and benefit east-west mobility in Southeast Tennessee. Freight to and from Dayton's factories travels along SR-30, commuters use SR-30 to access employment at the Watt's Bar facility (among other locations), and SR-30 is utilized to reach recreational destinations along the Tennessee River.

6.1.3 Guiding Principle 3: Support the State's Economy

There are several high quality north-south routes in Southeast Tennessee, including SR-29, I-75, US-11, and US-411. Due largely to topography, there are few high quality east-west highways in Southeast Tennessee to connect these north-south routes. SR-30 is the primary east-west route for travel between the cities of Dayton and Athens and for travel to and from I-75. Freight from Dayton's factories is shipped along SR-30 to access I-75. Local officials have expressed a desire for an improved SR-30 to become an east-west regional economic corridor.

6.1.4 Guiding Principle 4: Maximize Safety and Security

SR-30, within the study area, has deficient lane and shoulder widths, deficient grades, and horizontal curvature. The existing roadside design also appears inadequate in many locations. The crash rate along the majority of existing SR-30 exceeds the

statewide average. Improvements to SR-30 will meet or exceed current design standards and provide for safer operations.

Watts Bar Dam and Nuclear Plant is located northeast of the study area. Sequoyah Nuclear Plant is located southwest of the study area near Chattanooga. SR-30 is designated as the eastern evacuation route in case of a disaster at either plant. Improvements to SR-30 will provide a safer, more efficient, evacuation route in the event of an emergency.

6.1.5 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 Southeast Tennessee Development District Rural Planning Organization (RPO) to identify their concerns and objectives. The Rural Planning Organizations (RPOs) were created through a partnership between the Tennessee Department of Transportation (TDOT) and the Tennessee Development Districts to provide input from rural local officials and interested transportation stakeholders. The RPOs provide for continuing, comprehensive, coordinated transportation planning and programming in the non-metropolitan areas of the state. Furthermore, the public involvement process will continue as mandated by the provisions of the National Environmental Policy Act (NEPA).

6.1.6 Guiding Principle 6: Promote Stewardship of the Environment

Several locations within the study area should be avoided, if possible. Those that cannot be avoided should have their environmental impact mitigated. These areas include cemeteries, churches, schools, a landfill, a park, a hospital, EPA air emissions regulated sites, and rivers and streams. Several of these locations were located via a preliminary investigation, and should have their environmental significance assessed during the Environmental Planning phase of this project. The areas are listed in **Exhibit 6.1.6.1** and mapped in **Exhibit 6.1.6.2**.

EXHIBIT 6.1.6.1 ENVIRONMENTALLY SENSITIVE LOCATIONS

Cemeteries:	
Name	**Location**
CE1 Brown Cemetery	Ruth Road near Oak Hill Road
CE2 Buttram Cemetery	SR-29 near Walnut Grove Church Road
CE3 Dyers Cemetery	SR-30 near Blueberry Hill Road
CE4 Mynatt Cemetery	Mynatt Road
CE5 Porter Cemetery	Oak Hill Road near Grassy Branch Road
CE6 Sneed Cemetery	Ray Sneed Road near Oak Hill Road
CE7 Waterhouse Cemetery	SR-30 near Fraley Road

Churches:	
Name	**Location**
CH1 Kelly Grove Church	1878 Old Washington Highway (SR-30)
CH2Monmouth Presbyterian Church	Worthington Drive near the intersection of SR-30 with White Flats Road
CH3 New Union Church	4060 Double S Road
CH4 Oak Hill Church	1550 Oak Hill Road
CH5 Saint Bridget Church	3220 Walnut Grove Church Road
CH6 Walnut Grove Church	Walnut Grove Church Road near the intersection with SR-29
CH7 Washington Baptist Church	Old Washington Highway (SR-30) near the intersection with White Flats Road
CH8 White Oak Church	White Oak Road near the intersection with Walnut Grove Church Road

Schools:	
Name	**Location**
S1 Frazier Elementary School	3900 Double S Road
S2 Kelly Grove School (historical)	Shipley Lane
S3 Oak Hill School (Historical)	Oak Hill Road near Ray Sneed Road
S4 Valley School (Historical)	White Oak Road near SR-29
S5 Washington School	Old Dixie Highway northeast of SR-30 near the eastern terminus of the project
S6 William Jennings Bryan University	721 Bryan Drive

Landfills:	
Name	**Location**
L1 Rhea County Landfill	207 Smyrna Road

EXHIBIT 6.1.6.1 ENVIRONMENTALLY SENSITIVE LOCATIONS (CONT.)

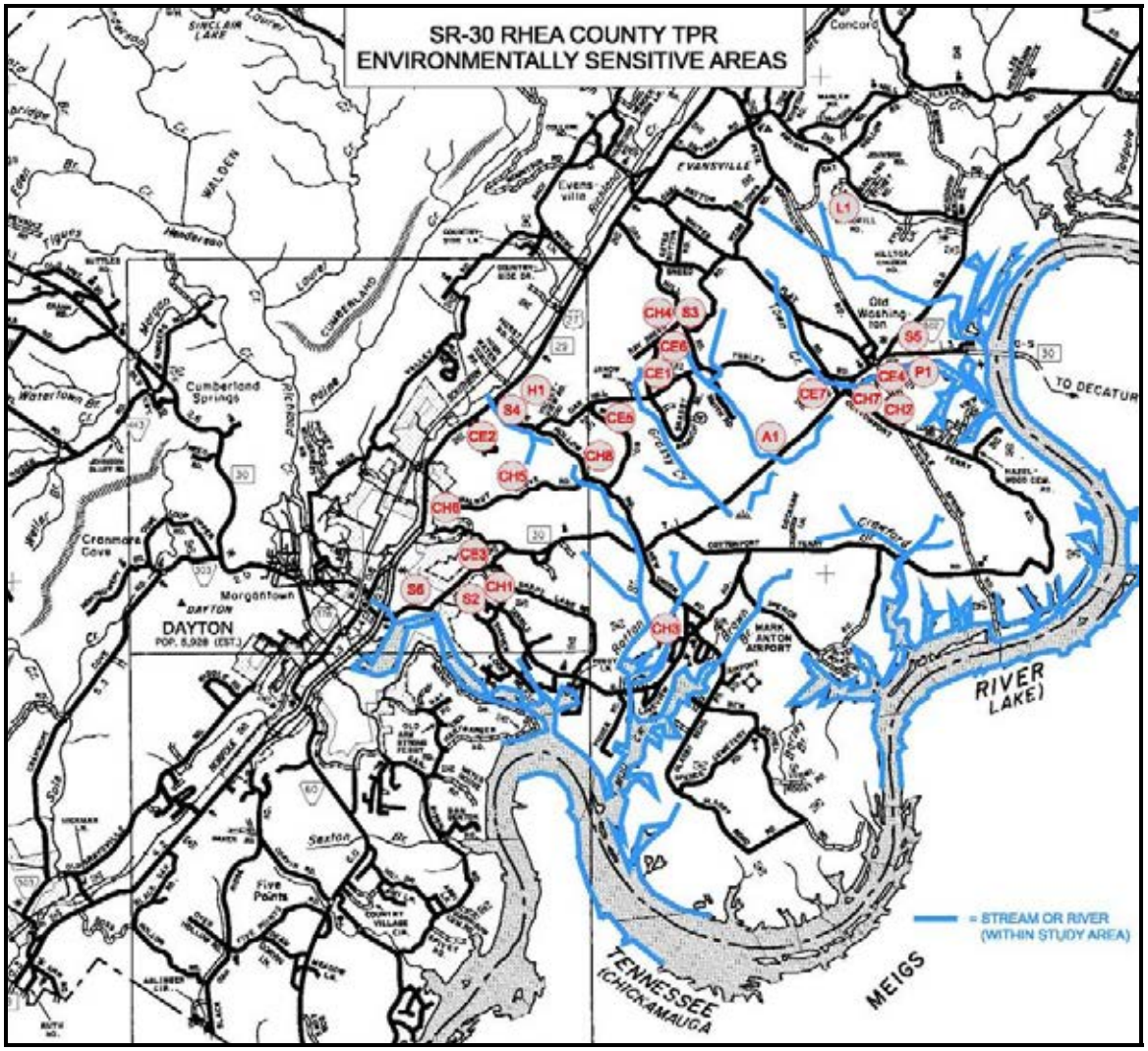
Parks:	
Name	**Location**
P1 Old Washington Park and David Campbell Burial Site	Near the intersection of SR-30 and SR-302

Hospital:	
Name	**Location**
H1 Rhea County Hospital	9400 Rhea County Highway

EPA Air Emissions Regulated Sites:	
Name	**Location**
L1 Rhea County Landfill	207 Smyrna Road
A1 Vulcan Materials, Inc.	5730 Old Washington Highway (SR-30)

Rivers and Streams:	
Name	**Location**
Blue Line Streams	Several stream crossings will be necessary.
Tennessee River	Tennessee River Bridge Crossing near the eastern terminus of the project

EXHIBIT 6.1.6.2 ENVIRONMENTALLY SENSITIVE LOCATIONS



Please refer to **The Checklist of Determinants for Location Study** provided in this report for a listing of the potential environmentally sensitive locations present adjacent to the route options discussed in this report.

6.1.7 Guiding Principle 7: Promote Financial Responsibility

The need for improvements to SR-30 was determined through Tennessee's statewide long-range multi-modal transportation planning process. This process includes extensive interaction with citizens, local government officials, and the Metropolitan Planning Organizations and the Rural Planning Organizations.

Preliminary construction cost estimates were prepared for each option considered. The costs are discussed in Sections **5.2 Alignment Options** and **6.2 Summary of Options**.

Cost will be one of the criteria used in the selection of an option that meets the purpose and need for improvements.

6.2 Summary of Options

Criteria for choosing a route should incorporate the purpose and need discussed in Section **3.0 Purpose and Need** of this report. A summary of each option is provided below and in Exhibit **6.2 Option Summary Chart**. Key measures of effectiveness of each option, along with how the option addresses the purpose and need for improvements, are discussed.

6.2.1 Option 1: Whites Flat Road Alignment

- Addresses the Purpose and Need of improvements to improve regional mobility by providing a high design-speed east-west route in Southeast Tennessee.
- Addresses the Purpose and Need of improvements to support economic development by providing a high design-speed east-west route in Southeast Tennessee. It is desired by local officials that SR-30 will become a regional economic corridor.
- Addresses the Purpose and Need of improvements to improve safety. Improvements will be designed to current standards, and include improved horizontal and vertical alignments, lane widths, and shoulders.
- Reduces the State Highway System Mileage by 3.4 miles.
- Estimated to cost $24.7 million.
- 10.6 miles long, with 4.5 miles of improvements.
- Calculated to have a design year weighted volume to capacity ratio of 0.18.
- Calculated to have a design year average travel speed of 49.8 mph. This is an improvement of 24% compared to the No Build Option.
- Calculated to have a design year travel time of 12.8 minutes over the length of the route. This is an increase of 9% compared to the No Build Option. The travel times would be reduced for vehicles traveling from the north, however.
- Calculated to have design year LOS ranging from B to C.
- Does not provide improvements to the intersection of existing SR-30 with New Union Road/Walnut Grove Road. This intersection is reported by local officials to have a relatively high crash rate.
- Will reduce traffic along existing SR-30 in the City of Dayton.
- Provides slightly improved access to Dayton's Industrial Park.
- Will adversely affect the existing route continuity. If improvements to SR-30 west of SR-29 are constructed on new alignment, future route continuity will be regained.
- Caves will not be adversely impacted by this option.
- Bryan College will not be adversely impacted by this option.

6.2.2 Option 2: New Location Alignment

- Addresses the Purpose and Need of improvements to improve regional mobility by providing a high design-speed east-west route in Southeast Tennessee.
- Addresses the Purpose and Need of improvements to support economic development by providing a high design-speed east-west route in Southeast

Tennessee. It is desired by local officials that SR-30 will become a regional economic corridor.
- Addresses the Purpose and Need of improvements to improve safety. Improvements will be designed to current standards, and include improved horizontal and vertical alignments, lane widths, and shoulders.
- Reduces the State Highway System Mileage by 1.3 miles.
- Estimated to cost $33.0 million.
- 8.6 miles long, with 6.6 miles of improvement.
- Calculated to have a design year weighted volume to capacity ratio of 0.14.
- Calculated to have a design year average travel speed of 50.2 mph. This is an improvement of 25% compared to the No Build Option.
- Calculated to have a design year travel time of 9.9 minutes over the length of the route. This is an improvement of 16% compared to the No Build Option.
- Calculated to have design year LOS ranging from B to C.
- Does not provide improvements to the intersection of existing SR-30 with New Union Road/Walnut Grove Road. This intersection is reported by local officials to have a relatively high crash rate.
- Will reduce traffic along existing SR-30 in the City of Dayton.
- Provides improved access to Dayton's Industrial Park.
- Will have a marginal adverse affect on the existing route continuity. If improvements to SR-30 west of SR-29 are constructed on new alignment, future route continuity may be marginally improved.
- Caves will not be adversely impacted by this option.
- Bryan College will not be adversely impacted by this option.
- Additional environmental concerns may arise with this route due to it being on new location.

6.2.3 Options 3 & 4: Walnut Grove Road Alignment

- Address the Purpose and Need of improvements to improve regional mobility by providing a high design-speed east-west route in Southeast Tennessee.
- Address the Purpose and Need of improvements to support economic development by providing a high design-speed east-west route in Southeast Tennessee. It is desired by local officials that SR-30 will become a regional economic corridor.
- Address the Purpose and Need of improvements to improve safety. Improvements will be designed to current standards, and include improved horizontal and vertical alignments, lane widths, and shoulders.
- Reduces the State Highway System Mileage by 0.7 miles. Option 4 reduces the State Highway System Mileage by 0.5 miles.
- Estimated to cost $39.6 million for Option 3. Option 4 is estimated to cost $40.4 million.
- 8.9 miles long. Option 4 is 9.1 miles long. The length of improvements is 7.2 miles and 7.4 miles, respectively.
- Calculated to have a design year weighted volume to capacity ratio of 0.21. Option 4 is calculated to have a design year weighted volume to capacity ratio of 0.23.
- Calculated to have a design year average travel speed of 48.9 mph. This is an improvement of 21% compared to the No Build Option. Option 4 is calculated to have a design year average travel speed of 48.6 mph. This is an improvement of 21% compared to the No Build Option.

- Calculated to have a design year travel time of 11.0 minutes over the length of the route. Option 4 is calculated to have a design year travel time of 11.3 minutes over the length of the route. These are improvements of 7% and 4% compared to the No Build Option, respectively.
- Calculated to have design year LOS ranging from B to D.
- Option 3 does not provide improvements to the intersection of existing SR-30 with New Union Road/Walnut Grove Road. Option 4 provides improvements to this intersection. This intersection is reported by local officials to have a relatively high crash rate.
- Will reduce traffic along existing SR-30 in the City of Dayton.
- Provide improved access to Dayton's Industrial Park.
- Will have a marginal adverse affect on the existing route continuity. If improvements to SR-30 west of SR-29 are constructed on new alignment, future route continuity may be marginally improved.
- Caves may be impacted by these options.
- Bryan College will not be adversely impacted by these options.

6.2.4 Option 5: Improvements to Existing Alignment

- Does not address the Purpose and Need of improvements to improve regional mobility by providing a high design-speed east-west route in Southeast Tennessee. The existing development along the west terminus of the project will probably not permit the speed limit of the route to be safely increased, regardless of the design speed of the roadway.
- Does not address the Purpose and Need of improvements to support economic development by providing a high design-speed east-west route in Southeast Tennessee. It is desired by local officials that SR-30 will become a regional economic corridor.
- Addresses the Purpose and Need of improvements to improve safety. Improvements will be designed to current standards, and include improved horizontal and vertical alignments, lane widths, and shoulders.
- Does not alter the State Highway System mileage.
- Estimated to cost $46.8 million.
- 7.9 miles long, all of which are improved.
- Calculated to have a design year weighted volume to capacity ratio of 0.33.
- Calculated to have a design year average travel speed of 50.0 mph. This is an improvement of 19% compared to the No Build Option.
- Calculated to have a design year travel time of 9.5 minutes over the length of the route. This is an improvement of 19% compared to the No Build Option.
- Calculated to have design year LOS ranging from C to D.
- Does provide improvements to the intersection of existing SR-30 with New Union Road/Walnut Grove Road. This intersection is reported by local officials to have a relatively high crash rate.
- Will not reduce traffic in the City of Dayton.
- Does not provide improved access to Dayton's Industrial Park.
- Will not adversely affect the existing route continuity. If improvements to SR-30 west of SR-29 are constructed on new alignment, future route continuity may be impacted.
- Caves may be impacted by this option.
- Bryan College may be impacted by this option.

