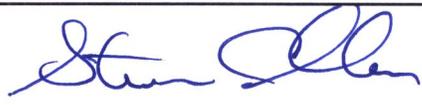


# **TRANSPORTATION PLANNING REPORT**

**PROPOSED SOUTHERN CONNECTOR  
FROM STATE ROUTE 49 WEST  
TO STATE ROUTE 76 EAST  
SPRINGFIELD, ROBERTSON COUNTY**



**PREPARED BY  
SAIN ASSOCIATES, INC.  
IN COOPERATION WITH THE  
TENNESSEE DEPARTMENT OF TRANSPORTATION  
ENVIRONMENT AND PLANNING DIVISIONS**

Recommended by:	Signature	DATE
CHIEF OF ENVIRONMENT AND PLANNING		2/6/07
TRANSPORATION DIRECTOR PROJECT PLANNING DIVISION		2-6-07
TRANSPORATION MANAGER 2 PROJECT PLANNING DIVISION		2-06-07

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

# TABLE OF CONTENTS

---

<u>Chapter</u>	<u>Page</u>
I. PROJECT HISTORY AND BACKGROUND INFORMATION.....	1
Project History.....	1
Project Study Area.....	1
Community Description.....	4
Existing Transportation Conditions.....	7
II. PRELIMINARY PURPOSE AND NEED FOR THE PROJECT.....	9
III. OPTIONS CONSIDERED.....	13
No Build Option.....	16
Build Option A.....	18
Build Option B.....	21
Build Option CA.....	24
Build Option CAB.....	27
IV. ASSESSMENT OF OPTIONS.....	30
Guiding Principle 1.....	30
Guiding Principle 2.....	30
Guiding Principle 3.....	31
Guiding Principle 4.....	31
Guiding Principle 5.....	31
Guiding Principle 6.....	32
Guiding Principle 7.....	32
V. SUMMARY.....	33

## **LIST OF TABLES**

---

<u>Table</u>		<u>Page</u>
1	Major Traffic Generators .....	6
2	Traffic Crash Rates for 2002-2005.....	7
3	Future 2010 AADT Ranges .....	13
4	Future 2030 AADT Ranges .....	13
5	Performance Measure Comparison .....	15
6	Comparison of Environmental Considerations .....	32
7	Comparison of Construction Cost Estimates .....	32

## **LIST OF FIGURES**

---

<u>Figure</u>	<u>Page</u>
1 Location Map .....	2
2 Project Study Area.....	3
3 Major Traffic Generators .....	5
4 Alternative Transportation Modes in Study Area .....	8
5 Considered Options .....	14
6 No Build (Existing System) Average Annual Daily Traffic.....	17
7 Option A Average Annual Daily Traffic .....	20
8 Option B Average Annual Daily Traffic .....	22
9 Option CA Average Annual Daily Traffic.....	25
10 Option CAB Average Annual Daily Traffic .....	28
11-16 Options on U.S.G.S. Quadrangle Maps .....	36-41
17-22 Options on Aerial Photography.....	42-47

## **I. PROJECT HISTORY AND BACKGROUND INFORMATION**

### **Project History**

This report documents analyses undertaken to evaluate the options for a southern connector road on the south side of Springfield between State Route (SR) 49 and SR 76 in Robertson County, Tennessee. This project was initially conceived in the late 1990s as a by-pass on the south side of Springfield to connect SR 49 to SR 11/US Highway 41. In 1998, TDOT prepared an Advance Planning Report for the connector road. Since that time, the City of Springfield has designed and constructed a 1.7 mile section of the connector that extends from SR 65/US 431 to Black Patch Drive. This center portion of the connector, known as Batson Parkway, contains a two-lane median divided cross section and is complete and open to traffic. In addition to construction of Batson Parkway, the City of Springfield conducted engineering studies and acquired right-of-way for extension of Batson Parkway from Black Patch Drive to SR 11/US 41.

In 2003, elected state and local officials requested that TDOT complete the Springfield connector road with the agreement that Robertson County will thereafter maintain the road. That proposal prompted the need for a Transportation Planning Report to develop the preliminary purpose, need, and cost for project development consideration.

### **Project Study Area**

Figure 1 illustrates the location of Springfield in the north central Tennessee region, and Figure 2 shows the study area for this evaluation. The study focuses on three specific areas: the first area extends from SR 49 in Springfield southeast for approximately 2.6 miles to SR 65/US 431 where it connects with the existing Batson Parkway; the second area extends from Batson Parkway's terminus at Black Patch Drive to the east approximately 1.2 miles to SR 11/US 41; and the third area extends from SR 11/US 41 northeast for a distance of approximately 2.4 – 2.9 miles to SR 76.

SR 49 and SR 65/US 431 are two-lane urban principle arterial highways that extend in a north/south orientation through Robertson County, providing access to Interstate 24 on the south side and the State of Kentucky to the north. SR 11/US 41 is a five-lane urban principle arterial with a northwest/southeast orientation that provides access to Nashville and Interstate 65 on the south side and Kentucky to the north. SR 76 is a two-lane rural arterial that extends in an east/west orientation through Robertson County, providing access to Interstate 65 to the east and merging with SR 11/US 41 in Springfield.

Existing land uses in the study area are predominantly residential and agricultural. The west section, between SR 49 and SR 65/US 431 is mostly agricultural. The remaining sections, along Batson Parkway and eastward to SR 76 are a mix of residential and agricultural uses. One item of significance that should be noted is the presence of a University of Tennessee Experimental Farm within the study area between SR 11/US 41 and SR 76.



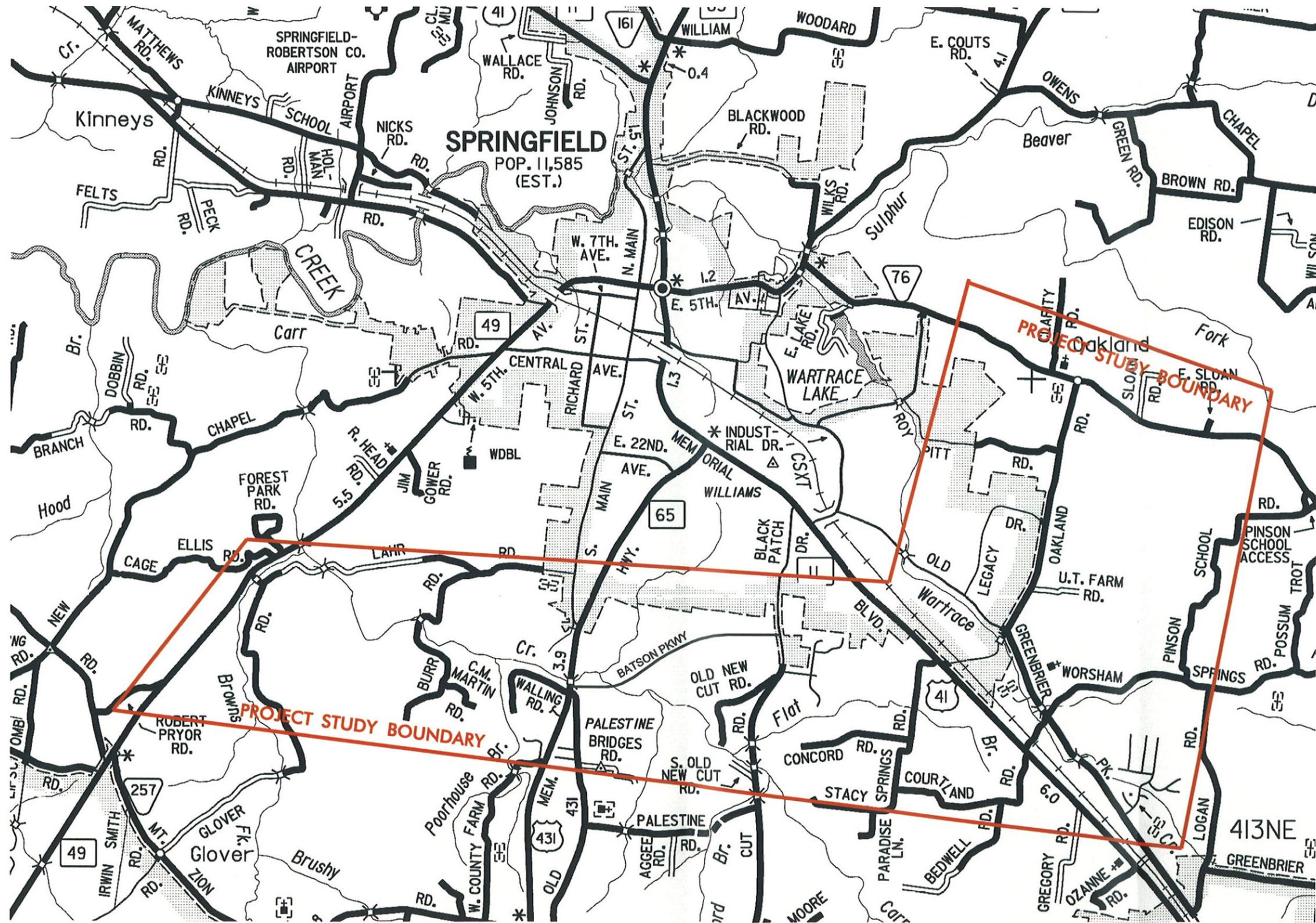


Figure 2  
PROJECT STUDY AREA

## **Community Description**

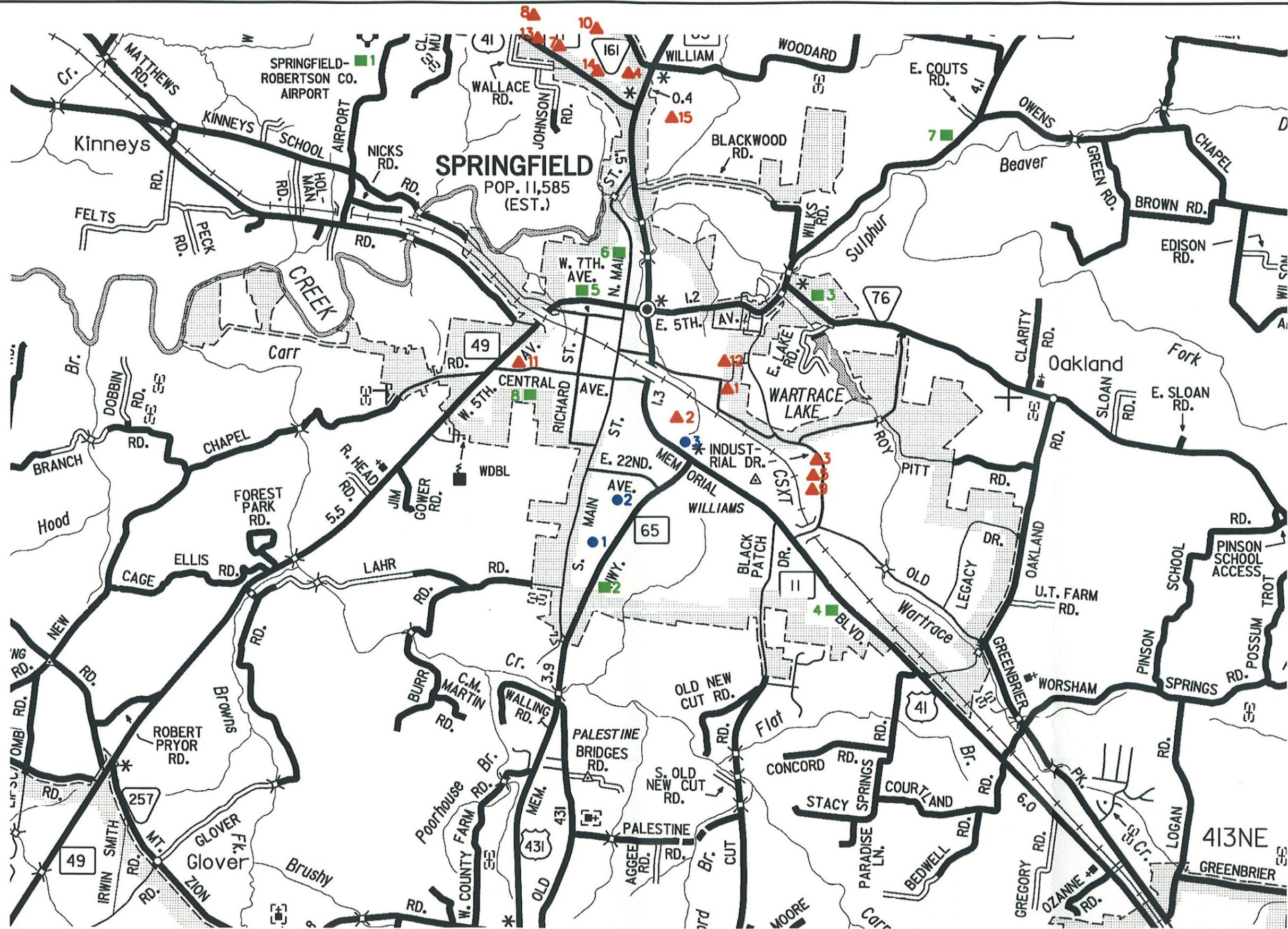
Springfield, the county seat of Robertson County, was established in 1798 and is one of the oldest towns in Tennessee. During the 19<sup>th</sup> century, Robertson County was famous for its whiskey and tobacco production. Springfield has been called the dark-fired tobacco capital of the world. Located on fertile farming land, Robertson County continues to produce a number of other agricultural products in addition to tobacco; these include soybeans, corn, wheat, and livestock. According to a 2002 Census of Agriculture report, approximately seventy-seven percent (77%) of the land acreage in Robertson County is farmland.

