Southern Extension of State Route 186 and the US 45 Bypass

Jackson,
Madison County,
Tennessee

Transportation Planning Report

Prepared by
Gresham, Smith and Partners
for the
City of Jackson, Tennessee
in Cooperation with the
Tennessee Department of Transportation
Project Planning Division

March 2009

TRANSPORTATION PLANNING REPORT

Southern Extension of State Route 186 and the US 45 Bypass

FROM STATE ROUTE 1 (US 70/AIRWAYS BOULEVARD) TO
STATE ROUTE 5 (US 45/SOUTH HIGHLAND AVENUE)
JACKSON, MADISON COUNTY

PREPARED BY
GRESHAM SMITH AND PARTNERS
For the
CITY OF JACKSON
In cooperation with
TENNESSEE DEPARTMENT OF TRANSPORTATION
PROJECT PLANNING DIVISION

Approved by:	Signature	DATE
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1.0 INTENT OF THE TRANSPORTATION PLANNING REPORT

The subject of this *Transportation Planning Report* (*TPR*) is the proposed southern extension of State Route (SR) 186 and the US 45/Keith Short Bypass (US 45 Bypass) from State Route 1/US 70/Airways Boulevard (Airways Boulevard) on the west side of the City of Jackson to SR 5/US 45/South Highland Avenue (US 45) on the south side of the City of Jackson. Figure 1 depicts the project in its regional context.

In 2005, $4.0 million in federal funds became available for an extension of the existing US 45 Bypass from Airways Boulevard to US 45 as part of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) High Priority Projects (HPP) Program.

In July of 2007, the City of Jackson formally contacted TDOT requesting assistance from the TDOT Local Programs Office and permission to fund a *TPR* and associated studies with HPP funds. In September of 2007, TDOT responded positively, agreeing to match funds for the early portions of project development. On March 10, 2008, the City received from TDOT the formal Notice to Proceed with preliminary engineering for the environmental phase of project development, permitting the city to move forward with the *TPR* process. (Documentation of this correspondence is in Appendix A.)

This *TPR* identifies the preliminary need and the goals (purpose) of the project, which include: inadequate crossings of the South Fork of the Forked Deer River, which poses concerns for emergency responses; safety issues along US 45 and the US 45 Bypass; roadway geometrics that fail to adequately accommodate existing and projected traffic; and inadequate infrastructure to accommodate area growth and economic development.

This *TPR* also presents and evaluates options developed in the planning process, both previously considered options and those developed during the *TPR* process. The *TPR* options are presented as wide corridors into which alignments can be developed in the next project phase (i.e., NEPA). The environmental screening presented in this TPR assisted planners and engineers in developing corridors that would minimize impacts to known environmentally sensitive areas. Planning level costs are also included in the analysis. Finally, a letter of endorsement from the Jackson Area MPO of their preferred corridor option is included in Appendix A.

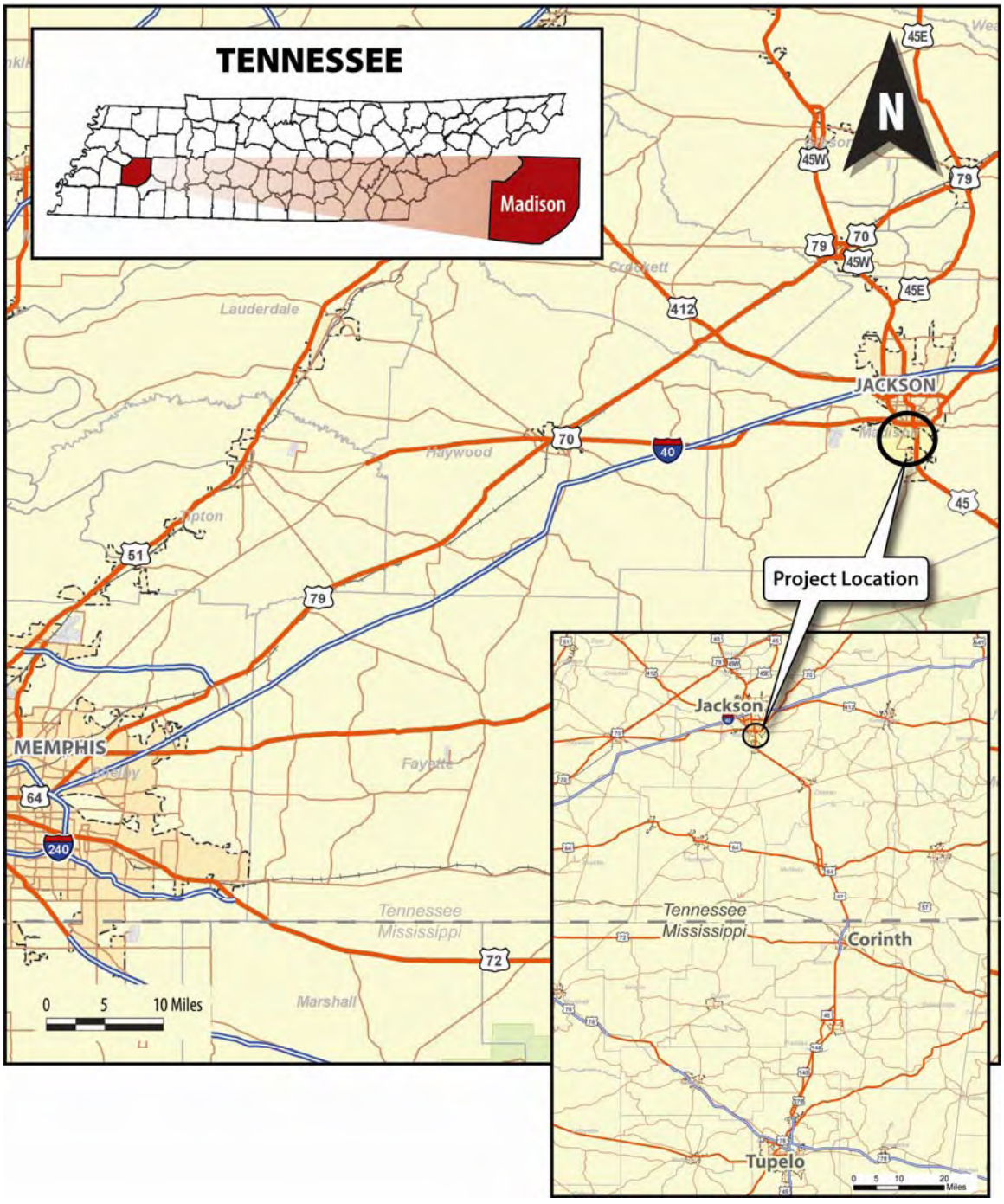


Figure 1. Project within its Regional Context

2.0 PROJECT BACKGROUND

The existing US 45 Bypass was constructed by TDOT in the mid-1960s to relieve congestion on existing US 45 through downtown Jackson. US 45 is a major arterial highway extending from Mobile, Alabama to Michigan, and serves as the main route between Jackson and Tupelo, Mississippi located approximately 100 miles to the south. The existing US 45 Bypass connects US 45 south of downtown Jackson to Interstate 40 (I-40), which lies north of the project area (see Figure 2). (The section of the bypass between I-40 and Airways Boulevard is also designated as SR 186.) The southern terminus of the existing US 45 Bypass is located in downtown Jackson, one block south of the Madison County Courthouse. Traffic from the south must travel US 45 into downtown Jackson to access the US 45 Bypass, resulting in congestion in the downtown area, as well as negative impacts to the travel time of through traffic.

When the existing bypass opened in 1967, annual average daily traffic (AADT) on US 45 was about 16,000. By 1981, AADT along US 45 south of the intersection with the existing US 45 Bypass had reached 24,000, an increase of 50 percent. To accommodate the additional traffic and decrease congestion at the intersection of US 45, the US 45 Bypass and East Chester Street, a jug-handle intersection configuration was constructed in 1981 (see inset in Figure 2). Northbound traffic on US 45 was routed to the right onto South Church Street and then left onto East Chester Street to continue onto the US 45 Bypass, thus eliminating the need for dedicated left turns from US 45 to the existing US 45 Bypass. This configuration has been successful at relieving some congestion, but increasing AADT in the area has once again resulted in the need for additional capacity or relief along existing US 45, particularly at its intersection with the existing bypass in the downtown area. Average daily traffic data is depicted in Figure 2.

In both 1999 and 2003, tornadoes left debris blocking US 45 and temporarily cut off access to southern portions of the city. Figure 3 shows the paths of several Jackson tornadoes and existing US 45 within the impact area of the storms. Following the 2003 storms, the City of Jackson, Madison County and the Jackson Metropolitan Planning Organization (MPO) agreed that a need existed for improved access between north and south Jackson, both for congestion and safety reasons. The City of Jackson initiated discussions with TDOT about a possible southern extension of the US 45 Bypass to provide an alternate route between north and south Jackson and an additional crossing of the South Fork of the Forked Deer River.

The US 45 Southern Bypass planning history over the last five years is depicted in Figures 4A and 4B. Over the past five years, the City of Jackson has used local funds to explore options for extension of the US 45 Bypass southward. During this time period, TDOT also prepared a feasibility study for an eastern bypass route, which was eventually rejected due to opposition from local residents and environmental groups. The City of Jackson continued to evaluate options for alignments to the south, but each proposed alternative was met with opposition, primarily from permitting agencies opposed to new crossings of the South Fork of the Forked Deer River. Alternatives for alignments farther west were also rejected, as they would bisect the University of Tennessee Agricultural Experiment Station, drawing opposition from the University, and/or were too far west from US 45.

Figure 2. Project Area

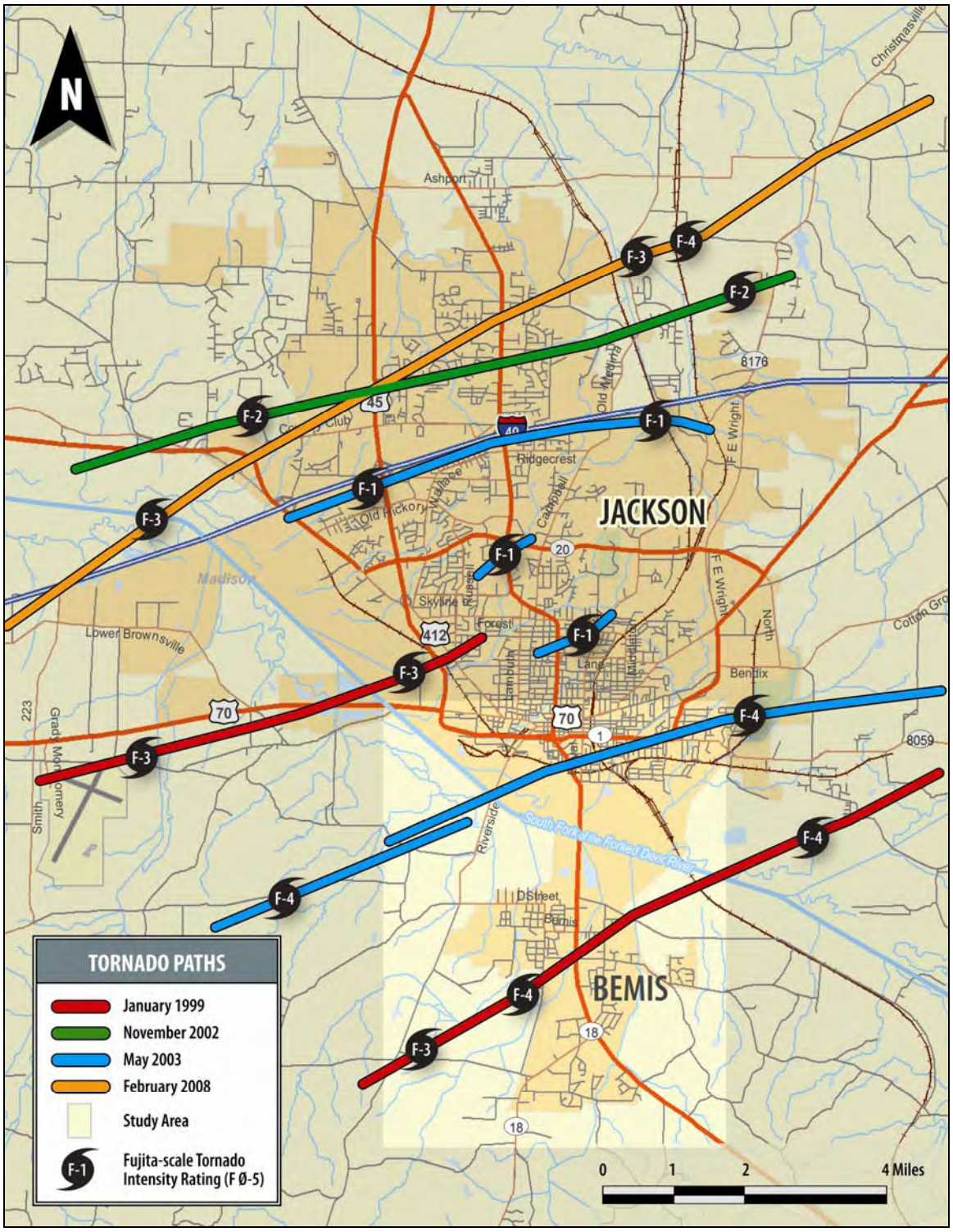


Figure 3. Paths of Recent Tornadoes

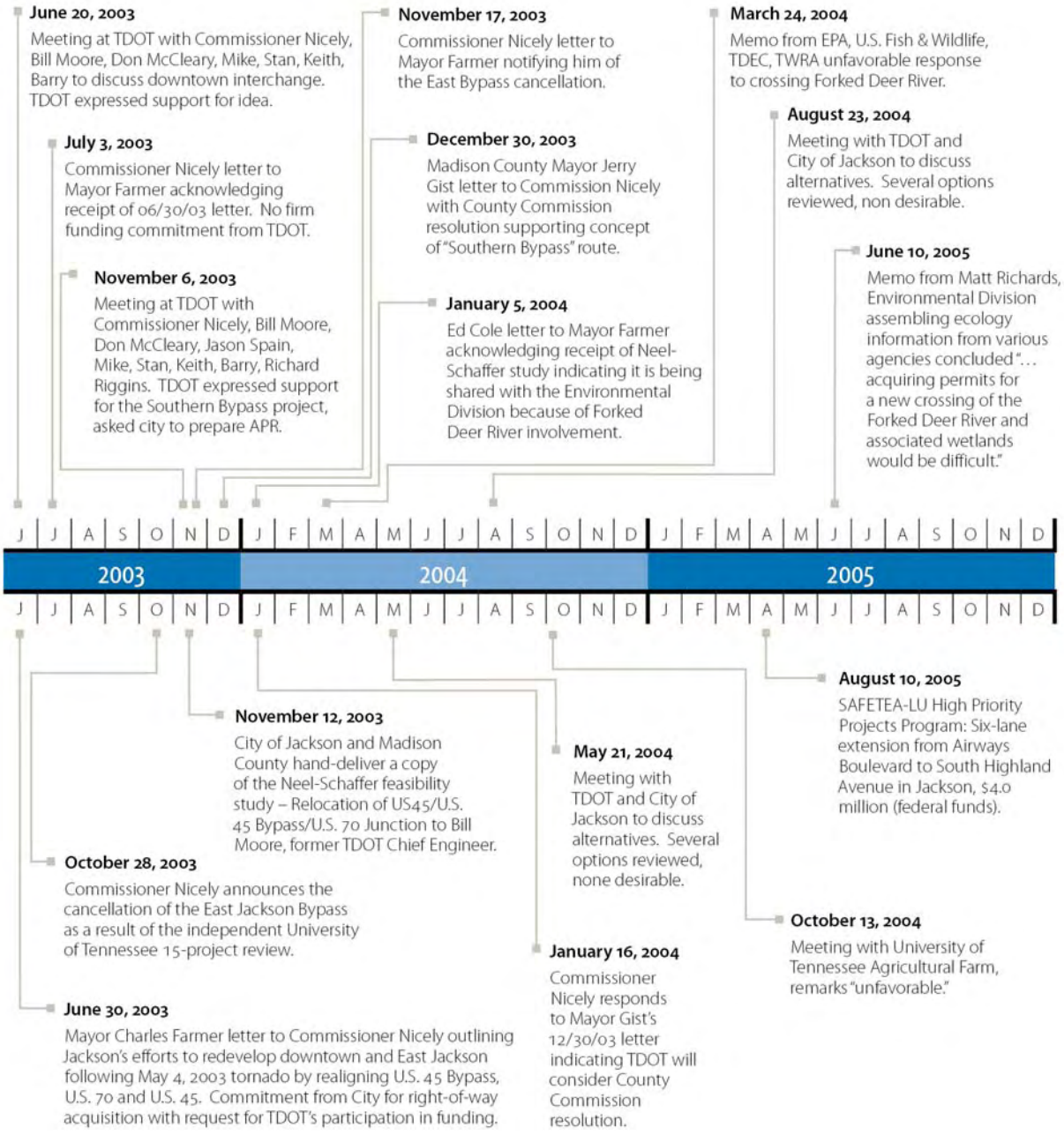


Figure 4A. US 45 Bypass Planning History, 2003-2005

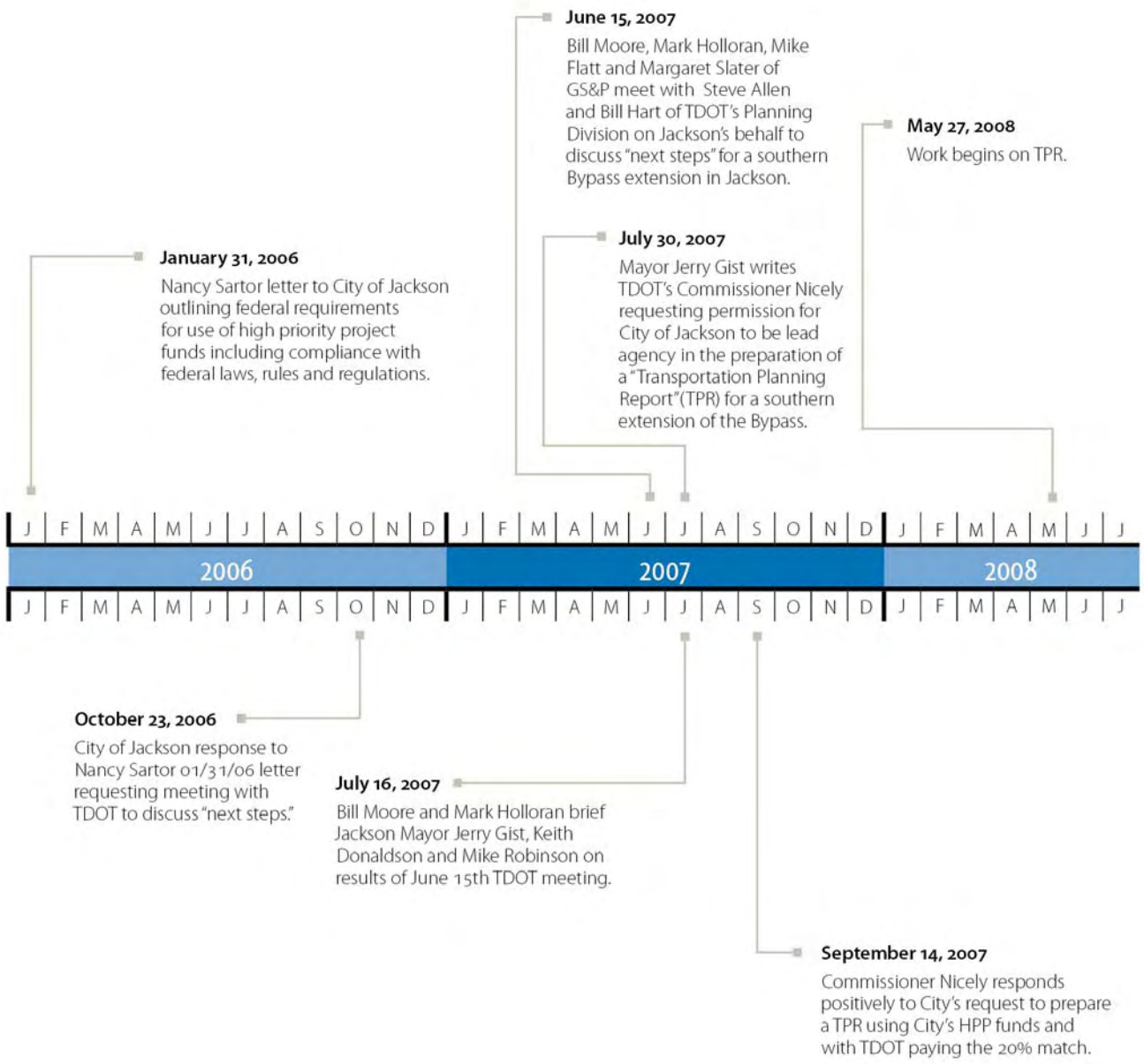


Figure 4B. US 45 Bypass Planning History, 2006-2008

As previously described, in 2005, federal funds became available for a six-lane extension of the existing US 45 Bypass from Airways Boulevard to US 45/South Highland Avenue through the SAFETEA-LU HPP Program. In September of 2007, TDOT agreed to match City funds for the project planning phases. In 2008, TDOT notified the City of Jackson that they could move forward with a *TPR* and then with the NEPA process upon completion and approval of the *TPR.*

Improvements to or reconfigurations of the existing US 45 Bypass and US 45 are proposed in several area planning documents. Following the tornadoes in 2003, the City of Jackson contracted with the Urban Land Institute (ULI) to prepare a master plan for downtown redevelopment. The study recommended focusing efforts on removing through traffic flow from the downtown area, as it conflicts with the desired pedestrian-oriented character. The study specifically recommended a relocation of the junction of the US 45 Bypass, US 45 and US 70/East Chester Street farther south of downtown in order to enhance pedestrian accessibility between the downtown core and the Carl Perkins Civic Center. Additionally, the Jackson MPO lists a number of improvements to the existing US 45 Bypass in its *Year 2035 Long Range Transportation Plan*, including interchange reconstruction and road widening. A relocation of a segment of the existing bypass from its current alignment to new location along an Illinois Central and Gulf railroad corridor south of downtown Jackson is also proposed for 2008 in the *2008-2011 Transportation Improvement Program*. Both plans recognize improvements to or extension of the existing bypass as a critical component in solving long-term traffic and safety issues in the Jackson region.

In 2008, project planners coordinated with the TDOT Environmental Division and the consultant preparing the NEPA documentation for the proposed improvements to SR 18, which currently intersects US 45 south of Bemis (See Figure 2). This project has two alternatives to connect with US 45 under consideration. The first is to follow the existing alignment of SR 18 to connect with US 45, and the second is to connect with US 45 south of existing SR 18. SR 18 is south of the southern terminus of the study corridor for the Southern Extension of the US 45 Bypass project, which is the subject of this TPR. Initial reviews of the alternatives and the traffic have indicated that it will not affect the results of this corridor study. However, this will need to be examined more closely in the future when an SR 18 alternative is selected and the US 45 project moves forward into the next study phase.

The Jackson MPO Transportation Improvement Program (TIP) is in the process of being updated to reflect the currently proposed US 45 Bypass and to add funds for the next study phase for the US 45 Bypass project, i.e., the completion of the NEPA process.

3.0 EXISTING CONDITIONS

3.1 Community Characteristics

As previously stated, the study area for the proposed southern extension of the US 45 Bypass lies to the south and southwest of the City of Jackson in Madison County, Tennessee. Jackson is located approximately 85 miles east of Memphis and 130 miles west of Nashville and is considered a hub of agricultural and industrial production for western Tennessee. Jackson serves as county seat for Madison County, and as an employment, retail, banking, medical and entertainment center for residents of several surrounding counties.

Population and Growth

In 2007, the City of Jackson had a population of 63,196 people. For comparison purposes, the population for both Madison County and the State of Tennessee are shown in Table 1. Between 1990 and 2007, Jackson experienced a 29.1 percent increase in population, as compared to 23.7 percent for Madison County and 26.2 percent in Tennessee as a whole.

Table 1: Population Growth

	Population			Percent Change
	1990	2000	2007	1990-2007
Tennessee	4,877,185	5,689,283	6,156,719	26.2
Madison County	77,982	91,837	96,518	23.8
City of Jackson	48,949	59,643	63,196	29.1

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

Development to accommodate the growing population is planned, and in some cases underway, in several parts of the city. Moss Creek Town Center and The Columns are commercial developments underway near I-40, north of the project area. Additional commercial development is underway at Park Place and Park Place West, both located along F.E. Wright Drive near Pringles Park, northeast of the proposed project study area. Land has been acquired but no plans have been submitted for development on parcels adjacent to the Criminal Justice Center near downtown. A commercial development known as Meridian Springs is also planned for land adjacent to US 45 in the project area, just north of Watlington Road. Three residential developments are planned along Harts Bridge and Perry Switch roads in the eastern part of the project study area. Current and planned developments are depicted on Maps E-1 and E-2 in Appendix E.

Major Employers and Traffic Generators

Four major universities are located in and around the City of Jackson, giving Jackson a sizeable student population. Jackson State Community College, the largest in the area, is located on North Parkway, between downtown Jackson and I-40. Jackson State enrolls approximately 4,300 students in both day and evening classes. Jackson State serves a 14-county area of West Tennessee and is primarily a commuter school; no on-campus housing is available, and students drive to and from campus each day. Union

University, a private, four-year liberal arts institution with 3,300 students, is located on the existing US 45 Bypass, north of I-40. Lane College, a historically African-American institution located just northeast of downtown Jackson on Lane Avenue, enrolls 1,300 students. Lambuth University, the smallest of Jackson's four major schools with 900 students, is located just northwest of downtown Jackson on Lambuth Boulevard.

In addition to the four major colleges and universities, Jackson is home to West Tennessee Business College, a 270-student technical school located on the existing US 45 Bypass just south of Hollywood Drive. The University of Tennessee also operates a major agricultural research station and associated technology facilities on Airways Boulevard, west of downtown Jackson and abutting the west side of the US 45 Bypass through this area. Collectively, Jackson's four 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 sector in the Jackson-Madison County area is health care and social services, closely followed by manufacturing. According to statistics compiled by the Tennessee Department of Labor and Workforce Development in April 2008, the labor force in Jackson is experiencing an unemployment rate of 5.3 percent, which is slightly below the statewide average of 5.4 percent.

Major employers in the Jackson-Madison area include:

- West Tennessee Healthcare *(5200 employees)*
- Jackson-Madison County School System *(2000 employees)*
- Proctor and Gamble *(1280 employees)*
- Porter Cable/Delta *(1200 employees)*
- Jackson State Community College *(788 employees)*
- The City of Jackson *(767 employees)*
- Delta Faucet Company *(700 employees)*

West Tennessee Healthcare operates Jackson-Madison County Hospital, a major facility serving 17 counties and currently undergoing a 365,000 square foot expansion expected to be completed in 2008. Proctor and Gamble's Jackson plant is the largest exporter of all its US facilities, as well as the only facility producing Pringles potato chips. Proctor and Gamble has been a major investor in the Jackson area, investing millions of dollars into its Jackson operations, particularly in the late 1990s. While most of these major employers, with the exception of some school and city facilities, are located outside the project study area, all generate truck and employee commute trips on US 45 and the US 45 Bypass, making them regional contributors to traffic in the study area.

Since completion of the existing US 45 Bypass in 1967, retail and service centers in Jackson have shifted away from the downtown area. Rapid development, driven by a growing labor force, populated the US 45 Bypass and US 45 south of Jackson with a host of auto-oriented, commercial development, significantly increasing congestion. Jackson's status as a regional retail and entertainment center continues to make sites along the US 45 Bypass and US 45 attractive to new businesses, exacerbating current traffic issues.

US 45 is the major north-south route through Jackson and runs through the heart of downtown. The US 45 Bypass, constructed in the late 1960s, was intended to alleviate congestion along US 45 by routing some traffic around the downtown area. At the time of construction, downtown served as Jackson's retail and commercial core. The terminus of the existing bypass was sited in the downtown area to provide access to this commercial core, thus permitting the bypass to serve both local and through traffic.

Today, much of the traffic along the existing US 45 Bypass and US 45 is generated externally. US 45 is the only major, north-south route through Jackson and serves as a major travel corridor and freight route for vehicles traveling to and from Mississippi. US 45 is the primary commuter route for residents of Chester, Hardeman and McNairy counties. According to US Census data compiled by the Jackson Area Chamber of Commerce, almost 5,000 residents of these counties south of Jackson make a daily commute into Jackson for work. Residents of the southern portion of Madison County also use US 45 to reach Jackson retail and services, but unlike through traffic, these vehicles typically move through the downtown area to reach their destinations, rather than taking the existing US 45 Bypass.

The community of Bemis, located just west of US 45 south of Jackson and in the middle of the study corridor (see Figure 2), was historically the home of the Jackson Fiber Company, originally constructed in 1900 as a division of the Bemis Brother Bag Company of St. Louis and Boston. The town site was selected by owner Justin M. Bemis for his cotton spinning mill because of its proximity to nearby cotton fields and its location near a major railroad center. The City of Jackson and Madison County donated the original 300-acre site for use by the mill town. The community was planned as a model mill town inspired by the principles of the Garden City planning movement. Justin Bemis' son Arthur, an MIT graduate with a degree in Civil Engineering, enlisted the help of his former classmates to develop the plan, which incorporated residential, commercial, industrial and community service land uses, and provided for homes, churches, sports fields, a YMCA, and community centers, as well as the mill buildings themselves. Also involved in the design were architects Andrew Hepburn and Arthur Shurcliff, who are best known for their participation in the restoration of Colonial Williamsburg in Virginia. An additional 350 acres were added to the community's footprint in the 1920s as business in the mill town continued to increase.

In the 1960s and 70s profits at the mill began to decline, and the Bemis community was annexed by the City of Jackson in 1975. The mill was sold in 1980 and operated under separate owners through the 1980s. The Bemis Mill was closed on August 27, 1991 by its owners and placed in receivership. Today, Bemis is a community within the larger City of Jackson, yet the evidence of its past as a model industrial town survives in its landscape. Bemis is currently listed as a Historic District on the National Register of Historic Places (NRHP). Bemis itself remains largely residential in character, but its annexation by the City of Jackson spurred additional commercial development along US 45 from Bemis south to the intersection of US 45 and SR 18.

Potential Future Coordination

Several resources in the general project area may invoke the need for coordination in the NEPA process. Jackson is served by the Western Tennessee Railroad and two

class I railroads, CSX and Norfolk Southern. Active rail corridors are identified on Map E-3 in Appendix E[1].

The McKellar-Sipes Regional Airport offers charter and fixed-base operation services and may soon offer daily flights to St. Louis, Missouri. The airport is located west of the project study area (see Map E-3, Appendix E).

The South Fork of the Forked Deer River cuts diagonally through the project area, flowing just south of downtown Jackson. Several other streams, identified on Map E-3 in Appendix E, are present in and around Jackson.