6.2.5 Option 6: No Build

- Does not address the Purpose and Need of improvements to improve regional mobility.
- Does not address the Purpose and Need of improvements to support economic development.
- Does not address the Purpose and Need of improvements to improve safety.
- Estimated to cost $0.
- 7.9 miles long.
- Calculated to have a design year weighted volume to capacity ratio of 0.33.
- Calculated to have a design year average travel speed of 40.3 mph.
- Calculated to have a design year travel time of 11.8 minutes over the length of the route.
- Calculated to have design year LOS ranging from C to E.
- Does not provide improvements to the intersection of existing SR-30 with New Union Road/Walnut Grove Road. This intersection is reported by local officials to have a relatively high crash rate.
- Will not reduce traffic in the City of Dayton.
- Does not provide improved access to Dayton's Industrial Park.
- Will not adversely affect the existing route continuity. If improvements to SR-30 west of SR-29 are constructed on new alignment, future route continuity may be impacted.
- Caves will not be adversely impacted by this option.
- Bryan College will not be adversely impacted by this option.

EXHIBIT 6.2 OPTION SUMMARY CHART

Criteria	Option					
	1 Whites Flat Road	2 New Location Alignment	3 Walnut Grove Road	4 Walnut Grove Road	5 Improve Existing Alignment	6 No Build
Addresses the Purpose and Need of improvements to improve regional mobility?	Yes	Yes	Yes	Yes	No	No
Addresses the Purpose and Need of improvements to support economic development?	Yes	Yes	Yes	Yes	No	No
Addresses the Purpose and Need of improvements to improve safety?	Yes	Yes	Yes	Yes	Yes	No
Cost (millions)	$24.7	$33.0	$39.6	$40.4	$46.8	$0
Length of Route (miles)	10.6	8.6	8.9	9.1	7.9	0.0
Length of improvements (miles)	4.5	6.6	7.2	7.4	7.9	0.0
Mileage difference in the State Highway System	-3.4	-1.3	-0.7	-0.5	0	0
Design year v/c ratio	0.18	0.14	0.21	0.23	0.33	0.33
Design year travel speed (mph)	49.8	50.2	48.9	48.6	50.0	40.3
Design year travel time (minutes)	12.8	9.9	11.0	11.3	9.5	11.8
Design year LOS	B to C	B to C	B to D	B to D	C to D	C to E
Provides safety improvement to the intersection of existing SR-30 with New Union Road?	No	No	No	Yes	Yes	No
Reduces traffic along existing SR-30 within Dayton's City Limits?	Yes	Yes	Yes	Yes	No	No
Improved access provided to Dayton's Industrial Park?	Yes	Yes	Yes	Yes	No	No
Is existing route continuity harmed?	Yes	Yes	Yes	Yes	No	No
Is future route continuity potentially harmed?	No	No	No	No	Yes	Yes
Could this corridor adversely impact known cave locations?	No	No	Yes	Yes	Yes	No
Could this corridor adversely impact Bryan College?	No	No	No	No	Yes	No

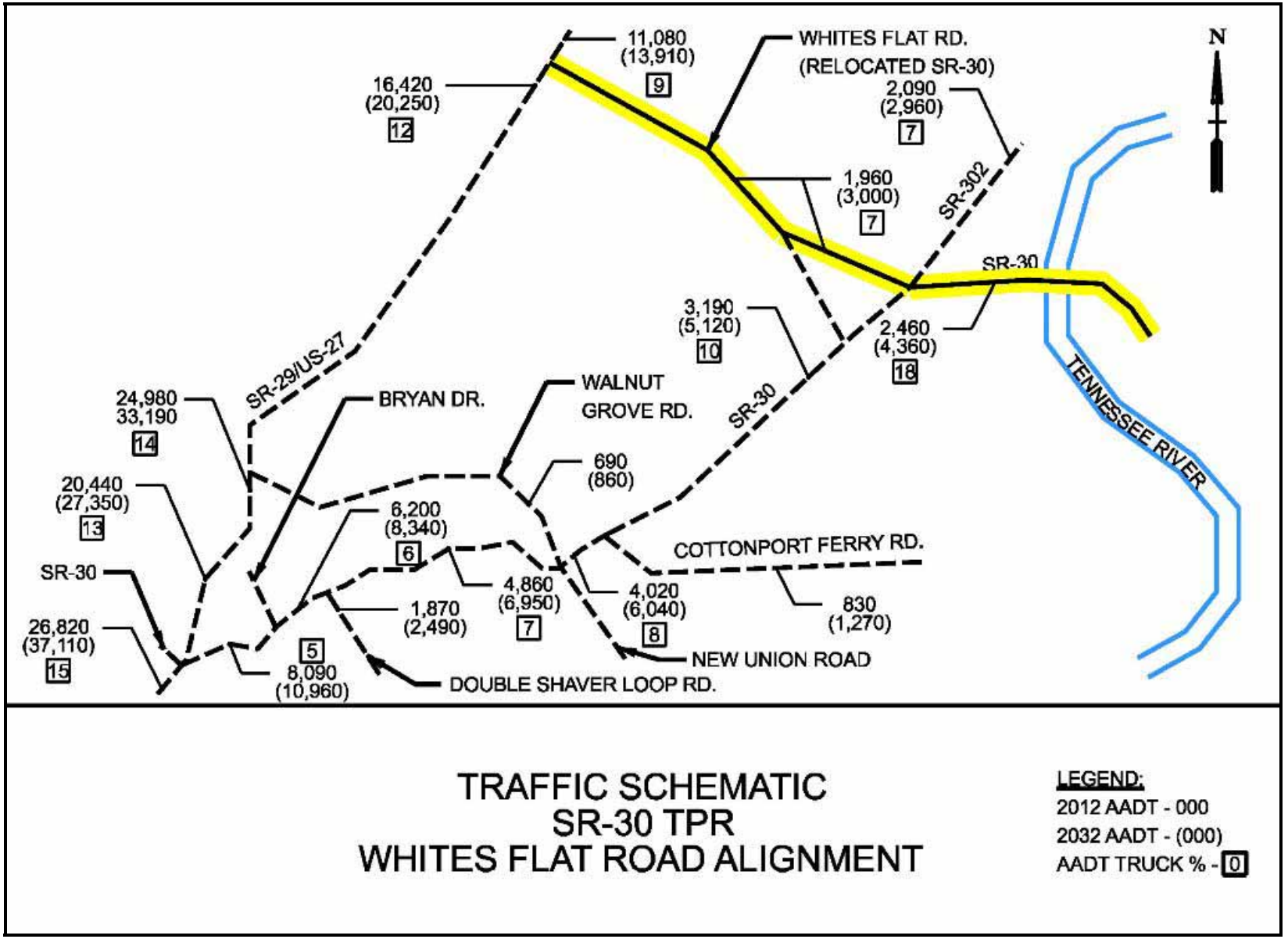
CHECKLIST OF DETERMINANTS FOR LOCATION STUDY

Location: SR-30 Rhea County from SR-29/US-27 to 2000' east of TN River Bridge

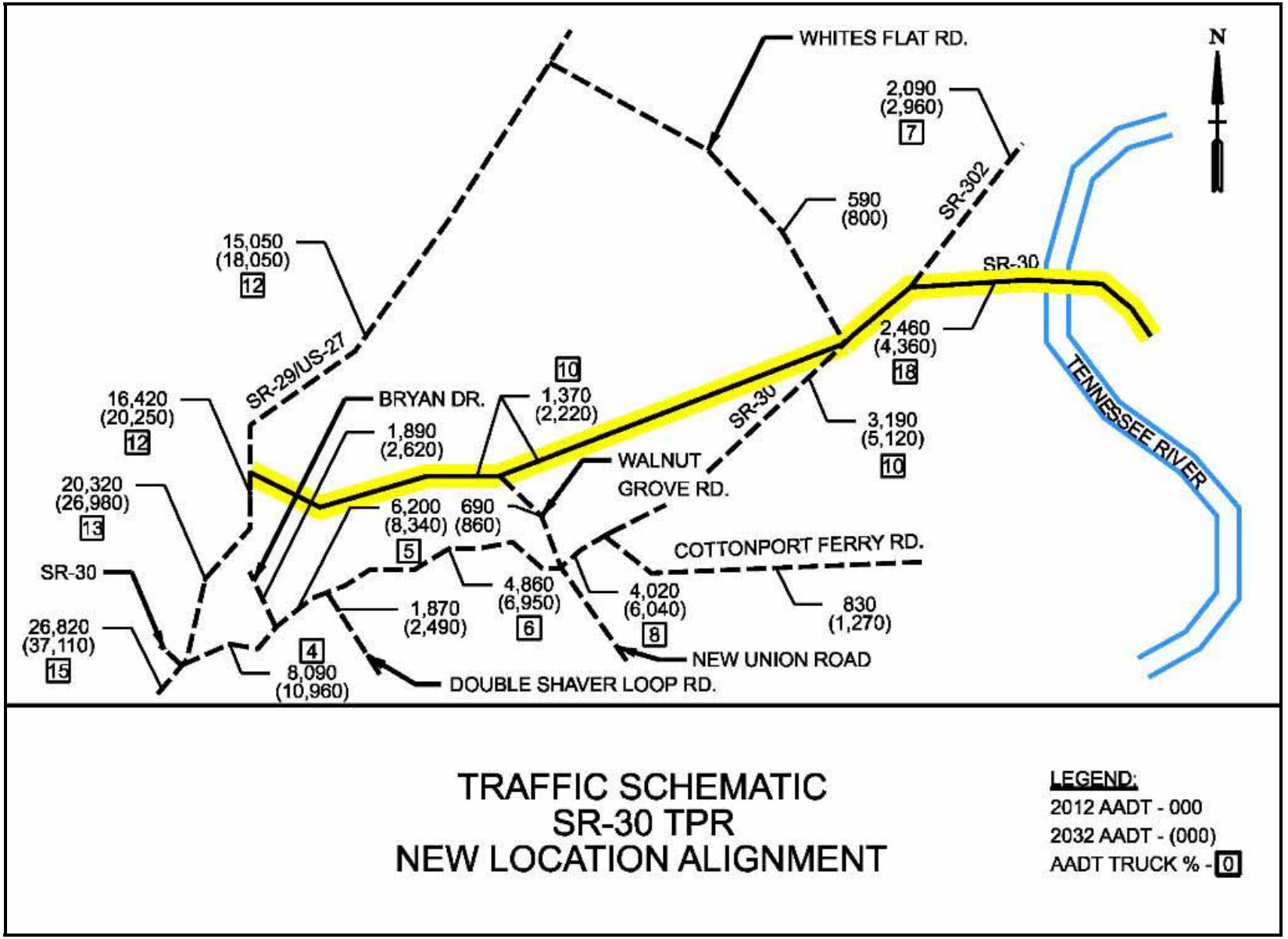
If preliminary field reviews indicate the presence of any of the following facilities or ESE categories, place an "X" in the blank opposite the item. Where more than one alternate is to be considered, place its letter designation in the blank.

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

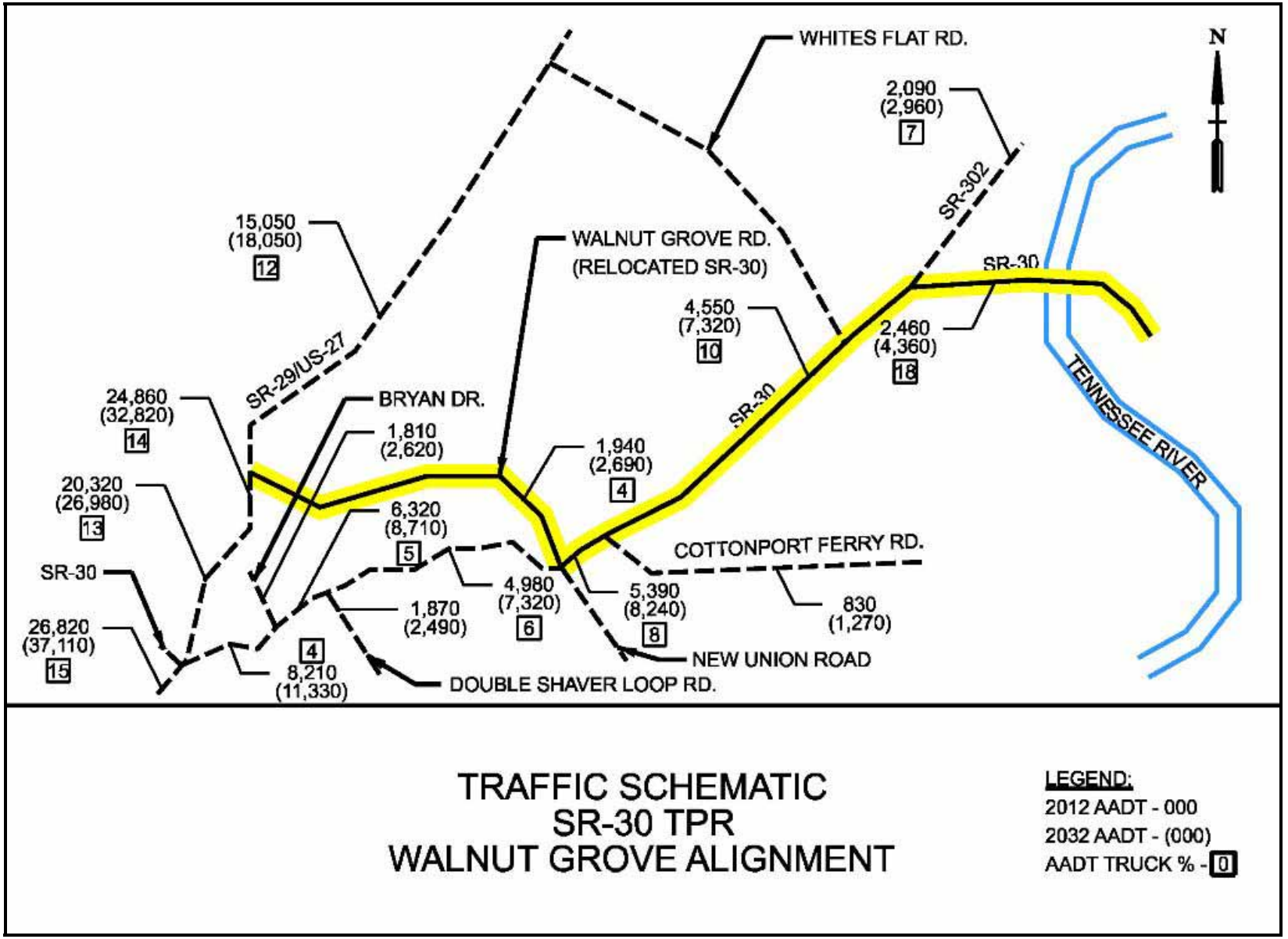
TRAFFIC SCHEMATIC: OPTION 1 WHITES FLAT ROAD ALIGNMENT



