

EXECUTIVE SUMMARY—TRANSPORTATION PLANNING REPORT
State Route 93 from I-81 to SR 347, Greene, Sullivan and Washington Counties,
PIN 112834.00

The City of Kingsport initiated this study. The study develops the purpose and need, which is to improve safety, provide an upgraded link in the regional transportation system, improve level of service and overall operations, promote economic development in this expansion area of the City/County, and correct roadway deficiencies. The State Route (SR) 93 project is included in the Kingsport Area MPO's Long Range Transportation Plan.

Improvement Options

Option 1, No Build: This option involves making no improvements to SR 93, beyond standard maintenance.

Options 2-4, Corridors: The two 2,000 foot wide corridors (1 and 2), which have two optional typical sections: two (2) lane with center turn lane/Alternate typical section #1; and four (4) lane with median/Alternate typical section #2) are:

- **Option 2**—Corridor 1 follows existing SR 93 corridor north and south of Fall Branch and bypasses Fall Branch to the east. Cost: \$29,484,217 to \$41,181,294
- **Option 3**—Corridor 2 follows existing SR 93 corridor north and south of Fall Branch and bypasses Fall Branch to the west. Cost: \$30,212,437 to \$45,700,818

Option 4—Corridor 3 is 500 feet wide and has a two (2) lane with center turn lane typical section. This corridor follows existing SR 93 and goes through the Fall Branch community. Because of the substantial right-of-way impacts to the Fall Branch Community and the fact that this corridor option did not meet the purpose and need, the concept was laid out on aerial photographs in this study, but no costs were developed.

Option 5, Spot Improvements: These improvements include the addition of turn lanes, improvement of horizontal and vertical sight distance, and upgrade to ten (10)-foot shoulders or addition of sidewalks with curb and gutter within the Fall Branch Elementary School zone area. These five (5) spot improvements encompass 4.51 miles of the 6.1-mile long corridor. A prioritized listing and a cost for each improvement is below.

No. 5: From 1,600 feet south of Derby Drive to 2,600 feet north of Derby Drive – improve horizontal/vertical alignment, sight distance and safety.
Approximately 4,200 feet Estimated Cost: \$ 4,210,821

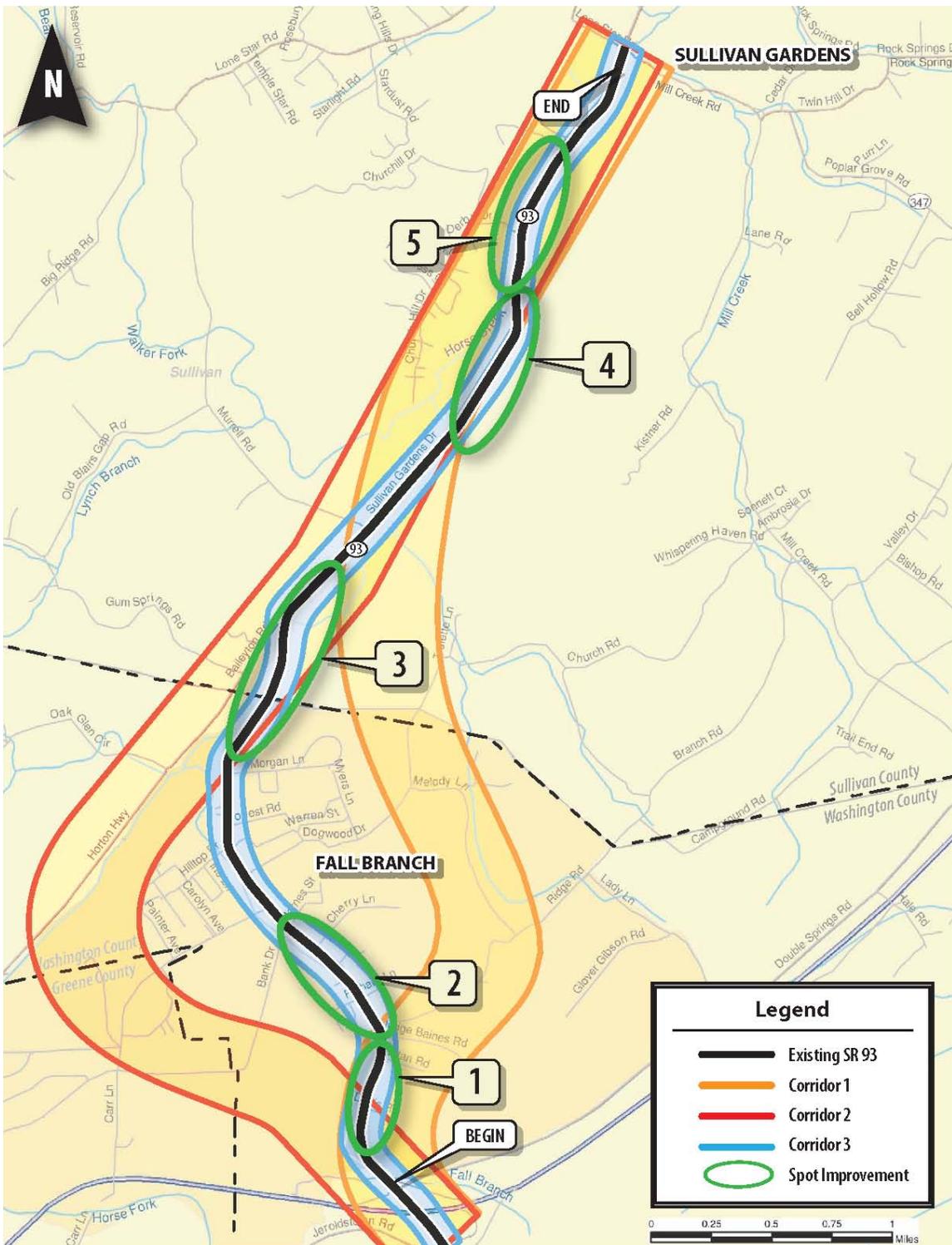
No. 4: From 1,700 feet north of Murrell Drive to 1,600 feet south of Derby Drive – improve safety in industrial area.
Length: approximately 2,800 feet Estimated Cost: \$ 2,056,392

No. 3: From 350 feet north of Morgan Lane to 600 feet south of Baileyton Road – improve existing vertical alignment, sight distance and safety.
Length: approximately 2,800 feet Estimated Cost: \$ 4,974,261

No. 1: From just north of Davis Road to north of Judge Baines Road – improve safety at Fall Branch Elementary School by adding a turn lane.
Length: approximately 1,600 feet Estimated Cost: \$ 1,056,461

No. 2: From Ruritan Road to 500 feet north of Fire Hall Road – flatten the existing horizontal curves and improve intersection sight distance.
Length: approximately 2,400 feet Estimated Cost: \$ 2,311,151

TOTAL FOR FIVE IMPROVEMENTS 14,609,086

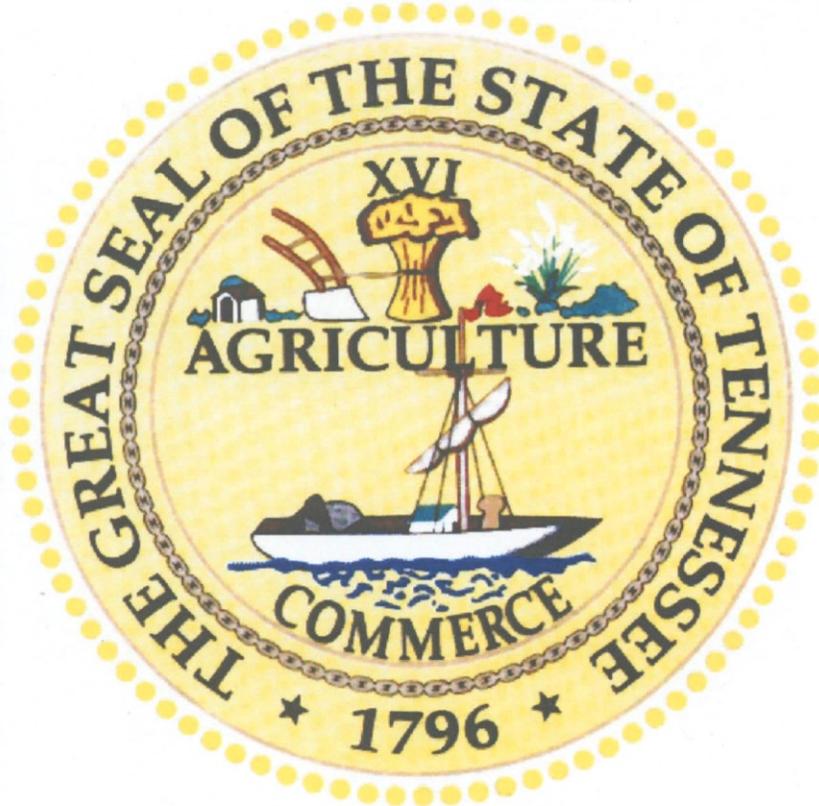


Map showing Corridors and Spot Improvements

TRANSPORTATION PLANNING REPORT

State Route 93

FROM INTERSTATE 81 TO STATE ROUTE 347
GREENE, SULLIVAN AND WASHINGTON COUNTIES
PIN 112834.00



PREPARED BY
GRESHAM, SMITH & PARTNERS
FOR THE
CITY OF KINGSPORT, TN
IN COOPERATION WITH THE TDOT PROJECT PLANNING DIVISION

Approved by:	Signature	DATE
CHIEF OF ENVIRONMENT AND PLANNING		10-5-10
TRANSPORTATION DIRECTOR PROJECT PLANNING DIVISION		10-4-10
TRANSPORTATION MANAGER 2 PROJECT PLANNING DIVISION		9/28/10

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

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- A. Stakeholder Meeting Summary
- B. Corridor Concept Set
- C. Spot Improvement Concept Set
- D. Cost Worksheets
- E. TDOT Early Environmental Screening (EES) Report
- F. Supplemental Environmental Screening Maps

This document is supplemented by Volume II, a CD containing the following PDFs:

- HCS+ Output (back up for traffic analysis)
- Pyritic Rock Memorandum
- TDOT Memorandum reporting results of windshield survey for historic resources

1 PURPOSE OF THE TRANSPORTATION PLANNING REPORT

The subject of this Transportation Planning Report (TPR) is the proposed improvements to State Route (SR) 93/Sullivan Gardens Parkway from Log Mile 3.080 in Washington County north of Interstate 81 (I-81) to SR 347/Mill Creek Road (SR 347 hereafter) in Sullivan County, Tennessee. The length of the segment of SR 93 under study is 5.6 miles and is classified as an urban principal arterial. Figure 1 depicts the proposed improvements in its regional context.

This TPR identifies the purpose and need of the proposed improvements and presents and evaluates options for addressing the transportation issues. The TPR options recommended to move forward in planning are presented as wide corridors into which alignments can be developed in the next project phase, i.e., the National Environmental Policy Act (NEPA) if federal funds are to be used for project development. The environmental screening presented in this TPR assisted planners and engineers in developing corridors that would minimize impacts to known environmentally sensitive areas and can also serve as a basis for future planning. Planning level cost estimates are also included in the analysis.

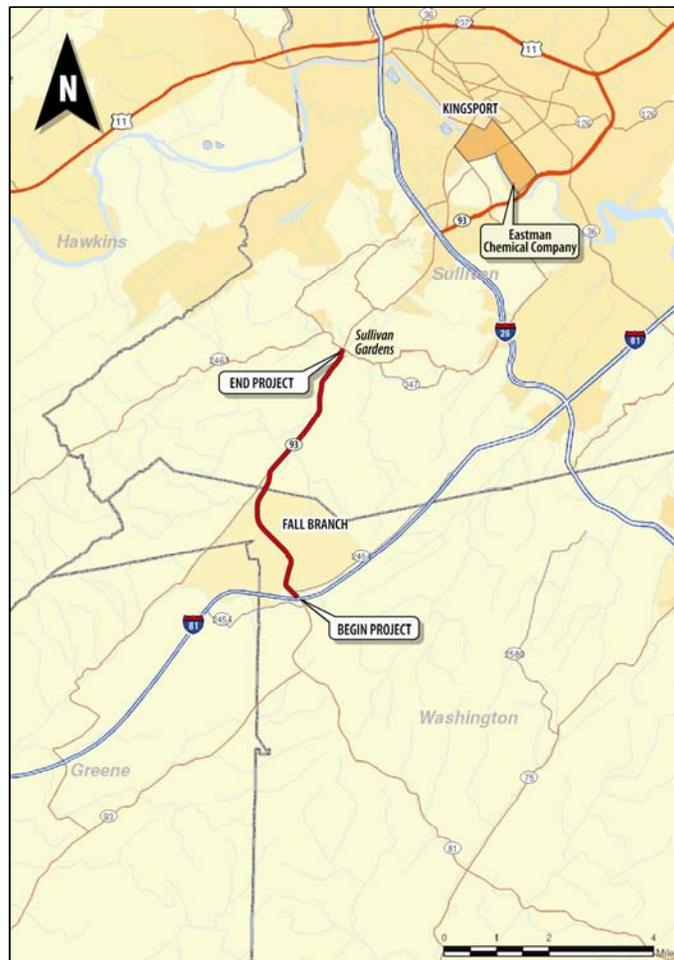


Figure 1. Proposed Improvement within its Regional Context

2 HISTORY AND BACKGROUND

SR 93 is an Urban Principal Arterial in Sullivan and Washington Counties, connecting Kingsport to I-81 just south of the community of Fall Branch. SR 93 also connects I-81 to I-26. Figure 2 illustrates the study area, which is located southwest of the City of Kingsport, beginning in the community of Fall Branch near I-81 in Washington County and extending north to SR 347 in Sullivan County. A small portion of the study area also falls within neighboring Greene County. The general study area is depicted in Figure 2.

In the late 1990s, the Tennessee Department of Transportation (TDOT) widened SR 93 to five (5) lanes from I-26 to SR 347 (the northern terminus of this study) to satisfy the need for increased capacity. South of SR 347, SR 93 remains a two (2)-lane principal arterial through the entire area proposed for improvement. Beyond the southern terminus of the TPR study and south to I-81, the roadway is also five (5) lanes. The subject segment of this state route has a two (2)-lane section with deficient shoulder widths between two five (5)-lane sections.

The City and the Kingsport Area Metropolitan Planning Organization (MPO) had been discussing improving SR 93, from the south end of the improved section at SR 347 southward to I-81 and had placed the project in the *Long Range Transportation Plan* (LRTP). The City hired a subcontractor in early 2008 to prepare a feasibility study. In June of 2008, the City and local officials sponsored a meeting in the study area to discuss the proposed improvements developed for the feasibility study and to show preliminary improvement concepts to the public. The only documentation for this meeting is two articles in the *Kingsport Times*. A draft feasibility study was completed, but the study was not finalized.

Other previous studies that discuss SR 93 include:

- *Land Use Plan 2010, Kingsport, TN*
- *SR 347 Corridor Study and Sullivan County Comprehensive Transportation Study, July 2001*
- *Sullivan County Regional Plan: A Guide for Future Land Use and Transportation Development (Planning Period 2006-2026)*

The MPO has portions of SR 93 recommended for highway improvement projects on the MPO's 2030 LRTP. Table 1 shows the SR 93 projects in the study area that are listed in the Kingsport LRTP—these two projects comprise the transportation improvements studied in this TPR. The preparation of this TPR was in the MPO's Unified Planning Work Program for 2009. This project is not yet listed in the Kingsport Area MPO Transportation Improvement Program, Fiscal Year 2008 through Year 2011, as funding has not yet been identified. This TPR is intended to assist the City with identifying future funding assistance.

In April of 2009, the MPO contacted TDOT requesting that TDOT participate in the development of a TPR by reviewing and approving the TPR and by assigning a TDOT staff person to assist in coordinating the study. In May of 2009, TDOT responded positively to the request.

Table 1. SR 93 Projects in 2030 LRTP

Project No/ Name	Location From/To	Functional Classification	Project Purpose	Project Type/ Improvements	Additional Information	Estimated Cost
PA-8a Sullivan Gardens Pkwy/SR 93	Lonestar Rd (SR 347) to Baileyton Rd	Major Principal Arterial*	Congestion Relief	Reconstruct to 4 lanes with median	Consider raised grass medians and turning lanes where appropriate	\$11,433,900
PA-8b Sullivan Gardens Pkwy/SR 93	Baileyton Rd to I-81	Major Principal Arterial*	Access/ Travel time; economic development	Reconstruct to 4 lanes with grass median and turning lanes	To be routed around Fall Branch	\$22,867,800

Source: Kingsport MPO 2030 Long Range Transportation Plan

*Urban Principal Arterial

In 2009, the City of Kingsport contracted with a consultant to prepare this TPR for improvements to the above-referenced section of SR 93. The TPR is based on the July 2008 Draft *State Route 93 Feasibility Study* (feasibility study, hereafter), which a consultant had prepared in cooperation with the City of Kingsport. This feasibility study was not finalized; instead the work was incorporated into this TPR.

3 EXISTING CONDITIONS

COMMUNITY CHARACTERISTICS

The City of Kingsport is located in the foothills of the Appalachian Mountains, and is part of a twelve (12)-county area in northeast Tennessee and southwest Virginia known as the Tri-Cities/Virginia region. The study area for the proposed improvements to SR 93 lies to the southwest of the City of Kingsport in Sullivan County, Tennessee. Kingsport is located approximately 100 miles northeast of Knoxville and eighty-two (82) miles north of Asheville, North Carolina. Chartered in 1917, Kingsport was an early example of a "garden city," designed by city planner and landscape architect John Nolen of Columbia University. As a result, Kingsport carries the nickname "The Model City" and is home to some of the earlier examples of traffic circles in the United States.

Population and Growth

In 2008, the City of Kingsport had an estimated population of 44,473 people. Table 2 summarizes population growth in the City of Kingsport and in the three (3) counties encompassing the study area, Sullivan, Washington and Greene Counties, between 1990 and 2008. The State of Tennessee is included for comparison purposes. The SR 93 corridor is located to the south of the City of Kingsport's city limits. An estimated 106,000 additional people live within five (5) miles of the Kingsport city limits, some of whom likely live or work along SR 93 (US Census, Kingsport Chamber of Commerce).

Table 2. Population Growth

	1990	2000	2008 (Estimates)	% Change 1990-2008
Kingsport	36,365	44,905	44,473	22.2%
Sullivan County	143,596	153,048	153,900	7.2%
Washington County	92,315	107,198	118,639	28.5%
Greene County	55,853	62,909	66,157	18.4%
Tennessee	4,877,185	5,689,283	6,214,888	21.5%

Source: US Census 1990 and 2000 and US Census Population Estimates

While the City's growth rate of 22.2 percent is comparable with the state as a whole, the state's population growth occurred over the course of two decades, whereas Kingsport's growth occurred quickly, between 1990 and 2000 (23.5 percent). According to the Kingsport Chamber of Commerce, the "Move To Kingsport" program announced 1,475 family households (approximately 3,245 new residents) from forty-two (42) states had moved to Kingsport in 2008, making a \$32.4 million economic impact on the community.

Major Employers and Traffic Generators

Two major universities are located in the Tri-Cities region. A satellite campus of East Tennessee State University (ETSU at Kingsport) is located on University Boulevard, off I-26 at US 11W/West Shore Drive. ETSU enrolls approximately 13,841 students in undergraduate, graduate, and cohort programs. King College, a private, four (4)-year Presbyterian-affiliated institution, enrolls approximately 1,703 students, and has campuses both in Kingsport and Bristol.

In addition to the two major colleges and universities, the Tri-Cities area is home to Northwest State Technical Community College, a 5,507-student technical school located on Highway 75 in Blountville, Tennessee, about ten (10) miles northeast of the I-81/I-26 interchange.

The Kingsport Academic Village includes the Regional Center for Applied Technology, Regional Center for Health Professions, Regional Center for Advanced Manufacturing, and Kingsport Center for Higher Education, all of which contribute to traffic in the region. Collectively, the Tri-Cities major colleges and universities and smaller educational institutions generate a fair amount of traffic in the study area as students and faculty from throughout the region travel to and from school.

The largest employment sectors in the Sullivan-Washington-Greene County area are healthcare and industrial/manufacturing. According to statistics compiled by the Tennessee Department of Labor and Workforce Development in May 2009, the labor force in the Kingsport-Bristol, TN-VA Metropolitan Statistical Area is experiencing an unemployment rate of 9.8 percent, which is below the statewide average of 10.7 percent.

The Kingsport area has a large industrial base, including companies such as Eastman Chemical Company, AFG Industries, Inc. and Domtar (formerly Weyerhaeuser Company). Eastman Chemical Company and Weyerhaeuser have operated in the area since 1920. Table 3 lists the largest employers in the regional area.

Table 3. Largest Employers in the Regional Area

Company	Industry	Employees
Mountain States Health Alliance	Healthcare	8,715
Wellmont Health Systems	Healthcare	7,000
Eastman Chemical Company	Chemicals, fibers, & plastics	6,700
K-VA-T Food Stores Inc.	Supermarket/Retail	3,814
East Tennessee State University	Higher education	2,800
Citigroup	Contact center	1,950
AGC Flat Glass North America	Mfr - specialty glass; solar	670
AFG Industries, Inc.	Flight operations	600
BAE Systems	Technology systems	428
Domtar (formerly Weyerhaeuser Company)	Paper producer	370

Source: Kingsport Chamber of Commerce and Alliantcetra.com

Eastman Chemical Company's North American Corporate Headquarters is located in the City of Kingsport, and is the City's largest employer. The company is located between South Wilcox Drive and South John B. Dennis Highway, east of I-26.

Three major medical centers are located in Kingsport. Wellmont Health System operates Holston Valley Medical Center, which is one of only six Level I trauma centers in Tennessee. In 2005, Holston Valley Medical Center launched Project Platinum, a \$110 million renovation of their facility. Mountain States Health Alliance operates Indian Path Medical Center, a 261-bed hospital that serves a 30-mile radius. HealthSouth

Rehabilitation Hospital of Kingsport is an acute inpatient rehabilitation hospital treating more than 1,000 patients annually from Southwest Virginia, Northeast Tennessee, Southeastern Kentucky and Northwestern North Carolina. While most of these major employers, with the exception of some school facilities, are located outside the project study area, all generate truck and employee commute trips on SR 93, making them regional contributors to traffic in the study area.

LAND USE

From I-81 northward to the north end of the community of Fall Branch, the land use is mixed commercial, residential and institutional. Near I-81, development is sparse, but the density increases in Fall Branch, which had a population of 1,424 as of July 2007. Commercial businesses include the Fall Branch Hardware on SR 93 just north of Richard Lane, and Fall Branch Auto Parts, also on SR 93 just north of Joe R. McCrary Road. Civic buildings in the Fall Branch Community include the Fall Branch Fire Department and the U.S. Post Office, which are located just off SR 93 on Ruritan Road. The Fall Branch Elementary School is located on SR 93 just south of Ruritan Road. Residential uses are found to each side of SR 93 in Fall Branch.

North of Fall Branch development becomes sparse and land is mostly utilized for agriculture. North of Murrell Road is a cluster of industrial uses, primarily on the west side of the roadway. These businesses include American Environmental, American Mechanical Contractor, M&M Woodworking and Uni First Corporation.

North of the industrial cluster, the land is primarily farmland, with one residential development set back from and to the west of SR 93. A bridge across Horse Creek on Derby Drive provides the only access to this subdivision.

The current Sullivan County zoning map (December 2006) classifies the majority of the study area in Sullivan County as *General Agriculture/Estate Residential District*. In the vicinity of Derby Drive, there is a *Medium Density Residential District* adjacent to a *General Business Service District* and a *Light Manufacturing District*.

The Sullivan County Regional Planning Commission endorsed a proposed land use plan in 2006. The portion of SR 93 that runs through Sullivan County is classified as a Planned Growth Area for future development of *Corridor Commercial*, as well as some *Medium Density Residential*, *Agricultural/Single-Family Residential*, and *Agricultural/Open Space* in the southern portion of the county near the county line.

The portion of the study area that lies within Washington County is part of the rural area growth boundary of the county, as established by the Washington County Growth Plan adopted in 1999. The general study area does not lie within an urban growth boundary from any of the surrounding cities. The Washington County Land Use and Transportation Policy Plan was adopted August 5, 2008, but the future land use plan does not directly address the general area of the study. The existing land use map from the plan shows that residential, agricultural and vacant uses are predominant along SR 93 north of the I-81 interchange.

In both Sullivan and Washington Counties, large parcels of undeveloped land are available to accommodate the expansion of Kingsport to the southwest. Infrastructure to accommodate new development includes water lines as far south as Fall Branch and sewer lines that extend south from Kingsport, and could easily be extended southward to

Fall Branch. This area is targeted as a future expansion area of Kingsport. Locals also discuss that they would like the I-81/SR 93 interchange to develop commercially.

A small section of Greene County in the study area contains scattered residences on rural land.

CRASH HISTORY

Between 2005 and 2007, the most recent three (3)-year period years for which crash data is available, seventy-one (71) crashes occurred along the segment of SR 93 in the study area, two (2) of which were fatalities. One (1) fatal crash was due to a collision with a utility pole near the intersection of SR 93 with SR 347 in Sullivan County, while the other was due to a lane departure at the intersection of SR 93 with Cherry Lane in Fall Branch, Washington County. Of the seventy-one (71) reported crashes, twenty-five (25) involved personal injury, and two (2) of those had incapacitating injuries. Five (5) of those crashes were head-on, nine (9) were rear-end crashes and eleven (11) were angle crashes. Forty-one (41) crashes, which is over half of the crashes (approximately 58 percent), were incidents that did not involve collision with another vehicle. The majority of these crashes involved collision with a deer, a ditch or a utility pole. Of the seventy one (71) crashes that occurred during the study period, twenty-eight (28) occurred on the roadway, twenty-three (23) occurred at an intersection and twenty (20) took place along the roadside.

Crash Rates

Using 2005-2007 TDOT crash data and statewide average rates, actual rates were calculated for three (3) segments of SR 93 in the study area. The actual rate is derived from a formula that takes into account factors such as total number of crashes, length of roadway and the time period over which the crashes occurred. Below are crash rates for SR 93 in the study area.

Washington County: Twenty-nine (29) of the crashes occurred in the Washington County segment of SR 93 in the study area. One (1) crash involved a fatality and twelve (12) resulted in personal injuries.

The two (2)-lane segment of SR 93 from Davis Road to the Washington/Sullivan County line, which includes the core of the Fall Branch community, has an actual crash rate of 3.32. This rate exceeds the statewide average crash rate of 1.65 for the same functional classification. The actual crash rate does indicate a Statistical safety deficiency. Stakeholders and the public also believe that there is a safety issue associated with the portion of SR 93 through Fall Branch.

Sullivan County: Forty-two (42) crashes occurred in the Sullivan County segment of SR 93 in the study area. One (1) fatality and fifteen (15) injuries were reported. The actual rate for the two (2)-lane Sullivan County portion of SR 93 in the study area is 2.10. This rate is less than the state average rate of 2.39 for the same functional classification. However, as stated above, stakeholders and the public feel that safety is an issue, particularly in the narrow roadway segment north of Fall Branch. This segment has no shoulders and a stream on one side and a rock bluff on the other, leaving no room for recovery if a lane departure occurs.

Crash Locations

The stakeholders meeting, held in support of this TPR, and a public meeting held during the preparation of Kingsport's 2008 feasibility study for improving SR 93, have indicated that safety is an issue along SR 93 in the study area.

Attendees of both meetings believe that the two (2)-lane roadway, combined with through truck traffic and development along both sides of the road, presents a safety concern for the Fall Branch community. According to TDOT data, 38 percent of the total crashes that occurred on the roadway between 2005 and 2007 were in the Fall Branch community. One (1) of these crashes involved a fatality.

Another fatality occurred north of Fall Branch, in an area identified by stakeholders and the public as a safety concern. Twelve (12) crashes occurred at or within 0.20 miles south of the intersection of SR 93 and Derby Drive (Sullivan County Log Mile 2.180) where SR 93 is narrow and the shoulders are substandard. In this area, the roadway passes through mountainous terrain where it is cut into the side of a hill with only a guardrail separating vehicles from a steep bank into Horse Creek. Through this area, there are substandard horizontal and vertical roadway deficiencies, which result in poor sight distances at some locations along the roadway. In addition, utilities are located within ten (10) to twelve (12) feet of the travelway. When car crashes occur along the corridor through this area, the narrow shoulders provide no room for recovery. Seven (7) crashes were also reported near the intersection of SR 93 and Baileyton Road, just north of the Washington-Sullivan County line.

Another location on this corridor that has been identified by stakeholders as a potential safety issue is the industrial cluster north of Murrell Road (between Log Miles 0.850 and 1.400 in Sullivan County). Large slow-moving trucks turn into the stream of SR 93 traffic, which is traveling at the posted speed limit of 45 miles-per-hour. One business in this area has buildings on both sides of SR 93. At this location, fork lifts and other vehicles regularly cross between the two buildings, across the SR 93 traffic stream, presenting a potentially hazardous situation. Six (6) crashes occurred in this area.

Spot improvements have been developed for these areas. These are described under Option 5, Spot Improvements in Chapter 6.

GEOMETRICS

Existing SR 93 geometrics are summarized in Table 4. SR 93 is classified as an Urban Principal Arterial in Sullivan and Washington Counties. The study corridor is approximately 5.56 miles long, extending from the north end of the improved section of SR 93 at Log Mile 3.080 in Washington County to the Washington-Sullivan County line at Log Mile 5.180, then from the Washington-Sullivan County line in Sullivan County at Log Mile 0.00 to SR 347 in Sullivan County at Log Mile 3.170. Data from TDOT's Tennessee Roadway Information Management System (TRIMS) database was used as the basis for this analysis.

Table 4. Existing Roadway Geometrics

Roadway	Log Miles / Segment Length	Avg. ROW	Total Lanes	Avg. Lane Width	Avg. Inside Shoulder Width	Avg. Outside Shoulder Width	Median Type & Avg. Width	Speed Limit	Bicycle Facilities/ Sidewalks	Land Use	Topography
Washington County											
SR 93 from I-81 northernmost ramp to Log Mile 3.080 (begin TPR study area)	2.790 - 3.080; 0.35 mile	120-240'	2-4	10-12'	1-4'	10-12'	38' grass 14' painted	30-50 mph	None	Rural	Rolling
SR 93 from Log Mile 3.080 to Washington-Sullivan County Lin)	3.080 - 5.180; 2.04 miles	50'	2	10'	0'	2'	N/A	30 mph	None	Mixed Residential & Commercial	Rolling
Sullivan County											
SR 93 from Washington-Sullivan County Line to Murrell Rd	0.000 - 0.850; 0.85 mile	40-60'	2	10'	0'	1-8'	N/A	30 mph	None	Rural	Rolling
SR 93 from Murrell Rd to 0.19 mile south of SR 347	0.850 - 3.090; 2.24 miles	50-60'	2	11'	0'	1-7'	N/A	45 mph	None	Rural Industrial Area	Rolling
SR 93 from 0.19 mile south of SR 347 to SR 347	3.090 - 3.170; 0.08 mile	100'	2-4	12'	0'	12'	12' painted	45 mph	None	Mixed Residential & Commercial	Rolling

Source: TDOT TRIMS Database

There are currently no provisions for bicycles or pedestrians along the corridor, which features rolling terrain and predominately rural landscape, with some commercial and residential driveways. The MPO's LRTP recommends three (3) miles of pavement markings on SR 93 to accommodate bike lanes north of the study area (vicinity of Horse Creek Valley/Sullivan Middle School). The LRTP also proposes a system of bike and pedestrian trails to connect with the recently completed greenbelt in Kingsport. One loop in this system is off road, west of SR 93 on the far north side of Fall Branch. An outer loop path crosses SR 93 and intersects the aforementioned path. This system is intended to serve both recreational and transportation purposes.

From the I-81/SR 93 interchange in Washington County north to Log Mile 3.080, SR 93 has been improved to a four (4)-lane road with a thirty-eight (38)-foot grass median. The project would begin at the northern end of the improved section. At this location, the road transitions from four (4) lanes to two (2) lanes, as the median becomes paved and narrows to fourteen (14) feet and then the median is dropped. From just south of Davis Road, to the Washington-Sullivan County line, the right of way narrows considerably to fifty (50) feet with two (2) ten (10)-foot lanes and a narrow two (2)-foot gravel outside shoulder.

In Sullivan County, SR 93 is a two (2)-lane road from the Washington-Sullivan County line (Log Mile 0.00) to 0.8 mile south of SR 347 near the northern terminus of the project (Log Mile 3.090), with lane widths that are primarily ten (10) to eleven (11) feet wide (except at the northern end of the project) and right of way that varies from fifty (50) to sixty (60) feet. From just north of the SR 93 bridge over Horse Creek (Log Mile 3.090) to the end of the project at SR 347, SR 93 is a two (2)-lane road with a twelve (12)-foot painted median. Bridges spanning Horse Creek are found at Sullivan County Log Miles 0.330, 1.400 and 2.980. Culverts are found at Sullivan County Log Miles 2.000, 2.200 and 3.130. At Log Mile 2.130, ramps provide access to/from Derby Drive, which leads to a residential subdivision.

TRAFFIC

Traffic data obtained from TDOT and MPO traffic model growth rates were utilized for the traffic study conducted in support of this TPR. The methodology is outlined below:

- Forecasted 2008 Annual Average Daily Traffic (AADT) counts obtained from TDOT using a one (1) percent growth rate to obtain 2014 traffic numbers. A one (1) percent growth rate is in-line with the historical growth trend on SR 93. Similarly, a one (1) percent growth rate was used to develop the 2034 No Build numbers.
- Obtained 2030 AADT counts from the Kingsport MPO travel demand model.
- Used HCS+ traffic analysis software to determine the Level of Service (LOS) for each roadway segment in the No Build and Build conditions. Both a three (3)-lane and a four (4)-lane divided typical section were analyzed for the Build condition. The HCS+ output is in a stand alone Appendix to this TPR.

Figure 3 depicts the Annual Average Daily Traffic (AADT) in the study area.

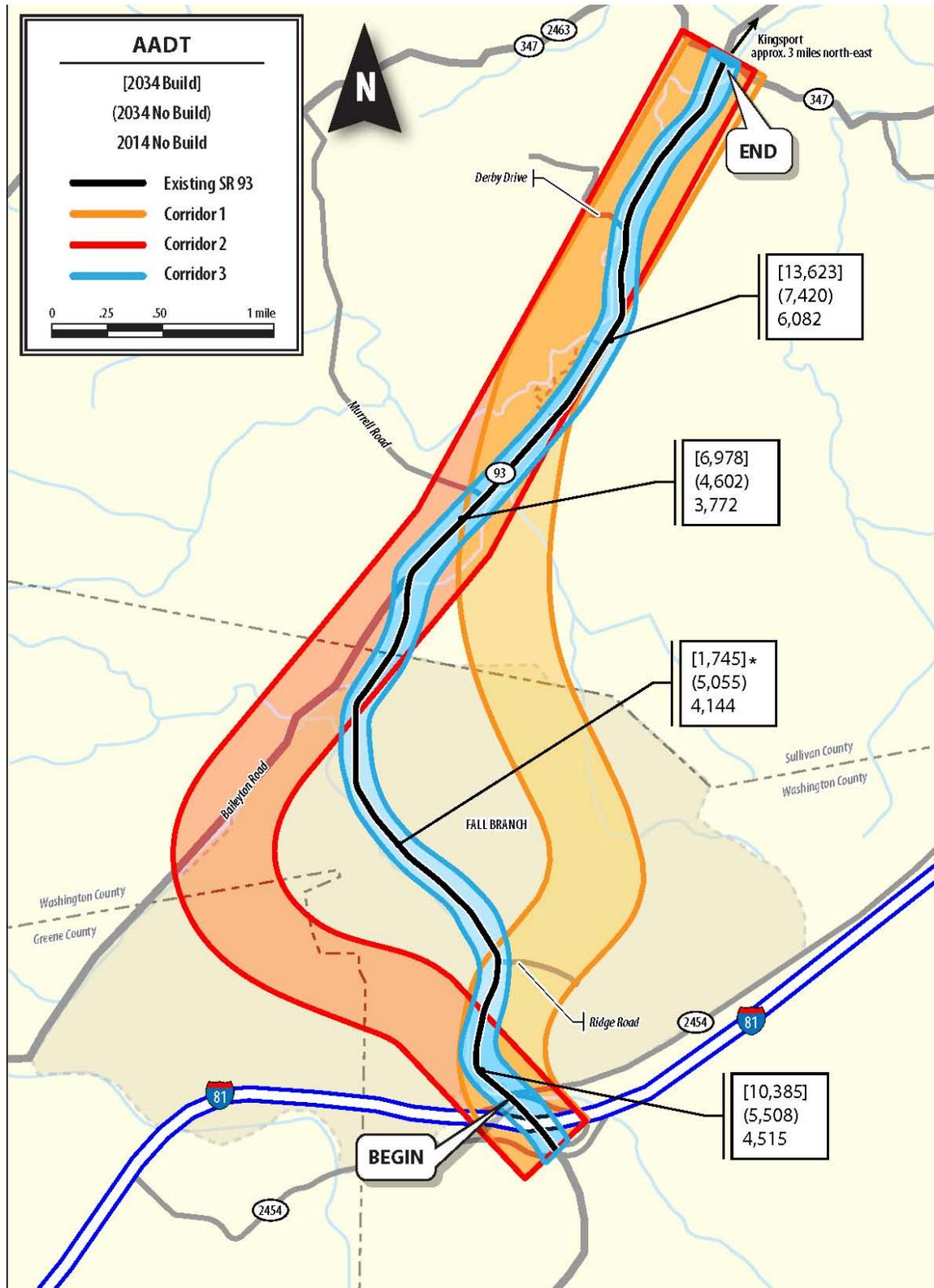


Figure 3. Annual Average Daily Traffic
 *Assumes either Corridor 1 or 2 are constructed.

The operational characteristics of a roadway are described by a level of service (LOS), which ranges from A to F, with A as the best LOS and F as the worst. Figure 4 depicts the levels of service. The LOS of a roadway is an indicator of the general operating condition of the traffic flow and is based on factors such as speed, travel time, freedom to maneuver, roadway characteristics, number of access points and safety. The 2034 Build condition assumes that the Fall Branch community will be bypassed by SR 93, that new SR 93 will either consist of a three (3)-lane or four (4)-lane divided typical section and that existing SR 93 through Fall Branch will become a local roadway.

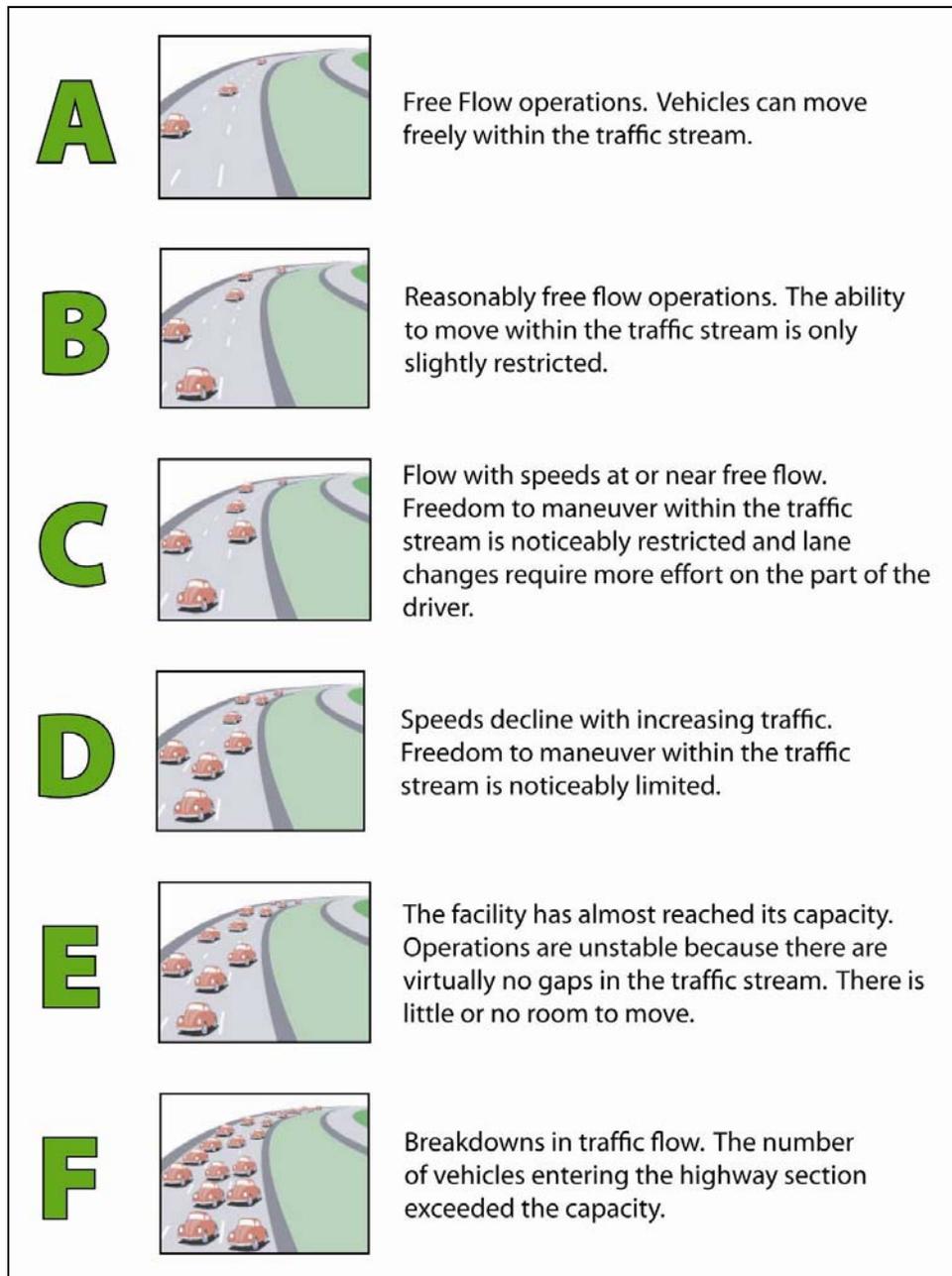


Figure 4. Traffic Levels of Service

The findings of the capacity analysis are summarized in Table 5.

Table 5. AADT and Level of Service

Roadway Segment	2014 No Build SR 93		2034 No Build SR 93		2034 Build		
	AADT	LOS	AADT	LOS	AADT	LOS (3-lane)	LOS * (4-lane)
SR 93 near I-81	4,515	E	5,508	E	10,385	D	A/A
SR 93 through Fall Branch (existing alignment)	4,144	E	5,055	E	1,745	C	-
SR 93 at Washington/Sullivan County Line	3,772	E	4,602	E	6,978	C	A/A
SR 93 500 feet south of SR 347	6,082	E	7,420	E	13,623	E	B/A

* Direction 1/Direction 2

The analysis indicates that in the 2014 No Build condition the segment of SR 93 from I-81 to SR 347 operates at LOS E, which means that the facility has almost reached its capacity. The case is the same under the 2034 No Build condition. In the 2034 Build condition, a three (3)-lane typical section with two (2) travel lanes and a center two-way left turn lane; and a four (4)-lane typical section with four (4) travel lanes separated by a raised median, were both analyzed. In the 2034 Build condition, the three (3)-lane section operates at an acceptable level of service except for the segment closest to SR 347. In the 2034 Build condition, the four (4)-lane divided section operates at acceptable levels of service for all segments.