A National Priorities List (NPL) site, American Creosote Works, is located south of the Meadow Street/State Street intersection on the southern edge of downtown Jackson and within the project impact area (see Map E-6, Appendix E). Though cleanup activity is complete, groundwater evaluation continues at the site, and excavation is prohibited on areas of the site that contain buried and capped contaminated soils. Coordination with the Tennessee Department of Environment and Conservation (TDEC), which manages site cleanup, will be necessary to ensure compliance with the requirements imposed by the cleanup process for use of the site.

Additionally, there are numerous gas and electric utility easements that cut through the project study area. These easements will need to be accounted for in future phases of the project.

3.2 Land Use

The land immediately adjacent to the existing US 45 Bypass and US 45 is highly developed with a mix of industrial, commercial and residential uses.

The existing US 45 Bypass south of Airways Boulevard is lined with primarily industrial uses. The Jackson Energy Authority (JEA) has a number of service and storage facilities located south of the existing bypass between State and Meadow Streets. A construction company is located adjacent to the JEA. Riverside Cemetery, a NRHP-listed property, also lies south of the bypass at its intersection with Riverside Drive. Additional commercial and industrial uses are scattered throughout the area.

The existing US 45 Bypass terminates in downtown Jackson in the City's central business district (CBD). The CBD is a mix of commercial and institutional land uses. County and Federal court buildings and state and city offices are scattered throughout the area, interspersed with restaurants, offices and other businesses.

US 45 runs south out of downtown Jackson, passing the Carl Perkins Civic Center and the J. Alexander Leech Criminal Justice Complex. The West Tennessee Fairgrounds are located just east of US 45, north of the crossing of the South Fork of the Forked Deer River. The stretch of roadway crossing the Forked Deer and its associated wetlands is largely undeveloped and wooded. Land use from south of the Forked Deer River to the intersection of US 45 and SR 18 is characterized by auto-oriented, highway commercial

[1] Some difficulties were encountered in determining the location, owner and active/inactive status of railroad lines in the project area. Further work will be required in the next study phase to ensure all active lines are properly identified.

development. Gas stations, fast food restaurants and other service businesses line the corridor. The numerous curb cuts required for auto access to these businesses significantly increase congestion along US 45 as vehicles slow to turn in and out of driveways.

The previously mentioned community of Bemis is to the west of the US 45 corridor (see Figure 2). Land uses in the Bemis area are primarily low density residential with some small commercial sites. The industrial buildings associated with the old mill are still in place, but are not currently in use.

South of Bemis, land uses adjacent to US 45 are entirely commercial with the exception of a small section of residential just south of Harts Bridge Road. These residential properties were all recently rezoned commercial and are now targets for the sort of commercial development already prevalent along the rest of the corridor. The Bonwood Industrial Park, currently occupied by light manufacturing and distribution businesses, also lies just to the west of US 45, just north of US 45's intersection with SR 18.

The portions of the project study area lying east and west of the central US 45 corridor are characterized by a mix of undeveloped wetland and floodplain areas, agricultural use and lower density residential. The residential is primarily scattered, with the exception of a single, residential subdivision, Yoshino Estates, located just east of the intersection of Riverside Drive and Caldwell Road.

3.3 Crash History

The statewide average crash rate for a roadway of the same functional classification is 2.65, while the actual rate for US 45 from the US 45 Bypass to SR 18 is 3.61. 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. An actual crash rate three times greater than the statewide average for a similar roadway indicates a safety deficiency. Although higher than the statewide average, the actual rate for this segment of roadway is not high enough to indicate that safety is a concern. Stakeholders and local officials, however, have indicated that they and the public believe safety is an issue, primarily due to the mixing of local traffic accessing area businesses with regional through traffic, including semi tractor-trailer trucks.

An examination of detailed crash data lends some credibility to public perceptions of a need for safety improvement. From 2004 to 2006, the most recent years for which data had been compiled at the start of this study, 533 crashes occurred along the segment of US 45 in the study area, five of which had fatalities. Of those crashes, 112 involved personal injury. Twenty-three of those crashes were head-on, 227 were rear end crashes and 174 were angle crashes. The high number of rear end and angle crashes can be attributed, in part, to the large numbers of curb cuts in the study area, which result in vehicles constantly slowing to turn in and out of parking lots.

Of the 533 crashes that occurred during the three study years, 300 took place at an intersection. Sixty-four of those occurred at the intersection of US 45, the US 45 Bypass and US 70. The statewide average crash rate for an intersection of this type is 0.89. The actual rate for the intersection is 2.38, which is almost three times higher than the statewide average. Of the 64 crashes at the intersection of US 45, the US 45 Bypass and

US 70, 31 involved heavy trucks. The large number of crashes involving heavy trucks at this intersection confirms a perception held by local officials and referenced in the ULI study that having local traffic, heavy trucks and through traffic converge at a central, downtown intersection is unsafe. The number of crashes suggests a need for an alternate route or intersection configuration to help separate through and local traffic.

3.4 Geometrics

Two of the three major roadways in the project area, US 45 and the US 45 Bypass, are classified as Urban Principal Arterials. The other, Riverside Drive, is classified as an Urban Collector. Data from TDOT's Tennessee Roadway Information Management System (TRIMS) database was used as the basis for this analysis, and all TRIMS data was field checked on September 5, 2008. Existing geometrics of the roadways are summarized in Table 2.

US 45, the main north-south corridor in the project area, is a major commercial corridor. Between Bond Street and Old Pinson Road, the grass plot median described in the summary table is replaced with dedicated center turn lanes to provide access to businesses and services adjacent to the roadway. At intersections, dedicated right turn lanes are also provided. Sidewalks are intermittent through the project area, appearing in scattered segments that average four feet in width when present. There are no dedicated bicycle facilities along US 45.

US 45 is elevated above railroad tracks in two locations, over the Norfolk Southern tracks at log mile 9.980 just north of Bond Street and over the CSX tracks at log mile 11.710 just south of Beasley Street. US 45 bridges Bond Creek at log mile 9.340. Three sets of parallel bridges serve to cross the South Fork of the Forked Deer River, overflows, and associated wetlands at log miles 10.540, 10.810 and 11.170.

The US 45 Bypass is a four-lane roadway, divided by a grass median from the edge of the project area at Airways Boulevard until it passes over Riverside Drive and the abandoned spur of the Norfolk Southern Railway. At this point, the median is replaced by a concrete barrier and the Right of Way (ROW) narrows considerably as the Bypass runs into downtown Jackson. The Bypass terminates at its intersection with US 45 at the jug-handle intersection configuration described in Section 2.0 and illustrated in Figure 2 with one-way traffic traveling east on Sycamore and west on Chester. Sidewalks are not present along the US 45 Bypass but begin as the Bypass terminates in downtown Jackson. There are no dedicated bicycle facilities. There are culverts at three locations between State Street and Riverside Drive.

Riverside Drive runs through primarily residential and undeveloped land in a consistent section of two, 11-foot travel lanes with narrow shoulders. There are no sidewalk or bicycle facilities present along the roadway. Because Riverside Drive traverses large sections of undeveloped wetlands, bridges are present in several locations. Bridges spanning Cane Creek are found at log miles 7.600 and 7.720. A series of seven bridges serves to span the South Fork of the Forked Deer River and associated wetlands between log miles 6.020 and 6.760. At grade crossings of the Norfolk Southern and CSX Railroad tracks are present at log miles 6.930 and 7.020.

Table 2: Existing Roadway Geometrics

Roadway	Length of Segment in Miles	Average ROW in Feet	Total Lanes	Number of lanes in each direction	Avg. Lane Width in Feet	Avg. Shoulder Width in Feet	Median Type	Avg. Median Width in Feet	Bicycle Facilities	Avg. Sidewalk Width in Feet	Topography
US 45 Bypass (from Airways Blvd. to overhead crossing of Riverside Dr.)	1.40	150	4	2	12	10	grass	14	None	None	Flat
US 45 Bypass (from overhead crossing of Riverside Dr. to intersection with US 45)	0.46	80	4	2	12	2	concrete barrier	2	None	None	Flat
US 45 (from log mile 6.620 to 12.250)	5.63	115	4	2	12	10	grass	28	None	4	Flat
Riverside Drive (from Caldwell Rd. to 45 Bypass)	11.3	50	2	1	11	3	N/A	N/A	None	None	Rolling

Source: TDOT TRIMS Database and September 5, 2008 field review by project planners

4.0 FIELD REVIEW

A stakeholder meeting and field review of the project corridor were held on July 10, 2008 to gather input that would assist in the development of this *TPR*. Representatives from the City of Jackson, the Jackson Transit Authority, the Jackson Energy Authority (JEA), the Jackson Area Chamber of Commerce, Madison County, TDOT, the Tennessee Department of Environment and Conservation (TDEC) and major area employers were invited to attend. A summary of the meeting, including the sign-in sheet, is included in Appendix B.

The meeting and field review provided a valuable venue for identifying issues, gathering information and recognizing opportunities for collaboration. The meeting included a welcome by the Mayor of the City of Jackson, an explanation of the *TPR* process and the next planning steps, and an overview of project history and background, including previously studied alternatives. Meeting participants were invited to: comment on the project 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 only one major crossing of the South Fork of the Forked Deer River south of Jackson. City of Jackson staff and emergency response personnel, as well as local utility authorities, all voiced the need for an additional crossing. Additional input to the project purpose and need included: congestion, poor travel times, substandard level of service, and the need for a route to separate through and local traffic. Stakeholders identified issues and constraints in the project area including safety, sensitive environmental features, historic resources, economic considerations and potential environmental justice issues. Stakeholders also expressed concern about the continued maintenance of existing US 45 should a new route be built, and about the need for considering the regional context to avoid creating bottlenecks and other delays in the project area.

Finally, meeting attendees used aerial photography to help identify preliminary study corridors in the project area. Several possible study corridors were suggested. City staff were given the opportunity to respond to stakeholder questions and concerns about previously studied alternatives. A TDEC representative submitted a map with several possible alignments drawn on it (see meeting summary, Appendix B).

Following the stakeholder meeting, attendees were invited to participate in a field review of the project area to visually examine many of the issues and constraints identified during the meeting and to ensure that none had been overlooked. A van carried representatives of The City of Jackson Planning and Fire Departments, TDOT and the project consultant through the project area and focused on areas where the potential corridors would cross the South Fork of the Forked Deer River and locations where the proposed bypass corridors might connect with existing US 45. Land use, environmental features and other constraints were noted.

5.0 PRELIMINARY PURPOSE AND NEED

Through coordination with local officials and stakeholders, the preliminary need for the project has been clearly identified. The identified project needs are listed below and described in the text that follows:

1. Inadequate crossings of the South Fork of the Forked Deer River poses concerns for emergency responses;
2. Safety issues along US 45 and the US 45 Bypass and at the intersection of the two routes;
3. An improved system link is needed to accommodate existing and projected traffic;
4. Inadequate infrastructure to accommodate area growth and economic development; and
5. Fulfill the legislative mandate to develop an extension of the US 45 Bypass as defined in the SAFETEA-LU HPP appropriation granted in 2005.

5.1 Inadequate Crossings of the South Fork of the Forked Deer River

US 45 serves as the only major roadway crossing the South Fork of the Forked Deer River, connecting downtown Jackson with newer development and the community of Bemis to the south. In both 1999 and 2003, debris from tornadoes, which struck the Jackson area, caused temporary blockages of US 45, cutting off portions of the city from access to police, fire, hospitals and other emergency services. Alternate access provided by Riverside Drive is frequently blocked due to flooding of the numerous low bridges over the South Fork of the Forked Deer River along the roadway. Even without the hazards created by a storm or other natural disaster, daily traffic congestion on US 45 makes it difficult for police and fire vehicles to respond to calls that come from southern areas of the city. Both police and fire representatives report currently using existing Riverside Drive to avoid congestion and decrease response time during peak traffic hours even though the Riverside Drive route requires traveling a longer distance.

Additionally, the JEA, a municipal utility providing electricity, gas, water and wastewater services to the City of Jackson, stores a majority of its service vehicles and equipment at locations north of the South Fork of the Forked Deer River. A road blockage or bridge failure would prohibit JEA from moving needed materials and equipment to areas south of the river to restore utility service to customers.

An improved or additional river crossing is essential for ensuring public safety and access to services both on a daily basis, and particularly in the case of a natural disaster or other emergency.

5.2 Safety Issues Along US 45 and the US 45 Bypass and at the Intersection of the Two Routes

As cited in the discussion of crash data, safety deficiencies currently exist on this segment of US 45 and the US 45 Bypass. Crash rates and the types of crashes that

occurred indicate a conflict between local traffic using US 45 to access area businesses and services and through traffic and trucks that make use of US 45 to reach destinations beyond Jackson. Even with existing turn lanes, the frequent stopping and turning movements made by local traffic impede the flow of traffic moving through the region, creating more potential for crashes. The presence of heavy trucks in the downtown area is not only unsafe for motorists, as indicated by the crash data, but may also contribute to a perception of an unsafe environment for pedestrians. The proposed project would result in an improved or additional north-south route in the Jackson area, providing an alternate route for through traffic separate from the developed commercial corridor. An additional route would help to reduce crashes and improve safety. Separation of local and through traffic under an additional route could also reduce congestion and travel times in the project area, resulting in reduced response times for emergency vehicles and increased community safety.

5.3 Need for Improved System Linkage to Accommodate Existing and Projected Traffic

In addition to serving as a critical connector in central Madison County, US 45 is a vital link in the regional transportation system. It is the primary north-south transportation corridor serving western Tennessee, carrying truck and through traffic northward from Mississippi and Tennessee counties south of Jackson and Madison County to I-40 and beyond. As previously stated, the current configuration of US 45 and the US 45 Bypass requires traffic traveling from destinations north and south of Jackson to navigate through downtown Jackson to continue travel along the roadway. This results in high numbers of traffic traveling through downtown Jackson, a condition that may have been desirable when downtown served as the commercial hub for the city, but which is now functionally obsolete. The current jug-handle configuration of the intersection of US 45, the US 45 Bypass and US 70 is no longer sufficient to accommodate the increased area traffic and projected future traffic. Additionally, truck traffic composes approximately nine percent of roadway traffic on US 45 and 10 percent of roadway traffic on the US 45 Bypass. The jug-handle configuration requires a left turn at a traffic light for northbound traffic, thus further restricting traffic flow.

The combination of through traffic and local traffic results in a poor level of service (LOS) in the downtown area. US 45 currently operates at LOS C and the LOS will decline to F by 2030. The US 45 Bypass currently operates at LOS B, but is expected to decrease to LOS D by 2030. The AADT along both US 45 and the US 45 Bypass is projected to increase by 56 percent by 2030. Improvements are needed to accommodate the existing and projected traffic at an adequate LOS. (Section 6.4 contains a detailed discussion of the LOS analysis prepared for this study.)

5.4 Inadequate Infrastructure to Accommodate Area Growth and Economic Development

Safe and efficient access to the regional transportation network is essential for movement of freight and goods and in maintaining the region's economic viability. US 45 currently carries about nine percent trucks. Congestion on the roadway, as well as the configuration that forces trucks to travel into downtown Jackson, decreases the efficiency of freight movement through the region which, in turn, hinders growth and economic development opportunities.

Toyota is currently constructing a new manufacturing plant in Blue Springs, Mississippi near Tupelo. The new plant is expected to open around 2010 and will draw on Tier I and II suppliers from within a 100-mile radius of the plant, an area that includes Jackson. Several automotive-related industries in the Jackson area will use US 45 to supply Toyota, including ARJ Manufacturing, Bodine Aluminum, TBDN Tennessee Company and others. The Jackson Area Chamber of Commerce is interested in recruiting additional suppliers to the area. Adequate infrastructure to support on-demand delivery and efficient movement of goods is necessary to attract this sort of supplier. The Chamber reports that while land remains available in the Bonwood Industrial Park along US 45 south of downtown, interest in the remaining land is low because of the congestion trucks would encounter at that location. An additional or improved route that could be gained through extension of the US 45 Bypass would reduce congestion and increase the appeal of Jackson's available industrial land, enhancing the Chamber's economic development efforts.

Additionally, according to the Jackson Area Chamber of Commerce, between 40 and 50 percent of workers employed in Jackson commute into the city from outlying areas. Much of this commuter traffic is generated in Chester, Hardeman and McNairy Counties south of Jackson, with commuters taking US 45 into Jackson to reach their jobs. This commuter traffic shares the existing roadway with trucks and local traffic, resulting in increased congestion and decreased LOS. A safe and efficient route to work for commuting workers is essential for the health of the region's economy.

5.5 Fulfill the Legislative Mandate

In 2005, federal funds were allocated for an extension of the existing US 45 Bypass from Airways Boulevard to US 45 as a part of the SAFETEA-LU HPP Act. The allocation is in Sec. 1701 High Priority Projects Program, which states that "The Secretary is authorized to carry out high priority projects with funds made available to carry out the high priority projects program under this section." Sec. 1702 states that the amount listed in the Highway Projects-High Priority Projects table "shall be available . . . for fiscal years 2005 through 2009 to carry out such project." Listed in the table as No. 4935 in the amount of $4,000,000 is the "six lane extension from Airways Boulevard to South Highland Avenue in Jackson [TN]." An excerpt from SAFETEA-LU is in Appendix A.

A portion of those funds has been allocated to the planning phases of the proposed project. While the allocation specifies six lanes, if a new location alternative is selected, traffic studies have indicated that six lanes are not needed now or 20 years into the future. To meet the legislative intent, however, right-of-way for the full six lane section could be purchased and reserved for future expansion when and if warranted by traffic and development. The analysis in this TPR and the cost estimates developed for the options include six lanes (Refer to Table 4, page 34).

6.0 OPTIONS

6.1 Previously Studied Alternatives

Prior to the commencement of this *TPR,* TDOT and the City of Jackson explored and subsequently rejected numerous options for an additional bypass or an extension of the existing US 45 Bypass.

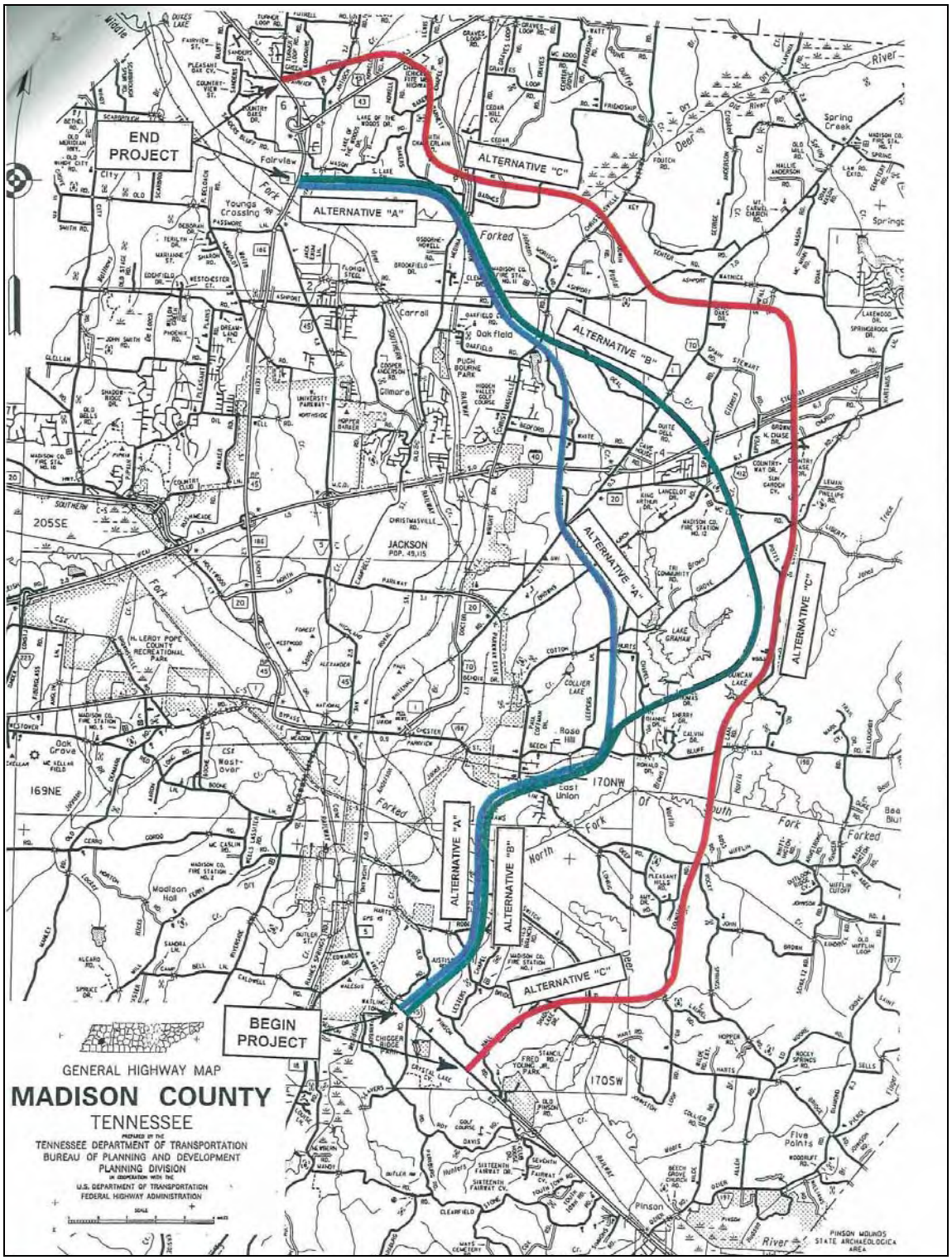
In 2001, TDOT prepared a feasibility study for an eastern bypass route to connect US 45 south of Jackson near SR 18 to US 45 north of I-40. The feasibility study explored three alternatives (see Figure 5). Opposition to the project, both by residents and environmental groups, triggered the inclusion of the project in an independent review of transportation projects by the University of Tennessee (UT), at TDOT's request. The UT study concluded that the area encompassing the proposed alternatives was environmentally sensitive and best avoided, prompting TDOT to cancel the eastern bypass project.

Following the tornadoes in 2003, the City of Jackson commissioned a feasibility study examining the relocation of the US 45/US 45 Bypass/US 70 junction in downtown Jackson. While the feasibility study focused heavily on the intersection, the report concludes that intersection improvements would do little to address the inadequate capacity along US 45 and acknowledged that a "southern bypass" would be more effective in diverting traffic from the downtown area.

The cancellation of the eastern bypass project and the conclusion of the 2003 feasibility study on the US 45/US 45 Bypass/US 70 junction prompted a meeting between TDOT and City of Jackson officials to discuss a southern bypass. TDOT expressed support for the project and asked the City of Jackson to prepare an *Advance Planning Report (APR*) examining options. The *APR* initially explored two alternatives for a southern bypass, both beginning on the north at the intersection of Airways Boulevard and the US 45 Bypass (see Figure 7, purple and yellow corridors). The first terminated at US 45 just south of Bemis; the second extended to US 45 south of SR 18.

According to TDOT files, in April of 2004, regulatory agency representatives were invited to review and comment upon the initial southern bypass alternatives. Initial comments on the corridors from representatives of the United States Fish and Wildlife Service (USFWS), United States Army Corps of Engineers (USACE), TDEC and TDOT's Environmental Division were unfavorable due to the wetland and floodplain impacts and the inclusion of an additional crossing of the South Fork of the Forked Deer River in all of the project concepts.

These comments and suggestions to minimize impacts were used in the development of new alternatives (see Figure 6), which were presented to regulatory agency representatives in August of 2004. One additional proposal, not shown in Figure 7, involved a connection to SR 223, which was deemed impractical because it would not adequately serve traffic demands and would require additional wetland crossings to connect with US 45 north of Jackson. SR 223 is located approximately five miles west of the existing US 45 Bypass. It was felt that traffic would not divert that far and would continue to use the existing roadway system. TDOT files documenting agency coordination reveal that agency representatives continued to express concerns about



Source: Feasibility Study, Jackson Eastern Bypass, Prepared by TDOT Bureau of Planning and Development, 2001

Figure 5. Proposed Eastern Bypass Alternatives

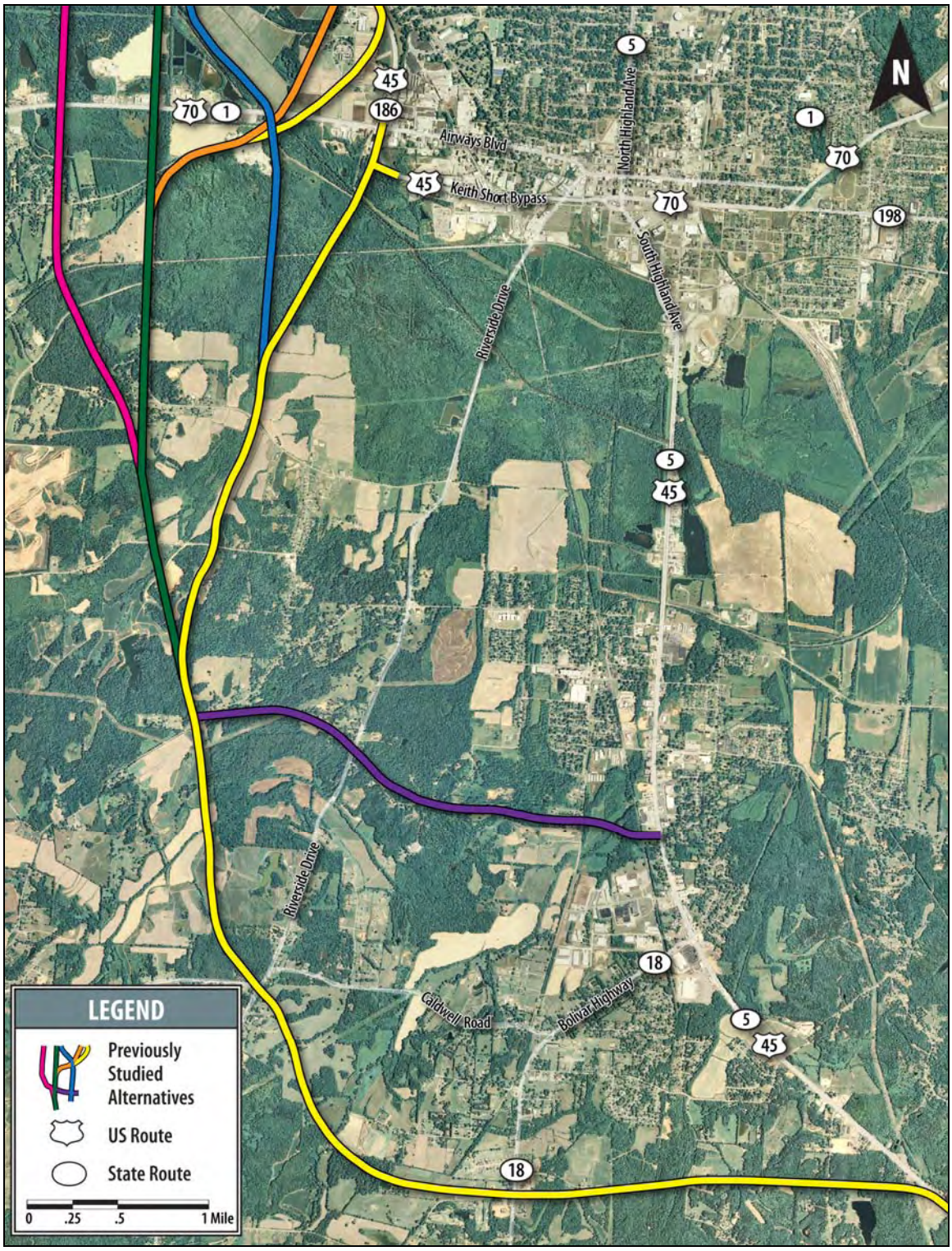


Figure 6. Previously Studied Alternatives
Source: Adapted from maps in TDOT Files

wetland and floodplain impacts, and the impacts of the new alternatives on low-income populations. Concerns were also raised about the impacts of the new proposals on the UT Agricultural Experiment Station. In a letter dated November 2, 2004 (TDOT files), UT's Director of Capital Projects expressed that the University could not support the development of the proposed routes due to the immeasurable harm that the routes would cause to the Experiment Station. In a memo dated June of 2005, Matt Richards of TDOT's Environmental Division concluded that "acquiring permits for a new crossing of the Forked Deer River and associated wetlands would be difficult if not impossible."

6.2 Corridors Studied in the *TPR* Process

Given the constraints encountered in earlier studies to develop a southern extension of the US 45 Bypass, this *TPR* does not consider previously studied and dismissed alternatives. Instead, project planners developed new study corridors using past issues and stakeholder comments as a guide. The study corridors are 750 feet wide and are intended to allow the development of an alignment within these wide corridors in future project phases.

The past studies and coordination clearly indicated that a new crossing of the South Fork of the Forked Deer River should not be a component of any of the study corridors developed in the *TPR* process. Since there were only two existing crossings in the general study area, planners focused on developing corridors that would utilize these crossings. This constraint limited the number and location of the corridors developed in the *TPR.*

Prior to the development of improvement options for the project study area, planners conducted preliminary environmental screening of the area, consisting of field reviews and checks of readily available records. Field reviews were conducted to identify topography, existing road networks, current land use and community facilities. Field reviews were supplemented with conversations with local authorities and stakeholders and checks of records maintained by TDOT, TDEC and the State Historical Preservation Office (SHPO). Due to the importance of sensitive ecological features in the study area, TDEC was consulted at two points during the development of corridor options (stakeholder meeting and follow-up meeting at TDEC). Soils maps were also reviewed to locate areas with poorly drained soils indicative of wetlands. The development of the options described below reflects efforts to minimize social, environmental and cultural impacts, while maintaining corridors that would feasibly meet the project purpose and need.

Preliminary TPR Corridors

Several build options were considered and evaluated as a means of addressing the project purpose and need along the existing US 45 Bypass and US 45. Early in the *TPR* process, the project team developed three preliminary study corridors.

In August of 2008, representatives from the City and the project consultant discussed the three corridors, shown as the red, yellow and green corridors in Figure 7. The corridors are 750 feet wide and were developed based on knowledge of past-studied alignments, environmental constraints, input from the stakeholder meeting, and input from Brian Canada of TDEC following the stakeholder meeting.