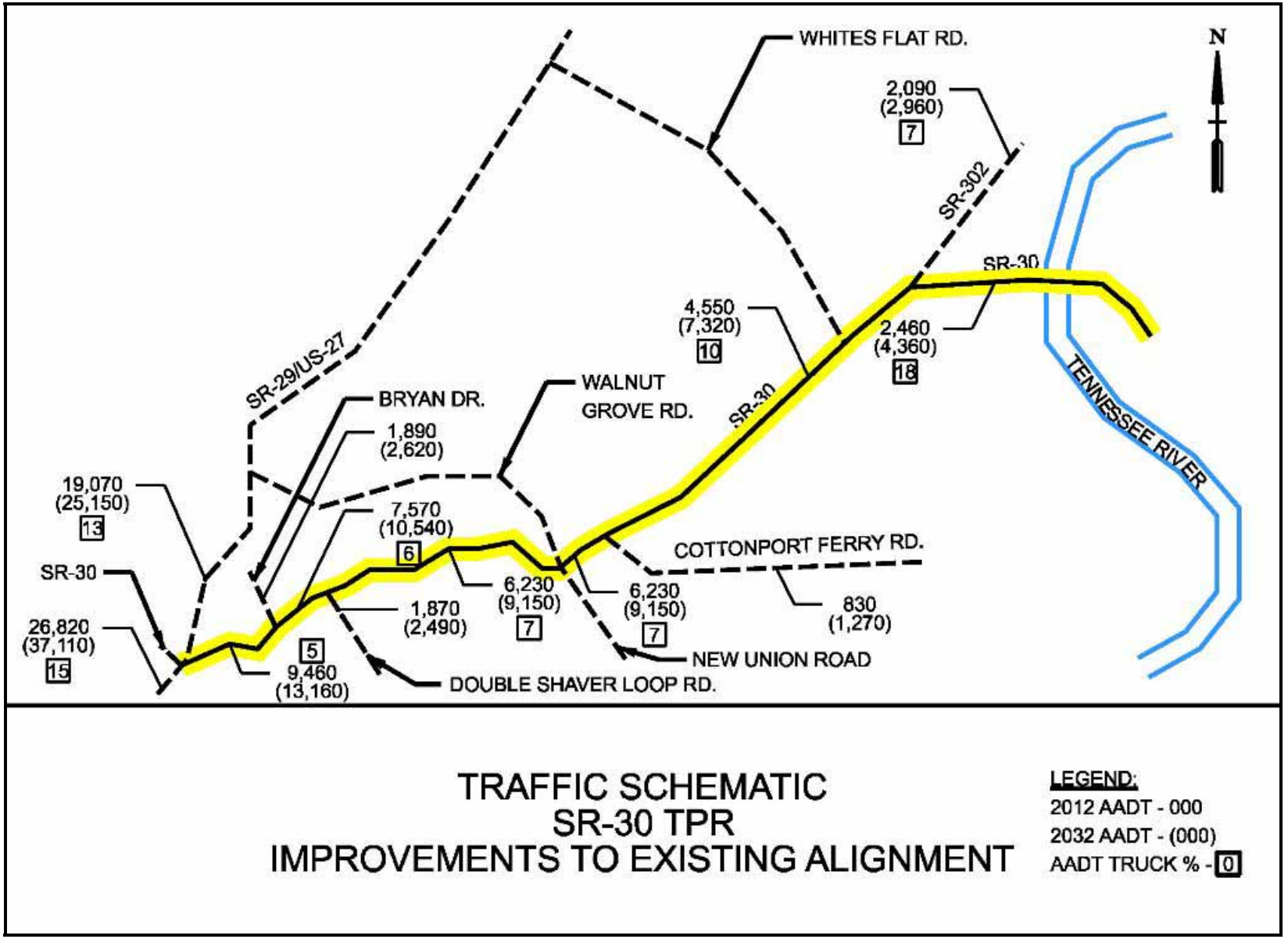
TRAFFIC SCHEMATIC: OPTION 2 NEW LOCATION ALIGNMENT



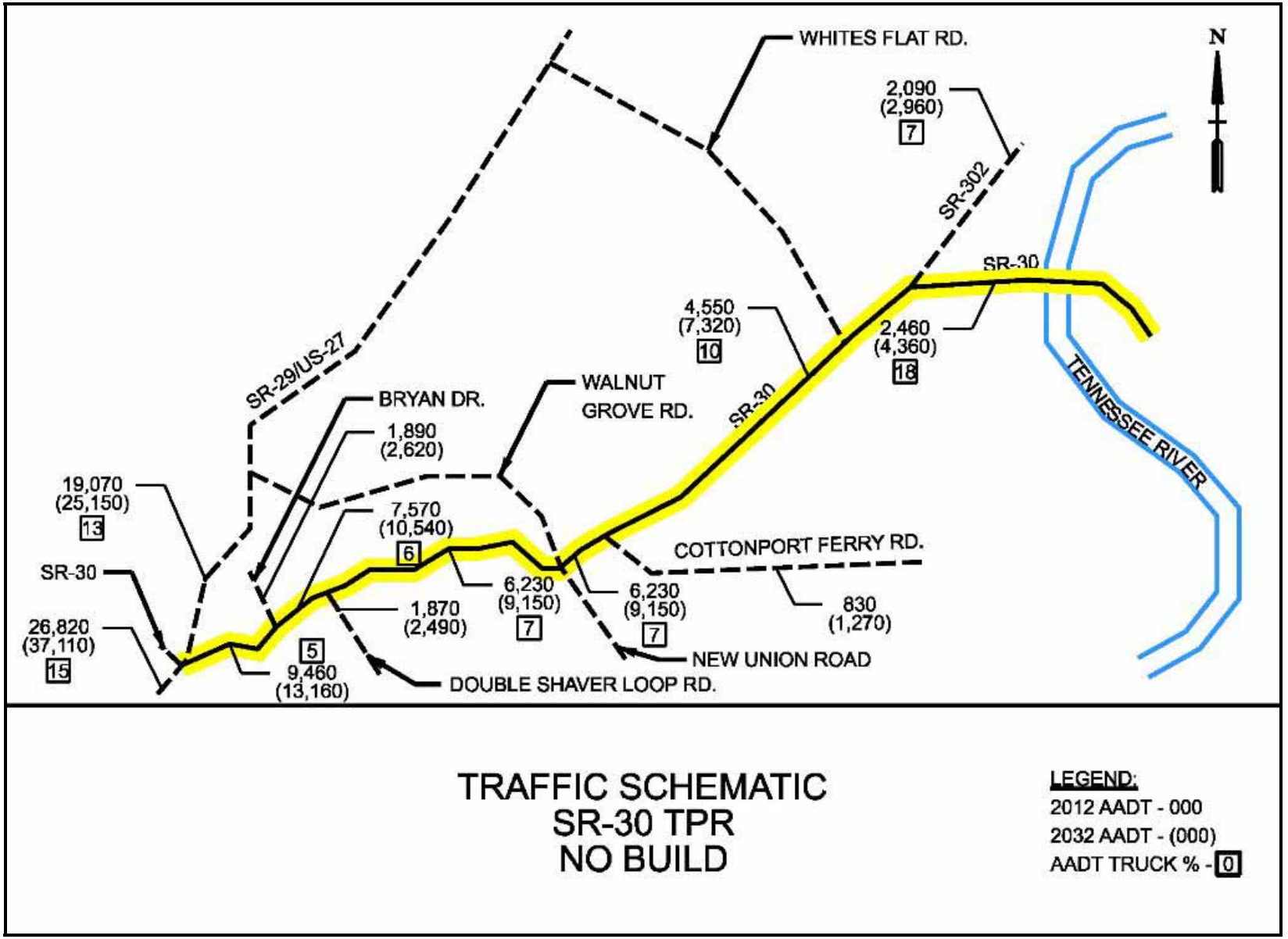
TRAFFIC SCHEMATIC: OPTIONS 3 & 4 WALNUT GROVE ROAD ALIGNMENTS



TRAFFIC SCHEMATIC: OPTION 5 IMPROVEMENTS TO EXISTING ALIGNMENT



TRAFFIC SCHEMATIC: OPTION 6 NO BUILD



TENNESSEE DEPARTMENT OF TRANSPORTATION
Design Criteria for Location and Design Phase

Route:	SR-30	Option:	1
Section:	N/A	Region:	2
County:	Rhea & Meigs	Project #	

Location

From:	SR-29/US-27, Log Mile 9.18
To:	2000' east of TN River Bridge, Log Mile 0.38

Parameter	**Criteria**
2012 AADT	1960 – 2460
2032 AADT	3000 – 4360
Percent Trucks (DHV)	4%
DHV (11% AADT 2032)	330 – 480
Functional Classification	Urban Minor Arterial, Rural Minor Arterial
Minimum Design Speed	60
Access Control	n/a
Minimum Radius	1205 ft.
Maximum Grade	4%
Minimum Stopping Sight Distance	570 ft.
Surface Width	40 ft.
Number of Lanes	2
Usable Shoulder Width	10 ft., 8 ft. paved
Median Width	n/a
Minimum R.O.W.	150 ft.
Signalization	n/a

TENNESSEE DEPARTMENT OF TRANSPORTATION
Design Criteria for Location and Design Phase

Route:	SR-30	Option:	2
Section:	N/A	Region:	2
County:	Rhea & Meigs	Project #	

Location

From:	SR-29/US-27, Log Mile 9.18
To:	2000' east of TN River Bridge, Log Mile 0.38

Parameter	**Criteria**
2012 AADT	1370 – 2460
2032 AADT	2200 – 4360
Percent Trucks (DHV)	4%
DHV (11% AADT 2032)	242 – 480
Functional Classification	Urban Minor Arterial, Rural Minor Arterial
Minimum Design Speed	60
Access Control	n/a
Minimum Radius	1205 ft.
Maximum Grade	4%
Minimum Stopping Sight Distance	570 ft.
Surface Width	40 ft.
Number of Lanes	2
Usable Shoulder Width	10 ft., 8 ft. paved
Median Width	n/a
Minimum R.O.W.	150 ft.
Signalization	n/a

TENNESSEE DEPARTMENT OF TRANSPORTATION
Design Criteria for Location and Design Phase

Route:	SR-30	Option:	3
Section:	N/A	Region:	2
County:	Rhea & Meigs	Project #	

Location

From:	SR-29/US-27, Log Mile 9.18
To:	2000' east of TN River Bridge, Log Mile 0.38

Parameter	**Criteria**
2012 AADT	1940 – 5390
2032 AADT	2690 – 8240
Percent Trucks (DHV)	4%
DHV (11% AADT 2032)	296 – 906
Functional Classification	Urban Minor Arterial, Rural Minor Arterial
Minimum Design Speed	60
Access Control	n/a
Minimum Radius	1205 ft.
Maximum Grade	4%
Minimum Stopping Sight Distance	570 ft.
Surface Width	40 ft.
Number of Lanes	2
Usable Shoulder Width	10 ft., 8 ft. paved
Median Width	n/a
Minimum R.O.W.	150 ft.
Signalization	n/a

TENNESSEE DEPARTMENT OF TRANSPORTATION
Design Criteria for Location and Design Phase

Route:	SR-30	Option:	4
Section:	N/A	Region:	2
County:	Rhea & Meigs	Project #	

Location

From:	SR-29/US-27, Log Mile 9.18
To:	2000' east of TN River Bridge, Log Mile 0.38

Parameter	**Criteria**
2012 AADT	1940 – 5390
2032 AADT	2690 – 8240
Percent Trucks (DHV)	4%
DHV (11% AADT 2032)	296 – 906
Functional Classification	Urban Minor Arterial, Rural Minor Arterial
Minimum Design Speed	60
Access Control	n/a
Minimum Radius	1205 ft.
Maximum Grade	4%
Minimum Stopping Sight Distance	570 ft.
Surface Width	40 ft.
Number of Lanes	2
Usable Shoulder Width	10 ft., 8 ft. paved
Median Width	n/a
Minimum R.O.W.	150 ft.
Signalization	n/a

TENNESSEE DEPARTMENT OF TRANSPORTATION
Design Criteria for Location and Design Phase

Route:	SR-30	Option:	5
Section:	N/A	Region:	2
County:	Rhea & Meigs	Project #	

Location

From:	SR-29/US-27, Log Mile 9.18
To:	2000' east of TN River Bridge, Log Mile 0.38

Parameter	**Criteria**
2012 AADT	6,050
2032 AADT	8,910
Percent Trucks (DHV)	4%
DHV (11% AADT 2032)	980
Functional Classification	Urban Minor Arterial, Rural Minor Arterial
Minimum Design Speed	60
Access Control	n/a
Minimum Radius	1205 ft.
Maximum Grade	4%
Minimum Stopping Sight Distance	570 ft.
Surface Width	40 ft.
Number of Lanes	2
Usable Shoulder Width	10 ft., 8 ft. paved
Median Width	n/a
Minimum R.O.W.	150 ft.
Signalization	n/a

COST DATA SHEET OPTION 1

Section: Option 1: Whites Flat Road Alignment
X-Sect: 2 Lane
Length: 4.5

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					**$ 3,803,000**

Utility Relocation

Reimbursable			$ 1,575,000		
Non-reimbursable			$ -		
Total Utility Cost					**$ 1,575,000**

Construction

Clear and Grubbing			$ 205,000		
Earthwork			$ 1,467,000		
Pavement Removal			$ -		
Drainage			$ 920,000		
Structures			$ 3,275,000		
Railroad Crossing or Separation			$ -		
Paving			$ 3,720,000		
Retaining Walls			$ -		
Maintenance of Traffic			$ 205,000		
Topsoil			$ 65,000		
Seeding			$ 45,000		
Sodding			$ 20,000		
Signing			$ 20,000		
Lighting			$ -		
Signalization			$ -		
Fence			$ -		
Guardrail			$ 105,000		
Rip Rap or Slope Protection			$ 120,000		
Construction Item Subtotal		$10,167,000			
Other Construction Items (15%)			$ 1,525,000		
Erosion Control (3.5%)			$ 356,000		
Mobilization			$ 508,350		
Construction Cost				$ 12,556,000	
10% Engineering & Cont.				$ 1,256,000	
Total Construction Cost					**$ 13,812,000**
Preliminary Engineering (10%)					**$ 1,381,000**
6% x 5 Years = 30%					**$ 4,144,000**

Total Cost	**$ 24,715,000**
Cost per Mile	$ 5,492,000

COST DATA SHEET OPTION 2

Section: Option 2: New Location Alignment
X-Sect: 2 Lane
Length: 6.58

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				**$ 5,560,000**

Utility Relocation

Reimbursable	$ 1,525,000	
Non-reimbursable	$ -	
Total Utility Cost		**$ 1,525,000**

Construction

Clear and Grubbing		$ 300,000		
Earthwork		$ 3,290,000		
Pavement Removal		$ -		
Drainage		$ 1,320,000		
Structures		$ 2,730,000		
Railroad Crossing or Separation		$ -		
Paving		$ 5,439,000		
Retaining Walls		$ -		
Maintenance of Traffic		$ 100,000		
Topsoil		$ 100,000		
Seeding		$ 70,000		
Sodding		$ 35,000		
Signing		$ 35,000		
Lighting		$ -		
Signalization		$ -		
Fence		$ -		
Guardrail		$ 90,000		
Rip Rap or Slope Protection		$ 100,000		
Construction Item Subtotal	$ 13,609,000			
Other Construction Items (15%)		$ 2,041,000		
Erosion Control (3.5%)		$ 476,000		
Mobilization		$ 680,450		
Construction Cost			$16,806,000	
10% Engineering & Cont.			$ 1,681,000	
Total Construction Cost				**$ 18,487,000**
Preliminary Engineering (10%)				**$ 1,849,000**
6% x 5 Years = 30%				**$ 5,546,000**

Total Cost	**$ 32,967,000**
Cost per Mile	$ 5,010,000

COST DATA SHEET OPTION 3

Section: Option 3: Walnut Grove Road Alignment
X-Sect: 2 Lane
Length: 7.19

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					**$ 6,076,000**

Utility Relocation

Reimbursable		$ 2,225,000		
Non-reimbursable		$ -		
Total Utility Cost				**$ 2,225,000**

Construction

Clear and Grubbing		$ 325,000		
Earthwork		$ 4,142,000		
Pavement Removal		$ -		
Drainage		$ 1,445,000		
Structures		$ 3,820,000		
Railroad Crossing or Separation		$ -		
Paving		$ 5,944,000		
Retaining Walls		$ -		
Maintenance of Traffic		$ 240,000		
Topsoil		$ 105,000		
Seeding		$ 75,000		
Sodding		$ 35,000		
Signing		$ 35,000		
Lighting		$ -		
Signalization		$ -		
Fence		$ -		
Guardrail		$ 125,000		
Rip Rap or Slope Protection		$ 140,000		
Construction Item Subtotal	$ 16,431,000			
Other Construction Items (15%)		$ 2,465,000		
Erosion Control (3.5%)		$ 575,000		
Mobilization		$ 821,550		
Construction Cost			$20,293,000	
10% Engineering & Cont.			$ 2,029,000	
Total Construction Cost				**$ 22,322,000**
Preliminary Engineering (10%)				**$ 2,232,000**
6% x 5 Years = 30%				**$ 6,697,000**

Total Cost	**$ 39,552,000**
Cost per Mile	$ 5,501,000

COST DATA SHEET OPTION 4

Section: Option 4: Walnut Grove Road Alignment
X-Sect: 2 Lane
Length: 7.41

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					**$ 6,261,000**

Utility Relocation

Reimbursable		$ 2,225,000		
Non-reimbursable		$ -		
Total Utility Cost				**$ 2,225,000**

Construction

Clear and Grubbing		$ 335,000		
Earthwork		$ 4,214,000		
Pavement Removal		$ -		
Drainage		$ 1,500,000		
Structures		$ 3,820,000		
Railroad Crossing or Separation		$ -		
Paving		$ 6,125,000		
Retaining Walls		$ -		
Maintenance of Traffic		$ 290,000		
Topsoil		$ 110,000		
Seeding		$ 75,000		
Sodding		$ 35,000		
Signing		$ 35,000		
Lighting		$ -		
Signalization		$ -		
Fence		$ -		
Guardrail		$ 125,000		
Rip Rap or Slope Protection		$ 140,000		
Construction Item Subtotal	$ 16,804,000			
Other Construction Items (15%)		$ 2,521,000		
Erosion Control (3.5%)		$ 588,000		
Mobilization		$ 840,200		
Construction Cost			$20,753,000	
10% Engineering & Cont.			$ 2,075,000	
Total Construction Cost				**$ 22,828,000**
Preliminary Engineering (10%)				**$ 2,283,000**
6% x 5 Years = 30%				**$ 6,848,000**