The analysis assumed fourteen (14) percent truck traffic under the No Build condition and for the Build condition, the analysis assumed that Fall Branch would be bypassed. The truck traffic through Fall Branch under the Build condition would be reduced from fourteen (14) percent to three (3) percent.

4 STAKEHOLDER MEETING AND FIELD REVIEW

A stakeholder meeting and field review of the study corridor were held on May 13, 2009, to gather input that would assist in the development of this TPR. Representatives from the City of Kingsport, Kingsport MPO, First Tennessee Rural Planning Organization, Sullivan County Commission, TDOT, and the State House of Representatives attended. (The Greene County Mayor was invited, but was unable to attend.) A field review occurred after the meeting. A summary of the meeting and field review, including the sign-in sheet, is included as Appendix A.

The proposed project was described to the meeting participants, who were invited to comment on the purpose and need, identify issues and constraints, and offer suggestions for preliminary study corridors.

The purpose and need discussion focused heavily on safety concerns, particularly those related to having a detour route for when crashes (including those involving hazardous materials) occur at the I-81/I-26 interchange. Safety issues were also brought up concerning school buses and truck traffic traveling on very narrow sections of SR 93. Additional input to the purpose and need included growth potential in the Fall Branch community and how road improvements are needed to accommodate nearby developments and to promote growth and economic development. Stakeholders identified issues and constraints in the study area including safety, sensitive environmental features, floodplains, economic considerations and the need to design the road to accommodate future land use.

Lastly, the City of Kingsport's 2008 draft feasibility study for improving SR 93 was discussed. In that study, four (4) roadway alignments were presented: two (2) alignments to the east and two (2) alignments to the west of existing SR 93 in the southern two-thirds of the corridor. The stakeholders were reminded that the TPR would be looking at corridors and not alignments. It was explained that, from an engineering standpoint, improvements to the west appeared more desirable because the new roadway could follow part of an existing road, would encounter fewer topographical challenges and would be a phaseable project. Stakeholders were given the opportunity to respond to and discuss concerns about alternatives studied in the 2008 feasibility study.

Following the stakeholder meeting, attendees were invited to participate in a field review. A van carried representatives of the City of Kingsport, TDOT and the City's engineering consultant through the study area. Land use, environmental features, existing infrastructure and other constraints were noted.

5 PRELIMINARY PURPOSE AND NEED FOR IMPROVEMENTS

Improvements to SR 93 are needed to:

- Improve safety
- Provide an upgraded link/route continuity in the regional transportation system
- Improve level of service and overall operations
- Promote economic development in this expansion area of the City/County
- Correct roadway deficiencies

There are no federal or state mandates for the improvement of SR 93 from I-81 to SR 347. SR 93 improvements are included in the Kingsport Area MPO's LRTP and were also in the 2009 Unified Planning Work Program.

SAFETY

Safety on Existing SR 93

The crash analysis on existing SR 93 revealed that some segments of the roadway (as discussed on page 8) had a crash rate that exceeded the statewide average crash rate. Members of the public and stakeholders also expressed the opinion that safety is a concern along the subject segment of SR 93. According to a June 24, 2008 article in the *Kingsport Times*, state and local officials (including incumbent state representatives Dale Ford and Nathan Vaughn), met in the study area with approximately 30 members of the public to open a dialogue regarding a proposed widening of SR 93 south to I-81. (This was about one (1) year prior to the commencement of this TPR.) Representative Ford stated that there had been interest in improving SR 93 for a number of years, including a petition signed by more than 2,000 people. Several commenters expressed their concern with safety due to the semi tractor trailers that drive the road and the existence of schools along the route. This meeting was held at the 93 Pub Convenience Store. According to the article, boards showing concepts for the improvement project were left on display at the store for residents to examine during the days following the meeting.

At a May 13, 2009, stakeholder meeting many of the attendees reiterated public comments that safety is considered an issue on the subject segment of SR 93 (See Chapter 4). The safety concerns were focused on school traffic and semi tractor trailers traveling through the area.

In the Fall Branch community, through-traffic from I-81 mixes with local traffic. Citizens in Fall Branch are concerned regarding the safety in the vicinity of the Fall Branch Elementary School, which is located on SR 93 in Fall Branch. School buses regularly travel along SR 93, and exit the roadway to access the school. They are typically present in the area between 6:00 a.m. and 8:00 a.m. and again in the afternoons between 2:30 p.m. and 4:00 p.m. Improvements are hoped to reduce the through traffic, improving safety for school traffic and providing shoulders at designated bus stops.

Another area of major concern to the public and stakeholders is the very narrow area north and up the hill from Fall Branch (between Log Miles 4.850 in Washington County and 0.380 in Sullivan County). This is a narrow area of roadway with deficient

shoulders, a cliff on one side and a creek with a steep bank down to it on the other side. Twelve (12) reported crashes have occurred here, and there is no room for vehicles to recover. Thus, the road is either blocked by the crash or the vehicle/ vehicles involved in the crash leave the road and go down the steep embankment to the creek (or hit a tree on the way there). This area is too narrow and curvy and is not up to standard to safely carry cars, nor the trucks and school buses that must traverse the area.

Visual observations and anecdotal information from stakeholders also indicate that the section of roadway through the industrial area near the north end of the study area presents safety concerns. At this location, slow-moving equipment crosses the road between two buildings that are owned by the same business. In addition, large trucks pull into and out of the businesses in that area.

Two fire departments must respond to emergency calls in the area. At times, travel conditions (e.g., no passing zones in constrained areas of roadway or blocked roadways) are reported by emergency responders to impact response times. The Volunteer Fire Department on SR 93 in Fall Branch has a 107 square mile coverage area in Washington and Greene Counties, including nine (9) miles of I-81. The department has two (2) engines, two (2) tankers, one (1) brush unit, one (1) medical first responder truck, one (1) support truck and one (1) multi purpose utility trailer that respond to emergency calls. The Sullivan County West Volunteer Fire Department maintains a fire station just north of the study area at 113 Rosemont Street. It services 41 square miles, which mainly comprises the study area that lies in Sullivan County. This department has fire trucks and a medical first responder, which answers calls for crashes in the study area.

In addition, stakeholders reported that two (2) facilities in the southern part of the study area generate truck traffic onto SR 93: a trucking school and a lumber mill. The Tennessee Highway Patrol (THP) headquarters is housed west of SR 93 near the south end of the study area.

Detour Route

An added benefit of the SR 93 improvement proposal would be to improve the functionality and safety of SR 93 when it serves as a detour route. Several stakeholders reported that SR 93 is used as a detour route for I-81 and I-26 when traffic cannot access I-26 from I-81 east of the SR 93/I-81 interchange. SR 93 is the most direct detour route into Kingsport or to I-26 northbound because it avoids the I-26/I-81 interchange. Between 2003 and 2005, there were three (3) fatal injuries associated with the I-81/I-26 interchange. Two (2) fatalities occurred as a result of an overturned vehicle, and the third involved four (4) vehicles. These and other crashes have resulted in temporary closures to the interstate and the need for detour routes, such as that provided by SR 93. The current route of SR 93 is too narrow at a number of locations to safely carry detoured traffic. Current truck traffic on SR 93 is fourteen (14) percent.

Stakeholders that attended the TPR meeting/field review also reported that a safe detour route is also needed in the event of a crash involving a vehicle transporting hazardous materials or in the event of a hazmat incident involving the large natural gas tank located on land adjacent to the I-81/I-26 interchange. In these type events, interstate traffic, including semi-tractor trailers, would be forced to travel on narrow and winding SR 93.

SYSTEM LINKAGE/ROUTE CONTINUITY

SR 93 is designated as a north-south Urban Principal Arterial connecting I-81 to Kingsport and I-26. As described in the Roadway Deficiency section, the roadway in the study area does not meet current design standards for this roadway classification. Roadway improvements will provide an upgraded and up-to-standard link in the regional transportation system. It will also provide an upgraded roadway section between two existing improved roadway sections of SR 93.

IMPROVE LEVEL OF SERVICE

Capacity is a component of the project need. Because of the many access points along existing SR 93, the LOS is E, both now and in the future under the No Build condition. Options to bypass Fall Branch and other areas of the roadway that have substandard geometrics, to either the east or west, with a three (3)-lane or four (4)-lane divided typical section have been analyzed as the Build condition. Under the three (3)-lane alternative, the LOS along SR 93 improves from an LOS of E to an LOS of C along the existing alignment through Fall Branch and north of Fall Branch on new alignment in the vicinity of the Washington/Sullivan county line. At the north terminus near SR 347, the LOS remains at E with the proposed three (3)-lane typical section as a result of the projected traffic volumes along that segment due to anticipated commercial development. At the south terminus near I-81, the LOS is D with the three (3)-lane typical section, which is an improvement over the No Build condition LOS of E. Under the four (4)-lane divided Build condition, the roadway would operate at LOS A with the exception of the segment near SR 347, which would operate at LOS B in the peak hour. Under the Build condition, truck traffic passing through the Fall Branch community is projected to decrease from fourteen (14) percent to three (3) percent.

SOCIAL DEMANDS OR ECONOMIC DEVELOPMENT

Improving SR 93 would make the highway corridor more appealing for development to higher uses, as access to I-81 and the City of Kingsport would be improved through a safer, upgraded roadway. The SR 93 corridor is a desired expansion area for the City and with the abundance of undeveloped land in the corridor, it could accommodate area growth and economic development. As previously stated, the portion of SR 93 that runs through Sullivan County is classified by the County as a Planned Growth Area for future development of *Corridor Commercial*, as well as some *Medium Density Residential*, *Agricultural/Single-Family Residential*, and *Agricultural/Open Space* in the southern portion of the county near the county line. Infrastructure is already in place at some locations and will expand into others as developments are proposed for this area. Currently water service stretches as far south as Fall Branch and sewer service extends south from Kingsport to just north of Fall Branch.

Residents of Fall Branch reported to local government officials at the 2008 public meeting that the level of truck traffic on SR 93 presents safety issues, and that these issues will only become more pronounced as the area grows and traffic increases. Local officials reported at the TPR stakeholder meeting that the perception of SR 93 as unsafe through the community has hindered development. Without roadway improvements, they feel that they cannot promote growth and economic development in the area.

Safe and efficient access to the regional transportation network is beneficial for freight and goods movement and to maintaining the region's economic viability. According to stakeholders at the TPR meeting, the SR 93/I-81 interchange has been targeted for

commercial development. Local stakeholders also reported that they hope an improved SR 93 will become a gateway to Kingsport from the south.

ROADWAY DEFICIENCIES

Existing SR 93 is designated as an Urban Principal Arterial. It does not meet the current TDOT design standards for two (2)-lane arterial highways.

The roadway has shoulder widths that do not meet current design standards throughout the majority of the corridor. Instead of the ten (10)-foot shoulders in the design standard as required based on SR 93 projected traffic volumes, the study segment of SR 93 has shoulders ranging from less than one (1) foot to eight (8) feet. The lack of shoulders leaves insufficient room for recovery from driver error. This is particularly valid in the narrow winding portion of the road north of Fall Branch with the rock cut on one side and the creek down a steep bank on the other (Washington County Log Mile 4.850 to Sullivan County Log Mile 0.380). Lane widths on existing SR 93 range from ten (10) to eleven (11) feet, while the design standard recommends twelve (12) feet.

Existing SR 93 does not meet current standards for sight distance at several locations along the route, including through the roadway section up the hill north of Fall Branch. Through the area north of Fall Branch, substandard horizontal and vertical deficiencies also result in poor sight distances at some locations along the roadway. In the Fall Branch community, intersection sight distance improvements are needed at several locations. Lastly, existing SR 93 has inadequate ditches and does not meet clear zone requirements for an arterial highway.

In Fall Branch and the industrial area in the northern portion of the study area, turn lanes are needed for safety reasons. However, there are currently no turn lanes to accommodate the turning movements from SR 93.

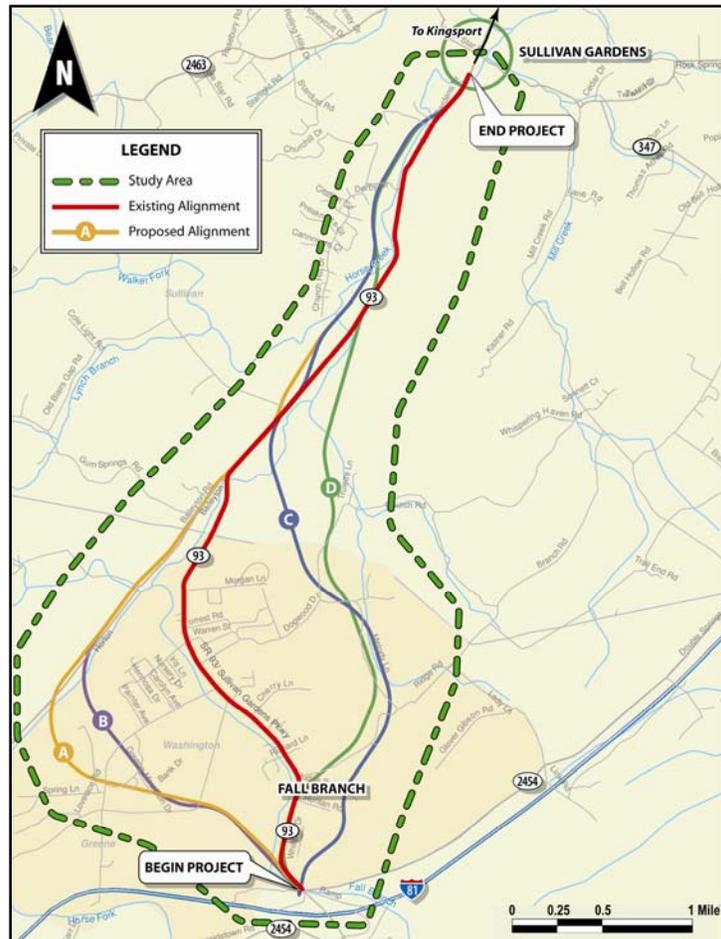
6 OPTIONS

PREVIOUSLY STUDIED OPTIONS

In the aforementioned 2008 feasibility study (prepared by a consultant for the City of Kingsport), four (4) alternatives were developed for use by the City for planning and budgeting purposes. This study was never finalized, as the City then decided to move forward with the preparation of this TPR. Very preliminary environmental screening was conducted to aid in the development of the alternatives presented in the study, which all bypass the Fall Branch Community. The four (4) alternatives are shown in Figure 5.

These alternatives are all to the west of existing SR 93 in the northern third of the five (5) to six (6)-mile long corridor. Options A and B join up with a section of SR 93 around Murrell Road and then continue southward and west of SR 93, generally following the Horton Highway/Baileyton Road corridor. These two (2) alignments then split again to pass through different hollows and then rejoin west of SR 93, intersecting existing SR 93 north of the interchange at I-81. Option D splits off to the east side of SR 93 south of Derby Drive and the Option C diverges to the east of SR 93 around Murrell Road. These alternatives follow independent routes on new location and intersect SR 93 just north of the I-81/SR 93 interchange. (Planners used these alignments as a basis for the TPR corridors.)

Figure 5. Alternatives Developed for Draft 2008 Feasibility Study



OPTIONS STUDIED IN THE TPR PROCESS

A No Build option and two types of build options were studied in the TPR process. The build options include three (3) corridor long improvements and spot improvements at five (5) locations. The options are:

- Option 1 No Build
- Option 2 Corridor 1: New location east of Fall Branch
- Option 3 Corridor 2: New location west of Fall Branch
- Option 4 Corridor 3: Improve existing SR 93
- Option 5 Spot Improvements

Based on input received from local government and stakeholders and using guidance in the TPR manual, two (2) 2,000-foot wide study corridors (Corridors 1 and 2, Options 3 and 4) were developed. Both bypass the existing segment of SR 93 through Fall Branch. A third corridor (Option 4) improves SR 93 through Fall Branch and is 500 feet wide. These corridors were based on issues identified and input from the stakeholders' meeting, the project purpose and need, review of topographical information, review of the existing roadway geometrics and preliminary environmental screening. The work done for the 2008 feasibility study served as the starting point for corridor development. Option 5 presents spot improvements that could improve safety and the travel conditions at five (5) locations along the corridor. Options 2 through 5 are depicted in Figure 6.

Option 1—No Build

The No Build Option involves making no modifications or improvements over the planning horizon to existing SR 93 except for routine maintenance. This option does not meet the proposed project needs of improving safety, providing an upgraded link in the regional transportation system, improving the level of service, promoting economic development in this expansion area of the City/County and correcting roadway deficiencies.

Option 2—New location east of Fall Branch

This option (Corridor 1) is shown on Figures 6 and 7 and In Appendix B, Sheets 3 – 7. From the north end of the improved four (4)-lane section at Log Mile 3.080 and northward to Log Mile 3.530, existing SR 93 is at the western edge of Corridor 1. In the vicinity of Ridge Road, Corridor 1 departs from existing SR 93 to the east and runs on new location across an area of relatively rugged topography with sparse housing and agricultural fields in the low lying areas. The corridor intersects existing SR 93 at Murrell Road. North of there, Corridor 1 joins Corridor 2 and they share the same corridor northward to the study corridors' northern terminus at SR 347. The two (2) corridors share the same location in this section because:

- Need to connect with SR 347 at the existing intersection of SR 93 and SR 347;
- Corridors farther west could not avoid subdivision development;
- Corridors farther east would encounter very rugged topography; and
- The only feasible alignment through this area is behind (to the west of) the industries on SR 93, and between the industries and the subdivision, which is accessed off SR 93 from Derby Drive.

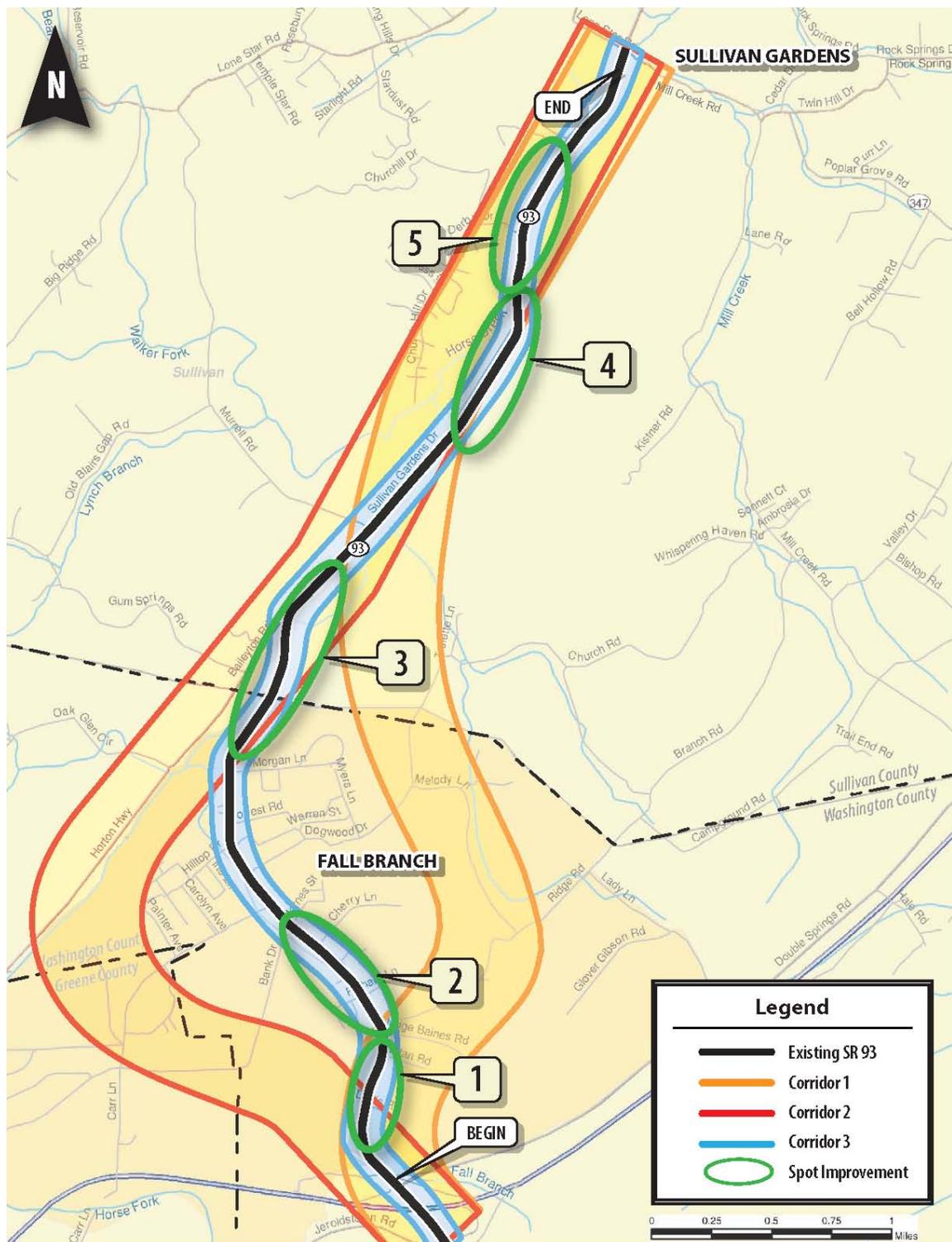


Figure 6. Build Options 2 – 5.

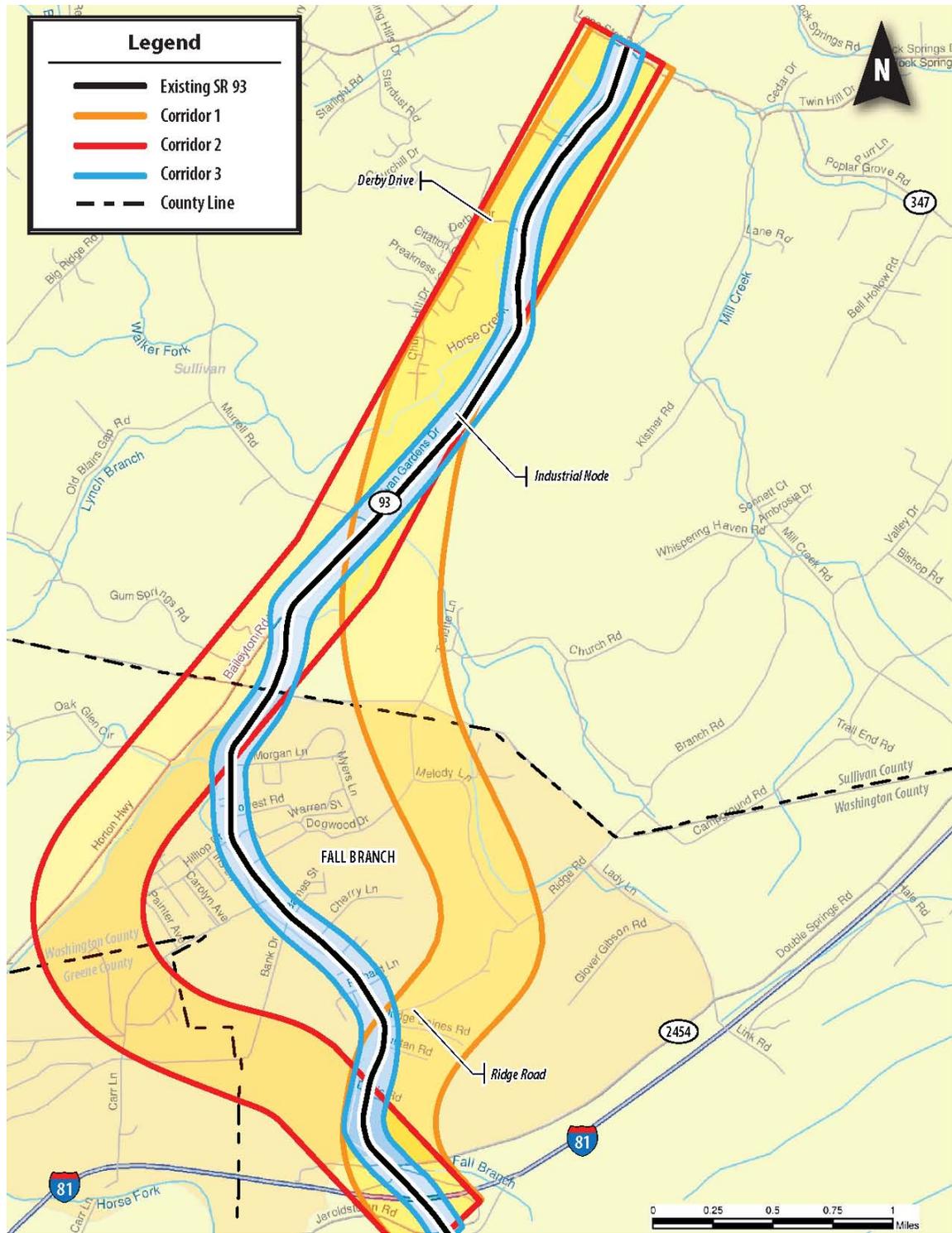


Figure 7. TPR Corridors, Options 2 through 4.

From Murrell Road north to near Derby Drive, existing SR 93 is at the eastern edge of the study corridor. From Derby Drive northward, SR 93 is in the center of Corridor 1. This option would reduce mileage on the state highway system by 0.41 mile.

Creeks within Corridor 1 include: Fall Branch, Horse Creek at numerous locations, Unnamed Tributary to Horse Creek and Walker Fork Creek. The supplemental environmental screening maps in Appendix F show these waterways.

Option 3—New location west of Fall Branch

This option (Corridor 2) is shown on Figures 6 and 7 and in Appendix B, Sheets 8 – 13. Corridor 2 departs from existing SR 93 just north of the I-81/SR 93 interchange, at the north end of the improved four (4)-lane section (Log Mile 3.080). The corridor is on new location through a relatively sparsely developed agricultural and rural residential area, south of the core of the Fall Branch community. It crosses an area of rugged topography (a southwest to northeast ridge), then turns to the northeast and is centered on existing Baileyton Road/Horton Highway. At Log Mile 4.850 (about 3,500 feet south of the intersection of SR 93 and Baileyton Road/Horton Highway), existing SR 93 is located within the corridor northward to the end of the study area at SR 347. From Murrell Road north to just south of Derby Drive, existing SR 93 is at the eastern edge of the study corridor. From Derby Drive northward, SR 93 is in the center of the TPR corridor. This option would increase mileage on the state highway system by 0.59 mile.

Creeks within Corridor 2 include: Fall Branch, Horse Creek at numerous locations, Unnamed Tributary to Horse Creek and Walker Fork Creek. The supplemental environmental screening maps in Appendix F show these waterways.

Option 4—Improve Existing SR 93 Along Length of Corridor (passing through Fall Branch)

This option (Corridor 3) is shown on Figures 6 and 7 and on Sheets 14 –18 in the corridor concept set at the end of Section 6.5. This option does not meet the project purpose and need of improving safety on SR 93 through the Fall Branch community, as through traffic will remain on the road, continuing to mix with local traffic, which includes fourteen (14) percent trucks. In addition, this study corridor does not include a bypass of Fall Branch as specified in the MPO's LRTP.

Option 4 specifies improving existing SR 93 between Log Mile 3.080 (north of the SR 93/I-81 interchange) on the south and SR 347 on the north. The study corridor width is 500 feet wide (compared to the wider corridor width of Corridors 1 and 2, which bypass Fall Branch) and it follows the existing roadway for the length of the corridor. North of Fall Branch and up the hill from town is an area of the road that is located between Horse Creek and an existing rock cut. The rock is close to the pavement on the east side of the road and to the west, the roadway steeply drops off toward Horse Creek. Improving this section of the road would require a significant amount of rock excavation and, maintenance of traffic would be very difficult during construction. Traffic control phasing would need to be considered early in the development of plans with over-excavation of the rock required to keep existing SR 93 open to traffic during construction. North of this section and south of Derby Drive, industries line both sides of SR 93. Improvements in this area would involve acquiring right of way from all of the industries in this area, potentially impacting at least one (1) building and each of the parking areas at the industries.

This corridor is not preferred by local government, does not meet the project purpose and need and it would have greater impacts in Fall Branch than the other two (2) corridors studied in this TPR. TPR level costs were not developed for Corridor 3 because of these reasons.

Features of Corridor Options (2, 3 and 4)

Typical Sections: Options 2 and 3, Corridors 1 and 2, can utilize either of the typical sections described below.

Alternate 1 is derived from the findings of the TPR traffic analysis and input received from the MPO and at the 2009 stakeholder meeting. Alternate 1 has two (2), twelve 12-foot travel lanes, a continuous twelve (12)-foot center turn lane and ten (10)-foot stabilized shoulders, which could accommodate a bike lane. The Option 1 typical section is shown in Figure 8.

A four (4)-lane, median-divided section is also studied in this TPR, as that is the typical section proposed in the LRTP (Alternate 2). Under this alternate, the section from the south project terminus (Log Mile 3.080) north to Baileyton Road has a raised grass median and turning lanes where warranted. Option 2 is depicted in Figure 9.

The concept set for the corridors, which is in Appendix B, includes a drawing of the typical sections for Corridors 1 and 2.

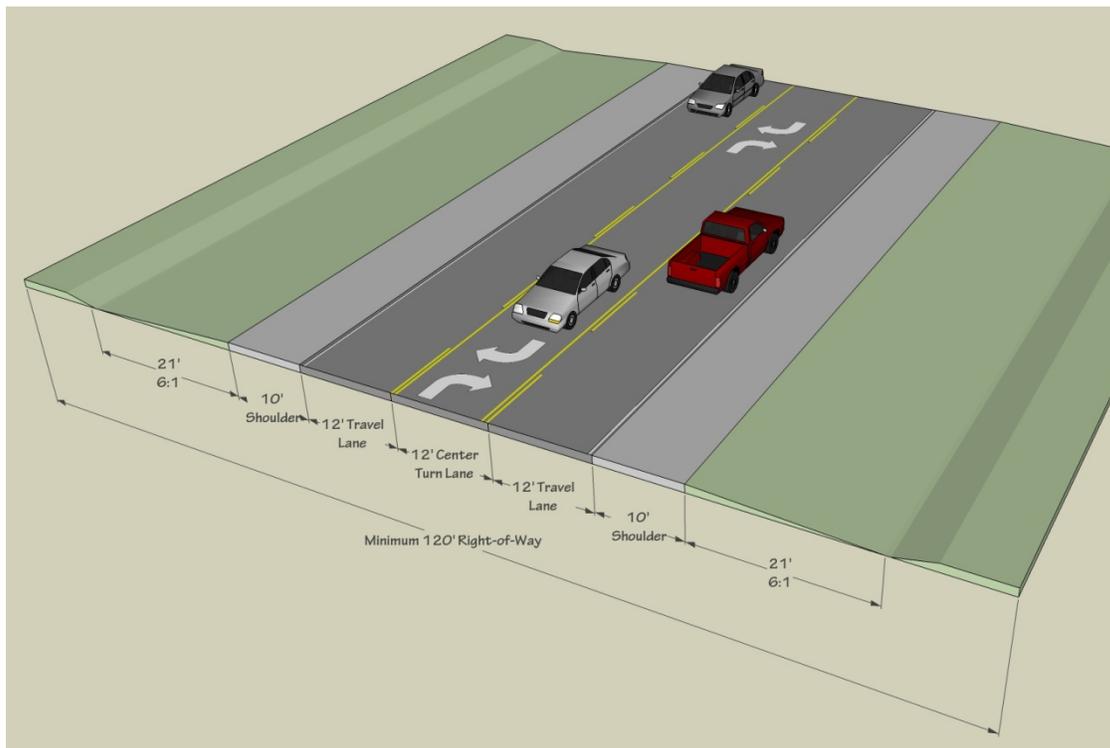


Figure 8. Three-lane Typical Section

The ten (10)-foot shoulder under either alternate could accommodate a bike lane. The desirability of including a bike lane in the proposed SR 93 improvements was briefly discussed with the MPO. The only marked bike lanes on an arterial in the larger study

area are on US 11W on the north side of Kingsport. In future project phases, the MPO has stated that they will coordinate the off-road pedestrian and bikeway improvements in the SR 93 study area with the need for improvements on SR 93.

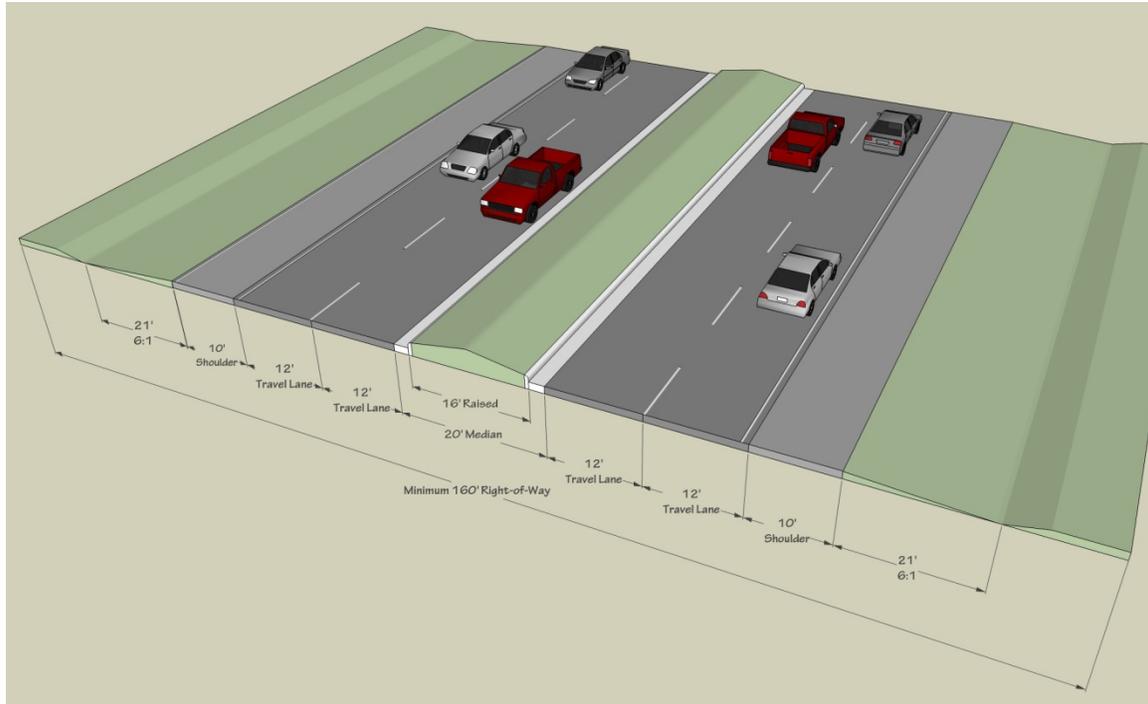


Figure 9. Four-lane Typical Section

The proposed typical section for Option 4, Corridor 3 is the same as the Alternate A typical section (two (2) lanes with center turn lane within a minimum 120 feet of right of way) under Corridors 1 and 2 (Figure 8 and Sheet 2 in the concept set in Appendix B). Even the option to improve SR 93 under Alternate A would have substantial property damages that would occur to the many properties (residential, commercial and institutional) along the corridor. It is estimated that thirty-four (34) residential and eighteen (18) commercial displacements would occur under this option throughout the corridor.

The greatest impacts on this corridor would occur in Fall Branch, where the existing right of way averages forty (40) feet. Under the Alternate A typical section, there would be thirty-two (32) residential and sixteen (16) commercial displacements. Beyond displacements, the improvement would bring the roadway into the front yards and parking areas of a number of other residences and small businesses and would negatively affect the community and its small-town character. In addition, TDOT historians have looked at the Fall Branch community along SR 93 and have stated that a number of individual properties in the community may be eligible for the NRHP. TDOT historians also recommended that Fall Branch should be evaluated for its potential NRHP eligibility as a historic district. Some of these potentially historic properties could be displaced or adversely impacted in other ways by the construction of a wider road through the community, resulting in Section 106 of the National Historic Preservation Act Adverse Effects and a Section 4(f) of the Department of Transportation Act “use.”

A curb and gutter section with two (2) lanes, a center turn lane, and sidewalks within 60 feet of right of way was also examined through Fall Branch. Even by reducing the typical section and with the consideration of retaining walls throughout the Fall Branch area limits, this option would have 17 residential and six (6) commercial displacements.

The four (4)-lane section described under Corridors 1 and 2 and included in the LRTP would have extensive property damages along the route, particularly through the Fall Branch community, therefore, the four (4)-lane section was not carried forward along the existing alignment.

Traffic and Level of Service: As described in Chapter 3, the traffic analysis indicates that this segment of roadway currently operates at LOS E, which means that the facility has almost reached its capacity. This is mainly due to the high number of access points and the lack of turn lanes. The case is the same under the 2034 No Build condition. The route carries fourteen (14) percent trucks.

In the 2034 Build condition, a three (3)-lane typical section (Alternate 1) and a four (4)-lane typical section (Alternate 2) were both analyzed for Corridors 1 and 2, which bypass Fall Branch. In the 2034 Build condition, Option 1 operates at LOS C or D except for the segment closest to SR 347, which operates at LOS E. However, a three (3)-lane typical section is typically adequate to handle the amount of traffic projected for this segment, so although the LOS was determined to be E in the peak hours, the roadway would operate at acceptable levels of service during the majority of the day. In the 2034 Build condition, Alternate 2 operates at acceptable levels of service (LOS A and B) for all segments. Table 6 summarizes the LOS for the 2034 Build Condition for Options 2 and 3, Corridors 1 and 2. The traffic analysis reported that the percentage of trucks on SR 93 through the community of Fall Branch would be reduced from fourteen (14) percent to three (3) percent under either of these options. (The HCS analysis is included in a stand-alone Appendix to this TPR). Under Option 4, Corridor 3, the LOS would improve from an E to a C and the truck percentage would remain at fourteen (14) percent.

Table 6. AADT and Level of Service (LOS) for 2034 Build Condition, Options 2 and 3

Roadway Segment	2034 Build		
	AADT	LOS (3-lane)	LOS* (4-lane)
SR 93 near I-81	10,385	D	A / A
SR 93 through Fall Branch (existing alignment)	1,745	C	-
SR 93 at Washington/Sullivan County Line	6,978	C	A / A
SR 93 500 feet south of SR 347	13,623	E	B / A

* Direction 1 / Direction 2

Disposition of Existing Roadway: Any portion of existing SR 93 not utilized in the construction of the proposed improvements will be removed from the State Highway System and maintenance will become the responsibility of local government.

Option 5—Spot Improvements

Spot improvements were developed for five (5) separate locations, which correspond to locations with a higher than average incident or severity of crashes along the existing SR 93 corridor. Improvements along SR 93 include the addition of turn lanes, improvement of the horizontal and vertical sight distance, upgrade to ten (10)-foot shoulders or addition of sidewalks with curb and gutter within the Fall Branch Elementary School zone area. Consideration was given to the location of existing overhead and underground utilities along the corridor. A set of concepts on aerial photography of the five (5) improvements is in Appendix C. Detailed costs for each improvement can be found in Appendix D. Figure 10 shows the location of the five (5) spot improvements. These improvements encompass 4.51 miles of the 6.1 mile long corridor. A reduced right of way width for each improvement was also considered due to the impacts of a 120-foot right of way along the existing corridor, especially in Fall Branch.

Spot Improvement No. 1:

SR 93 from Log Mile 3.200 to 3.530, Washington County

Estimated Cost: \$1,056,461.00

This improvement is intended to enhance safety in the vicinity of the Fall Branch Elementary School. A two (2)-lane section with a left turn lane is proposed at the Fall Branch Elementary School on SR 93 in the Fall Branch community. The turn lane is proposed for southbound traffic turning into the parking lot of the Fall Branch Elementary School and Ruritan Road where there is additional parking for the school. The proposed typical section includes two (2) twelve (12)-foot travel lanes and one (1) twelve (12)-foot left turn lane for a total width of thirty-six (36) feet. Curb and gutter along with five (5)-foot sidewalks are also proposed throughout Spot Improvement 1 within a proposed sixty (60)-foot right of way. Sheet 3 in the concept set in Appendix C depicts the improvements.

Spot Improvement No. 2

SR 93 from Log Mile 3.460 to 3.850, Washington County

Estimated Cost: \$2,311,151.00

This improvement is intended to flatten the existing horizontal curves and improve intersection sight distance through this section of existing SR 93. The typical section is a continuation of the three (3)-lane section for Spot Improvement 1. The proposed typical section includes two (2) twelve (12)-foot travel lanes and one (1) 12-foot center turn lane for a total width of thirty-six (36) feet. Curb and gutter along with five (5)-foot sidewalks are also proposed throughout the Spot Improvement 2 segment within a proposed sixty (60)-foot right of way. With this section, there are three (3) residential relocations. Potentially historic properties in this segment of roadway could also be adversely affected by this spot improvement. Coordination between Spot Improvement 1 and 2 is required. Sheet 4 in the concept set in Appendix C depicts the improvements.