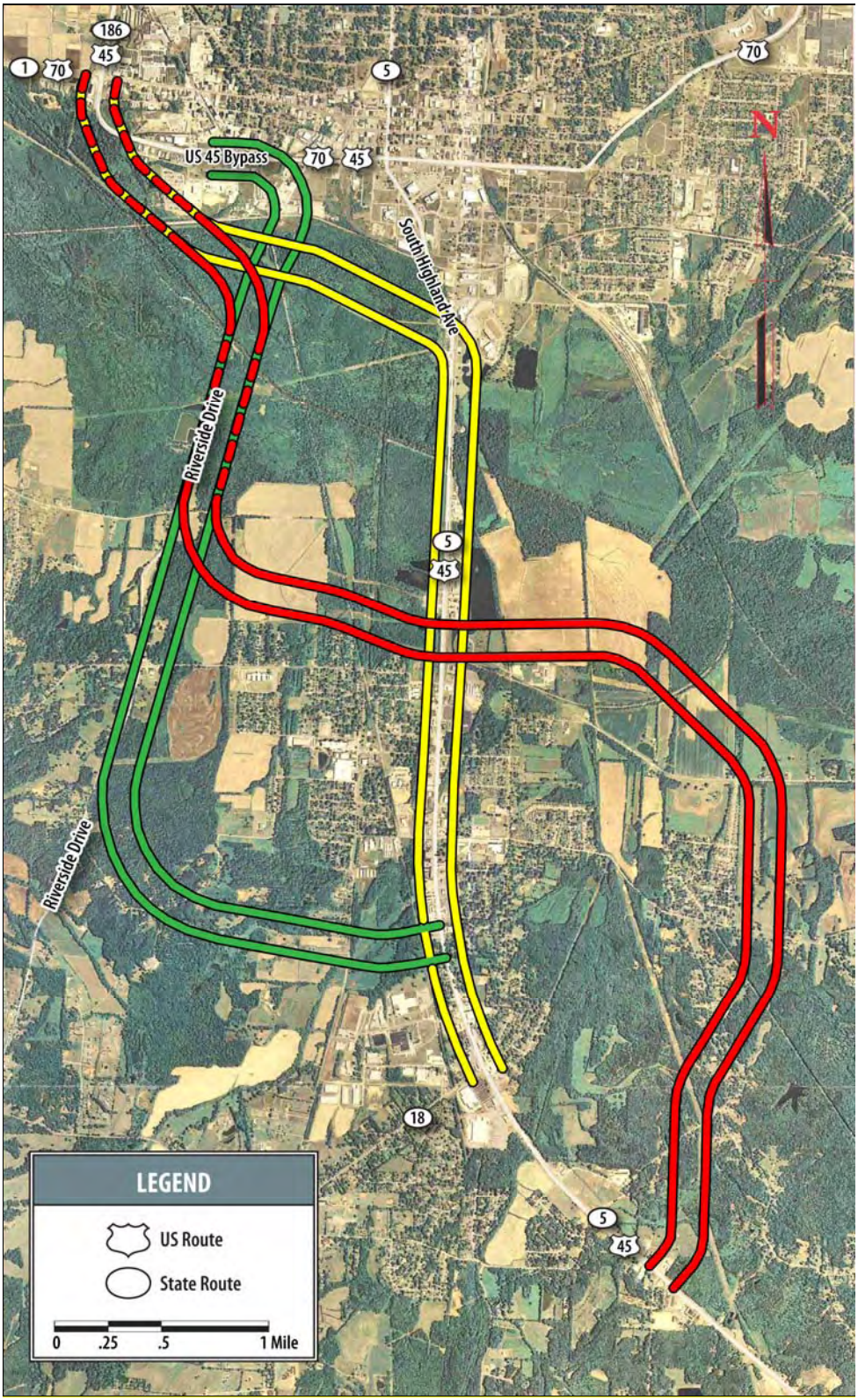


Figure 7. Preliminary Corridors Examined in the TPR Process

Because routes that would meet the purpose and need and avoid a new crossing of the South Fork of the Forked Deer River were very limited, it was determined that one of the corridors should incorporate a section of existing US 45. The yellow corridor involved a new location connector from the south end of the existing US 45 Bypass (just south of Airways Boulevard) that would connect with US 45 south of downtown Jackson near the Fairgrounds. (A similar new connector, proposed to tie in to US 45 slightly farther to the north, is currently included in Jackson's Long Range Transportation Plan/LRTP). Once the yellow corridor bypass replacement intersects US 45, it would then follow US 45 southward to SR 18. This corridor did not meet the project need as well as a corridor with a new crossing of the South Fork of the Forked Deer would, but it did meet the project needs of a new bypass to address safety issues and improve the level of service by avoiding the jughandle intersection downtown at US 45/US 70 and the US 45 Bypass. In addition, this corridor includes widening the existing roadway and improving the existing river crossing on US 45. It does not, however, provide an additional crossing of the river as desired to address public safety concerns.

City of Jackson staff expressed the most interest in the green study corridor, which primarily follows the alignment of existing Riverside Drive in its northern half and then turns east south of Bemis and connects with US 45 just north of the Bonwood Industrial Park. Discussion of the northern connecting piece of the green corridor between the current intersection of the existing bypass and US 45 and Riverside Drive followed. All in attendance concluded that this segment needed to be shifted or narrowed to avoid the historic Riverside Cemetery. The City staff preferred the connection to the existing bypass shown in red on the attached map. It was suggested and agreed that this connecting segment of the red corridor become part of the green study corridor. The green connector at Riverside Drive and the Bypass adjacent to the Riverside Cemetery would be developed as an option to the green corridor.

During discussions of the red study corridor, City staff provided pertinent information related to its viability as a study corridor option. All present expressed concern about the corridor encompassing the old WTJS radio tower and facilities, which are potentially historic and currently in use by the local Optimist Club. Additionally, the red corridor encompasses more of the Falaya soils (poorly drained and indicative of wetlands) than the other study corridor options. GS&P staff proposed shifting the red corridor farther to the east to more closely parallel the alignment proposed by TDOT in its eastern bypass feasibility study in order to avoid wetlands and the floodplain. This proposal prompted City of Jackson staff to share the general locations of one new commercial development and three planned residential developments (described in Section 3.1 and shown on Figure E-2 in Appendix E).

The red study corridor travels through the area for which much of this residential development is planned. Given the anticipated development, the presence of wetlands and other poorly drained soils and the possible historic resource constraints that limit shifts to the existing red study corridor, all agreed that the red study corridor did not appear viable and it was dropped from consideration.

Finally, at this August 2008 meeting, a connection was suggested between the southern terminus of the green study corridor at US 45 south of Bemis and a short segment in the southern portion of the red study corridor, east of US 45 and connecting to US 45 around Seavers Road. This additional connecting piece of the green corridor could help the City accomplish its desire of a connection south of SR 18, while avoiding the pitfalls

of the red study corridor. City staff agreed that this connection piece should be added as an option to the green study corridor.

At the conclusion of the meeting, it was determined that GS&P would move forward with a No Build Alternative and two corridors in the TPR, Corridors B and C, which are described below.

Summer 2008 Corridor Refinement

In late August and September 2008, planners worked on refining the two study corridors. These corridors (B and C) are shown in Figure 8.

Corridor B, shown in yellow on Figure 8, involved improvements to existing US 45 from Seavers Road south of SR 18 to just south of downtown Jackson, crossing the South Fork of the Forked Deer using the existing crossing. The Corridor included a segment on new location just south of downtown, connecting US 45 south of downtown to the existing US 45 Bypass at Airways Boulevard. This new location connection is similar to the southern bypass extension depicted in the LRTP, but is a little farther south.

Corridor C, shown in red on Figure 8, involved extension of the existing US 45 Bypass south from Airways Boulevard to US 45 south of the community of Bemis with alignment along existing Riverside Drive and on new location. The Corridor would have begun on the south on new location at Seavers Road south of SR 18 and on the east side of US 45. It then traveled north and then west, crossing Chester Levee Road and then intersecting US 45 south of Bemis. At that point, the corridor continued across US 45 and then was on new location westward. It turned north just south of Cane Creek Road and continued north on new location until it intersected existing Riverside Drive at Boone Lane. It then proceeded north along Riverside Drive, crossing the South Fork of the Forked Deer River within the corridor of the existing crossing. Just north of the river crossing, the Corridor turned west to join the US 45 Bypass at Airways Boulevard.

An optional connection on the north end between the US 45 Bypass and Corridor C, known as Corridor Option C-1 and shown in orange on Figure 8, was also considered to minimize the length of the Bypass Extension and to provide a more direct connection to the existing US 45 Bypass than Corridor C. The connection ran from the crossing of the South Fork of the Forked Deer River along Riverside Drive north to the US 45 Bypass north of Meadow Street.

In early 2009, further refinements were made to form the corridors that moved forward in the planning phases of this TPR. These are described in Section 6.3.

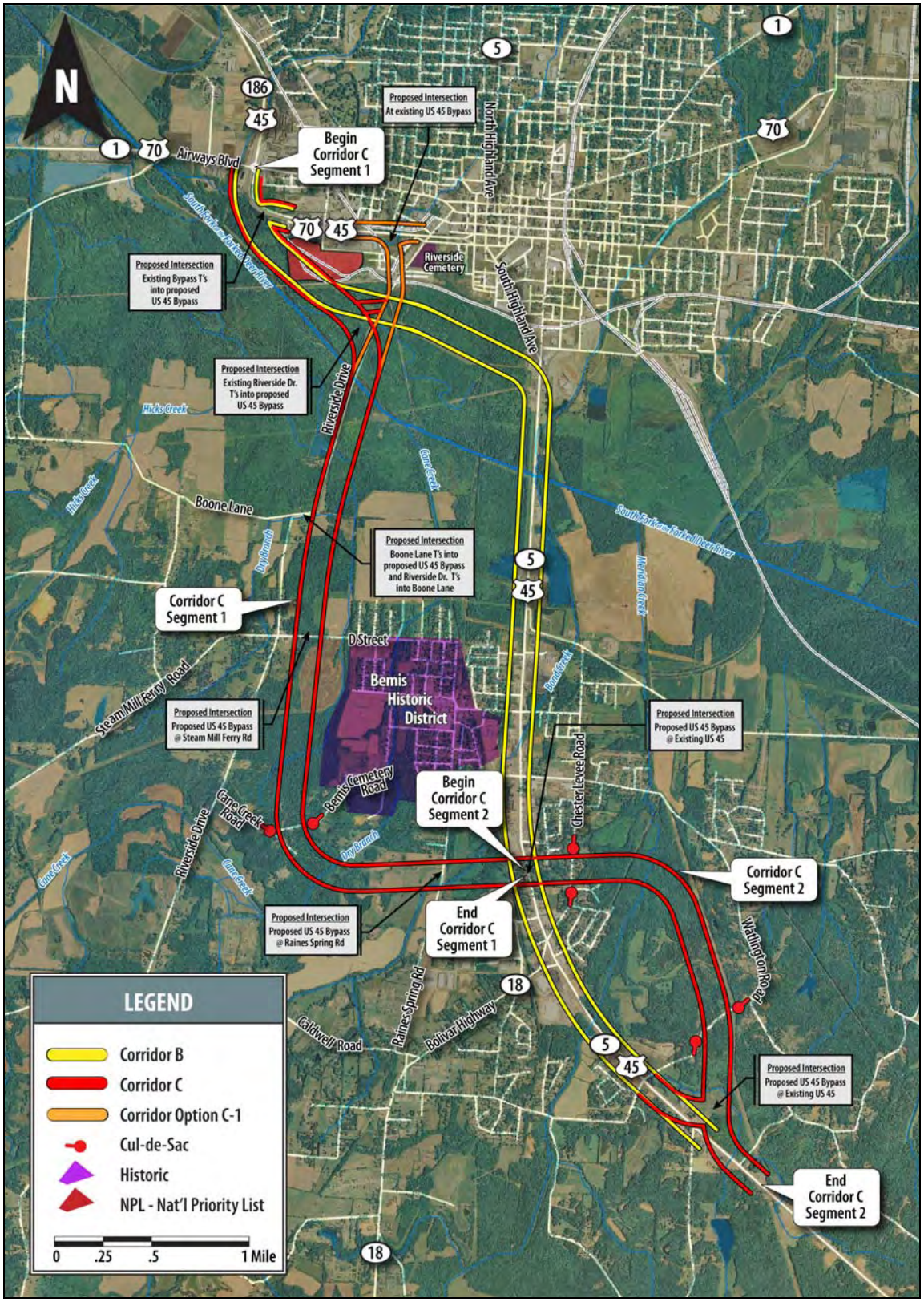


Figure 8. Summer-Fall 2008 Corridor Refinements

6.3 Options Recommended to Move Forward in Project Planning

Based on the early analysis of options, City and TDOT input, and continued efforts to minimize impacts, three corridor options are currently under consideration as part of the *TPR* process. Option A is a No Build option, which, as the name implies, involves no improvements to the existing roadway aside from necessary safety improvements and regular maintenance. The Build Options are illustrated in Figure 9 and shown on aerial photographs in Appendix C. As earlier stated, the corridors are presented as 750-foot wide study corridors into which alignments can be developed in the next study phase. These Build Options are described in detail below with a summary description of each corridor and its proposed typical section. Following the description of each is a section describing the operation performance of the Build Options. Planning level cost estimates are included at the end of this section.

Description of Option A: No Build

As the name implies, Option A: No Build, would involve no improvements to existing roadways in the project area aside from regular maintenance and necessary safety improvements. Option A would not affect the current operational performance of the existing roadway. As it does not involve any improvements in the project area, Option A would not result in impacts to the natural, social or built environment. The only costs incurred would be those associated with normal roadway maintenance activities.

Option A does not achieve the project purpose because it does not meet the project needs of providing an additional or improved crossing of the Forked Deer River to protect public safety, nor does it improve the safety and capacity of the existing roadway to accommodate existing and projected traffic and economic development. Option A also does not fulfill the legislative mandate for improvements between Airways Boulevard and US 45, which are laid out in the SAFETEA-LU HPP allocation.

Description of Corridor B

Corridor B, shown in Figure 9 and Appendix C (Sheets 4 – 8), consists of improvements to existing US 45, as well as one connecting segment on new location between US 45 opposite the West Tennessee Fairgrounds and the US 45 Bypass just south of Airways Boulevard. (As previously stated, the proposed bypass segment parallels and is south of the bypass shown in the LRTP.)

The corridor begins on the south just north of the intersection of US 45 and Edwards Drive, following existing US 45 north for 2.7 miles, passing through four signalized intersections and crossing the South Fork of the Forked Deer River and associated wetlands at its existing crossing. Near the West Tennessee Fairgrounds, the corridor turns west off existing US 45 and travels on new location for 2.1 miles, curving back north to join the US 45 Bypass south of Airways Boulevard. This provides a bypass of the current jughandle at the intersection of US 45 and the US 45 Bypass in downtown. The total length of Corridor B is approximately 4.8 miles. The selection of Corridor B will add 2.1 miles to the US and State highway systems through the new bypass portion of the corridor between south of Airways Boulevard and US 45 south of downtown.

The project will involve widening the existing US 45 dual bridges over the South Fork of the Forked Deer River from two lanes to three lanes on each bridge as well as the dual

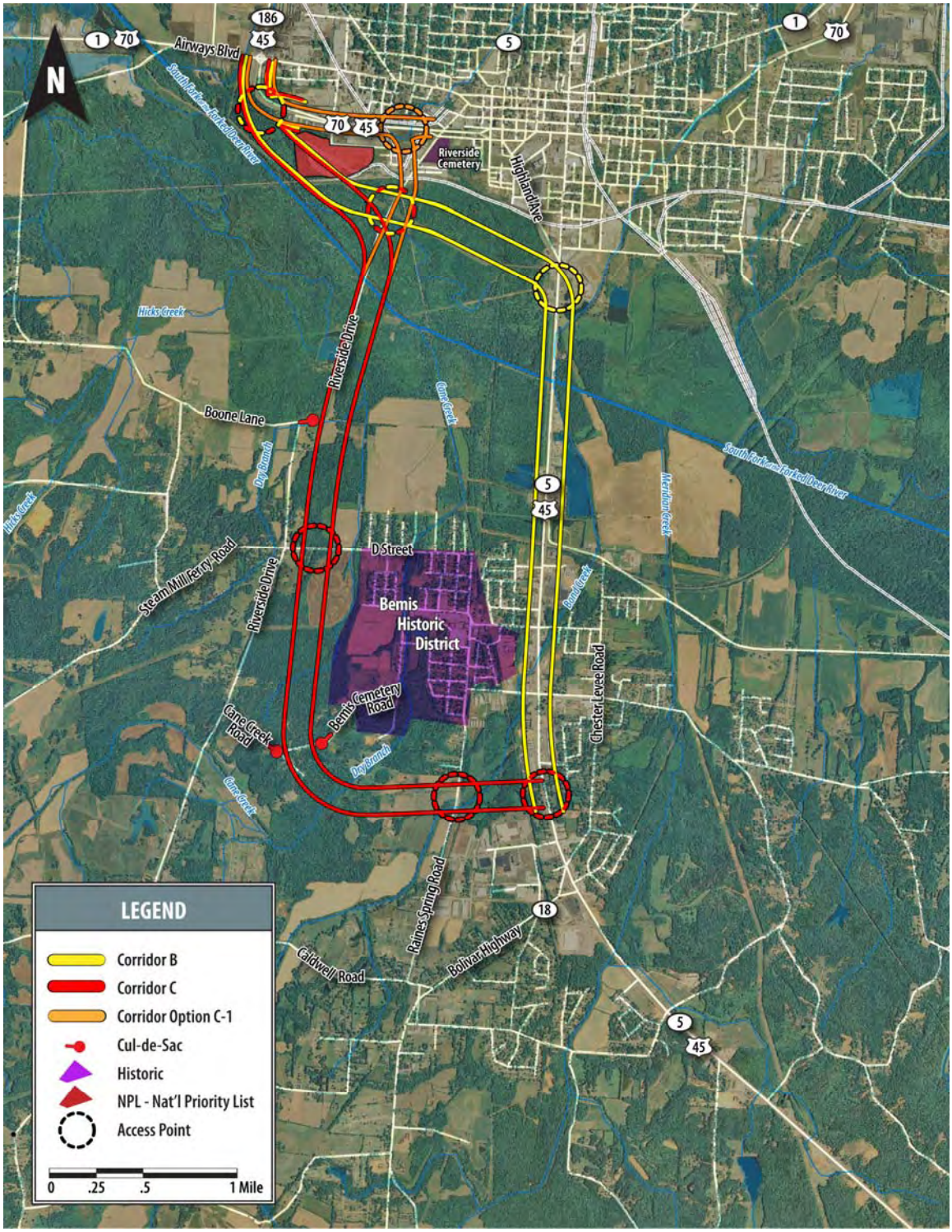


Figure 9. Proposed Study Corridors

overflow structures south of the main river crossing. Widening the bridges would provide an improved crossing of the river; however, the existing profile of US 45 as it approaches the bridges drops below the 100-year flood elevation. In the next study phase, designers should evaluate whether the grade on the approaches needs to be raised above the 100-year floodplain as part of the project. If so, confirmation of the hydraulic capacity of the existing bridge openings will also need to occur in future project planning phases. The area in question is the segment of US 45 from approximately 2,200 feet north of the South Fork of the Forked Deer River bridge to approximately 3,500 feet south of the bridge. Raising the grade would provide additional safety improvements at the crossing against overtopping during flooding, but it has the potential to adversely impact access to properties in this area. (The raised grade has been included in project costs as a worst case scenario.) It is anticipated that traffic will be maintained on US 45 during bridge widening if Corridor B is selected in future project planning phases.

A new signal will be needed where the new location southern extension of the bypass under Corridor B intersects US 45 south of downtown Jackson. The intersection of the proposed bypass with the existing bypass just south of Airways Boulevard will need to be configured so that the old bypass T's into the new bypass at a signalized intersection south of Airways Boulevard.

In future project planning phases, it is possible that the 2.1-mile long segment that parallels the existing US 45 Bypass between Airways Boulevard and US 45 just south of downtown could be developed as a stand-alone project. It would partially meet the project need through providing a bypass of downtown, improving safety and level of service in the vicinity of the jughandle intersection downtown by allowing traffic to bypass downtown. It would not, however, provide improvement to traffic safety on existing US 45 south of Jackson, nor would it provide a second adequate crossing of the South Fork of the Forked Deer River.

Corridor B would be designated an Urban Principal Arterial. The new bypass would have a roadway design speed of 45 miles per hour (mph) from the south end of the project to just north of Royal Street. The bypass segment would have a design speed of mph). New at-grade intersections would be required at the new bypass and US 45 just south of downtown and on the west at the new bypass and the existing US 45 Bypass.

Detailed typical sections for Corridor B are included in Appendix C, Sheets 2 and 3. The typical section for the segment of Corridor B that follows existing US 45 is six, 12-foot traffic lanes with a 12-foot dedicated left turn lane and eight to 10-foot shoulders within a minimum of 125 feet of ROW. The typical section for the first segment on new location between Airways Boulevard and US 45 is four, 12-foot travel lanes with 12-foot inside and outside shoulders and a 64 to 88-foot median within a minimum of 250 feet of ROW. The ROW acquired would allow for future expansion to an ultimate section of six, 12-foot travel lanes if needed to meet demand and to meet the legislative intent.

Corridor C

Corridor C, depicted on the aerial photograph in Figure 9 and in Appendix C Sheets 9 - 14, extends from US 45 just south of the community of Bemis to the US 45 Bypass at Airways Boulevard. It is 5.3 miles in length. The selection of Corridor C will add 5.3 miles to the US and State highway systems.

The corridor begins on the south at US 45 just north of the intersection of US 45 and Edwards Drive (north of SR 18). A signal will be required at this location. In the next study phase when alternatives are developed, consideration will need to be given as to how the new Bypass will tie in to existing US 45 at this location. Just west of US 45, Corridor C is on new location and crosses what appears to be an active railroad line that is said to serve the Bonwood Industrial Park (it appears to end in the industrial park). In the next phases of the planning process, further coordination with TDOT and the railroad operator needs to be undertaken to determine if an at-grade crossing is acceptable at this location. West of the railroad the corridor crosses Raines Springs Road. At Cane Creek Road the corridor turns north, passing west of Bemis, crossing D Street, and then intersecting existing Riverside Drive at Boone Lane. This portion of the corridor is approximately 3.15 miles in length. At the Riverside Drive/Boone Lane intersection, the corridor continues north for about 0.75 mile, crossing the South Fork of the Forked Deer River within the corridor of the existing bridges on Riverside Drive. At this phase of project planning, it is estimated that one main channel bridge will be needed and approximately two or three overflow structures will be required to replace the existing bridges. The grade of the new roadway through this area will need to be raised above the existing roadway as it currently floods periodically and is within the 100-year floodplain.

North of the River, the corridor has two options to connect to US 45, the main line option (Corridor C), shown as red in Figure 9, and Option C-1, shown as orange in Figure 9. The main line corridor (C) is on new location, basically paralleling the river. It joins the existing bypass just south of Airways Boulevard. There, the existing bypass will T into the new bypass, and this intersection will be signalized.

Option C-1, follows the existing alignment of Riverside Drive until it reaches the CSX Railroad line where it turns slightly northwest to cross Meadow Street and T into the existing US 45 Bypass where a signal will be required. It then follows the existing bypass westward and terminates at Airways Boulevard.

Graphics depicting the typical sections for Corridor C are included in Appendix C, Sheets 2 and 3. Corridor C, which partially follows Riverside Drive and is partially on new location, would be designated an Urban Principal Arterial with a design and posted speed of 55 mph, except as it nears the north and south termini, where it would be reduced. Partial access control is proposed for the facility. At-grade intersections would be utilized at each end of the new bypass, at US 45 and the US 45 Bypass and; at-grade intersections are recommended at D Street and Raines Springs Road along the route. An optional connection to Riverside Drive is shown on Figure 9. The feasibility of and need for this connection will be studied during the next project phases.

The design of Corridor C incorporates two typical sections. The first, four 12-foot traffic lanes with 12-foot inside and outside shoulders and a 64 to 88-foot median within a minimum of 250 feet of ROW, would be from the beginning of the project at US 45 north of the intersection of US 45 and Edwards Drive to Boone Lane and from the Corridor's turn west of Riverside Drive just north of the South Fork of the Forked Deer River to the northern project terminus at the US 45 Bypass and Airways Boulevard. The ROW acquired would permit future expansion of the roadway to six 12-foot traffic lanes should demand be demonstrated.

The second typical section, consisting of four 12-foot traffic lanes with median barrier

and 10-foot outside shoulders within a minimum of 200 feet of ROW, would be used for the segment of Corridor C beginning at Boone Lane and ending at the intersection of the Corridor and Riverside Drive in order to minimize impacts on the South Fork of the Forked Deer River and associated wetlands. The ROW acquired would permit future expansion of the roadway to six 12-foot traffic lanes should demand be shown.

The typical section for Option C-1 from its split from Corridor C northward to the existing US 45 Bypass consists of four 12-foot traffic lanes with a median barrier and 10-foot outside shoulders within a minimum of 200 feet of ROW in order to minimize impacts to sensitive sites, such as the historic Riverside Cemetery. The ROW acquired would permit future expansion of the roadway to six 12-foot traffic lanes should demand be demonstrated. It would have a design speed of 55 mph in its southern portion (just north of the river crossing) and 45 mph as it nears its intersection with the existing US 45 Bypass.

6.4 Traffic and Level of Service Analysis

A Level of Service (LOS) analysis was used to gauge the operational performance of the existing roadway under the No-Build Option and the Corridor Options developed for this TPR and described in detail in Section 6.2. The LOS is a qualitative measure that describes traffic conditions related to speed and travel time, freedom to maneuver and traffic interruptions. There are six levels, ranging from "A" to "F" with "F" being the worst. Each level represents a range of operating conditions. Figure 10 illustrates the traffic flow conditions and approximate driver comfort level at each LOS.

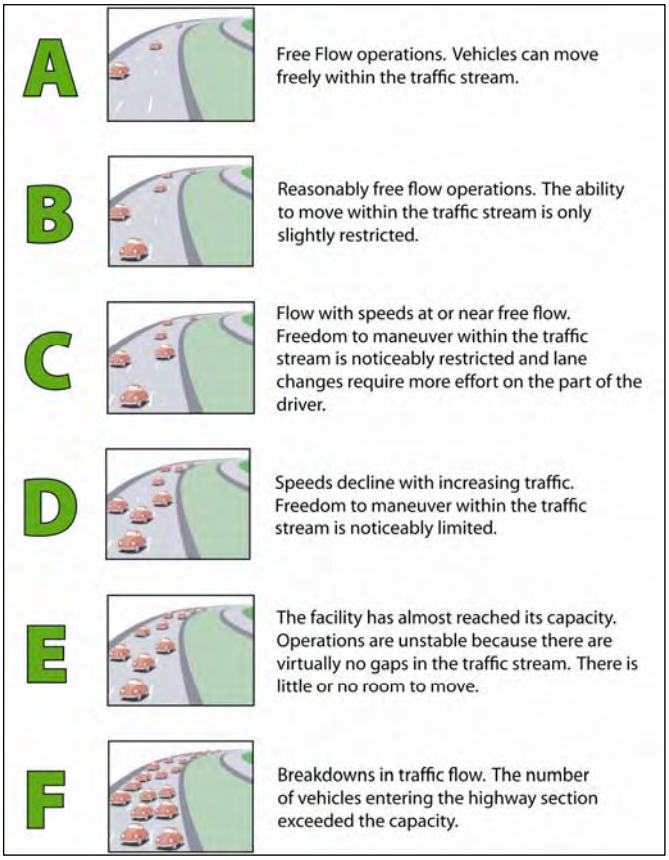


Figure 10. Definition of Level of Service

Table 3 summarizes the traffic data and peak hour LOS analysis for Option A (No Build) and Corridor Options B and C.

No-Build: The build year (2015) LOS for traffic on US 45 south of downtown Jackson under the No-Build Alternative is D, meaning that traffic speeds are low and maneuverability is limited. In 2030, under the No-Build Alternative, the LOS is F, meaning that the traffic would encounter the poorest travel times and very little freedom to maneuver. Traffic levels are projected to increase during this period from 44,464 annual average daily traffic (AADT) to 69,273 AADT, an increase of about 56 percent.

The build year (2015) LOS for traffic on the US 45 Bypass under the No-Build Alternative is C, meaning that traffic flows near free flow, but

maneuverability is noticeably restricted and lane changes require more effort. In 2030, under the No-Build Alternative, the LOS of the US 45 Bypass is D, meaning that traffic speeds are low and maneuverability is limited. Traffic levels during this period are projected to increase from 29,072 AADT to 45,294 AADT, an increase of about 56 percent.

Table 3: Traffic and Level of Service

No Build				
	Existing US 45		**Existing US 45 Bypass**	
	AADT	**LOS**	**AADT**	**LOS**
2007	35,100	C	22,950	B
2015	44,464	D	29,072	C
2030	69,273	F	45,294	D

Corridor B							
	Existing US 45 (widened to 6-lane)		**Existing US 45 Bypass**		**New Location Segment of Corridor B**		
	AADT	**LOS**	**AADT**	**LOS**	**AADT**	**LOS**	
						4-lane	**6-lane**
2015	44,464	C	14,536	A	14,536	A	A
2030	69,273	D	22,647	B	22,647	B	A

Corridor C							
	Existing US 45 (remains 4 lane)		**Existing US 45 Bypass**		**New Location Corridor C**		
	AADT	**LOS**	**AADT**	**LOS**	**AADT**	**LOS**	
						4-lane	**6-lane**
2015	29,297	C	14,536	A	14,536	A	A
2030	46,626	D	22,647	B	22,647	B	A

*****Traffic Data from TDOT Planning

The LOS analysis indicates that both Options B and C would improve the projected level of service from the No-Build 2030 LOS of F on existing US 45 and D on the existing bypass.

Corridor B: The LOS and traffic analysis for Corridor B assumes an improved six-lane facility with center turn lanes from the project start at the intersection of US 45 and near Edwards Drive south of Bemis to the bridge over the West Tennessee Railroad and a six-lane divided facility from the railroad bridge north to the intersection of US 45 and the new bypass corridor segment. The LOS and traffic analysis then assumes a new four-lane facility for the proposed new location segment (between existing US 45 and Airways Boulevard) in the near term (possible expansion to six lanes in the future).

The LOS analysis indicates that the new location segment of Corridor B would operate at LOS A in 2015 and at LOS B in 2030 as a four-lane facility. If the new location segment were built as a six-lane facility, the LOS in 2030 would improve to A. With much of the traffic now required to travel into downtown diverted to the new location segment of Corridor B, the LOS along the existing US 45 Bypass would improve to A in 2015 and B in 2030 from the projected LOS of C in 2015 and D in 2030 under Option A, the No-Build Alternative. The new location segment of the roadway is expected to carry 20 percent trucks, relieving the US 45 Bypass from Airways Boulevard to the jug-handle intersection in downtown Jackson of a significant amount of truck traffic.

Corridor C: Approximately 50 percent of the traffic using the existing US 45 Bypass is expected to divert to the new Corridor C. The expected operational performance of the new roadway and changes to the operational performance of existing roadways under this scenario, are summarized in Table 3. Corridor Option C-1 provides an alternate connection between the US 45 Bypass and proposed Corridor C and is not expected to alter the operational performance of Corridor C overall.

The LOS analysis indicates that Corridor C would operate at LOS A in 2015 and LOS B in 2030 if constructed as a four-lane facility. If the facility is widened under the future six-lane option, the LOS for 2030 would improve to A. Corridor C is expected to carry about 20 percent trucks, diverting truck traffic away from the existing US 45 Bypass and existing US 45. Construction of Corridor C would improve the projected LOS on the existing US 45 Bypass from C under the No-Build Alternative in 2015 to A, and from D under the No-Build Alternative in 2030 to B. Additionally, construction of Corridor C would reduce the projected AADT for existing US 45 to 29,297 from the 44,464 AADT projected in 2015 under the No-Build Alternative. The 2030 AADT along US 45 would drop to 46,626 with the construction of Corridor C from the 69,273 AADT projected for 2030 under the No-Build Alternative.