Total Cost	**$ 40,445,000**
Cost per Mile	$ 5,458,000

COST DATA SHEET OPTION 5

Section: Option 5: Improvements to Existing Alignment
X-Sect: 2 Lane
Length: 7.94

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					**$ 9,257,000**

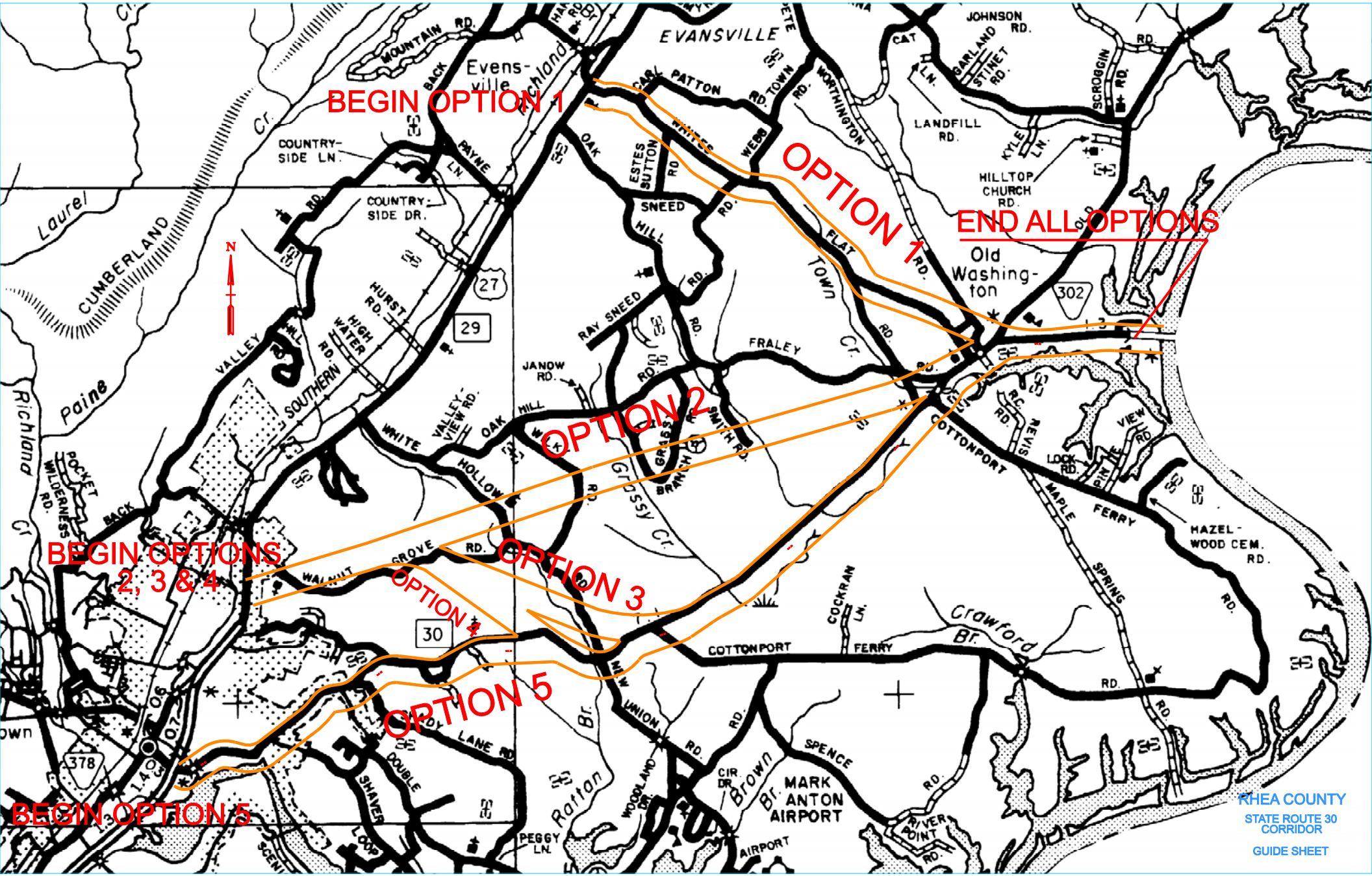
Utility Relocation

Reimbursable		$ 3,579,000		
Non-reimbursable		$ -		
Total Utility Cost				**$ 3,579,000**

Construction

Clear and Grubbing		$ 360,000		
Earthwork		$ 2,588,000		
Pavement Removal		$ -		
Drainage		$ 1,620,000		
Structures		$ 5,735,000		
Railroad Crossing or Separation		$ -		
Paving		$ 6,563,000		
Retaining Walls		$ -		
Maintenance of Traffic		$ 395,000		
Topsoil		$ 120,000		
Seeding		$ 80,000		
Sodding		$ 40,000		
Signing		$ 40,000		
Lighting		$ -		
Signalization		$ -		
Fence		$ -		
Guardrail		$ 160,000		
Rip Rap or Slope Protection		$ 180,000		
Construction Item Subtotal	$ 17,881,000			
Other Construction Items (15%)		$ 2,682,000		
Erosion Control (3.5%)		$ 626,000		
Mobilization		$ 894,050		
Construction Cost			$22,083,000	
10% Engineering & Cont.			$ 2,208,000	
Total Construction Cost				**$ 24,291,000**
Preliminary Engineering (10%)				**$ 2,429,000**
6% x 5 Years = 30%				**$ 7,287,000**

Total Cost	**$ 46,843,000**
Cost per Mile	$ 5,900,000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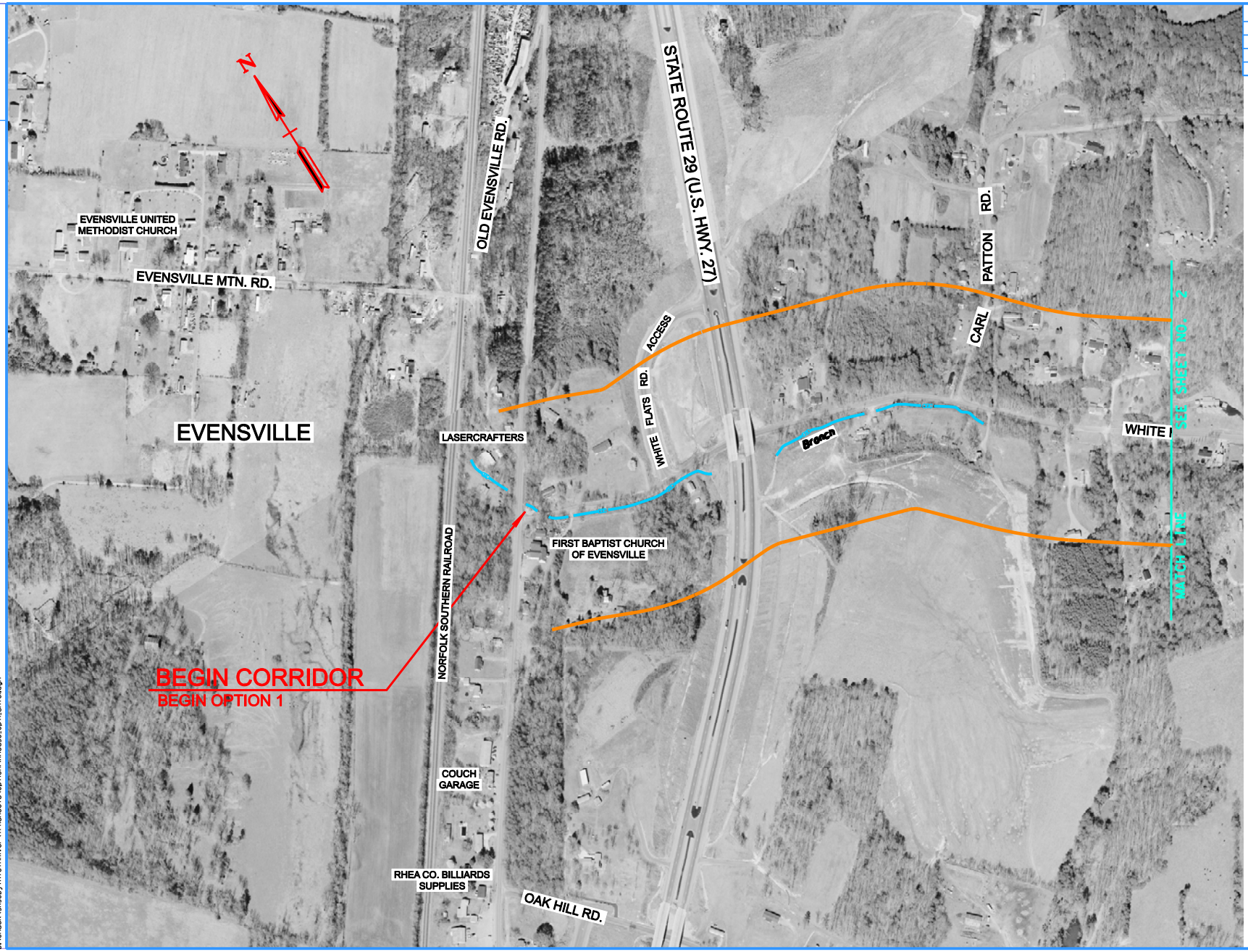
OPTION 1
END ALL OPTIONS
BEGIN OPTIONS 2, 3 & 4
OPTION 2
OPTION 3
OPTION 4
OPTION 5
BEGIN OPTION 5
EVANSVILLE
Evens-ville
Old Washing-ton
COTTONPORT
Crawford Br.
Brown Br.
Ratton Br.
MARK ANTON AIRPORT
Laurel
CUMBERLAND
Paine
Richland Cr
Grassy Cr.
Town Cr.
RHEA COUNTY
STATE ROUTE 30 CORRIDOR
GUIDE SHEET



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

TYPE	YEAR	PROJECT NO.	SHEET NO.
			1

OPTION 1

0 200 400

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

RHEA COUNTY

STATE ROUTE 30 CORRIDOR

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TYPE	YEAR	PROJECT NO.	SHEET NO.
			2

OPTION 1

0 200 400

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

RHEA COUNTY

STATE ROUTE 30 CORRIDOR

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

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TYPE	YEAR	PROJECT NO.	SHEET NO.
			3

OPTION 1

0 200 400

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

RHEA COUNTY

STATE ROUTE 30
CORRIDOR

TENNESSEE D.O.T.
DESIGN DIVISION

FILE NO.

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

TYPE	YEAR	PROJECT NO.	SHEET NO.
			4

OPTION 1

0 200 400

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

RHEA COUNTY

STATE ROUTE 30 CORRIDOR

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

TYPE	YEAR	PROJECT NO.	SHEET NO.
			5

OPTION 1

0 200 400

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

RHEA COUNTY

STATE ROUTE 30
CORRIDOR

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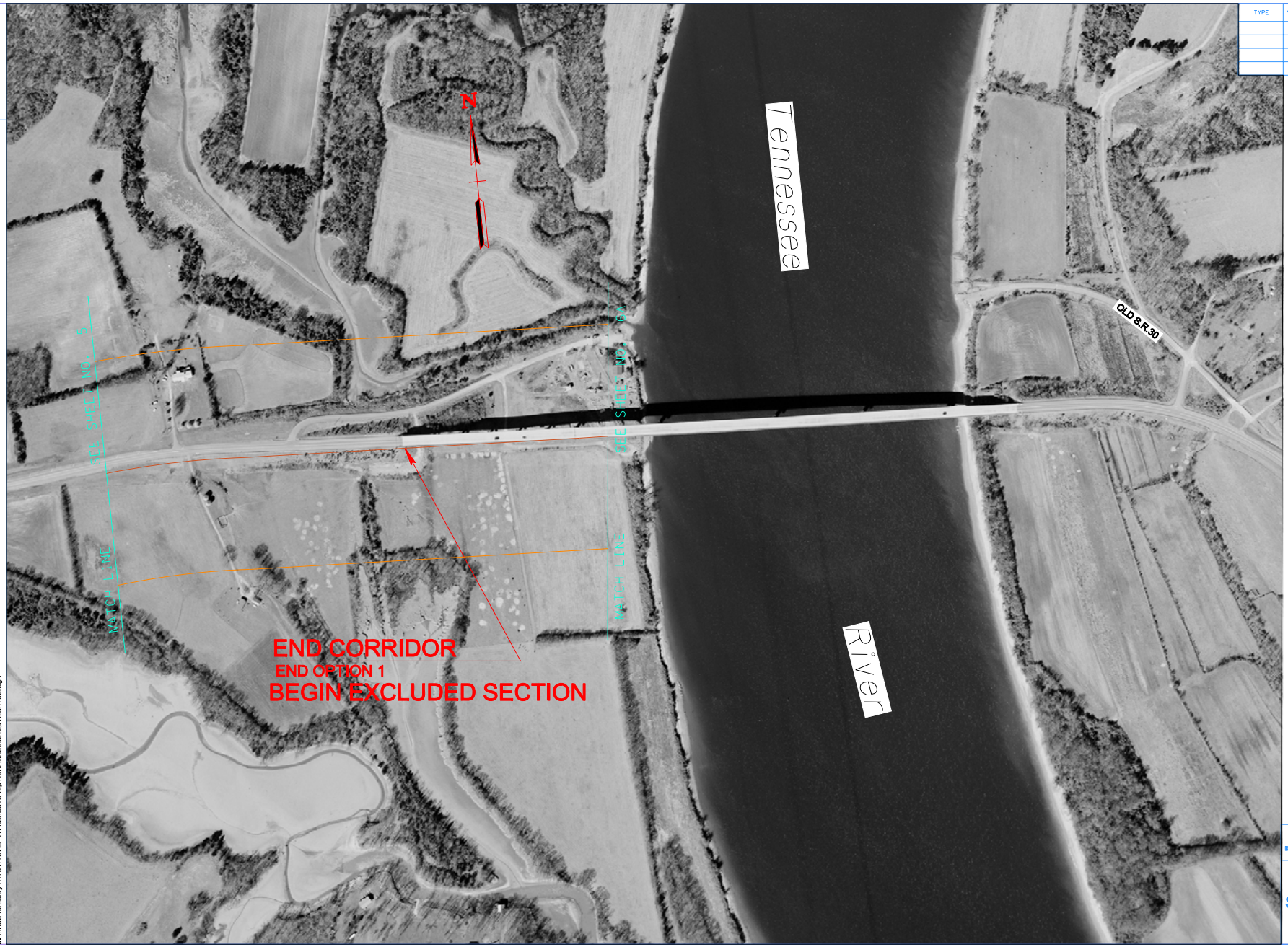

TENNESSEE D.O.T.
DESIGN DIVISION
FILE NO.