In recent years, industrial development has become an important component of the economy in Springfield and Robertson County. Two industrial parks are located in Springfield: one north of downtown along SR 65/US 431, and a second east of downtown between SR 11/US 41 and SR 76 along Jones Industrial Drive. Some of the larger manufacturing companies within the project study area include Electrolux Home Products (3,300 employees), UNARCO Material Handling, Inc. (400 employees), and Collins & Aikman, Corp. (325 employees).

The population of Robertson County in the last decennial census (year 2000) was 54,433, of which 14,332 lived in the City of Springfield. Population in Springfield and Robertson County increased by approximately 31% between 1990 and 2000. Growth has continued in the present decade with population estimates for 2004 at 59,322 in Robertson County and 15,916 in Springfield. Evidence of this population growth can be seen in the study area where new homes are under construction and retail activity is strong.

Employment rates in Springfield and Robertson County have been good in recent years. According to statistics for September 2006 compiled by the Tennessee Department of Labor and Workforce Development, the labor force in Robertson County is experiencing an unemployment rate of 3.4%. This is 0.9% lower than the statewide average of 4.3% for Tennessee (4.3% is not seasonally adjusted, 4.6% is seasonally adjusted).

Figure 3 shows a map of the study area which identifies many of the major traffic generators located in the Springfield area. The traffic generators are separated into three land use categories: 1) industrial or manufacturing, 2) retail, and 3) educational or institutional. Table 1 lists the name of each identified site.



- ▲ INDUSTRIAL/MANUFACTURING
- RETAIL
- AIRPORT, SCHOOL, OR INSTITUTIONAL

Figure 3  
MAJOR TRAFFIC GENERATORS

**Table 1  
Major Traffic Generators**

Map Symbol	Industrial or Manufacturing Business
? 1	Electrolux Home Products
? 2	Unarco Material Storage
? 3	Collins & Aikman
? 4	Thyssen Krupp Fabco
? 5	CEI, Co., Ltd
? 6	Hinkle Chair Co.
? 7	Trico Electronics
? 8	Highland Graphics
? 9	Nashville Wire Products
? 10	Owens Corning
? 11	Water Bonnet Mfg.
? 12	Datreck Miller International
? 13	All American Homes
? 14	Globe Pequo Press Warehouse
? 15	Springfield Quarry
Map Symbol	Retail Business
? 1	Wal-Mart
? 2	Lowe's Home Improvement Store
? 3	Belk
Map Symbol	Airport, Institution, or School
! 1	Springfield-Robertson County Airport
! 2	Northcrest Medical Center
! 3	Springfield High School
! 4	South Haven Christian School
! 5	Springfield Middle School
! 6	Cheltheam Park Elementary School
! 7	Krisle Elementary School
! 8	Bransford Elementary School
! 9	Springfield High School

The City of Springfield and Robertson County contain numerous sites of historical significance. The public square in Springfield is registered as a historic district on the National Register of Historic Places. Within the study area, two sites have been identified by TDOT historians as eligible for the National Register: the Highland Rim Experiment Station, (located on the UT Experimental Farm) and the J.D. Worsham House. The Highland Rim Experiment Station, located on Experiment Station Road, was built in 1943 for the purpose of extensive research on tobacco crops to increase the crop yields, improve disease resistance, and develop new varieties. The experiments conducted at the station produced improvements in tobacco production to the dark-fired burley belt of Tennessee and Kentucky. The J.D. Worsham House, located on Courtland Road off of SR 11/US 41, was built in 1905 and is significant for architecture due to its relatively unaltered appearance and use of concrete as a building material. Both of these sites are identified on the project maps included in this report.

### Existing Transportation Conditions

Increased development around Springfield has fueled a steady increase in traffic volumes on the local highway system. The increasing traffic volumes on SR 49, SR 65/US 431, SR 11/US 41, and SR 76 have resulted in frequently recurring traffic congestion and travel delays especially in the retail and industrial centers surrounding the SR 11/US 41 at SR 65/US 431 intersection. As the population grows so does the demand on area roadways as an increased number of residents travel to and from work, school and shopping destinations.

Typical urban roadways experience 2% - 4% truck traffic, according to data provided by TDOT, the segment of SR 65/US 431 nearest its intersection with SR 11/US 41 carried approximately 8% of its 2005 annual average daily traffic as trucks. This percentage is double the percentage that typical urban roadways carry. SR 11/US 41 also carried approximately 8% trucks in 2005. The mix of such large numbers of truck trips and passenger vehicles can often lead to higher crash rates.

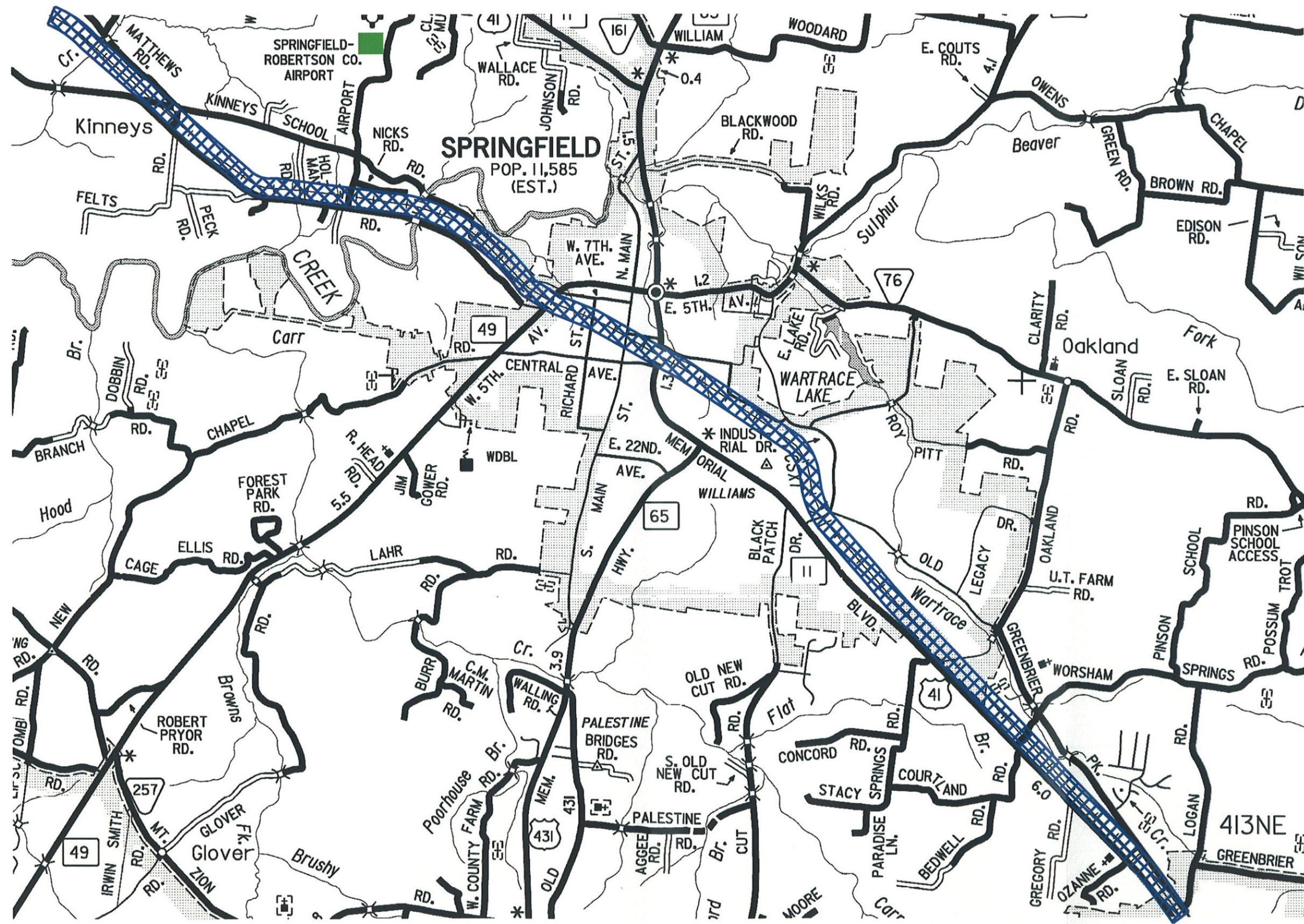
Traffic crash rates on SR 65/US 431 and SR 11/US 41 were calculated from crash data for the years 2002 through 2005. Table 2 summarizes the crash rates for each facility. The section of SR 65/US 431 between Walling Road and the intersection of SR 11/US 41 has a crash rate that is below the statewide average. The section of SR 11/US 41 between the beginning of Memorial Boulevard, near the Springfield City limit and the intersection of SR 65/US 431/SR 65 has a crash rate that is slightly higher than the statewide average.

**Table 2**  
**Traffic Crash Rates for 2002-2005**

Location	Statewide Average	Actual Crash Rate
SR 65/US 431 between Walling Road and SR 11/US 41	2.51	1.87
SR 11/US 41 east of SR 65/US 431	2.82	3.17

There are few alternative modes of transportation available in the study area. Figure 4 shows the location of air and rail facilities. The Springfield-Robertson County Airport provides general aviation and maintenance services. A rail line operated by CSXT that connects Nashville with Bowling Green, Kentucky, roughly parallels SR 11/US 41 in the study area. This CSXT rail line accommodates 19 freight trains per day traveling at 59 mph. No rail passenger service is provided. There are no designated bikeways in the study area. Bicycle accommodation on the state routes in the study area is made through a shared use shoulder, not a designated bike lane. There is no public bus service in Springfield.

In addition to the local air transportation services provided by the Springfield-Robertson County Airport, Robertson County has access to Nashville International Airport via Interstate 24. The Nashville International Airport is located approximately 31 miles from Springfield and provides non-stop service to 48 major airline hubs.



AIRPORT
  RAILROAD

Figure 4  
**ALTERNATIVE TRANSPORTATION MODES IN STUDY AREA**

## **II. PRELIMINARY PURPOSE & NEED FOR THE PROJECT**

The City of Springfield is served by a radial network of highways that provide access to the middle Tennessee region. SR 65/US 431 and SR 49 serve as the principal routes from Springfield to Interstate 24. SR 11/US 41 and SR 76 provide linkage to Interstate 65. While the downtown core of Springfield is serviced by a dense grid network of streets, the southern edge of the City is lacking in east/west connectivity.

During the late 1990s, the City of Springfield began to explore the possibility of constructing a southern connector road that would extend from SR 49 to SR 11/US 41 and thus provide additional east/west connectivity for the southern fringe of the city. In 1998, TDOT prepared an Advance Planning Report for such a connector road. Since 1998, the City of Springfield has designed and constructed a 1.7 mile section of the envisioned connector that extends from SR 65/US 431 to Black Patch Drive. This center portion of the connector road, known as Batson Parkway, is complete and open to traffic but it's ability to provide the envisioned aid to traffic flow is limited because it does not presently connect to SR 11/US 41. The City has conducted engineering studies and acquired right-of-way for the extension of Batson Parkway from Black Patch Drive to SR 11/US 41 but construction funding assistance from TDOT is needed to complete the envisioned connection.