Spot Improvement No. 3

SR 93 from Log Mile 4.850 in Washington County to 0.300 in Sullivan County

Estimated Cost: \$4,974,261.00

This option considers improvements to the existing vertical alignment and construction of a two (2)-lane section with shoulders to improve sight distance and safety through this section of existing SR 93 located between Horse Creek and an existing rock cut. The

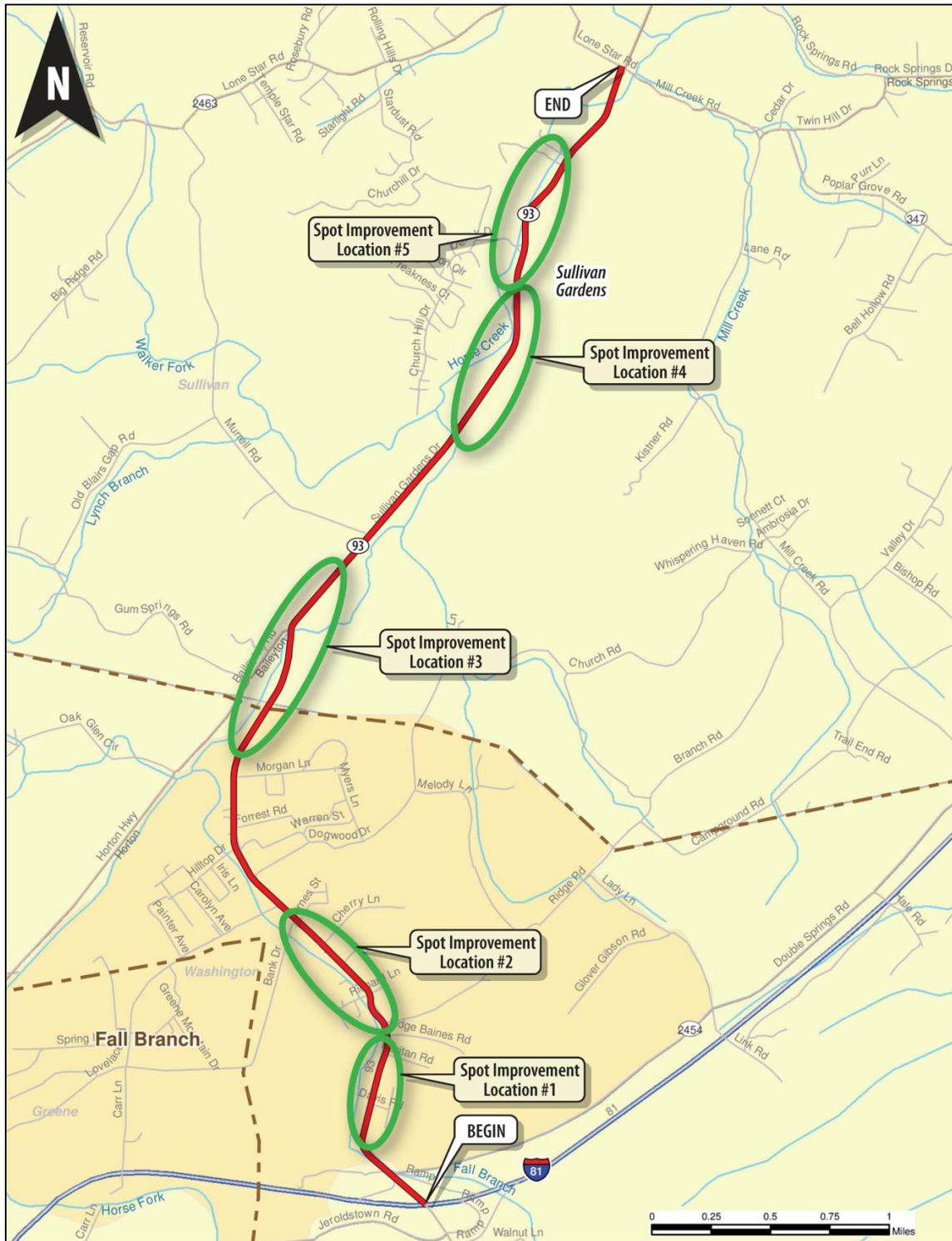


Figure 10. Spot Improvement Locations

proposed typical section consists of two (2) twelve (12)-foot travel lanes, ten (10)-foot shoulders, and 6:1 ditch slopes as required by Standard Drawing RD01-TS-3 for a two (2)-lane arterial highway with the given traffic volumes within a proposed 100-foot right of way. SR 93 is proposed to be shifted east to avoid impacts to the creek and tie to the existing roadway embankment on the west side. Traffic control phasing will need to be considered early in development of plans for this improvement due to the significant amount of rock excavation that will likely be required and the difficulty in maintaining existing traffic during construction. Due to the additional excavation, a truck lane may be considered during design if traffic volumes warrant such lane. Additional right of way and/or slope and construction easements will also be required.

Sheet 4 of the concept set in Appendix C depicts the improvement and a representative typical section of the proposed phasing.

Spot Improvement No. 4

SR 93, from Log Mile 0.950 to 1.180, Sullivan County

Estimated Cost: \$2,056,392.00

This improvement considers adding a three (3)-lane section at the industrial area along existing SR 93 where truck traffic enters and exits SR 93, and vehicles drive from one side of the road to the other for the industry that occupies both sides of the road. This would improve safety in this area where slow turning trucks enter and turn off SR 93 into the businesses. The typical section includes two (2) 12-foot travel lanes and one (1) 12-foot center turn lane for a total width of 36 feet, with 10-foot shoulders and ditches within a proposed 120-foot right of way. Right of way, which includes parking and parts of buildings, would be acquired from the businesses. There is also one (1) commercial relocation. The existing bridge located at Horse Creek would require widening. Access management should also be considered for each of the industrial businesses. Sheets 6 and 7 of the concept set in Appendix C depict the improvements.

Spot Improvement No. 5

SR 93 from Log Mile 1.180 to 2.400, Sullivan County

Estimated Cost: \$4,210,821.00

This option considers improvements to the existing horizontal and vertical alignment and construction of a two (2)-lane section with shoulders to improve sight distance and safety through this section of existing SR 93. The proposed typical section consists of two (2) twelve (12)-foot travel lanes, ten (10)-foot shoulders, and 6:1 ditch slopes as required by Standard Drawing RD01-TS-3 for a two (2)-lane arterial highway with the given traffic volumes within a proposed 100-foot right of way. SR 93 is proposed to be shifted east to avoid impacts to existing Horse Creek at the beginning of the section, and then to tie into the existing roadway embankment on the west side. At Derby Drive, the existing reverse curvature of SR 93 is proposed to be removed. As mentioned in Spot Improvement 3, traffic control phasing will need to be considered early in the plans development, due to the significant amount of rock excavation that will likely be required. Coordination between Spot Improvement 4 and 5 is required. Sheets 7 and 8 of the concept set in Appendix C depict the improvements.

ESTIMATED COSTS

Planning level cost estimates for Corridors 1 and 2 and for the spot improvements are summarized below. Detailed cost estimates, which were based on the minimum typical sections previously shown in this Chapter (Figures 8 and 9), are found in Appendix D.

CORRIDORS*

Option A: three (3)-lane section

Corridor 1 East of Fall Branch	\$29,484,217
Corridor 2 West of Fall Branch	\$30,212,437

Option B: four (4)-lane raised median section

Corridor 1 East of Fall Branch	\$41,181,294
Corridor 2 West of Fall Branch	\$45,700,818

* As previously stated, costs were not developed for Corridor 3 because the option is not prudent due to the environmental impacts to the Fall Branch community. The cost estimates are attached.

PRIORITIZED LIST OF SPOT IMPROVEMENTS

<u>#</u>	<u>Description</u>	<u>Cost Estimate</u>
5	1,600 feet South and 2,600 feet north of Derby Drive, 4,200 feet	\$ 4,210,821
4	North of Murrell Drive to South of Derby Drive, 2,800 feet	\$ 2,056,392
3	Morgan Lane to South of Balleyton Road, 2,800 feet	\$ 4,974,261
1	North of Davis to North of Judge Baines Road, 1,600 feet	\$ 1,056,461
2	Ruritan Road to North of Fire Hall Road, 2,400 feet	<u>\$ 2,311,151</u>
	TOTAL	14,609,086

7 ENVIRONMENTAL SCREENING

The environmental screening presented in this TPR is a combination of information that was gathered in support of the July 2008 feasibility study, information provided by the TDOT Early Environmental Screening (EES) reports, and additional information and GIS mapping developed in support of this TPR. The EES report is found in Appendix E and the supplemental environmental screening maps are in Appendix F.

FLOODPLAINS AND WETLANDS

Federal Emergency Management Agency (FEMA) issued Flood Insurance Rate Maps (FIRM) numbers 47163C0230D, 47163C0220D, 47179C0020D and 47179C0040D were reviewed for the SR 93 corridor. As illustrated on the supplemental environmental screening maps in Appendix F, there are floodplains within the study area. The floodplains shown are associated with Horse Creek, which runs parallel to SR 93 from SR 347 south to Oak Glen Circle, where it then follows Horton Highway; and Fall Branch, which runs parallel to SR 93 from Oak Glen Circle south to I-81.

The United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) map was reviewed to identify known wetlands in the study area. Wetlands data for the Sullivan Gardens and Lovelace USGS Quadrangle maps, which encompass the study area, have been digitized by USFWS. A digitized version of the NWI data created by the Tennessee Wildlife Resources Agency (TWRA) and made available on the Tennessee Spatial Data Server was used for the mapping of wetlands in the study area. Very few known wetlands are present in the study area. Their relationship to the study corridors is displayed on the supplemental environmental screening maps in Appendix F.

Two (2) streams in the study area are listed on the Tennessee Department of Environment and Conservation's (TDEC) 303(d) list (see supplemental environmental screening maps in Appendix F). Once a project has been placed on the 303(d) list, it is considered a priority for water quality improvement efforts. Over four (4) miles of Horse Creek (TN06010102003_3000) are listed as impaired by pollution and not fully meeting its designated uses. Horse Creek has sustained a loss of biological integrity due to siltation from pasture grazing. An additional unnamed tributary to Horse Creek (TN06010102003_0200) within the study area is listed as impaired by pollution and not fully meeting its designated uses. This is also due to siltation from pasture grazing.

The selection of either corridor will generate additional permitting and special design requirements for new stream crossings.

THREATENED AND ENDANGERED SPECIES

The TDEC Division of Natural Areas maintains records of rare, threatened and endangered species located throughout the state. TDEC files were examined in August 2009 in an attempt to identify threatened and endangered species recorded in the general vicinity of the study area. There are no federally listed, threatened or endangered species in the general study area.

The records check revealed one (1) state-listed species reported within the study area. The Northern White Cedar (*Thuja occidentalis*), a gymnosperm plant found in calcareous rocky seep or cliffs, is listed as "Special Concern" at the state level and was observed in the Fall Branch community. Instances of a stonefly (*Allocapnia brooksi*), an insect that is

neither federally or state-listed, have been recorded within one (1) mile of the study area, especially near Horse Creek. The stonefly is most common in small-medium size creeks and is a concern in areas of poor agricultural practices or development. These observations and listings within one mile of the study area are outlined in Table 7.

Six (6) additional state-listed plant species have been observed within four (4) miles of the study area. Appalachia Bugbane (*Cimicifuga rubifolia*), Butternut (*Juglans cinerea*), Fetter-bush (*Leucothoe racemosa*), and Mountain Fetter-bush (*Pieris floribunda*) are listed as “Threatened”. American Ginseng (*Panax quinquefolius*) and Pink Lady’s slipper are a concern due to commercial exploitation. TDEC considers commercially exploited species, such as ginseng, to be of “long-term” conservation concern, but the Division of Natural Areas does not recommend that they be included in the normal environmental review process.”

Two (2) state-listed mammals have been observed within four (4) miles of the study area. The Southeastern Shrew (*Sorex longirostris*) and the Woodland Jumping Mouse (*Napaeozapus insignis*) are considered “Deemed in Need of Management”, which is analogous with to “Special Concern.” None of these state-listed plant and animal species observed within four (4) miles of the study area have been federally listed. These observations and listings within four (4) miles of the study area are outlined in Table 8.

Approximately five (5) miles north of the intersection of SR 93 and SR 347 (and outside the study area) is the Bays Mountain Park and Planetarium in Kingsport, TN. Located at 853 Bays Mountain Park Road, the Park is a designated State Natural Area that is a 3,500-acre nature preserve. Framed on all sides by mountain ridges, much of the park lies in a natural basin and is a protected haven for wildlife.

Table 7. Rare Species Observations Within One Mile of the Study Area

Type	Scientific Name	Common Name	Global Rank	State Rank	Federal Protection	State Protection	Habitat
Plant: Gymnosperm	<i>Thuja occidentalis</i>	Northern White Cedar	G5	S3	**	S	Calcareous Rocky Seeps, Cliffs
Insect	<i>Allocaupnia brooksi</i>	A Stonefly	G2	S2	**	**	Small-medium size creeks; northern Ridge & Valley and adj. Blue Ridge; upper Tenn. River watershed.

Source: TDEC Division of Natural Areas Natural Heritage Inventory Program

Table 8. Rare Species Observations Within Four Miles of the Proposed Project Area

Type	Scientific Name	Common Name	Global Rank	State Rank	Federal Protection	State Protection*	Habitat
Flowering Plant	Cimicifuga rubifolia	Appalachian Bugbane	G3	S3	**	T	Rich Woods
Flowering Plant	Cypripedium acaule	Pink Lady's-slipper	G5	S4	**	S-CE	Piney Woods
Flowering Plant	Juglans cinerea	Butternut	G4	S3	**	T	Rich Woods And Hollows
Flowering Plant	Leucothoe racemosa	Fetter-bush	G5	S2	**	T	Acidic Wetlands And Swamps
Flowering Plant	Panax quinquefolius	American Ginseng	G3,G4	S3,S4	**	S-CE	Rich Woods
Flowering Plant	Pieris floribunda	Mountain Fetter-bush	G4	S2	**	T	Heath Thickets
Mammal	Napaeozapus insignis	Woodland Jumping Mouse	G5	S4	**	D	Deciduous and coniferous forests with herbaceous groundcover; middle and east Tennessee.
Mammal	Sorex longirostris	Southeastern Shrew	G5	S4	**	D	Various habitats including wet meadows, damp woods, uplands; statewide.
Plant: Gymnosperm	Thuja occidentalis	Northern White Cedar	G5	S3	**	S	Calcareous Rocky Seeps, Cliffs
Insect	Allocaupnia brooksi	A Stonefly	G2	S2	**	**	Small-medium size creeks; northern Ridge & Valley and adj. Blue Ridge; upper Tennessee River watershed.

Source: TDEC Division of Natural Areas Natural Heritage Inventory Program

**State Protection Legend:*

- D – Deemed in Need of Management
- S – Special Concern
- S-CE – Special Concern, Commercially Exploited
- T - Threatened

HAZARDOUS MATERIALS

Project planners reviewed Environmental Protection Agency (EPA) records and TDEC Division of Remediation records to check for the presence of any hazardous materials sites in the study area. Databases checked included the Resource Conservation and Recovery Act (RCRAInfo) database, the Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) database (Superfund) and the Enforcement and Compliance History Online (ECHO) database.

Two (2) sites were found in the ECHO database for NPDES permits, the Fall Branch Grocery and the Magic Wand Car Wash, which are both located in Fall Branch along SR 93, within Corridor 3 and Spot Improvements 1 and 2. The details of the NPDES permits for these sites are shown in Table 9. Both facilities have obtained a National Pollutant Discharge Elimination System (NPDES) permit. This permit program controls water pollution by regulating point sources¹ that discharge pollutants into waters of the United States. No violations have been recorded for either facility.

Table 9. NPDES Permits in Study Area

NPDES ID	Name	Address	EPA Registry ID	Permit Issued	Permit Expiration	Listed
TNG830062 Non-Major	Fall Branch Grocery	1500 SR 93, Fall Branch, TN 37656	110013402807	3/3/03	8/23/08	ECHO
TN0056898 Minor	Magic Wand Car Wash	153 Lovelace Drive, Fall Branch, TN 37656	110006796306	4/30/08	4/30/13	ECHO

Source: EPA's EnviroMapper

Two (2) gas pipelines appear on the Federal Highway Administration's Pipeline Mapping System. Both pipelines, depicted on one of the supplemental environmental screening in Appendix F, are within the TPR corridors.

The TDOT EES reports noted that there is a moderate pyritic rock impact within 2,000 feet of the study corridors. Specifically, four (4) classifications of pyritic rock were reported for both corridors. Of the Dolomite classification, two (2) Knox Group and one (1) Honaker Dolomite were noted. Additionally, the Sevier Formation may contain potentially acid producing rock. The Dolomite classifications are more prominent in Corridor 1, and the Sevier Formation is more prominent in Corridor 2. These are shown on the "SR-93: 2,000-foot EES Corridor map", contained in the TDOT EES reports at the end of Section 7. The TDOT report notes that "medium project impact is anticipated in the project study area or corridor. Formations that may contain acid producing rock (symbolized as orange or pink in color) are anticipated in small quantities. A greater than normal design is anticipated to perform geotechnical studies and analysis and design (i.e., containment measures and minimize disturbance/movement of pyritic rock during construction). More effort is likely needed to: identify additional right of way to 'waste' material, secure permits, and design project blending of pyritic materials. Minimal long term efforts are anticipated to ensure performance of containment measures."

In July 2009, GS&P examined available geologic information for pyritic rock potential in the study area. The study area parallels the surface outcrop of the Pulaski and the Cliffs fault traces in East Tennessee near where Sullivan, Washington and Greene Counties come together. The bedrock in the area consists of Ordovician Age limestones of the Knox group and shale formations on the flank of Bays Mountain. Sevier Shale formation is likely to underlie the western portions of both proposed corridors. This Sevier Shale formation is not pyritic rock throughout, but some thin intervals, particularly near the Knox formation contact, could contain localized inclusions of pyrite. This would not present a problem in the soil regolith or the weatherized portion of the parent bedrock,

¹ Point sources are discrete conveyances such as pipes or man-made ditches.

but any proposed excavations deep enough into the formation to expose unweathered shale could be a concern. The Sevier Shale weathers to a gray or blue gray color from a dark gray to black calcareous shale parent material. Pyrite could occur in brecciated portions of the Kingsport Formation and near the faults, but the quantities are insignificant in light of the acid neutralizing capacity of the native rock in such areas.

Overall, pyritic rock potential in this area is low due to the topographic position of the proposed Corridors. Deep excavations in the shale hillsides are the only areas of potential concern for generation of acidic runoff. The weathered shale and associated acidic soils could represent a potential for concrete corrosion, if that is a concern. The full memorandum discussing pyritic rock potential in the area and associated maps can be found in the stand-alone Appendix to this TPR.

ENVIRONMENTAL JUSTICE AREAS (TITLE 6)

U.S. Census Data was reviewed for the study area to determine whether the proposed improvements have the potential for disproportionately high and adverse human health or environmental effects on minority populations and low-income populations. Maps showing the minority and low-income populations are included in the supplemental environmental screening maps in Appendix F.

Minority Populations

According to the 2000 U.S. Census, the county-wide average percentage of minority populations for Greene County was 3.58 percent, for Sullivan County was 3.45 percent, and for Washington County was 6.28 percent. All three averages are significantly lower than the statewide average of 19.79 percent.

Only one Census Block located in the study area has a minority population percentage higher than that of Greene County, Sullivan County and Washington County. The Census Block has a minority population percentage of 8.70 percent and is identified as Block 3035 of Census Tract 91 in Greene County. A majority of the census blocks within the study area have minority populations of 3.45 percent or less. Of the seventy (70) census blocks encompassing the study area, only four (4) have minority population percentages higher than that of Sullivan County (3.45 percent minority). In addition to Block 3035 of Census Tract 91 in Greene County, the other three (3) include Blocks 1004, 1031 and 2035 of Census Tract 616 in Washington County, which have minority populations of 5.26 percent, 5.56 percent and 5.88 percent respectively.

Corridor 2 crosses Census Block 3035 of Census Tract 91 in Greene County. While this Block has an 8.70 percent minority average, only twenty-three (23) persons live within the Block. Two (2) out of twenty-three (23) are minority. None of the houses that may accommodate these populations are located within or adjacent to Corridor 2.

There are less than six (6) percent minority populations in Corridors 1 and 3.

Low Income Populations

The supplemental environmental screening maps in Appendix F show the percentage of the population living below poverty in the study area by Census Block Group. The study area is encompassed by eight (8) Census Block Groups. U.S. Census data on poverty status is only provided for the portion of the population for which poverty status can be determined. Thus, the percent living below poverty level is calculated using the

population for which status can be determined rather than the total population of the Block Group in 2000.

The average percent of the population living below poverty in 2000 (based on 1999 income) for Greene County was 14.50 percent, for Sullivan County was 12.93 percent, and for Washington County was 13.95 percent. The statewide average was 13.48 percent. Only one Block Group in the study area has a percentage of residents living below poverty level that is higher than 14.50 percent. This Block Group is Census Tract 414, Block Group 1 in Sullivan County, which has an average of 14.8 percent. This Block Group is just north of the northern terminus of the corridors in an area where SR 93 has already been improved.

HISTORIC PROPERTIES

A review of State Historic Preservation Office (SHPO) records at the Tennessee Historical Commission (THC) was conducted to check for the presence of historic resources within the study area. The records check revealed that there are no properties listed on the NRHP within the study area. In addition, a review of the THC United States Geological Survey (USGS) quadrangle survey maps indicated that there are no properties in the Area of Potential Effect (APE) listed in the National Register of Historic Places (NRHP). The Jesse Scalf House, which is located on existing SR 93 in Fall Branch, was determined ineligible for the NRHP in 1986 due to extensive alterations.

According to the SHPO records, approximately 40 properties in Washington County have been surveyed within the study corridor, none of which were deemed eligible for the NRHP by the surveyor. A review of photographs from the THC files indicates that these assessments are likely valid for most, but not all, of the properties surveyed. The quality of the photos, however, does not allow for a valid preliminary assessment, and these resources have not been examined in the field by a qualified architectural historian. It appears that approximately ten (10) to twelve (12) of these properties may warrant an in-depth analysis to determine NRHP eligibility. Additional survey work is needed in future project phases to determine whether the APE in Washington County contains resources that are eligible for the NRHP.

SHPO records revealed that a comprehensive county-wide survey has not been completed for Sullivan County or Greene County. As a result, the portion of the APE that falls within Sullivan and Greene counties could contain properties that are eligible for the NRHP.

In July 2009, TDOT historians drove through the SR 93 corridor in order to provide a preliminary scoping of information for NRHP eligible or listed properties. An intensive level survey was not performed. In Washington County they found that the Fall Branch Elementary School needs to be surveyed and that the town of Fall Branch should be surveyed for its potential as a NRHP district. In addition, several structures in Fall Branch on or adjacent to SR 93 need to be surveyed for individual eligibility. In Sullivan County, the historians noted at least five (5) structures that need to be surveyed along the existing SR 93 corridor. If SR 93 moves forward and becomes an official project, then a survey would need to be conducted in the early planning stages to determine if NRHP eligible resources exist in the APE. The memo and map prepared by TDOT of their findings is in Volume II. The memo noted properties that should be considered for an in-depth study as the SR 93 improvement studies advance. (Archaeology survey

records were not checked in this environmental screening task, as this is outside the scope of this study.)

CEMETERIES

According to the TDOT EES reports, cemetery sites were found within 1,000 feet of the study corridors (See EES reports in Appendix E, 1,000-foot EES Corridor Map). These cemetery sites are considered a “low impact” on the project. In Corridor 1, two (2) cemeteries were noted: McCrary Cemetery and Baines Cemetery. Both of these cemeteries are located in the southern portion of the study area near the Fall Branch community. In Corridor 2, only McCrary Cemetery was noted. Within Corridor 3, there is a large cemetery on the east side of SR 93 in Fall Branch in addition to the McCrary Cemetery.

COMMUNITY RESOURCES

The study area contains a number of community resources, which are illustrated on the supplement environmental screening maps in Appendix F. The four (4) churches in the study area include:

Within TPR Corridor 1 and 3:

- Fall Branch United Cornerstone Fellowship located at 169 Judge Baines Road
- Fall Branch Christian Church located at 132 Ruritan Road

Within Corridor 3:

- First Baptist Church located at 1525 Highway 93
- Fall Branch United Methodist Church located at 1901 Highway 93

Fall Branch Elementary School is located within the study area at 1061 Highway 93, in the Fall Branch community and within Corridors 1 and 3. It is a public school in the Washington County School District that has a student enrollment of approximately 352 students for Kindergarten through 8th grade (see supplemental environmental screening map in Appendix F). School buses serving Fall Branch Elementary School travel through the study area along SR 93 and secondary residential streets. Buses are typically present in the area between 6:00 a.m. and 8:00 a.m. and again in the afternoons between 2:30 and 4:00 p.m. Just north of the study area Sullivan Elementary School and Sullivan Middle School are located off Rock Springs Drive.

The Fall Branch Volunteer Fire Department is located at the southern portion of the study area at 106 Ruritan Road. It lies within the southern portion of Corridors 1 and 3. The Sullivan County West Volunteer Fire Department maintains a fire station just north of the project study area at 113 Rosemont Street. That station services the northern portion of the study area that lies in Sullivan County.

All three (3) corridors have the potential for community impacts through displacing businesses and residences. Estimates of displacements are:

	<u># Residential</u>	<u># Commercial</u>
Corridor 1	12	2
Corridor 2	8	2
Corridor 3	34	18

The five (5) spot improvements have the potential for the following displacements:

	<u># Residential</u>	<u># Commercial</u>
1	0	0
2	4	0
3	2	0
4	0	1
5	0	0

OTHER RESOURCES

Just north of Oak Glen Circle on the east side of Horton Highway and in the vicinity of Corridor 2, is a waterfall that stakeholders reported as “significant” to the area.

8 ASSESSMENT OF OPTIONS

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 for the proposed SR 93 improvements.

GUIDING PRINCIPLE 1:

PRESERVE AND MANAGE THE EXISTING TRANSPORTATION SYSTEM

The function of SR 93 will be preserved as it will continue to connect this section of Kingsport and Sullivan and Washington Counties to the interstate. The section of existing SR 93 through Fall Branch will remain to service primarily local traffic.

The options presented as Corridors 1 and 2, which involve construction of the SR 93 roadway largely on new location, can help preserve the life of existing SR 93 by diverting regional traffic that does not have an origin or destination in Fall Branch. Construction of Corridor 1 or 2 would ensure that existing transportation infrastructure continues to function at an adequate LOS in the future and safety on the roadway is improved.

GUIDING PRINCIPLE 2:

MOVE A GROWING, DIVERSE, AND ACTIVE POPULATION

The proposed improvements will facilitate traffic movement through the study area, by separating through traffic from local, Fall Branch traffic. The LOS will improve through the majority of either corridor from an LOS E to a LOS C.

The proposed improvements will redirect some through traffic away from existing SR 93 through Fall Branch, creating a safer and more hospitable environment for local traffic. The improvements will allow many sections of SR 93 through this area to serve as a roadway intended for primarily local traffic. Consequently, the proposed improvements will support a diverse and active population by offering all citizens a safer roadway. The proposed improvements consider all users and improve safety in the area.

An improved SR 93 would also provide a safer route for traffic detoured onto SR 93 from I-26 or I-81.

GUIDING PRINCIPLE 3:

SUPPORT THE STATE'S ECONOMY

SR 93 is a regional mover of goods and services, as well as a local connection to I-81. SR 93 also serves as a commuter route to Kingsport for workforce housed in Fall Branch and the surrounding areas. Local stakeholders feel that the proposed SR 93 improvements will make the interchange area a more attractive site for potential developers and employers. The roadway improvements will also support the vision of local government to promote the development of the SR 93 corridor with commercial and residential uses on the many parcels of underdeveloped land.

**GUIDING PRINCIPLE 4:
MAXIMIZE SAFETY AND SECURITY**

The proposed project will create opportunities for the separation of through and local traffic, increasing safety along the bypassed sections of SR 93, such as in Fall Branch and in the vicinity of the industrial area in the northern portion of the project. An alternate route will eliminate the need for through traffic, including semi tractor-trailers, to travel through a developed commercial corridor in the Fall Branch community, reducing the potential for crashes with local traffic that turns and stops frequently.

**GUIDING PRINCIPLE 5:
BUILD PARTNERSHIPS FOR LIVABLE COMMUNITIES**

Coordination with local leaders and interested agencies to identify their concerns and objectives for the proposed project was conducted throughout the planning process. Meetings were held with the City of Kingsport officials and stakeholders (see Section Chapter 4, Stakeholder Meeting and Field Review). Improving safety along SR 93 through Fall Branch will make the community more livable. In addition, development near I-81 could provide services or new employment opportunities to the local community.

An improved SR 93 will also make the SR 93 corridor more appealing for residential and commercial developers as the City expands southward. It will provide an upgraded roadway needed to safely carry existing and new area residents, as well as businesspeople.

In keeping with TDOT's Public Involvement Process, the provisions of NEPA and SAFETEA-LU and the provisions of the Tennessee Environmental Streamlining Agreement (TESA), this project will be coordinated with the public and additional governmental agencies, beginning in the next study phase (NEPA), should federal funding assistance be identified. Ideas brought forward to make the proposed improvements a good fit for the community will be evaluated for inclusion in the project design.

**GUIDING PRINCIPLE 6:
PROMOTE STEWARDSHIP OF THE ENVIRONMENT**

Potential adverse environmental impacts identified during the environmental screening phase or coordination with local government and stakeholders have been carefully considered in the development of the corridors included in this study. Detailed studies are needed to fully address the impacts of each option considered in this report. Section 7.0 of this report outlines potential environmental and cultural impacts.

Should continued federal funding be obtained for the proposed improvements, a NEPA document will be prepared in future project phases. The NEPA document will assess the potential impacts of the improvements on the natural, social and built environment. All efforts will be made to avoid adverse impacts to sensitive resources. If impacts cannot be avoided, they will be minimized and mitigated. Early and continuous coordination will continue to take place with the appropriate federal, state and local agencies and the public, including through the TESA. This coordination will assist with the identification of important resources early in the planning process and help ensure the proposed project promotes stewardship of the environment.

**GUIDING PRINCIPLE 7:
PROMOTE FINANCIAL RESPONSIBILITY**

This TPR was compiled as part of a comprehensive transportation planning process. Prior feasibility studies and advanced planning reports, as well as acknowledgement of the project need in the LRTP, all served as the impetus for the production of this report. This TPR, as part of a comprehensive planning process, serves to ensure that the purpose and need are considered in light of the larger regional context and that any proposed options to meet those needs are coordinated with the existing transportation network.

The cost estimates in Chapter 6 will fluctuate with inflation and any unexpected conditions. It is TDOT's goal to follow a comprehensive transportation planning process, promote coordination among public and private operators of transportation systems and support efforts to provide stable funding for the public component of the transportation system. This entails exercising financial responsibility in the development and implementation of roadway projects and minimizing cost to taxpayers.

9 SUMMARY

SR 93 is a state route, designated by TDOT as an Urban Principal Arterial. It serves as a critical link between I-81 and the Fall Branch Community, as well as the adjacent areas of Washington, Sullivan and Greene Counties and the City of Kingsport.

Through coordination with local officials and stakeholders, the preliminary need for the improvements has been clearly identified. Improvements to SR 93 are needed to:

- Improve safety
- Provide an upgraded link in the regional transportation system
- Improve level of service and overall operations
- Promote economic development in this expansion area of the City/County
- Correct roadway deficiencies

Five options were studied in this TPR:

- Option 1 — No Build
- Options 2 - 4 — Corridors 1-3
- Option 5 — Spot improvements

Option 1 — No Build involves making no modifications or improvements over the planning horizon to existing SR 93 except for routine maintenance. This option does not meet the proposed project needs.

Three (3) corridor improvements were studied in this TPR, but one of these, Option 4—Corridor 3, was not studied to the same level as Option 2—Corridor 1 and Option 3—Corridor 2 because it was not prudent or feasible, i.e., it did not meet the purpose and need and would have much greater environmental and right of way impacts, particularly in Fall Branch. Option 4—Corridor 3 specified improving SR 93 along the existing route, including the segment through Fall Branch.

Options 2 and 3 (Corridors 1 and 2) for improving SR 93 were studied in detail in this TPR: one primarily to the east of Fall Branch and the other primarily to the west of Fall Branch. Both bypass existing SR 93 through the core of the Fall Branch community. Two scenarios are presented for the typical section for Corridors 1 and 2, a three (3) lane alternate (two (2) travel lanes and a continuous center turn lane) and a four (4)-lane alternate with a median as specified in the LRTP.

Five (5) spot improvements were developed as part of this study. Each of these would improve safety at the specific locations. They partially meet the purpose and need of improving safety, bringing the roadway up to standards for an arterial roadway and improving system linkage.

Issues identified during environmental screening that will need to be addressed in the next study phase are outlined in Table 10.

If federal funding is identified for corridor or spot improvements, a NEPA document will be undertaken. If state funding is identified for the proposed improvements, a Tennessee Environmental Evaluation Report (TEER) will be undertaken. The NEPA

document or TEER will fully address the impacts to the social and natural environment. In addition, the NEPA or TEER process will lead to the selection of an alternative. Although a detailed environmental study is needed to fully address the impacts of each option considered in this report, preliminary research was done to provide a basis for future environmental work and refinement of corridors into alternatives. Table 10 summarizes the results from the environmental screening.

Potential Future Coordination

Resources in the general study area identified in the early planning/screening process that may invoke the need for coordination in future project phases are:

- Blueline stream crossings and wetlands;
- Gas and Electric Service Providers;
- Gas Pipelines; and
- Historic resources.

Table 10. Summary of Environmental Screening Results

	Streams/ Wetlands	Floodplains	Threatened and Endangered Species	Hazardous Materials	Historic Resources	Community Resources	Estimated Displacements	Environmental Justice
Option 2 Corridor 1	Crosses Horse Creek and Fall Branch and potential wetlands	Crosses floodplains associated with Horse Creek and Fall Branch	No federally-listed, threatened or endangered species; state-listed Northern White Cedar is present	Gas pipelines; potential for encountering pyritic rock	No NRHP listed or determined eligible properties in Area of Potential Effect (APE)	2 churches, 1 school, fire dept, two cemeteries	12 residential/ 2 commercial displacements	No impact
Option 3 Corridor 2	Same as above	Same as above	Same as above	Same as above	Same as above	1 cemetery	8 residential/ 2 commercial displacements	Same as above.
Option 4 Corridor 3	Same as above	Same as above	Same as above	Potential for USTs	TDOT reports potentially NRHP eligible properties in Fall Branch	1 school, fire department, churches, 2 cemeteries	34 residential/ 18 commercial displacements	Same as above.
Option 5-Spot Improvement 1	No Impact	No impact	Same as above	Same as above	Same as above	1 school, fire department	No displacements,	Same as above
Option 5-Spot Improvement 2	No Impact	No impact	Same as above	Same as above	Same as above	2 residential displacements, school, fire department	4 residential displacements	Same as above
Option 5-Spot Improvement 3	Potential impacts to Horse Creek and potential wetlands	No impact	Same as above	Potential for encountering pyritic rock	Same as above	1 school, fire department	2 residential displacements	Same as above
Option 5-Spot Improvement 4	Crosses Horse Creek and potential wetlands	No impact	Same as above	Potential for USTs	No NRHP listed or determined eligible properties in APE	Business impacts	1 commercial displacement	Same as above
Option 5-Spot Improvement 5	Potential impacts to Horse Creek and potential wetlands	No Impact	Same as above	Potential for encountering pyritic rock	Same as above	Impacts to businesses	No displacements	Same as above

Appendix A: Stakeholder Meeting Summary

**STAKEHOLDER MEETING SUMMARY
STATE ROUTE 93 IMPROVEMENTS
SULLIVAN AND WASHINGTON COUNTIES, TENNESSEE**

The City of Kingsport sponsored a stakeholder meeting to discuss potential future improvements to State Route 93, from just south of the Kingsport city limits to I-81 on May 13, 2009 from 9 a.m. to 11 a.m. at the Kingsport City Hall. The purpose of the meeting was to gather input that would assist the City and its subconsultant (Gresham Smith & Partners/GS&P) in the preparation of a Transportation Planning Report (TPR). The TPR is an early planning study that will:

- establish the need for the project;
- identify environmental and other constraints and issues; and
- develop and evaluate project concepts at the corridor level.

Fifteen people attended the meeting (list attached). State Representatives Dale Ford and Tony Shipley attended, as did representatives of the City, County, MPO and RPO.

The meeting opened with a call to order by Jack Qualls with the City of Kingsport. After asking attendees to introduce themselves, Jack described the SR 93 study and said that improving SR 93 had been identified in the Long Range Plan. He briefly described a feasibility study that had been completed in 2008 and stated that a public meeting had been held and there was much support exhibited for improving SR 93 from SR 347 south through Fall Branch to I-81. He said that this meeting is to kick-off the TPR.

TPR Process

Margaret Slater of GS&P described the TPR process. She said that TDOT has developed guidelines for the preparation of TPRs and that when the TPR is completed, it is anticipated that TDOT will approve it, allowing the project to move forward. Margaret said that for the TPR, the team will take a step back from the feasibility study wherein actual alignment alternatives were presented, to studying potential wide corridors in which an alignment can be fit in later planning phases (such as NEPA—the National Environmental Policy Act phase). The TPR will also include a planning-level range of costs for the potential improvements.

Project Need

Margaret then stated that a key part of the group's task today is to discuss why the project is needed. Without a strong need, it is unlikely that the study would move forward as a project. Margaret said that the feasibility study had described some preliminary needs such as safety, but that she'd like to hear from the attendees what they think are project needs.

The bulleted list below outlines the project needs that the attendees identified.

- Potential Hazmat incidents—detour routes are needed in case of a hazmat incident at the I-81/I-26 interchange. There is a very large natural gas tank located there—also, such incidents occur along I-26 and I-81;
- I-81/I26 Interchange—a detour route is needed for traffic when accidents occur at the interchange;
- Project is part of a longer project in the Long Range Plan. Completion of this segment would complete the entire route;
- Dangerous situation as area grows and traffic increases—residents of Fall Branch feel truck traffic on road presents safety issues;
- Road improvements are needed to accommodate nearby developments and promote growth and economic development;
- I-81 interchange will develop in the near future; sewer lines will be extended to the interchange area—this is a targeted growth area;

- Perception of SR 93 through this area as unsafe has hindered development;
- Truck industry uses SR 93 exit off 81, even though road is too narrow for tractor trailer trucks and lacks shoulders;
- Safety of school buses on SR 93—road is too narrow, citizens are concerned;
- Growth potential (Fall Branch)—need road that will support growth;
- Need exit detour from city to address Homeland Security and road closures due to crashes; and
- Numerous crashes along corridor, narrow road leaves no room for recovery at a number of locations.

Issues Discussed

Below are some issues identified during the project need discussion.

- A few people fear that Fall Branch would lose its small town feel if SR 93 is improved through the area—people are interested in quality of life;
- Need to design the road to accommodate future land use;
- A public meeting was held and most people were in support of project. Business owners want to ensure that access to their property is retained, some owners want access from the new roadway if its on new alignment;
- Roadway must consider floodplain impacts (an RFP is out now to develop a holistic approach to the preserving lands in the Horse Creek floodplain and to enhance flooding as needed to protect other lands);
- Some local officials hope that I-26, which currently ends near the Tennessee-Virginia Line, will be extended to the north at some point in the future; and
- Leave Fall Branch intact.

Roadway Concepts from 2008 Feasibility Study

Jason Brady of GS&P discussed the alignment options that were developed for the 2008 feasibility study. The four options were depicted on a display board.

Jason opened the discussion by stating that early in project planning, engineers had identified numerous impediments to improving along existing SR 93 for the length of the route. The primary issue was the close proximity of the creek on one side and bluff on another at several locations along the corridor. This results in serious constructability issues, such as the need to close SR 93 during project construction in these areas.

Jason described the four alignments: two to the east (C and D) and two to the west (A and B) of existing SR 93 in the southern two-thirds of the corridor. He stated that from an engineering standpoint, improvements to the west appeared more desirable because the new roadway could follow part of an existing road, would encounter fewer topographical challenges and would be a phasable project. Items noted in the ensuing discussion include:

- Why can't the alignment follow 93 south to Horton Highway;
- Need to ask Greene County what they have planned—they may have a mill dam near A;
- Alternative D has the least right-of-way impacts;
- Pub 93 wants to keep his business intact and expand it;
- Routes to west are longer and would consequently have a longer travel time;
- How will the roadway typical section be determined (three lanes, five lanes?) Traffic projections will be generated utilizing existing traffic counts and recent and future land use

along the corridor. These projections will be incorporated into the MPO's travel demand model to determine levels of service. Appropriate AASHTO, TDOT and FHWA guidelines will be used to develop the proposed typical cross sections for the roadway;

- Preliminary studies indicate a “super” three lane section is needed. Right-of-way requirements for a three-lane section with ditches often requires as much or more width than a five-lane section with curb and gutter (i.e., a closed drainage system). This is due to the differing roadside clear zone requirements for a ditch section versus a curb and gutter section. Additionally, room sufficient to properly accommodate drainage features also adjusts the required right-of-way width. The closed curb and gutter system adds significant cost to the project;
- Request to have animal pass-throughs for fields that are separated by the project. Jason explained that this is much more easily achievable in fill areas.

Margaret reminded everyone that we would be looking at corridors in the TPR—not alignments and that the alignments discussed today would fall within the corridors studied in the TPR.

Jack Qualls thanked everyone for attending. Margaret Slater said to please let her know if anyone has any thoughts to add after they leave the meeting. She also said that she would send a meeting summary out to attendees and others who were invited but were unable to attend.

The meeting was adjourned by Jack Qualls and attendees were invited to participate in the field review.

Field Review

Six people attended the field review:

City of Kingsport: Jack Qualls, Mike Thompson

TDOT: Chris Armstrong, Glenda Tyus

GS&P: Margaret Slater, Jason Brady

Issues discussed:

- TDOT said that the TPR needs to address whether there is pyrite in the project area;
- Horton Highway lends itself to being widened for part of the SR 93 relocation western corridor;
- Just north of Oak Glen Circle on the east side of Horton Highway is a waterfall that is listed on the national list of waterfalls;
- Power line crosses SR 93; and
- Part of area possibly not served by TVA, served by AEP.

Prepared by: Margaret Slater, Gresham Smith and Partners, June 29, 2009

**SIGN IN SHEET FOR STAKEHOLDER MEETING
IMPROVEMENTS TO STATE ROUTE 93, FROM I-81 TO STATE ROUTE 347
Kingsport, Sullivan and Washington Counties, TN**

Date/Time: Thursday June 25th, 2009/9:00 a.m.
 Location: Kingsport City Hall, 2nd Floor Council Room
 Purpose: Early Planning for Improvements to State Route 93

Name	Organization/Affiliation	Contact Information: e-mail
Michael Flatt	GSP	Michael.Flatt@gspnet.com
Neal Ford	State Rep	Joyous 227@Embargo.com
Eddie Williams	SULLIVAN COUNTY COMM	423-578-2121
Jason Brady	GSP	jason.brady@gspnet.com
Tony Shipley	State Rep	tony_shipley@yahoo.com
Jack Qualls	Kingsport	
Margaret Slater	GSP	
Alan Webb	City of Kingst	webb@ci.kingsport.tn.us
Ambre Terbett	Sullivan County	planning@sullivancounty.org
Chris Craig	First TN DA RPO	ccraig@fdd.org
Ryan McRynolds	city of Kingsport	mcrynolds@ci.kingsport.tn.us
Chris Armstrong	TDOT	christopher.armstrong@tdot.tn.gov
Glenda Tyus	TDOT	glenda.tyus@tdot.gov
Michael Thompson	city of Kingsport	thompson@ci.kingsport.tn.us
Bill Albright of _____	Kingsport MPO	albright@ci.kingsport.tn.us

Appendix B: Corridor Concept Set

Appendix C: Spot Improvement Concept Set

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

Index Of Sheets

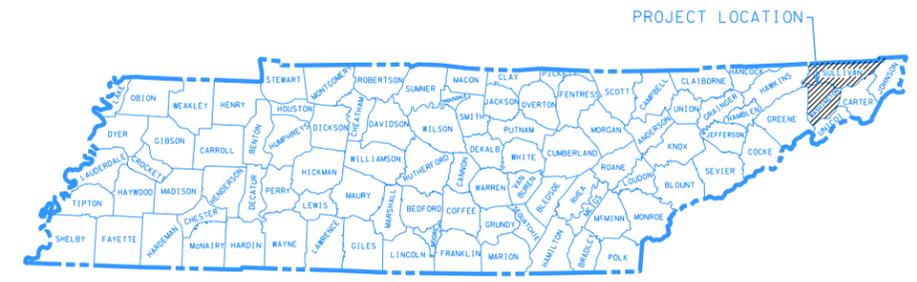
TYPICAL SECTION SHEET	2
CORRIDOR LAYOUTS	3-18
CORRIDORS ON USGS MAP	19

STATE OF TENNESSEE DEPARTMENT OF TRANSPORTATION BUREAU OF ENGINEERING

TENN.	YEAR	SHEET NO.
	2010	1
FED. AID PROJ. NO.		
STATE PROJ. NO.		