TYPE	YEAR	PROJECT NO.	SHEET NO.
			6

OPTION 1

0 200 400

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

RHEA COUNTY

STATE ROUTE 30
CORRIDOR

11/20/2007
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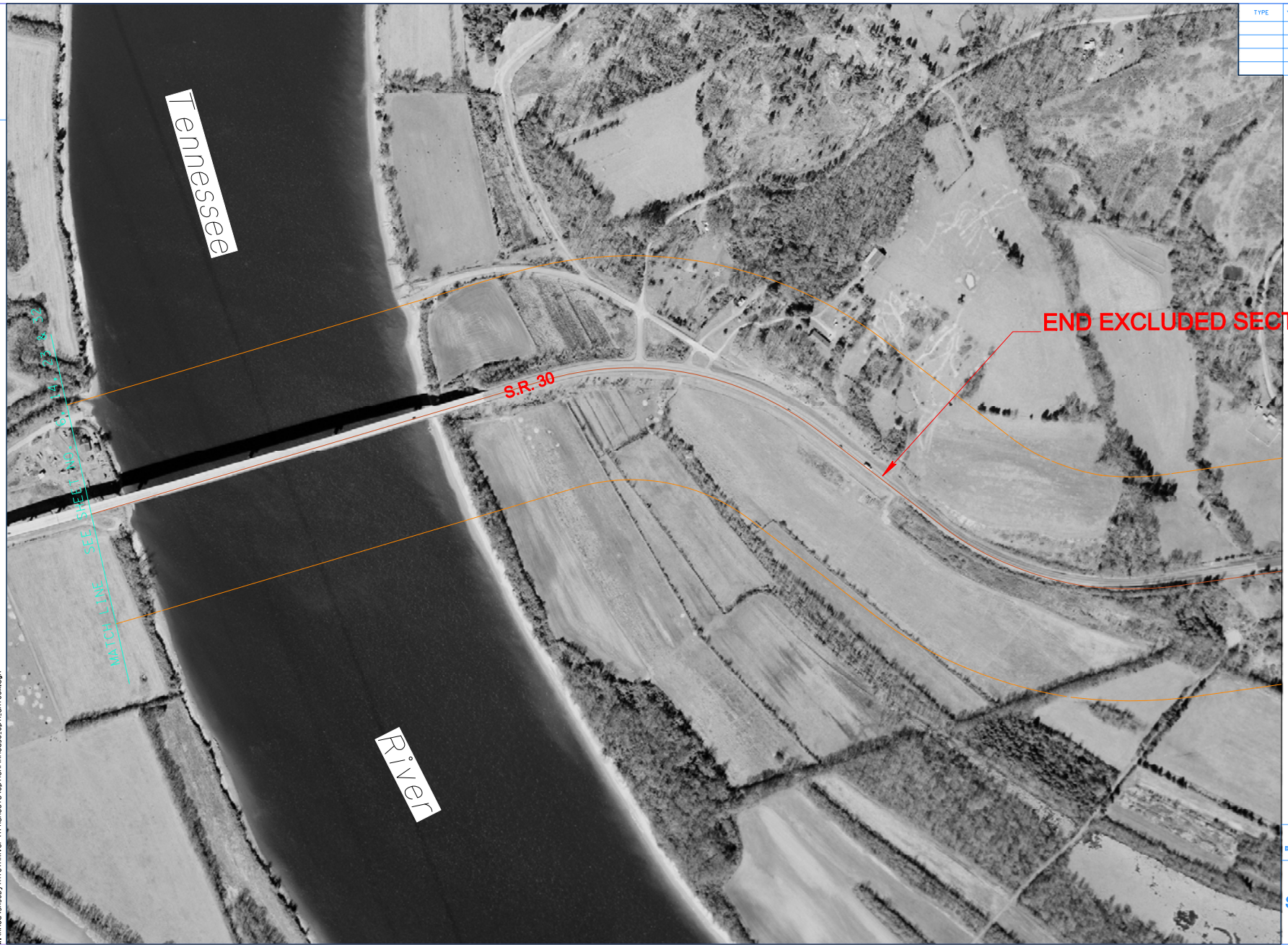

TENNESSEE D.O.T.
DESIGN DIVISION
FILE NO.

TYPE	YEAR	PROJECT NO.	SHEET NO.
			6A

OPTION 1

0 200 400

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

RHEA COUNTY

STATE ROUTE 30 CORRIDOR

11/20/2007
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TENNESSEE D.O.T.
DESIGN DIVISION
FILE NO.

TYPE	YEAR	PROJECT NO.	SHEET NO.
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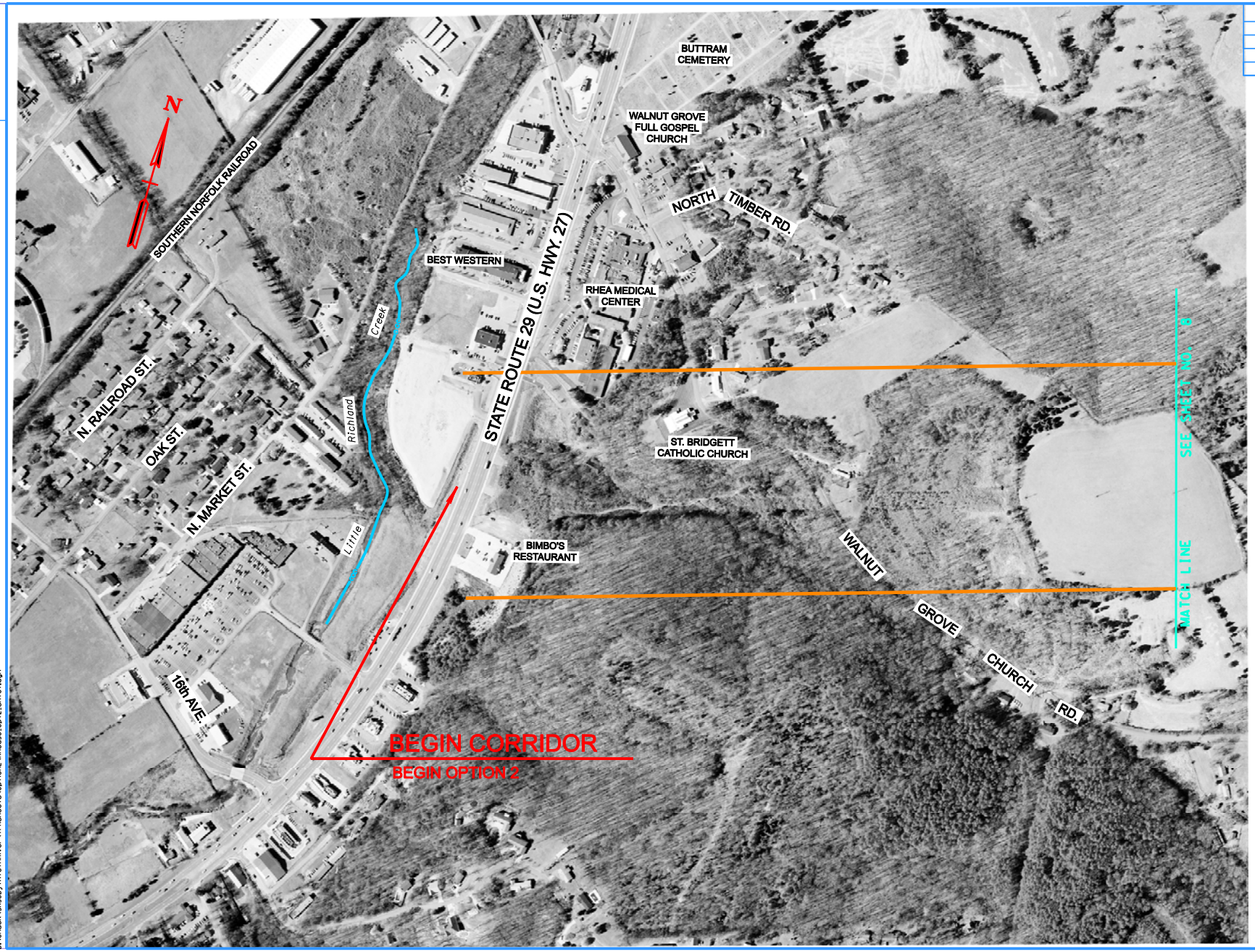

OPTION 2

0 200 400

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

RHEA COUNTY

STATE ROUTE 30 CORRIDOR

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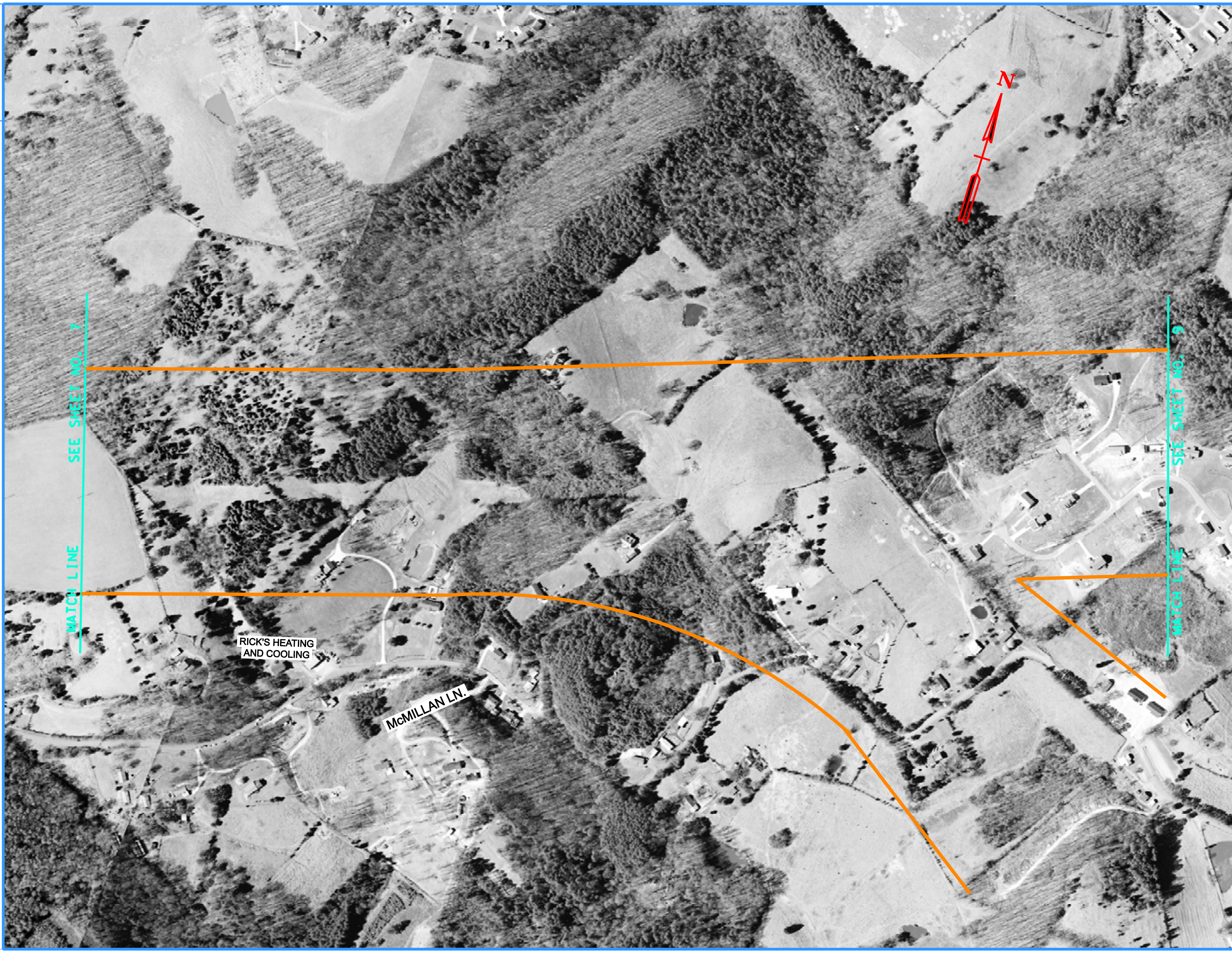

TYPE	YEAR	PROJECT NO.	SHEET NO.
			8

OPTION 2

0 200 400

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

RHEA COUNTY

STATE ROUTE 30 CORRIDOR

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

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TYPE	YEAR	PROJECT NO.	SHEET NO.
			9

OPTION 2

0 200 400

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

RHEA COUNTY

STATE ROUTE 30
CORRIDOR

TENNESSEE D.O.T.
DESIGN DIVISION

FILE NO.

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TENNESSEE D.O.T.
DESIGN DIVISION
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STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

RHEA COUNTY
STATE ROUTE 30
CORRIDOR

OPTION 2

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TYPE	YEAR	PROJECT NO.	SHEET NO.
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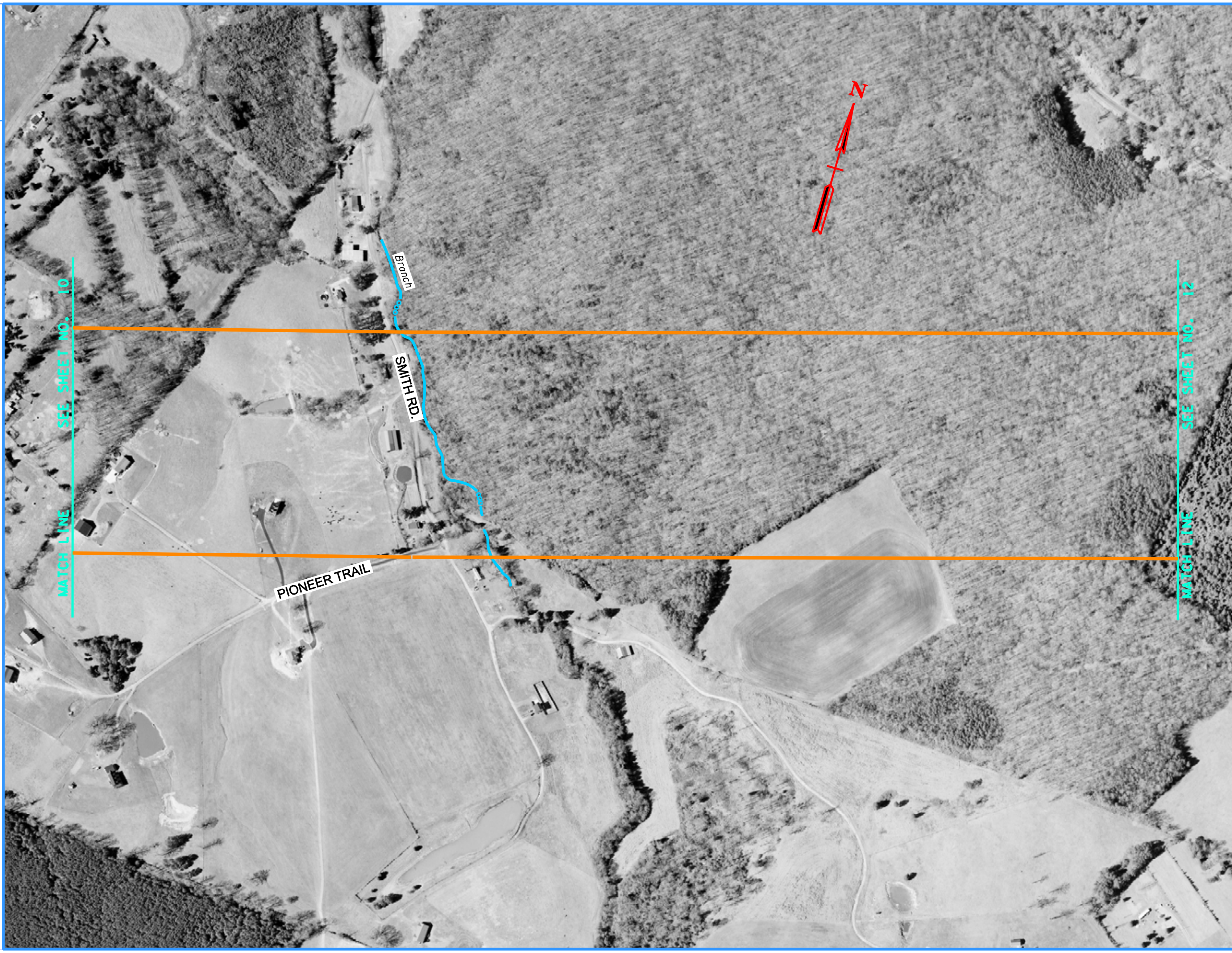