6.5 Estimated Costs

Cost estimates for each of the Build Alternatives are summarized in Table 4. The table includes per mile costs for the options under consideration. In order to account for variation in bid prices, both low and high totals are listed, resulting in a range of costs for each corridor option. Inflation costs were applied to the total estimated construction and preliminary engineering costs at a rate of six percent over five years (as per 2008 TDOT cost estimate guidance).

At this preliminary planning phase, costs do not include estimates for either an at-grade crossing by Corridor C of the railroad line just west of existing US 45 (see Section "*Corridor C"*), or the expense associated with elevating the railroad line over Corridor C at that location should it be determined necessary in future phases of planning. Planning level costs indicate that Corridor Option C would have the highest total cost. The costs per mile of the three options, however, are quite close.

Detailed cost estimates are included in Appendix D.

Table 4: Planning Level Cost Estimates*

Item	Option B		Option C		Option C-1	
	Low Total	High Total	Low Total	High Total	Low Total	High Total
Right-of-Way	$7,350,000	$11,030,000	$4,875,000	$7,462,500	$7,225,000	$11,017,500
Construction	$37,420,819	$55,093,119	$43,049,747	$63,294,619	$41,732,429	$60,961,714
Utilities	$1,960,000	$11,760,000	$1,400,000	$8,400,000	$1,400,000	$8,400,000
Mobilization	$1,389,729	$1,832,794	$1,586,741	$2,078,839	$1,540,635	$2,008,851
Erosion Control	$1,309,729	$1,928,259	$1,506,741	$2,215,312	$1,460,635	$2,133,660
Contingency	$5,907,123	$10,027,968	$6,667,462	$10,754,193	$6,469,864	$10,404,257
Total Construction	$47,987,399	$80,642,140	$54,210,691	$86,742,962	$52,603,564	$83,908,482
Preliminary Engineering	$4,798,740	$8,064,214	$5,421,069	$8,674,296	$5,260,356	$8,390,848
TOTAL 2008 COST	$52,786,139	$88,706,354	$59,631,760	$95,417,258	$57,863,920	$92,299,330
Inflation (6 % per year over 5 years)	$17,852,272	$30,000,489	$20,167,461	$32,270,117	$19,569,578	$31,215,634
TOTAL COSTS	**$70,638,411**	**$118,706,843**	**$79,799,222**	**$127,687,375**	**$77,433,498**	**$123,514,964**
Length in miles/ Cost per Mile	4.8/ $14,716,336	4.8/ $24,730,592	5.3/ $15,056.457	5.3/ $24,091,957	5.7/ $13,584,824	5.7/ $21,669.292

* Detailed estimates are in Appendix D.

7.0 POTENTIAL ENVIRONMENTAL IMPACTS

7.1 Wetlands and Floodplains

The northern portion of the project area is traversed by the South Fork of the Forked Deer River. The proposed extension of the US 45 Bypass, regardless of the corridor selected, would result in improvements to an existing crossing.

The United States Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) map (shown in Appendix E) was reviewed to identify known wetlands in the project area. Wetlands data for the Jackson South USGS Quadrangle map, which encompasses the project area, has not 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 project area. Wetlands are present along both sides of the South Fork of the Forked Deer River as well as along Bond and Meridian Creeks in the eastern portion of the project area and Hicks Creek in the west. The relationship of the wetlands present in the project area to the study corridors is displayed on the map in Appendix E, Map E-4. The study corridors were designed to minimize wetland impacts wherever possible; however, both Corridor B and Corridor C cross some wetland areas.

Falaya soils are also present in the project area. Early consultation with TDEC revealed that this soil type is poorly drained and often indicative of wetlands. TDEC recommended that areas of this soil type be avoided when possible to prevent roadway flooding and protect sensitive wetland areas. Consequently, the study corridors were designed to avoid Falaya soils to the extent feasible. The presence of Falaya soils in relationship to the study corridors is also indicated on Map E-4 in Appendix E.

According to Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM), portions of the project area lie within the 100-year flood zone. Areas along the South Fork of the Forked Deer River, as well as near Hicks, Cane, Bond and Meridian creeks fall within this zone. FIRMs depicting the 100-year floodplains within the project area were digitized and are included in Appendix E, Map E-5. Both Corridors B and C cross floodplains, but were designed to avoid floodplain areas to the extent possible.

7.2 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 an attempt to identify threatened and endangered species recorded in the general vicinity of the project. There are no federally listed, threatened or endangered species in the general project area.

The records check revealed one state-listed species reported within the project study area. The inflated bladderwort (*Utricularia inflata*), a flowering plant found in calmer waters along pond or lake margins, is listed as “extremely rare or critically imperiled” at the state level and is a species of special concern due to its unique and highly specific habitat requirements.

Instances of the firebelly darter (*Etheostoma pyrrhogaster*), a fish listed by the state as "rare and uncommon" and "deemed in need of management," have been recorded within one mile of the proposed project area. The darter is most common in sand and gravel-bottomed pools of creeks, streams and small rivers. The darter is negatively affected by rechannelization of streams and degradation of surrounding habitat.

Four additional state-listed plant species have been observed within four miles of the proposed project area. Lamance Iris (*Iris brevicaulis*) is listed as endangered; Lake-bank Sedge (*Carex lacustris)* and Red Starvine (*Schisandra glabra)* are listed as threatened; and American Ginseng (*Panax quinquefolius*) is a species of 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."

7.3 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 proposed project area. The EPA's Superfund Information Systems Database and TDEC's Promulgated Site List of Inactive Hazardous Sites revealed the presence of several sites including dry cleaners, automotive works and others in the Jackson-Madison region; however, only one of these sites, American Creosote Works, is actually located within the project area.

American Creosote Works, included on EPA's National Priorities List (NPL) for cleanup, is located south of the Meadow Street/State Street intersection south and west of downtown Jackson (see Map E-6 in Appendix E), and just south of the US 45 Bypass where it curves east toward downtown. Cleanup was conducted on the site between 1983 and 2000, when the site was declared clean for human health for industrial purposes. Re-evaluation, particularly of groundwater, continues on the site, and excavation is prohibited on areas of the site that contain buried and capped contaminated soils. A portion of the site is currently occupied by the JEA and is used for storage purposes. The portion of the site under which contaminated soils are buried is occupied by a construction company which uses the property as a storage yard. Both Corridors B and C cross a portion of this site; only Corridor Option C-1 avoids the site entirely.

A field review of the project area was conducted to check for the presence of gas and service stations that may have underground storage tanks (USTs). There are numerous gas stations, including one vacant former station, located along US 45. The area was also checked for dry cleaners and other services that are associated with potentially hazardous chemicals. One dry cleaning business was noted in the project area. Corridor B has the potential to impact these facilities. No such facilities exist along Corridor C.

The locations of the identified facilities are depicted on Map E-6 in Appendix E. Confirmation of potential UST and other hazardous site locations identified during preliminary environmental screening will occur during the NEPA process.

8.0 POTENTIAL CULTURAL IMPACTS

8.1 Historic Resources

A review of SHPO records at the Tennessee Historical Commission (THC) was conducted to check for the presence of historic resources within the project area. The records check revealed the presence of one individual property and one historic district listed in the NRHP within the project study area (See Map E-7 in Appendix E). Study corridors were designed to avoid these resources.

Riverside Cemetery was listed in the NRHP in 2003. The cemetery is located at the intersection of Riverside Drive and Sycamore Street, just south of the Illinois Central and Gulf Railroad. The 10.5-acre site contains approximately 4,000 graves; approximately 3,000 markers remain. The City of Jackson established Riverside Cemetery in 1824. The cemetery contains the remains of many of Jackson's founders and earliest leaders. The site also contains approximately 200 unmarked graves, 100 of which belong to unknown Confederate soldiers and 100 of which are attributed to slaves who were buried in the cemetery from its inception until 1865. The site is considered significant for its representation of the settlement patterns and social history of early Jackson, as well as its representation of funerary art spanning several time periods and styles. The City of Jackson is responsible for current care and maintenance of the cemetery. The cemetery is adjacent to Corridor Option C-1.

The Bemis Historic District, located south of the City of Jackson and to the west of US 45, was officially listed on the NRHP in December of 1991. The District is approximately 455 acres in size and contains 523 contributing properties. The district is roughly bounded by D Street to the north, the Illinois Central Gulf Railroad to the east, Sixth Street to the south and rural property lines not defined by nearby streets to the west. The boundaries for the Bemis Historic District represent all property known to have been owned in association with the development and operation of the Bemis Brothers Company as the company town of Bemis, Tennessee. The area was annexed by the City of Jackson in 1975. The district is adjacent to both Build Alternatives; Corridor B is to the east and Corridor C is to the west. Neither corridor, however, encroaches upon the district.

The community of Bemis was originally developed as a model industrial village to support the cotton spinning mills of the Jackson Fiber Company, a division of the Bemis Brothers Bag Company, in the early 1900s. Designed in the Garden City tradition, the community includes residential, commercial, industrial and community facilities on gently rolling terrain lying on either side of Cane Creek. The community is focused on a central, industrial core anchored by the two mills, an associated power house, water tanks, storage buildings and other related structures. Commercial and community-related structures serve to buffer the surrounding residential development from the industrial center. There are five distinct residential areas containing 385 residences surrounding the core, each with a specific architectural and environmental character, developed by the Bemis Company between 1900 and 1926. The THC recognizes Bemis as the best preserved of the surviving pre-World War One company towns in the state, and the community established design precedents that shaped the local architectural environment.

In addition to the historic district, review of SHPO records also revealed the presence of several surveyed historic properties along North Highland Avenue and Westwood Road, north of downtown Jackson. These properties are located well north of the project area.

8.2 Community Resources

The project area is home to a number of community resources, which are illustrated on Map E-7 in Appendix E. The six churches in the study area include:

- Mother Liberty CME Church located at the intersection of US 45 and Auditorium Street, just south of downtown;
- Cornerstone Baptist Church located on Boone Lane, just west of Riverside Drive;
- Bemis Chapel Missionary Baptist Church located on D Street in Bemis;
- Trinity Baptist Church located on D Street in Bemis;
- Bemis United Methodist Church located on B Street in Bemis; and
- West Bemis Baptist Church located on Bemis Cemetery Road.

Southside High School is located within the project area on Harts Bridge Road. Bemis Intermediate School is located on D Street in Bemis (see Map E-7 in Appendix E). School buses serving Southside, Bemis Intermediate and other area schools travel through the project area along US 45, Riverside Drive and other residential streets. Buses are typically present in the area between 6:00 and 8:00 a.m. and again in the afternoons between 2:30 and 4:00 p.m.

There are three medical clinics located within the project area. The Tucker Clinic of Bemis, located on US 45, specializes in dermatology. The Bemis Medical Clinic located on Missouri Street in Bemis and Jackson Clinic Convenient Care located at the intersection of US 45 and Edwards both offer more general medical services. The locations of these clinics are mapped on Map E-7 in Appendix E.

The City of Jackson Fire Department maintains a fire station on US 45 just north of Harts Bridge Road (see Map E-7 in Appendix E) along Corridor B.

8.3 Environmental Justice

U.S. Census Data was reviewed for the project area to determine whether the proposed project will have disproportionately high and adverse human health or environmental effects on minority populations and low-income populations.

Minority Populations

Map E-8 in Appendix E illustrates the minority population in the project area by Census Block for the 2000 US Census. The average percentage of minority populations for the City of Jackson in 2000 was 44.9 percent. The county-wide minority population for Madison County was 34.8 percent. Both of these averages are considerably higher than the statewide average of 19.8 percent. A majority of the census blocks within the study area have minority populations of 15 percent or less. Of the sixty-six census blocks encompassing the study area, only six have minority population percentages higher than that of Jackson as a whole.

These six Census Blocks are highlighted on Map E-8 in Appendix E. The percentage of the population that identifies as minority in these six Blocks ranges from 32 to 100 percent. Portions of two of these Blocks, Census Tract 11, Block Group 1, Block 1040 (100 percent minority) and Census Tract 13, Block Group 5, Block 5016 (32 percent minority) lie within Corridor B. Block 1040, with 100 percent minority, had 24 residents as of the 2000 census. None of the houses in Block 1040 are within or adjacent to Corridor B. Approximately two houses that may accommodate minority populations are located adjacent to Corridor B in Block 5016, but the houses are not within the corridor.

Corridor C crosses three Census Blocks with minority population percentages higher than that of Jackson as a whole. These Blocks, all located in Census Tract 13, include Block 6012 with 43 percent minority (or 21 of 49 persons), Block 2013 with 36 percent minority (or 20 of 56 persons) and Block 2007 with 81 percent minority (or 22 of 27 persons). None of the houses that may accommodate these populations are located within or adjacent to Corridor C.

Corridor Option C-1 crosses Census Tract 8, Block Group 2, Block 2030, which has a minority population of 100 percent, however, at the time of the 2000 Census, the block contained only two residents, likely housed within the single house within the Option C-1 corridor. This area is primarily industrial today.

Low Income Populations

Map E-9 in Appendix E shows the percentage of the population living below poverty in the project area by Census Block Group. The study area is encompassed by five Census Block Groups. US 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 percent of the population living below poverty in 2000 (based on 1999 income) within the City of Jackson averages 17.1 percent. This is slightly higher than the County and statewide averages of 14 and 13.5 percent respectively. The percent of the population below poverty in a majority of the Block Groups in the project area is comparable to the City and County averages. Two Block Groups in the study area have a higher percentage of residents living below poverty level than the City as a whole, with 51 and 40 percent of the population in the Block Groups below poverty. These Block Groups, Census Tract 8, Block Group 2 and Census Tract 11, Block Group 1, are highlighted on Map E-9 in Appendix E. Census Tract 8, Block Group 2 is crossed by portions of Corridor B, Corridor C and Corridor Option C-1. No houses are in or adjacent to the corridor through this Block Group. Tract 11, Block Group 1 is crossed only by Corridor B. No houses are located within or adjacent to the corridor through this Block.

9.0 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 southern extension of SR 186 and the US 45 Bypass.

Guiding Principle 1:
Preserve and Manage the Existing Transportation System

When the existing US 45 Bypass was constructed in 1967, it quickly became a major asset to the City of Jackson, acting as a corridor to accommodate both local and through traffic and providing access to Jackson's commercial core, which is located in the downtown area. Over time, the City of Jackson grew and spread south, and US 45 and the US 45 Bypass became major commercial corridors and attractive sites for new development. With this development came an increase in traffic.

The option to improve the existing US 45 corridor with a parallel replacement of the US 45 Bypass segment in the vicinity of the existing bypass, presented as Corridor B, is consistent with TDOT's goal of preserving the existing transportation system. The proposed improvements and new connection between the US 45 Bypass at Airways Boulevard and US 45 would result in decreased congestion, improving the anticipated 2030 LOS of US 45 from F to D and of the US 45 Bypass from D to B. This option, however, does not result in an additional crossing of the South Fork of the Forked Deer River desired by the City of Jackson to reduce safety concerns in regard to emergency response, but it does result in an improved crossing of the South Fork of the Forked Deer River, as well as an improved LOS. Additionally, any widening of the existing roadway from four to six lanes could result in disruption of a highly developed, commercial district and substantial property impacts to businesses and a limited number of residences from construction.

The options presented as Corridor C and Corridor Option C-1, which involve construction of roadway largely on new location but still generally along the alignment of Riverside Drive, can help preserve the life of US 45 and the US 45 Bypass by diverting regional traffic that does not have an origin or destination in Jackson. As previously discussed, construction of either Corridor C or Corridor C with Option C-1 (as four-lane facilities) would initially improve the expected LOS of the US 45 Bypass from C under the No-Build Alternative to A in 2015 and from D to B in 2030. Expansion to six-lanes would improve the LOS to A in 2030. Additionally, the expected AADT along US 45 would decrease by about 33 percent. Construction of Corridor C or Corridor C with Option C-1 would ensure that existing transportation infrastructure continues to function at an adequate LOS in the future.

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

The options presented in this report will provide additional capacity to support the area's growing population and increasing amounts of externally generated traffic. The City of

Jackson grew by 29.1 percent between 1990 and 2007, a figure higher than that of Madison County (23.8 percent) and the State of Tennessee as a whole (26.2 percent).

The proposed improvements will facilitate traffic movement through the project area. Traffic analyses indicate that the proposed extension of the existing bypass will improve the 2030 LOS from F to D along US 45 and from D to B along the US 45 Bypass. Expansion of the proposed improvements to the future six-lane options would further improve the 2030 LOS of the US 45 Bypass to A.

The proposed improvements will redirect some through traffic away from existing US 45 and the existing US 45 Bypass, potentially reducing congestion and creating a safer and more hospitable environment for bicyclists, pedestrians and local traffic. Additionally, the improvements will facilitate the movement of those living south of Jackson in Chester, Hardeman and McNairy Counties to their places of employment in Jackson. The proposed improvements, by removing some of the through traffic, will support a diverse and active population by offering all citizens a safer roadway.

Guiding Principle 3:
Support the State's Economy

As the major north-south corridor connecting destinations in western Tennessee, US 45 and the existing US 45 Bypass are critical components of the regional transportation network. US 45 is a regional mover of goods and services, as well as a local connection between residents and retail and service destinations in and around Jackson. Jackson's status as a retail, service and employment hub for all of western Tennessee ensures that the US 45 and US 45 Bypass corridors will continue to be major economic assets to the region and the state. Additionally, US 45 serves as a commuter route for a large percentage of Jackson's current workforce.

The additional infrastructure provided by the proposed project improvements will better accommodate existing traffic as well as make the Jackson area a more attractive site for potential employers such as Tier I and II suppliers. For example, the new Toyota Plant to the south in Mississippi, could attract suppliers to the project area.

Guiding Principle 4:
Maximize Safety and Security

By providing an additional north-south route through the Jackson area as specified under Corridor C, the proposed project will create opportunities for some traffic to divert from existing US 45 to the new bypass, increasing safety along area roadways. An alternate route will eliminate the need for through traffic, including semi tractor-trailers, to travel through a heavily developed commercial corridor, reducing the potential for crashes with local traffic that turns and stops frequently.

Both Corridors will reduce the need for heavy truck traffic to travel into the downtown area, increasing safety for both motorists and for pedestrians who may be moving between the downtown core and the Civic Center area by bicycle or on foot.

In addition to improved safety on the roadways, both corridors will provide the City of Jackson with an improved crossing of the South Fork of the Forked Deer River. This crossing, particularly along Corridor C, will result in improved access to police, fire, hospital and services for residents of the southern portions of the city, even in the event

of emergency or natural disaster. The substantially upgraded crossing under Corridor C will also help to improve response times for emergency responders such as police and fire and to ensure that utility service can be quickly restored after disruptions, such as the frequent tornadoes that have ravaged Jackson over the last decade.

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 Jackson Planning Department officials and stakeholders (see Section 6.0 Stakeholder Meeting and Field Review). Due to the sensitive nature of the wetlands and river environment in the project area, expanded coordination was undertaken with TDEC representatives. (Coordination with permitting agencies, such as TDEC, is not generally included in the TPR process, but it was felt to be important for this project.)

The City of Jackson expressed their concerns about safety on the existing roadway and safety issues related to access to portions of Jackson south of the river should US 45, the only major river crossing, be blocked or a bridge fail. Safety of roadways and access to hospitals and emergency personnel are critical components of a livable community. The proposed options presented in this report improve safety and ensure access to areas of Jackson south of the river by improving by widening and potentially upgrading an existing crossing or constructing a new one.

Conversations with local officials and agency stakeholders revealed a desire for a project that serves the needs of through traffic on a regional scale, as well as local traffic. The proposed improvement options (Corridors B and C) discussed in this report will work toward achieving improved travel conditions for both local and through traffic.

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 project phase (NEPA).

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. Sections 7.0 and 8.0 of this report outline potential environmental and cultural impacts.

Should continued federal funding be obtained for the project as is anticipated, a NEPA document will be prepared in future project phases. The NEPA document will assess the project's impacts 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 Tennessee Environmental Streamlining Agreement (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

The cost estimates shown in Table 4, page 35 in this report are offered for comparison purposes and will fluctuate with inflation and any unexpected conditions. It is the Department'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 project and minimizing costs to taxpayers.

10.0 SUMMARY

US 45 is an arterial highway serving as the major north-south thoroughfare in the City of Jackson for both through and local traffic. The US 45 Bypass provides a connection between US 45 south of downtown Jackson and I-40, which lies north of downtown Jackson. The US 45 Bypass, constructed in the late 1960s, was intended to alleviate congestion on US 45 by routing some through traffic around downtown Jackson. The terminus of the Bypass was sited at the southern edge of downtown Jackson, permitting the roadway to also serve local traffic by providing access to the downtown commercial core. Increased population growth and Jackson's status as a regional commercial hub have resulted in increased development activity along US 45 and the US 45 Bypass, and with it, increased congestion.

US 45 is currently operating at LOS C. Under Option A, the No-Build Alternative, LOS along US 45 will decline to D by 2015 and to F by 2030. The US 45 Bypass is currently operating at LOS B. Under the No-Build Alternative, LOS will decline to C in 2015 and D in 2030. AADT is expected to increase by about 56 percent between 2015 and 2030.

A southern extension of the US 45 Bypass is needed to address the following needs:

- Substandard crossings of the South Fork of the Forked Deer River poses concerns for emergency responses
- Safety issues along US 45 and the US 45 Bypass and at the intersection of the two routes;
- An improved system link is needed to accommodate existing and projected traffic;
- Inadequate infrastructure to accommodate area growth and economic development; and
- Fulfill the legislative mandate to develop a six-lane extension of the US 45 Bypass as defined in the SAFETEA-LU HPP appropriation granted in 2005.

Three options were considered in this TPR. The No Build Option (A) does not address the project needs for improved safety and adequate infrastructure to accommodate current and projected traffic. Improved access to areas south of downtown Jackson, particularly during emergencies, would not be provided and congestion would continue. The other two options, Corridor B and Corridor C (with Corridor Option C-1) would both address congestion and safety concerns, particularly at the US 70/US 45 and US 45 Bypass intersection on the southern edge of downtown. Corridor C, with much of the route on new location and tying into US 45 further south than Corridor B, would more successfully separate through and local traffic, reducing conflicts and congestion. Corridor C, by improving the crossing of the South Fork of the Forked Deer River at Riverside Drive, would also provide much-needed, alternate access to areas of Jackson south of the river in the event of blockages at the existing crossing along US 45.

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. Table 5 summarizes the results of environmental screening for the two corridors studied in this TPR and recommended to move forward in the planning process.

Table 5: Summary of Environmental Screening Results

	Wetlands	Floodplains	Threatened and Endangered Species	Hazardous Materials	NRHP Historic Resources	Community Resources	Environmental Justice
Corridor B	Crosses wetlands associated with the SFFDR*; corridor development to minimize impacts	Crosses floodplains associated with the SFFDR*; corridor development to minimize impacts	No federally-listed species; some state-listed species may be present	NPL Site; some gas stations and dry cleaners	Bemis Historic District	Churches, medical clinics, schools, fire station	Two adjacent Census Blocks (1040 and 5016) with minority populations larger than city-wide average, but no houses within or adjacent to the corridor. Two Block Groups (Tract 8, Group 2 and Tract 11, Group 1) with low income populations larger than the city-wide average. No EJ issues anticipated.
Corridor C	Crosses wetlands associated with the SFFDR*; corridor development to minimize impacts	Crosses floodplains associated with the SFFDR*; corridor development to minimize impacts	No federally-listed species; some state-listed species may be present	NPL Site; some gas stations and dry cleaners	Bemis Historic District	None	Three adjacent Census Blocks (2007, 2013, 6012) with minority populations larger than city-wide average, but no houses within or adjacent to corridor. One Block Group (Tract 8, Group 2) with low income population larger than city-wide average. No EJ issues anticipated.
Corridor Option C-1	Crosses wetlands associated with the SFFDR*; corridor development to minimize impacts	Crosses floodplains associated with the SFFDR*; corridor development to minimize impacts	No federally-listed species; some state-listed species may be present	None	Riverside Cemetery	None	One adjacent Census Block (2030) with minority population larger than city-wide average; house lies within the corridor and had two residents as of 2000. One adjacent Block Group (Tract 8, Group 2) with low income populations larger than city-wide average. No EJ issues anticipated.

* SFFDR—South Fork of the Forked Deer River

Appendix A:
Early Planning Correspondence and Documentation

JACKSON AREA
METROPOLITAN
PLANNING ORGANIZATION

MAYOR JERRY GIST, MPO BOARD CHAIRMAN
STANLEY T. PILANT, MPO STAFF CHAIRMAN
KEITH C. DONALDSON, TRANSPORTATION
PLANNING COORDINATOR

March 19, 2009

Mr. Steve Allen
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Suite 1000, James K. Polk Building
Nashville, TN 37243

Re: US 45 Bypass/State Route 186 Southern Extension TPR, from Airways Boulevard to South Highland, Jackson, TN

Dear Mr. Allen:

The City of Jackson, Tennessee is currently in the process of preparing a Transportation Planning Report (TPR) for the southern extension of the US 45 Bypass. The Jackson Area Metropolitan Planning Organization (MPO) has been working closely with the City of Jackson Staff to ensure the project was in compliance with the approved 2035 Long Range Transportation Plan (LRTP). The project is included in the current LRTP Future Needs Plan as Project T-2b.

Therefore, please accept this letter as the full support and endorsement of the proposed project by the Jackson Area Metropolitan Planning Organization (MPO). Furthermore, it is our understanding that the City has identified a preferred corridor "C" as described and depicted within the TPR document. The MPO will update the current project T-2b description within the LRTP once final approval has been granted for the project by the State of Tennessee.

The Jackson Area MPO urges TDOT to move forward with the approval of this TPR to enable the City of Jackson and the Jackson Area MPO to take the next steps toward project implementation.

If any further information is required, please feel free to contact me at (731) 425-8275 or by e-mail at kdonaldson@cityofjackson.net.

Respectfully,

Keith C. Donaldson
Transportation Planning Coordinator
Jackson Area MPO

121 East Main Street, Suite 301
P.O. Box 2508
Jackson, Tennessee 38302-2508

Telephone: 731-425-8240
Fax: 731-425-8605
E-Mail: jgist@cityofjackson.net

City of Jackson

Jerry Gist
Mayor

July 30, 2007

The Honorable Gerald Nicely
Commissioner of Transportation
Tennessee Department of Transportation
Suite 700, James K. Polk Building
Nashville, Tennessee 37243

Re: US 45 Bypass from Airways Boulevard to South Highland Avenue

Dear Commissioner Nicely:

Pursuant to our understanding following the meeting with you and your staff in late 2003, following the devastating tornado that ravaged our downtown and south Jackson communities, we have steadily sought to secure funding for the proposed improvement of the US 45 Bypass. With the passage of SAFETEA-LU in 2005, the City of Jackson was awarded a $4.0 million High Priority Project (HPP) for the improvement of the US 45 Bypass from Airways Boulevard to South Highland Avenue. Upon your direction, over the past three years, the City has explored several options for a bypass improvement utilizing local funds and in coordination with your Environmental and Planning divisions. The result of this work is that we have now eliminated several alignments from further study because of environmental concerns.

In a recent meeting with members of your Planning and Programming staff, it was suggested that in order to proceed further with this project the next step would be to prepare a Transportation Planning Report (TPR) formally identifying the three or four possible alternatives, and then to prepare a detailed Environmental Impact Statement (EIS) on each of the identified alternatives. The City would propose to fund the report and associated studies from our $4.0 million HPP, and would request to be allowed to be the lead agency for their preparation. If this proposal is acceptable to TDOT, we request that your Local Programs office prepare the necessary state/local contract to allow this action to occur. We realize that the HPP is federal funds and we understand and are prepared to abide by all applicable federal regulations.

Since the US 45 Bypass and the US 45 are both federal/state highways, we view this potential improvement as a state/local partnership. The US 45 Bypass has a 2006 ADT of 44,500 south of I-40 and the US 45 (South Highland) carries 34,300 vehicles per day. While a portion of this traffic is local, a substantial amount is through traffic bound for Interstate 40 from Tennessee counties south of Jackson and from northern Mississippi. As such, we feel that TDOT will have a part to play in this improvement and we are requesting that you consider providing the 20% match required for the utilization of these federal funds. For the preparation of the TPR and the EIS, our preliminary estimate is in the $1.0 million range, thus a 20% match would be approximately $200,000.

Commissioner, we appreciate all of the assistance TDOT continues to provide to the City of Jackson, which is home to your Region 4 Headquarters office. The improvement of the US 45 Bypass south of Jackson is critical to our long term traffic problems in our city, and as such, has been depicted in our last two updates of our MPO Long Range Transportation Plan as an unconstrained demonstration project. Again, your consideration of our request is most appreciated.

Sincerely,

Jerry Gist, Mayor
City of Jackson

JG:tpr

cc: Senator Lowe Finney
Representative Jimmy Eldridge
Representative Johnny Shaw

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
SUITE 700, JAMES K. POLK BUILDING
NASHVILLE, TENNESSEE 37243-0349
(615) 741-2848

GERALD F. NICELY
COMMISSIONER

PHIL BREDESEN
GOVERNOR

September 14, 2007

The Honorable Jerry Gist
Mayor, City of Jackson
121 East Main Street
Suite 301
P. O. Box 2508
Jackson, TN 38302-2508

RE: US-45 Bypass from Airways Blvd. to South Highland Ave.

Dear Mayor Gist:

Thank you for your recent letter requesting that the Tennessee Department of Transportation (TDOT) match the $4 million received in High Priority Program (HPP) funds for the above-referenced project.

The department is willing to provide a match to these funds for the early phases of the project. Specifically, the department will match necessary funds to complete a Transportation Planning Report (TPR) for the project. The department may also match the necessary funds to complete an Environmental Document on the project; however, prior to authorizing this work, we would need to include the project in its annual work program for Environmental Studies.

We are also agreeable to your proposal to be the lead agency in the preparation of the TPR. Our Local Programs Office will be contacting you in order to prepare the necessary contract to proceed with the TPR.

No work can begin for which federal reimbursement is anticipated until the project is included in your long range plan and Transportation Improvement Program.

If you have questions or concerns, please feel free to contact Mr. Paul Degges, Chief Engineer, at 615-741-0791.