STATE ROUTE 93 FROM EXIT 50 AT INTERSTATE 81 TO STATE ROUTE 347 WASHINGTON AND SULLIVAN COUNTIES

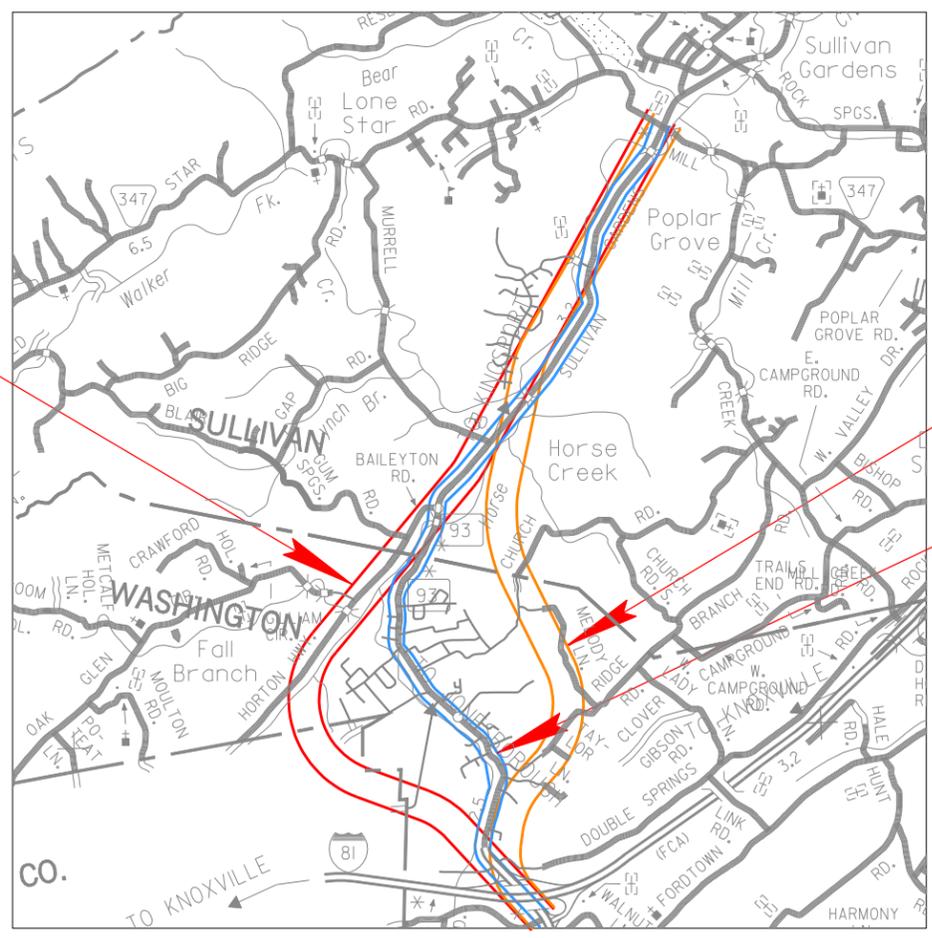
STATE HIGHWAY NO. 93 F.A.H.S. NO.
CORRIDOR LAYOUTS



CORRIDOR 2

CORRIDOR 1

CORRIDOR 3



SCALE: 1" = 6000'

SPECIAL NOTES

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

THIS PROJECT TO BE CONSTRUCTED UNDER THE STANDARD SPECIFICATIONS OF THE TENNESSEE DEPARTMENT OF TRANSPORTATION DATED MARCH 1, 2006 AND ADDITIONAL SPECIFICATIONS AND SPECIAL PROVISIONS CONTAINED IN THE PLANS AND IN THE PROPOSAL CONTRACT.

TDOT C.E. MANAGER 1 OR
 TDOT DESIGN MANAGER 1 _____
 TDOT ROAD SP. SV. 2 _____
 DESIGNED BY _____
 DESIGNER _____ CHECKED BY _____
 P.E. NO. _____
 PIN NO. _____

APPROVED: _____
 CHIEF ENGINEER

DATE: _____

APPROVED: _____
 COMMISSIONER

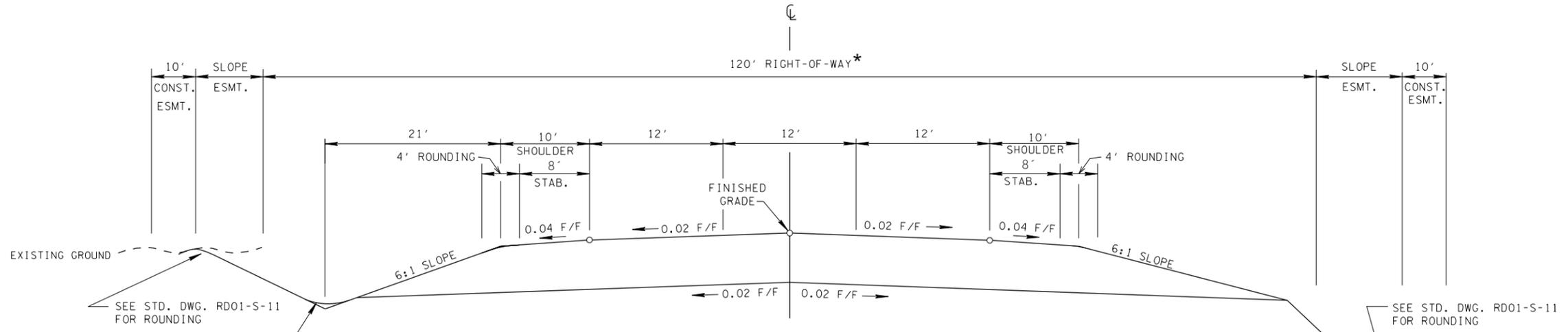
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 FEDERAL HIGHWAY ADMINISTRATION

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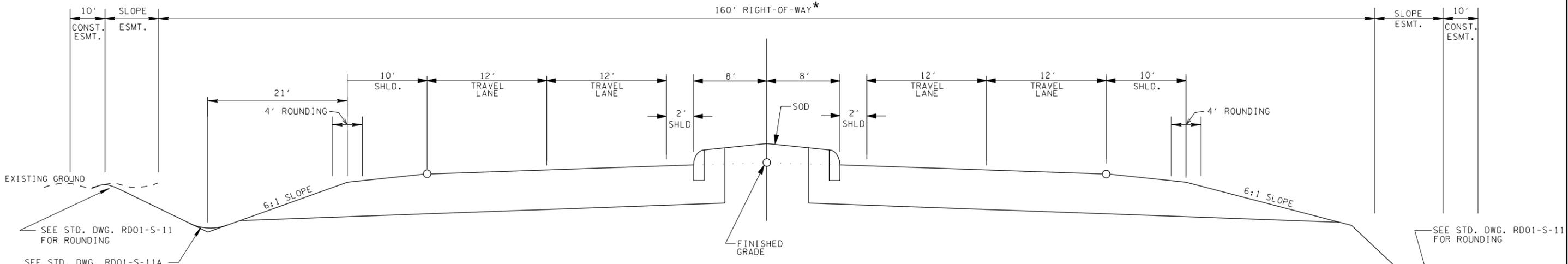
TANGENT SECTION (OPTION A)

3-12' LANES WITH 10' SHOULDERS AND 21' DITCH

(BASED ON STD. DWG. RD01-TS-3)
S.R. 93

NOTE : FOR SUPERELEVATION SECTIONS
SEE TDOT STANDARD DRAWINGS

160' RIGHT-OF-WAY*



TANGENT SECTION (OPTION B)

4-12' LANES WITH 16' RAISED MEDIAN, 10' SHOULDERS AND 21' DITCH

S.R. 93

NOTE : FOR SUPERELEVATION SECTIONS
SEE TDOT STANDARD DRAWINGS

*Minimum Right-of-Way

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STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

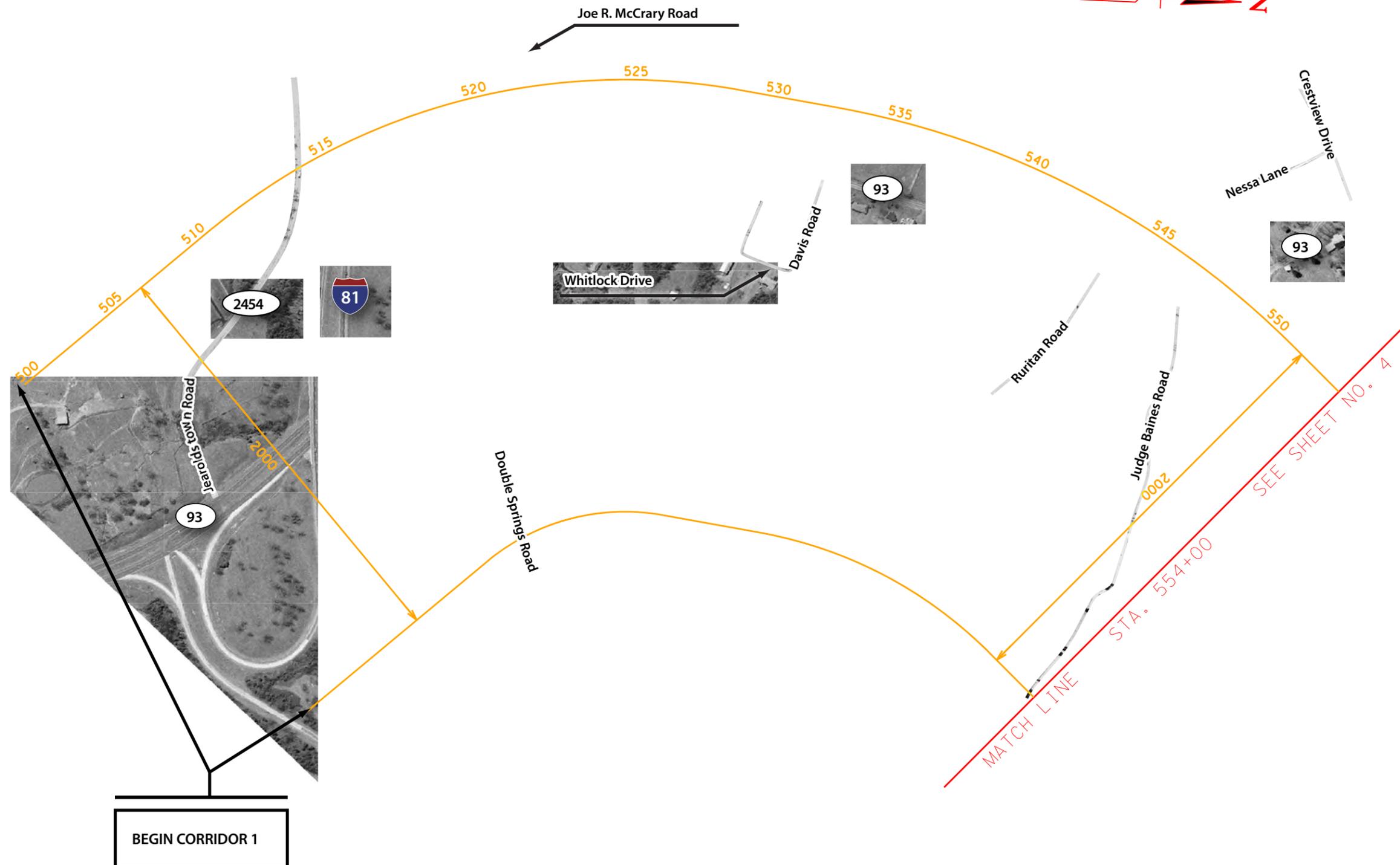
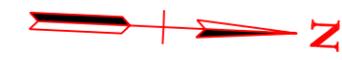
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S.R. 93
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STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

SR 93
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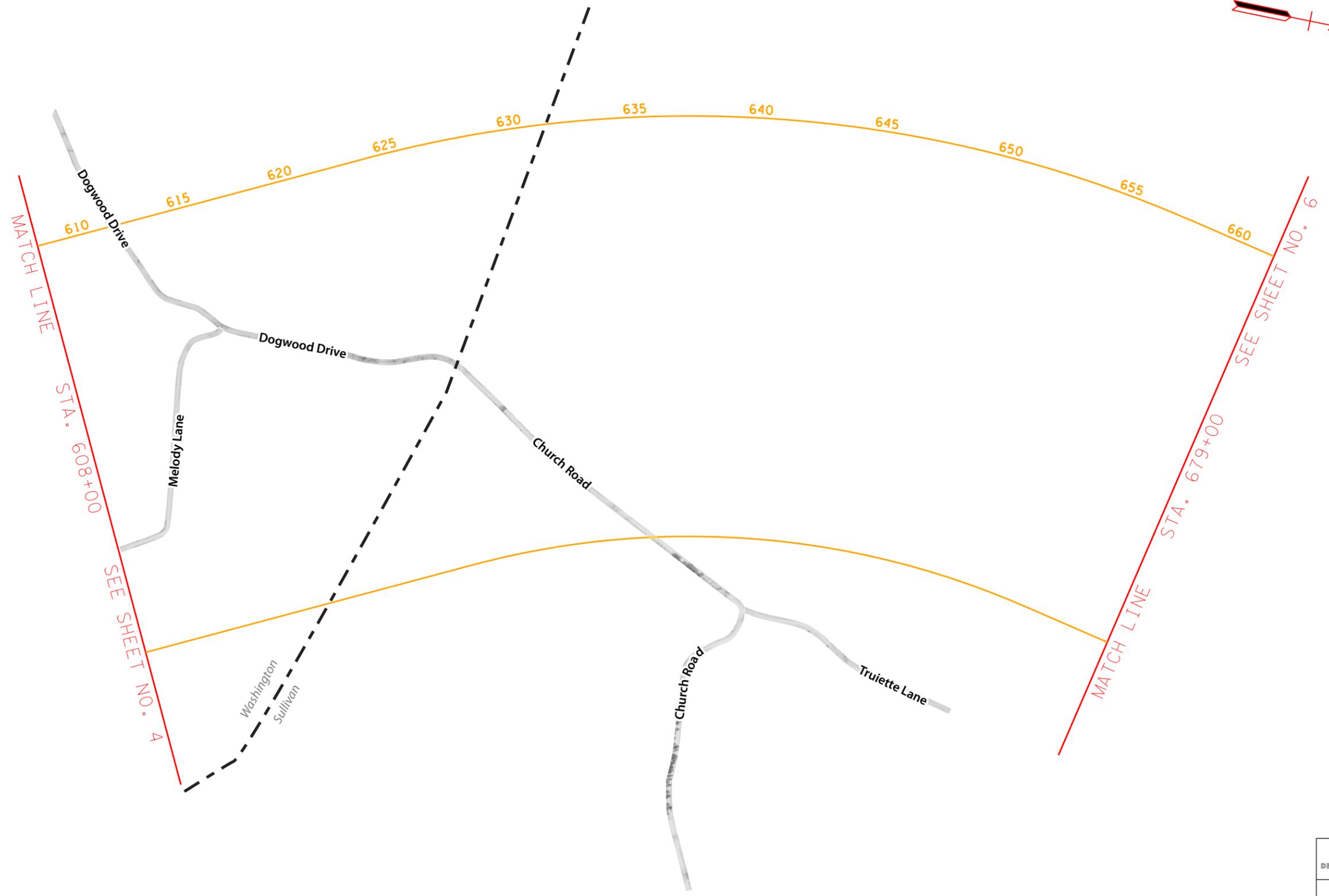
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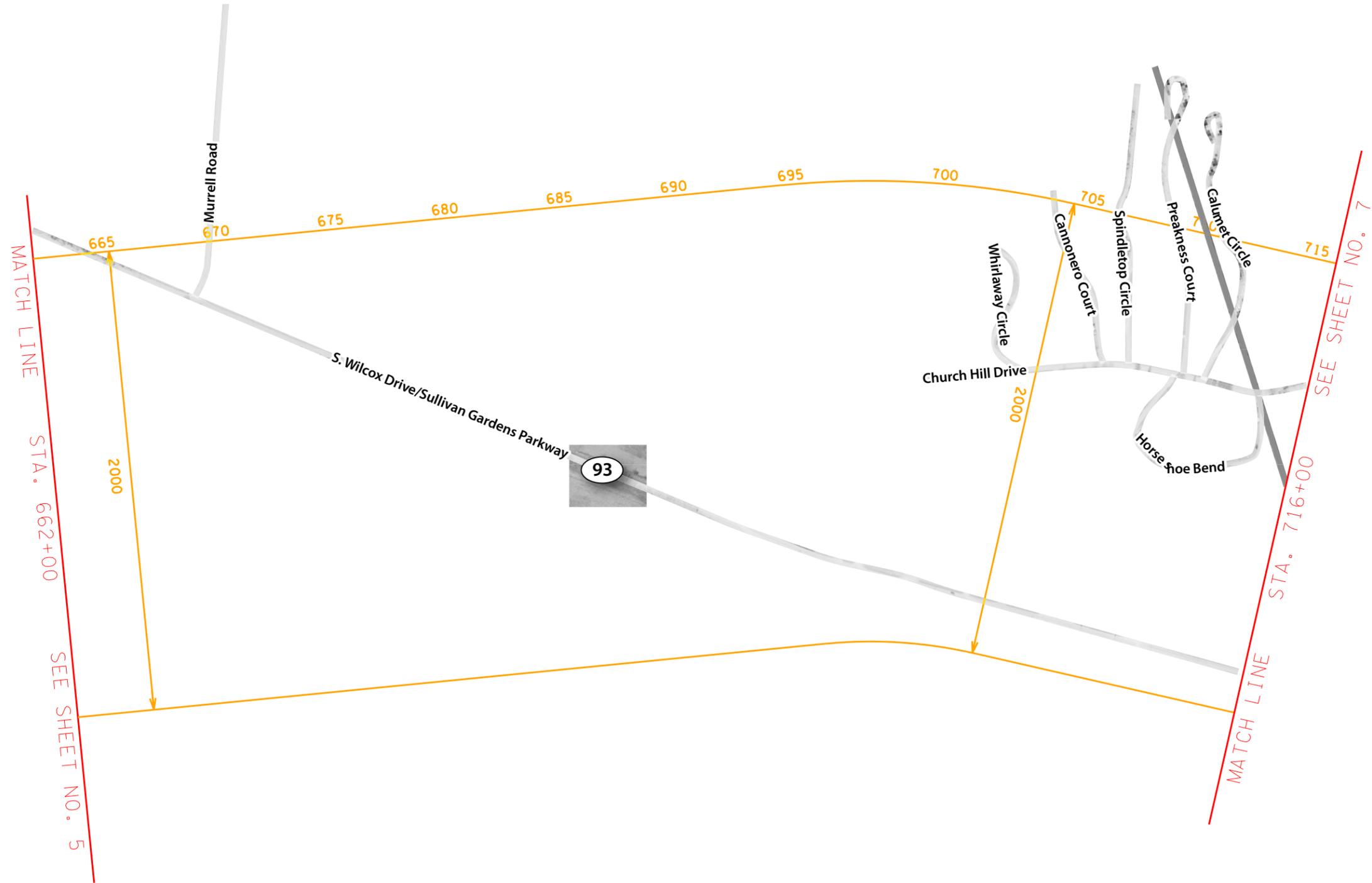
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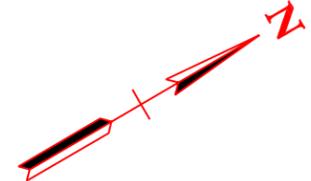
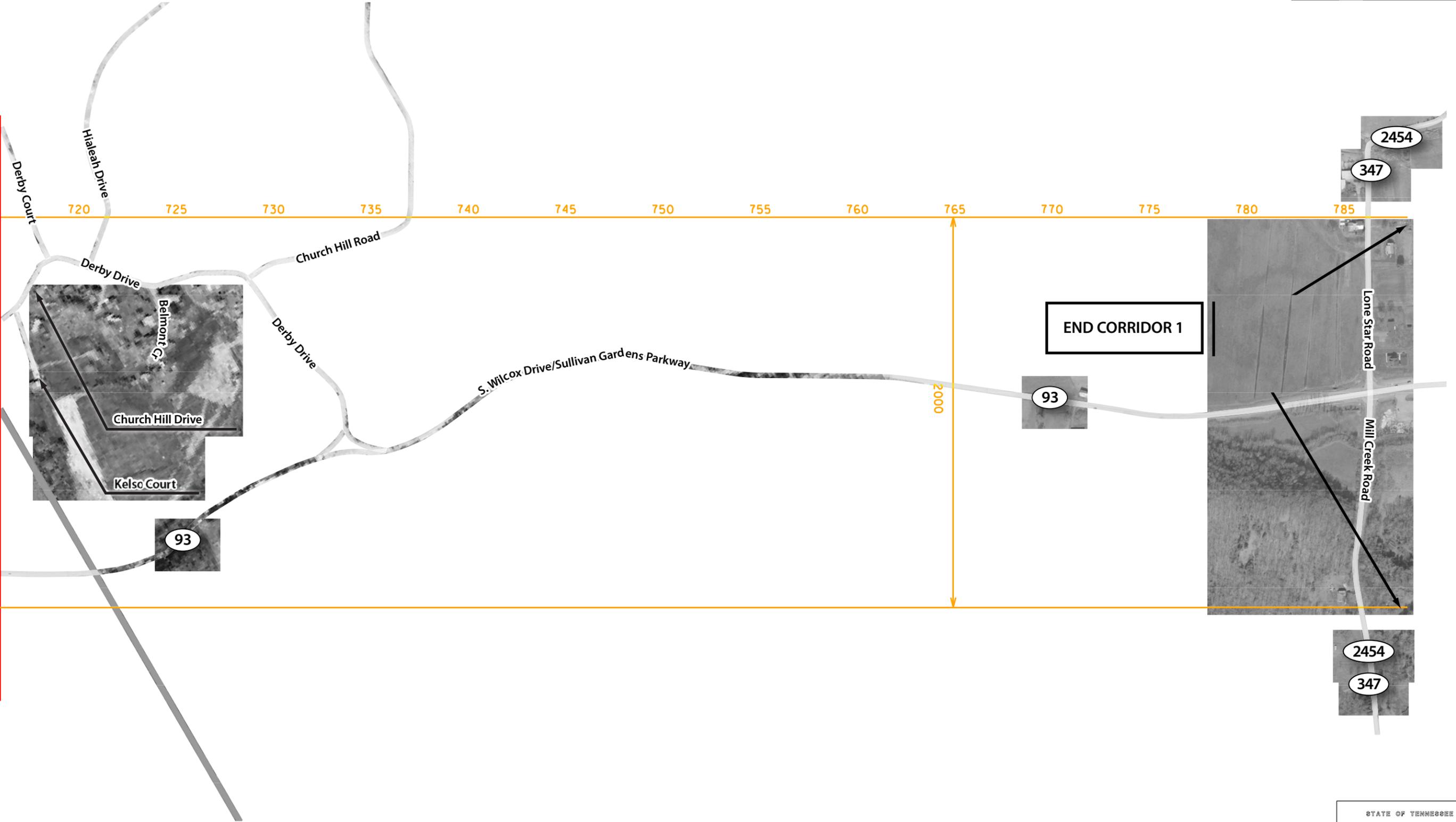
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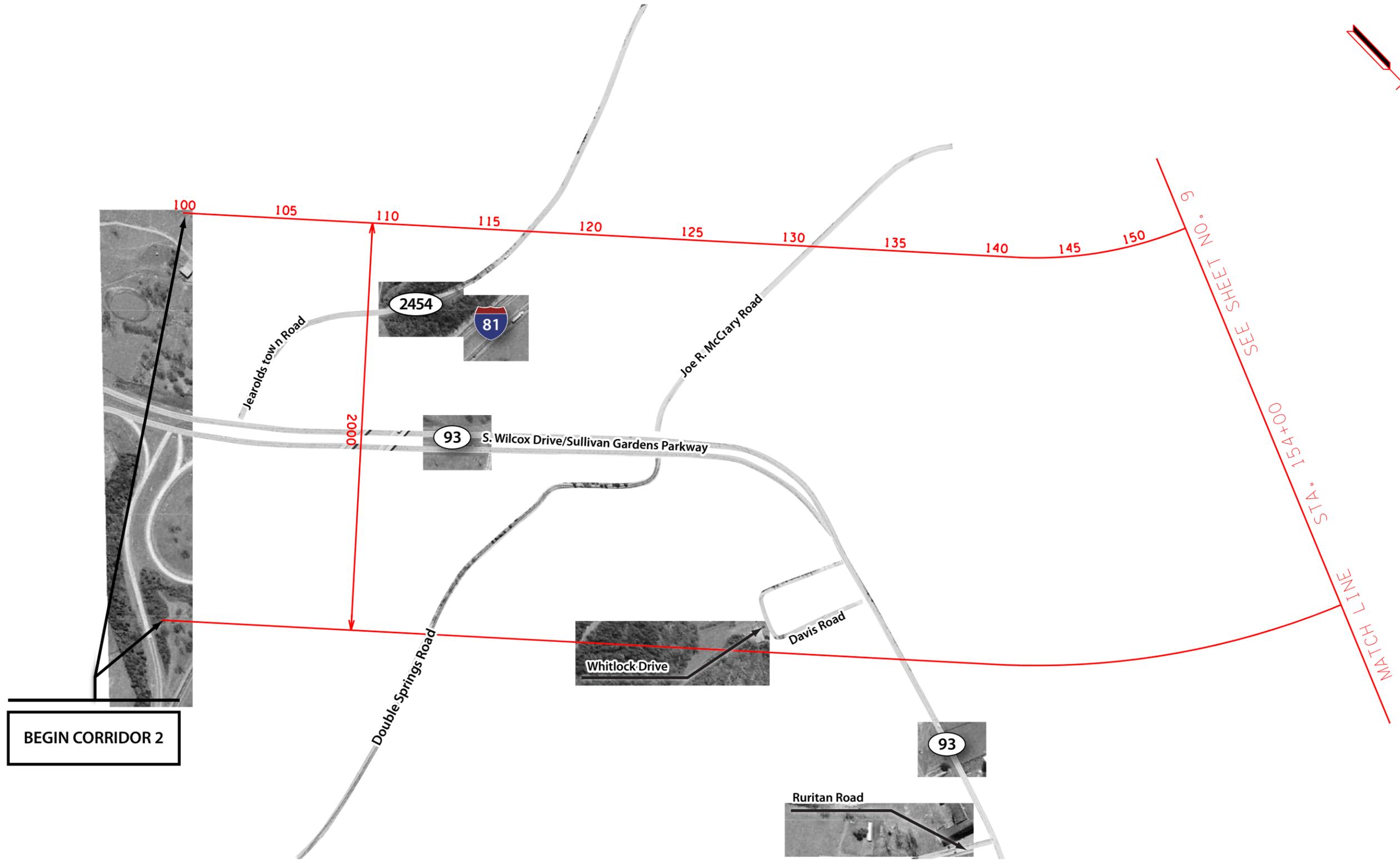
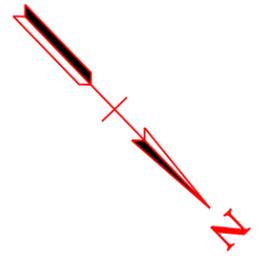


STATE OF TENNESSEE
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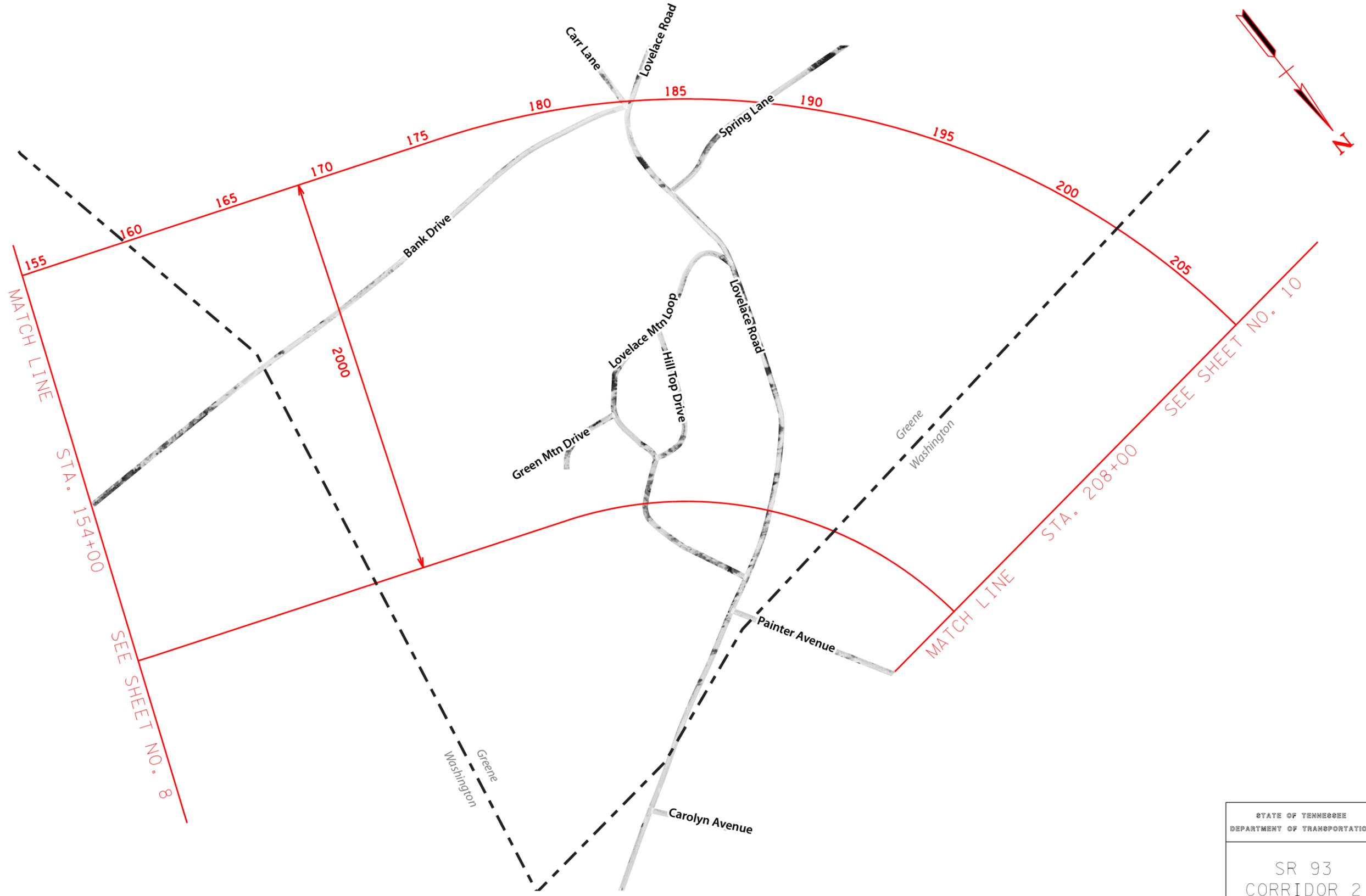
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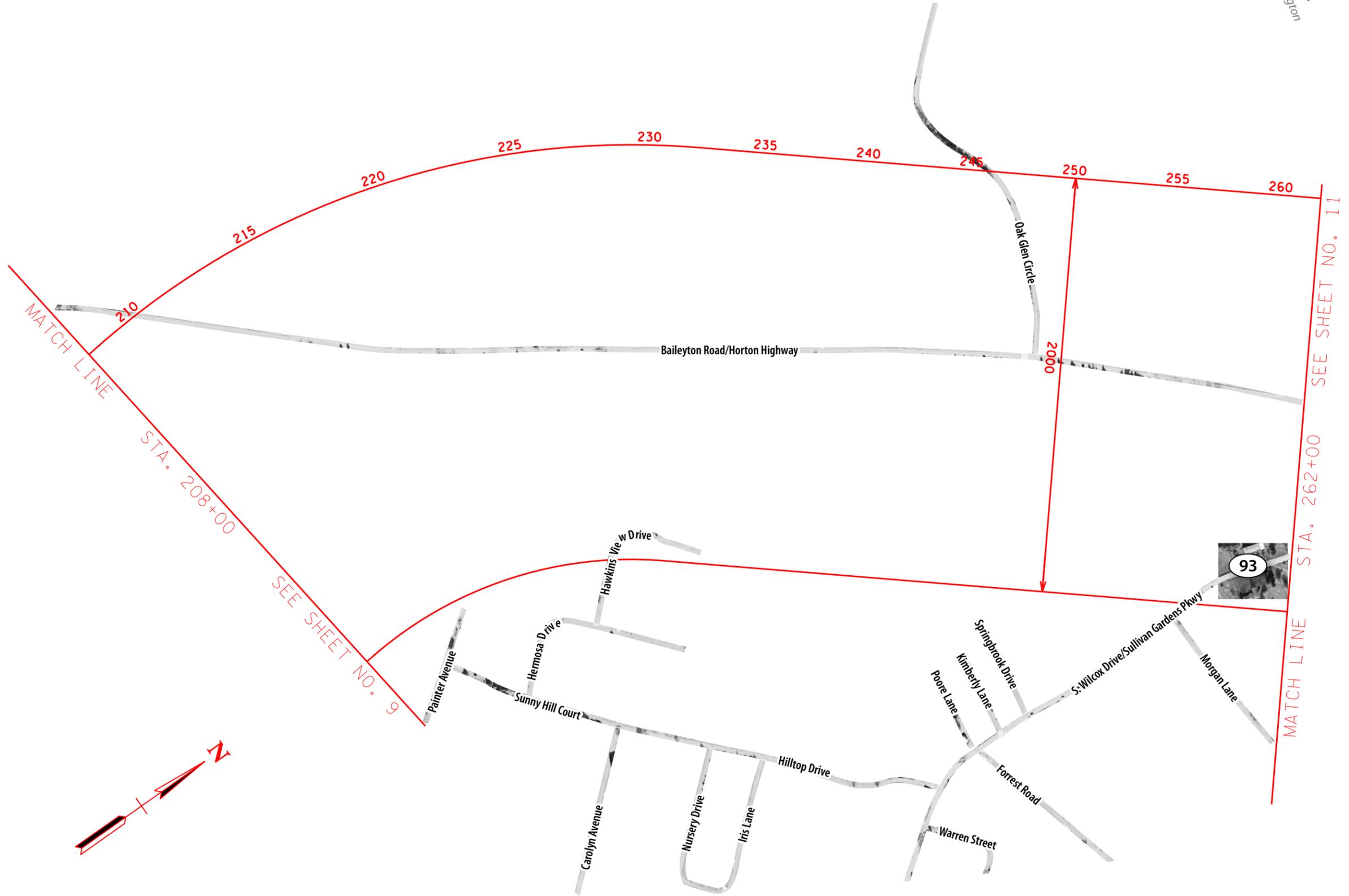
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Sullivan



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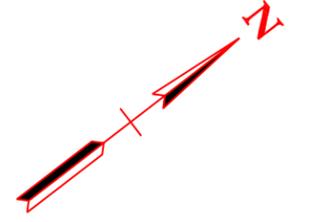
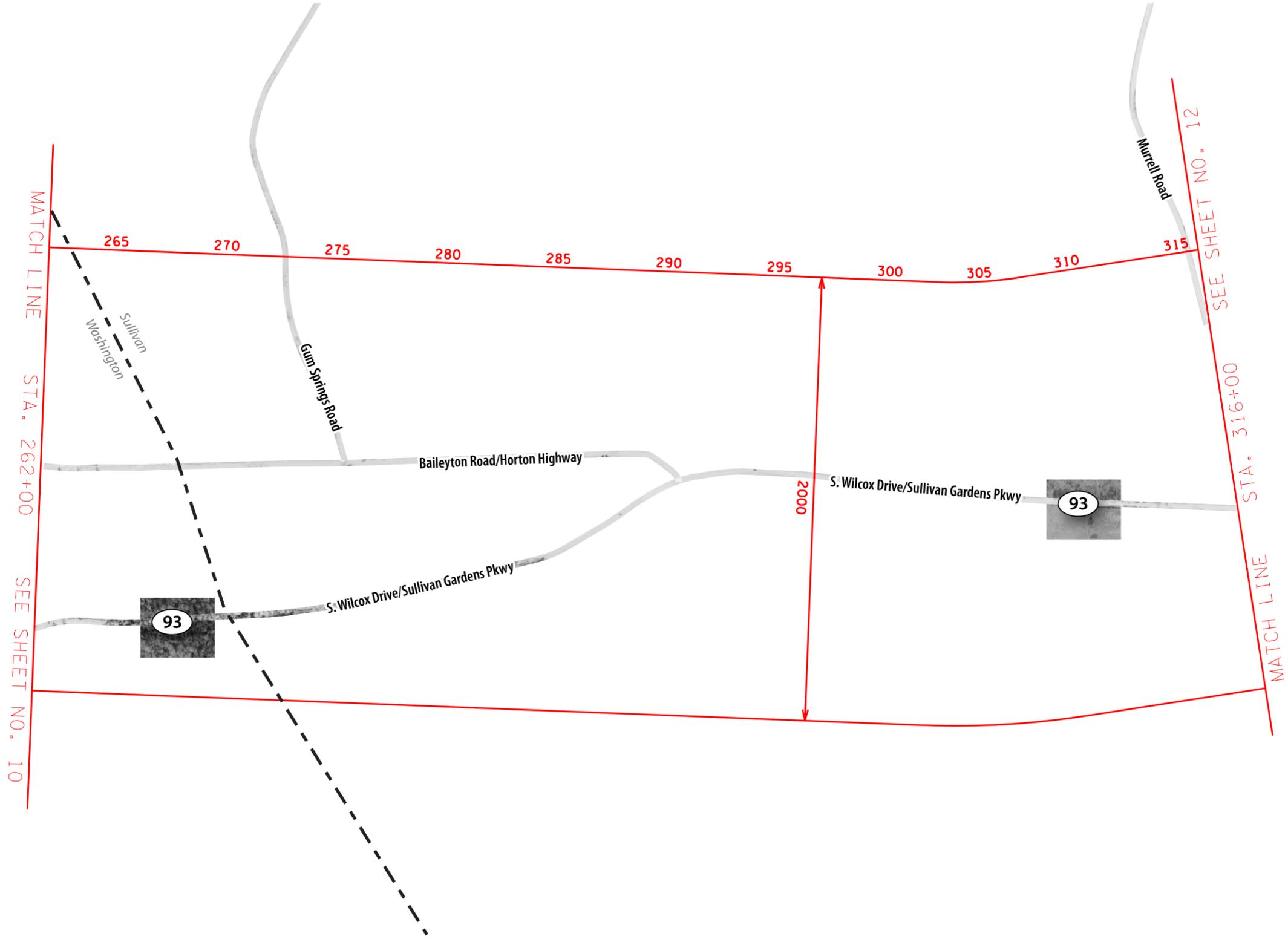
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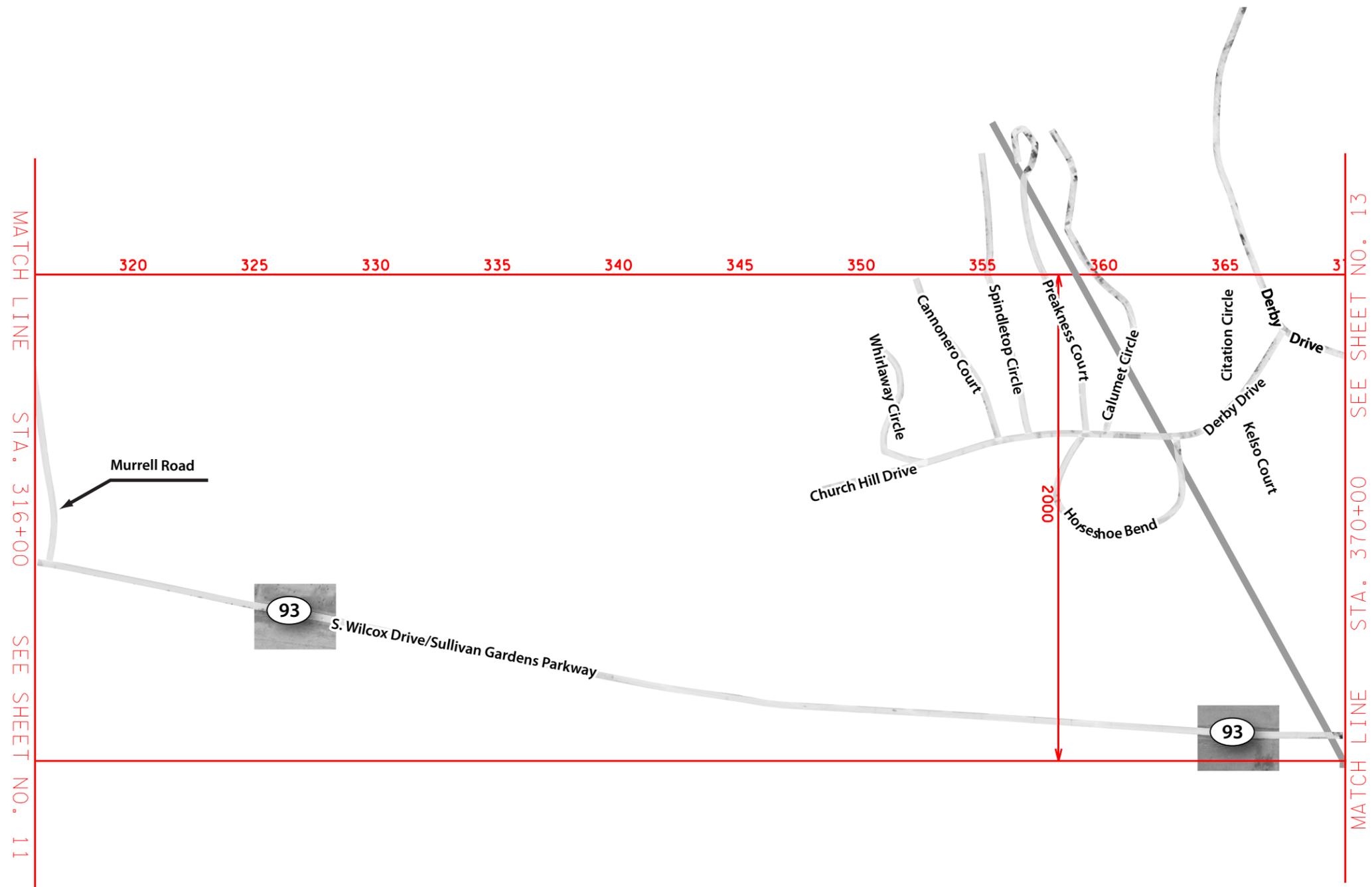


STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

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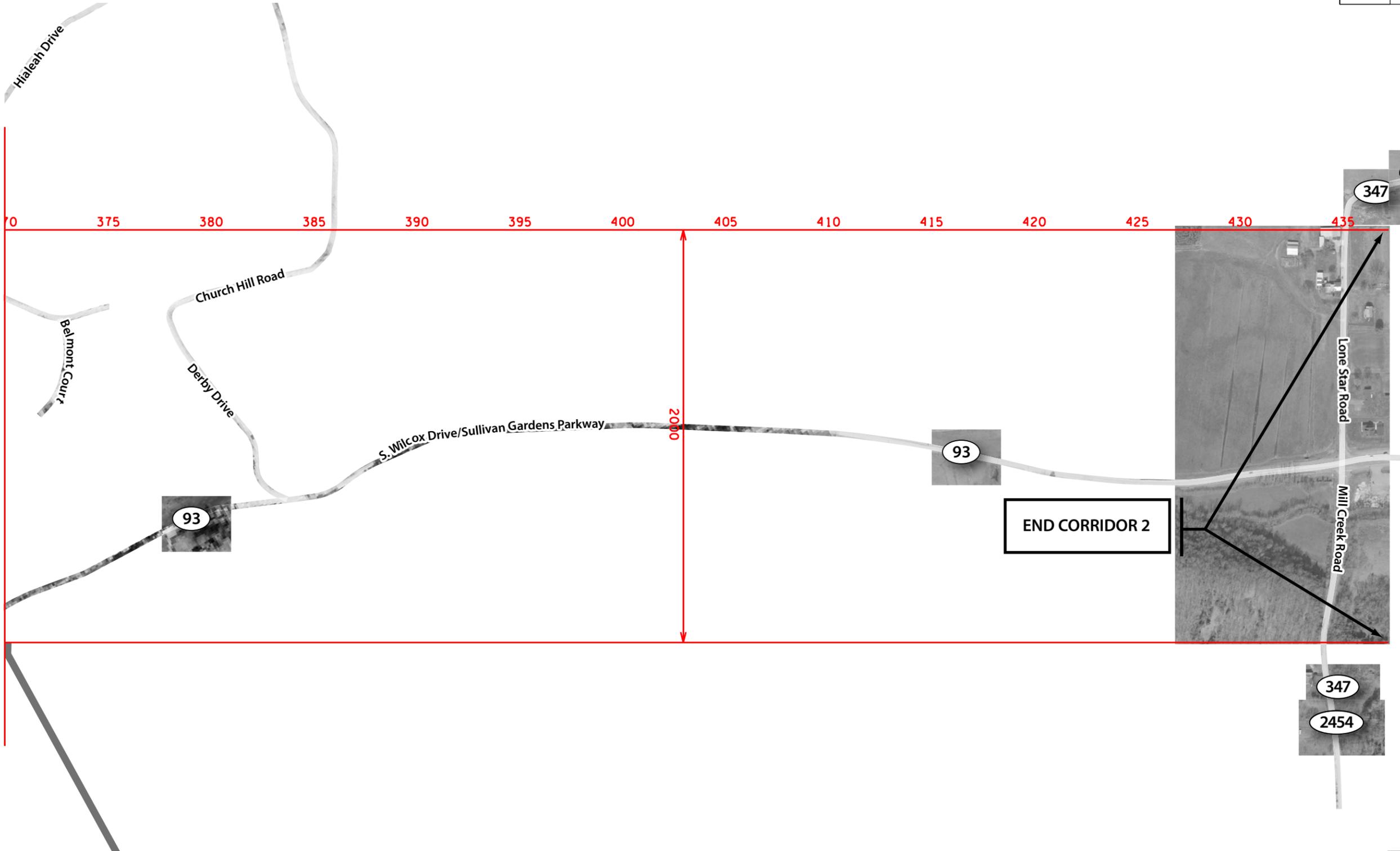
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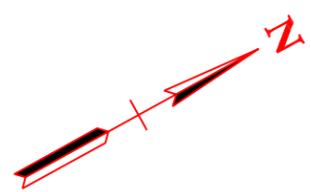
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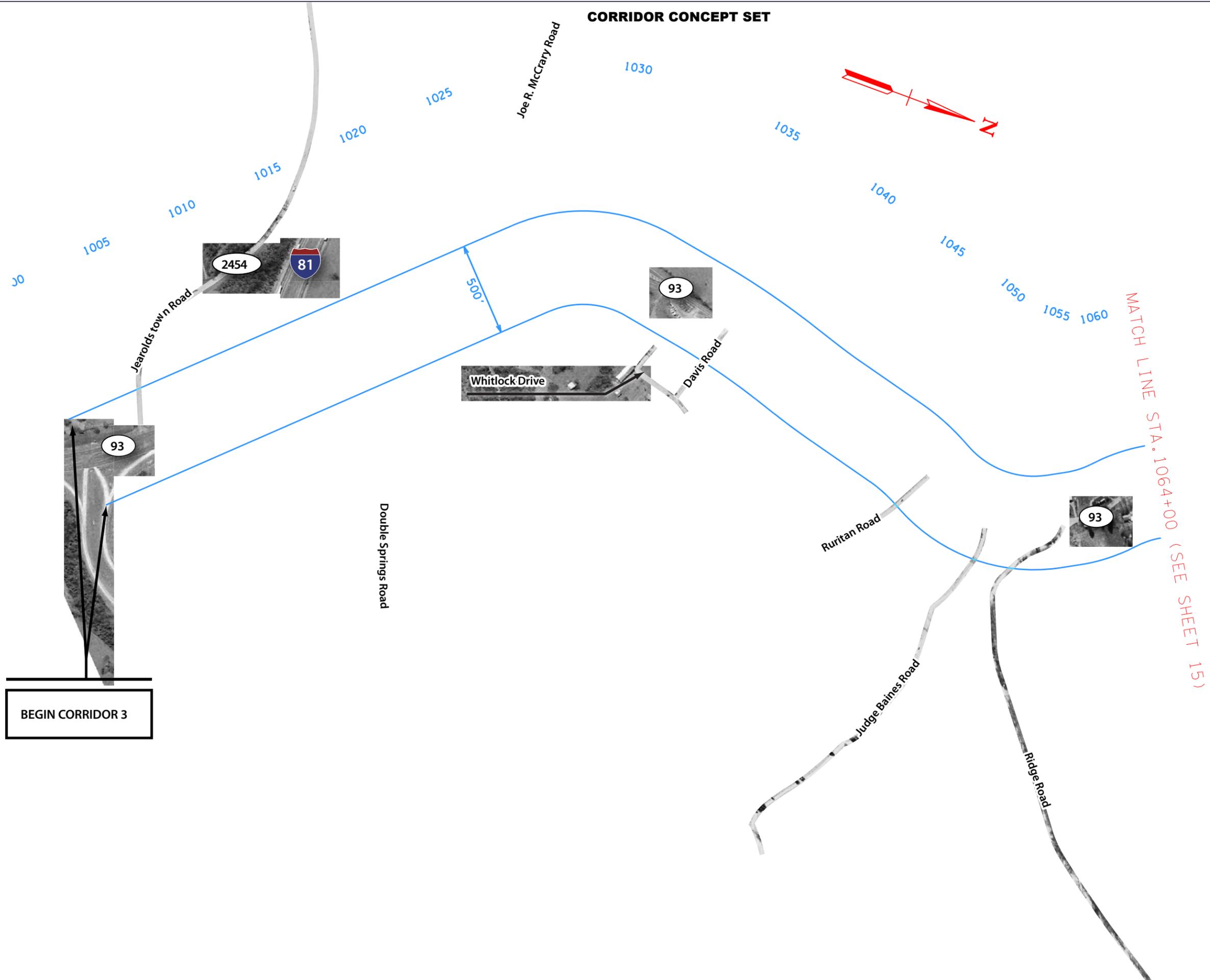
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STATE OF TENNESSEE
 DEPARTMENT OF TRANSPORTATION

SR 93
 CORRIDOR 2

CORRIDOR CONCEPT SET



MATCH LINE STA. 1064+00 (SEE SHEET 15)

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STATE OF TENNESSEE
 DEPARTMENT OF TRANSPORTATION

SR 93
 CORRIDOR 3

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CORRIDOR CONCEPT SET



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MATCH LINE STA. 1132+00 (SEE SHEET 15)

MATCH LINE STA. 1200+00 (SEE SHEET 17)



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STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

SR 93
CORRIDOR 3

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MATCH LINE STA. 1200+00 (SEE SHEET 16)

MATCH LINE STA. 1268+00 (SEE SHEET 18)



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STATE OF TENNESSEE
 DEPARTMENT OF TRANSPORTATION

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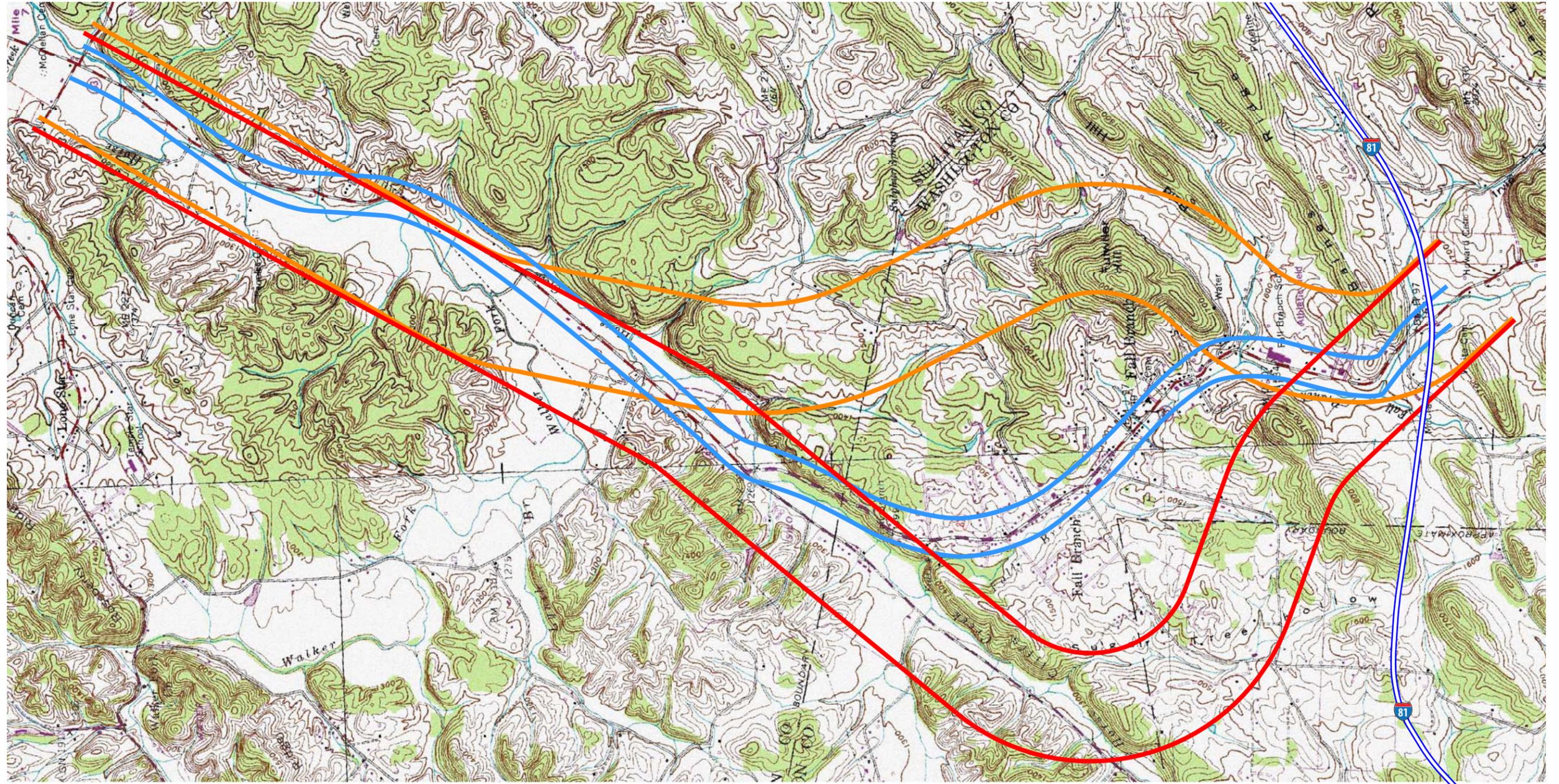


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STATE OF TENNESSEE
 DEPARTMENT OF TRANSPORTATION

SR 93
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Corridor 2		
Corridor 3		

Index Of Sheets

TYPICAL SECTION SHEET 2
 CONCEPT LAYOUTS 3-8

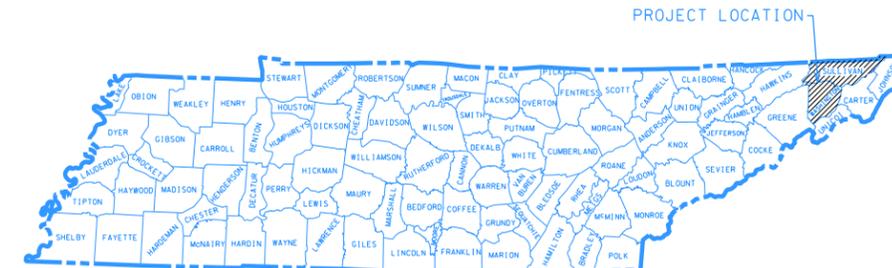
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 DEPARTMENT OF TRANSPORTATION
 BUREAU OF ENGINEERING

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STATE PROJ. NO.		

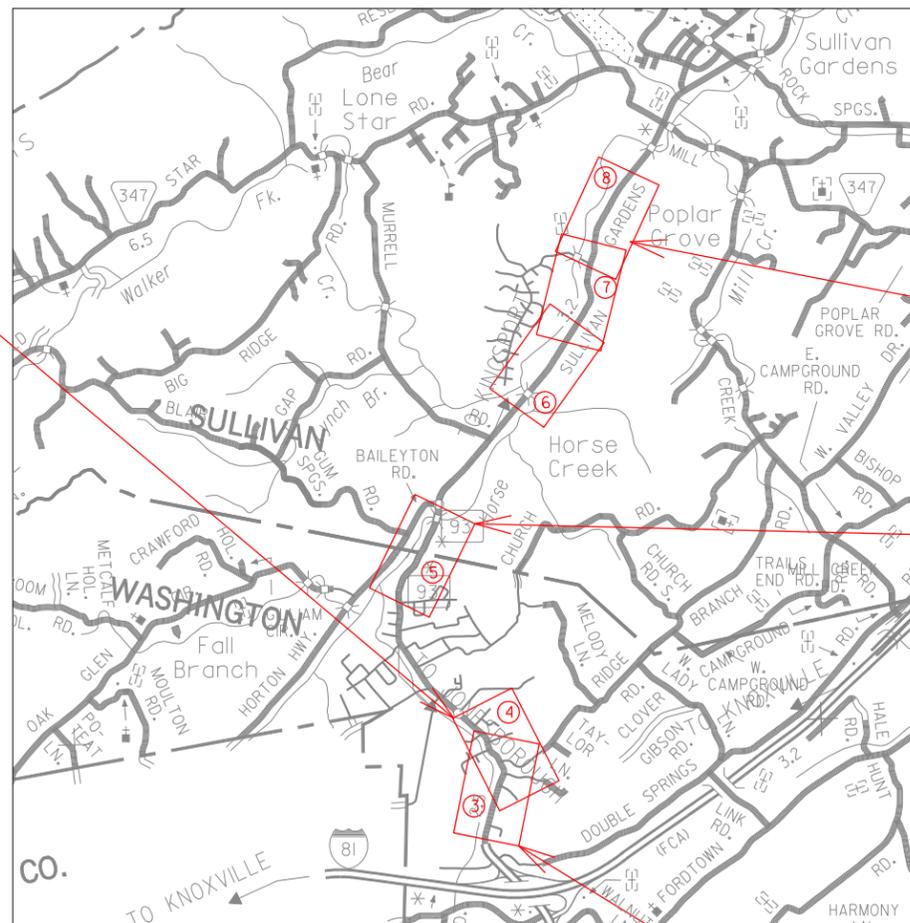
STATE ROUTE 93
 FROM EXIT 50 AT INTERSTATE 81
 TO STATE ROUTE 347

WASHINGTON AND SULLIVAN COUNTIES

STATE HIGHWAY NO. 93 F.A.H.S. NO.
 CONCEPT LAYOUTS



SPOT IMPROVEMENT
 LOCATION 2
 SHEET NO. 4



SPOT IMPROVEMENT
 LOCATION 4 & 5
 SHEET NOS. 6, 7 & 8

SPOT IMPROVEMENT
 LOCATION 3
 SHEET NO. 5

SPOT IMPROVEMENT
 LOCATION 1
 SHEET NO. 3

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TDOT C.E. MANAGER 1 OR
 TDOT DESIGN MANAGER 1
 TDOT ROAD SP. SV. 2
 DESIGNED BY _____
 DESIGNER _____ CHECKED BY _____
 P.E. NO. _____
 PIN NO. _____

APPROVED: _____
 CHIEF ENGINEER

DATE: _____

APPROVED: _____
 COMMISSIONER

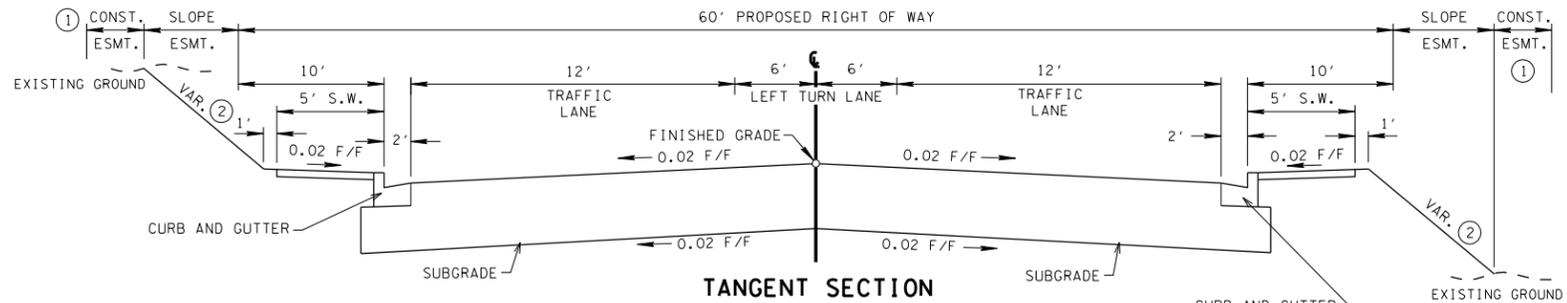
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 FEDERAL HIGHWAY ADMINISTRATION

APPROVED: _____
 DIVISION ADMINISTRATOR DATE

SPOT IMPROVEMENT CONCEPTS

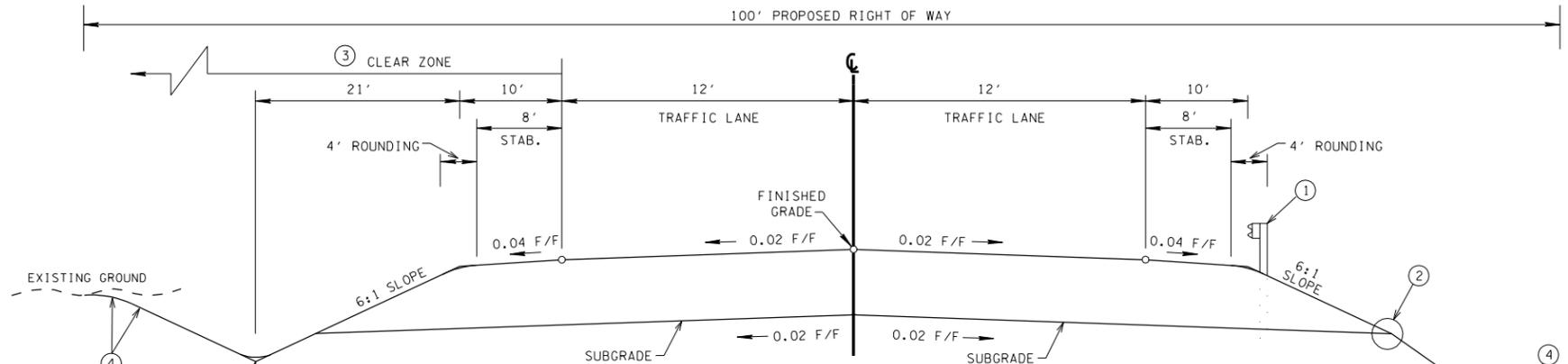
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TENNESSEE D.O.T.
DESIGN DIVISION
FILE NO.



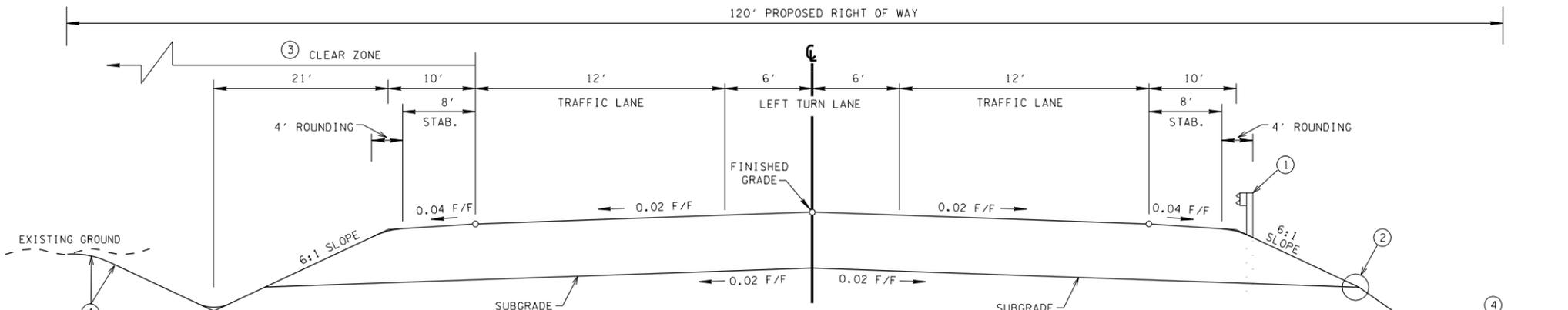
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SPOT IMPROVEMENT LOCATION 1
SPOT IMPROVEMENT LOCATION 2

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- ② ON URBAN PROJECTS THE BACKSLOPE AND FORESLOPE DESIGN WILL VARY FROM PROJECT TO PROJECT, AS A GENERAL RULE USE THE FOLLOWING.
3:1 SLOPES OR FLATTER ARE DESIRABLE AND ARE THE MAXIMUM IN REGION IV AND 2:1 SLOPES ARE APPLICABLE IN AREAS WHERE RIGHT-OF-WAY RESTRICTIONS OR COST WARRANTS A STEEPER THAN 3:1 SLOPE. THE MAXIMUM SLOPE IN REGION IV IS 3:1.



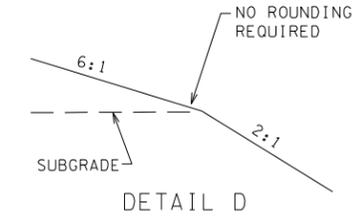
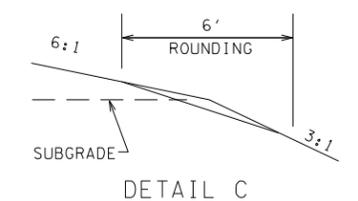
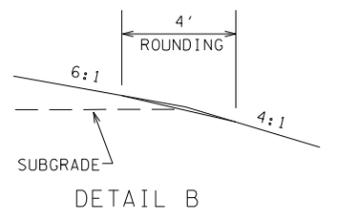
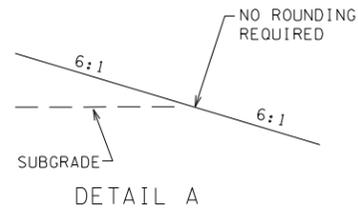
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SPOT IMPROVEMENT LOCATION 5

- ① SEE GUARDRAIL STANDARD DRAWINGS FOR TYPICAL GUARDRAIL PLACEMENT.
- ② SEE DETAIL A,B OR C ON THIS SHEET FOR ROUNDRING.
- ③ CLEAR ZONE WIDTHS SHALL BE DETERMINED FROM STANDARD DRAWING RD01-S-11.
- ④ SEE STANDARD DRAWING RD01-S-11 FOR FILL AND CUT SLOPE TABLES, ROUNDRING ON TOP OF CUT SLOPES AND TOE OF FILL SLOPES, AND SPECIAL ROCK CUT TREATMENT.
- ⑤ SEE STANDARD DRAWING RD01-S-11A FOR FOR ROUNDRING OF ROADSIDE DITCH SLOPES.



TANGENT SECTION
(BASED ON STD. DWG. RD01-TS-3)
SPOT IMPROVEMENT LOCATION 4

- ① SEE GUARDRAIL STANDARD DRAWINGS FOR TYPICAL GUARDRAIL PLACEMENT.
- ② SEE DETAIL A,B OR C ON THIS SHEET FOR ROUNDRING.
- ③ CLEAR ZONE WIDTHS SHALL BE DETERMINED FROM STANDARD DRAWING RD01-S-11.
- ④ SEE STANDARD DRAWING RD01-S-11 FOR FILL AND CUT SLOPE TABLES, ROUNDRING ON TOP OF CUT SLOPES AND TOE OF FILL SLOPES, AND SPECIAL ROCK CUT TREATMENT.
- ⑤ SEE STANDARD DRAWING RD01-S-11A FOR FOR ROUNDRING OF ROADSIDE DITCH SLOPES.

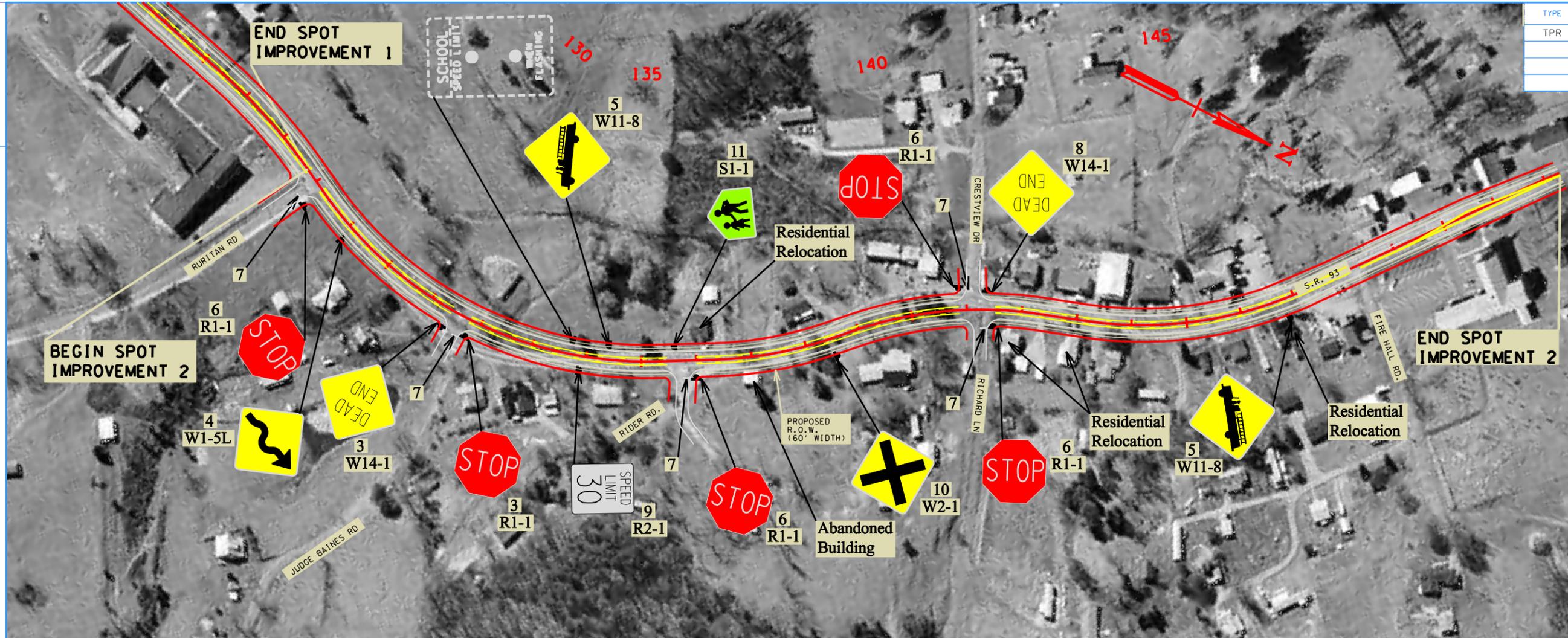


STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
TYPICAL SECTIONS

SPOT IMPROVEMENT CONCEPTS

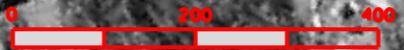
TYPE	YEAR	PROJECT NO.	SHEET NO.
TPR	2010		4

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



GUIDANCE - SPOT IMPROVEMENT NO. 2

1. Realign S.R. 93 to improve sight distance, consider a three lane section with 2-(12)-foot travel lanes and 1-12-foot continuous center turn lane, curb and gutter, and 5-foot sidewalks with handicap ramps at intersections.
2. Thermoplastic markings to be used within the project limits.
3. Remove existing STOP sign (R1-1)/DEAD END sign (W14-1) that is mounted back-to-back for the Judge Baines Road approach to S.R. 93 and replace with a new diamond-grade STOP sign (30-inch, R1-1) on the right side of the Judge Baines Road approach to S.R. 93 and a new DEAD END sign (30-inch, W14-1) on the left side of the Judge Baines Road approach to S.R. 93. Tie existing Judge Baines Road to relocated S.R. 93.
4. Remove existing Winding Road sign (W1-5) on S.R. 93 and replace with a new Winding Road sign (30-inch, W1-5L) on the right side of the northbound lane of S.R. 93 just north of Ruritan Road.
5. Remove existing Emergency Vehicle signs (W11-8) on S.R. 93 and replace with new Emergency Vehicle signs (30-inch, W11-10) on the right side of S.R. 93.
6. Remove existing STOP signs (R1-1) at the Ruritan Road, Rider Road, Richard Lane, and Crestview Drive approaches to S.R. 93 and replace with new diamond-grade STOP signs (30-inch, R1-1) on the right side of the approaches to S.R. 93. Tie existing side roads to relocated S.R. 93.
7. Remove existing stop bars for Ruritan Road, Judge Baines Road, Rider Road, Richard Lane, and Crestview Drive approaches to S.R. 93 and replace with thermoplastic stop bars.
8. Remove existing DEAD END sign (W14-1) at the Crestview Drive approach to S.R. 93 and replace with a new DEAD END sign (30-inch, W14-1) on the left side of the Crestview Drive approach to S.R. 93.
9. Remove existing Speed Limit sign (R2-1) and replace with a new Speed Limit sign (24-inch X 30-inch, R2-1) on the right side of the northbound lane of S.R. 93 just south of Rider Road.
10. Remove existing Cross Road sign (W2-1) and replace with a new Cross Road sign (36-inch, W2-1) on the right side of the northbound lane of S.R. 93 just north of Rider Road.
11. Remove existing School sign (S1-1) and replace with a new School sign (36-inch, S1-1) on the right side of the southbound lane of S.R. 93 just south of Rider Road.



STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

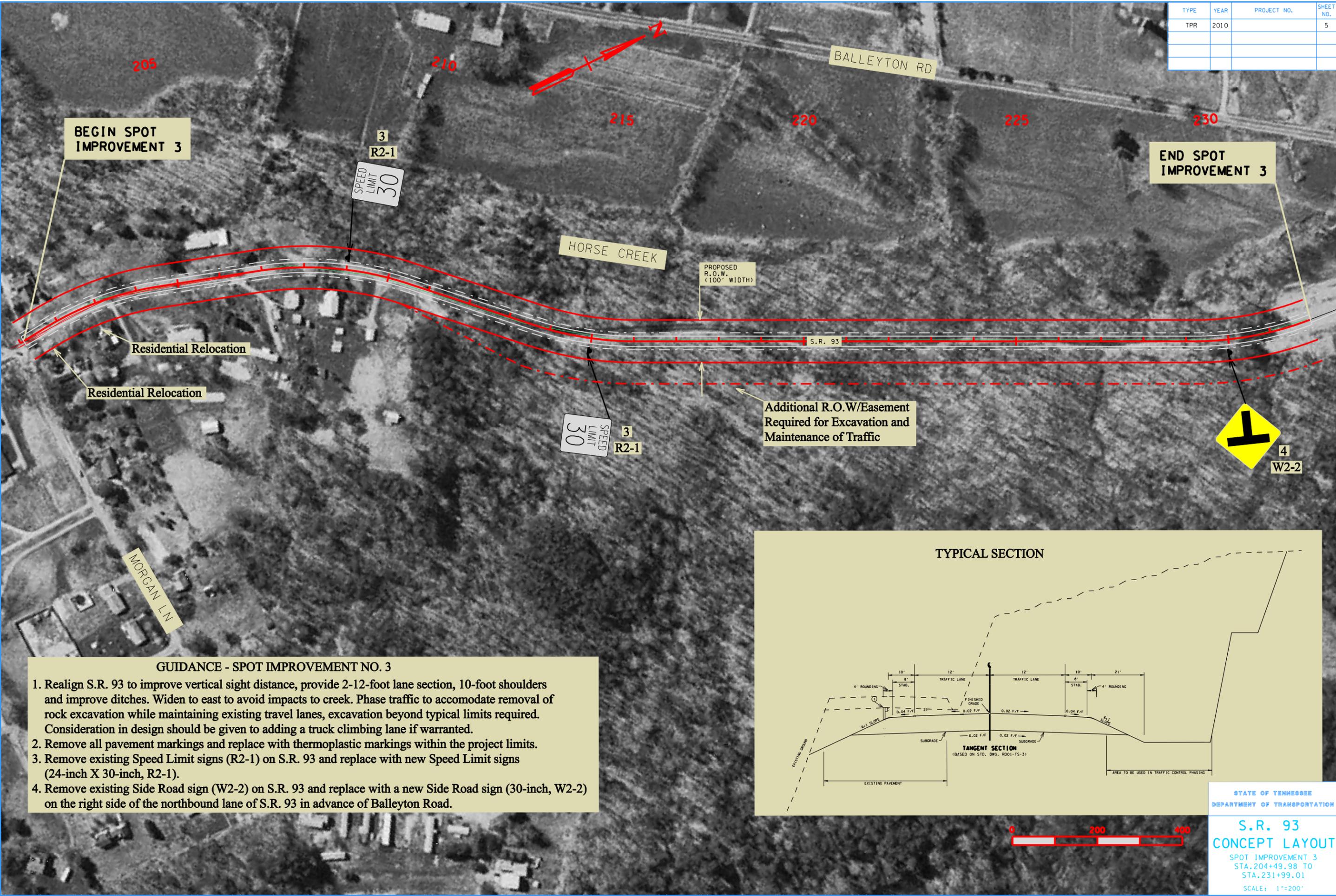
**S.R. 93
CONCEPT LAYOUT**
SPOT IMPROVEMENT 2
STA. 127+73.06 TO
STA. 152+29.80
SCALE: 1"=200'

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SPOT IMPROVEMENT CONCEPTS

TYPE	YEAR	PROJECT NO.	SHEET NO.
TPR	2010		5

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



BEGIN SPOT IMPROVEMENT 3

END SPOT IMPROVEMENT 3

Residential Relocation

Residential Relocation

PROPOSED R.O.W. (100' WIDTH)

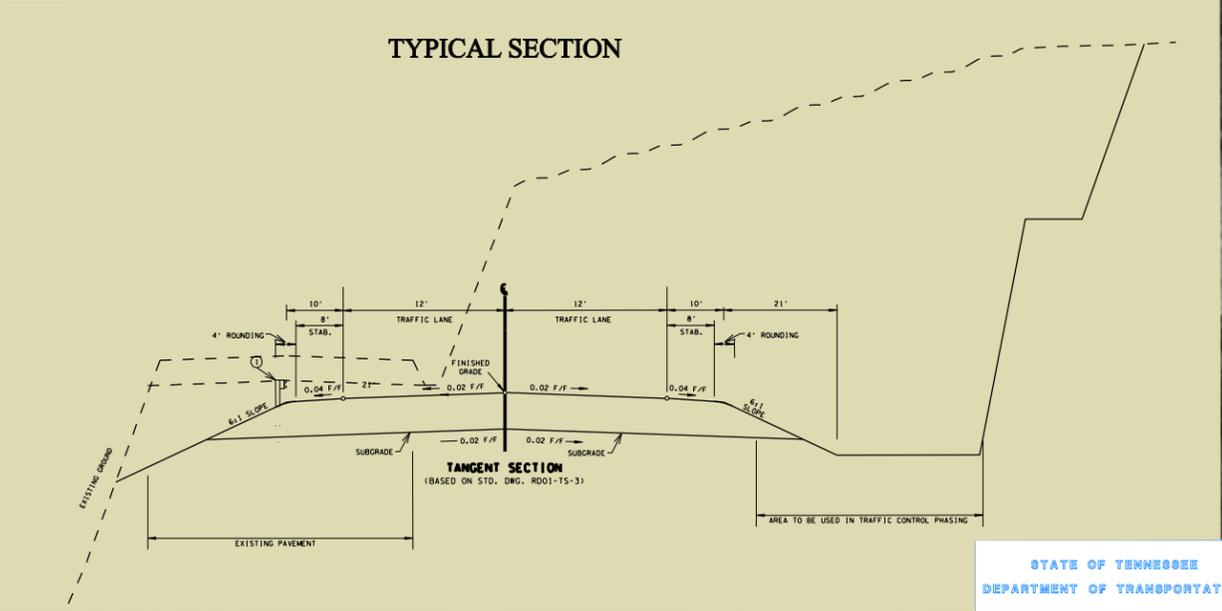
Additional R.O.W/Easement Required for Excavation and Maintenance of Traffic

4 W2-2

GUIDANCE - SPOT IMPROVEMENT NO. 3

1. Realign S.R. 93 to improve vertical sight distance, provide 2-12-foot lane section, 10-foot shoulders and improve ditches. Widen to east to avoid impacts to creek. Phase traffic to accommodate removal of rock excavation while maintaining existing travel lanes, excavation beyond typical limits required. Consideration in design should be given to adding a truck climbing lane if warranted.
2. Remove all pavement markings and replace with thermoplastic markings within the project limits.
3. Remove existing Speed Limit signs (R2-1) on S.R. 93 and replace with new Speed Limit signs (24-inch X 30-inch, R2-1).
4. Remove existing Side Road sign (W2-2) on S.R. 93 and replace with a new Side Road sign (30-inch, W2-2) on the right side of the northbound lane of S.R. 93 in advance of Balleyton Road.

TYPICAL SECTION



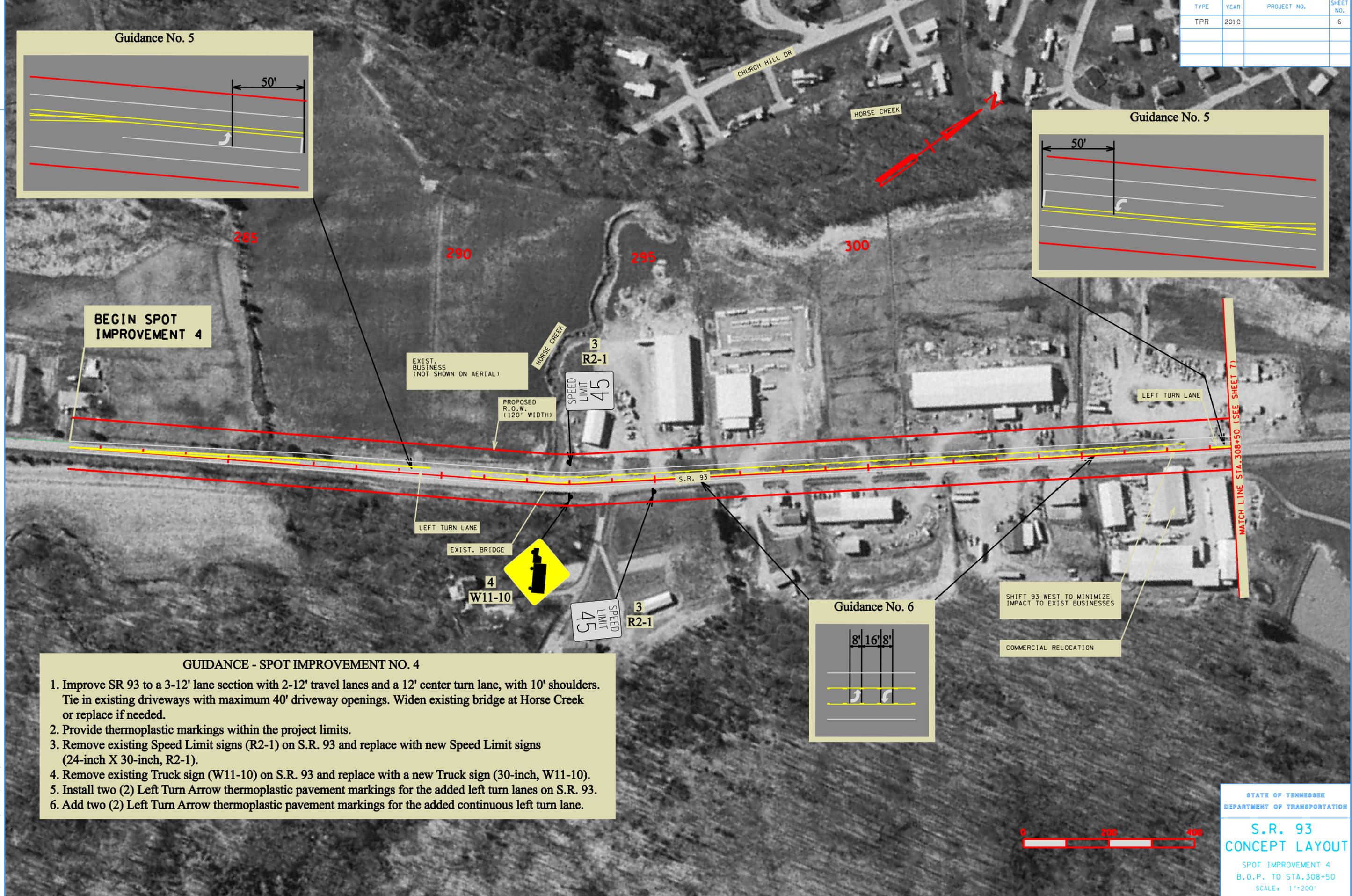
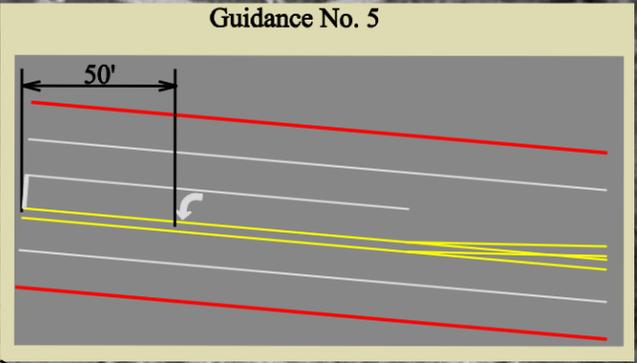
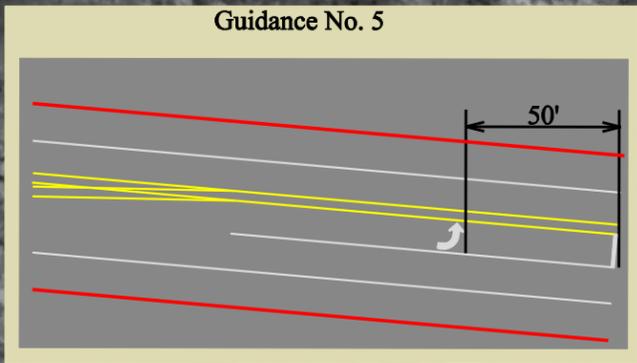
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

S.R. 93
CONCEPT LAYOUT
SPOT IMPROVEMENT 3
STA. 204+49.98 TO
STA. 231+99.01
SCALE: 1"=200'

SPOT IMPROVEMENT CONCEPTS

TYPE	YEAR	PROJECT NO.	SHEET NO.
TPR	2010		6

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



BEGIN SPOT IMPROVEMENT 4

EXIST. BUSINESS (NOT SHOWN ON AERIAL)

PROPOSED R.O.W. (120' WIDTH)

SPEED LIMIT 45 R2-1

LEFT TURN LANE

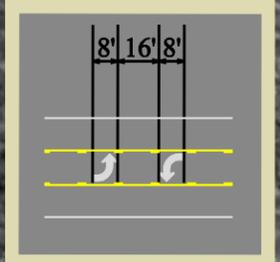
EXIST. BRIDGE

W11-10



SPEED LIMIT 45 R2-1

Guidance No. 6



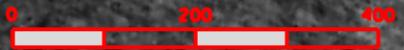
SHIFT 93 WEST TO MINIMIZE IMPACT TO EXIST BUSINESSES

COMMERCIAL RELOCATION

MATCH LINE STA. 308+50 (SEE SHEET 7)

GUIDANCE - SPOT IMPROVEMENT NO. 4

1. Improve SR 93 to a 3-12' lane section with 2-12' travel lanes and a 12' center turn lane, with 10' shoulders. Tie in existing driveways with maximum 40' driveway openings. Widen existing bridge at Horse Creek or replace if needed.
2. Provide thermoplastic markings within the project limits.
3. Remove existing Speed Limit signs (R2-1) on S.R. 93 and replace with new Speed Limit signs (24-inch X 30-inch, R2-1).
4. Remove existing Truck sign (W11-10) on S.R. 93 and replace with a new Truck sign (30-inch, W11-10).
5. Install two (2) Left Turn Arrow thermoplastic pavement markings for the added left turn lanes on S.R. 93.
6. Add two (2) Left Turn Arrow thermoplastic pavement markings for the added continuous left turn lane.



STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

**S.R. 93
CONCEPT LAYOUT**

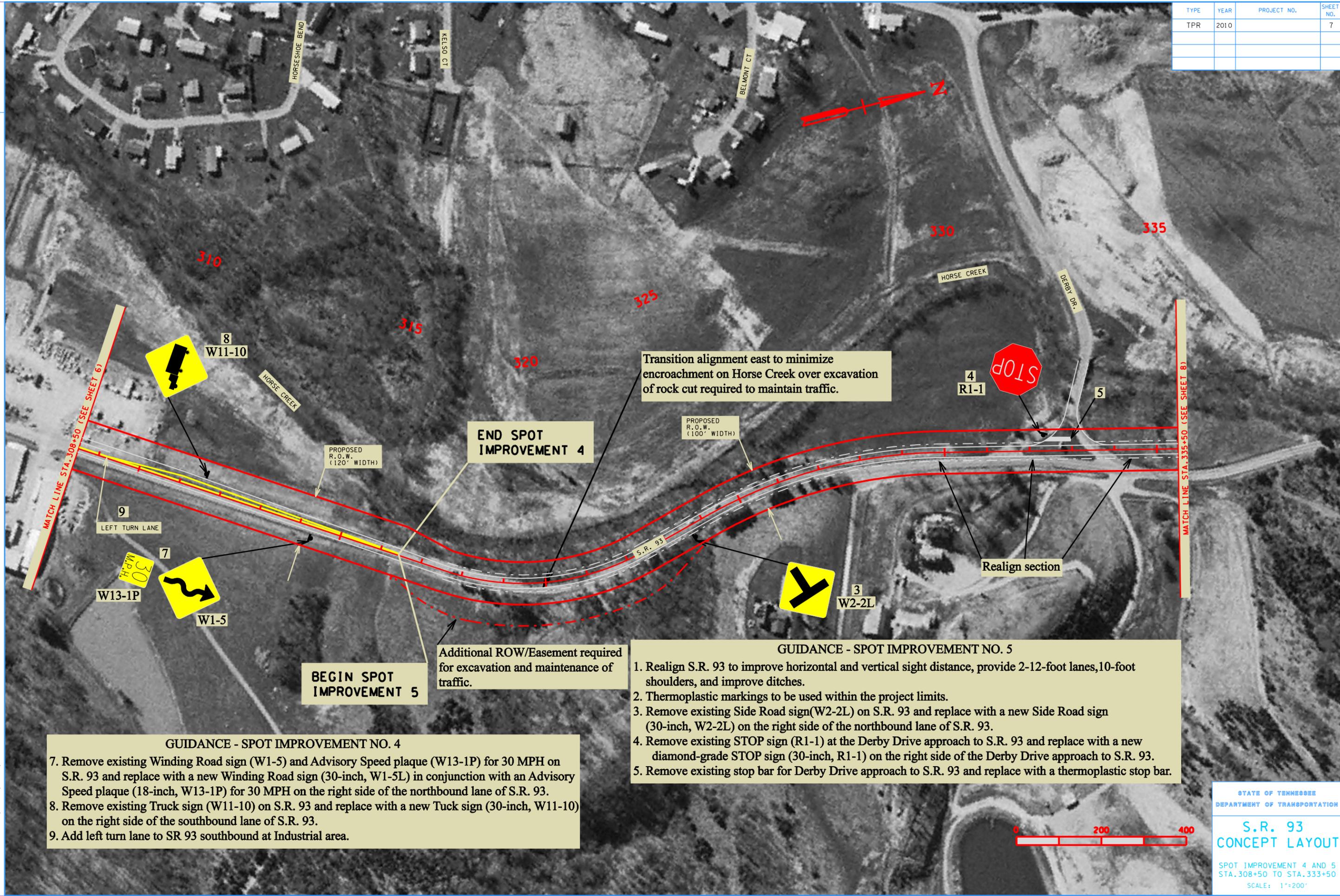
SPOT IMPROVEMENT 4
B.O.P. TO STA. 308+50
SCALE: 1"=200'

5/27/2010 2:19:20 PM
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SPOT IMPROVEMENT CONCEPTS

TYPE	YEAR	PROJECT NO.	SHEET NO.
TPR	2010		7

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



END SPOT IMPROVEMENT 4

Transition alignment east to minimize encroachment on Horse Creek over excavation of rock cut required to maintain traffic.

BEGIN SPOT IMPROVEMENT 5

Additional ROW/Easement required for excavation and maintenance of traffic.

Realign section

GUIDANCE - SPOT IMPROVEMENT NO. 4

- 7. Remove existing Winding Road sign (W1-5) and Advisory Speed plaque (W13-1P) for 30 MPH on S.R. 93 and replace with a new Winding Road sign (30-inch, W1-5L) in conjunction with an Advisory Speed plaque (18-inch, W13-1P) for 30 MPH on the right side of the northbound lane of S.R. 93.
- 8. Remove existing Truck sign (W11-10) on S.R. 93 and replace with a new Truck sign (30-inch, W11-10) on the right side of the southbound lane of S.R. 93.
- 9. Add left turn lane to SR 93 southbound at Industrial area.

GUIDANCE - SPOT IMPROVEMENT NO. 5

- 1. Realign S.R. 93 to improve horizontal and vertical sight distance, provide 2-12-foot lanes, 10-foot shoulders, and improve ditches.
- 2. Thermoplastic markings to be used within the project limits.
- 3. Remove existing Side Road sign (W2-2L) on S.R. 93 and replace with a new Side Road sign (30-inch, W2-2L) on the right side of the northbound lane of S.R. 93.
- 4. Remove existing STOP sign (R1-1) at the Derby Drive approach to S.R. 93 and replace with a new diamond-grade STOP sign (30-inch, R1-1) on the right side of the Derby Drive approach to S.R. 93.
- 5. Remove existing stop bar for Derby Drive approach to S.R. 93 and replace with a thermoplastic stop bar.

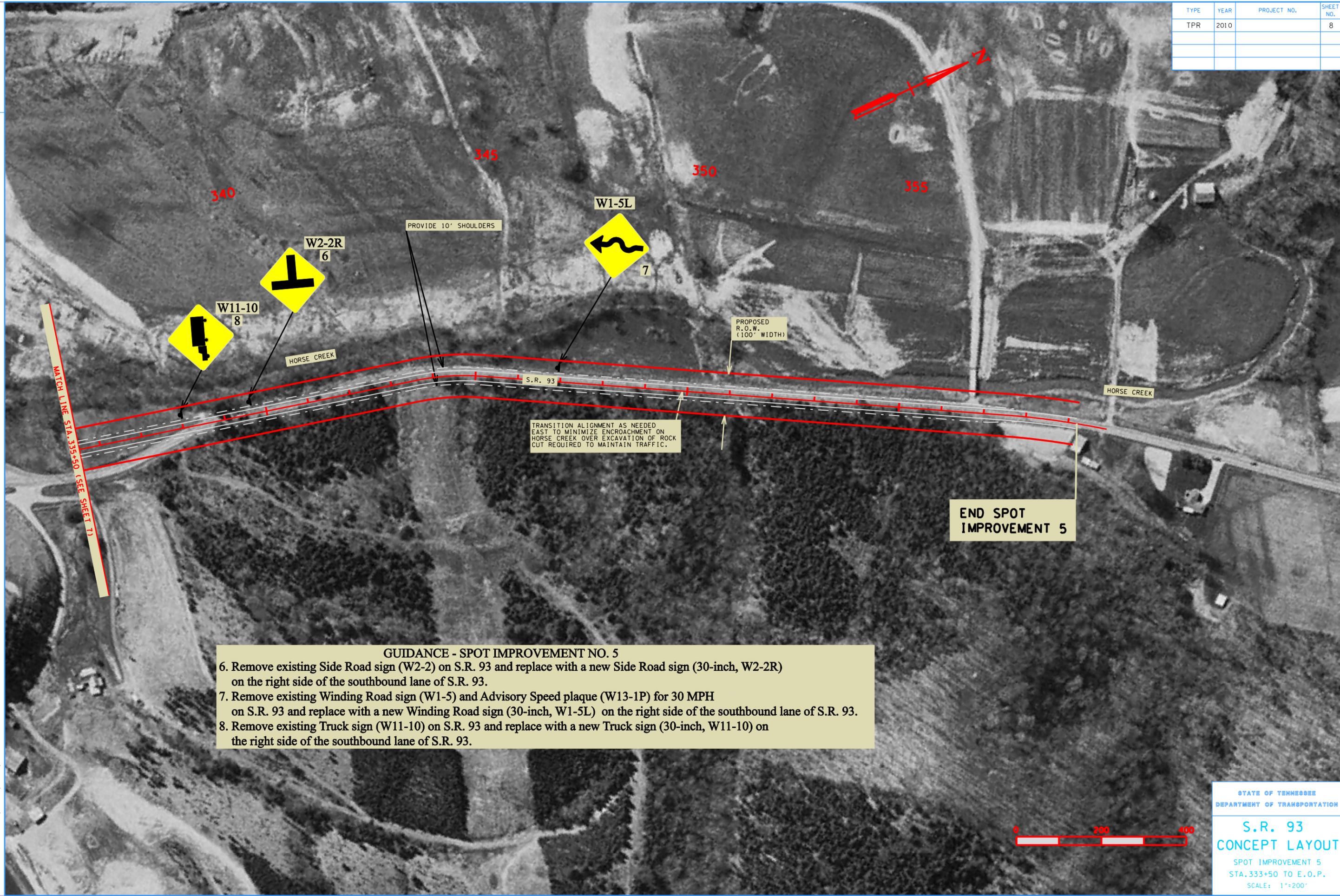


STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

**S.R. 93
CONCEPT LAYOUT**

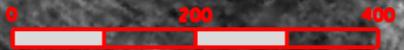
SPOT IMPROVEMENT 4 AND 5
STA. 308+50 TO STA. 333+50
SCALE: 1"=200'

TYPE	YEAR	PROJECT NO.	SHEET NO.
TPR	2010		8



GUIDANCE - SPOT IMPROVEMENT NO. 5

- Remove existing Side Road sign (W2-2) on S.R. 93 and replace with a new Side Road sign (30-inch, W2-2R) on the right side of the southbound lane of S.R. 93.
- Remove existing Winding Road sign (W1-5) and Advisory Speed plaque (W13-1P) for 30 MPH on S.R. 93 and replace with a new Winding Road sign (30-inch, W1-5L) on the right side of the southbound lane of S.R. 93.
- Remove existing Truck sign (W11-10) on S.R. 93 and replace with a new Truck sign (30-inch, W11-10) on the right side of the southbound lane of S.R. 93.



STATE OF TENNESSEE
 DEPARTMENT OF TRANSPORTATION

**S.R. 93
 CONCEPT LAYOUT**

SPOT IMPROVEMENT 5
 STA. 333+50 TO E.O.P.
 SCALE: 1"=200'

Appendix D: Cost Worksheets

COST ESTIMATES

Summary of Detailed Cost Estimates

CORRIDOR 1 - OPTION A

	UNIT	QUANTITY	UNIT COST	TOTAL
RIGHT-OF-WAY COST				
LAND, IMPROVEMENTS, DAMAGES	AC	80	\$15,000	\$1,200,000
COMMERCIAL	EA	2	\$200,000	\$400,000
RESIDENTIAL	EA	12	\$150,000	\$1,800,000
			SUBTOTAL	\$3,400,000

CONSTRUCTION COST				
NEW 3-LANE, RURAL SECTION*	MI	5.45	\$1,317,991	\$7,183,051
EARTHWORK (BORROW)	CY	800000	\$10	\$7,600,000
STRUCTURES (BRIDGES)	SF	54000	\$85	\$4,590,000
DRAINAGE (BOX CULVERTS)	EA.	4	\$90,000	\$360,000
DRAINAGE (PIPE CULVERTS)	LF	300	\$73	\$21,750
SIGNALS	EA.	0	\$200,000	\$0
TRAFFIC CONTROL	LS	1	\$350,000	\$350,000
			SUBTOTAL	\$20,104,801

*SEE PER-MILE DETAILS

UTILITY COST				
OVERHEAD ELECTRIC	MI	1	\$210,000	\$210,000
TELEPHONE	MI	1	\$125,000	\$125,000
CABLE	MI	1	\$700,000	\$700,000
GAS	MI	1	\$875,000	\$875,000
			SUBTOTAL	\$1,910,000

MOBILIZATION

LOW=\$430,000+3.5% CONSTRUCTION OVER \$10,000,000	\$783,144
HIGH=\$780,000+3.0% CONSTRUCTION OVER \$20,000,000	

EROSION CONTROL (3.5% OF CONSTRUCTION COST)	\$703,668
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CONTINGENCY (15% OF CONSTRUCTION COST+UTILITIES)	\$3,302,220
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TOTAL CONSTRUCTION COST	\$26,803,834
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PRELIMINARY ENGINEERING (10% OF TOTAL CONSTRUCTION COST)	\$2,680,383
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TOTAL COSTS	\$29,484,217
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* For estimating future project costs, a compounded inflation rate of 10% per year will be applied from the date of this estimate.

COST ESTIMATES

Per-Mile Details- Corridor 1 - Option A

2-Lane Road with Continuous Center Turn Lane

Item No.	Description	Unit	Quantity/Mile	Unit Cost	Total
201-01	CLEARING AND GRUBBING	L.S	(120' ROW WIDTH)	\$117,500	\$117,500
303-01	MINERAL AGGREGATE, TYPE A BASE, GRADING D	TON	11909.33	\$17	\$196,504
307-02.02	ASPHALT CEM. (PG70-22) (BPMB-HM) GR. A-S	TON	92.66	\$478	\$44,247
307-02.03	AGGREGATE (BPMB-HM) GRADING A-S MIX	TON	2758.54	\$37	\$100,687
307-02.01	ASPHALT CONCRETE MIX (PG70-22) (BPMB-HM) GRADING A	TON	3643.20	\$61	\$220,414
307-02.08	ASPHALT CONCRETE MIX (PG70-22) (BPMB-HM) GRADING B-M2	TON	2088.24	\$66	\$136,780
411-02.10	ACS MIX (PG70-22) GRADING D	TON	1399.20	\$82	\$114,734
402-01	BITUMINOUS MATERIAL FOR PRIME COAT (PC)	TON	30.17	\$410	\$12,370
402-02	AGGREGATE FOR COVER MATERIAL (PC)	TON	105.60	\$18	\$1,901
403-01	BITUMINOUS MATERIAL FOR TACK COAT (TC)	TON	1.83	\$670	\$1,225
705-01.01	GUARDRAIL AT BRIDGE ENDS	L.F.	600.00	\$62	\$37,200
705-02.02	SINGLE GUARDRAIL (TYPE 2)	L.F.	2500.00	\$17	\$42,500
705-04.07	TAN ENERGY ABSORBING TERM (NCHRP 350, TL3)	EACH	8.00	\$2,324	\$18,592
709-05.06	MACHINED RIP-RAP (CLASS A-1)	TON	4000.00	\$28	\$112,000
709-05.08	MACHINED RIP-RAP (CLASS B)	TON	4000.00	\$30	\$118,000
					\$0
716-02.01	THERMO PLASTIC PAVEMENT MARKING (4" LINE)	L.M.	6.00	\$3,050	\$18,300
716-02.04	THERMO PLASTIC PAV MARKING (CHANNEL. STRIPING)	S.Y.	350.00	\$26	\$8,925
716-02.05	PLASTIC MARKING (STOP LINE)	L.F.	24.00	\$13	\$300
716-02.06	PLASTIC MARKING (ARROW)	EACH	5.00	\$138	\$688
					\$0
801-02	SEEDING (WITH MULCH)	Unit	550.00	\$28	\$15,125

TOTAL	\$1,317,991
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COST ESTIMATES

Summary of Detailed Cost Estimates

CORRIDOR 2 - OPTION A

	UNIT	QUANTITY	UNIT COST	TOTAL
RIGHT-OF-WAY COST				
LAND, IMPROVEMENTS, DAMAGES	AC	90	\$15,000	\$1,350,000
COMMERCIAL	EA	2	\$200,000	\$400,000
RESIDENTIAL	EA	8	\$150,000	\$1,200,000
			SUBTOTAL	\$2,950,000

CONSTRUCTION COST				
NEW 3-LANE, RURAL SECTION*	MI	6.45	\$1,317,991	\$8,501,042
EARTHWORK (BORROW)	CY	400000	\$10	\$3,800,000
STRUCTURES (BRIDGES)	SF	72000	\$85	\$6,120,000
DRAINAGE (BOX CULVERTS)	EA.	8	\$90,000	\$720,000
DRAINAGE (PIPE CULVERTS)	LF	400	\$73	\$29,000
SIGNALS	EA.	0	\$200,000	\$0
TRAFFIC CONTROL	LS	1	\$500,000	\$500,000
			SUBTOTAL	\$19,670,042

*SEE PER-MILE DETAILS

UTILITY COST				
OVERHEAD ELECTRIC	MI	2	\$210,000	\$420,000
TELEPHONE	MI	2	\$125,000	\$250,000
CABLE	MI	2	\$700,000	\$1,400,000
GAS	MI	1	\$875,000	\$875,000
			SUBTOTAL	\$2,945,000

MOBILIZATION	
LOW=\$430,000+3.5% CONSTRUCTION OVER \$10,000,000	\$770,101
HIGH=\$780,000+3.0% CONSTRUCTION OVER \$20,000,000	

EROSION CONTROL (3.5% OF CONSTRUCTION COST)	\$688,451
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CONTINGENCY (15% OF CONSTRUCTION COST+UTILITIES)	\$3,392,256
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TOTAL CONSTRUCTION COST	\$27,465,852
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PRELIMINARY ENGINEERING (10% OF TOTAL CONSTRUCTION COST)	\$2,746,585
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TOTAL COSTS	\$30,212,437
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* For estimating future project costs, a compounded inflation rate of 10% per year will be applied from the date of this estimate.

COST ESTIMATES

Per-Mile Details- Corridor 2 - Option A

2-Lane Road with Continuous Center Turn Lane

Item No.	Description	Unit	Quantity/Mile	Unit Cost	Total
201-01	CLEARING AND GRUBBING	L.S	(120' ROW WIDTH)	\$117,500	\$117,500
303-01	MINERAL AGGREGATE, TYPE A BASE, GRADING D	TON	11909.33	\$17	\$196,504
307-02.02	ASPHALT CEM. (PG70-22) (BPMB-HM) GR. A-S	TON	92.66	\$478	\$44,247
307-02.03	AGGREGATE (BPMB-HM) GRADING A-S MIX	TON	2758.54	\$37	\$100,687
307-02.01	ASPHALT CONCRETE MIX (PG70-22) (BPMB-HM) GRADING A	TON	3643.20	\$61	\$220,414
307-02.08	ASPHALT CONCRETE MIX (PG70-22) (BPMB-HM) GRADING B-M2	TON	2088.24	\$66	\$136,780
411-02.10	ACS MIX (PG70-22) GRADING D	TON	1399.20	\$82	\$114,734
402-01	BITUMINOUS MATERIAL FOR PRIME COAT (PC)	TON	30.17	\$410	\$12,370
402-02	AGGREGATE FOR COVER MATERIAL (PC)	TON	105.60	\$18	\$1,901
403-01	BITUMINOUS MATERIAL FOR TACK COAT (TC)	TON	1.83	\$670	\$1,225
705-01.01	GUARDRAIL AT BRIDGE ENDS	L.F.	600	\$62	\$37,200
705-02.02	SINGLE GUARDRAIL (TYPE 2)	L.F.	2500	\$17	\$42,500
705-04.07	TAN ENERGY ABSORBING TERM (NCHRP 350, TL3)	EACH	8	\$2,324	\$18,592
709-05.06	MACHINED RIP-RAP (CLASS A-1)	TON	4000.00	\$28	\$112,000
709-05.08	MACHINED RIP-RAP (CLASS B)	TON	4000.00	\$30	\$118,000
					\$0
716-02.01	THERMO PLASTIC PAVEMENT MARKING (4" LINE)	L.M.	6.00	\$3,050	\$18,300
716-02.04	THERMO PLASTIC PAV MARKING (CHANNEL. STRIPING)	S.Y.	350.00	\$26	\$8,925
716-02.05	PLASTIC MARKING (STOP LINE)	L.F.	24.00	\$13	\$300
716-02.06	PLASTIC MARKING (ARROW)	EACH	5.00	\$138	\$688
					\$0
801-02	SEEDING (WITH MULCH)	Unit	550	\$28	\$15,125

TOTAL	\$1,317,991
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COST ESTIMATES

Summary of Detailed Cost Estimates

CORRIDOR 1 - OPTION B

	UNIT	QUANTITY	UNIT COST	TOTAL
RIGHT-OF-WAY COST				
LAND, IMPROVEMENTS, DAMAGES	AC	80	\$15,000	\$1,200,000
COMMERCIAL	EA	2	\$200,000	\$400,000
RESIDENTIAL	EA	12	\$150,000	\$1,800,000
			SUBTOTAL	\$3,400,000
CONSTRUCTION COST				
NEW 4-LANE, RURAL SECTION*	MI	5.45	\$2,042,487	\$11,131,553
EARTHWORK (BORROW)	CY	1066666	\$10	\$10,133,327
STRUCTURES (BRIDGES)	SF	72000	\$85	\$6,120,000
DRAINAGE (BOX CULVERTS)	EA.	4	\$90,000	\$360,000
DRAINAGE (PIPE CULVERTS - CROSS DRAINS)	LF	10509.56	\$73	\$761,943
SIGNALS	EA.	0	\$200,000	\$0
TRAFFIC CONTROL	LS	1	\$350,000	\$350,000
			SUBTOTAL	\$28,856,823

*SEE PER-MILE DETAILS

UTILITY COST				
OVERHEAD ELECTRIC	MI	1	\$210,000	\$210,000
TELEPHONE	MI	1	\$125,000	\$125,000
CABLE	MI	1	\$700,000	\$700,000
GAS	MI	1	\$875,000	\$875,000
			SUBTOTAL	\$1,910,000

MOBILIZATION

LOW=\$430,000+3.5% CONSTRUCTION OVER \$10,000,000	\$1,045,705
HIGH=\$780,000+3.0% CONSTRUCTION OVER \$20,000,000	

EROSION CONTROL (3.5% OF CONSTRUCTION COST)	\$1,009,989
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CONTINGENCY (15% OF CONSTRUCTION COST+UTILITIES)	\$4,615,024
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TOTAL CONSTRUCTION COST	\$37,437,540
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PRELIMINARY ENGINEERING (10% OF TOTAL CONSTRUCTION COST)	\$3,743,754
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TOTAL COSTS	\$41,181,294
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* For estimating future project costs, a compounded inflation rate of 10% per year will be applied from the date of this estimate.

COST ESTIMATES

Per-Mile Details- Corridor 1 - Option B

4-Lane Road

Item No.	Description	Unit	Quantity/Mile	Unit Cost	Total
201-01	CLEARING AND GRUBBING	L.S	(160' ROW WIDTH)	\$156,667	\$156,667
303-01	MINERAL AGGREGATE, TYPE A BASE, GRADING D	TON	15879.11	\$17	\$262,005
307-02.02	ASPHALT CEM. (PG70-22) (BPMB-HM) GR. A-S	TON	123.55	\$478	\$58,996
307-02.03	AGGREGATE (BPMB-HM) GRADING A-S MIX	TON	3678.05	\$37	\$134,249
307-02.01	ASPHALT CONCRETE MIX (PG70-22) (BPMB-HM) GRADING A	TON	4857.60	\$61	\$293,885
307-02.08	ASPHALT CONCRETE MIX (PG70-22) (BPMB-HM) GRADING B-M2	TON	2784.32	\$66	\$182,373
411-02.10	ACS MIX (PG70-22) GRADING D	TON	1865.60	\$82	\$152,979
402-01	BITUMINOUS MATERIAL FOR PRIME COAT (PC)	TON	40.23	\$410	\$16,494
402-02	AGGREGATE FOR COVER MATERIAL (PC)	TON	140.80	\$18	\$2,534
403-01	BITUMINOUS MATERIAL FOR TACK COAT (TC)	TON	2.44	\$670	\$1,634
607-05.02	CONCRETE PIPE CULVERT (CLASS III)	L.F.	4400	\$55	\$242,000
611-10.02	CATCH BASINS	EACH	15	\$2,000	\$30,000
702-01.01	EXTRUDED MOUNTABLE CURB	L.F.	11000	\$12	\$132,000
705-01.01	GUARDRAIL AT BRIDGE ENDS	L.F.	600.00	\$62	\$37,200
705-02.02	SINGLE GUARDRAIL (TYPE 2)	L.F.	2500.00	\$17	\$42,500
705-04.07	TAN ENERGY ABSORBING TERM (NCHRP 350, TL3)	EACH	8.00	\$2,324	\$18,592
709-05.06	MACHINED RIP-RAP (CLASS A-1)	TON	4000.00	\$28	\$112,000
709-05.08	MACHINED RIP-RAP (CLASS B)	TON	4000.00	\$30	\$118,000
					\$0
716-02.01	THERMO PLASTIC PAVEMENT MARKING (4" LINE)	L.M.	6.00	\$3,050	\$18,300
716-02.04	THERMO PLASTIC PAV MARKING (CHANNEL. STRIPING)	S.Y.	350.00	\$26	\$8,925
716-02.05	PLASTIC MARKING (STOP LINE)	L.F.	24.00	\$13	\$300
716-02.06	PLASTIC MARKING (ARROW)	EACH	5.00	\$138	\$688
					\$0
801-02	SEEDING (WITH MULCH)	Unit	733.33	\$28	\$20,167

TOTAL	\$2,042,487
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COST ESTIMATES

Summary of Detailed Cost Estimates

CORRIDOR 2 - OPTION B

	UNIT	QUANTITY	UNIT COST	TOTAL
RIGHT-OF-WAY COST				
LAND, IMPROVEMENTS, DAMAGES	AC	90	\$15,000	\$1,350,000
COMMERCIAL	EA	2	\$200,000	\$400,000
RESIDENTIAL	EA	8	\$150,000	\$1,200,000
			SUBTOTAL	\$2,950,000

CONSTRUCTION COST				
NEW 4-LANE, RURAL SECTION*	MI	6.45	\$2,034,787	\$13,124,375
EARTHWORK (BORROW)	CY	1066666	\$10	\$10,133,327
STRUCTURES (BRIDGES)	SF	72000	\$85	\$6,120,000
DRAINAGE (BOX CULVERTS)	EA.	8	\$90,000	\$720,000
DRAINAGE (PIPE CULVERTS - CROSS DRAINS)	LF	9118.66	\$73	\$661,103
SIGNALS	EA.	0	\$200,000	\$0
TRAFFIC CONTROL	LS	1	\$500,000	\$500,000
			SUBTOTAL	\$31,258,805

*SEE PER-MILE DETAILS

UTILITY COST				
OVERHEAD ELECTRIC	MI	2	\$210,000	\$420,000
TELEPHONE	MI	2	\$125,000	\$250,000
CABLE	MI	2	\$700,000	\$1,400,000
GAS	MI	1	\$875,000	\$875,000
			SUBTOTAL	\$2,945,000

MOBILIZATION	
LOW=\$430,000+3.5% CONSTRUCTION OVER \$10,000,000	\$1,117,764
HIGH=\$780,000+3.0% CONSTRUCTION OVER \$20,000,000	

EROSION CONTROL (3.5% OF CONSTRUCTION COST)	\$1,094,058
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CONTINGENCY (15% OF CONSTRUCTION COST+UTILITIES)	\$5,130,571
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TOTAL CONSTRUCTION COST	\$41,546,198
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PRELIMINARY ENGINEERING (10% OF TOTAL CONSTRUCTION COST)	\$4,154,620
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TOTAL COSTS	\$45,700,818
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* For estimating future project costs, a compounded inflation rate of 10% per year will be applied from the date of this estimate.

COST ESTIMATES

Per-Mile Details- Corridor 2 - Option B

4-Lane Road

Item No.	Description	Unit	Quantity/Mile	Unit Cost	Total
201-01	CLEARING AND GRUBBING	L.S	(160' ROW WIDTH)	\$156,667	\$156,667
303-01	MINERAL AGGREGATE, TYPE A BASE, GRADING D	TON	15879.11	\$17	\$262,005
307-02.02	ASPHALT CEM. (PG70-22) (BPMB-HM) GR. A-S	TON	123.55	\$478	\$58,996
307-02.03	AGGREGATE (BPMB-HM) GRADING A-S MIX	TON	3678.05	\$37	\$134,249
307-02.01	ASPHALT CONCRETE MIX (PG70-22) (BPMB-HM) GRADING A	TON	4857.60	\$61	\$293,885
307-02.08	ASPHALT CONCRETE MIX (PG70-22) (BPMB-HM) GRADING B-M2	TON	2784.32	\$66	\$182,373
411-02.10	ACS MIX (PG70-22) GRADING D	TON	1865.60	\$82	\$152,979
402-01	BITUMINOUS MATERIAL FOR PRIME COAT (PC)	TON	40.23	\$410	\$16,494
402-02	AGGREGATE FOR COVER MATERIAL (PC)	TON	140.80	\$18	\$2,534
403-01	BITUMINOUS MATERIAL FOR TACK COAT (TC)	TON	2.44	\$670	\$1,634
607-05.02	CONCRETE PIPE CULVERT (CLASS III)	L.F.	4260	\$55	\$234,300
611-10.02	CATCH BASINS	EACH	15	\$2,000	\$30,000
702-01.01	EXTRUDED MOUNTABLE CURB	L.F.	11000	\$12	\$132,000
705-01.01	GUARDRAIL AT BRIDGE ENDS	L.F.	600	\$62	\$37,200
705-02.02	SINGLE GUARDRAIL (TYPE 2)	L.F.	2500	\$17	\$42,500
705-04.07	TAN ENERGY ABSORBING TERM (NCHRP 350, TL3)	EACH	8	\$2,324	\$18,592
709-05.06	MACHINED RIP-RAP (CLASS A-1)	TON	4000.00	\$28	\$112,000
709-05.08	MACHINED RIP-RAP (CLASS B)	TON	4000.00	\$30	\$118,000
					\$0
716-02.01	THERMO PLASTIC PAVEMENT MARKING (4" LINE)	L.M.	6.00	\$3,050	\$18,300
716-02.04	THERMO PLASTIC PAV MARKING (CHANNEL. STRIPING)	S.Y.	350.00	\$26	\$8,925
716-02.05	PLASTIC MARKING (STOP LINE)	L.F.	24.00	\$13	\$300
716-02.06	PLASTIC MARKING (ARROW)	EACH	5.00	\$138	\$688
					\$0
801-02	SEEDING (WITH MULCH)	Unit	733.33	\$28	\$20,167

TOTAL	\$2,034,787
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COST ESTIMATES FOR TPR SPOT IMPROVEMENTS

Route:	SR 93 - Spot Improvement 1
Description:	Spot Imp. No. 1 SR 93: From just North of Davis Road to just North of Judge Baines Road
County:	Washington
Length:	1600'
Date:	5/28/2010

	UNIT	QUANT. - S.I. NO. 1	UNIT COST	SPOT IMP. NO. 1 TOTAL
RIGHT-OF-WAY COST				
LAND, IMPROVEMENTS, DAMAGES	AC	0.74	\$25,000	\$ 18,500
COMMERCIAL	EACH	0	\$200,000	\$ -
RESIDENTIAL	EACH	0	\$150,000	\$ -
TRACTS (INCIDENTALS)	EACH	11	\$2,800	\$ 30,800
			SUBTOTAL	\$ 49,300
CONSTRUCTION COST				
CLEAR AND GRUBBING			\$	2,580
EARTHWORK			\$	24,960
PAVEMENT REMOVAL			\$	18,720
DRAINAGE (INCLUDING EROSION CONTROL) STRUCTURES			\$	130,760
RAILROAD CROSSING OR SEPARATION			\$	-
PAVING (INCLUDING CURB, GUTTER AND SIDEWALK)			\$	240,274
RETAINING WALLS			\$	-
MAINTENANCE OF TRAFFIC			\$	41,279
TOPSOIL			\$	1,430
SEEDING			\$	1,213
SODDING			\$	-
SIGNING			\$	7,065
LIGHTING			\$	-
SIGNALIZATION			\$	-
FENCE			\$	-
GUARDRAIL			\$	-
RIP RAP OR SLOPE PROTECTION			\$	675
OTHER CONST. ITEMS (15%)			\$	70,343
			SUBTOTAL	\$ 539,299
UTILITY COST				
OVERHEAD ELECTRIC	MI.	0.3	\$135,000	\$ 40,500
TELEPHONE	MI.	0.3	\$75,000	\$ 22,500
WATER	MI.	0.3	\$275,000	\$ 82,500
SEWER	MI.	0.3	\$165,000	\$ 49,500
CABLE	MI.	0.3	\$25,000	\$ 7,500
GAS	MI.	0.3	\$212,000	\$ 63,600
			SUBTOTAL	\$ 266,100
MOBILIZATION				
BASED ON SP 717, CALCULATED FOR TOTAL COST			SUBTOTAL	\$ 26,965
CONTINGENCY (10% OF CONSTRUCTION COST AND UTILITIES)				\$ 83,236
TOTAL CONSTRUCTION COST				\$ 915,601
PRELIMINARY ENGINEERING (10% OF TOTAL CONSTRUCTION COST)				\$ 91,560
TOTAL COST*				\$ 1,056,461

* For estimating future project costs, a compounded inflation rate of 10% per year will be applied from the date of this estimate.

COST ESTIMATES FOR TPR SPOT IMPROVEMENTS

Route: SR 93 - Spot Improvement 2
Description: Spot Imp. No. 2 SR 93: From Ruritan Road
 to just North of Fire Hall Road
County: Washington
Length: 2400'
Date: 5/28/2010

	UNIT	QUANT. - S.I. NO. 2	UNIT COST	SPOT IMP. NO. 2 TOTAL
RIGHT-OF-WAY COST				
LAND, IMPROVEMENTS, DAMAGES	AC	1.41	\$25,000	\$ 35,250
COMMERCIAL	EACH	0	\$200,000	\$ -
RESIDENTIAL	EACH	4	\$150,000	\$ 600,000
TRACTS (INCIDENTALS)	EACH	31	\$2,800	\$ 86,800
			SUBTOTAL	\$ 722,050
CONSTRUCTION COST				
CLEAR AND GRUBBING				\$ 6,320
EARTHWORK				\$ 61,240
PAVEMENT REMOVAL				\$ 29,520
DRAINAGE (INCLUDING EROSION CONTROL)				\$ 193,276
STRUCTURES				\$ -
RAILROAD CROSSING OR SEPARATION				\$ -
PAVING (INCLUDING CURB, GUTTER AND SIDEWALK)				\$ 377,662
RETAINING WALLS				\$ 13,500
MAINTENANCE OF TRAFFIC				\$ 60,589
TOPSOIL				\$ 2,346
SEEDING				\$ 2,976
SODDING				\$ -
SIGNING				\$ 8,962
LIGHTING				\$ -
SIGNALIZATION				\$ -
FENCE				\$ -
GUARDRAIL				\$ -
RIP RAP OR SLOPE PROTECTION				\$ 675
OTHER CONST. ITEMS (15%)				\$ 113,560
			SUBTOTAL	\$ 870,625
UTILITY COST				
OVERHEAD ELECTRIC	MI.	0.45	\$135,000	\$ 60,750
TELEPHONE	MI.	0.45	\$75,000	\$ 33,750
WATER	MI.	0.45	\$275,000	\$ 123,750
SEWER	MI.	0.45	\$165,000	\$ 74,250
CABLE	MI.	0.45	\$25,000	\$ 11,250
GAS	MI.	0.45	\$212,000	\$ 95,400
			SUBTOTAL	\$ 399,150
MOBILIZATION				
BASED ON SP 717, CALCULATED FOR TOTAL COST			SUBTOTAL	\$ 43,531
CONTINGENCY (10% OF CONSTRUCTION COST AND UTILITIES)				\$ 131,331
TOTAL CONSTRUCTION COST				\$ 1,444,637
PRELIMINARY ENGINEERING (10% OF TOTAL CONSTRUCTION COST)				\$ 144,464
TOTAL COST*				\$ 2,311,151

* For estimating future project costs, a compounded inflation rate of 10% per year will be applied from the date of this estimate.

COST ESTIMATES FOR TPR SPOT IMPROVEMENTS

Route:	SR 93 - Spot Improvement 3
Description:	Spot Imp. No. 3 SR 93: From Morgan Lane to 600' south of Balleyton Road
County:	Washington/Sullivan
Length:	2800'
Date:	5/28/2010

	UNIT	QUANT. - S.I. NO. 3	UNIT COST	SPOT IMP. NO. 3 TOTAL
RIGHT-OF-WAY COST				
LAND, IMPROVEMENTS, DAMAGES	AC	2.8	\$10,000	\$ 28,000
COMMERCIAL	EACH	0	\$200,000	\$ -
RESIDENTIAL	EACH	2	\$150,000	\$ 300,000
TRACTS (INCIDENTALS)	EACH	12	\$2,800	\$ 33,600
			SUBTOTAL	\$ 361,600
CONSTRUCTION COST				
CLEAR AND GRUBBING			\$	40,400
EARTHWORK (INCLUDES ROCK EXCAVATION)			\$	2,187,269
PAVEMENT REMOVAL			\$	33,000
DRAINAGE (INCLUDING EROSION CONTROL)			\$	65,108
STRUCTURES			\$	-
RAILROAD CROSSING OR SEPARATION			\$	-
PAVING (INCLUDING CURB, GUTTER AND SIDEWALK)			\$	288,303
RETAINING WALLS			\$	-
MAINTENANCE OF TRAFFIC			\$	100,909
TOPSOIL			\$	-
SEEDING			\$	9,233
SODDING			\$	-
SIGNING			\$	7,307
LIGHTING			\$	-
SIGNALIZATION			\$	-
FENCE			\$	-
GUARDRAIL			\$	41,000
RIP RAP OR SLOPE PROTECTION			\$	29,700
OTHER CONST. ITEMS (15%)			\$	420,334
			SUBTOTAL	\$ 3,222,562
UTILITY COST				
OVERHEAD ELECTRIC	MI.	0.53	\$135,000	\$ 71,550
TELEPHONE	MI.	0.53	\$75,000	\$ 39,750
WATER	MI.	0.53	\$275,000	\$ 145,750
SEWER	MI.	0.53	\$165,000	\$ 87,450
CABLE	MI.	0.53	\$25,000	\$ 13,250
GAS	MI.	0.53	\$212,000	\$ 112,360
			SUBTOTAL	\$ 470,110
MOBILIZATION				
BASED ON SP 717, CALCULATED FOR TOTAL COST			SUBTOTAL	\$ 119,444
CONTINGENCY (10% OF CONSTRUCTION COST AND UTILITIES)				\$ 381,212
TOTAL CONSTRUCTION COST				\$ 4,193,328
PRELIMINARY ENGINEERING (10% OF TOTAL CONSTRUCTION COST)				\$ 419,333
TOTAL COST*				\$ 4,974,261

* For estimating future project costs, a compounded inflation rate of 10% per year will be applied from the date of this estimate.

COST ESTIMATES FOR TPR SPOT IMPROVEMENTS

Route:	SR 93 - Spot Improvement 4
Description:	Spot Imp. No. 4 SR 93: From 1700' north of Murrell Drive to 1600' south of Derby Drive
County:	Sullivan
Length:	2800'
Date:	5/28/2010

	UNIT	QUANT. - S.I. NO. 4	UNIT COST	SPOT IMP. NO. 4 TOTAL
RIGHT-OF-WAY COST				
LAND, IMPROVEMENTS, DAMAGES	AC	2.57	\$25,000	\$ 64,250
COMMERCIAL	EACH	1	\$200,000	\$ 200,000
RESIDENTIAL	EACH	0	\$150,000	-
TRACTS (INCIDENTALS)	EACH	16	\$2,800	\$ 44,800
			SUBTOTAL	\$ 309,050
CONSTRUCTION COST				
CLEAR AND GRUBBING			\$	15,320
EARTHWORK			\$	98,844
PAVEMENT REMOVAL			\$	41,700
DRAINAGE (INCLUDING EROSION CONTROL)			\$	61,310
STRUCTURES			\$	306,000
RAILROAD CROSSING OR SEPARATION			\$	-
PAVING (INCLUDING CURB, GUTTER AND SIDEWALK)			\$	515,153
RETAINING WALLS			\$	-
MAINTENANCE OF TRAFFIC			\$	52,945
TOPSOIL			\$	5,662
SEEDING			\$	7,206
SODDING			\$	-
SIGNING			\$	9,791
LIGHTING			\$	-
SIGNALIZATION			\$	-
FENCE			\$	-
GUARDRAIL			\$	15,786
RIP RAP OR SLOPE PROTECTION			\$	7,695
OTHER CONST. ITEMS (15%)			\$	170,612
			SUBTOTAL	\$ 1,308,023
UTILITY COST				
OVERHEAD ELECTRIC	MI.	0.1	\$135,000	\$ 13,500
TELEPHONE	MI.	0.1	\$75,000	\$ 7,500
WATER	MI.	0.1	\$275,000	\$ 27,500
SEWER	MI.	0	\$165,000	-
CABLE	MI.	0.1	\$25,000	\$ 2,500
GAS	MI.	0.1	\$212,000	\$ 21,200
			SUBTOTAL	\$ 72,200
MOBILIZATION				
BASED ON SP 717, CALCULATED FOR TOTAL COST			SUBTOTAL	\$ 63,861
CONTINGENCY (10% OF CONSTRUCTION COST AND UTILITIES)				\$ 144,408
TOTAL CONSTRUCTION COST				\$ 1,588,492
PRELIMINARY ENGINEERING (10% OF TOTAL CONSTRUCTION COST)				\$ 158,849
TOTAL COST*				\$ 2,056,392

* For estimating future project costs, a compounded inflation rate of 10% per year will be applied from the date of this estimate.