The segment between Black Patch Drive and SR 11/US 41, referred to in this report as Option A, is a priority to state and local officials. Traffic traveling between Batson Parkway and SR 11/US 41 must currently take a circuitous route through a residential area. A traffic signal at the intersection of Black Patch Drive and Driftwood Drive helps to calm the cut-through traffic within the neighborhood. Additional traffic calming measures should be evaluated for this area if this Option A segment is not constructed in the near future. The proposed improvement could result in an estimated travel reduction of up to a half of a mile and a time savings of up to two minutes per vehicle depending upon the tie in location chosen at SR 11/US 41. This savings will result better operational characteristics throughout the area, including a reduction in vehicle emissions and a probable improvement in safety. This segment should be considered as an independent entity, since a potential right-of-way for the corridor has already been purchased by the City of Springfield. The traffic volumes are expected to grow along all of the routes in the study area over the next 20 years. The construction of a southern connector road would provide alternate routes around town, providing improved access to the institutional sites around Springfield. For example, from observations in the field, the intersection of SR 11/US 41 is heavily congested during the midday and commuter peak hours. This intersection is the primary route for emergency vehicles traveling to/from the medical center on SR 65/US 431 to reach the western and far eastern portions of Springfield. The construction of the southern connector, especially the Option A portion, would provide a more direct route to the medical center for emergency vehicles and other healthcare users.

The traffic volume forecasts developed by TDOT from the Metropolitan Transportation Planning Organization's travel demand model show that traffic on the radial highways that serve Springfield will increase in the future, with resulting increased congestion. Some of this traffic increase could be offset by providing east/west linkages that eliminate the need for

vehicle trips to drive into the commercial core of Springfield to make an east/west connection. The southern connector road could address two specific concerns related to traffic flow: truck traffic in the commercial core centered around the intersection of SR 65/US 431 and SR 11/US 41, and mobility between residential, commercial, and institutional land uses.

Truck traffic from SR 65/US 431 South of Springfield trying to access the Industrial Park on Jones Industrial Drive have three possible routes, none of which provide good paths.

- The first is to continue north on SR 65/US 431, turn right at the traffic signal at the SR 65/US 431 at SR 11/US 41 (heavy congestion), proceed through the traffic signal at Black Patch Drive and SR 11/US 41, then turn left on to Jones Industrial Drive at an additional traffic signal. In the afternoon peak hour this route takes approximately five minutes. The reverse path takes over eight minutes, as the traffic signal at SR 65/US 431 and SR 11/US 41 can take longer than one cycle length to make the left turn. That equals to a travel speed of approximately 22 miles per hour.
- The second possible path if traveling north on SR 65/US 431 is to turn right on to Batson Parkway, left on to Black Patch Drive, through the traffic signal at Black Patch Drive at Driftwood Drive, right at the traffic signal at Black Patch Drive and SR 11/US 41, then left at the SR11/US 41 and Jones Industrial Drive traffic signal. This route takes approximately four minutes and thirty seconds. In reverse this route takes approximately five minutes and thirty seconds. That time equates to a travel speed of approximately 31.5 miles per hour. It should be noted that trucks taking this route are traveling through a residential area along Black Patch Drive.
- The third possible route from SR 65/US 431 traveling north is a right turn on to Batson Parkway, a left on to Black Patch Drive, a right at the traffic signal at Black Patch Drive and Driftwood Drive, a left at the stop sign on SR 11/US 41, and a right onto Jones Industrial Drive. This path can take slightly over five minutes, and the reverse can take almost five minutes as well. The portion of the route along Black Patch Drive and Driftwood Drive is located in a residential area. The travel time for this route equates to a travel speed of approximately 30 miles per hour.

Electrolux Home Products provides an example of an industry whose trucks must utilize one of the above described routes. Electrolux generates traffic from over 100 trucks per day. In order to access SR 65/US 431 from Jones Industrial Drive, drivers typically turn right onto SR 11/US 41 then left onto SR 65/US 431 at a very congested intersection that is located within a fully developed commercial district. It should be noted that peak hour turning movement data was not collected at this intersection for this evaluation, but peak hour observations were made and have confirmed a problem with left-turn capacity on SR 11/US 41. It is recommended that additional intersection data be collected in order to thoroughly evaluate the improvement that could be provided by the proposed southern connector. Construction of the southern connector, would allow truck drivers from Electrolux an option to turn left onto SR 11/US 41 from Jones Industrial Drive and then take the connector road to reach SR 65/US 431 without adding traffic to the already congested commercialized area of SR 65/US 431 or traveling through the residential areas on Black Patch Drive or Driftwood Drive.

Improved mobility for home-based trips is also a potential benefit of the connector road. Citizens living in the southern edge of Springfield could use the connector road to travel between their homes and shopping areas or Northcrest Medical Center along SR 65/US 431 without first driving in towards the city center. If connected to SR 76, the road would provide a new route from residential neighborhoods to Springfield High School.

The primary need for a southern connector road varies by section, but the overall need is improved east/west mobility. Several specific needs are encompassed in this broad goal by each evaluated option:

#### OPTION A:

- Provides an alternate route for trucks traveling between one of the southern radial highways and the industrial park located along Jones Industrial Road.
- Removes truck traffic from residential roadways (Driftwood Drive and Black Patch Drive).
- Provides the possibility of removing a traffic signal at the intersection of Black Patch Drive at Driftwood Drive, which is necessitated by the truck traffic.
- Improves access to the Northcrest Medical Center on SR 65/US 431.
- Provides improved access to the Martin Luther King Jr. Park on S. Main Street and the Robertson County YMCA on SR 65/US 431.
- Reduces traffic volumes at the intersection of SR 65/US 431 and SR 11/US 41 that will yield a reduction in congestion and improved safety.

#### OPTION B:

- Provides an alternate route for trucks traveling between one of the southern radial highways and the industrial park located along Jones Industrial Road.
- Removes truck traffic from residential roadways (Driftwood Drive and Black Patch Drive).
- Provides the possibility of removing a traffic signal at the intersection of Black Patch Drive at Driftwood Drive, which is necessitated by the truck traffic.
- Improves access to the Northcrest Medical Center on SR 65/US 431.
- Provides improved access to the Martin Luther King Jr. Park on S. Main Street and the Robertson County YMCA on SR 65/US 431.
- Reduces traffic volumes at the intersection of SR 65/US 431 and SR 11/US 41 that will yield a reduction in congestion and improved safety.
- Improves access to Springfield High School on SR 76.

#### OPTION CA:

- Provides an alternate route for trucks traveling between one of the southern radial highways and the industrial park located along Jones Industrial Road.
- Removes truck traffic from residential roadways (Driftwood Drive and Black Patch Drive)
- Provides the possibility of removing a traffic signal at the intersection of Black Patch Drive at Driftwood Drive, which is necessitated by the truck traffic.
- Improves access to the Northcrest Medical Center on SR 65/US 431.

- Provides improved access to the Martin Luther King Jr. Park on S. Main Street and the Robertson County YMCA on SR 65/US 431.
- Reduces traffic volumes at the intersection of SR 65/US 431 and SR 11/US 41 that will yield a reduction in congestion and improved safety
- Reduces the density of traffic on state highways within downtown Springfield by shifting some of the burden to another route.

OPTION CAB:

- Provides an alternate route for trucks traveling between one of the southern radial highways and the industrial park located along Jones Industrial Road.
- Removes truck traffic from residential roadways (Driftwood Drive and Black Patch Drive).
- Provides the possibility of removing a traffic signal at the intersection of Black Patch Drive at Driftwood Drive, which is necessitated by the truck traffic.
- Improves access to the Northcrest Medical Center on SR 65/US 431.
- Provides improved access to the Martin Luther King Jr. Park on S. Main Street and the Robertson County YMCA on SR 65/US 431.
- Reduces traffic volumes at the intersection of SR 65/US 431 and SR 11/US 41 that will yield a reduction in congestion and improved safety.

### III. OPTIONS CONSIDERED

Several options were considered and evaluated as a means of addressing the transportation needs along the existing roadway network and in the Springfield area. The options, illustrated on Figure 5, include the following:

- a. “No Build” - Make no physical changes to the existing roadway network.
- b. “Build Option A” – Construct a new partial access controlled connector road to extend eastward from the intersection of Batson Parkway and Black Patch Drive to SR 11/US 41.
- c. “Build Option B” – Construct a new partial access controlled connector road to extend from Batson Parkway east, cross SR 11/US 41 and continue north east to intersect with SR 76.
- d. “Build Option CA” – This option would begin at SR 49 and connect with Batson Parkway on the west, and also include the segment A described above.
- e. “Build Option CAB” – This option would include each segment described above providing a continuous roadway from SR 49 on the west, utilizing the existing Batson Parkway, and connecting to SR 76 on the east.

The following pages of this report will summarize the concept, typical section, anticipated operational performance, preliminary cost (based upon a per mile estimate), and identified environmental concerns of each considered option. The operational performance assessment is based upon a peak hour volume estimated by multiplying the annual average daily traffic (AADT) projections provided by TDOT with a peak hour factor similar to that on the surrounding roadways. The forecasted peak hour volumes were then analyzed using the Highway Capacity Software. Future annual average daily traffic volumes for each option are summarized in Tables 3 and 4. Traffic volume maps are included in the detailed description of each option. Table 5 includes a comparison of several performance measures for each option. These performance measures are referred to in the subsequent discussion of each improvement option.

**Table 3  
Future 2010 AADT Ranges**

	No Build	Opt A	Opt B	Opt CA	Opt CAB
SR 49	8,820 – 13,470	8,820 – 13,470	8,820 – 11,320	4,790 – 11,520	4,790 – 11,570
SR 65/US 431	14,800 – 17,360	14,800 – 17,010	14,800 – 17,010	11,830 – 14,800	11,830 – 14,800
SR 11/US 41	16,570 – 30,920	16,570 – 30,920	16,570 – 33,200	16,570 – 30,020	16,570 – 30,020
SR 76	8,140 – 8,720	8,140 – 8,720	8,720 – 9,040	8,000 – 8,720	7,750 – 9,110
Option		2,400	3,000 – 6,190	5,550 -6,680	5,280 – 6,680

**Table 4  
Future 2030 AADT Ranges**

	No Build	Opt A	Opt B	Opt CA	Opt CAB
SR 49	10,300 – 18,200	10,300 – 18,200	10,300 – 18,200	7,700 – 16,500	4,790 – 11,570
SR 65/US 431	17,400 – 19,680	17,400 – 19,280	17,400 – 19,280	13,900 – 17,400	11,830 – 14,800
SR 11/US 41	20,400 – 37,400	20,400 – 37,700	20,400 – 36,400	20,400 – 32,800	16,570 – 30,020
SR 76	11,400 – 12,200	11,400 – 12,200	12,200 – 12,350	11,200 – 12,200	7,750 – 9,110
Option		3,850	4,800 – 7,800	5,550 -6,680	5,280 – 6,680