TYPE	YEAR	PROJECT NO.	SHEET NO.
			11

OPTION 2

0 200 400

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

RHEA COUNTY

STATE ROUTE 30
CORRIDOR

TENNESSEE D.O.T.
DESIGN DIVISION
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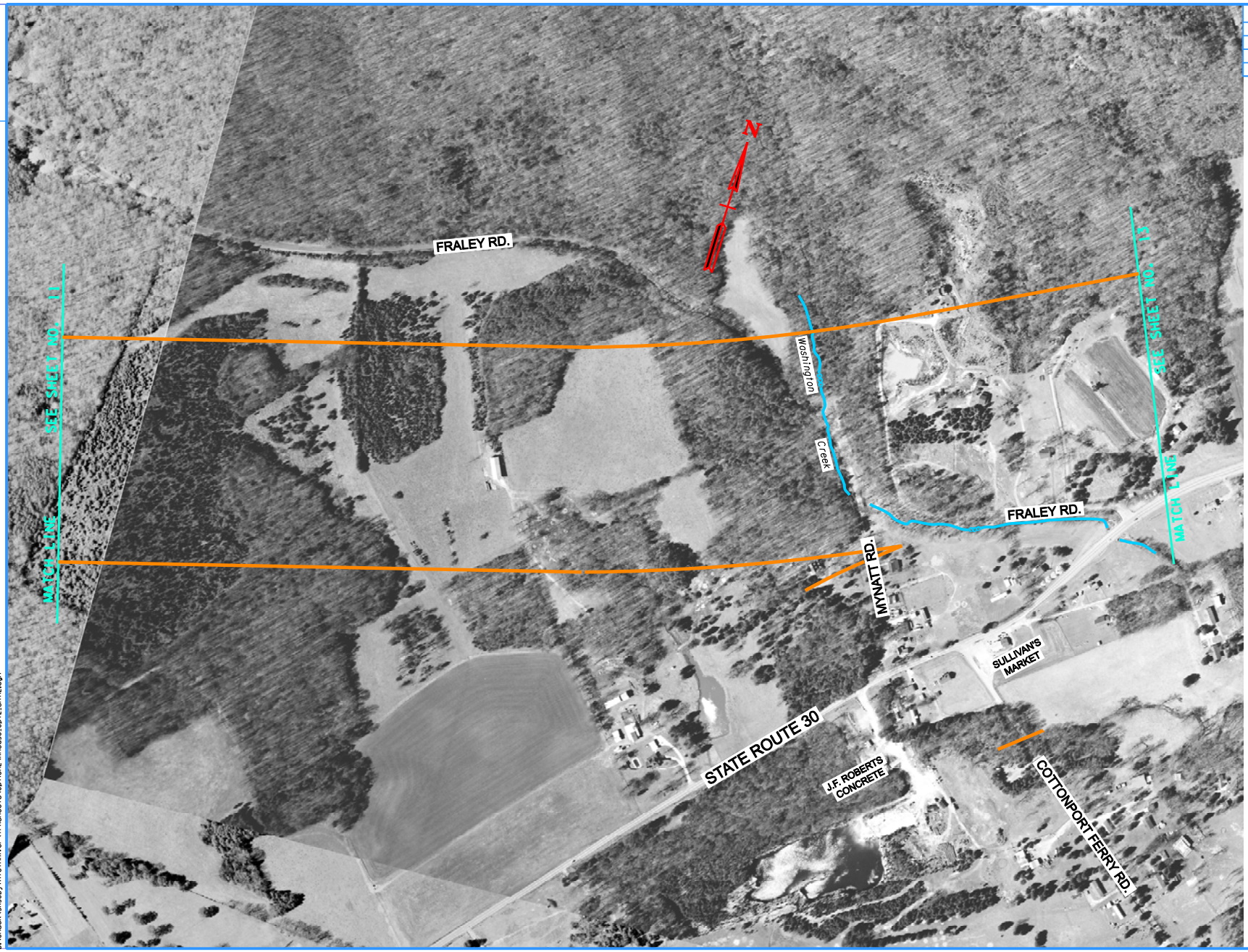

TENNESSEE D.O.T.
DESIGN DIVISION
FILE NO.

TYPE	YEAR	PROJECT NO.	SHEET NO.
			12

OPTION 2

0 200 400

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

RHEA COUNTY

STATE ROUTE 30 CORRIDOR

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TYPE	YEAR	PROJECT NO.	SHEET NO.
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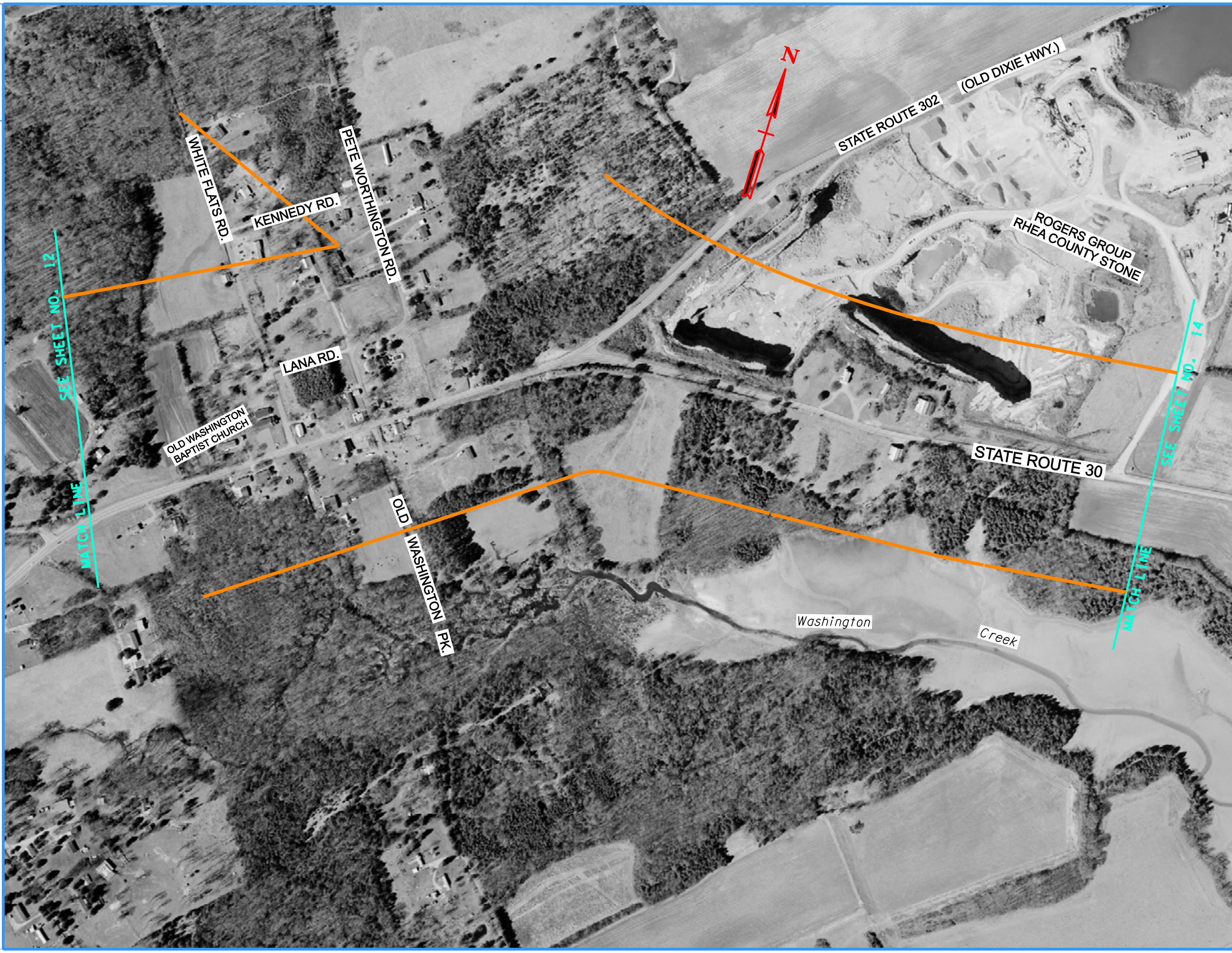

OPTION 2

0 200 400

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

RHEA COUNTY

STATE ROUTE 30 CORRIDOR

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

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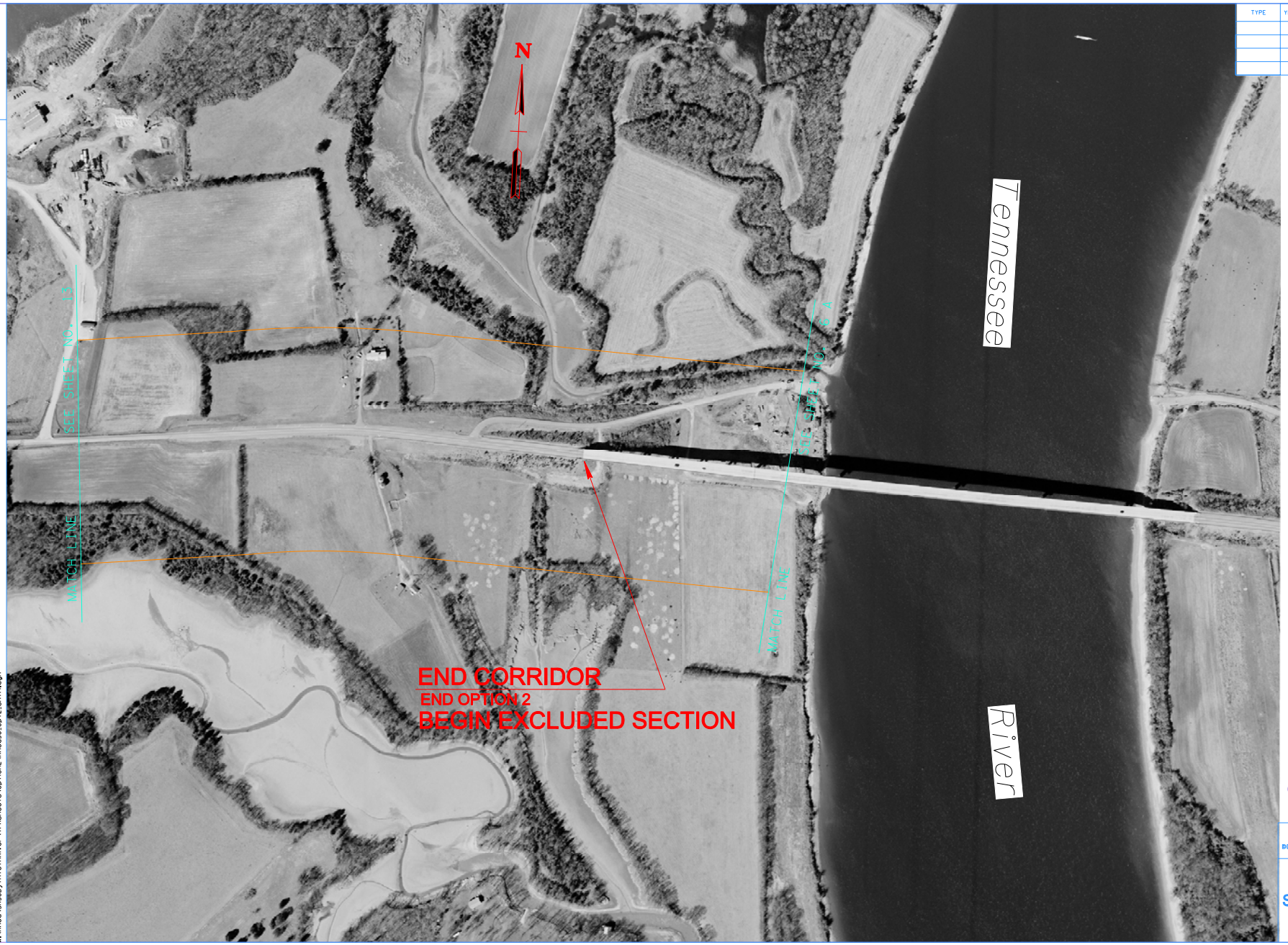

TENNESSEE D.O.T.
DESIGN DIVISION
FILE NO.

TYPE	YEAR	PROJECT NO.	SHEET NO.
			14

OPTION 2

0 200 400

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

RHEA COUNTY

STATE ROUTE 30
CORRIDOR

11/20/2007
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TENNESSEE D.O.T.
DESIGN DIVISION
FILE NO.

TYPE	YEAR	PROJECT NO.	SHEET NO.
			15

OPTIONS 3 & 4

0 200 400

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

RHEA COUNTY

STATE ROUTE 30 CORRIDOR

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

TYPE	YEAR	PROJECT NO.	SHEET NO.
			16

OPTIONS 3 & 4

0 200 400

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

RHEA COUNTY

STATE ROUTE 30 CORRIDOR

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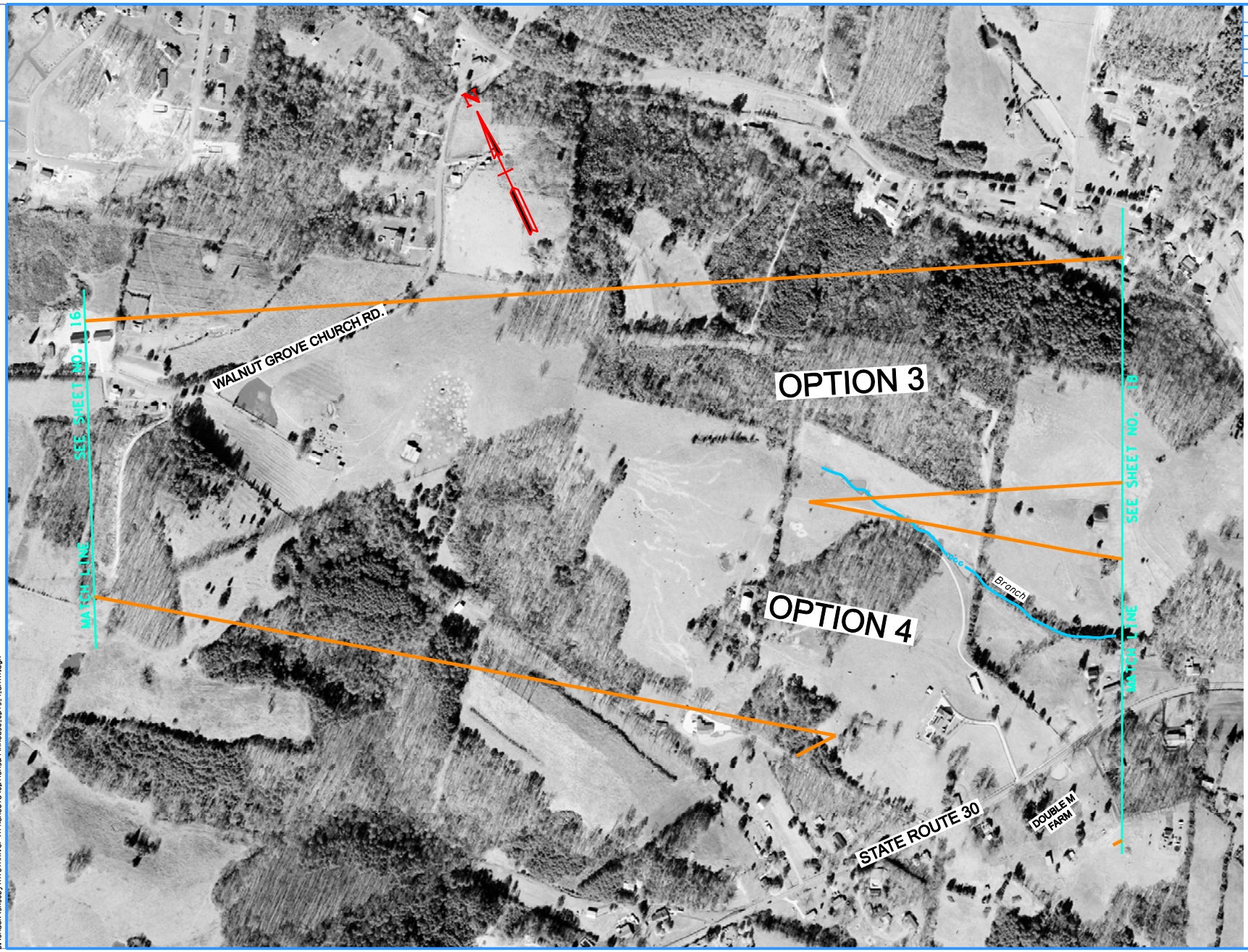

TENNESSEE D.O.T.
DESIGN DIVISION
FILE NO.