Sincerely,

Gerald F. Nicely
Commissioner

GFN:PD

Cc: Mr. Paul Degges, W/Attach.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
Local Programs Development Office
SUITE 600, JAMES K. POLK BUILDING
NASHVILLE, TENNESSEE 37243-0341
Voice:615-741-6745
FAX: 615-741-9673
Find Information for Local Governments at http://www.tdot.state.tn.us/local/

3/10/2008

The Honorable Jerry Gist
Mayor, City of Jackson
121 East Main Street, Ste. 301 P.O. Box 2508
Jackson, Tennessee 38302-2508

PIN: 109926.00 HPP-NHE-1(225)

COUNTY: Madison

DESCRIPTION:

US-45 Bypass; From Airways Boulevard to South Highland Avenue in Jackson

NOTICE TO PROCEED WITH THE PRELIMINARY ENGINEERING FOR **ENVIRONMENTAL** PHASE OF PROJECT DEVELOPMENT

You are hereby authorized to begin the Preliminary Engineering for Environmental Document preparation and approval. This notice confirms that there is a fully executed contract between your agency and TDOT for the development of this project, that you have provided all information material required to determine your agency's ability to perform the work and that the Federal Highway Administration (FHWA) has approved funding for the Preliminary Engineering work necessary to research and prepare the Environmental Document for this project. You shall perform this phase of project development in accordance with the guidelines provided in the Local Programs guidelines and its appendices.

BE AWARE that this notice specifically does not provide authorization for any activities connected to the Final Design or right-of-way or construction phases of project development. You will receive separate notices to proceed for these later phases of project development. ANY WORK YOU PERFORM AHEAD OF THESE NOTICES TO PROCEED WILL BE DONE AT YOUR OWN EXPENSE. EXPENSES INCURRED ON THESE LATER PHASES WILL NOT BE REIMBURSED UNLESS YOU HAVE A NOTICE TO PROCEED IN YOUR POSSESSION BEFORE YOU INITIATE THEM.

Please provide this office a notice indicating the date you authorized work on the preliminary engineering phase of the project. This notice should be addressed to Manager, Local Programs Development Office, Suite 600, James K. Polk Building, Nashville, TN 37243-0341.

You may request reimbursement for the funds expended on this project no more often than monthly, please submit invoices using the attached forms with the submission of itemized, paid invoices showing project costs, along with accompanying bills. The invoices should reflect both 100% of the total cost incurred on the project and the Federal share. Please submit a canceled check or proof showing payment of the invoices. We will reimburse the Federal and State share of the eligible items up to the amount stated in the contract. If you have any questions, or if we can be of further assistance, please let us know.

You may also contact me at van.stovall@state.tn.us

Appendix B: Stakeholder Meeting Summary and Sign-In Sheets

AGENCY STAKEHOLDER MEETING SUMMARY
JULY 10, 2008
NEW US 45 SOUTHERN BYPASS
CITY OF JACKSON, TENNESSEE

The City of Jackson conducted a stakeholder meeting for the US 45 Southern Bypass project on Thursday, July 10, 2008 from 10:00 a.m. to 12:00 p.m. at Jackson City Hall, located at 111 East Main Street, Jackson, Tennessee. A field review of the project study followed the meeting from 1:15 p.m. to 3:15 p.m. 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 alternative corridors.

Stakeholder Meeting

Thirty people attended the meeting. The Mayors of Jackson (Jerry Gist) and Madison County (Jimmy Harris) attended, as did State Representative Jimmy Eldridge. One private citizen attended. Other attendees represented:

- City of Jackson and MPO
- Madison County
- Tennessee Department of Transportation (TDOT)
- Tennessee Department of Environment and Conservation (TDEC)
- Jackson Energy Authority
- Jackson Area Chamber of Commerce
- Jackson Spokes Bicycle Club
- GS&P

Meeting attendees were invited to sign in (sign-in sheet is included as Attachment A) and were given a handout, which included:

- A meeting agenda;
- Traffic counts and crash data for the Jackson area; and
- An 11x17 aerial map of the project area.

The meeting opened with a welcome by Mayor Jerry Gist of the City of Jackson. The Mayor described the existing US 45 Bypass as an asset to the City and discussed the changes in its use through the years. Mayor Gist expressed his views on the need for the project. The Mayor said that improved safety was one project need, citing high travel speeds through the corridor and accidents at intersections. Mayor Gist spoke of the recent growth of Jackson and the need for long-term vision surrounding the project. Finally, the Mayor expressed grave concern over the lack of alternate routes across the Forked Deer River to the southern portion of the city. Tornadoes struck the area in 1999 and 2003 and temporarily cut off emergency response and hospital access for residents south of the river due to debris blockages. The Mayor expressed his desire to secure an alternate route to ensure access and enable emergency response for all citizens should another storm or bridge failure temporarily shut down existing US 45.

Keith Donaldson, transportation planner for the City of Jackson, reminded participants that the proposed project is not just a congestion mitigation project, but is intended to address safety by

securing another crossing of the Forked Deer or an improvement of an existing crossing. He thanked stakeholders in advance for their input and assured them that the city would look to them for direction throughout the planning process. Keith then asked attendees to introduce themselves.

Bill Moore of GS&P made a brief presentation regarding the project history and background. The presentation outlined changes in traffic patterns and use since the construction of the existing bypass in 1967 and provided an overview of past planning steps related to the project. Following the tornadoes in 1999 and 2003, the City, County and Jackson Metropolitan Planning Organization approached TDOT about developing an additional corridor. Since that time, a number of alternatives for an additional corridor have been reviewed; each of these was displayed on a map and described to the stakeholders present. Margaret Slater and Mark Holloran, also of GS&P, provided an overview of the TPR process, as well as next steps in the overall project process, including National Environmental Policy Act (NEPA) document requirements, design and construction.

Following the presentations, stakeholders were invited to comment on the project purpose and need, issues and constraints. They also were invited to suggest corridors for future study. This discussion is summarized below.

Purpose and Need: Stakeholders were asked to state why they think the project is needed and the responses below were recorded on an easel pad:

- Safety issues, including crashes and emergency access;
- Relief of congestion;
- Promote economic development and redevelopment ;
- Poor travel times—Level of Service;
- Functional obsolescence of existing facilities;
- A representative from the Jackson Area Chamber of Commerce commented on the economic need for the proposed project. Approximately 45-50 percent of workers in Jackson commute from outside the City and could take advantage of alternate routes. Additionally the Chamber is interested in recruiting Tier II suppliers to the area;
- The City Planning Director commented that the City was not just interested in moving vehicles around Jackson, but also seeking to address local traffic. In the past, up to 90 percent of traffic has been found to have local destinations. Additionally, with rising fuel costs, many people are combining trips and traveling into Jackson so they can access retail and services in the same location rather than visiting retail-only destinations closer to home;
- City Police and Fire Department representatives both commented on the difficulty of emergency access to areas of the City south of the Forked Deer River. At times police and fire vehicles use Riverside Drive to reach these areas, despite the road being out of the way, in order to avoid traffic and congestion on US 45. Police and Fire need an additional crossing of the Forked Deer to avoid a situation such as that which occurred following the 2003 tornadoes, where bridge blockages cut off a portion of Jackson from emergency response following a natural disaster;
- A representative from the Jackson Energy Authority (JEA) commented that all JEA equipment and supplies are stored north of the river. When access is blocked, as was the case after the tornadoes, JEA has difficulty getting the necessary equipment to areas of southern Jackson to restore service.

At the end of this discussion, Keith Donaldson asked stakeholders if anyone disagreed with the purpose and need discussion or felt the project was not needed. Stakeholder input was encouraged, even if negative, but no negative comments in relation to the project purpose and need were offered.

Issues and Constraints: Potential issues and constraints identified by the stakeholders include:

- Environmental justice issues (impacts to minority or low income areas);
- Economic issues—bypassing Bemis could result in adverse economic impacts
- What will happen to the existing US 45 route in the future? Who will be responsible for maintaining it?;
- The existing US 45 Bypass will need to be improved north of the proposed project to eliminate possible bottleneck effects;
- Regional context should be considered. An ideal project would satisfy the need for a regional mover of goods and services as well as better conditions for local traffic;
- Historic resources, such as Bemis Historic District and Riverside Cemetery; and
- Ecological issues (e.g., wetlands, floodplains, waterway crossings).

Development of Project Alternatives: City representatives acknowledged that critical issues existed with previously studied alternatives and, as such, the project is starting with a clean slate. GS&P explained that alignments are not developed in the TPR process, but instead wide corridors are developed and studied. The development of alignments does not occur until the next planning phase (the NEPA environmental document), which occurs after the TPR is accepted. The bulleted items below summarize the discussion of project alternatives.

- A representative from TDEC suggested using the existing SR 223 corridor as a possible alignment and asked why this was not being considered.

  City staff responded that SR 223 is too far west to serve as the US 45 southern bypass extension. Traffic coming from the north on US 45 and desiring to use the southern bypass would have to travel four miles to the west along I-40 to access a bypass that follows SR 223. The case is the same with traffic from the south of Jackson desiring to connect to US 45 north of Jackson. It is unlikely that cars would choose this bypass route because it would be too far out of the way. Instead, they would likely continue to travel on existing US 45. This option would also be much longer than the options that would extend southward from existing US 45 south of Airways Boulevard and would likely greatly increase costs.

- A stakeholder inquired about the previously studied eastern route and why that corridor was not being considered.

  Staff responded that the University of Tennessee had previously studied this corridor. At that time a local group, Friends of Harris Creek, contacted the Sierra Club and fought to have the project stopped. The University of Tennessee study concluded that the area was environmentally sensitive and best avoided.

- A stakeholder asked for further clarification of the decision not to use the University of Tennessee agricultural land as part of the alignment.

  Staff responded that the land actually belongs to Tennessee taxpayers and constitutes a scientific experiment with specially calibrated fields. Taking the land would require reimbursing taxpayers not only for the actual value of the land but also for the costs of the

last fifteen or so years of crop experimentation. This makes using this land prohibitively expensive and ruins the scientific experiments.

- A stakeholder suggested widening the existing US 45 corridor.

  Staff expressed concern about the retail that would be displaced if a widening were undertaken. Most businesses along US 45 have very little setback and there is limited space for additional lanes within the current right-of-way. Furthermore, the addition of lanes may relieve congestion but does not address the safety issues associated with having a single crossing over the Forked Deer River or with the high volume of through traffic mixing with local traffic. An improved South Highland is also not in keeping with the City vision.

Following this discussion, a representative of TDEC (Brian Canada) submitted an 11x17 hard copy of the aerial photograph containing sketches of a number of possible study corridors and locating streams and wetlands along the corridors (included as Attachment B).

Additional Discussion: During this portion of the discussion, staff also provided some clarification about conditions and relevant planning efforts for the project area. These points included:

- Current corridor traffic is approximately 12-18 percent trucks.
- Highway 18 to Bolivar is currently under study.
- A possible widening of the existing US 45 Bypass from Airways Boulevard north to I-40 is also under consideration.
- The Long Range Transportation Plan prepared by the Jackson Metropolitan Planning Organization proposes re-routing the existing US 45 Bypass along State Street behind the Jackson Energy Authority facilities and reconnecting with US 45 just south of Riverside Cemetery.
- The City is considering other, non-highway options such as park and ride lots, but these options will not solve the existing safety issues that the City wishes to address.

The meeting adjourned shortly before noon. In closing, Keith thanked everyone for attending and told them that their input was important and would be used to move the project forward. Attendees interested in participating in the field review were asked to meet at 1:15.

Field Review

The following attended the afternoon field review:

City of Jackson: Wayne Arnold, Scott Chandler, Keith Donaldson, Stan Pilant

GS&P: Margaret Slater, Bill Moore, Shawn Means, Mark Holloran, Will Reid

TDOT: Joe Matlock

A van carried attendees through the study area and focused on areas where the potential corridors would cross and locations where the proposed bypass corridors could connect with existing US 45 (Highland) south of Jackson. Land use, environmental features, and potential constraints were noted.

Prepared by: Shawn Means and Margaret Slater, Gresham Smith and Partners, July 14, 2008

Attachment A: Stakeholder Sign in Sheets

One stakeholder in attendance, Scott Chandler (City of Jackson), did not sign in but was present for both the meeting and the field review.

SIGN IN SHEET FOR JULY 10, 2008 STAKEHOLDER MEETING
Proposed US 45 Southern Bypass,
From existing US 45 Bypass west of Jackson to US 45 south of Jackson ,
City of Jackson, Tennessee

Date/Time: July 10, 2008 / 10:00 a.m.
Location: Jackson City Hall, 111 East Main Street, 1st Floor Conference Room
Purpose: Early Planning for US 45 Southern Bypass

Name	Organization/Affiliation	Contact Information: e-mail	Check if attending Field Review
Brian Canada	TDEC	Brian.Canada@state.tn.us	
Amy Fitz	TDEC, WPC Jackson	Amy.Fitz@state.tn.us	✓
Keith Donaldson	City of Jackson/MPO	kdonaldson@cityofjackson.net	✓
Beth Williams	TDEC	Elizabeth.Williams@state.tn.us	
Stan Pilant	CITY OF JACKSON	spilant@cityofjackson.net	✓
	City & Other		
Shawn Means	GS&P	shawn_means@gspnet.com	✓
Mark Holloran	GS&P	Mark_Holloran@gspnet.com	✓
Bill Moore	GS&P	bill_moore@gspnet.com	

_____ of _____

SIGN IN SHEET FOR JULY 10, 2008 STAKEHOLDER MEETING
Proposed US 45 Southern Bypass,
From existing US 45 Bypass west of Jackson to US 45 south of Jackson ,
City of Jackson, Tennessee

Date/Time: July 10, 2008 / 10:00 a.m.
Location: Jackson City Hall, 111 East Main Street, 1st Floor Conference Room
Purpose: Early Planning for US 45 Southern Bypass

Name	*Organization/Affiliation*	*Contact Information: e-mail*	*Check if attending Field Review*
Jim Eldridge	STATE Representative		
Michele T. Jackson	JTA		
Joe Warren	TDOT Jackson	joe.warren@state.tn.us	
Jason D. Baker	TDOT Project Management	jason.baker@state.tn.us	
Terry L. Dromwright	TLM Assoc INC	tldromwright@tlmassociates.com	
Hameen Harris	JEA	hharris@jeaenergy.com	
Danny Hall	JEA	dhall@jeaenergy.com	
Randy McKinnon	Jackson Spokes	r.mckinnon@tlmassociate.com	
Tom White	Madison County		
Jimmy Harris	" "		

_____ of _____

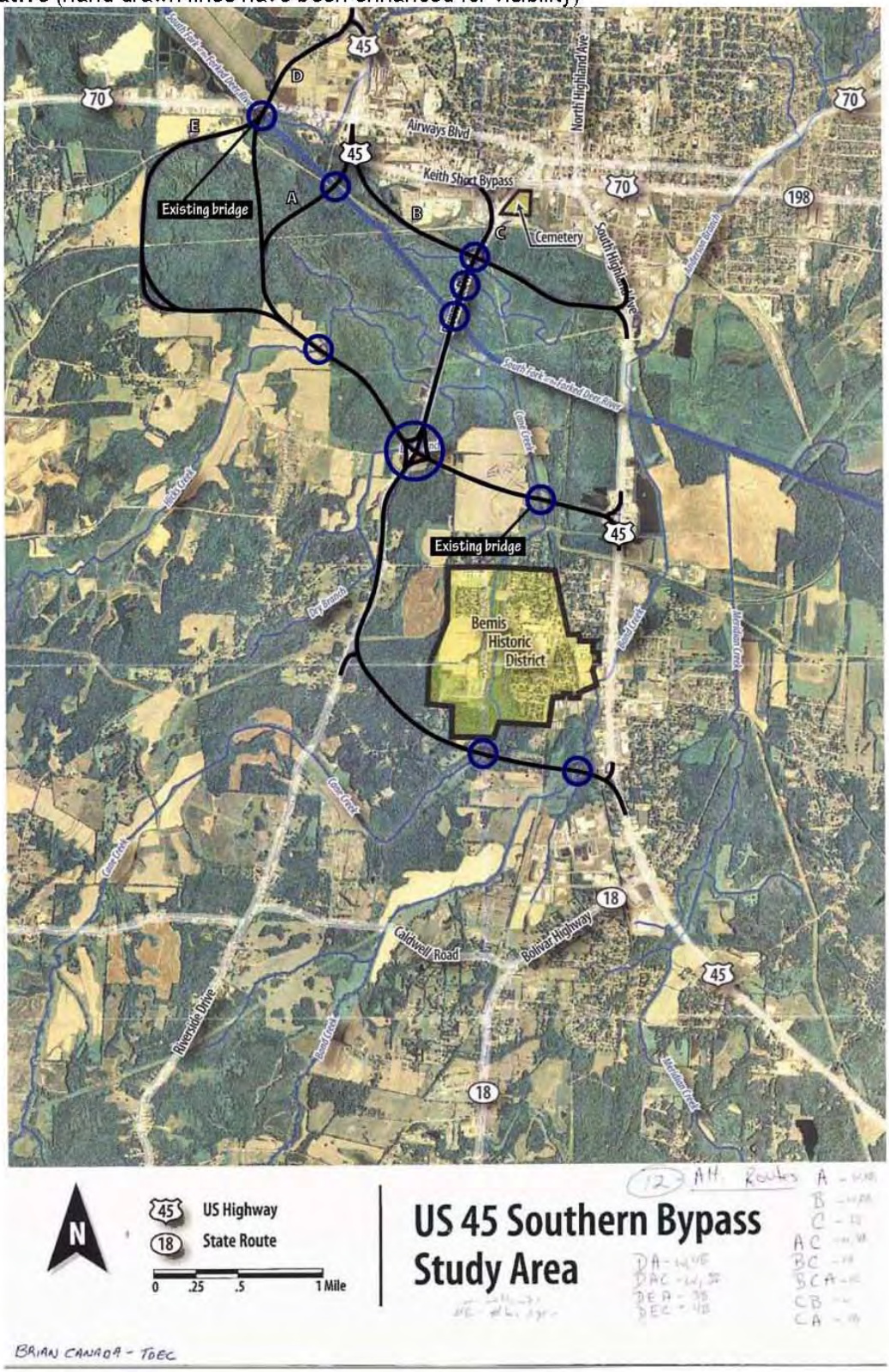
SIGN IN SHEET FOR JULY 10, 2008 STAKEHOLDER MEETING
Proposed US 45 Southern Bypass,
From existing US 45 Bypass west of Jackson to US 45 south of Jackson ,
City of Jackson, Tennessee

Date/Time: July 10, 2008 / 10:00 a.m.
Location: Jackson City Hall, 111 East Main Street, 1st Floor Conference Room
Purpose: Early Planning for US 45 Southern Bypass

Name	Organization/Affiliation	Contact Information: e-mail	Check if attending Field Review
Margaret Slater	GS+P	margaret_slater@gspnet.com	✓
Wayne Arnold	Jackson Fire Dept	warnold@cityofjackson.net	
Gary Leforgee	Jack Street Dept	gleforgee@cityofjackson.net	✓
Mandy White	Jackson Area Chamber of Commerce	mwhite@jacksontn.com	
Brandon T. Banks	TDOT	Brandon.T.Banks@state.tn.us	
Bill Hart	TDOT	Bill.Hart@state.tn.us	
Joe Mathlick	ED TDOT	Joe.Mathlick@state.tn.us	✓
Will Reid	GS&P	will_reid@gspnet.com	✓
Ron Adams	Jackson Police	RADAMS@CITYOFJACKSON.NET	✓
Gregg Overstreet	TDEC/WPC	Gregg.Overstreet@state.tn.us	

_____ of _____

Attachment B: Aerial Photograph with Possible Study Corridor Sketches Submitted by a TDEC Representative (hand drawn lines have been enhanced for visibility)



Appendix C: Typical Sections and Plan Sheets

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

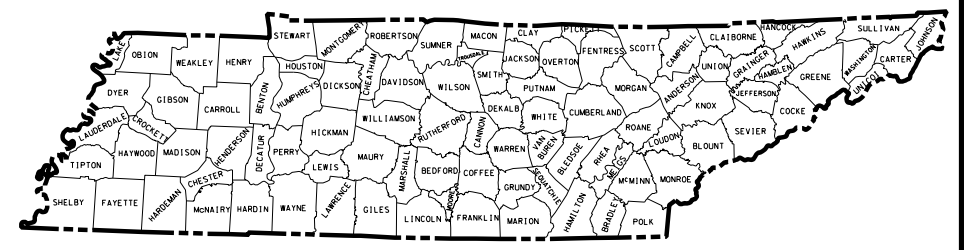
Index Of Sheets

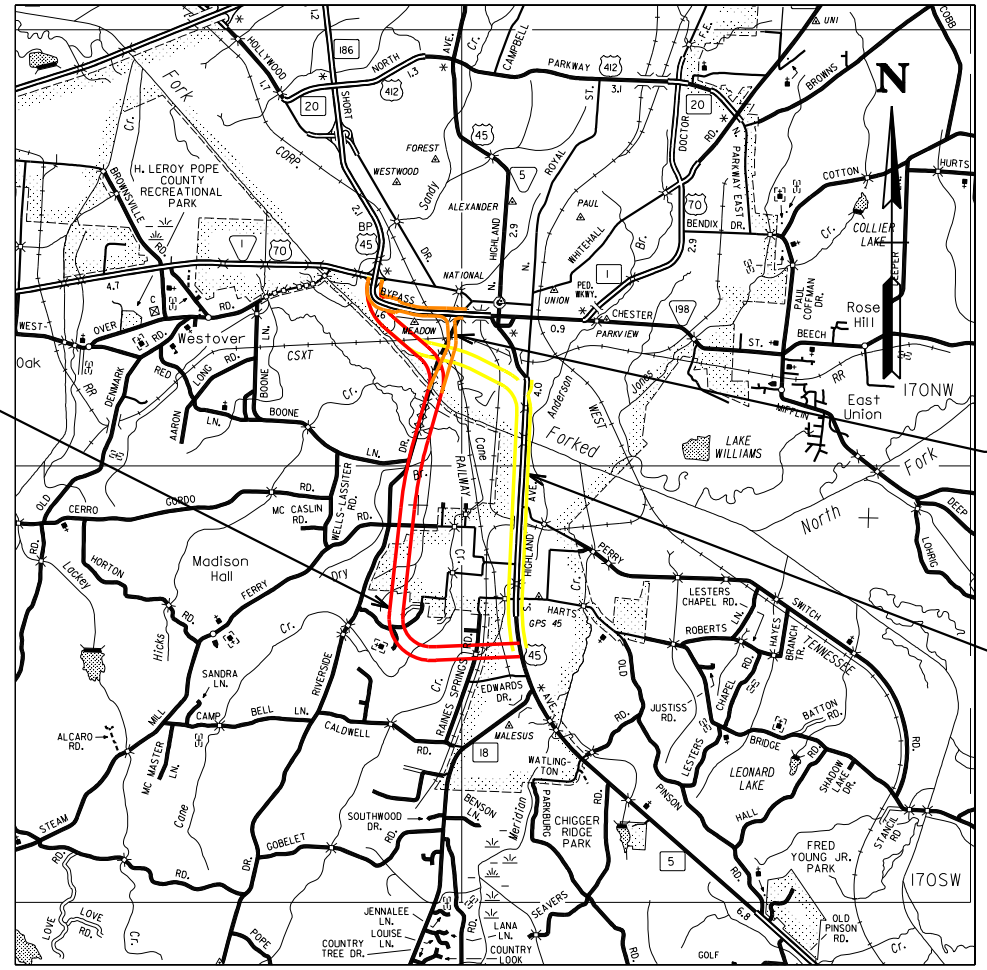
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING

TENN.	YEAR	SHEET NO.
	2008	1
FED. AID PROJ. NO.		
STATE PROJ. NO.		

SOUTHERN EXTENSION OF THE US 45 BYPASS (STATE ROUTE 5)
FROM AIRWAYS BOULEVARD TO US 45 (STATE ROUTE 1) NORTH OF STATE ROUTE 18
JACKSON, MADISON COUNTY, TN

STATE HIGHWAYS NO. 1 AND NO. 5 (U.S. HIGHWAY 45/U.S. 45 BYPASS)





SCALE: 1"= 2 MILES

APPROVED:

CHIEF ENGINEER

DATE:

APPROVED:

COMMISSIONER

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED:

DIVISION ADMINISTRATOR — DATE

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 TRANSPORTATION MANAGER 1 _____
TDOT ROAD SP. SV. 2 _____
DESIGNED BY _____
DESIGNER _____ CHECKED BY _____

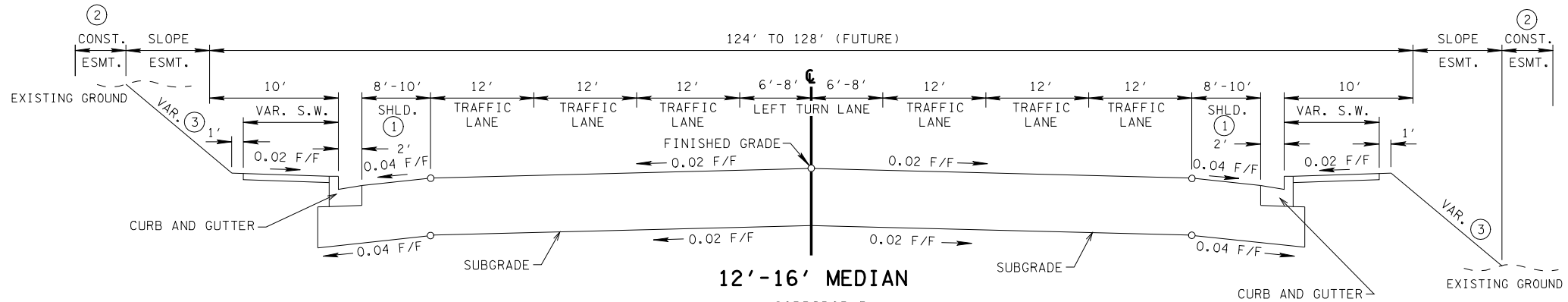
P.E. NO. _____

PIN NO. _____

1/28/2009
Q:\26717\1\Cover.sht

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

TYPE	YEAR	PROJECT NO.	SHEET NO.
TPR	2008		2



12′-16′ MEDIAN

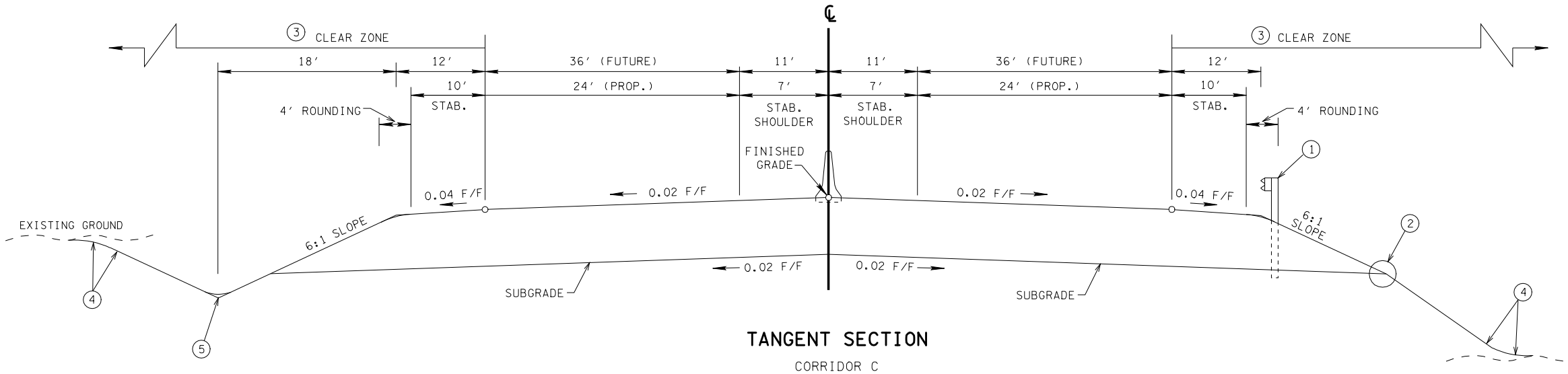
CORRIDOR B
EXIST. 45 FROM B.O.P. TO S. HIGHLAND

① THE SHOULDER WIDTH WILL BE AS SPECIFIED IN THE ADVANCE PLANNING REPORT.

② 10 FEET OF CONSTRUCTION EASEMENT IS DESIREABLE.

③ 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.



TANGENT SECTION

CORRIDOR C
NORTH OF BOONE LN. TO SOUTH OF RIVERSIDE DR.

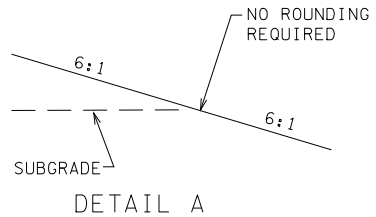
① SEE GUARDRRAIL STANDARD DRAWINGS FOR TYPICAL GUARDRAIL PLACEMENT.

② SEE DETAIL A,B,C, OR D ON THIS SHEET FOR ROUNDING.

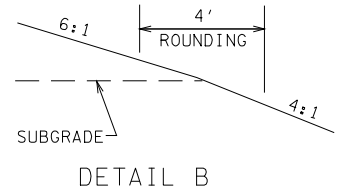
③ CLEAR ZONE WIDTHS SHALL BE DETERMINED FROM STANDARD DRAWING RD-S-11.

④ SEE STANDARD DRAWING RD-S-11 FOR FILL AND CUT SLOPE TABLES, ROUNDING ON TOP OF CUT SLOPES AND TOE OF FILL SLOPES, AND SPECIAL ROCK CUT TREATMENT.

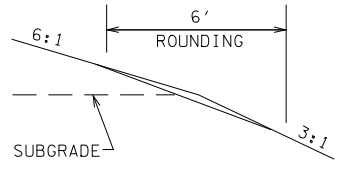
⑤ SEE STANDARD DRAWING RD-S-11A FOR FOR ROUNDING OF ROADSIDE DITCH SLOPES.