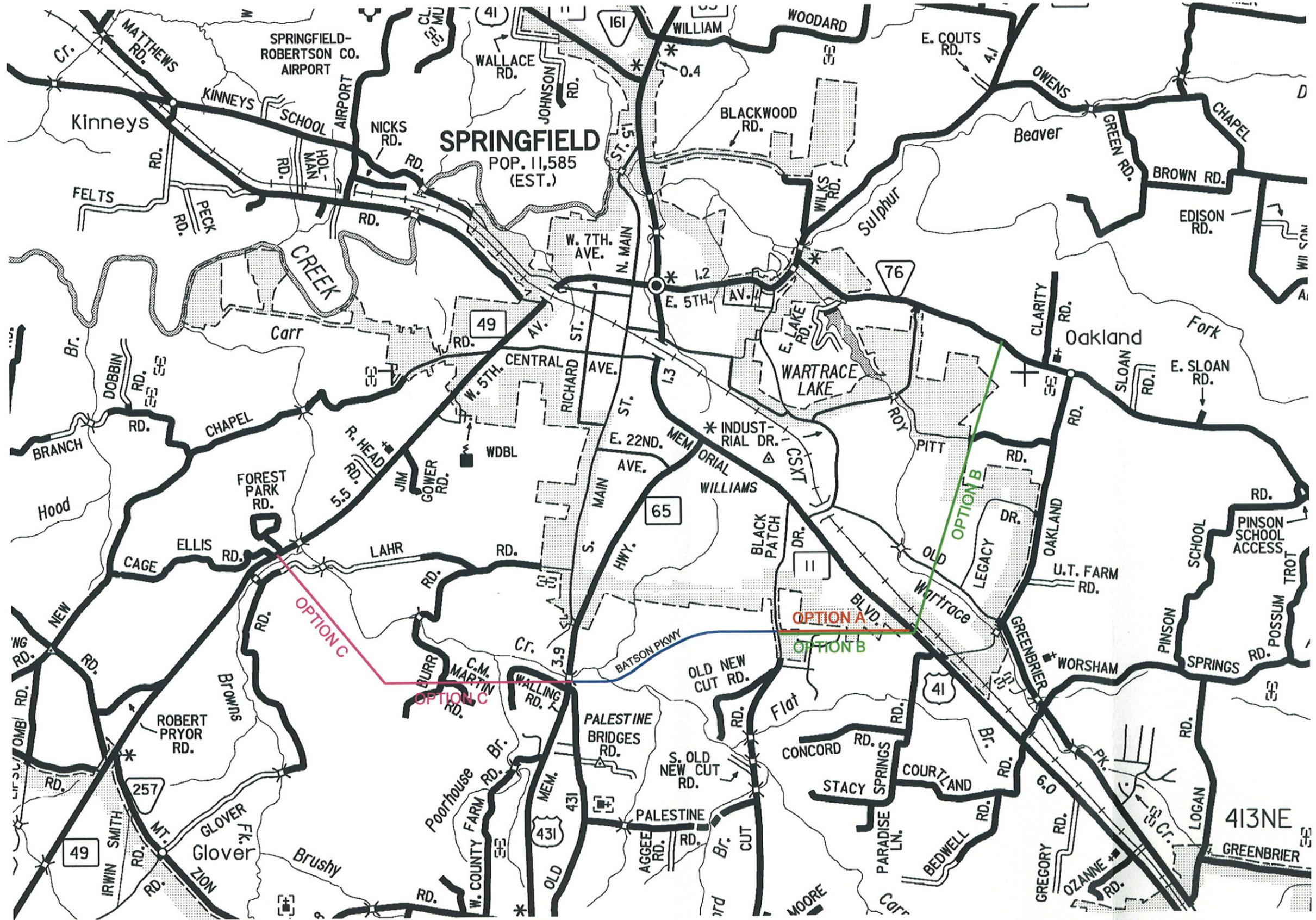


Figure 5

OPTIONS CONSIDERED

**Table 5  
Performance Measure Comparison  
2010 & 2030**

Performance Measure	Existing 2010	Option A 2010	Option B 2010	Option CA 2010	Option CAB 2010	Existing 2030	Option A 2030	Option B 2030	Option CA 2030	Option CAB 2030
Truck % SR 49	4% - 6%	4% - 6%	4% - 6%	4% - 6%	4% - 6%	4% - 6%	4% - 6%	4% - 6%	4% - 6%	4% - 6%
Truck % US 431	7% - 8%	5% - 8%	5% - 8%	7% - 8%	7% - 8%	7% - 8%	5% - 8%	5% - 8%	7% - 8%	7% - 8%
Truck % US 41	5% - 9%	4% - 9%	3% - 8%	4% - 9%	4% - 9%	5% - 9%	4% - 9%	3% - 8%	4% - 9%	4% - 9%
Truck % SR 76	5%	5%	4% - 5%	5%	4% - 5%	5%	5%	4% - 5%	5%	4% - 5%
Truck% Batson Pkwy	3%	11%	10%	7%	9%	3%	11%	10%	7%	9%
Truck % for Build Option	-	11%	1% - 9%	2% - 6%	1% - 9%	-	11%	1% - 9%	2% - 6%	1% - 9%
LOS SR 49	E	E	E	E	E	E	E	E	E	E
LOS US 431	E	E	E	E	E	E/B*	E/B*	E/B*	E/B*	E/B*
LOS US 41	B	C	C	C	C	C	D	D	C	D
LOS SR 76	D	D	D	D	D	D	D	D	D	D
LOS Batson Pkwy	D	E	E	E	E	E	E	E	E	E
LOS for Build Option	-	D	D	D	D	-	D	D	E	E
V/C Ratio SR 49	0.28	0.28	0.28	0.26	0.26	0.45	0.45	0.45	0.40	0.40
V/C Ratio US 431	0.50	0.48	0.48	0.37	0.37	0.56	0.54	0.54	0.44	0.44
Density US 41 (pc/mi/ln)	15.8	25.0	20.6	20.6	24.2	19.3	32.7	26.9	25.4	30.8
V/C Ratio SR 76	0.30	0.30	0.31	0.29	0.26	0.38	0.38	0.39	0.38	0.37
V/C Ratio Batson Parkway	0.08	0.11	0.12	0.16	0.16	0.12	0.18	0.14	0.22	0.22
V/C Ratio for Build Option	-	0.11	0.21	0.20	0.21	-	0.17	0.26	0.26	0.26
Construction	\$ -	\$7,026,506	\$36,192,772 (B1)	\$24,862,590	\$54,028,856 (CAB1)	SAME AS 2010	SAME AS 2010	SAME AS 2010	SAME AS 2010	SAME AS 2010
			\$34,224,832 (B2)		\$52,060,916 (CAB2)					
Approximate Length (Miles)	-	1.2	3.6 (B1)	3.8	6.2 (CAB1)	SAME AS 2010	SAME AS 2010	SAME AS 2010	SAME AS 2010	SAME AS 2010
			4.2 (B2)		6.7 (CAB2)					

\* LOS with proposed widening project from LRTP

## **No Build Option**

### **Concept:**

Make no physical changes to the existing roadway network.

### **Typical Section:**

All roadway sections would remain as they are currently.

### **Anticipated Operational Performance:**

Figure 6 illustrates the anticipated annual average daily traffic volumes on the existing roadway network in 2010 and 2030. SR 49 volumes are projected to reach 18,200 vehicles per day by the year 2030, this volume would cause the roadway to decline to unacceptable levels of service. On SR 65/US 431 volumes are expected to reach 19,680 vehicles per day by the year 2030. That volume exceeds the carrying capacity of the current two-lane roadway. It should be noted that the Nashville Urban Area Long Range Transportation Plan calls for widening of SR 65/US 431 to five lanes by 2016. That widening would increase the road's capacity to an acceptable level of operation. By the year 2030, traffic on SR 11/US 41 in the study area is expected to reach a peak of approximately 37,700 vehicles per day. A traffic volume of that magnitude typically exceeds the carrying capacity of a five-lane urban arterial. By the year 2030, SR 76 has a projected volume of 12,200 vehicles per day; the two-lane roadway would be sufficient to carry that volume at acceptable levels of service.

Truck traffic on SR 49 ranges from 4% - 6% within Springfield. The truck percentages along SR 65/US 431 range from 7% to 8%; while truck traffic on SR 11/US 41 ranges from 5% (at the southern limit of the study area) to 9% of total daily traffic (north of downtown). The truck trip percentage along SR 76 is 5%. The higher truck percentages along SR 49, SR 65/US 431, and SR 11/US 41 are higher than normally found in an urban setting. On typical urban arterials truck percentages might vary from 2% to 4%. The higher than typical truck trips in the study area are a result of the industrial and manufacturing facilities located along SR 11/US 41 on the north end of the study area and along Jones Industrial Drive, east of SR 11/US 41.

As noted previously, the traffic crash rate on SR 65/US 431 between Walling Road and SR 11/US 41 is below the statewide average, while the rate on SR 11/US 41 east of SR 65/US 431 is slightly higher than the statewide average. As traffic volumes increase on the facility with no geometric improvements, those crash rates are likely to increase.

If the no build option is selected, trucks traveling between Jones Industrial Drive and SR 65/US 431 will continue to travel through the residential areas of Black Patch Drive and Driftwood Drive or deal with the congestion at the SR 11/US 41 and SR 65/US 431 intersection.

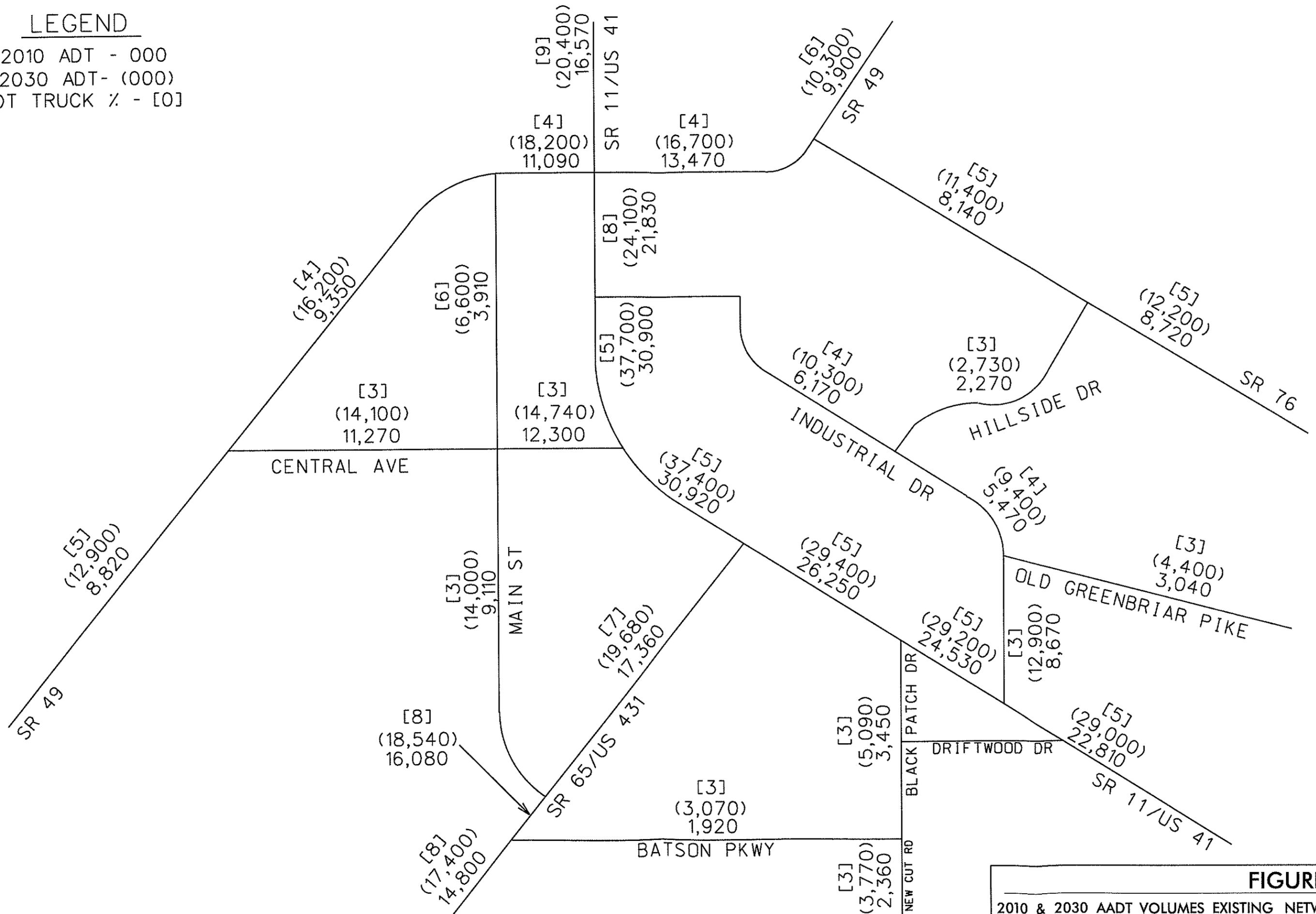
**Construction Cost Estimate:**           \$0

### **Identified Environmental Concerns:**

No specific environmental concerns are identified at this time for the No Build option.

# LEGEND

2010 ADT - 000  
 2030 ADT - (000)  
 ADT TRUCK % - [0]



**FIGURE 6**  
 2010 & 2030 AADT VOLUMES EXISTING NETWORK

## **Build Option A**

### **Concept:**

Construct a new two-lane median divided roadway to connect the existing Batson Parkway to the east to SR 11/US 41. Figures 12 and 18 at the back of this report illustrate the corridor for Option A on U.S.G.S. quadrangle maps and aerial photography. The corridor is designated as 2,000 feet wide, an area large enough to allow design flexibility within the natural topographic constraints of the area. It should be noted that the city has already purchased right-of-way for this portion of the connector. The purchased right-of-way is significantly less than the corridor boundary shown. A large map that shows the overall corridor and the already purchased right-of-way is included as an attachment to the report. The concept plan is for Option A to be constructed as a partial access controlled facility with at-grade intersections at the major roadway crossings. It would tie into Batson Parkway at its west termini at the Black Patch Drive intersection. For cost estimating purposes, it was assumed that sufficient right-of-way would be acquired such that, when required by traffic demand, the roadway could be widened to contain a four lane cross section with a median.

### **Typical Section (proposed):**

- Option A
  - two travel lanes with a raised grass median and partial access control
  - 104' of right-of-way
- All other roadways would maintain their existing sections

### **Anticipated Operational Performance:**

Figure 7 illustrates the anticipated annual average daily traffic volumes on Option A and the surrounding roadways in 2010 and 2030. The traffic projections for the roadway network provided by TDOT were derived from the Nashville MPO traffic forecast model. The volume along the Option A corridor is projected to reach approximately 3,850 vehicles per day by 2030, well within the capacity of a two-lane divided highway with partial access control. The projected volumes for SR 49, SR 11/US 41(except between Black Patch Drive and the Option A termini), and SR 76 are projected to remain the same as with the existing roadway network in 2030. SR 65/US 431 volumes are projected to decrease slightly from Batson Parkway to SR 11/US 41 due to the additional connectivity provided by Option A. The volumes on SR 11/US 41 between Jones Industrial Drive and the Option A termini increase slightly while volumes between Jones Industrial Drive and Black Patch Drive decrease slightly as vehicles make the diversion onto Option A.