TYPE	YEAR	PROJECT NO.	SHEET NO.
			17

OPTIONS 3 & 4

0 200 400

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

RHEA COUNTY

STATE ROUTE 30 CORRIDOR

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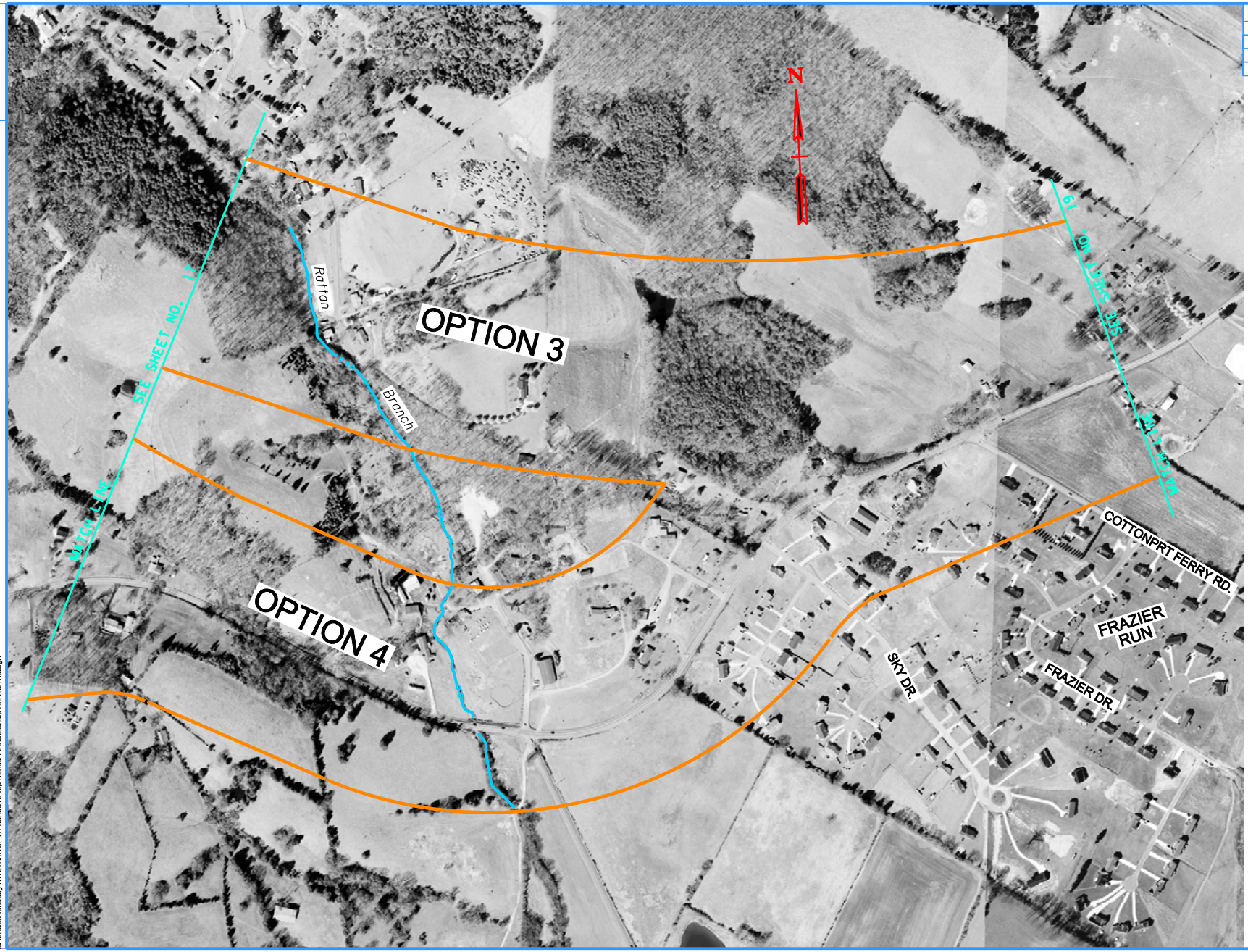

TENNESSEE D.O.T.
DESIGN DIVISION
FILE NO.

TYPE	YEAR	PROJECT NO.	SHEET NO.
			18

OPTIONS 3 & 4

0 200 400

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

RHEA COUNTY

STATE ROUTE 30 CORRIDOR

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

TYPE	YEAR	PROJECT NO.	SHEET NO.
			19

OPTIONS 3 & 4

0 200 400

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

RHEA COUNTY

STATE ROUTE 30
CORRIDOR

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TYPE	YEAR	PROJECT NO.	SHEET NO.
			20

OPTIONS 3 & 4

0 200 400

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

RHEA COUNTY

STATE ROUTE 30 CORRIDOR

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

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TYPE	YEAR	PROJECT NO.	SHEET NO.
			21

OPTIONS 3 & 4

0 200 400

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

RHEA COUNTY

STATE ROUTE 30 CORRIDOR

TENNESSEE D.O.T.
DESIGN DIVISION

FILE NO.

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

TYPE	YEAR	PROJECT NO.	SHEET NO.
			22

OPTIONS 3 & 4

0 200 400

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

RHEA COUNTY

STATE ROUTE 30 CORRIDOR

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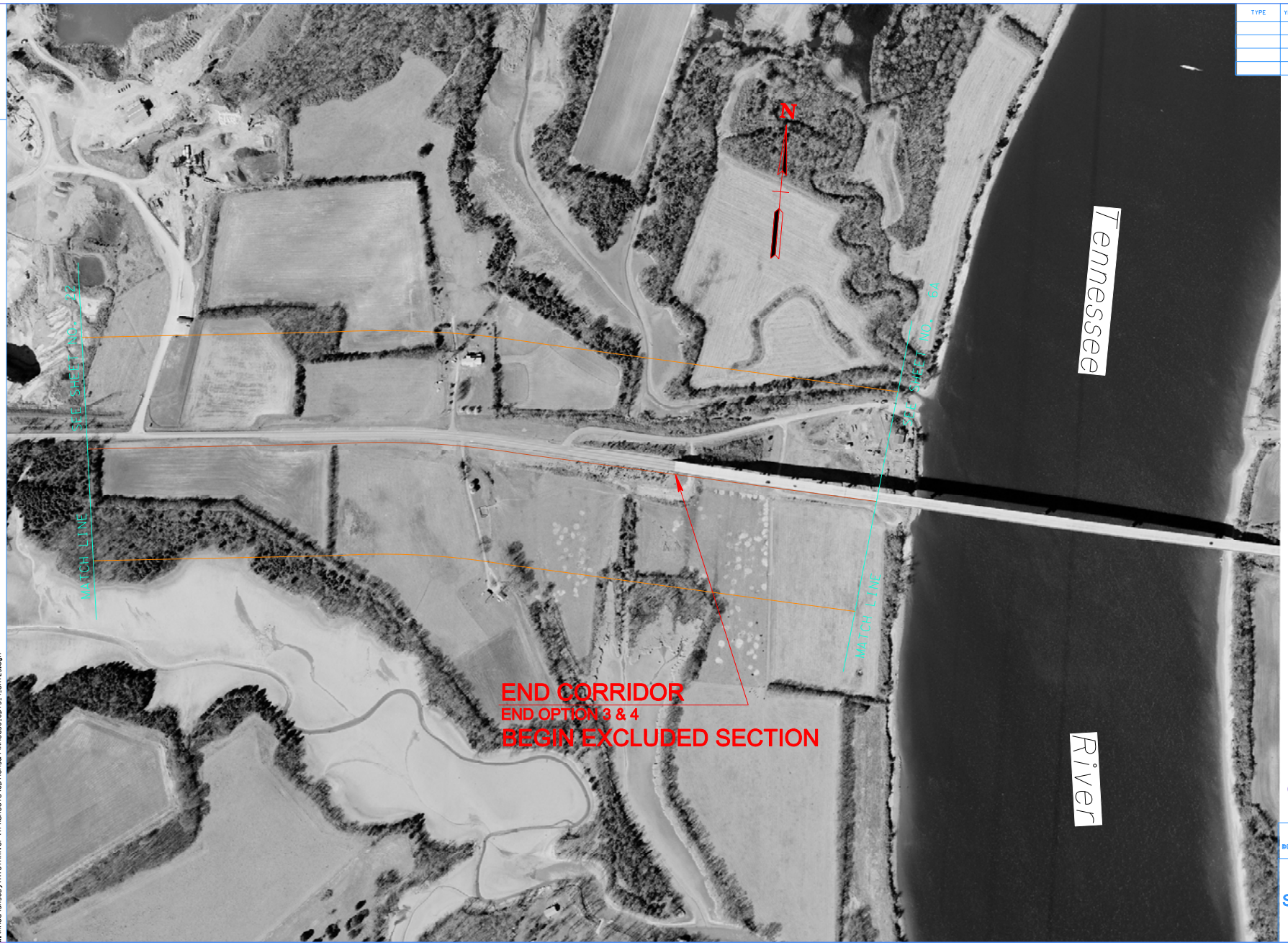

TENNESSEE D.O.T.
DESIGN DIVISION
FILE NO.

TYPE	YEAR	PROJECT NO.	SHEET NO.
			23

OPTIONS 3 & 4

0 200 400

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

RHEA COUNTY

STATE ROUTE 30
CORRIDOR

11/20/2007
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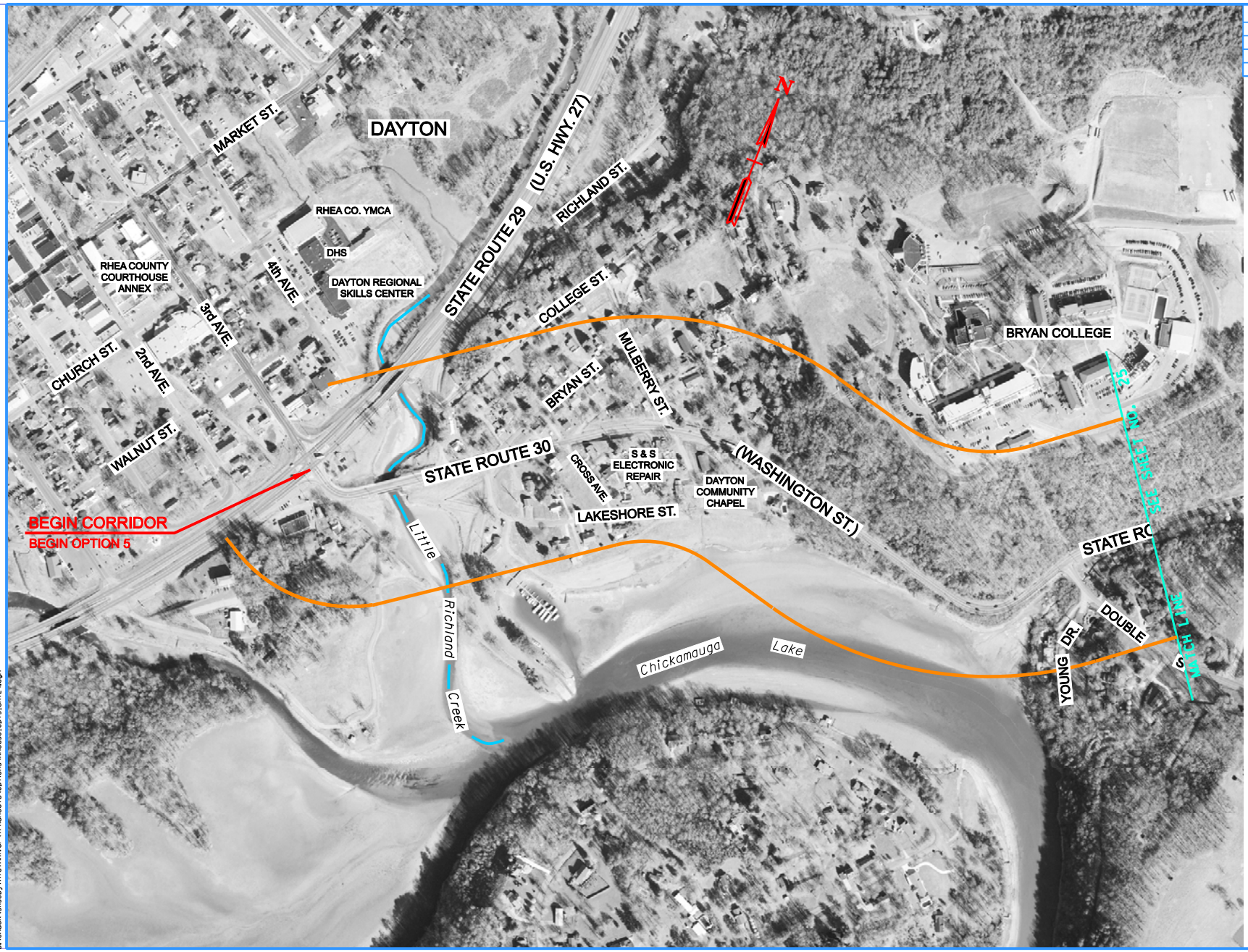

TYPE	YEAR	PROJECT NO.	SHEET NO.
			24

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

OPTION 5

0 200 400

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

RHEA COUNTY

STATE ROUTE 30 CORRIDOR

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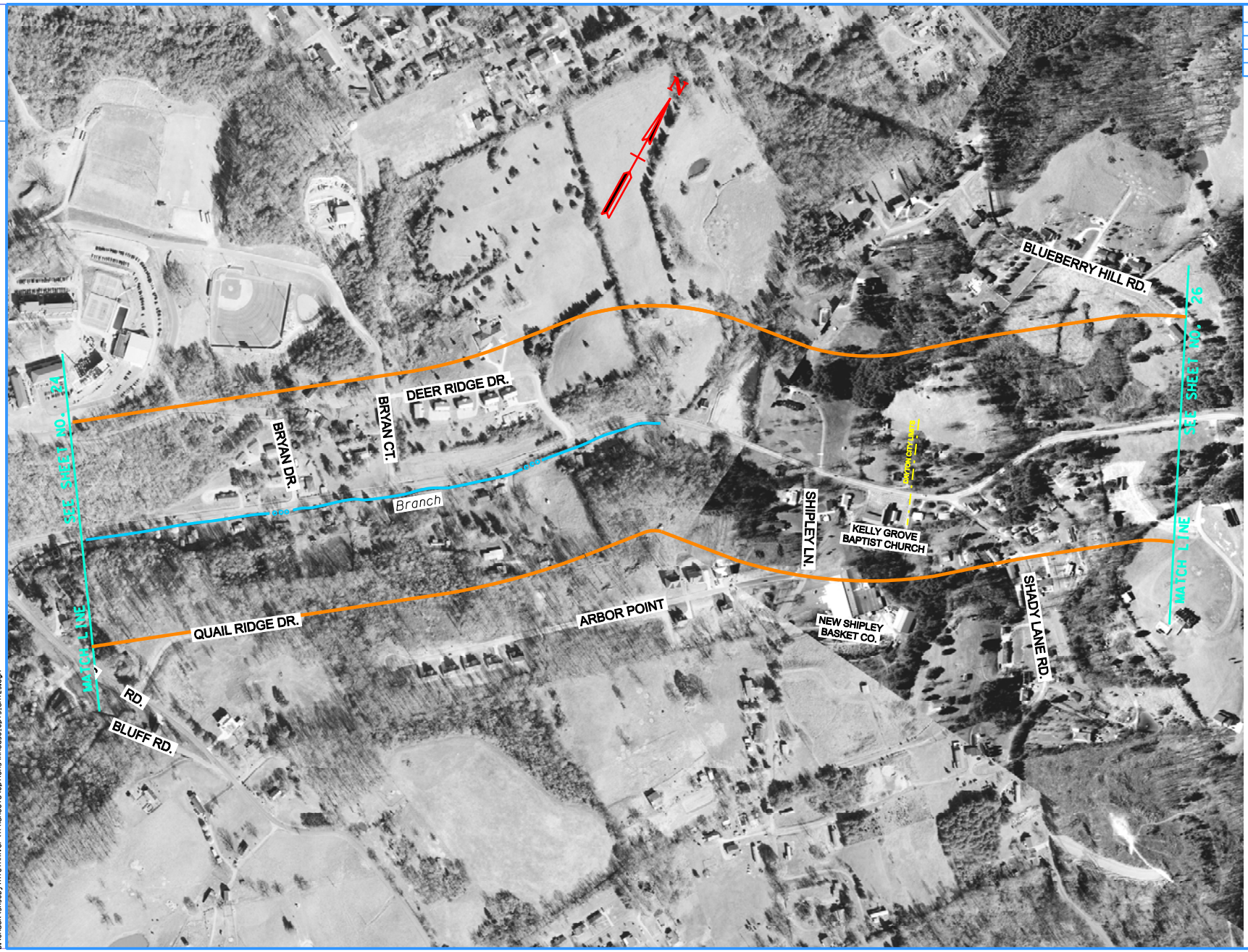

TENNESSEE D.O.T.
DESIGN DIVISION
FILE NO.

TYPE	YEAR	PROJECT NO.	SHEET NO.
			25

OPTION 5

0 200 400

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

RHEA COUNTY

STATE ROUTE 30 CORRIDOR

8/7/2007 10:33 PM
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TENNESSEE D.O.T.
DESIGN DIVISION
FILE NO.