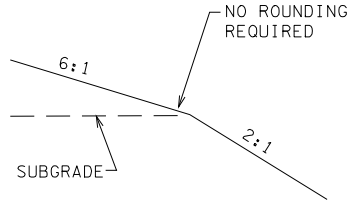
DETAIL A



DETAIL B



DETAIL C



DETAIL D

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

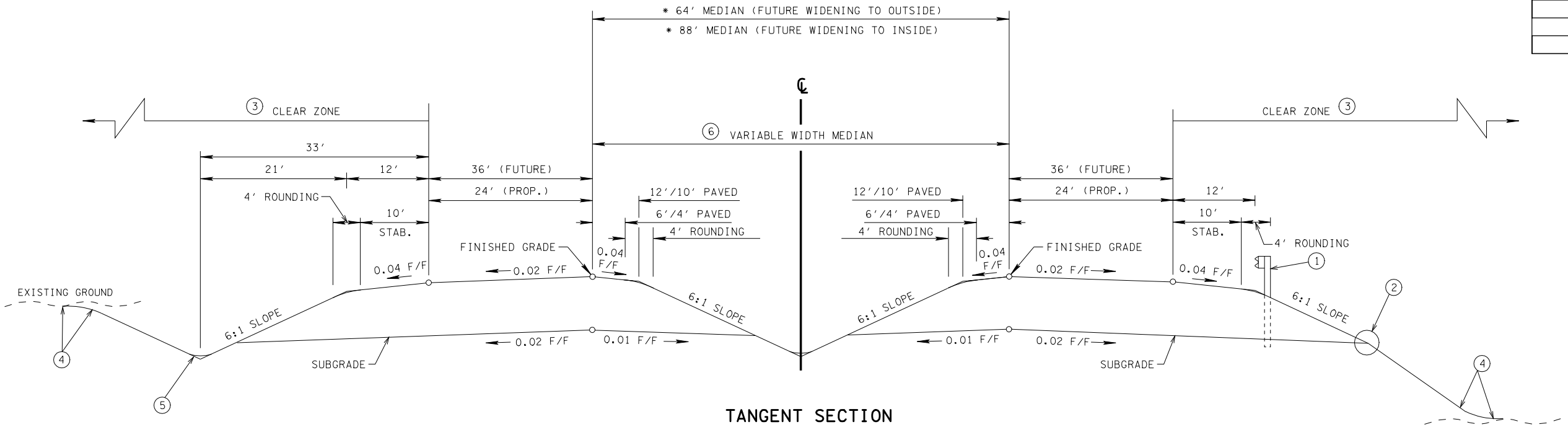
TYPICAL SECTIONS

28-JAN-2009 08:57
Q:\2671\t\Sheets 01_27_09\TypicalSection1.sht

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

TYPE	YEAR	PROJECT NO.	SHEET NO.
TPR	2008		3

* ASSUMES THE USE OF 12' INSIDE SHOULDERS



TANGENT SECTION

CORRIDOR B
WEST OF EXIST. U.S. 45 TO E.O.P.
CORRIDOR C
B.O.P. TO SOUTH OF BOONE LN.
SOUTH OF RIVERSIDE DR. TO E.O.P.

(1) SEE GUARDRRAIL STANDARD DRAWINGS FOR TYPICAL GUARDRAIL PLACEMENT.

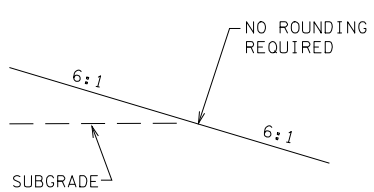
(2) SEE DETAIL A,B,C, OR D ON THIS SHEET FOR ROUNDING.

(3) CLEAR ZONE WIDTHS SHALL BE DETERMINED FROM STANDARD DRAWING RD-S-11. SEE THE "ROADSIDE DESIGN GUIDE", AASHTO, 2002, FOR FURTHER INFORMATION ON CLEAR ZONES

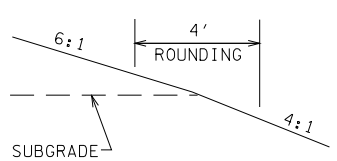
(4) SEE STANDARD DRAWING RD-S-11 FOR FILL AND CUT SLOPE TABLES, ROUNDING ON TOP OF CUT SLOPES AND TOE OF FILL SLOPES, AND SPECIAL ROCK CUT TREATMENT.

(5) SEE STANDARD DRAWING RD-S-11A FOR FOR ROUNDING OF ROADSIDE DITCH SLOPES.

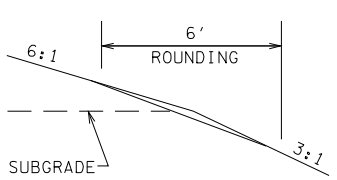
(6) MINIMUM MEDIAN WIDTH IS TO BE 48 FEET WHEN USING 6 FEET WIDE INSIDE SHOULDERS. MINIMUM MEDIAN WIDTH IS TO BE 64 FEET WHEN USING 12 FOOT WIDE INSIDE SHOULDERS.



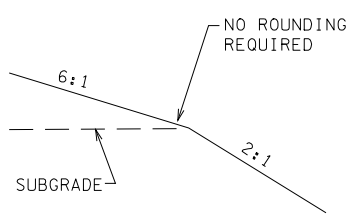
DETAIL A



DETAIL B



DETAIL C



DETAIL D

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

TYPICAL SECTIONS

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

TYPE	YEAR	PROJECT NO.	SHEET NO.
TPR	2009		4

BEGIN CORRIDOR B

200 205 210 215 220 225 230 235 240 245 250

Western Tennessee Railroad

Western Tennessee Railroad

Harts Bridge Road

Judson Street

Farwell Street

Young Street

Missouri Street

Bemis Lane

US 45 / SR 5

US 45 / SR 5

750'

SEE SHEET NO. 5

MATCH LINE 251+00

Rebel Road

Southside High School

Harts Bridge Road

Herron Avenue

Herron Grove Road

Chester Levee Road

Chester Levee Road

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

CORRIDOR B

B.O.P. TO STA.251+00

0 200 400'

1/28/2009
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TENNESSEE D.O.T.
DESIGN DIVISION
FILE NO.

TYPE	YEAR	PROJECT NO.	SHEET NO.
TPR	2009		5

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

CORRIDOR B

STA.251+00 TO STA.303+00

0 200 400'

1/28/2009
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STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

CORRIDOR B

STA. 303+00 TO STA. 355+00

0 200 400'

TYPE	YEAR	PROJECT NO.	SHEET NO.
TPR	2009		6

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

1/28/2009
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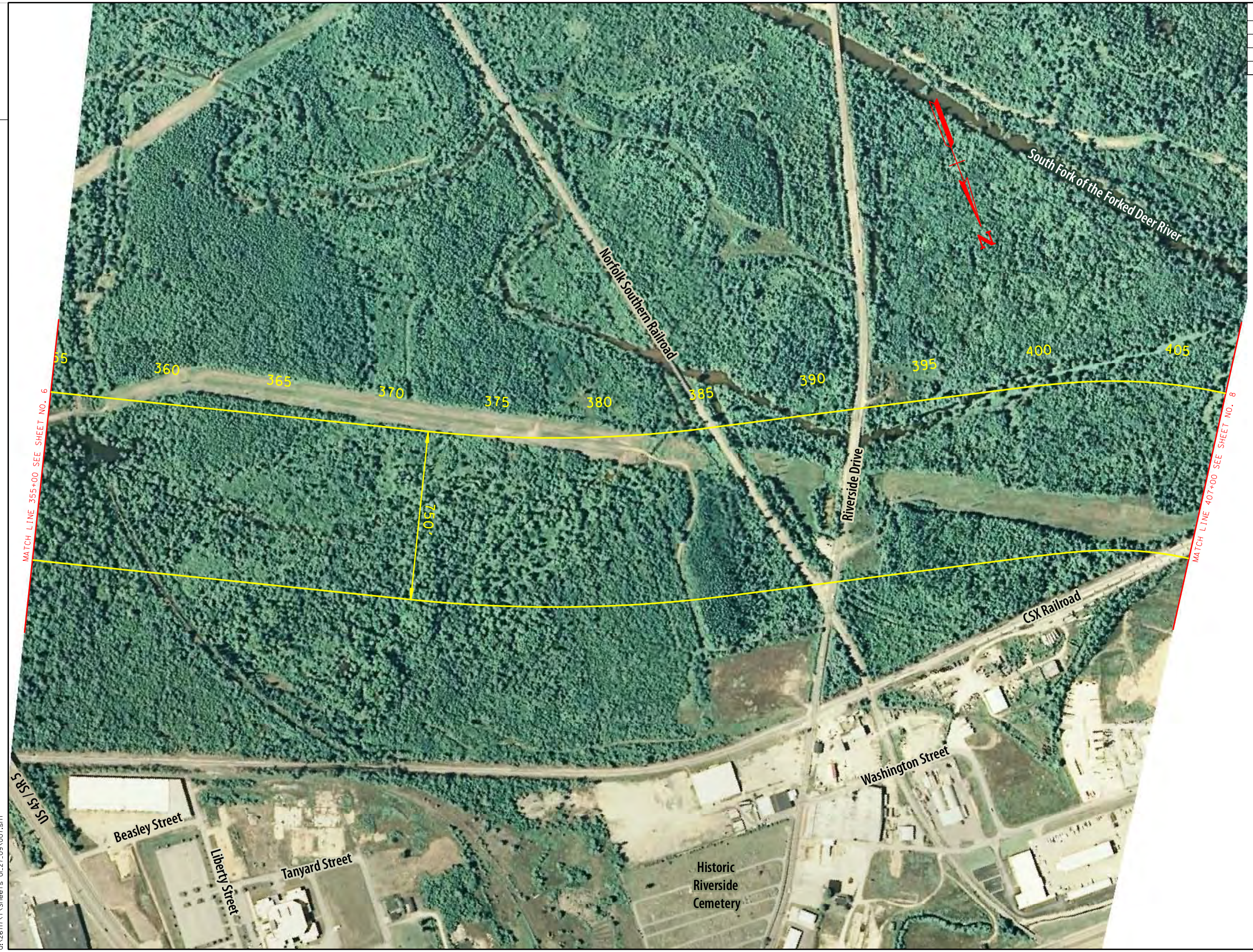
TENNESSEE D.O.T.
DESIGN DIVISION
FILE NO.

TYPE	YEAR	PROJECT NO.	SHEET NO.
TPR	2009		7



STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

CORRIDOR B

STA. 355+00 TO STA. 407+00

0 200 400'

1/28/2009
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STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

CORRIDOR B

STA.407+00 TO E.O.P.

0 200 400'

1/28/2009
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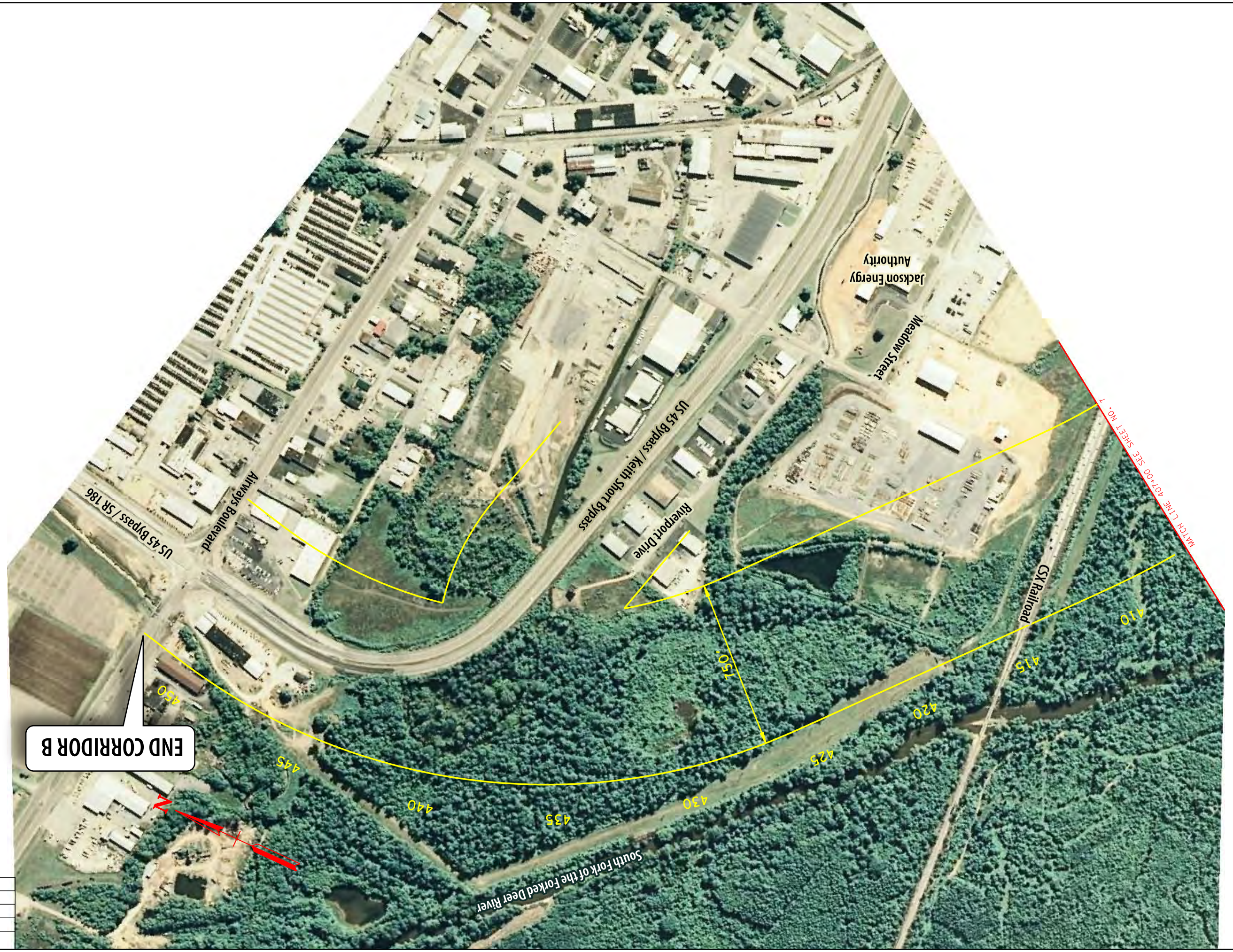
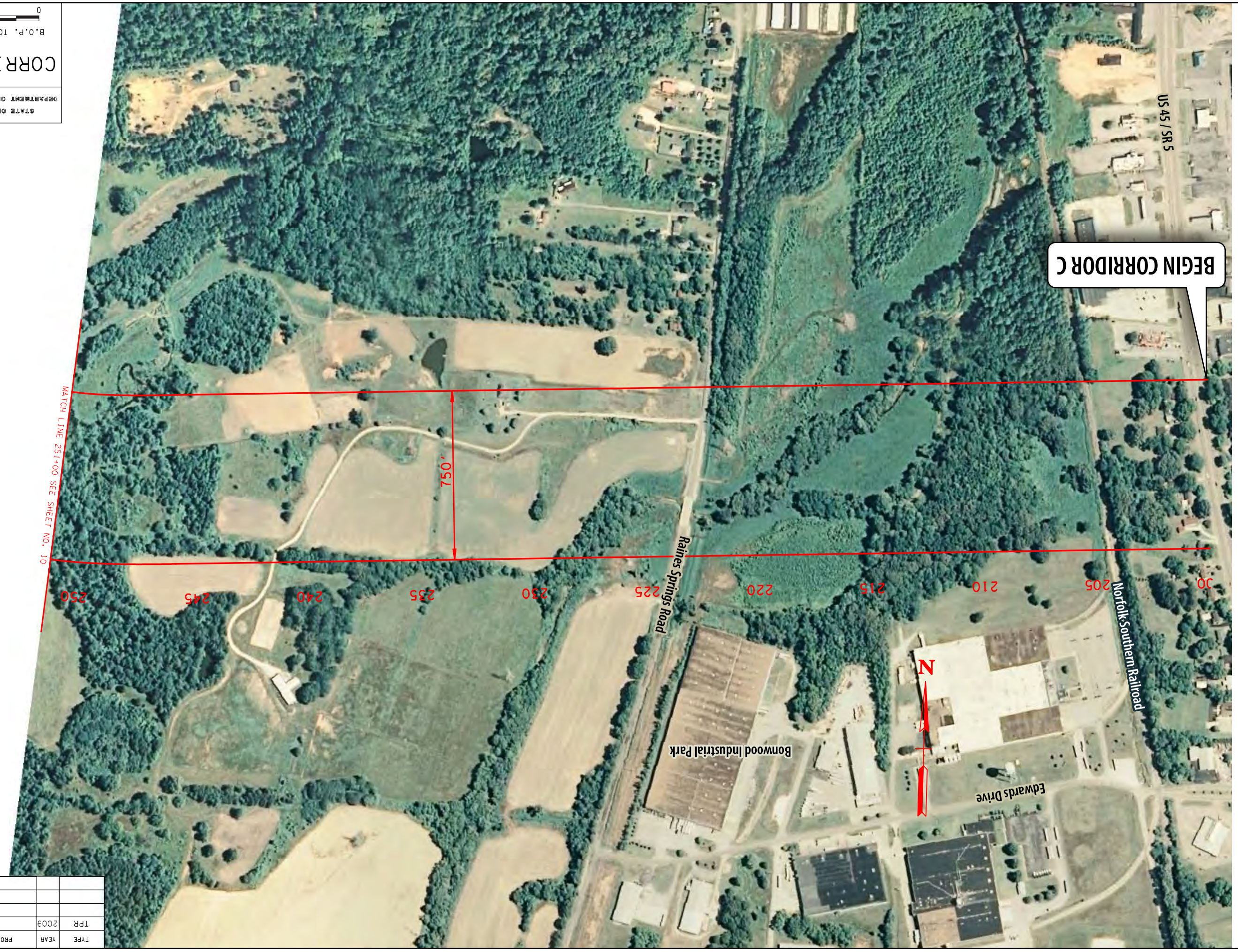
TYPE	YEAR	PROJECT NO.	SHEET NO.
TPR	2009		8

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





STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

CORRIDOR C

B.O.P. TO STA.251+00

0 200 400'

TYPE	YEAR	PROJECT NO.	SHEET NO.
TPR	2009		9

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

1/28/2009
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TENNESSEE D.O.T.
DESIGN DIVISION
FILE NO.

1/28/2009
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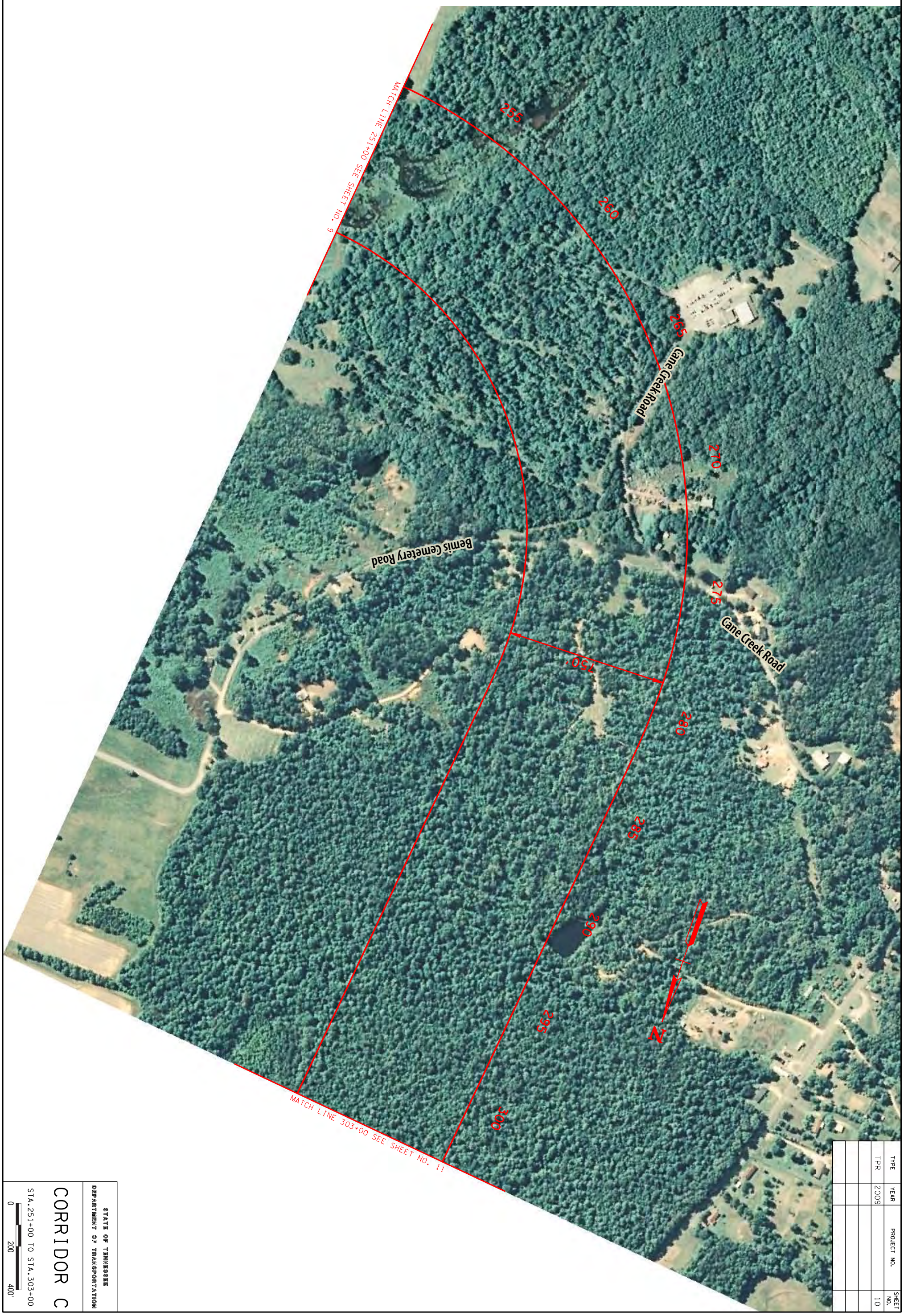

TYPE	YEAR	PROJECT NO.	SHEET NO.
TPR	2009		10

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

CORRIDOR C

STA.251+00 TO STA.303+00

0 200 400'

TENNESSEE D.O.T.
DESIGN DIVISION

FILE NO.

1/28/2009
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TYPE	YEAR	PROJECT NO.	SHEET NO.
TPR	2009		11

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

CORRIDOR C

STA.303+00 TO STA.355+00

0 200 400'

TENNESSEE D.O.T.
DESIGN DIVISION

FILE NO.

1/28/2009
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MATCH LINE 355+00 SEE SHEET NO. 11

Riverside Drive

Boone Lane

Riverside Drive

750'

MATCH LINE 407+00 SEE SHEET NO. 13

TYPE	YEAR	PROJECT NO.	SHEET NO.
TPR	2009		12

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

CORRIDOR C

STA. 355+00 TO STA. 407+00

0 200 400'

1/28/2009
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STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

CORRIDOR C

STA. 407+00 TO STA. 459+00

0 200 400'

US 45 Bypass / Keith Short Bypass

Jackson Energy Authority

CSX Railroad

Norfolk Southern Railroad

Riverside Drive

South Fork of the Forked Deer River

CSX Railroad

MATCH LINE 459+00 SEE SHEET NO. 14

MATCH LINE 407+00 SEE SHEET NO. 12

N

TYPE	YEAR	PROJECT NO.	SHEET NO.
TPR	2009		13

FILE NO.

DESIGN DIVISION

TENNESSEE D.O.T.

TYPE	YEAR	PROJECT NO.	SHEET NO.
TPR	2009		14

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

CORRIDOR C

STA.459+00 TO E.O.P.

0 200 400'

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

1/28/2009
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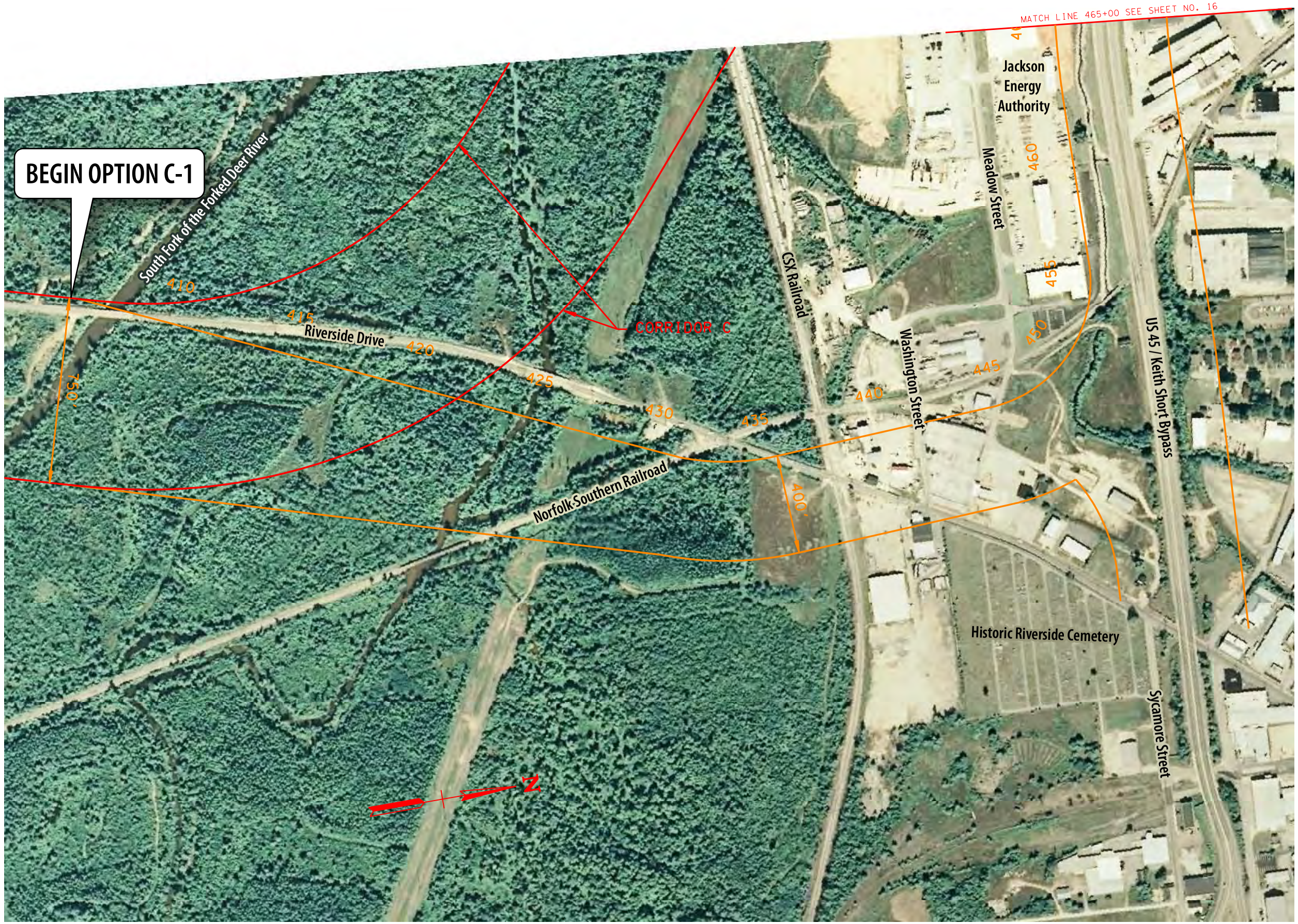
CSX Railroad

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

TYPE	YEAR	PROJECT NO.	SHEET NO.
TPR	2009		15



STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

CORRIDOR C1

B.O.P. TO STA. 465+00

0 200 400'

1/28/2009
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TENNESSEE D.O.T.
DESIGN DIVISION
FILE NO.

TYPE	YEAR	PROJECT NO.	SHEET NO.
TPR	2009		16

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

CORRIDOR C1

STA.407 +00 TO E.O.P.

0 200 400'

1/28/2009
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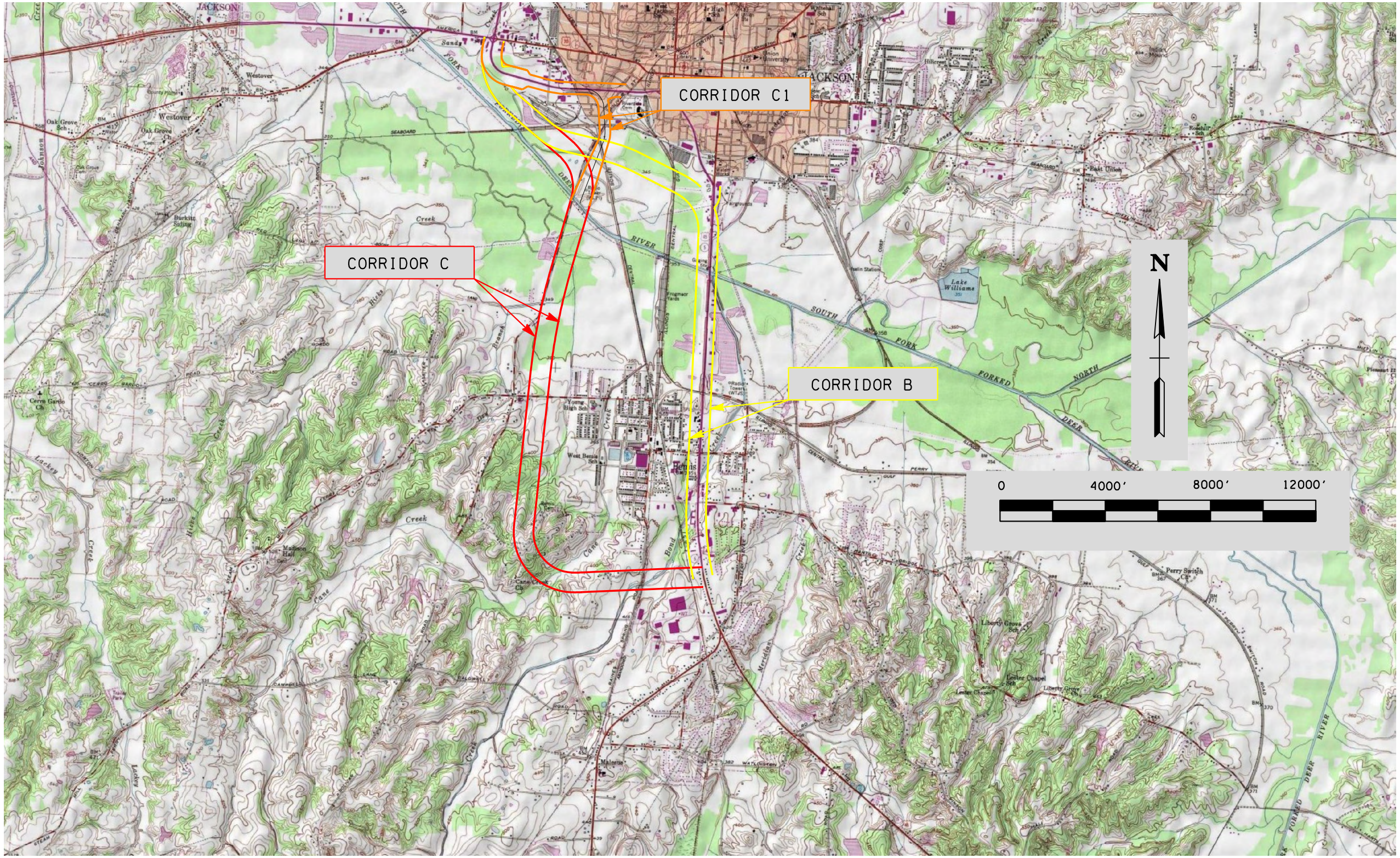
TENNESSEE D.O.T.
DESIGN DIVISION
FILE NO.