The projected peak AADT for the Option A corridor is within the capacity of a two-lane divided highway with partial access control. The peak AADT volumes on the surrounding roadways are comparable to the No Build option, which in some areas exceed the capacity of the existing lane geometry as previously discussed.

The addition of the Option A segment of the southern connector provides improved truck access between Jones Industrial Road and SR 65/ US 431 by creating a direct path that avoids the residential areas on Black Patch Drive and Driftwood Drive and the congested SR 11/US 41 at SR 65/US 431 intersection. Option A provides improved access to Northcrest

Medical Center and commercial areas along SR 65/US 431. Option A would improve traffic operations at the intersection of SR 11/US 41 at SR 65/US 431 by reducing traffic volumes. Additional data collection is needed to quantify these improvements.

With Option A, a portion of the truck traffic currently using SR 65/US 431 is expected to shift to the Option A corridor. This will increase the truck traffic on the existing segment of Batson Parkway from a No Build Percentage of approximately 3% to an Option A percentage of approximately 11%. The truck traffic on the segment of SR 65/US 431 nearest SR 11/US 41 is expected to decrease from 7% to approximately 5%, as the total AADT is expected to be decrease slightly along that segment.

**Construction Cost Estimate:** \$7,026,506

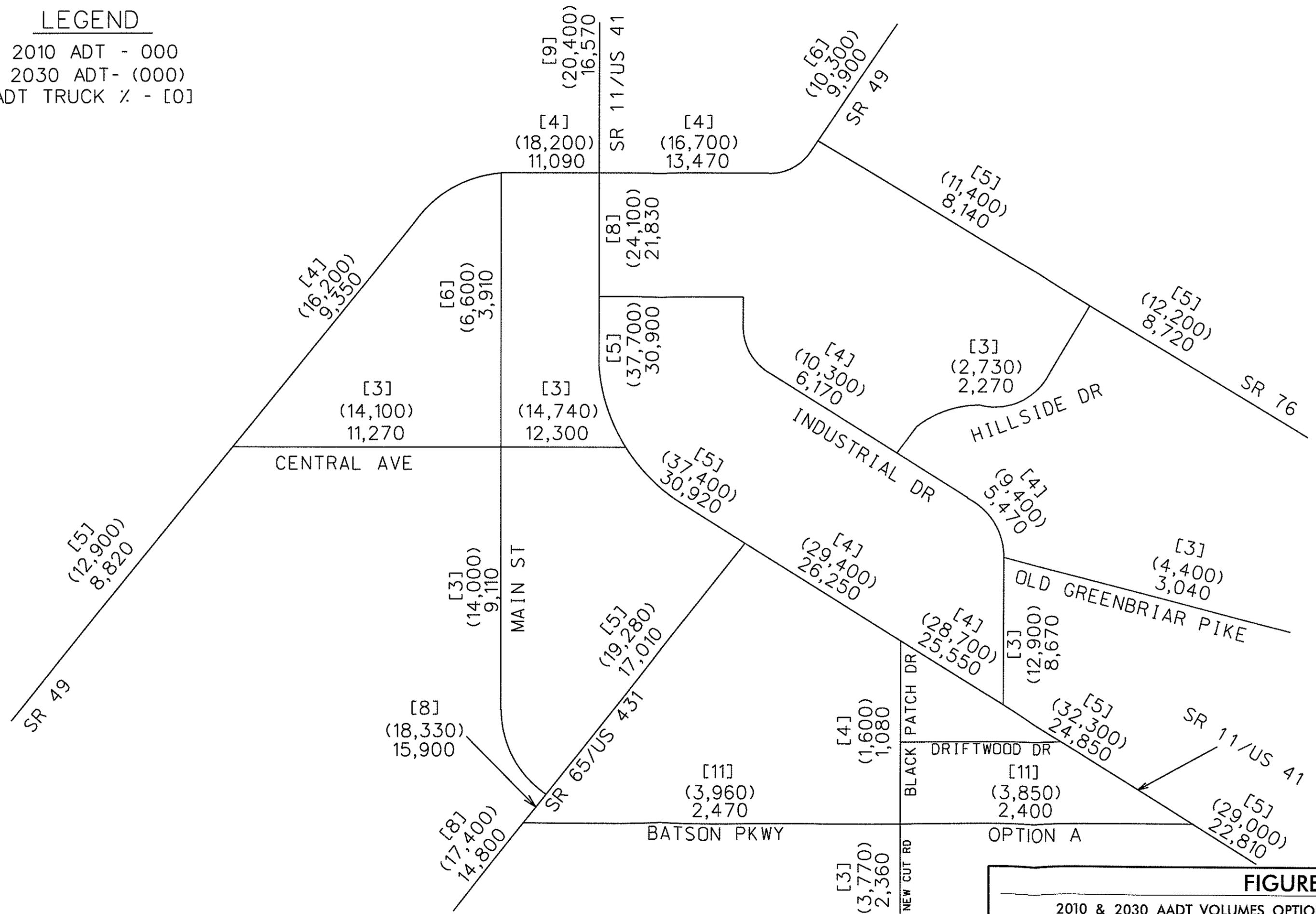
This preliminary cost estimate is based upon per mile costs for approximately 1.2 miles of new two-lane median divided highway with partial access control in flat terrain. The cost estimate includes purchasing sufficient right-of-way to construct a four-lane section at a point in the future when it is needed. It is assumed that right-of-way for this segment would need to be purchased, as it is not yet determined if the right-of-way already purchased by the City of Springfield would be used.

**Identified Environmental Concerns:**

There are no identified environmental concerns within this corridor for Option A at this time.

# LEGEND

2010 ADT - 000  
 2030 ADT - (000)  
 ADT TRUCK % - [0]



**FIGURE 7**

2010 & 2030 AADT VOLUMES OPTION A

## **Build Option B**

### **Concept:**

Construct a new two-lane median divided roadway from the existing Batson Parkway east to SR 11/US 41 then northeast to SR 76. The concept plan is for Option B to be constructed as a partial access controlled facility with at grade intersections at major local roadways except for the intersection at SR 11/US 41 where grade separation will be necessary to cross the CSXT railroad. It is envisioned that a trumpet type interchange would be constructed to provide access to and from SR 11/US 41 and still bridge the highway and railroad. Option B has two possible corridors, referred to as Option B1 and Option B2. Option B1 provides a wider corridor, approximately 4,500 feet in most areas as shown in Figures 13, 15, 19 and 21 attached at the end of this report. The width of this corridor is significantly wider than the other corridors presented in order to allow for adjustments in the roadway alignment to minimize impacts to the UT Experimental Farm and a newly constructed neighborhood around Double D Drive. Option B2 provides an option that would completely avoid the UT Experimental Farm and the newly constructed neighborhood, as shown in Figures 14, 16, 20 and 22 attached at the end of this report. It would however require an offset connection between the east and west roadway segments at SR 11/US 41. The segment extending to the east from SR 11/ US 41 would require a trumpet type interchange because of the proximity of the railroad tracks to SR 11/US 41.

### **Typical Section (proposed):**

- Option B
  - two travel lanes with raised median and partial access control
  - 104' of right-of-way
- All other roadways would maintain their existing cross sections

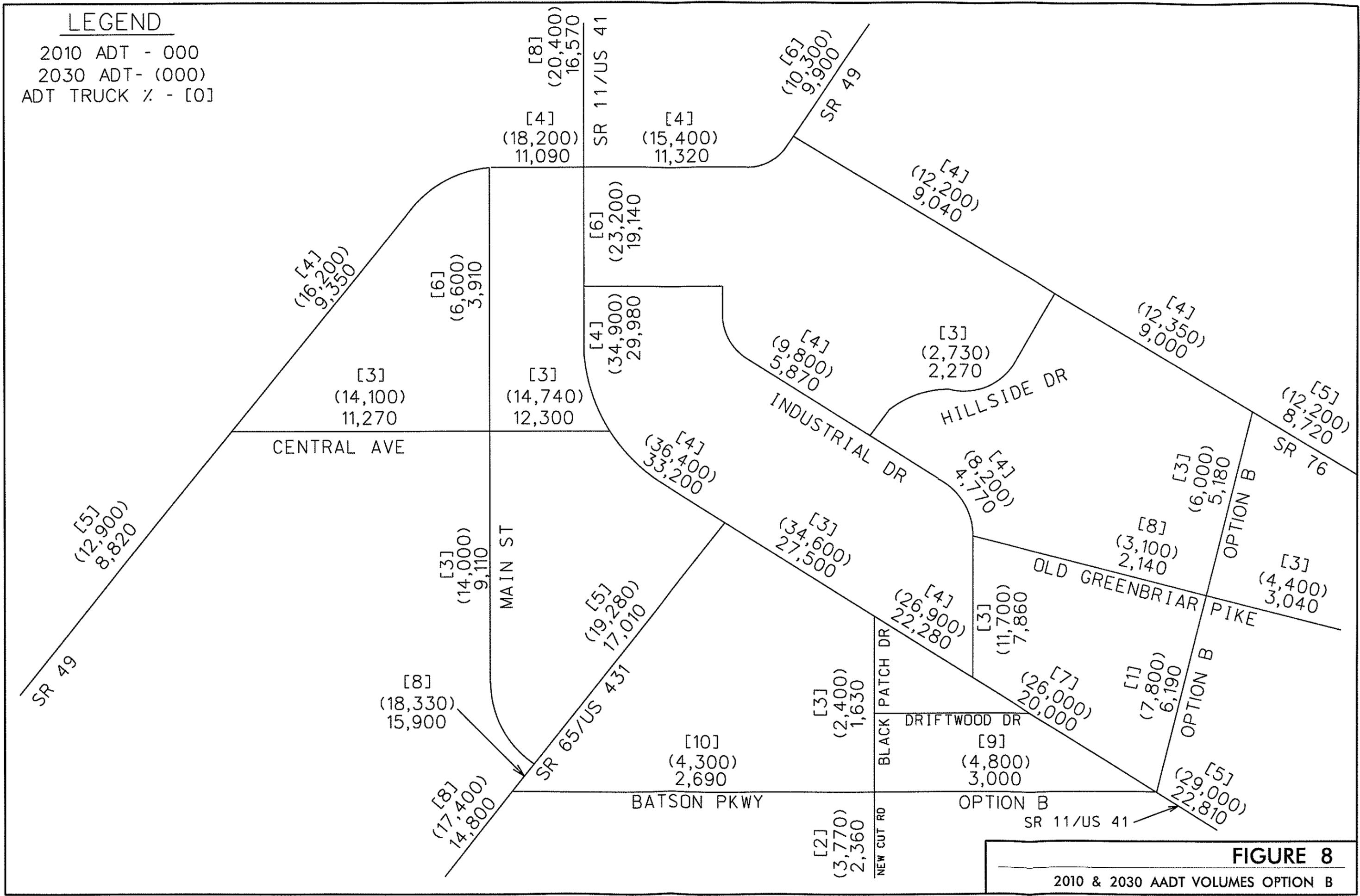
### **Anticipated Operational Performance:**

Figure 8 illustrates the anticipated annual average daily traffic volumes on Option B and the surrounding roadways in 2010 and 2030. The traffic projections for the roadway network provided by TDOT were derived from the Nashville MPO traffic forecast model. By the year 2030, traffic on Option B is expected to peak at approximately 7,800 vehicles per day in the segment of Option B just north of SR 11/US 41. The volumes on SR 49 are projected to remain the same in 2030 with the construction of Option B as they were in the No Build Option. 2030 Volumes along SR 65/US 431 north of Batson Parkway, are expected to decrease slightly from the No Build Option. Along SR 11/US 41 2030 volumes are expected to decrease between the Option B intersection at SR 11/US 41 and Black Patch Drive as well as from SR 65/US 431 to SR 49. The projected volumes for SR 11/US 41 between Black Patch Drive and SR 65/US 431 show an increase, as do the volumes along SR 76.

The projected peak AADT for the Option B corridor is well within the capacity of a two-lane divided highway with partial access control. The other network roadways are expected to perform at a level similar to the No Build Option as previously described.