COST ESTIMATES FOR TPR SPOT IMPROVEMENTS

Route:	SR 93 - Spot Improvement 5
Description:	Spot Imp. No. 5 SR 93: From 1600' south of Derby Drive to 2600' north of Derby Drive
County:	Sullivan
Length:	4200'
Date:	5/28/2010

	UNIT	QUANT. - S.I. NO. 5	UNIT COST	SPOT IMP. NO. 5 TOTAL
RIGHT-OF-WAY COST				
LAND, IMPROVEMENTS, DAMAGES	AC	3.9	\$10,000	\$ 39,000
COMMERCIAL	EACH	0	\$200,000	\$ -
RESIDENTIAL	EACH	0	\$150,000	\$ -
TRACTS (INCIDENTALS)	EACH	8	\$2,800	\$ 22,400
			SUBTOTAL	\$ 61,400
CONSTRUCTION COST				
CLEAR AND GRUBBING				\$ 24,760
EARTHWORK				\$ 1,914,122
PAVEMENT REMOVAL				\$ 51,360
DRAINAGE (INCLUDING EROSION CONTROL)				\$ 76,782
STRUCTURES				\$ -
RAILROAD CROSSING OR SEPARATION				\$ -
PAVING (INCLUDING CURB, GUTTER AND SIDEWALK)				\$ 448,704
RETAINING WALLS				\$ -
MAINTENANCE OF TRAFFIC				\$ 139,234
TOPSOIL				\$ -
SEEDING				\$ 11,648
SODDING				\$ -
SIGNING				\$ 14,510
LIGHTING				\$ -
SIGNALIZATION				\$ -
FENCE				\$ -
GUARDRAIL				\$ 28,350
RIP RAP OR SLOPE PROTECTION				\$ 24,300
OTHER CONST. ITEMS (15%)				\$ 410,066
			SUBTOTAL	\$ 3,143,836
UTILITY COST				
OVERHEAD ELECTRIC	MI.	0.8	\$135,000	\$ 108,000
TELEPHONE	MI.	0.8	\$75,000	\$ 60,000
CABLE	MI.	0.8	\$25,000	\$ 20,000
			SUBTOTAL	\$ 188,000
MOBILIZATION				
BASED ON SP 717, CALCULATED FOR TOTAL COST			SUBTOTAL	\$ 97,437
CONTINGENCY (10% OF CONSTRUCTION COST AND UTILITIES)				
				\$ 342,927
TOTAL CONSTRUCTION COST				\$ 3,772,201
PRELIMINARY ENGINEERING (10% OF TOTAL CONSTRUCTION COST)				\$ 377,220
TOTAL COST*				\$ 4,210,821

* For estimating future project costs, a compounded inflation rate of 10% per year will be applied from the date of this estimate.

COST ESTIMATES FOR TPR SPOT IMPROVEMENTS

Summary of Detailed Cost Estimates

Spot Improvement No. 1: North of Davis Road to North of Judge Baines Road, Approximately 1600'

	UNIT	QUANTITY	UNIT COST	TOTAL
CLEAR AND GRUBBING				
36' x 1560'	AC	1.29	\$2,000.00	\$2,580
			SUBTOTAL	\$2,580
EARTHWORK				
ROAD AND DRAINAGE UNCLASSIFIED	CY	6240	\$4.00	\$24,960
BORROW EXCAVATION	CY	0	\$3.00	\$0
PRESPLITTING OF ROCK EXCAVATION	SY	0	\$7.50	\$0
			SUBTOTAL	\$24,960
PAVEMENT REMOVAL				
AREA	SY	4160	\$4.50	\$18,720
			SUBTOTAL	\$18,720
DRAINAGE (INCLUDING EROSION CONTROL)				
CATCH BASINS	EACH	8	\$2,500.00	\$20,000
RCP	LF	1400	\$65.00	\$91,000
SIDE DRAINS	LF	195	\$40.00	\$7,800
SILT FENCE	LF	6400	\$1.40	\$8,960
SILT FENCE WITH BACKING	LF	0	\$3.40	\$0
SEDIMENT REMOVAL	CY	0	\$4.40	\$0
CATCH BASIN PROTECTION	EACH	6	\$500.00	\$3,000
CHECK DAMS	EACH	0	\$325.00	\$0
SEDIMENT FILTER BAGS	EACH	0	\$900.00	\$0
EROSION CONTROL BLANKET	SY	0	\$2.00	\$0
			SUBTOTAL	\$130,760
STRUCTURES				
NONE	SF	0	\$85.00	\$0
			SUBTOTAL	\$0
RAILROAD CROSSING OR SEPARATION				
NONE	SF	0	\$85.00	\$0
			SUBTOTAL	\$0
PAVING (INCLUDES CURB, GUTTER & SIDEWALK)				
1.25" ASPHALTIC CONCRETE SURFACE (411-02.10)	TON	413.4	\$77.00	\$31,832
2" ASPHALT BASE BINDER (307-02.08)	TON	705.12	\$63.00	\$44,423
2" ASPHALT AGGREGATE BASE BINDER (307-02.01)	TON	717.6	\$59.00	\$42,338
8" MINERAL AGGREGATE BASE (303-01)	TON	3362.28	\$15.00	\$50,434
TACK COAT	TON	0	\$464.00	\$0
PRIME COAT	TON	0	\$500.00	\$0
UNDERDRAIN	LF	3200	\$5.00	\$16,000
CURB AND GUTTER	CY	99.98	\$162.50	\$16,247
SIDEWALK	SF	15600	\$2.50	\$39,000
			SUBTOTAL	\$240,274
RETAINING WALLS				
NONE	SF	0	\$45.00	\$0
			SUBTOTAL	\$0
MAINTENANCE OF TRAFFIC				
TRAFFIC CONTROL	LS	1	\$15,000.00	\$15,000
TRAFFIC CONTROL SIGNAGE	SF	150	\$8.50	\$1,275
PORTABLE BARRIER RAIL	LF	0	\$22.00	\$0
FLEXIBLE DRUMS	EACH	52	\$30.00	\$1,560
WARNING LIGHTS	EACH	52	\$22.00	\$1,144
ARROW BOARD	EACH	2	\$900.00	\$1,800
CHANGEABLE MESSAGE SIGN UNIT	EACH	2	\$4,400.00	\$8,800
TEMPORARY STRIPING	LF	9360	\$1.25	\$11,700
			SUBTOTAL	\$41,279
TOPSOIL				
TOPSOIL	CY	520	\$2.75	\$1,430
			SUBTOTAL	\$1,430
SEEDING				
SEEDING WITH MULCH	UNIT	56.16	\$21.00	\$1,179
WATER	M.G.	5.62	\$6.00	\$34
			SUBTOTAL	\$1,213
SODDING				
SODDING	SY	0	\$2.50	\$0
WATER	M.G.	0	\$8.00	\$0
			SUBTOTAL	\$0
SIGNING				
SIGNS	SF	150	\$11.50	\$1,725
STRIPING	LM	1.2	\$4,450.00	\$5,340
			SUBTOTAL	\$7,065
LIGHTING				
NONE	LS	0	\$0.00	\$0
			SUBTOTAL	\$0
SIGNALIZATION				
NONE	LS	0	\$0.00	\$0
			SUBTOTAL	\$0
FENCE				
NONE	LF	0	\$15.00	\$0
			SUBTOTAL	\$0
GUARDRAIL				
GUARDRAIL	LF	0	\$18.50	\$0
END TERMINALS	EACH	0	\$2,000.00	\$0
GUARDRAIL AT BRIDGE ENDS	LF	0	\$56.00	\$0
			SUBTOTAL	\$0
RIP RAP OR SLOPE PROTECTION				
RIP RAP	TON	25	\$27.00	\$675
			SUBTOTAL	\$675

COST ESTIMATES FOR TPR SPOT IMPROVEMENTS

Summary of Detailed Cost Estimates

Spot Improvement No. 2: Ruritan Road to 500' north of Fire Hall Road, approximately 2400'

	UNIT	QUANTITY	UNIT COST	TOTAL
CLEAR AND GRUBBING				
56' x 2460'	AC	3.16	\$2,000.00	\$6,320
			SUBTOTAL	\$6,320
EARTHWORK				
ROAD AND DRAINAGE UNCLASSIFIED	CY	15310	\$4.00	\$61,240
BORROW EXCAVATION	CY	0	\$3.00	\$0
PRESPLITTING OF ROCK EXCAVATION	SY	0	\$7.50	\$0
			SUBTOTAL	\$61,240
PAVEMENT REMOVAL				
AREA	SY	6560	\$4.50	\$29,520
			SUBTOTAL	\$29,520
DRAINAGE (INCLUDING EROSION CONTROL)				
CATCH BASINS	EACH	12	\$2,500.00	\$30,000
RCP	LF	1900	\$65.00	\$123,500
SIDE DRAINS	LF	500	\$40.00	\$20,000
SILT FENCE	LF	9840	\$1.40	\$13,776
SILT FENCE WITH BACKING	LF	0	\$3.40	\$0
SEDIMENT REMOVAL	CY	0	\$4.40	\$0
CATCH BASIN PROTECTION	EACH	12	\$500.00	\$6,000
CHECK DAMS	EACH	0	\$325.00	\$0
SEDIMENT FILTER BAGS	EACH	0	\$900.00	\$0
EROSION CONTROL BLANKET	SY	0	\$2.00	\$0
			SUBTOTAL	\$193,276
STRUCTURES				
NONE	SF	0	\$85.00	\$0
			SUBTOTAL	\$0
RAILROAD CROSSING OR SEPARATION				
NONE	SF	0	\$85.00	\$0
			SUBTOTAL	\$0
PAVING (INCLUDES CURB, GUTTER & SIDEWALK)				
1.25" ASPHALTIC CONCRETE SURFACE (411-02.10)	TON	651.9	\$77.00	\$50,196
2" ASPHALT BASE BINDER (307-02.08)	TON	1111.92	\$63.00	\$70,051
2" ASPHALT AGGREGATE BASE BINDER (307-02.01)	TON	1131.6	\$59.00	\$66,764
8" MINERAL AGGREGATE BASE (303-01)	TON	5302.06	\$15.00	\$79,531
TACK COAT	TON	0	\$464.00	\$0
PRIME COAT	TON	0	\$500.00	\$0
UNDERDRAIN	LF	4800	\$5.00	\$24,000
CURB AND GUTTER	CY	157.66	\$162.50	\$25,620
SIDEWALK	SF	24600	\$2.50	\$61,500
			SUBTOTAL	\$377,662
RETAINING WALLS				
RIGHT SIDE	SF	300	\$45.00	\$13,500
			SUBTOTAL	\$13,500
MAINTENANCE OF TRAFFIC				
TRAFFIC CONTROL	LS	1	\$15,000.00	\$15,000
TRAFFIC CONTROL SIGNAGE	SF	150	\$8.50	\$1,275
PORTABLE BARRIER RAIL	LF	500	\$22.00	\$11,000
FLEXIBLE DRUMS	EACH	82	\$30.00	\$2,460
WARNING LIGHTS	EACH	82	\$22.00	\$1,804
ARROW BOARD	EACH	2	\$900.00	\$1,800
CHANGEABLE MESSAGE SIGN UNIT	EACH	2	\$4,400.00	\$8,800
TEMPORARY STRIPING	LF	14760	\$1.25	\$18,450
			SUBTOTAL	\$60,589
TOPSOIL				
TOPSOIL	CY	853	\$2.75	\$2,346
			SUBTOTAL	\$2,346
SEEDING				
SEEDING WITH MULCH	UNIT	137.76	\$21.00	\$2,893
WATER	M.G.	13.78	\$6.00	\$83
			SUBTOTAL	\$2,976
SODDING				
SODDING	SY	0	\$2.50	\$0
WATER	M.G.	0	\$8.00	\$0
			SUBTOTAL	\$0
SIGNING				
SIGNS	SF	82.75	\$11.50	\$952
STRIPING	LM	1.8	\$4,450.00	\$8,010
			SUBTOTAL	\$8,962
LIGHTING				
NONE	LS	0	\$0.00	\$0
			SUBTOTAL	\$0
SIGNALIZATION				
NONE	LS	0	\$0.00	\$0
			SUBTOTAL	\$0
FENCE				
NONE	LF	0	\$15.00	\$0
			SUBTOTAL	\$0
GUARDRAIL				
GUARDRAIL	LF	0	\$18.50	\$0
END TERMINALS	EACH	0	\$2,000.00	\$0
GUARDRAIL AT BRIDGE ENDS	LF	0	\$56.00	\$0
			SUBTOTAL	\$0
RIP RAP OR SLOPE PROTECTION				
RIP RAP	TON	25	\$27.00	\$675
			SUBTOTAL	\$675

COST ESTIMATES FOR TPR SPOT IMPROVEMENTS

Summary of Detailed Cost Estimates

Spot Improvement No. 3: From Morgan Lane to 1600' south of Derby Drive, approximately 2800'

	UNIT	QUANTITY	UNIT COST	TOTAL
CLEAR AND GRUBBING				
320' x 2750'	AC	20.2	\$2,000.00	\$40,400
			SUBTOTAL	\$40,400
EARTHWORK				
ROAD AND DRAINAGE UNCLASSIFIED (INC. ROCK EXC.)	CY	264815	\$8.00	\$2,118,519
BORROW EXCAVATION	CY	0	\$3.00	\$0
PRESPLITTING OF ROCK EXCAVATION	SY	9167	\$7.50	\$68,750
			SUBTOTAL	\$2,187,269
PAVEMENT REMOVAL				
AREA	SY	7333	\$4.50	\$33,000
			SUBTOTAL	\$33,000
DRAINAGE (INCLUDING EROSION CONTROL)				
RCBC	SF	0	\$60.00	\$0
RCP	LF	300	\$65.00	\$19,500
SIDE DRAINS	LF	60	\$40.00	\$2,400
SILT FENCE	LF	0	\$1.40	\$0
SILT FENCE WITH BACKING	LF	5500	\$3.40	\$18,700
SEDIMENT REMOVAL	CY	0	\$4.40	\$0
CATCH BASIN PROTECTION	EACH	0	\$500.00	\$0
CHECK DAMS	EACH	19	\$325.00	\$6,175
SEDIMENT FILTER BAGS	EACH	0	\$900.00	\$0
EROSION CONTROL BLANKET	SY	9167	\$2.00	\$18,333
			SUBTOTAL	\$65,108
STRUCTURES				
NONE	SF	0	\$85.00	\$0
			SUBTOTAL	\$0
RAILROAD CROSSING OR SEPARATION				
NONE	SF	0	\$85.00	\$0
			SUBTOTAL	\$0
PAVING (INCLUDES CURB, GUTTER & SIDEWALK)				
1.25" ASPHALTIC CONCRETE SURFACE (411-02.10)	TON	647.78	\$77.00	\$49,879
2" ASPHALT BASE BINDER (307-02.08)	TON	828.67	\$63.00	\$52,206
2" ASPHALT AGGREGATE BASE BINDER (307-02.01)	TON	843.33	\$59.00	\$49,756
8" MINERAL AGGREGATE BASE (303-01)	TON	9097.41	\$15.00	\$136,461
TACK COAT	TON	0	\$464.00	\$0
PRIME COAT	TON	0	\$500.00	\$0
UNDERDRAIN	LF	0	\$5.00	\$0
CURB AND GUTTER	CY	0	\$162.50	\$0
SIDEWALK	SF	0	\$2.50	\$0
			SUBTOTAL	\$288,303
RETAINING WALLS				
NONE	SF	0	\$45.00	\$0
			SUBTOTAL	\$0
MAINTENANCE OF TRAFFIC				
TRAFFIC CONTROL	LS	1	\$10,000.00	\$10,000
TRAFFIC CONTROL SIGNAGE	SF	150	\$8.50	\$1,275
PORTABLE BARRIER RAIL	LF	2750	\$22.00	\$60,500
FLEXIBLE DRUMS	EACH	92	\$30.00	\$2,760
WARNING LIGHTS	EACH	92	\$22.00	\$2,024
ARROW BOARD	EACH	2	\$900.00	\$1,800
CHANGEABLE MESSAGE SIGN UNIT	EACH	2	\$4,400.00	\$8,800
TEMPORARY STRIPING	LF	11000	\$1.25	\$13,750
			SUBTOTAL	\$100,909
TOPSOIL				
TOPSOIL	CY	0	\$2.75	\$0
			SUBTOTAL	\$0
SEEDING				
SEEDING WITH MULCH	UNIT	346.5	\$21.00	\$7,277
WATER	M.G.	326	\$6.00	\$1,956
			SUBTOTAL	\$9,233
SODDING				
SODDING	SY	0	\$2.50	\$0
WATER	M.G.	0	\$8.00	\$0
			SUBTOTAL	\$0
SIGNING				
SIGNS	SF	16.25	\$11.50	\$187
STRIPING	LM	1.6	\$4,450.00	\$7,120
			SUBTOTAL	\$7,307
LIGHTING				
NONE	LS	0	\$0.00	\$0
			SUBTOTAL	\$0
SIGNALIZATION				
NONE	LS	0	\$0.00	\$0
			SUBTOTAL	\$0
FENCE				
NONE	LF	0	\$15.00	\$0
			SUBTOTAL	\$0
GUARDRAIL				
GUARDRAIL	LF	2000	\$18.50	\$37,000
END TERMINALS	EACH	2	\$2,000.00	\$4,000
GUARDRAIL AT BRIDGE ENDS	LF	0	\$56.00	\$0
			SUBTOTAL	\$41,000
RIP RAP OR SLOPE PROTECTION				
RIP RAP	TON	1100	\$27.00	\$29,700
			SUBTOTAL	\$29,700

COST ESTIMATES FOR TPR SPOT IMPROVEMENTS

Summary of Detailed Cost Estimates

Spot Improvement No. 4: From 1700' north of Murrell Drive to 1600' south of Derby Drive, 2800'

	UNIT	QUANTITY	UNIT COST	TOTAL
CLEAR AND GRUBBING				
96' x 3475'	AC	7.66	\$2,000.00	\$15,320
			SUBTOTAL	\$15,320
EARTHWORK				
ROAD AND DRAINAGE UNCLASSIFIED	CY	24711	\$4.00	\$98,844
BORROW EXCAVATION	CY	0	\$3.00	\$0
PRESPLITTING OF ROCK EXCAVATION	SY	0	\$7.50	\$0
			SUBTOTAL	\$98,844
PAVEMENT REMOVAL				
AREA	SY	9267	\$4.50	\$41,700
			SUBTOTAL	\$41,700
DRAINAGE (INCLUDING EROSION CONTROL)				
RCBC	SF	0	\$60.00	\$0
RCP	LF	36	\$65.00	\$2,340
SIDE DRAINS	LF	340	\$40.00	\$13,600
SILT FENCE	LF	13900	\$1.40	\$19,460
SILT FENCE WITH BACKING	LF	400	\$3.40	\$1,360
SEDIMENT REMOVAL	CY	0	\$4.40	\$0
CATCH BASIN PROTECTION	EACH	0	\$500.00	\$0
CHECK DAMS	EACH	70	\$325.00	\$22,750
SEDIMENT FILTER BAGS	EACH	2	\$900.00	\$1,800
EROSION CONTROL BLANKET	SY	0	\$2.00	\$0
			SUBTOTAL	\$61,310
STRUCTURES				
BRIDGES OVER PEYTON CREEK	SF	3600	\$85.00	\$306,000
			SUBTOTAL	\$306,000
RAILROAD CROSSING OR SEPARATION				
NONE	SF	0	\$85.00	\$0
			SUBTOTAL	\$0
PAVING (INCLUDES CURB, GUTTER & SIDEWALK)				
1.25" ASPHALTIC CONCRETE SURFACE (411-02.10)	TON	1330.15	\$77.00	\$102,422
2" ASPHALT BASE BINDER (307-02.08)	TON	1570.7	\$63.00	\$98,954
2" ASPHALT AGGREGATE BASE BINDER (307-02.01)	TON	1598.5	\$59.00	\$94,312
8" MINERAL AGGREGATE BASE (303-01)	TON	14631.04	\$15.00	\$219,466
TACK COAT	TON	0	\$464.00	\$0
PRIME COAT	TON	0	\$500.00	\$0
UNDERDRAIN	LF	0	\$5.00	\$0
CURB AND GUTTER	CY	0	\$162.50	\$0
SIDEWALK	SF	0	\$2.50	\$0
			SUBTOTAL	\$515,153
RETAINING WALLS				
NONE	SF	0	\$45.00	\$0
			SUBTOTAL	\$0
MAINTENANCE OF TRAFFIC				
TRAFFIC CONTROL	LS	1	\$5,000.00	\$5,000
TRAFFIC CONTROL SIGNAGE	SF	100	\$8.50	\$850
PORTABLE BARRIER RAIL	LF	200	\$22.00	\$4,400
FLEXIBLE DRUMS	EACH	116	\$30.00	\$3,480
WARNING LIGHTS	EACH	116	\$22.00	\$2,552
ARROW BOARD	EACH	2	\$900.00	\$1,800
CHANGEABLE MESSAGE SIGN UNIT	EACH	2	\$4,400.00	\$8,800
TEMPORARY STRIPING	LF	20850	\$1.25	\$26,063
			SUBTOTAL	\$52,945
TOPSOIL				
TOPSOIL	CY	2059	\$2.75	\$5,662
			SUBTOTAL	\$5,662
SEEDING				
SEEDING WITH MULCH	UNIT	333.6	\$21.00	\$7,006
WATER	M.G.	33.36	\$6.00	\$200
			SUBTOTAL	\$7,206
SODDING				
SODDING	SY	0	\$2.50	\$0
WATER	M.G.	0	\$8.00	\$0
			SUBTOTAL	\$0
SIGNING				
SIGNS	SF	31	\$11.50	\$357
STRIPING	LM	2.12	\$4,450.00	\$9,434
			SUBTOTAL	\$9,791
LIGHTING				
NONE	LS	0	\$0.00	\$0
			SUBTOTAL	\$0
SIGNALIZATION				
NONE	LS	0	\$0.00	\$0
			SUBTOTAL	\$0
FENCE				
NONE	LF	0	\$15.00	\$0
			SUBTOTAL	\$0
GUARDRAIL				
GUARDRAIL	LF	100	\$18.50	\$1,850
END TERMINALS	EACH	4	\$2,000.00	\$8,000
GUARDRAIL AT BRIDGE ENDS	LF	106	\$56.00	\$5,936
			SUBTOTAL	\$15,786
RIP RAP OR SLOPE PROTECTION				
RIP RAP	TON	285	\$27.00	\$7,695
			SUBTOTAL	\$7,695

COST ESTIMATES FOR TPR SPOT IMPROVEMENTS

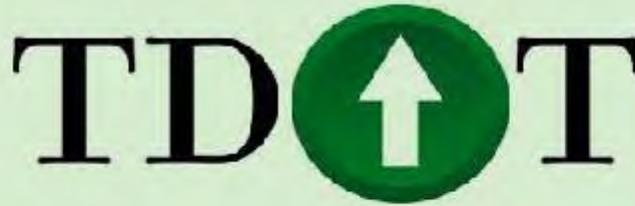
Summary of Detailed Cost Estimates

Spot Improvement No. 5: From 1600' south of Derby Drive to 2600' north of Derby Drive, approximately 4200'

	UNIT	QUANTITY	UNIT COST	TOTAL
CLEAR AND GRUBBING				
126' x 4280'	AC	12.38	\$2,000.00	\$24,760
			SUBTOTAL	\$24,760
EARTHWORK				
ROAD AND DRAINAGE UNCLASSIFIED (INC. ROCK EXC.)	CY	232578	\$8.00	\$1,860,622
BORROW EXCAVATION	CY	0	\$3.00	\$0
PRESPLITTING OF ROCK EXCAVATION	SY	7133	\$7.50	\$53,500
			SUBTOTAL	\$1,914,122
PAVEMENT REMOVAL				
AREA	SY	11413	\$4.50	\$51,360
			SUBTOTAL	\$51,360
DRAINAGE (INCLUDING EROSION CONTROL)				
RCBC	SF	0	\$60.00	\$0
RCP	LF	48	\$65.00	\$3,120
SIDE DRAINS	LF	120	\$40.00	\$4,800
SILT FENCE	LF	0	\$1.40	\$0
SILT FENCE WITH BACKING	LF	8560	\$3.40	\$29,104
SEDIMENT REMOVAL	CY	0	\$4.40	\$0
CATCH BASIN PROTECTION	EACH	0	\$500.00	\$0
CHECK DAMS	EACH	29	\$325.00	\$9,425
SEDIMENT FILTER BAGS	EACH	2	\$900.00	\$1,800
EROSION CONTROL BLANKET	SY	14267	\$2.00	\$28,533
			SUBTOTAL	\$76,782
STRUCTURES				
NONE	SF	0	\$85.00	\$0
			SUBTOTAL	\$0
RAILROAD CROSSING OR SEPARATION				
NONE	SF	0	\$85.00	\$0
			SUBTOTAL	\$0
PAVING (INCLUDES CURB, GUTTER & SIDEWALK)				
1.25" ASPHALTIC CONCRETE SURFACE (411-02.10)	TON	1008.18	\$77.00	\$77,630
2" ASPHALT BASE BINDER (307-02.08)	TON	1289.71	\$63.00	\$81,252
2" ASPHALT AGGREGATE BASE BINDER (307-02.01)	TON	1312.53	\$59.00	\$77,439
8" MINERAL AGGREGATE BASE (303-01)	TON	14158.87	\$15.00	\$212,383
TACK COAT	TON	0	\$464.00	\$0
PRIME COAT	TON	0	\$500.00	\$0
UNDERDRAIN	LF	0	\$5.00	\$0
CURB AND GUTTER	CY	0	\$162.50	\$0
SIDEWALK	SF	0	\$2.50	\$0
			SUBTOTAL	\$448,704
RETAINING WALLS				
NONE	SF	0	\$45.00	\$0
			SUBTOTAL	\$0
MAINTENANCE OF TRAFFIC				
TRAFFIC CONTROL	LS	1	\$5,000.00	\$5,000
TRAFFIC CONTROL SIGNAGE	SF	75	\$8.50	\$638
PORTABLE BARRIER RAIL	LF	4280	\$22.00	\$94,160
FLEXIBLE DRUMS	EACH	143	\$30.00	\$4,290
WARNING LIGHTS	EACH	143	\$22.00	\$3,146
ARROW BOARD	EACH	2	\$900.00	\$1,800
CHANGEABLE MESSAGE SIGN UNIT	EACH	2	\$4,400.00	\$8,800
TEMPORARY STRIPING	LF	17120	\$1.25	\$21,400
			SUBTOTAL	\$139,234
TOPSOIL				
TOPSOIL	CY	0	\$2.75	\$0
			SUBTOTAL	\$0
SEEDING				
SEEDING WITH MULCH	UNIT	539.28	\$21.00	\$11,325
WATER	M.G.	53.93	\$6.00	\$324
			SUBTOTAL	\$11,648
SODDING				
SODDING	SY	0	\$2.50	\$0
WATER	M.G.	0	\$8.00	\$0
			SUBTOTAL	\$0
SIGNING				
SIGNS	SF	31.25	\$11.50	\$359
STRIPING	LM	3.18	\$4,450.00	\$14,151
			SUBTOTAL	\$14,510
LIGHTING				
NONE	LS	0	\$0.00	\$0
			SUBTOTAL	\$0
SIGNALIZATION				
NONE	LS	0	\$0.00	\$0
			SUBTOTAL	\$0
FENCE				
NONE	LF	0	\$15.00	\$0
			SUBTOTAL	\$0
GUARDRAIL				
GUARDRAIL	LF	1100	\$18.50	\$20,350
END TERMINALS	EACH	4	\$2,000.00	\$8,000
GUARDRAIL AT BRIDGE ENDS	LF	0	\$56.00	\$0
			SUBTOTAL	\$28,350
RIP RAP OR SLOPE PROTECTION				
RIP RAP	TON	900	\$27.00	\$24,300
			SUBTOTAL	\$24,300

Appendix E: TDOT Early Environmental Screening Documentation

Note: The data and mapping in these screening reports were prepared by TDOT. Option 1 as shown in the EES is TPR Corridor 3, Option 4; EES Option 2 is TPR Option 3, Corridor 2; EES Option 3 is TPR Option 2.



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

Project Score Factors

	Total Impacts Evaluated	Total Impacts to Evaluate	EES Evaluation
Project Impact Areas:	15	15	Complete
Date of Evaluation:	August 21, 2009		
Evaluation done by:	Chris Armstrong		
	Transportation Planner 4		
County:	Sullivan & Washington		
Route:	State Route 93		
PIN:	112834.00		
Termini:	Interstate 81 to State Route 347 (Option 3)		

Impact Ranking of Features Evaluated: Total by Rank

Features with No Impact 10

- National Register Sites
- Bat
- Aquatic Species
- TDEC Conservation Sites & TDEC Scenic Waterways
- Superfund Sites
- Caves
- Railroads
- Tennessee Natural Areas Program
- Wildlife Management Areas
- TWRA Lakes & Other Public Lands

Features with Low Impact 2

- Cemetery Sites & Cemetery Properties
- Terrestrial Species

Features with Moderate Impact **1**

Pyritic Rock

Features with Substantial Impact **1**

Large Wetland Impacts

Community Impacts Present:

Institutions:

School

Church

Populations:

No population present

Populations below poverty - State average- 13%

EES Project Impact: **Complete**

Impacts Evaluated Within 1,000 Ft of Study Area

CEMETERY SITES & CEMETERY PROPERTIES

Impact

Project Impact (Environmental, Time, Cost, Design, and Maintenance)	<input checked="" type="checkbox"/> Low - Low impact on the project is anticipated as there is a cemetery abutting the project study area or corridor. It is anticipated that a 'normal' effort will be required to complete this environmental review as part of NEPA.
--	--

INSTITUTIONS & SENSITIVE COMMUNITY POPULATIONS

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

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

**TDOT EARLY ENVIRONMENTAL
SCREENING REPORT**

Populations below poverty - State average - 13%	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Populations below poverty - State average - 27%	<input type="checkbox"/>	<input checked="" type="checkbox"/>

BAT

Impact

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

RAILROADS

Impact

Project Impact (Environment, Time, Cost, Design, and Maintenance)	<input checked="" type="checkbox"/> None – No impact on the project is anticipated. There are no railroads located within the project study area or corridor.
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Impacts Evaluated Within 2,000 Ft of Study Area

NATIONAL REGISTER SITES

Impact

Project Impact (Environmental, Time, Cost, Design, and Maintenance)	<input checked="" type="checkbox"/> None – No project impact is anticipated as there are no National Register listed properties abutting or within the project study area or corridor.
--	---

SUPERFUND SITES

Impact

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

PYRITIC ROCK

Impact

Project Impact (Environment, Time, Cost, Design, and Maintenance)	<input checked="" type="checkbox"/> Moderate – Medium project impact is anticipated in the project study area or corridor. Formations that may contain acid producing rock (symbolized as orange or pink in color) are anticipated in small quantities. A greater than normal design is anticipated to perform geotechnical studies and analysis and design (i.e., containment measures and minimize disturbance/ movement of pyritic rock during construction). More effort is likely needed to: identify additional right of way to ‘waste’ material, secure permits, and design project blending of pyritic materials. Minimal long term efforts are anticipated to ensure performance of containment measures.
--	---

TWRA LAKES & OTHER PUBLIC LANDS

Impact

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

Impacts Evaluated Within 4,000 Ft of Study Area

TERRESTRIAL SPECIES

Impact

Project Impact (Environment, Time, Cost, Design, and Maintenance)	<input checked="" type="checkbox"/> Low – Minimal impact on the project is predicted as there is a known rare or state protected terrestrial species located within the project study area or corridor. A survey for the species may be required.
--	--

TDEC CONSERVATION SITES & TDEC SCENIC WATERWAYS

Impact

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

LARGE WETLAND IMPACTS

Impact

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

TENNESSEE NATURAL AREAS PROGRAM

Impact

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

Impact

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

Impacts Evaluated Within 10,000 Ft of Study Area

AQUATIC SPECIES

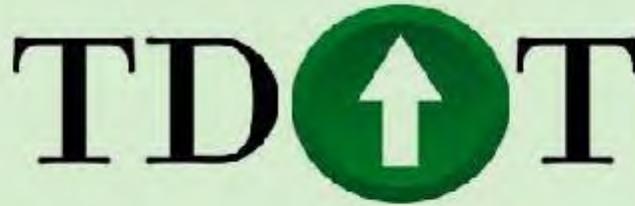
Impact

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

Impact

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



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

Project Score Factors

	Total Impacts Evaluated	Total Impacts to Evaluate	EES Evaluation
Project Impact Areas:	15	15	Complete
Date of Evaluation:	August 21, 2009		
Evaluation done by:	Chris Armstrong		
	Transportation Planner 4		
County:	Sullivan, Greene, & Washington		
Route:	State Route 93		
PIN:	112834.00		
Termini:	Interstate 81 to State Route 347 (Option 2)		

Impact Ranking of Features Evaluated: Total by Rank

Features with No Impact

10

- National Register Sites
- Bat
- Aquatic Species
- TDEC Conservation Sites & TDEC Scenic Waterways
- Superfund Sites
- Caves
- Railroads
- Tennessee Natural Areas Program
- Wildlife Management Areas
- TWRA Lakes & Other Public Lands

Features with Low Impact

2

- Cemetery Sites & Cemetery Properties
- Terrestrial Species

Features with Moderate Impact **1**

Pyritic Rock

Features with Substantial Impact **1**

Large Wetland Impacts

Community Impacts Present:

Institutions:

Populations:

No population present

Populations below poverty - State average- 13%

EES Project Impact: **Complete**

Impacts Evaluated Within 1,000 Ft of Study Area

CEMETERY SITES & CEMETERY PROPERTIES

Impact

Project Impact (Environmental, Time, Cost, Design, and Maintenance)	<input checked="" type="checkbox"/> Low - Low impact on the project is anticipated as there is a cemetery abutting the project study area or corridor. It is anticipated that a 'normal' effort will be required to complete this environmental review as part of NEPA.
--	--

INSTITUTIONS & SENSITIVE COMMUNITY POPULATIONS

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

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

BAT

Impact

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

RAILROADS

Impact

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

Impacts Evaluated Within 2,000 Ft of Study Area

NATIONAL REGISTER SITES

Impact

Project Impact (Environmental, Time, Cost, Design, and Maintenance)	<input checked="" type="checkbox"/> None – No project impact is anticipated as there are no National Register listed properties abutting or within the project study area or corridor.
--	---

SUPERFUND SITES

Impact

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

PYRITIC ROCK

Impact

Project Impact (Environment, Time, Cost, Design, and Maintenance)	<input checked="" type="checkbox"/> Moderate – Medium project impact is anticipated in the project study area or corridor. Formations that may contain acid producing rock (symbolized as orange or pink in color) are anticipated in small quantities. A greater than normal design is anticipated to perform geotechnical studies and analysis and design (i.e., containment measures and minimize disturbance/ movement of pyritic rock during construction). More effort is likely needed to: identify additional right of way to 'waste' material, secure permits, and design project blending of pyritic materials. Minimal long term efforts are anticipated to ensure performance of containment measures.
--	---

TWRA LAKES & OTHER PUBLIC LANDS

Impact

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

Impacts Evaluated Within 4,000 Ft of Study Area

TERRESTRIAL SPECIES

Impact

Project Impact (Environment, Time, Cost, Design, and Maintenance)	<input checked="" type="checkbox"/> Low – Minimal impact on the project is predicted as there is a known rare or state protected terrestrial species located within the project study area or corridor. A survey for the species may be required.
--	--

**TDEC CONSERVATION SITES & TDEC SCENIC
WATERWAYS**

Impact

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

LARGE WETLAND IMPACTS

Impact

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

TENNESSEE NATURAL AREAS PROGRAM

Impact

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

WILDLIFE MANAGEMENT AREAS

Impact

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

Impacts Evaluated Within 10,000 Ft of Study Area

AQUATIC SPECIES

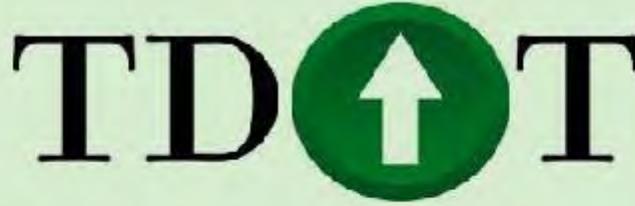
Impact

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

CAVES

Impact

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



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

Project Score Factors

	Total Impacts Evaluated	Total Impacts to Evaluate	EES Evaluation
Project Impact Areas:	15	15	Complete
Date of Evaluation:	August 21, 2009		
Evaluation done by:	Chris Armstrong		
	Transportation Planner 4		
County:	Sullivan & Washington		
Route:	State Route 93		
PIN:	112834.00		
Termini:	Interstate 81 to State Route 347 (Option 1)		

Impact Ranking of Features Evaluated: Total by Rank

Features with No Impact 10

- National Register Sites
- Bat
- Aquatic Species
- TDEC Conservation Sites & TDEC Scenic Waterways
- Superfund Sites
- Caves
- Railroads
- Tennessee Natural Areas Program
- Wildlife Management Areas
- TWRA Lakes & Other Public Lands

Features with Low Impact 2

- Cemetery Sites & Cemetery Properties
- Terrestrial Species

Features with Moderate Impact **1**

Pyritic Rock

Features with Substantial Impact **1**

Large Wetland Impacts

Community Impacts Present:

Institutions:

Populations:

No population present

Populations below poverty - State average- 13%

EES Project Impact: **Complete**

Impacts Evaluated Within 1,000 Ft of Study Area

CEMETERY SITES & CEMETERY PROPERTIES

Impact

Project Impact (Environmental, Time, Cost, Design, and Maintenance)	<input checked="" type="checkbox"/> Low - Low impact on the project is anticipated as there is a cemetery abutting the project study area or corridor. It is anticipated that a 'normal' effort will be required to complete this environmental review as part of NEPA.
--	--

INSTITUTIONS & SENSITIVE COMMUNITY POPULATIONS

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

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

BAT

Impact

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

RAILROADS

Impact

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

Impacts Evaluated Within 2,000 Ft of Study Area

NATIONAL REGISTER SITES

Impact

Project Impact (Environmental, Time, Cost, Design, and Maintenance)	<input checked="" type="checkbox"/> None – No project impact is anticipated as there are no National Register listed properties abutting or within the project study area or corridor.
--	---

SUPERFUND SITES

Impact

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

PYRITIC ROCK

Impact

Project Impact (Environment, Time, Cost, Design, and Maintenance)	<input checked="" type="checkbox"/> Moderate – Medium project impact is anticipated in the project study area or corridor. Formations that may contain acid producing rock (symbolized as orange or pink in color) are anticipated in small quantities. A greater than normal design is anticipated to perform geotechnical studies and analysis and design (i.e., containment measures and minimize disturbance/ movement of pyritic rock during construction). More effort is likely needed to: identify additional right of way to 'waste' material, secure permits, and design project blending of pyritic materials. Minimal long term efforts are anticipated to ensure performance of containment measures.
--	---

TWRA LAKES & OTHER PUBLIC LANDS

Impact

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

Impacts Evaluated Within 4,000 Ft of Study Area

TERRESTRIAL SPECIES

Impact

Project Impact (Environment, Time, Cost, Design, and Maintenance)	<input checked="" type="checkbox"/> Low – Minimal impact on the project is predicted as there is a known rare or state protected terrestrial species located within the project study area or corridor. A survey for the species may be required.
--	--

**TDEC CONSERVATION SITES & TDEC SCENIC
WATERWAYS**

Impact

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

LARGE WETLAND IMPACTS

Impact

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

TENNESSEE NATURAL AREAS PROGRAM

Impact

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

WILDLIFE MANAGEMENT AREAS

Impact

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

Impacts Evaluated Within 10,000 Ft of Study Area

AQUATIC SPECIES

Impact

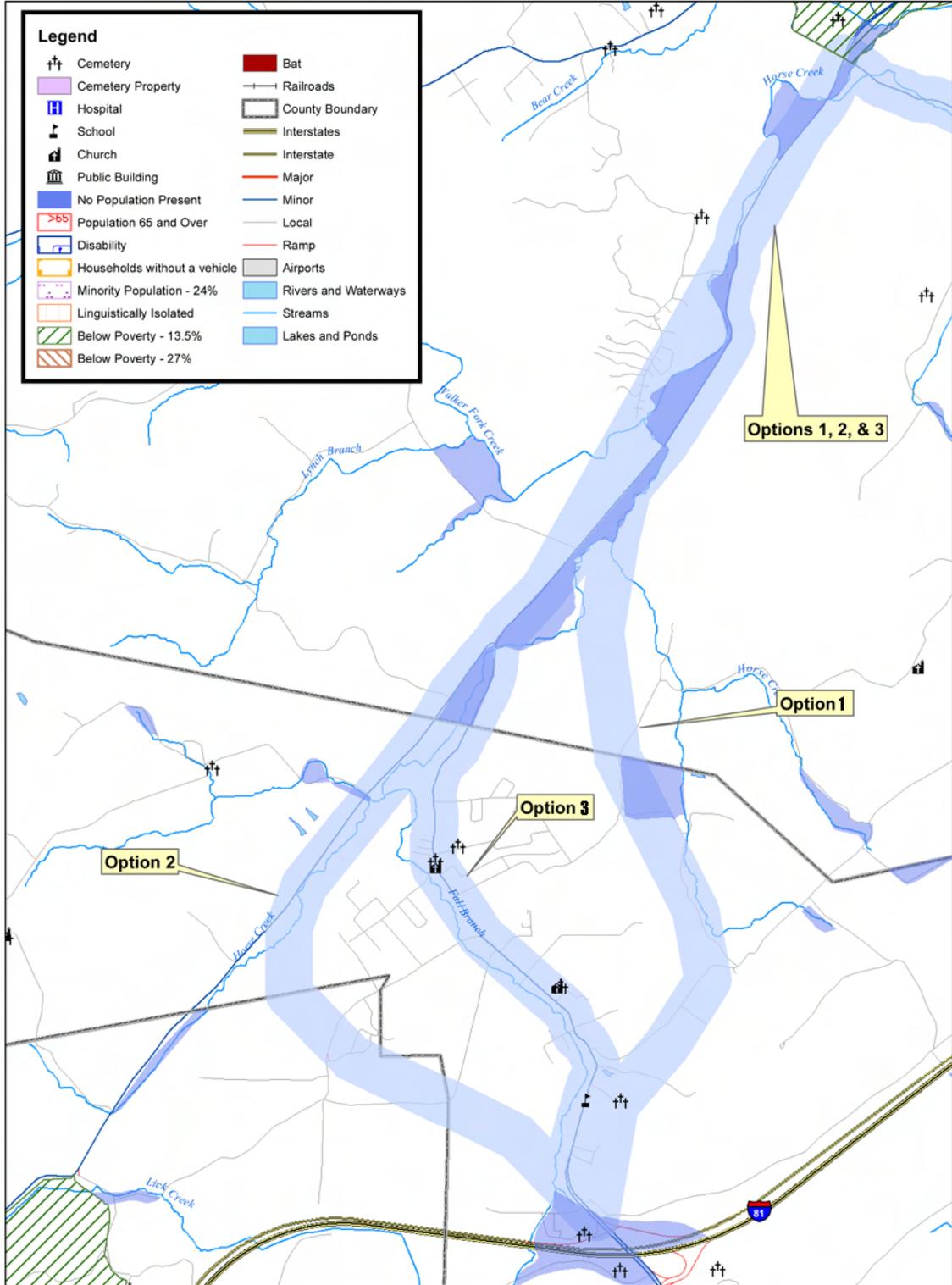
Project Impact (Environment, Time, Cost, Design, and Maintenance)	<input checked="" type="checkbox"/> None - No impact to the project is anticipated. There is no known occurrence of a rare, state, or federally-protected aquatic species within the project study area or corridor.
--	---