TYPE	YEAR	PROJECT NO.	SHEET NO.
TPR	2008		17



2/4/2009
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STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

CORRIDORS ON USGS MAP

Appendix D:
Preliminary Cost Estimates

Summary of Detailed Cost Estimates
Southern Extension of SR 186/US 45 Bypass, Jackson, Madison County, TN

OPTION B

	UNIT	QUANTITY	LOW UNIT COST	HIGH UNIT COST	LOW TOTAL	HIGH TOTAL
RIGHT-OF-WAY COST						
LAND	AC	120	$5,000	$6,500	$600,000	$780,000
COMMERCIAL	EA	12	$500,000	$750,000	$6,000,000	$9,000,000
RESIDENTIAL	EA	5	$150,000	$250,000	$750,000	$1,250,000
				SUBTOTAL	**$7,350,000**	**$11,030,000**
CONSTRUCTION COST						
NEW 4-LANE, RURAL SECTION*	MI	2.2	$2,646,177	$3,527,789	$5,821,589	$7,761,136
NEW 6-LANE, URBAN SECTION W/ MEDIAN BARRIER*	MI	1.1	$3,588,656	$4,557,661	$3,947,522	$5,013,427
WIDEN EXIST 5-LANE TO 7-LANE URBAN SECTION*	MI	1.5	$1,128,172	$1,638,391	$1,692,258	$2,457,587
EARTHWORK (BORROW)	CY	2000000	$7	$12	$14,000,000	$24,000,000
STRUCTURES (BRIDGES)	SF	111326	$75	$95	$8,349,450	$10,575,970
DRAINAGE (BOX CULVERTS)	EA.	3	$150,000	$200,000	$450,000	$600,000
DRAINAGE (PIPE CULVERTS)	LF	11000	$60	$85	$660,000	$935,000
SIGNALS	EA.	10	$150,000	$250,000	$1,500,000	$2,500,000
TRAFFIC CONTROL	LS	1	$1,000,000	$1,250,000	$1,000,000	$1,250,000
				SUBTOTAL	**$37,420,819**	**$55,093,119**

*SEE PER-MILE DETAILS

UTILITY COST						
OVERHEAD ELECTRIC	MI	3.5	$60,000	$360,000	$210,000	$1,260,000
TELEPHONE	MI	3.5	$50,000	$300,000	$175,000	$1,050,000
CABLE	MI	3.5	$200,000	$1,200,000	$700,000	$4,200,000
GAS	MI	3.5	$250,000	$1,500,000	$875,000	$5,250,000
				SUBTOTAL	**$1,960,000**	**$11,760,000**

MOBILIZATION		
LOW=$430,000+3.5% CONSTRUCTION OVER $10,000,000 HIGH=$780,000+3.0% CONSTRUCTION OVER $20,000,000	$1,389,729	$1,832,794
EROSION CONTROL (3.5% OF CONSTRUCTION COST)	$1,309,729	$1,928,259
CONTINGENCY (15% OF CONSTRUCTION COST+UTILITIES)	$5,907,123	$10,027,968
TOTAL CONSTRUCTION COST	$47,987,399	$80,642,140
PRELIMINARY ENGINEERING (10% OF TOTAL CONSTRUCTION COST)	$4,798,740	$8,064,214
TOTAL (WITHOUT INFLATION)	**$52,786,139**	**$88,706,354**
INFLATION (6% PER YEAR OVER 5 YEARS)	$17,852,272	$30,000,489
TOTAL COSTS	**$70,638,411**	**$118,706,843**

Southern Extension of SR 186/US 45 Bypass, Jackson, Madison County, TN
Per-Mile Details-Option B

4-Lane, Rural Cross-section

Item No.	Description	Unit	Quantity/Mile	Low Unit Cost	High Unit Cost	Low Total	High Total
201-01	CLEARING AND GRUBBING	L.S	(250' ROW WIDTH)	$70,000	$471,000	$70,000	$471,000
303-01	MINERAL AGGREGATE, TYPE A BASE, GRADING D	TON	56887	$14	$17	$796,418	$967,079
307-03.01	ASPHALT CONCRETE MIX (PG76-22) (BPMB-HM) GRADING A	TON	11336	$72	$78	$816,192	$884,208
307-03.08	ASPHALT CONCRETE MIX (PG76-22) (BPMB-HM) GRADING B-M2	TON	4508	$79	$86	$356,132	$387,688
411-03.10	ACS MIX (PG76-22) GRADING D	TON	2643	$102	$110	$269,586	$290,730
402-01	BITUMINOUS MATERIAL FOR PRIME COAT (PC)	TON	61	$362	$737	$22,082	$44,957
402-02	AGGREGATE FOR COVER MATERIAL (PC)	TON	240	$14	$22	$3,360	$5,280
403-01	BITUMINOUS MATERIAL FOR TACK COAT (TC)	TON	9	$13	$13	$117	$117
705-01.01	GUARDRAIL AT BRIDGE ENDS	L.F.	150	$23	$25	$3,450	$3,750
705-02.02	SINGLE GUARDRAIL (TYPE 2)	L.F.	950	$22	$24	$20,900	$22,800
705-04.07	TAN ENERGY ABSORBING TERM (NCHRP 350, TL3)	EACH	8	$2,432	$2,600	$19,456	$20,800
709-05.06	MACHINED RIP-RAP (CLASS A-1)	TON	4000	$28	$47	$112,000	$188,000
709-05.08	MACHINED RIP-RAP (CLASS B)	TON	4000	$29	$48	$116,000	$192,000
						$0	$0
716-02.01	THERMO PLASTIC PAVEMENT MARKING (4" LINE)	L.M.	6	$2,734	$3,500	$16,404	$21,000
716-02.04	THERMO PLASTIC PAV MARKING (CHANNEL. STRIPING)	S.Y.	375	$21	$30	$7,875	$11,250
716-02.05	PLASTIC MARKING (STOP LINE)	L.F.	45	$12	$15	$540	$675
716-02.06	PLASTIC MARKING (ARROW)	EACH	5	$163	$211	$815	$1,055
						$0	$0
801-02	SEEDING (WITH MULCH)	Unit	550	$27	$28	$14,850	$15,400

TOTAL	**$2,646,177**	**$3,527,789**

6-Lane, Urban freeway w/ median barrier Cross-section (across floodplain)

Item No.	Description	Unit	Quantity/Mile	Low Unit Cost	High Unit Cost	Low Total	High Total
201-01	CLEARING AND GRUBBING	L.S	(250' ROW WIDTH)	$70,000	$471,000	$70,000	$471,000
303-01	MINERAL AGGREGATE, TYPE A BASE, GRADING D	TON	51613	$14	$17	$722,582	$877,421
307-03.01	ASPHALT CONCRETE MIX (PG76-22) (BPMB-HM) GRADING A	TON	20308	$72	$78	$1,462,176	$1,584,024
307-03.08	ASPHALT CONCRETE MIX (PG76-22) (BPMB-HM) GRADING B-M2	TON	7028	$79	$86	$555,212	$604,408
411-03.10	ACS MIX (PG76-22) GRADING D	TON	4120	$102	$110	$420,240	$453,200
402-01	BITUMINOUS MATERIAL FOR PRIME COAT (PC)	TON	110	$362	$737	$39,820	$81,070
402-02	AGGREGATE FOR COVER MATERIAL (PC)	TON	434	$14	$22	$6,076	$9,548
403-01	BITUMINOUS MATERIAL FOR TACK COAT (TC)	TON	20	$13	$13	$260	$260
705-01.01	GUARDRAIL AT BRIDGE ENDS	L.F.	150	$23	$25	$3,450	$3,750
705-02.02	SINGLE GUARDRAIL (TYPE 2)	L.F.	950	$22	$24	$20,900	$22,800
705-04.07	TAN ENERGY ABSORBING TERM (NCHRP 350, TL3)	EACH	8	$2,432	$2,600	$19,456	$20,800
709-05.06	MACHINED RIP-RAP (CLASS A-1)	TON	4000	$28	$47	$112,000	$188,000
709-05.08	MACHINED RIP-RAP (CLASS B)	TON	4000	$29	$48	$116,000	$192,000
						$0	$0
716-02.01	THERMO PLASTIC PAVEMENT MARKING (4" LINE)	L.M.	6	$2,734	$3,500	$16,404	$21,000
716-02.04	THERMO PLASTIC PAV MARKING (CHANNEL. STRIPING)	S.Y.	375	$21	$30	$7,875	$11,250
716-02.05	PLASTIC MARKING (STOP LINE)	L.F.	45	$12	$15	$540	$675
716-02.06	PLASTIC MARKING (ARROW)	EACH	5	$163	$211	$815	$1,055
						$0	$0
801-02	SEEDING (WITH MULCH)	Unit	550	$27	$28	$14,850	$15,400

TOTAL	**$3,588,656**	**$4,557,661**

7-Lane, Urban Cross-section (Widen and overlay existing)

Item No.	Description	Unit	Quantity/Mile	Low Unit Cost	High Unit Cost	Low Total	High Total
201-01	CLEARING AND GRUBBING	L.S	(195' ROW WIDTH)	$50,000	$300,000	$50,000	$300,000
303-01	MINERAL AGGREGATE, TYPE A BASE, GRADING D	TON	9130	$14	$17	$127,820	$155,210
307-03.01	ASPHALT CONCRETE MIX (PG76-22) (BPMB-HM) GRADING A	TON	3400	$72	$78	$244,800	$265,200
307-03.08	ASPHALT CONCRETE MIX (PG76-22) (BPMB-HM) GRADING B-M2	TON	1591	$79	$86	$125,689	$136,826
411-03.10	ACS MIX (PG76-22) GRADING D	TON	2425	$102	$110	$247,350	$266,750
402-01	BITUMINOUS MATERIAL FOR PRIME COAT (PC)	TON	36	$362	$737	$13,032	$26,532
402-02	AGGREGATE FOR COVER MATERIAL (PC)	TON	120	$14	$22	$1,680	$2,640
403-01	BITUMINOUS MATERIAL FOR TACK COAT (TC)	TON	6	$230	$400	$1,380	$2,400
705-01.01	GUARDRAIL AT BRIDGE ENDS	L.F.	150	$46	$60	$6,900	$9,000
705-02.02	SINGLE GUARDRAIL (TYPE 2)	L.F.	950	$22	$24	$20,900	$22,800
705-04.07	TAN ENERGY ABSORBING TERM (NCHRP 350, TL3)	EACH	8	$2,432	$2,600	$19,456	$20,800
709-05.06	MACHINED RIP-RAP (CLASS A-1)	TON	4000	$28	$47	$112,000	$188,000
709-05.08	MACHINED RIP-RAP (CLASS B)	TON	4000	$29	$48	$116,000	$192,000
						$0	$0
716-02.01	THERMO PLASTIC PAVEMENT MARKING (4" LINE)	L.M.	4	$2,734	$3,500	$10,936	$14,000
716-02.04	THERMO PLASTIC PAV MARKING (CHANNEL. STRIPING)	S.Y.	375	$21	$30	$7,875	$11,250
716-02.05	PLASTIC MARKING (STOP LINE)	L.F.	245	$12	$15	$2,940	$3,675
716-02.06	PLASTIC MARKING (ARROW)	EACH	28	$163	$211	$4,564	$5,908
						$0	$0
801-02	SEEDING (WITH MULCH)	Unit	550	$27	$28	$14,850	$15,400

TOTAL	**$1,128,172**	**$1,638,391**

Summary of Detailed Cost Estimates
Southern Extension of SR 186/US 45 Bypass, Jackson, Madison County, TN
OPTION C

	UNIT	QUANTITY	LOW UNIT COST	HIGH UNIT COST	LOW TOTAL	HIGH TOTAL
RIGHT-OF-WAY COST						
LAND	AC	225	$5,000	$6,500	$1,125,000	$1,462,500
COMMERCIAL	EA	3	$500,000	$750,000	$1,500,000	$2,250,000
RESIDENTIAL	EA	15	$150,000	$250,000	$2,250,000	$3,750,000
				SUBTOTAL	**$4,875,000**	**$7,462,500**
CONSTRUCTION COST						
NEW 4-LANE, URBAN SECTION W/ MEDIAN BARRIER*	MI	1.8	$3,173,176	$4,079,051	$5,711,717	$7,342,292
NEW 4-LANE, RURAL SECTION*	MI	3.5	$2,651,580	$3,536,522	$9,280,530	$12,377,827
EARTHWORK (BORROW)	CY	2500000	$7	$12	$17,500,000	$30,000,000
STRUCTURES (BRIDGES)	SF	112100	$75	$95	$8,407,500	$10,649,500
DRAINAGE (BOX CULVERTS)	EA.	5	$150,000	$200,000	$750,000	$1,000,000
DRAINAGE (PIPE CULVERTS)	LF	5000	$60	$85	$300,000	$425,000
SIGNALS	EA.	4	$150,000	$250,000	$600,000	$1,000,000
TRAFFIC CONTROL	LS	1	$500,000	$500,000	$500,000	$500,000
				SUBTOTAL	**$43,049,747**	**$63,294,619**

*SEE PER-MILE DETAILS

UTILITY COST						
OVERHEAD ELECTRIC	MI	2.5	$60,000	$360,000	$150,000	$900,000
TELEPHONE	MI	2.5	$50,000	$300,000	$125,000	$750,000
CABLE	MI	2.5	$200,000	$1,200,000	$500,000	$3,000,000
GAS	MI	2.5	$250,000	$1,500,000	$625,000	$3,750,000
				SUBTOTAL	**$1,400,000**	**$8,400,000**

MOBILIZATION		
LOW=$430,000+3.5% CONSTRUCTION OVER $10,000,000 HIGH=$780,000+3.0% CONSTRUCTION OVER $20,000,000	$1,586,741	$2,078,839
EROSION CONTROL (3.5% OF CONSTRUCTION COST)	$1,506,741	$2,215,312
CONTINGENCY (15% OF CONSTRUCTION COST+UTILITIES)	$6,667,462	$10,754,193
TOTAL CONSTRUCTION COST	$54,210,691	$86,742,962
PRELIMINARY ENGINEERING (10% OF TOTAL CONSTRUCTION COST)	$5,421,069	$8,674,296
TOTAL (WITHOUT INFLATION)	**$59,631,760**	**$95,417,258**
INFLATION (6% PER YEAR OVER 5 YEARS)	$20,167,461	$32,270,117
TOTAL COSTS	**$79,799,222**	**$127,687,375**

Southern Extension of SR 186/US 45 Bypass, Jackson, Madison County, TN
Per-Mile Details-Option C

4-Lane, Rural Cross-section

Item No.	Description	Unit	Quantity/Mile	Low Unit Cost	High Unit Cost	Low Total	High Total
201-01	CLEARING AND GRUBBING	L.S	(250' ROW WIDTH)	$70,000	$471,000	$70,000	$471,000
303-01	MINERAL AGGREGATE, TYPE A BASE, GRADING D	TON	56887	$14	$17	$796,418	$967,079
307-03.01	ASPHALT CONCRETE MIX (PG76-22) (BPMB-HM) GRADING A	TON	11336	$72	$78	$816,192	$884,208
307-03.08	ASPHALT CONCRETE MIX (PG76-22) (BPMB-HM) GRADING B-M2	TON	4508	$79	$86	$356,132	$387,688
411-03.10	ACS MIX (PG76-22) GRADING D	TON	2643	$102	$110	$269,586	$290,730
402-01	BITUMINOUS MATERIAL FOR PRIME COAT (PC)	TON	61	$362	$737	$22,082	$44,957
402-02	AGGREGATE FOR COVER MATERIAL (PC)	TON	240	$14	$22	$3,360	$5,280
403-01	BITUMINOUS MATERIAL FOR TACK COAT (TC)	TON	9	$230	$400	$2,070	$3,600
705-01.01	GUARDRAIL AT BRIDGE ENDS	L.F.	150	$46	$60	$6,900	$9,000
705-02.02	SINGLE GUARDRAIL (TYPE 2)	L.F.	950	$22	$24	$20,900	$22,800
705-04.07	TAN ENERGY ABSORBING TERM (NCHRP 350, TL3)	EACH	8	$2,432	$2,600	$19,456	$20,800
709-05.06	MACHINED RIP-RAP (CLASS A-1)	TON	4000	$28	$47	$112,000	$188,000
709-05.08	MACHINED RIP-RAP (CLASS B)	TON	4000	$29	$48	$116,000	$192,000
						$0	$0
716-02.01	THERMO PLASTIC PAVEMENT MARKING (4" LINE)	L.M.	6	$2,734	$3,500	$16,404	$21,000
716-02.04	THERMO PLASTIC PAV MARKING (CHANNEL. STRIPING)	S.Y.	375	$21	$30	$7,875	$11,250
716-02.05	PLASTIC MARKING (STOP LINE)	L.F.	45	$12	$15	$540	$675
716-02.06	PLASTIC MARKING (ARROW)	EACH	5	$163	$211	$815	$1,055
						$0	$0
801-02	SEEDING (WITH MULCH)	Unit	550	$27	$28	$14,850	$15,400

TOTAL	**$2,651,580**	**$3,536,522**

4-Lane, Urban freeway w/ median barrier Cross-section

Item No.	Description	Unit	Quantity/Mile	Low Unit Cost	High Unit Cost	Low Total	High Total
201-01	CLEARING AND GRUBBING	L.S	(250' ROW WIDTH)	$70,000	$471,000	$70,000	$471,000
303-01	MINERAL AGGREGATE, TYPE A BASE, GRADING D	TON	43667	$14	$17	$611,338	$742,339
307-03.01	ASPHALT CONCRETE MIX (PG76-22) (BPMB-HM) GRADING A	TON	19364	$72	$78	$1,394,208	$1,510,392
307-03.08	ASPHALT CONCRETE MIX (PG76-22) (BPMB-HM) GRADING B-M2	TON	5437	$79	$86	$429,523	$467,582
411-03.10	ACS MIX (PG76-22) GRADING D	TON	3188	$102	$110	$325,176	$350,680
402-01	BITUMINOUS MATERIAL FOR PRIME COAT (PC)	TON	73	$362	$737	$26,426	$53,801
402-02	AGGREGATE FOR COVER MATERIAL (PC)	TON	289	$14	$22	$4,046	$6,358
403-01	BITUMINOUS MATERIAL FOR TACK COAT (TC)	TON	13	$13	$13	$169	$169
705-01.01	GUARDRAIL AT BRIDGE ENDS	L.F.	150	$23	$25	$3,450	$3,750
705-02.02	SINGLE GUARDRAIL (TYPE 2)	L.F.	950	$22	$24	$20,900	$22,800
705-04.07	TAN ENERGY ABSORBING TERM (NCHRP 350, TL3)	EACH	8	$2,432	$2,600	$19,456	$20,800
709-05.06	MACHINED RIP-RAP (CLASS A-1)	TON	4000	$28	$47	$112,000	$188,000
709-05.08	MACHINED RIP-RAP (CLASS B)	TON	4000	$29	$48	$116,000	$192,000
						$0	$0
716-02.01	THERMO PLASTIC PAVEMENT MARKING (4" LINE)	L.M.	6	$2,734	$3,500	$16,404	$21,000
716-02.04	THERMO PLASTIC PAV MARKING (CHANNEL. STRIPING)	S.Y.	375	$21	$30	$7,875	$11,250
716-02.05	PLASTIC MARKING (STOP LINE)	L.F.	45	$12	$15	$540	$675
716-02.06	PLASTIC MARKING (ARROW)	EACH	5	$163	$211	$815	$1,055
						$0	$0
801-02	SEEDING (WITH MULCH)	Unit	550	$27	$28	$14,850	$15,400

TOTAL	**$3,173,176**	**$4,079,051**

Southern Extension of SR 186/US 45 Bypass, Jackson, Mad Southern I Southern Ex Southern Extension of SI Southern Extension of : Southern Extension Southern Extensio
Summary of Detailed Cost Estimates
OPTION C-1

	UNIT	QUANTITY	LOW UNIT COST	HIGH UNIT COST	LOW TOTAL	HIGH TOTAL
RIGHT-OF-WAY COST						
LAND	AC	195	$5,000	$6,500	$975,000	$1,267,500
COMMERCIAL	EA	8	$500,000	$750,000	$4,000,000	$6,000,000
RESIDENTIAL	EA	15	$150,000	$250,000	$2,250,000	$3,750,000
				SUBTOTAL	**$7,225,000**	**$11,017,500**
CONSTRUCTION COST						
NEW 4-LANE, URBAN SECTION W/ MEDIAN BARRIER*	MI	1.7	$3,173,176	$4,079,051	$5,394,399	$6,934,387
NEW 4-LANE, RURAL SECTION*	MI	3.5	$2,651,580	$3,536,522	$9,280,530	$12,377,827
EARTHWORK (BORROW)	CY	2250000	$7	$12	$15,750,000	$27,000,000
STRUCTURES (BRIDGES)	SF	112100	$75	$95	$8,407,500	$10,649,500
DRAINAGE (BOX CULVERTS)	EA.	7	$150,000	$200,000	$1,050,000	$1,400,000
DRAINAGE (PIPE CULVERTS)	LF	10000	$60	$85	$600,000	$850,000
SIGNALS	EA.	5	$150,000	$250,000	$750,000	$1,250,000
TRAFFIC CONTROL	LS	1	$500,000	$500,000	$500,000	$500,000
				SUBTOTAL	**$41,732,429**	**$60,961,714**

*SEE PER-MILE DETAILS

UTILITY COST						
OVERHEAD ELECTRIC	MI	2.5	$60,000	$360,000	$150,000	$900,000
TELEPHONE	MI	2.5	$50,000	$300,000	$125,000	$750,000
CABLE	MI	2.5	$200,000	$1,200,000	$500,000	$3,000,000
GAS	MI	2.5	$250,000	$1,500,000	$625,000	$3,750,000
				SUBTOTAL	**$1,400,000**	**$8,400,000**

MOBILIZATION		
LOW=$430,000+3.5% CONSTRUCTION OVER $10,000,000 HIGH=$780,000+3.0% CONSTRUCTION OVER $20,000,000	$1,540,635	$2,008,851
EROSION CONTROL (3.5% OF CONSTRUCTION COST)	$1,460,635	$2,133,660
CONTINGENCY (15% OF CONSTRUCTION COST+UTILITIES)	$6,469,864	$10,404,257
TOTAL CONSTRUCTION COST	$52,603,564	$83,908,482
PRELIMINARY ENGINEERING (10% OF TOTAL CONSTRUCTION COST)	$5,260,356	$8,390,848
TOTAL (WITHOUT INFLATION)	**$57,863,920**	**$92,299,330**
INFLATION (6% PER YEAR OVER 5 YEARS)	$19,569,578	$31,215,634
TOTAL COSTS	**$77,433,498**	**$123,514,964**

Per-Mile Details-Option C-1

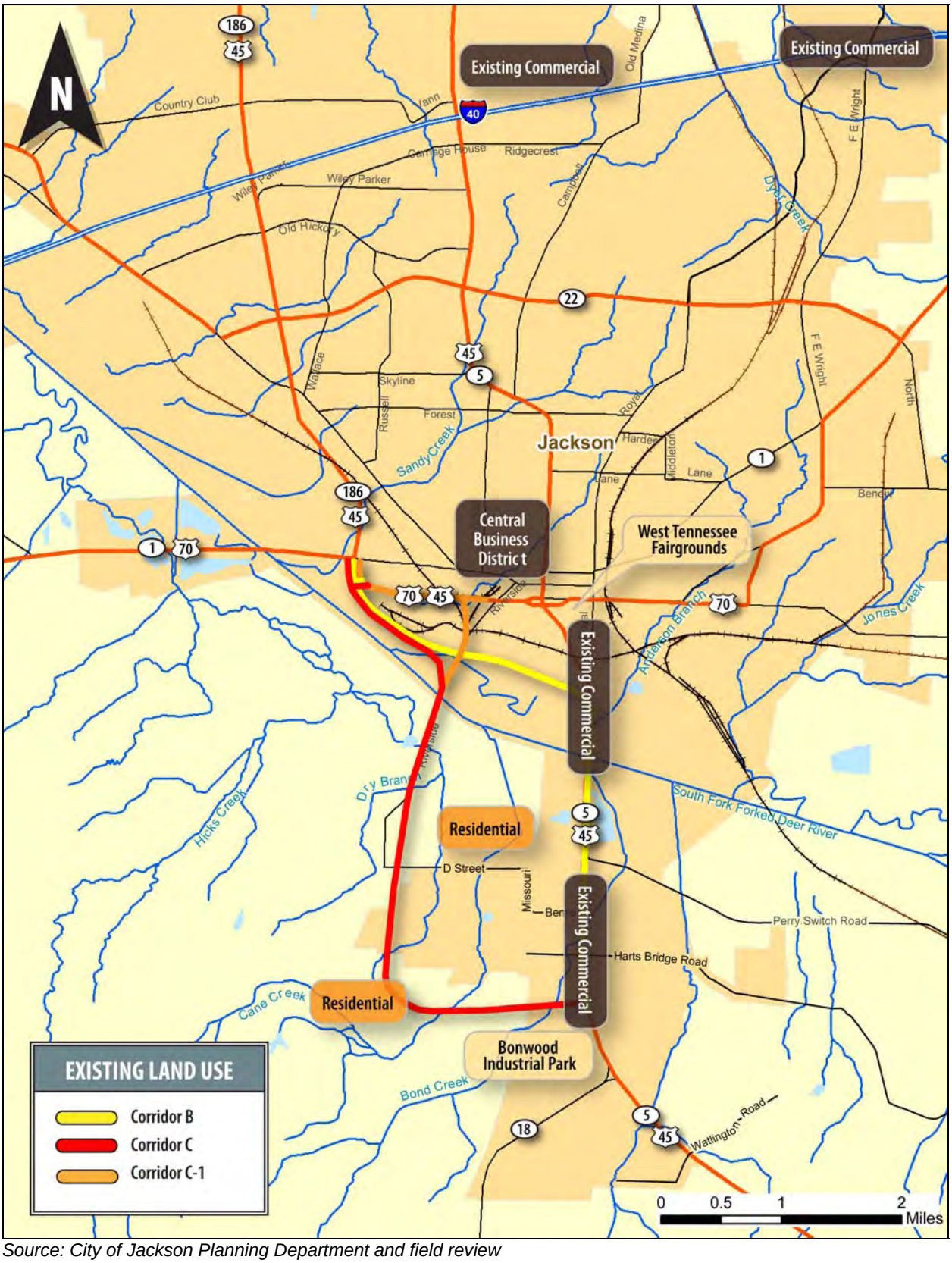
4-Lane, Rural Cross-section

Item No.	Description	Unit	Quantity/Mile	Low Unit Cost	High Unit Cost	Low Total	High Total
201-01	CLEARING AND GRUBBING	L.S	(250' ROW WIDTH)	$70,000	$471,000	$70,000	$471,000
303-01	MINERAL AGGREGATE, TYPE A BASE, GRADING D	TON	56887	$14	$17	$796,418	$967,079
307-03.01	ASPHALT CONCRETE MIX (PG76-22) (BPMB-HM) GRADING A	TON	11336	$72	$78	$816,192	$884,208
307-03.08	ASPHALT CONCRETE MIX (PG76-22) (BPMB-HM) GRADING B-M2	TON	4508	$79	$86	$356,132	$387,688
411-03.10	ACS MIX (PG76-22) GRADING D	TON	2643	$102	$110	$269,586	$290,730
402-01	BITUMINOUS MATERIAL FOR PRIME COAT (PC)	TON	61	$362	$737	$22,082	$44,957
402-02	AGGREGATE FOR COVER MATERIAL (PC)	TON	240	$14	$22	$3,360	$5,280
403-01	BITUMINOUS MATERIAL FOR TACK COAT (TC)	TON	9	$230	$400	$2,070	$3,600
705-01.01	GUARDRAIL AT BRIDGE ENDS	L.F.	150	$46	$60	$6,900	$9,000
705-02.02	SINGLE GUARDRAIL (TYPE 2)	L.F.	950	$22	$24	$20,900	$22,800
705-04.07	TAN ENERGY ABSORBING TERM (NCHRP 350, TL3)	EACH	8	$2,432	$2,600	$19,456	$20,800
709-05.06	MACHINED RIP-RAP (CLASS A-1)	TON	4000	$28	$47	$112,000	$188,000
709-05.08	MACHINED RIP-RAP (CLASS B)	TON	4000	$29	$48	$116,000	$192,000
						$0	$0
716-02.01	THERMO PLASTIC PAVEMENT MARKING (4" LINE)	L.M.	6	$2,734	$3,500	$16,404	$21,000
716-02.04	THERMO PLASTIC PAV MARKING (CHANNEL. STRIPING)	S.Y.	375	$21	$30	$7,875	$11,250
716-02.05	PLASTIC MARKING (STOP LINE)	L.F.	45	$12	$15	$540	$675
716-02.06	PLASTIC MARKING (ARROW)	EACH	5	$163	$211	$815	$1,055
						$0	$0
801-02	SEEDING (WITH MULCH)	Unit	550	$27	$28	$14,850	$15,400
					TOTAL	**$2,651,580**	**$3,536,522**