# LEGEND

2010 ADT - 000  
 2030 ADT - (000)  
 ADT TRUCK % - [0]



**FIGURE 8**  
 2010 & 2030 AADT VOLUMES OPTION B

With Option B, a portion of the truck traffic on the surrounding roadways is expected to shift to the partial access Option B corridor. It is estimated that the truck percentage will increase on Batson Parkway to approximately 10% of the AADT with the construction of Option B. This percentage decreases significantly on the northeast side of SR 11/US 41. The truck diversion benefits described for Option A would also apply for Option B. With Option B, the segment north of SR 11/US 41 would serve as an alternate means to Springfield High School which is located on SR 76. This would allow a more direct route for students, parents, and emergency vehicles from south central Springfield to access the school. It would also provide improved travel to Northcrest Medical Center on SR 65/US 431.

**Construction Cost Estimate:**

**Option B1:** \$36,192,772

This preliminary cost estimate is based upon per mile costs for approximately 3.6 miles of two-lane median divided highway with partial access control in rolling terrain. The estimate includes costs for an interchange at the intersection of the proposed roadway and SR 11/US 41. It also includes right-of way for a four-lane section that could be constructed at a later time.

**Option B2:** \$34,224,832

This preliminary cost estimate is based upon per mile costs for approximately 4.1 miles of two-lane median divided highway with partial controlled access in rolling terrain. The estimate includes costs for an interchange at the intersection of the eastern segment of the proposed roadway and SR 11/US 41. It also includes right-of way for a four-lane section that could be constructed at a later time.

**Identified Environmental Concerns:**

The Option B1 corridor has several environmental concerns, the most prominent of which is the potential impact to the UT Experimental Farm. Located on the UT Experimental Farm is the National Register Eligible Property, Highland Rim Experiment Station. There are also 3 blue line streams located within the B1 corridor boundaries.

The Option B2 corridor would avoid impacting the UT Experimental Farm and the National Register Eligible Property located within the farm. Option B2 corridor boundaries contains 2 blue line streams.

## **Build Option CA**

### **Concept:**

Construct a new two-lane median divided roadway from SR 49 southwest of Springfield to tie in with the existing Batson Parkway at SR 65/US 431, and construct Option A as described previously from the existing Batson Parkway east to SR 11/US 41. Figures 11 through 13 and 17 through 19 at the back of this report illustrate the corridor boundaries on aerial photography and U.S.G.S. quadrangle maps. The corridor is designated as approximately 2,000 feet wide, an area large enough to allow design flexibility within the natural topographic constraints of the area. A large map that shows the overall corridor is included as an attachment to the report. The concept plan is for Option CA to be constructed as a partial access controlled facility with at-grade intersections at major local roadways. For cost estimating purposes, it was assumed that all intersections would be at-grade. A more detailed study will be needed to identify required turn lanes and signal locations.

### **Typical Section (proposed):**

- Option CA
  - Two travel lanes with raised median and partial access control
  - 104' of right-of-way
- All surrounding roadways would maintain their existing cross sections.

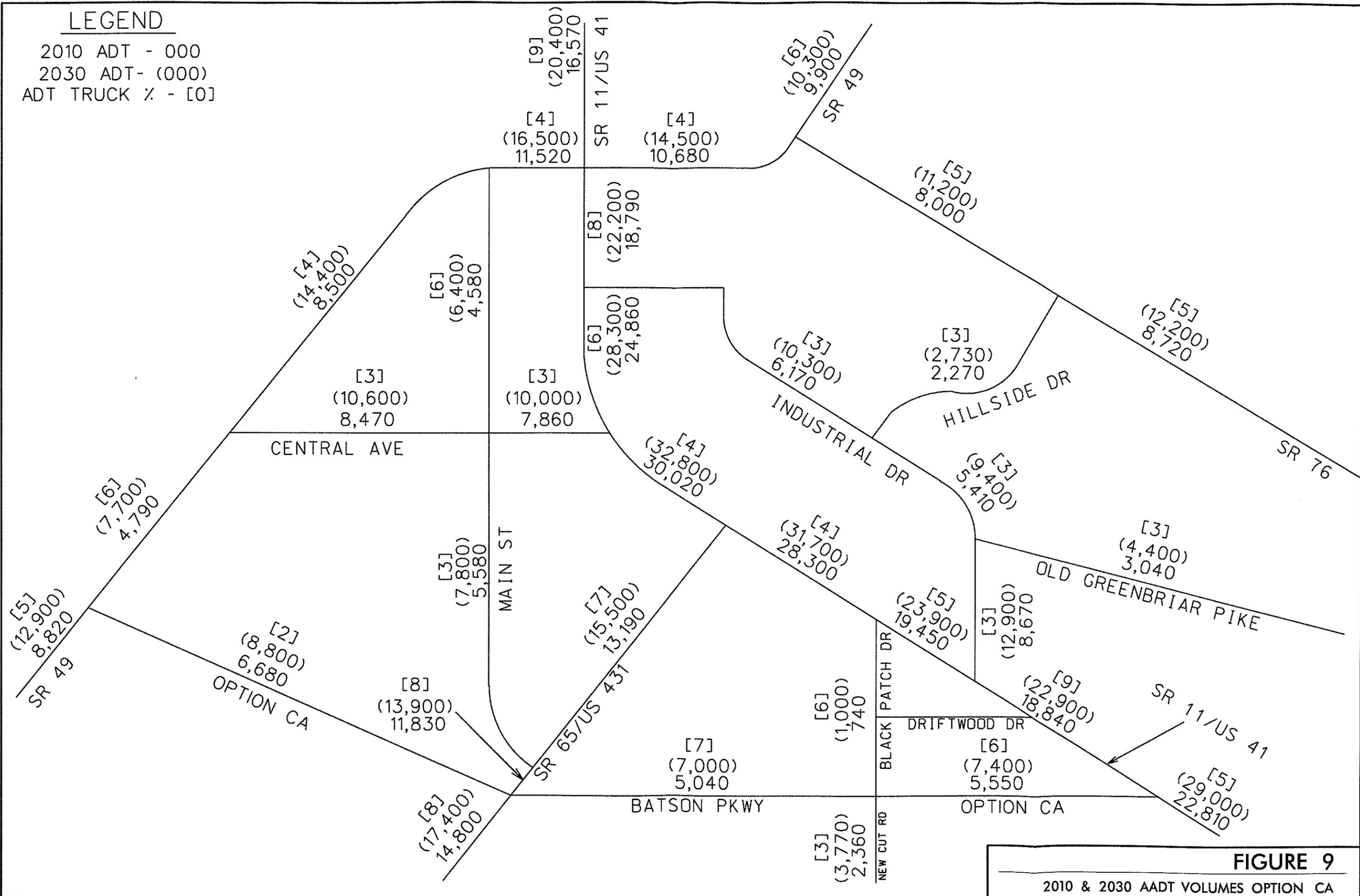
### **Anticipated Operational Performance:**

Figure 9 illustrates the anticipated annual average daily traffic volumes on Option CA and the surrounding roadways. By the year 2030, traffic on Option CA is expected to peak at approximately 8,800 vehicles per day. The 2030 projections for SR 49 show decreases between the western termini of Option CA and SR 11/US 41, as does SR 65/US 431 north of Option CA, and SR 11/US 41 from the eastern Option CA termini north to Black Batch Drive and from SR 65/US 431 north to SR 49. The highest volume shown along SR 11/US 41 is 32,800 vehicles per day, over 4,000 less than the volume projected for that segment in the No Build Option. The volumes projected for SR 76 in the year 2030 remain the same as those presented in the No Build Option.

The projected peak AADT for the Option CA corridor is within the capacity of a two-lane divided highway with partial access control. In approximately the year 2027, it is expected the level of service along Option CA between SR 49 and SR 65/US 431 will drop to a level of service E. It is recommended to purchase right-of-way sufficient for a four-lane roadway to accommodate the widening if these volumes are indeed reached. The peak AADT volume on SR 11/US 41, while decreased by the construction of Option CA, will continue to operate below acceptable levels of service for the segment of SR 11/US 41 between the two intersections of Jones Industrial Drive.

# LEGEND

2010 ADT - 000  
 2030 ADT - (000)  
 ADT TRUCK % - [0]



**FIGURE 9**  
 2010 & 2030 AADT VOLUMES OPTION CA

With Option CA a portion of the truck traffic in the area is expected to shift to the partial access Option CA corridor. It is expected that truck traffic on Option CA would be minimal on the west side of SR 65/US 431 as the route to the industrial facilities on SR 11/US 41 north of SR 49 would continue to use SR 49. It would, however, provide improved access for those truck trips whose destination is the industrial park located along Jones Industrial Road. The projected truck percentage is expected to range from 2% to 6% on the new segments. Truck traffic on Batson Parkway is expected to increase to 7% and trucks along the segment of SR 11/US 41 between the tie in location and Industrial Drive are expected to reach 9%.

**Construction Cost Estimate:** \$24,862,590

This preliminary cost estimate is based upon per mile costs for approximately 3.8 miles of new two-lane median divided highway with partial access control in rolling terrain. The estimate contains costs for acquiring right-of-way for a future four lane section.

**Identified Environmental Concerns:**

The corridor for Option CA encompasses 4 blue line streams, a portion of Carr Creek, one cemetery, and one church. The Binkley Cemetery and the Grace Baptist Church are located in the Option C portion shown on Figure 11.

## **Build Option CAB**

### **Concept:**

Construct a new two-lane median divided roadway to combine the options previously described and thus connect from SR 49 on the west, through the existing Batson Parkway, to SR 76. This option could utilize either the B1 or B2 corridor.

### **Typical Section (proposed):**

- Option CAB
  - two travel lanes with raised median and partial access control
  - 104' of right-of-way
- All other surrounding roadways will maintain their existing cross sections

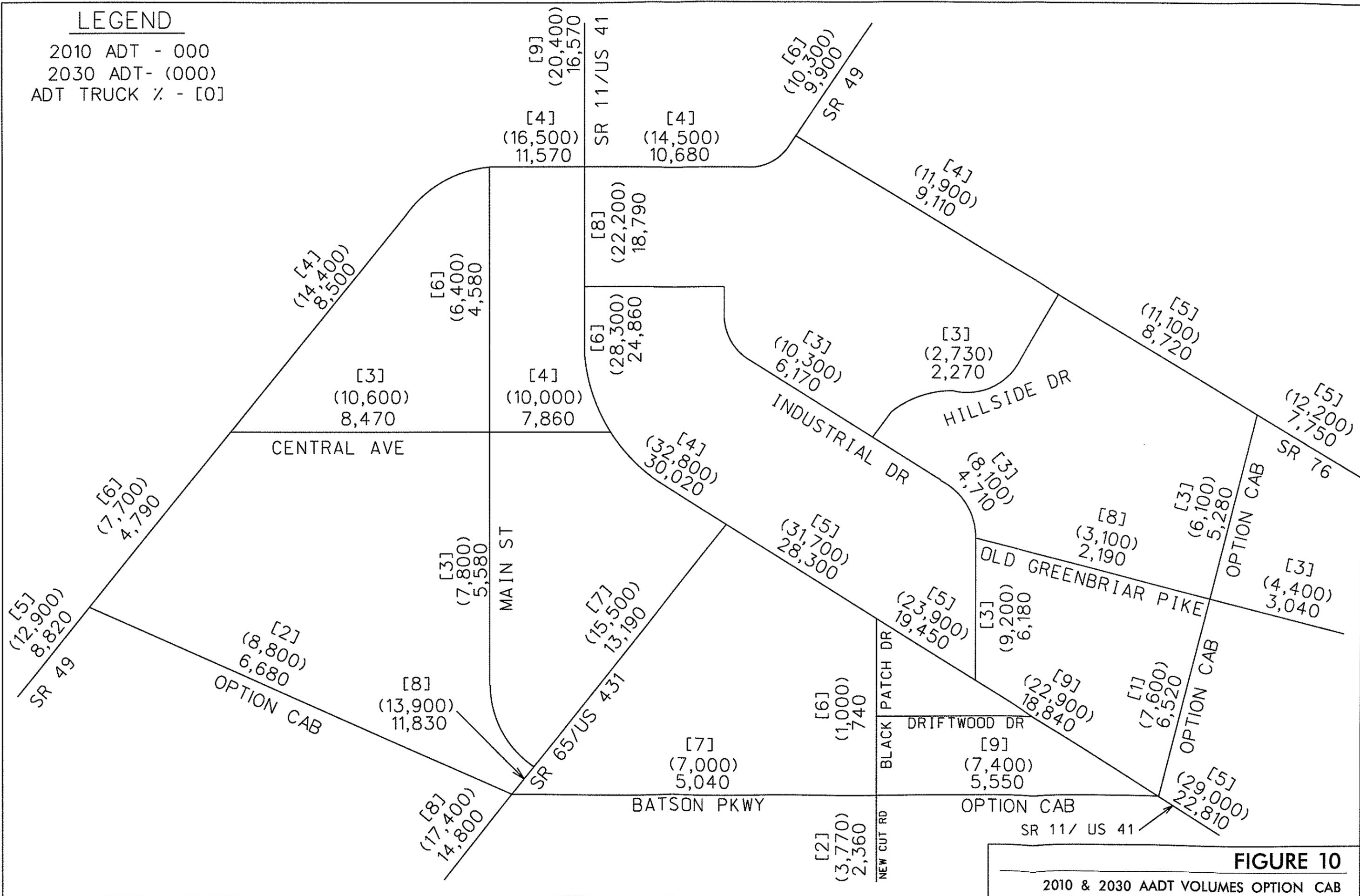
### **Anticipated Operational Performance:**

Figure 10 illustrates the anticipated annual average daily traffic volumes for Option CAB in 2010 and 2030. By the year 2030, traffic on Option CAB is expected to peak at approximately 8,800 vehicles per day, volumes on SR 11/US 41 in the study area are expected to reach a peak of approximately 32,800 vehicles per day while SR 65/US 431 is projected to experience 15,500 vehicles per day north of Batson Parkway. The volume changes anticipated on the roadway networks are a combination of those described for each Option individually.