TYPE	YEAR	PROJECT NO.	SHEET NO.
			26

OPTION 5

0 200 400

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

RHEA COUNTY

STATE ROUTE 30 CORRIDOR

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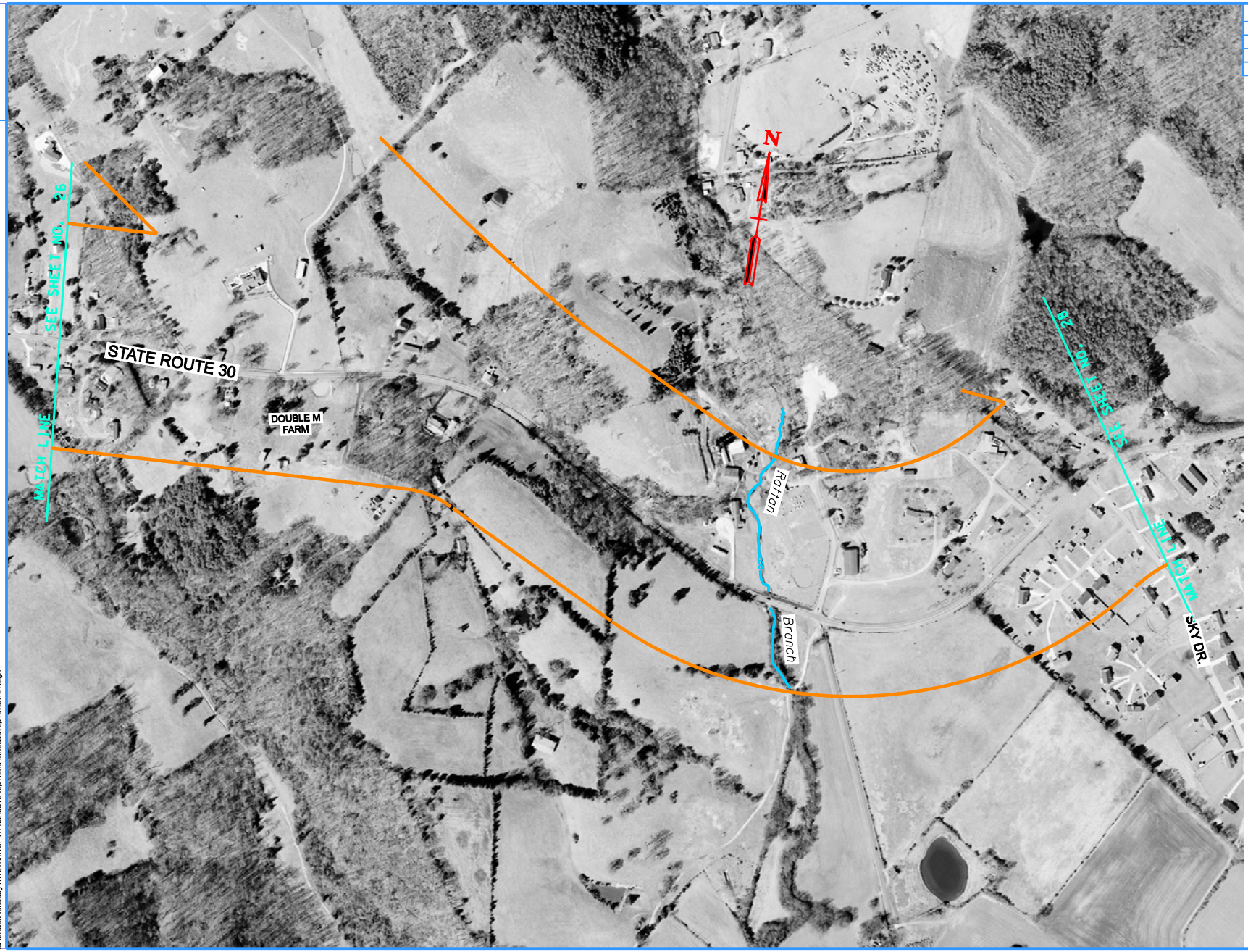

TENNESSEE D.O.T.
DESIGN DIVISION
FILE NO.

TYPE	YEAR	PROJECT NO.	SHEET NO.
			27

OPTION 5

0 200 400

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

RHEA COUNTY

STATE ROUTE 30 CORRIDOR

8/7/2007 14:40:2 PM
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TENNESSEE D.O.T.
DESIGN DIVISION
FILE NO.

TYPE	YEAR	PROJECT NO.	SHEET NO.
			28

OPTION 5

0 200 400

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

RHEA COUNTY

STATE ROUTE 30 CORRIDOR

8/7/2007 2:03:33 PM
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8/7/2007 2:14:13 PM
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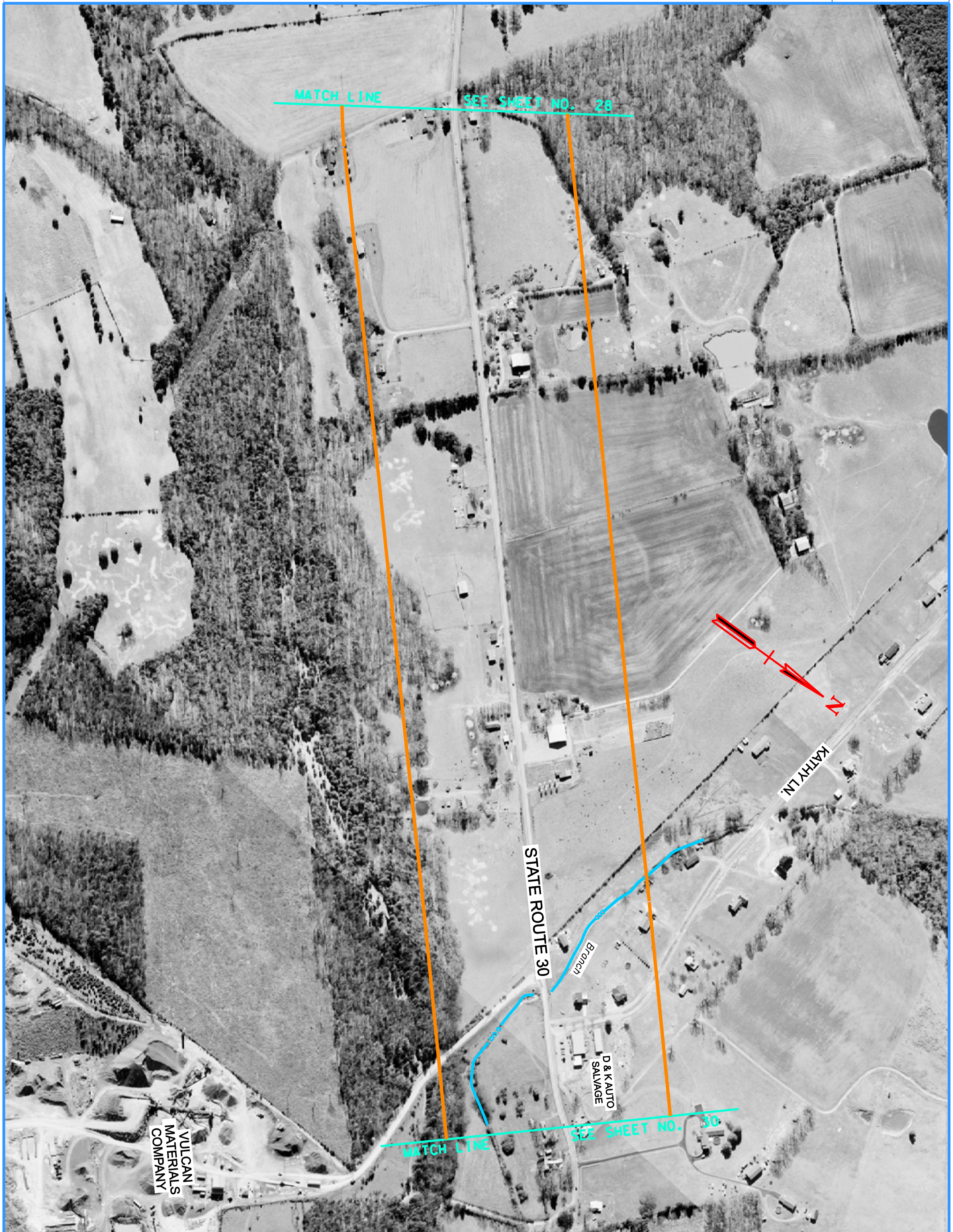
TENNESSEE D.O.T.
DESIGN DIVISION
FILE NO.



OPTION 5

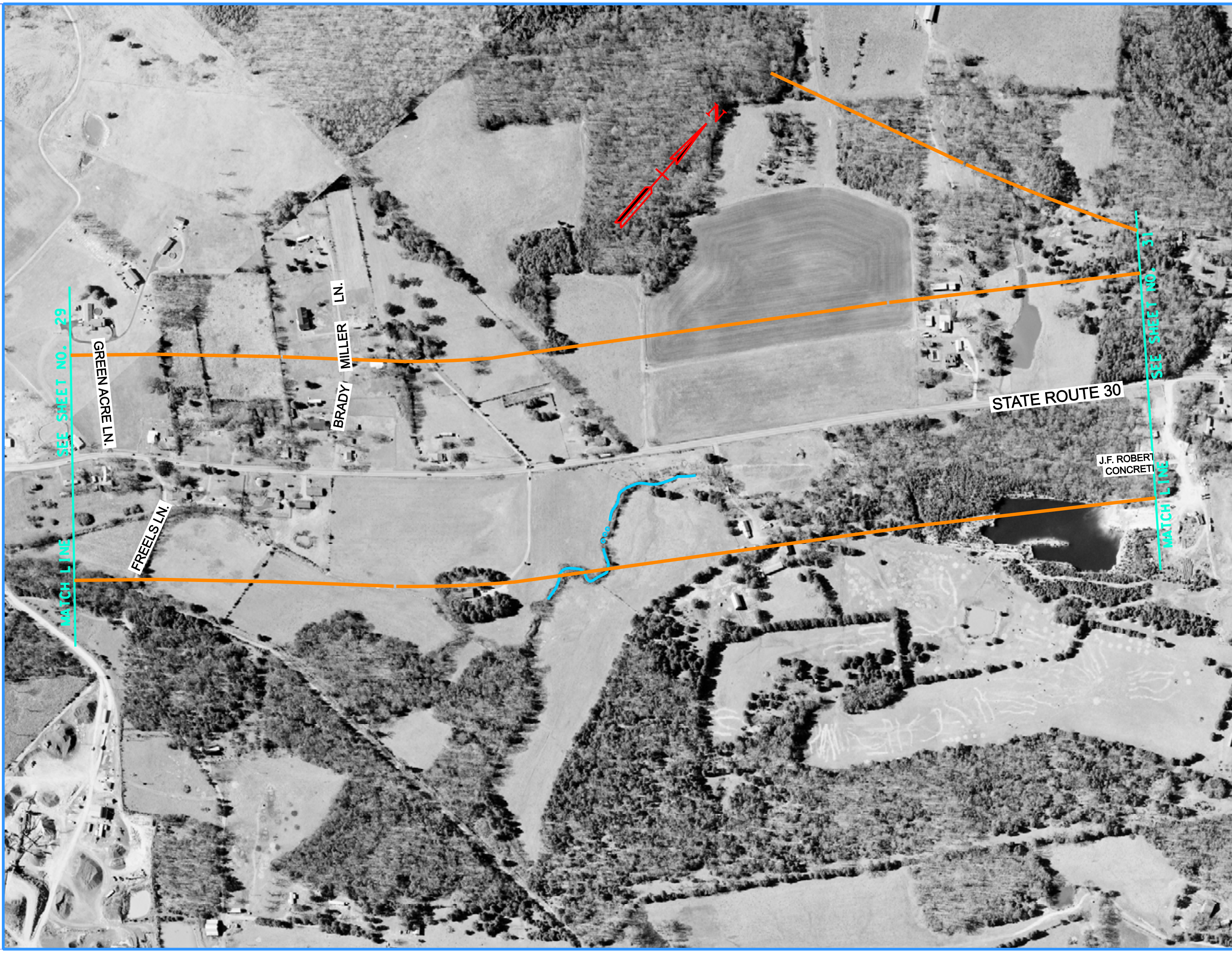
0 200 400

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

RHEA COUNTY
STATE ROUTE 30
CORRIDOR

TYPE	YEAR	PROJECT NO.	SHEET NO.
			29

TYPE	YEAR	PROJECT NO.	SHEET NO.
			30



OPTION 5

0 200 400

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

RHEA COUNTY

STATE ROUTE 30
CORRIDOR

TENNESSEE D.O.T.
DESIGN DIVISION

FILE NO.

8/7/2007 2:22:38 PM
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TYPE	YEAR	PROJECT NO.	SHEET NO.
			31

OPTION 5

0 200 400

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

RHEA COUNTY

STATE ROUTE 30 CORRIDOR

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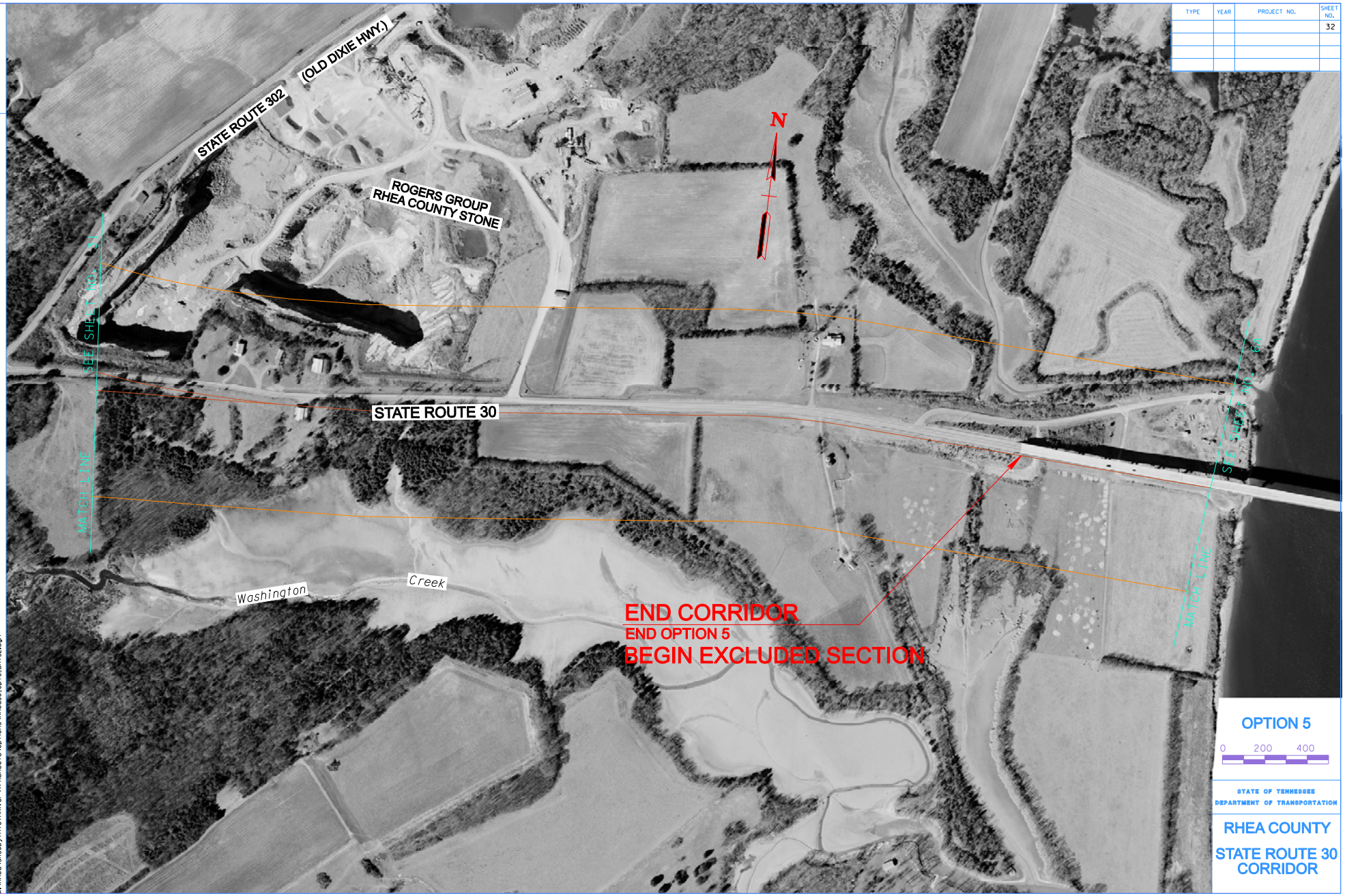
FILE NO.

TENNESSEE D.O.T.
DESIGN DIVISION


TENNESSEE D.O.T.
DESIGN DIVISION
FILE NO.
TYPE
YEAR
PROJECT NO.
SHEET NO.
32
STATE ROUTE 302
(OLD DIXIE HWY.)
ROGERS GROUP
RHEA COUNTY STONE
N
STATE ROUTE 30
MATCH LINE
SEE SHEET NO. 31
SEE SHEET NO. 33
MATCH LINE
Washington
Creek
END CORRIDOR
END OPTION 5
BEGIN EXCLUDED SECTION
OPTION 5
0
200
400
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
RHEA COUNTY
STATE ROUTE 30
CORRIDOR
11/20/2007
W:\Rhea\SR30DynTolnRiver\TPRsheets\Option5\Rhea30_Op15_sht32.dgn