4-Lane, Urban freeway w/ median barrier Cross-section

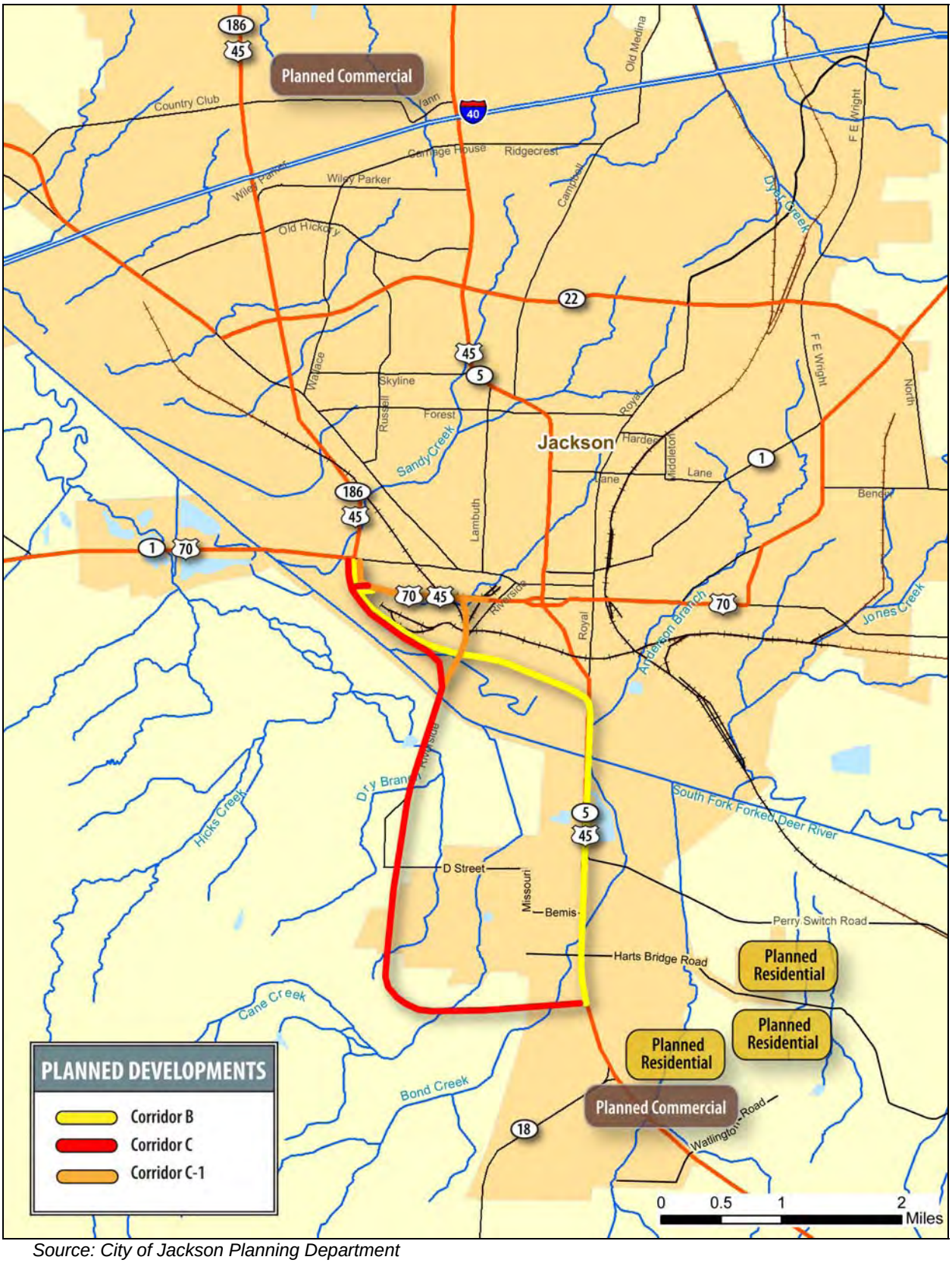
Item No.	Description	Unit	Quantity/Mile	Low Unit Cost	High Unit Cost	Low Total	High Total
201-01	CLEARING AND GRUBBING	L.S	(250' ROW WIDTH)	$70,000	$471,000	$70,000	$471,000
303-01	MINERAL AGGREGATE, TYPE A BASE, GRADING D	TON	43667	$14	$17	$611,338	$742,339
307-03.01	ASPHALT CONCRETE MIX (PG76-22) (BPMB-HM) GRADING A	TON	19364	$72	$78	$1,394,208	$1,510,392
307-03.08	ASPHALT CONCRETE MIX (PG76-22) (BPMB-HM) GRADING B-M2	TON	5437	$79	$86	$429,523	$467,582
411-03.10	ACS MIX (PG76-22) GRADING D	TON	3188	$102	$110	$325,176	$350,680
402-01	BITUMINOUS MATERIAL FOR PRIME COAT (PC)	TON	73	$362	$737	$26,426	$53,801
402-02	AGGREGATE FOR COVER MATERIAL (PC)	TON	289	$14	$22	$4,046	$6,358
403-01	BITUMINOUS MATERIAL FOR TACK COAT (TC)	TON	13	$13	$13	$169	$169
705-01.01	GUARDRAIL AT BRIDGE ENDS	L.F.	150	$23	$25	$3,450	$3,750
705-02.02	SINGLE GUARDRAIL (TYPE 2)	L.F.	950	$22	$24	$20,900	$22,800
705-04.07	TAN ENERGY ABSORBING TERM (NCHRP 350, TL3)	EACH	8	$2,432	$2,600	$19,456	$20,800
709-05.06	MACHINED RIP-RAP (CLASS A-1)	TON	4000	$28	$47	$112,000	$188,000
709-05.08	MACHINED RIP-RAP (CLASS B)	TON	4000	$29	$48	$116,000	$192,000
						$0	$0
716-02.01	THERMO PLASTIC PAVEMENT MARKING (4" LINE)	L.M.	6	$2,734	$3,500	$16,404	$21,000
716-02.04	THERMO PLASTIC PAV MARKING (CHANNEL. STRIPING)	S.Y.	375	$21	$30	$7,875	$11,250
716-02.05	PLASTIC MARKING (STOP LINE)	L.F.	45	$12	$15	$540	$675
716-02.06	PLASTIC MARKING (ARROW)	EACH	5	$163	$211	$815	$1,055
						$0	$0
801-02	SEEDING (WITH MULCH)	Unit	550	$27	$28	$14,850	$15,400
					TOTAL	**$3,173,176**	**$4,079,051**

Appendix E:
Environmental Screening Maps



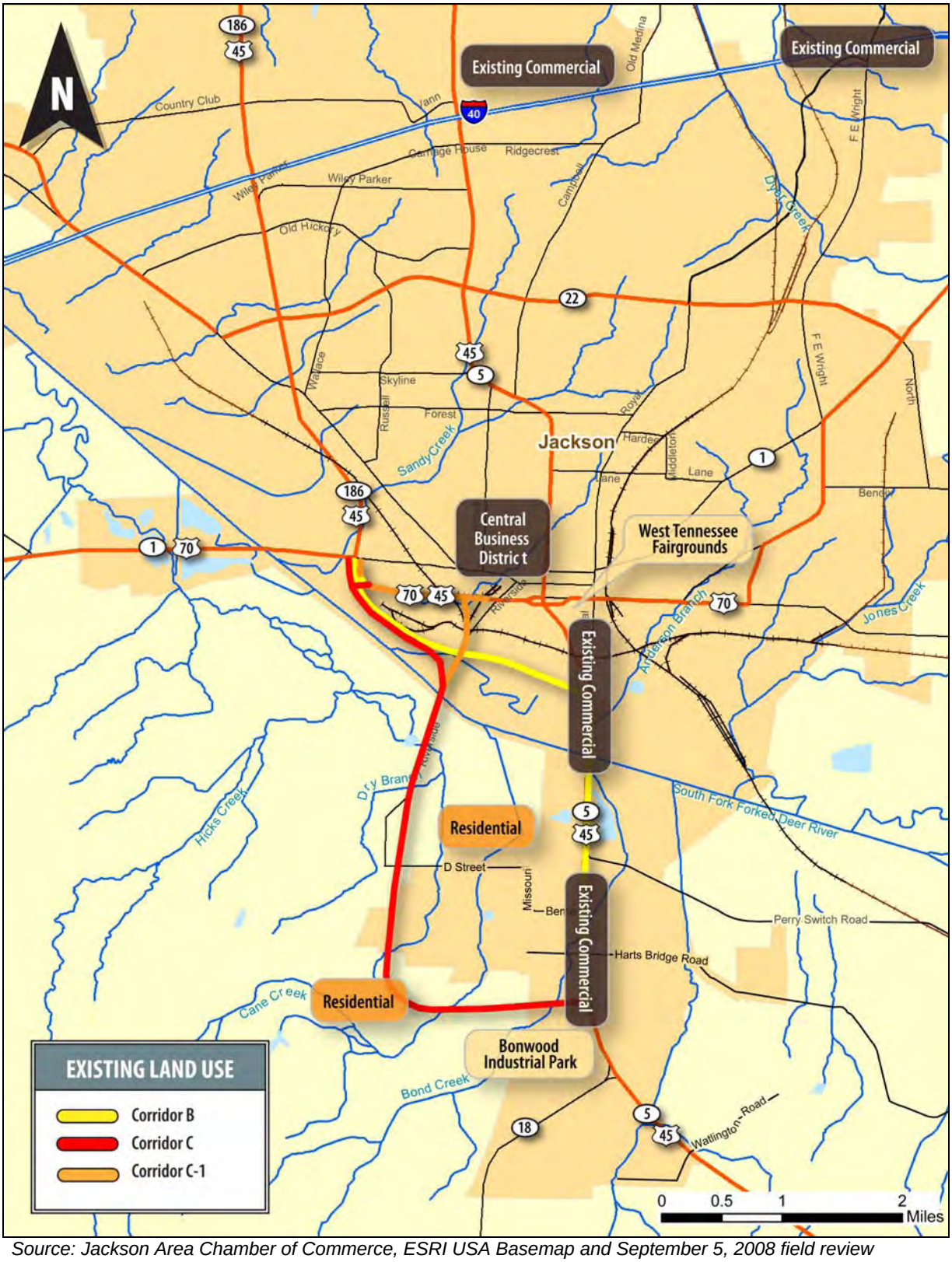
Source: City of Jackson Planning Department and field review

E-1: Existing Land Uses In and Near the Project Area



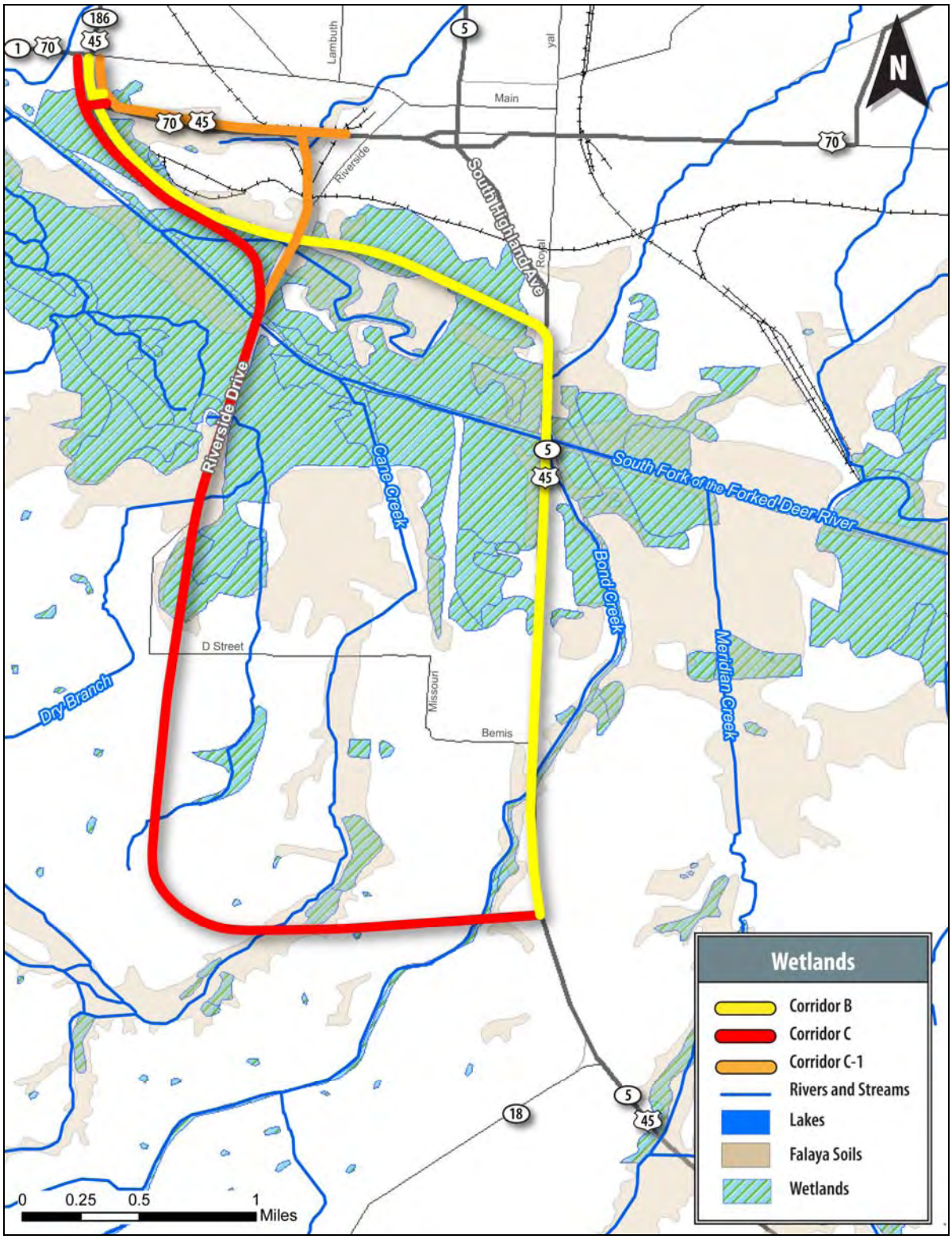
Source: City of Jackson Planning Department

E-2: Planned Developments in the Project Area



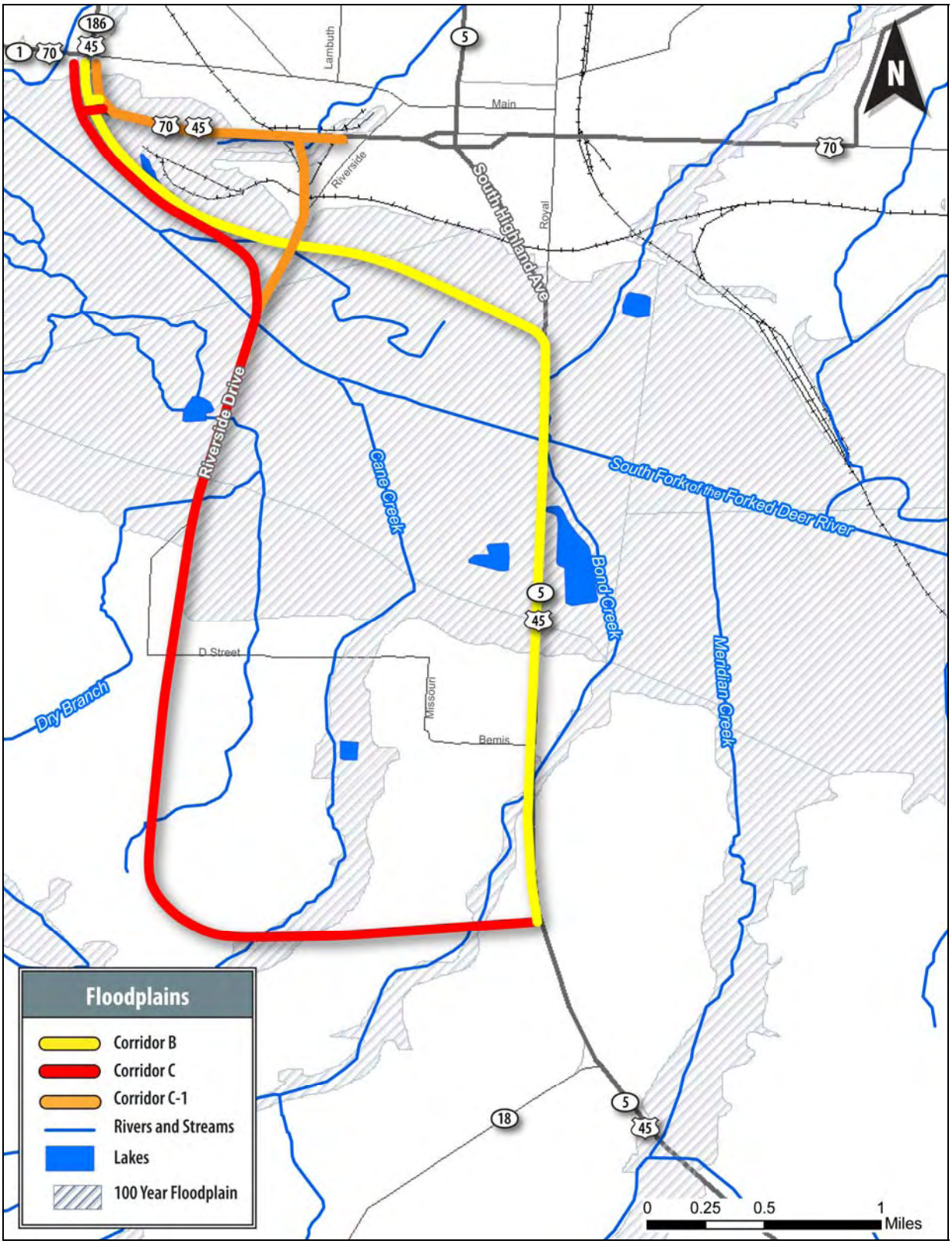
Source: Jackson Area Chamber of Commerce, ESRI USA Basemap and September 5, 2008 field review

E-3: Existing Infrastructure and Streams that May Require Permitting



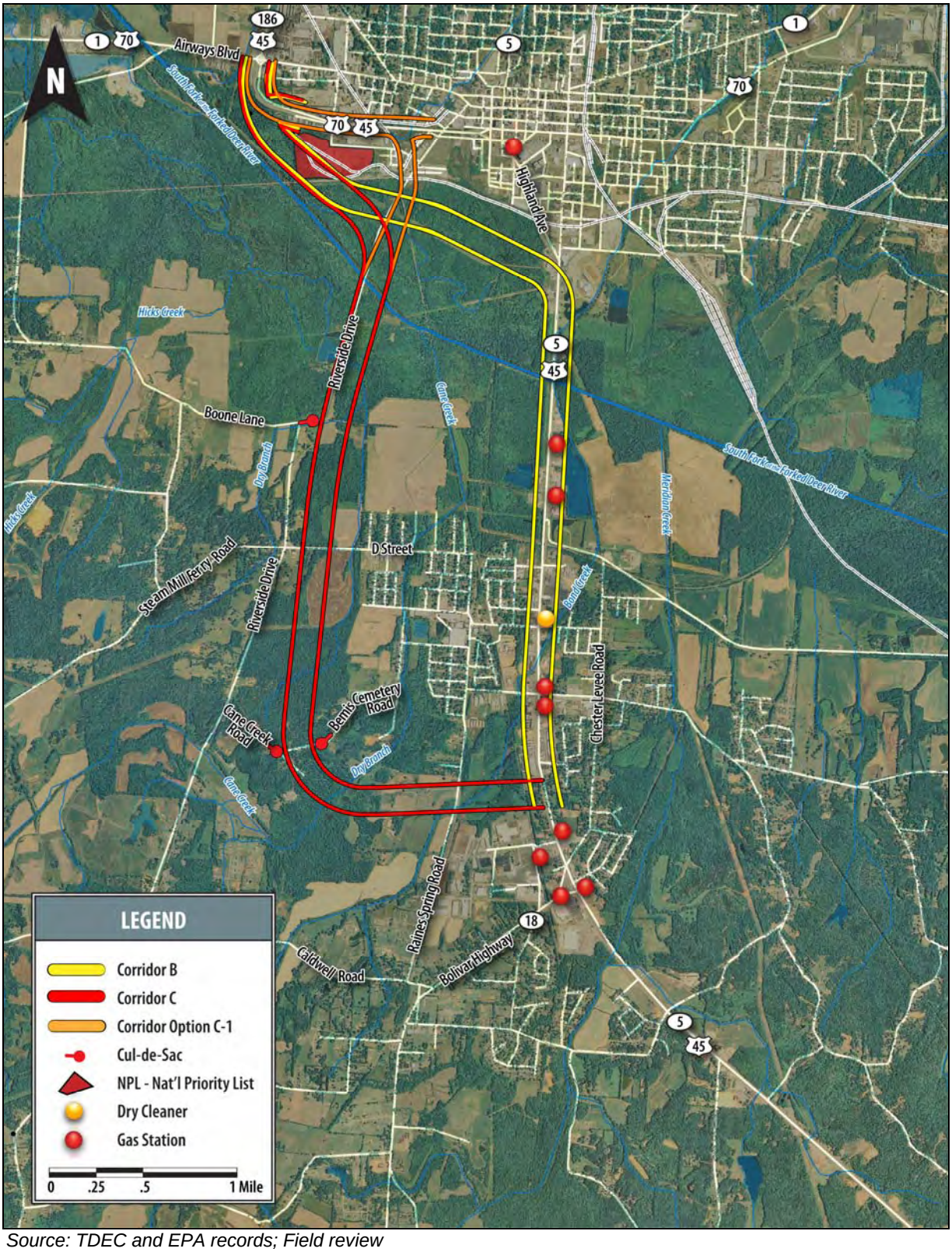
Sources: USFWS National Wetland Inventory, TDEC-provided soils data; FEMA FIRM

E-4: Wetlands and Falaya Soils



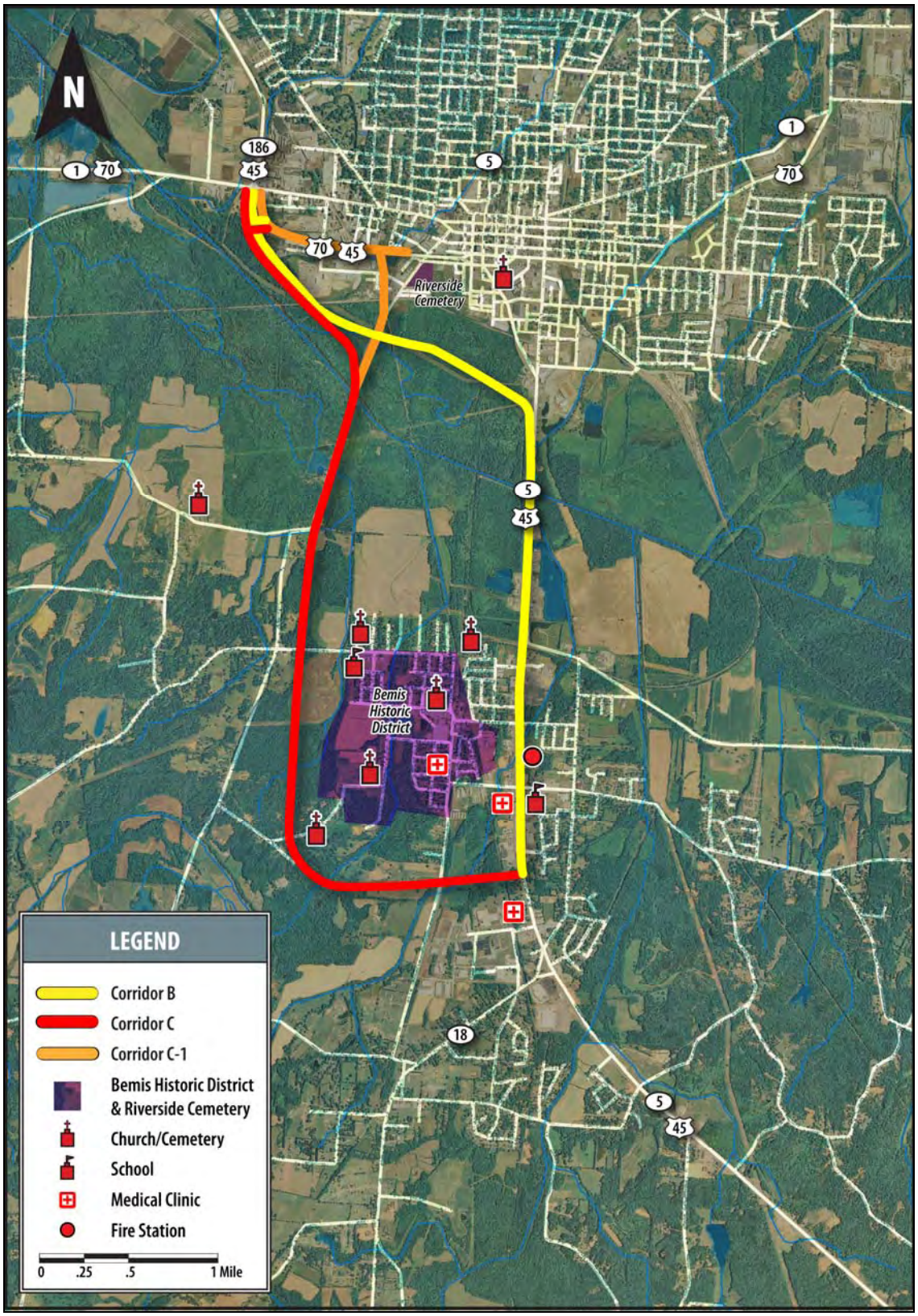
Source: FEMA FIRM Maps Digitized by GS&P in GIS

E-5: 100-Year Floodplains



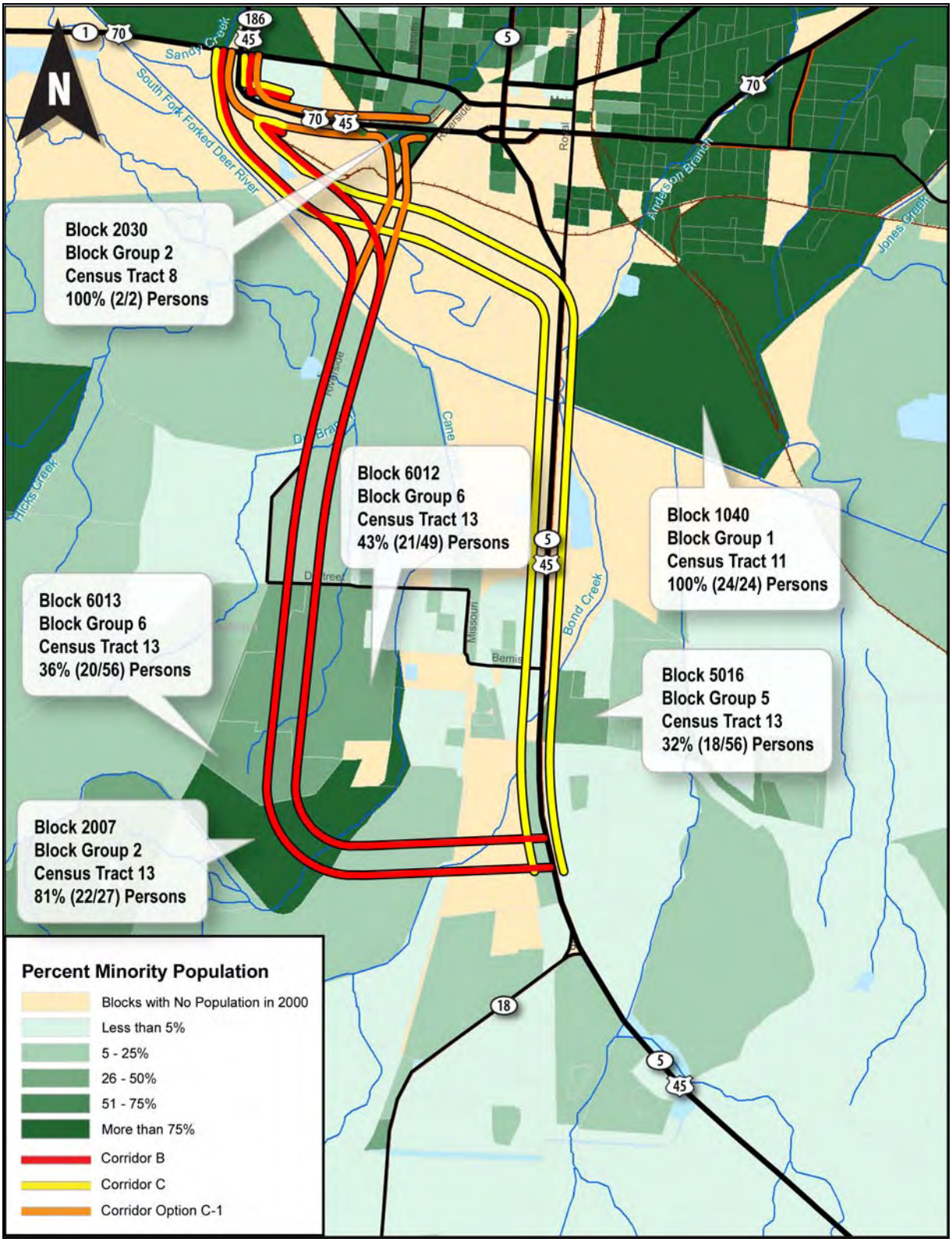
Source: TDEC and EPA records; Field review

E-6: Potential Hazardous Materials Sites



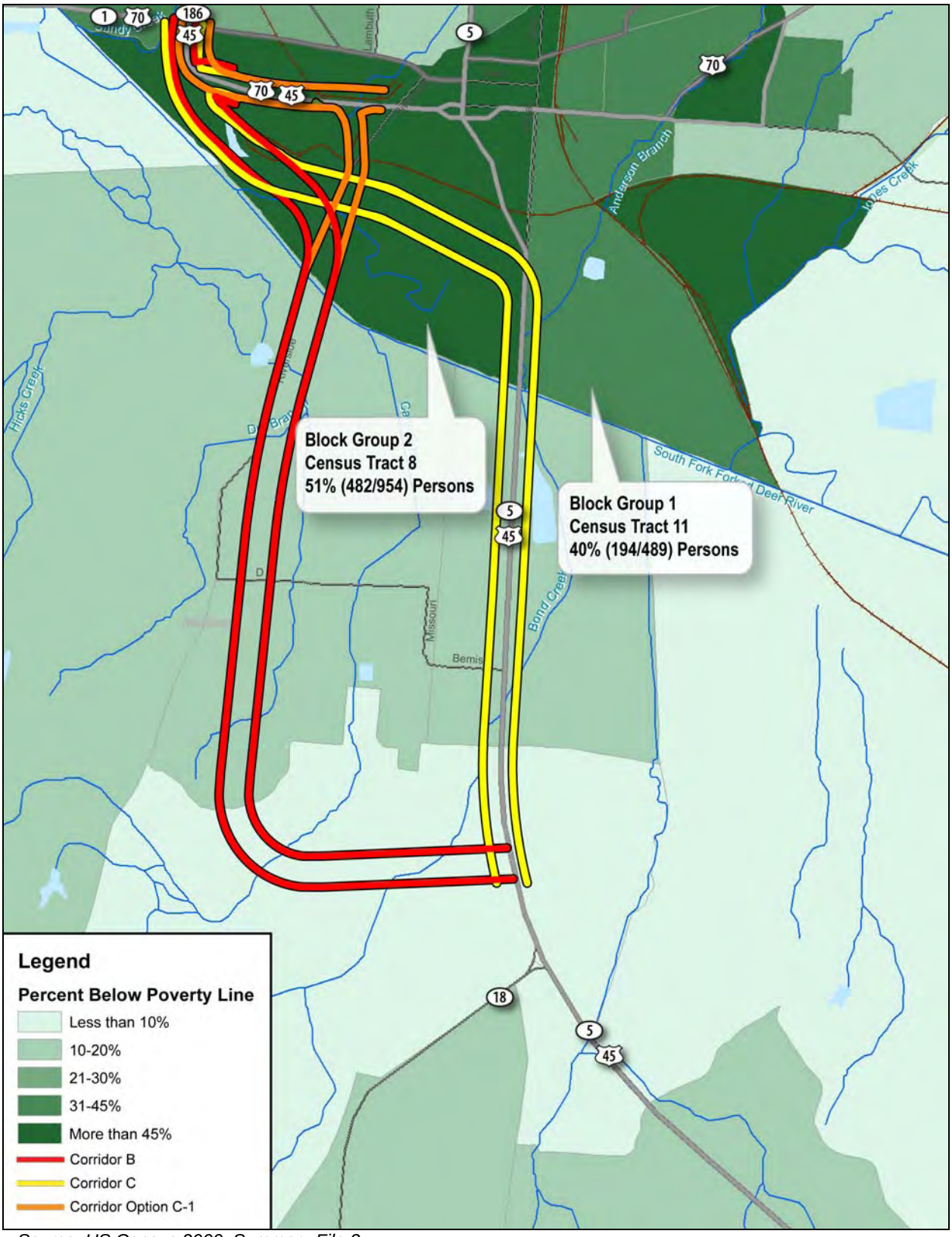
Source: Tennessee SHPO records; field review

E-7: NRHP-Listed Historic Resources and Community Resources



Source: US Census 2000, Summary File 1

E-8: Percent Minority Population in the Study Area



Source: US Census 2000, Summary File 3

E-9: Percent Low Income Population in the Study Area