CAVES

Impact

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

**SR-93: 1,000 ft EES Corridor
Options 1, 2, and 3**



Option 1

EES Report

PIN 112834.00

Study Line ID: 112834_9003V01

1,000 Foot Corridor

Version Date: August 03, 2009

Created by: JONATHAN ROGERS

Cemetery Sites & Cemetery Properties

Cemetery Sites	<u>Total= 2</u>
McCrary Cemetery	
Baines Cemetery	
Cemetery Property	None were found

Institutions & Sensitive Community Populations

Institutions	None were found
Populations:	
No population present	Present
65 & older populations	None were found
Disability populations	None were found
Households without a vehicle	None were found
Minority populations 24%	None were found
Linguistically isolated populations	None were found
Populations below poverty-State average-13%	Present
Populations below poverty-State average-27%	None were found
Bat	None were found
Railroads	None were found

Option 2

EES Report

PIN 112834.00
1,000 Foot Corridor

Study Line ID: 112834_3002V01
Version Date: August 03, 2009
Created by: JONATHAN ROGERS

Cemetery Sites & Cemetery Properties

Cemetery Sites	<u>Total= 1</u>
McCrary Cemetery	
Cemetery Property	None were found

Institutions & Sensitive Community Populations

Institutions	None were found
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Populations:

No population present	Present
65 & older populations	None were found
Disability populations	None were found
Households without a vehicle	None were found
Minority populations 24%	None were found
Linguistically isolated populations	None were found
Populations below poverty-State average-13%	Present
Populations below poverty-State average-27%	None were found

Bat	None were found
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Railroads	None were found
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Option 3

EES Report

PIN 112834.00
1,000 Foot Corridor

Study Line ID: 112834_9001V01
Version Date: June 17, 2009
Created by: J. ROGERS

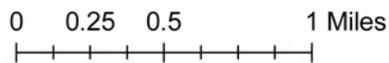
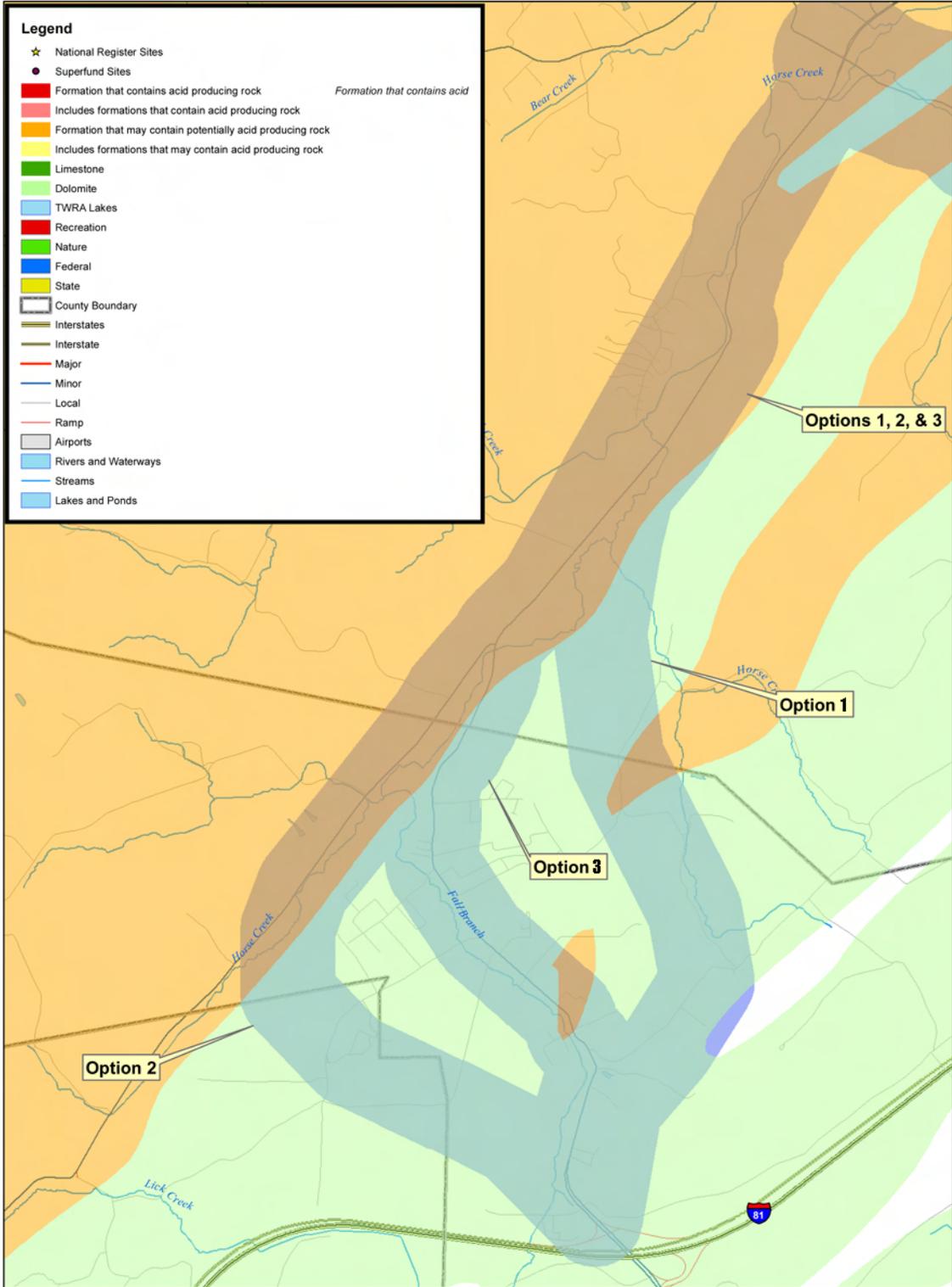
Cemetery Sites & Cemetery Properties

Cemetery Sites	<u>Total=</u> 3
McCrary Cemetery	
Fall Branch Cemetery	
Fall Branch Cemetery	
Cemetery Property	None were found

Institutions & Sensitive Community Populations

Institutions:	<u>Total=</u> 3
School	Fall Branch Elementary School
Church	Fall Branch United Methodist C
Church	Fall Branch First Baptist Chur
Populations:	
No population present	Present
65 & older populations	None were found
Disability populations	None were found
Households without a vehicle	None were found
Minority populations 24%	None were found
Linguistically isolated populations	None were found
Populations below poverty-State average-13%	Present
Populations below poverty-State average-27%	None were found
Bat	None were found
Railroads	None were found

SR-93: 2,000 ft EES Corridor
Options 1, 2, and 3



Option 1

EES Report

PIN 112834.00
2,000 Foot Corridor

Study Line ID: 112834_9003V01
Version Date: August 03, 2009
Created by: JONATHAN ROGERS

National Register Sites None were found

Superfund Sites None were found

Pyritic Rock Classification Total= 5

Dolomite

Honaker Dolomite

Knox Group

Knox Group

May Contain Potentially Acid Producing Rock

Sevier Formation

Sevier Formation

TWRA Lakes & Other Public Lands

TWRA Lakes None were found

Other Public Lands None were found

Option 2

EES Report

PIN 112834.00
2,000 Foot Corridor

Study Line ID: 112834_3002V01
Version Date: August 03, 2009
Created by: JONATHAN ROGERS

National Register Sites None were found

Superfund Sites None were found

Pyritic Rock Classification Total= 4

Dolomite

Knox Group

Knox Group

Honaker Dolomite

May Contain Potentially Acid Producing Rock

Sevier Formation

TWRA Lakes & Other Public Lands

TWRA Lakes None were found

Other Public Lands None were found

Option 3

EES Report

PIN 112834.00
2,000 Foot Corridor

Study Line ID: 112834_9001V01
Version Date: June 17, 2009
Created by: J. ROGERS

National Register Sites None were found

Superfund Sites None were found

Pyritic Rock Classification Total= 5

Dolomite

Honaker Dolomite

Knox Group

Knox Group

May Contain Potentially Acid Producing Rock

Sevier Formation

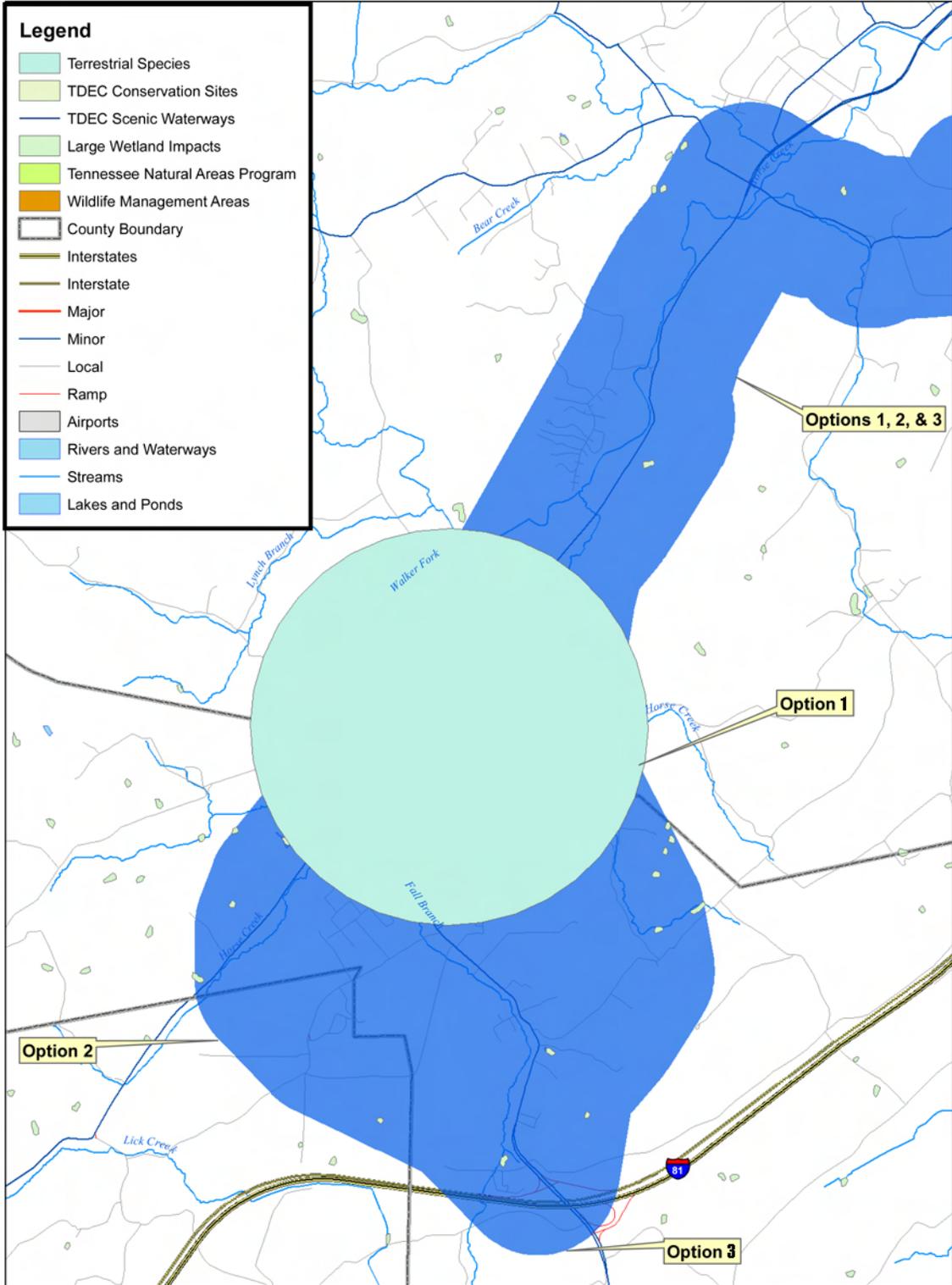
Sevier Formation

TWRA Lakes & Other Public Lands

TWRA Lakes None were found

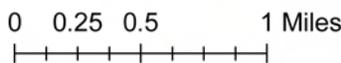
Other Public Lands None were found

SR-93: 4,000 ft EES Corridor
Options 1, 2, and 3



Legend

- Terrestrial Species
- TDEC Conservation Sites
- TDEC Scenic Waterways
- Large Wetland Impacts
- Tennessee Natural Areas Program
- Wildlife Management Areas
- County Boundary
- Interstates
- Interstate
- Major
- Minor
- Local
- Ramp
- Airports
- Rivers and Waterways
- Streams
- Lakes and Ponds



Option 2

EES Report

PIN 112834.00
4,000 Foot Corridor

Study Line ID: 112834_9002V01
Version Date: August 3, 2009
Created by: JONATHAN ROGERS

Terrestrial Species	<u>Total</u> = 2	USESA	SPROT
Allocapnia brooksi			
Thuja occidentalis			S

TDEC Conservation Sites & TDEC Scenic Waterways

TDEC Conservation Sites	None were found
TDEC Scenic Waterways	None were found

Large Wetland Impacts

Total AVERAGE= 8.45

PEM1A	0.80	acres
PEM1A	0.88	acres
PUBFh	0.32	acres
PUBFh	0.45	acres
PUBFh	0.43	acres
PUBHh	0.56	acres
PUBHh	0.46	acres
PUBHh	0.61	acres
PUBHh	0.86	acres
PUBHh	0.64	acres
PUBHh	1.54	acres
PUBHh	0.36	acres
PUBHh	0.53	acres

Tennessee Natural Areas Program	None were found
Wildlife Management Areas	None were found

Option 3

EES Report

PIN 112834.00
4,000 Foot Corridor

Study Line ID: 112834_9001V01
Version Date: June 17, 2009
Created by: J. ROGERS

Terrestrial Species	<u>Total</u> = 2	USESA	SPROT
Allocapnia brooksi			
Thuja occidentalis			S

TDEC Conservation Sites & TDEC Scenic Waterways

TDEC Conservation Sites	None were found
TDEC Scenic Waterways	None were found

Large Wetland Impacts

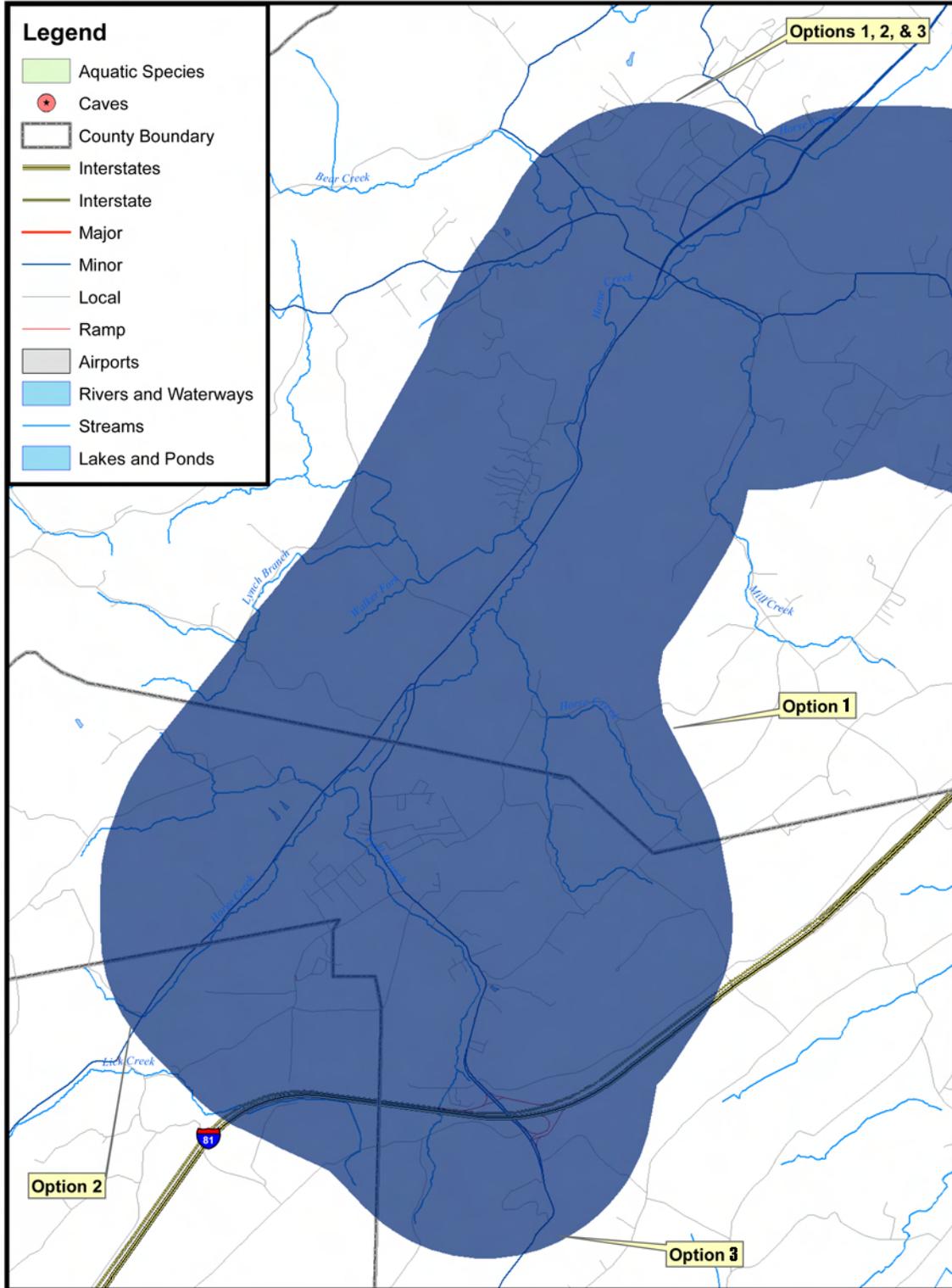
Total Acentage= 6.84

PEM1A	0.80	acres
PUBFh	0.55	acres
PUBFh	0.58	acres
PUBFh	0.32	acres
PUBHh	0.46	acres
PUBHh	0.61	acres
PUBHh	0.86	acres
PUBHh	1.54	acres
PUBHh	0.58	acres
PUBHh	0.53	acres

Tennessee Natural Areas Program	None were found
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Wildlife Management Areas	None were found
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**SR-93: 10,000 ft EES Corridor
Options 1, 2, and 3**



Option 1

EES Report

PIN 112834.00

10,000 Foot Corridor

Study Line ID: 112834_9003V01

Version Date: August 03, 2009

Created by: JONATHAN ROGERS

Aquatic Species

None were found

Caves

None were found

Option 2

EES Report

PIN 112834.00

Study Line ID: 112834_9002V01

10,000 Foot Corridor

Version Date: August 03, 2009

Created by: JONATHAN ROGERS

Aquatic Species

None were found

Caves

None were found

Option 3

EES Report

PIN 112834.00

Study Line ID: 112834_9001V01

10,000 Foot Corridor

Version Date: June 17, 2009

Created by: J. ROGERS

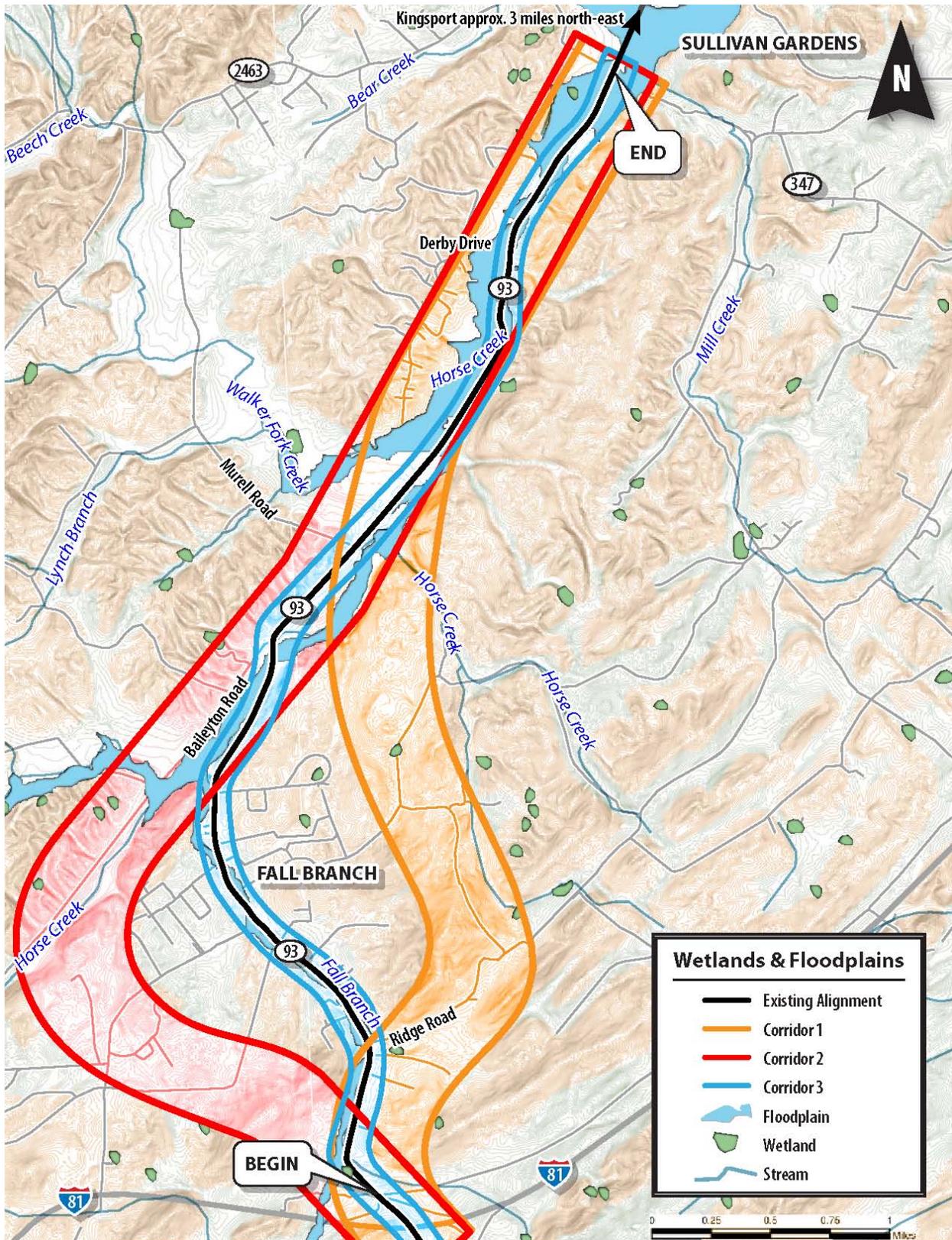
Aquatic Species

None were found

Caves

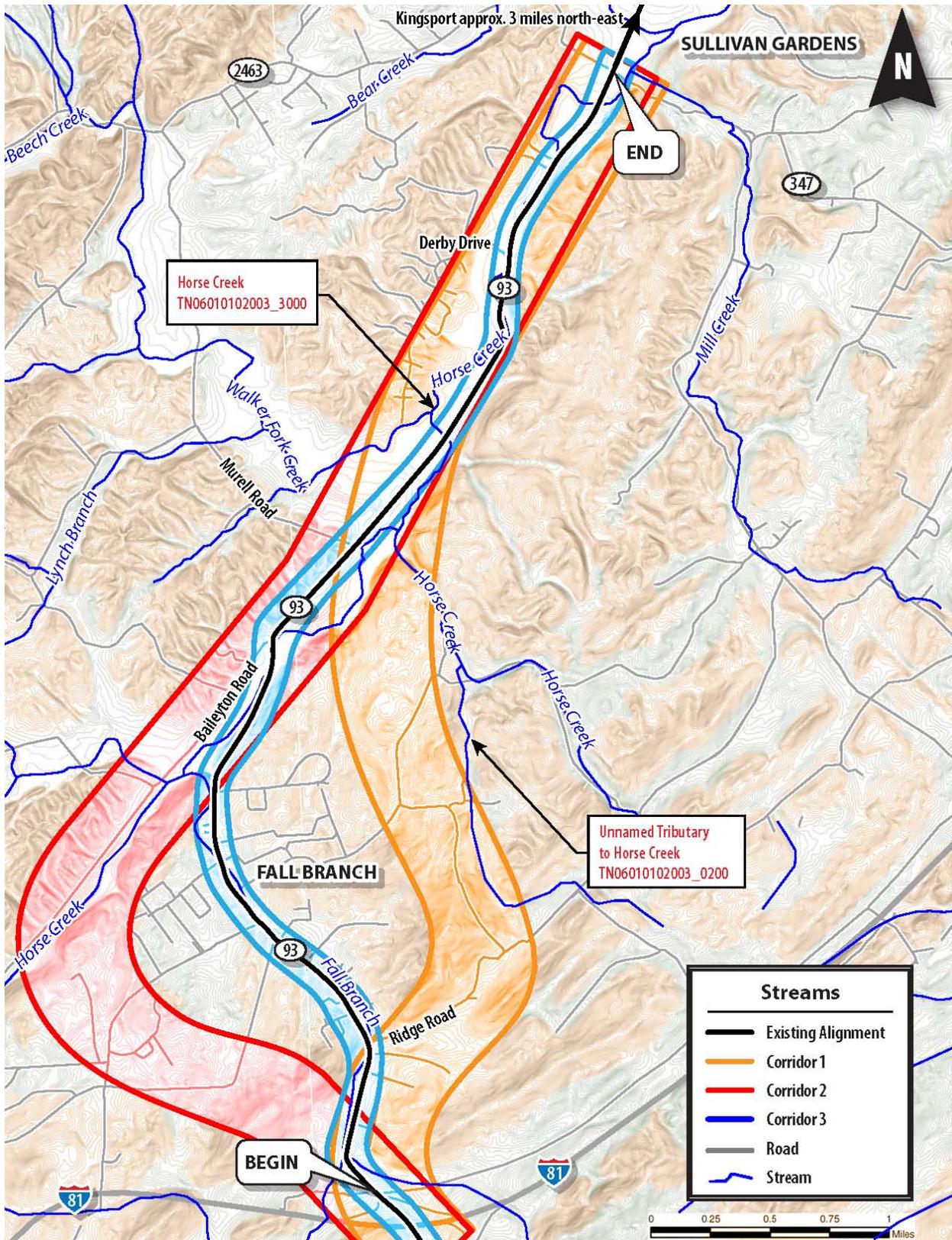
None were found

Appendix F: Supplemental Environmental Screening Maps



Sources: USFWS National Wetland Inventory, FEMA FIRM

Floodplains and Wetlands

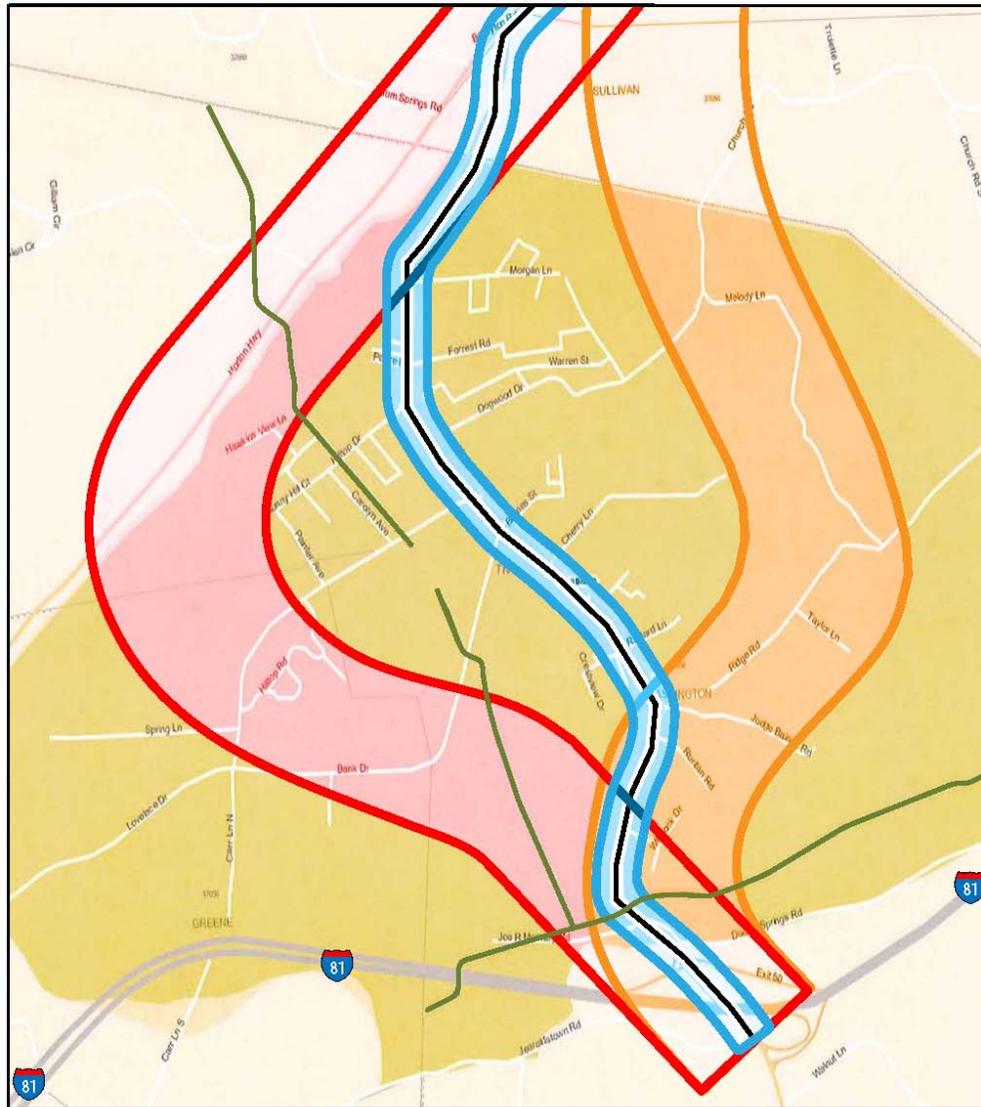


Source: Tennessee Department of Environment and Conservation

Streams



NATIONAL PIPELINE MAPPING SYSTEM



Layer List

- NPMS Data**
- Gas Transmission
- High Consequence Areas**
- High Population Areas
- Other Populated Areas
- Corridor 1
- Corridor 2
- Corridor 3

Pipelines depicted on this map represent gas and hazardous liquid transmission pipelines only. Gathering and distribution systems are not represented.

This map should never be used as a substitute for contacting a one-call center prior to excavation activities. Please call 811 before any digging occurs.

Questions regarding this map or its contents can be directed to npms-tr@mbakercorp.com.

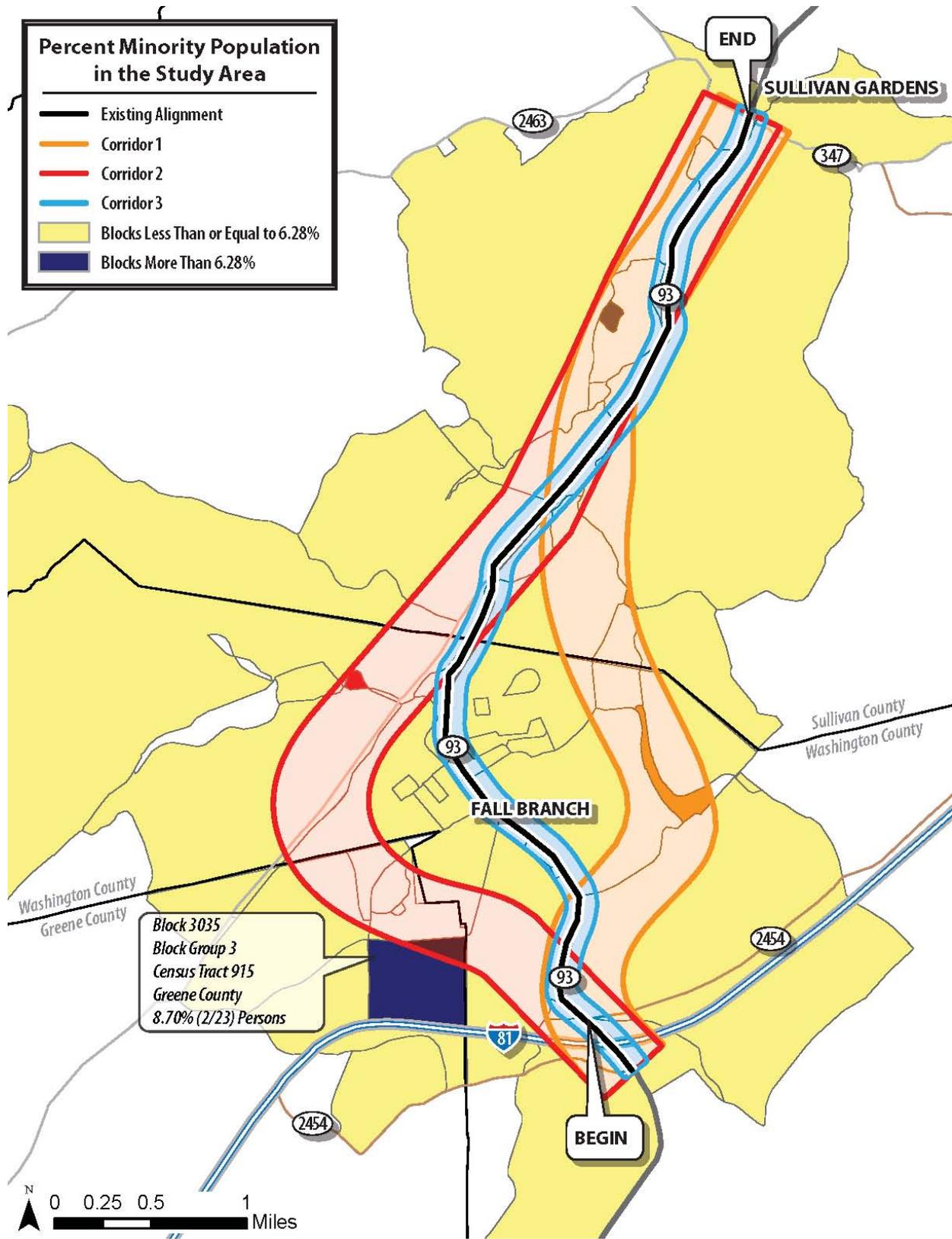
Projection: Geographic
Datum: NAD83

U.S. Department of Transportation
Pipeline and Hazardous Materials Safety
Administration
National Pipeline Mapping System



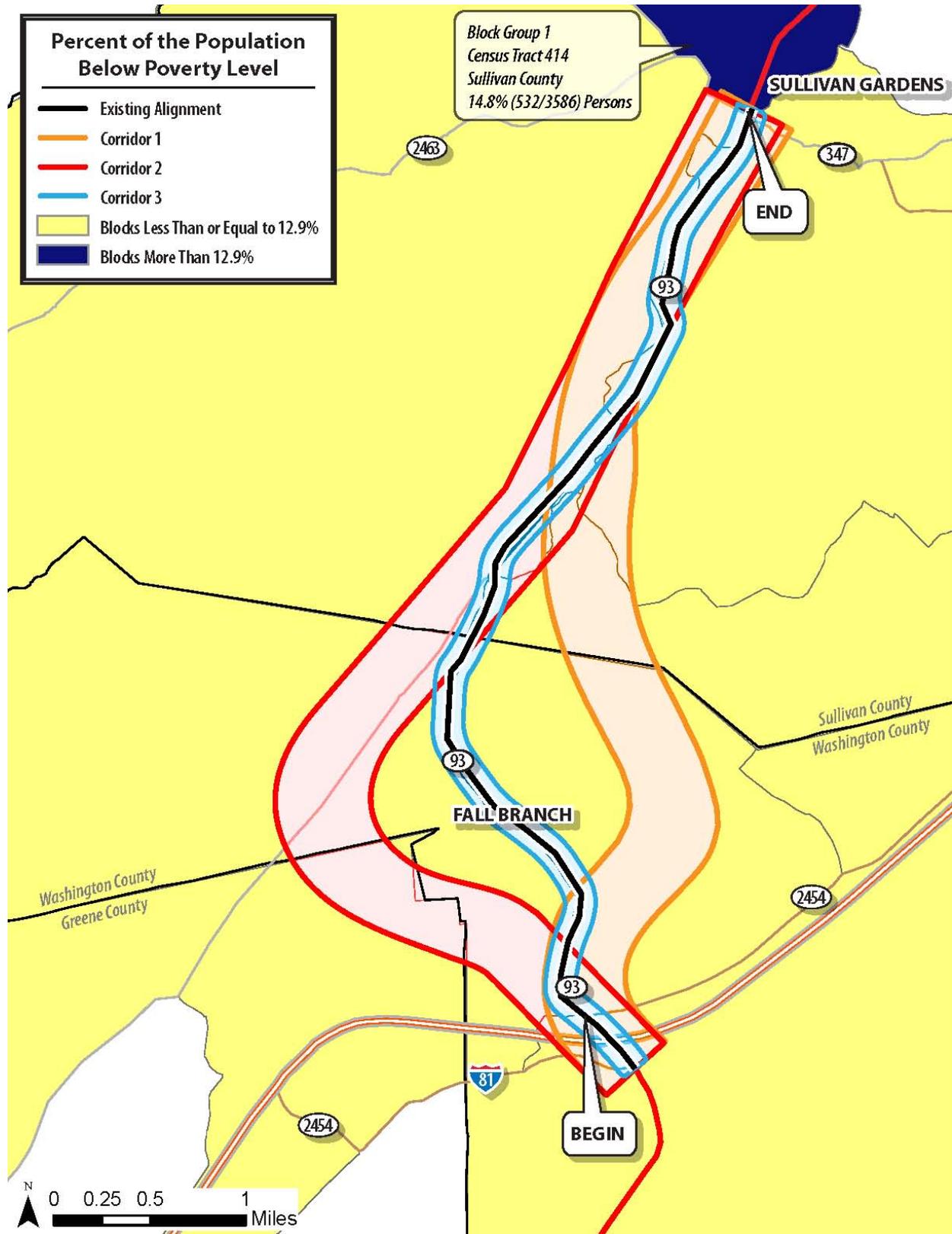
Source: U.S. Dept. of Transportation Pipeline and Hazardous Materials Safety Administration

Gas Pipelines



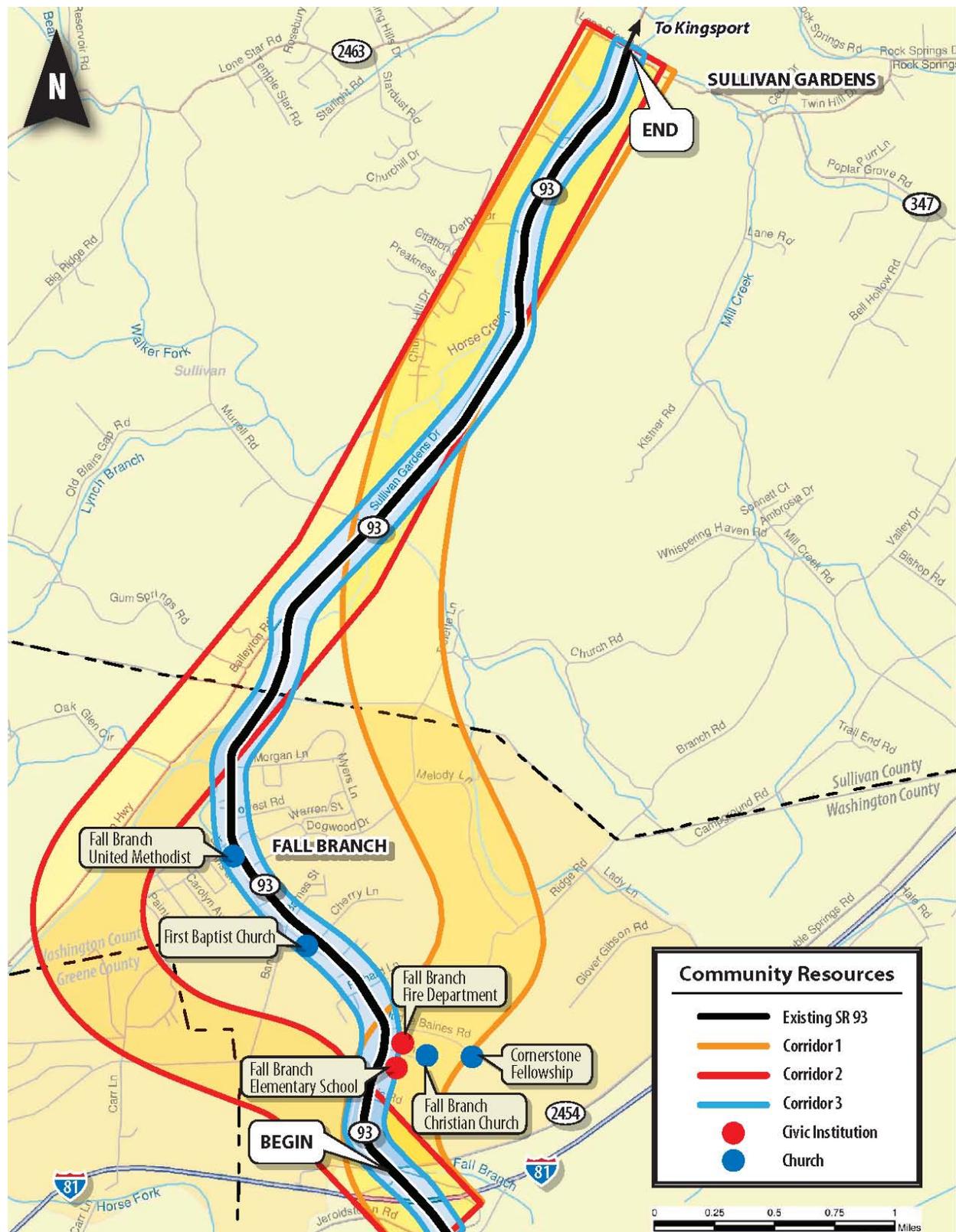
Source: US Census 2000, Summary File 1

Percent Minority Population in the Study Area



Source: US Census 2000, Summary File 3

Percent of the Population Below Poverty Level



Community Resources