The projected peak AADT for the Option CAB corridor is within the capacity of a two-lane divided highway with partial access control. The peak AADT volume is expected to result in a level of service E for the Option C segment as discussed earlier in the report by approximately 2027. It is recommended to purchase right-of-way sufficient for a four-lane roadway to accommodate widening if these volumes are indeed reached. The provision of a continuous bypass from SR 49 to SR 76 is expected to improve operations along the existing roadways within the study area, however operations still remain unacceptable on some roadway segments. The addition of the roadway segments comprising the southern connector should improve traffic operations at key intersections in the study area such as SR 65/US 431 at SR 11/US 41. Further data collection is needed to quantify the possible improvements. The additional roadway will also improve truck travel paths, including removing the trucks from residential streets.

# LEGEND

2010 ADT - 000  
 2030 ADT- (000)  
 ADT TRUCK % - [0]



**FIGURE 10**

2010 & 2030 AADT VOLUMES OPTION CAB

With Option CAB, a portion of the truck traffic on the area roadways is expected to shift to the partial controlled access Option CAB corridor. The truck percentages on the Option CAB corridor are expected to range from 1% to 9%. The projected truck traffic on SR 11/US 41 is expected to remain similar to that of the No Build Option on the surrounding roadway network. Due to the decrease in volume along many of these existing segments, this will result in a decrease of actual truck trips along these segments.

**Construction Cost Estimate:**

**Option CAB1** \$54,028,856

This preliminary cost estimate is based upon per mile costs for approximately 6.2 miles of new two-lane median divided highway with partial access control in rolling terrain. The estimate includes cost of acquiring sufficient right-of-way to widen to four-lanes when necessary.

**Option CAB2** \$52,060,916

This preliminary cost estimate is based upon per mile costs for approximately 6.7 miles of new two-lane median divided highway with partial access control in rolling terrain. The estimate includes cost of acquiring sufficient right-of-way to widen to four-lanes when necessary.

**Identified Environmental Concerns:**

The environmental concerns of each segment that together comprise the Option CAB have been previously discussed in the report.

## **IV. ASSESSMENT OF OPTIONS**

The Tennessee Department of Transportation 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 Springfield Bypass.

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

Options A, B, CA, and CAB involve construction of a new connector road. By diverting traffic from the existing system, the new road can help preserve the service life of the existing roadway network. The proposed connector road will allow the current network to function with fewer impacts from the growing population than would otherwise be experienced.

If constructed, the connector road corridor should be a partial access controlled facility in order to preserve the function of the newly constructed roadway further into the future.

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

The No Build Option does not address the need of Springfield for improved east-west connectivity, or better truck routes through the area. Each of the other Options discussed provide improved east-west connectivity, alternate routes for truck traffic, and improved access to institutional facilities. With the addition of each segment to the Option, those improvement goals are more fully realized. For example, Option CAB connects from SR 49 all the way through to SR 76, providing an opportunity for more people in the community to be able to use the roadway. Option A provides a route for the truck traffic traveling to and from Jones Industrial Drive to avoid traveling through the residential area along both Black Patch Drive and Driftwood Drive. It also improves access for emergency vehicles traveling to and from Northcrest Medical Center to avoid the heavily congested intersection of SR11/US 41 at SR 65/US 431. The extension of the existing Batson Parkway to SR 11/US 41 also improves route continuity between two state US highways and improves access to the Martin Luther King Jr. Park and the Robertson County YMCA, both of which are important recreation locations within the community.

Industry is an important component of the Robertson County economy. Freight movement on SR 65/US 431 is a concern as the highway has become more congested in recent years. The connector road options have the potential for providing an alternate route for truck traffic. There is a large industrial area on Jones Industrial Drive, northeast of SR 11/US 41. The build Options would provide relief to the heavy volumes of traffic at the intersection of SR 11/US 41 and SR 65/US 431 by providing truckers, whose destination is that industrial area, an alternate route.

One important consideration is access to Springfield High School on SR 76. The build Option B and CAB would provide improved access to Springfield High School for individuals living in the neighborhoods of south Springfield. An additional destination of importance is Northcrest Medical Center located on SR 65/US 431. All of the proposed options provide a critical missing link for emergency vehicles.

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

Springfield has a strong industrial and commercial business section that requires adequate transportation facilities to operate. The current unemployment rate in Robertson County is 0.9% below the statewide average rate. Local leaders believe that the southern connector road is vital to Springfield's ability to accommodate the transportation demands of these business sectors.

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

Traffic crash rates on segments of SR 65/US 431 and SR 11/US 41 were calculated from crash data for the years 2002 through 2005. During that period a total of 83 traffic crashes were reported on SR 65/US 431 between Walling Road and SR 11/US 41 and 150 were reported on SR 11/US 41 between SR 11/US 41 and the city limit. Of the reported crashes, forty percent (40%) on SR 65/US 431 involved an injury and thirty eight percent (38%) on SR 11/US 41 involved an injury. No fatalities were reported within the study areas of SR 65/US 431 and SR 11/US 41. The continued growth of the area without new options for travel will increase the potential for additional and more serious crashes.

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

Throughout the process of this study and the others done for this corridor, TDOT staff has coordinated with local leaders to identify their concerns and objectives. The project documentation includes correspondence between local officials and TDOT Commissioner Gerald Nicely requesting TDOT's assistance in the construction of a southern connector with the agreement that after construction Robertson County will maintain the road.

In keeping with the goals of TDOT's current Public Involvement Process, several meetings have been held by and for the local elected officials and the public to coordinate the transportation needs envisioned by Robertson County and those of TDOT. This public involvement process will continue as mandated by the provisions of the National Environmental Policy Act (NEPA).

It is noted that the connector road options will have a greater impact on residential communities and agricultural land than the no build. It is believed that this impact can be minimized and that historic sites located within the corridor boundaries can be avoided.

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

A detailed environmental study is needed to fully address the impacts of each considered option. For comparison purposes, Table 6 summarizes environmental considerations for each option based upon information of record. It should be noted that the items listed in Table 6 are located within the identified corridors but may not necessarily be impacted.

**Table 6  
Comparison of Environmental Considerations**

Option	Underground Storage Tanks	Streams	Archaeological Sites	Residential	Cemetery
No Build					
Option A				?	
Option B		?		?	
Option CA		?		?	?
Option CAB		?		?	?

(The table above is based on a preliminary environmental screening process performed by TDOT, a detailed technical study will be needed.)

**Guiding Principle 7: Promote Financial Responsibility**

Preliminary construction cost estimates were prepared for each considered option based upon typical per mile costs. Table 7 summarizes the construction cost estimates for all options.

**Table 7  
Comparison of Construction Cost Estimates**

Option	Number of New Lanes	Number of New Interchanges	Construction Cost	Length	Cost Per Lane Mile
No Build	n/a	n/a	\$0	n/a	n/a
Option A	2	n/a	\$7,026,506	1.2 miles	\$6,081,959
Option B1	2	1	\$36,192,772	3.6 miles	\$10,110,997
Option B2	2	1	\$34,224,832	4.1 miles	\$8,251,466
Option CA	2	n/a	\$24,862,590	3.8 miles	\$6,697,677
Option CAB1	2	1	\$54,028,856	6.2 miles	\$8,804,702
Option CAB2	2	1	\$52,060,916	6.7 miles	\$7,765,018

## V. SUMMARY

SR 49 is a two-lane urban principle arterial highway that extends in a north/south orientation through Robertson County, providing access to Interstate 24 on the south side and the state of Kentucky to the north. SR 65/US 431 is a two-lane urban principle arterial highway that extends in a north/south orientation through Robertson County, providing access to Interstate 24 on the south side and the state of Kentucky to the north. SR 11/US 41 is a four-lane urban principle arterial with a northwest/southeast orientation providing access to Nashville on the south side and the state of Kentucky on the north side. SR 76 is a two-lane rural arterial that extends in an east/west orientation through Robertson County, providing access to Interstate 65 to the east and merging with SR 11/US 41 in Springfield.

Traffic crash rates on segments of SR 65/US 431 and SR 11/US 41 were calculated from crash data for the years 2002 through 2005. During that period a total of 83 traffic crashes were reported on SR 65/US 431 between Walling Road and SR 11/US 41 and 150 were reported on SR 11/US 41 between SR 11/US 41 and the city limit. Of the reported crashes, forty percent (40%) on SR 65/US 431 involved an injury and thirty eight percent (38%) on SR 11/US 41 involved an injury. No fatalities were reported within the study areas of SR 65/US 431 and SR 11/US 41. The continued growth of the area without new options for travel will increase the potential for additional and more serious crashes.

The primary need for a southern connector road varies by section, but the overall need is for improved east/west mobility. Several specific needs are encompassed in this broad goal by each of the five evaluated options:

### OPTION A:

- Provides an alternate route for trucks traveling between one of the southern radial highways and the industrial park located along Jones Industrial Road.
- Removes truck traffic from residential roadways (Driftwood Drive and Black Patch Drive).
- Provides the possibility of removing a traffic signal at the intersection of Black Patch Drive at Driftwood Drive, which is necessitated by the truck traffic.
- Improves access to the Northcrest Medical Center on SR 65/US 431.
- Provides improved access to the Martin Luther King Jr. Park on S. Main Street and the Robertson County YMCA on SR 65/US 431.
- Reduces traffic volumes at the intersection of SR 65/US 431 and SR 11/US 41 that will yield a reduction in congestion and improved safety.

### OPTION B:

- Provides an alternate route for trucks traveling between one of the southern radial highways and the industrial park located along Jones Industrial Road.
- Removes truck traffic from residential roadways (Driftwood Drive and Black Patch Drive).
- Provides the possibility of removing a traffic signal at the intersection of Black Patch Drive at Driftwood Drive, which is necessitated by the truck traffic.
- Improves access to the Northcrest Medical Center on SR 65/US 431.

- Provides improved access to the Martin Luther King Jr. Park on S. Main Street and the Robertson County YMCA on SR 65/US 431.
- Reduces traffic volumes at the intersection of SR 65/US 431 and SR 11/US 41 that will yield a reduction in congestion and improved safety.
- Improves access to Springfield High School on SR 76.

OPTION CA:

- Provides an alternate route for trucks traveling between one of the southern radial highways and the industrial park located along Jones Industrial Road.
- Removes truck traffic from residential roadways (Driftwood Drive and Black Patch Drive).
- Provides the possibility of removing a traffic signal at the intersection of Black Patch Drive at Driftwood Drive, which is necessitated by the truck traffic.
- Improves access to the Northcrest Medical Center on SR 65/US 431.
- Provides improved access to the Martin Luther King Jr. Park on S. Main Street and the Robertson County YMCA on SR 65/US 431.
- Reduces traffic volumes at the intersection of SR 65/US 431 and SR 11/US 41 that will yield a reduction in congestion and improved safety
- Reduces the density of traffic on state highways within downtown Springfield by shifting some of the burden to another route.

OPTION CAB:

- Provides an alternate route for trucks traveling between one of the southern radial highways and the industrial park located along Jones Industrial Road.
- Removes truck traffic from residential roadways (Driftwood Drive and Black Patch Drive).
- Provides the possibility of removing a traffic signal at the intersection of Black Patch Drive at Driftwood Drive, which is necessitated by the truck traffic.
- Improves access to the Northcrest Medical Center on SR 65/US 431.
- Provides improved access to the Martin Luther King Jr. Park on S. Main Street and the Robertson County YMCA on SR 65/US 431.
- Reduces traffic volumes at the intersection of SR 65/US 431 and SR 11/US 41 that will yield a reduction in congestion and improved safety.

The following are items that summarize the performance or issues associated with each option:

**No Build**

- does not address the need for improved east/west mobility
- does not reduce truck traffic in the Springfield commercial core area

**Option A**

- moderately increases east/west mobility
- reduces truck traffic on existing state highways in Springfield
- reduces truck traffic in residential areas

- immediately improves route continuity
- improves access to Northcrest Medical Center
- slightly reduces volume/capacity ratios on SR 65/US 431
- increases developable property by providing access

#### **Option B**

- moderately increases east/west mobility
- reduces truck traffic on existing state highways in Springfield
- slightly reduces volume/capacity ratios on SR 65/US 431
- increases developable property by providing access
- has a potential to impact the UT Experimental Farm and subdivisions
- requires a grade separated interchange at SR 11/US 431 to bridge the CSXT railroad

#### **Option CA**

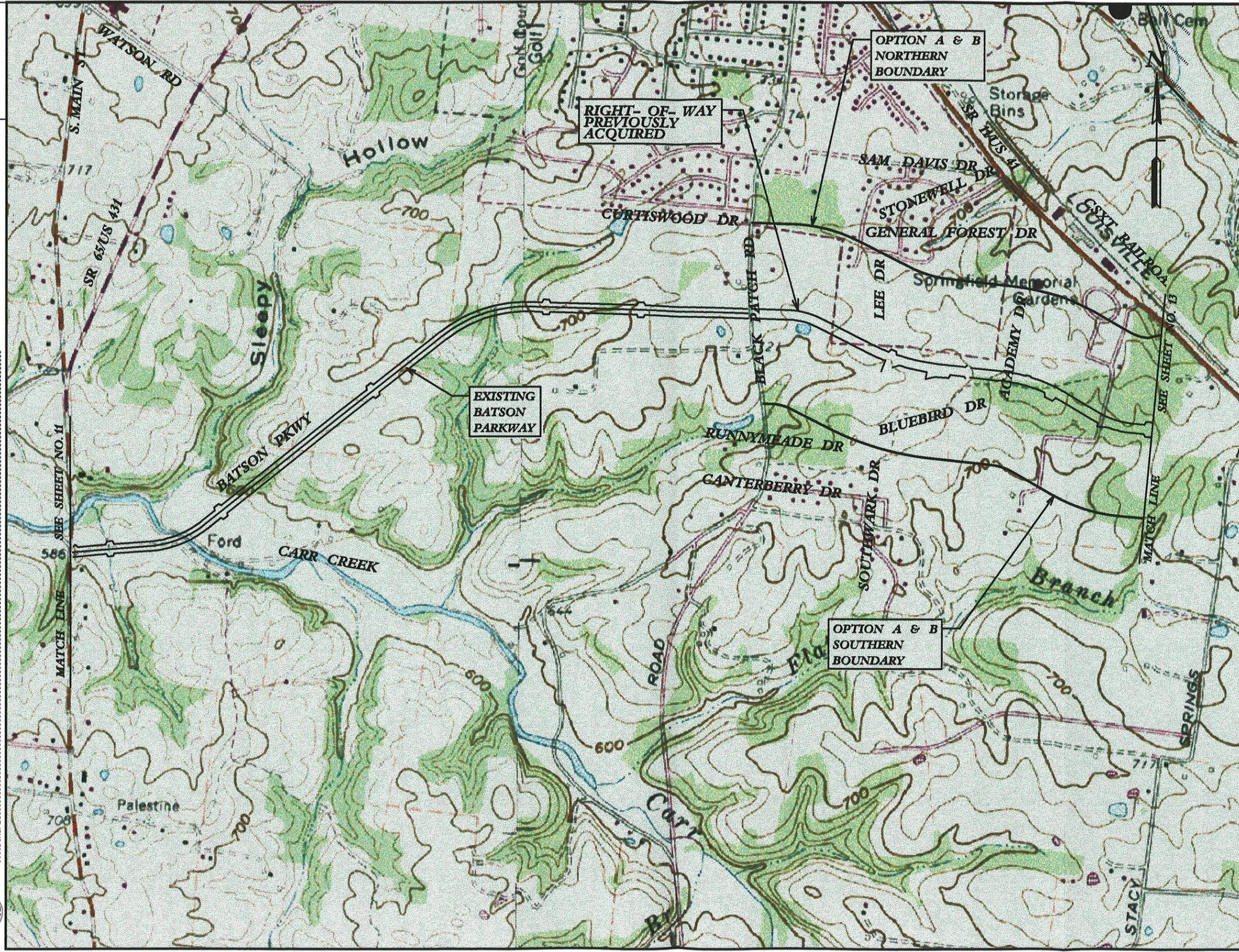
- increases east/west mobility
- reduces truck traffic on existing state highways
- reduces volume/capacity ratios on SR 49 and SR 65/US 431
- avoids impacts to the UT Experimental Farm property
- increases developable property by providing access

#### **Option CAB**

- increases east/west mobility
- reduces truck traffic on existing state highways
- reduces volume/capacity ratios on SR 49, SR 65/US 431, and SR 76
- has potential to impact the UT Experimental Farm and subdivisions
- increases developable property by providing access
- requires a grade separated interchange at SR 11/US 41 to bridge the CSXT railroad

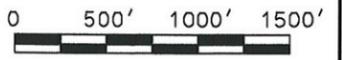


TYPE	YEAR	PROJECT NO.	SHEET NO.
TPR	2006		12



**OPTION A  
 TERMINI  
 FROM BLACK  
 PATCH RD. TO  
 SR 11/US 41**

**OPTION B  
 TERMINI  
 FROM BLACK  
 PATCH RD. TO  
 SR 76**



STATE OF TENNESSEE  
 DEPARTMENT OF TRANSPORTATION  
 BUREAU OF PLANNING & DEVELOPMENT

**OPTION A & B  
 FIGURE 12**

SYTIME  
 INSPEC





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

TYPE	YEAR	PROJECT NO.	SHEET NO.
TPR	2006		14

**OPTION B  
 TERMINI  
 FROM BLACK  
 PATCH RD. TO  
 SR 76**



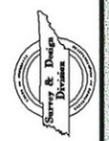
OPTION B2  
 WESTERN  
 BOUNDARY

OPTION B2  
 EASTERN  
 BOUNDARY

J.D. WORSHAM  
 HOUSE NRE

STATE OF TENNESSEE  
 DEPARTMENT OF TRANSPORTATION  
 BUREAU OF PLANNING & DEVELOPMENT

**OPTION B2  
 FIGURE 14**





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

TYPE	YEAR	PROJECT NO.	SHEET NO.
TPR	2006		16

**OPTION B  
 TERMINI  
 FROM BLACK  
 PATCH RD. TO  
 SR 76**



STATE OF TENNESSEE  
 DEPARTMENT OF TRANSPORTATION  
 BUREAU OF PLANNING & DEVELOPMENT

**OPTION B2  
 FIGURE 16**

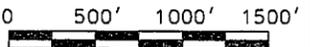
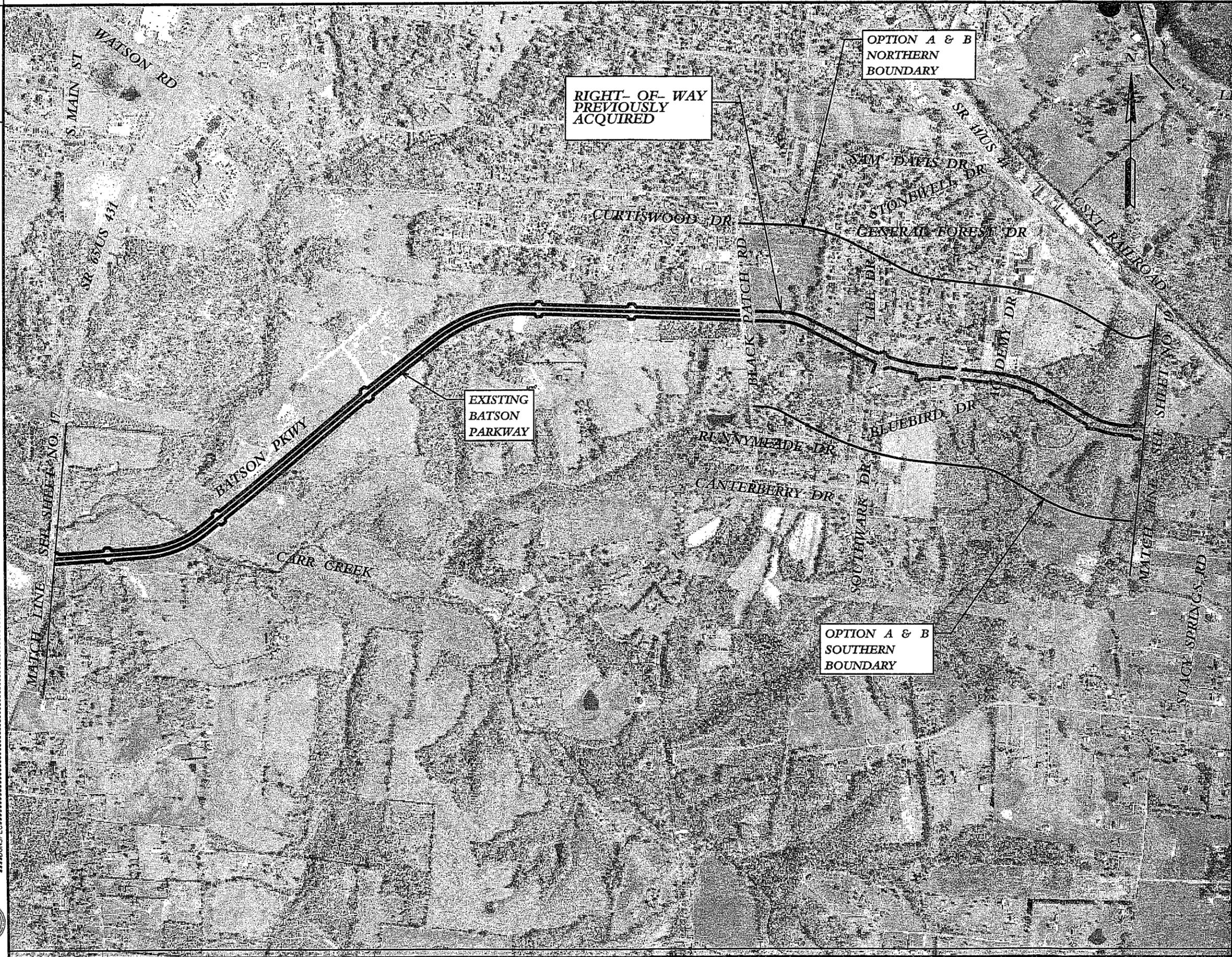




TENNESSEE D.O.T.  
 DESIGN DIVISION  
 FILE NO.

TYPE	YEAR	PROJECT NO.	SHEET NO.
TPR	2006		18

OPTION A  
 TERMINI  
 FROM BLACK  
 PATCH RD  
 TO SR 11/US 41  
 OPTION B  
 TERMINI  
 FROM BLACK  
 PATCH RD  
 TO SR 76



STATE OF TENNESSEE  
 DEPARTMENT OF TRANSPORTATION  
 BUREAU OF PLANNING & DEVELOPMENT

OPTION A & B  
 FIGURE 18



\*\*\*\*\*SYTIME\*\*\*\*\*  
 \*\*\*\*\*DONSPEC\*\*\*\*\*

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

TYPE	YEAR	PROJECT NO.	SHEET NO.
TPR	2006		19

**OPTION A  
 TERMINI  
 FROM BLACK  
 PATCH RD TO  
 SR 11/US 41**  
**OPTION B  
 TERMINI  
 FROM BLACK  
 PATCH RD TO  
 SR 76**



PREVIOUSLY  
 ACQUIRED  
 RIGHT-OF-WAY

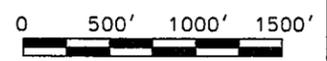
OPTION B1  
 WESTERN  
 BOUNDARY

OPTION A & B  
 SOUTHERN  
 BOUNDARY

J.D. WORSHAM  
 HOUSE NRE

HIGHLAND RIM  
 EXPERIMENT  
 STATION NRE

OPTION B1  
 EASTERN  
 BOUNDARY



STATE OF TENNESSEE  
 DEPARTMENT OF TRANSPORTATION  
 BUREAU OF PLANNING & DEVELOPMENT

**OPTION A, B, & B1**  
**FIGURE 19**







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

TYPE	YEAR	PROJECT NO.	SHEET NO.
TPR	2006		22

**OPTION B  
TERMINI  
FROM BLACK  
PATCH RD  
TO SR 76**



\*\*\*\*\*  
DESIGN SPEC  
\*\*\*\*\*



STATE OF TENNESSEE  
DEPARTMENT OF TRANSPORTATION  
BUREAU OF PLANNING & DEVELOPMENT

**OPTION B2  
FIGURE 22**