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DEPARTMENT OF TRANSPORTATION
PROJECT PLANNING DIVISION
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Gerald F. Nicely
COMMISSIONER

Phil Bredesen
GOVERNOR

MEMORANDUM

TO: Don Ellis, Manager 2
Program Development and Scheduling Office

FROM: Bill Hart, Manager 2
Project Planning Division

DATE: March 19, 2008

SUBJECT: Transportation Planning Report, State Route 136 (S. Jefferson Avenue), From State Route 111 to Interstate 40, Cookeville, Putnam County
PIN # 110348.00

I am enclosing a copy of the subject report bearing the signatures of the appropriate Department personnel. In addition, a PDF file of the study will soon be available via PPRM and the Transportal.

This report is being provided for your use in determining priorities, establishing future scheduling, and initiating further development of the project.

If you need further information, please contact me.

BH/gw

Enclosure

Cc/enc: Sam Sallee (Mayor of Cookeville), Jim Shipley (City Manager), James Mills (Planning Director), Greg Brown (Public Works Director), Randy Williams (Center Hill RPO Coordinator), Leigh Ann Tribble (FHWA)

ECc: Ed Cole, Paul Degges, Doug Delaney, Jim Moore, Robert Brown, Jeff Jones, Ed Wasserman, Steve Allen, Jeanne Stevens, Suzanne Herron, Jim Waters, Harold Jackson, Charles Bush, Elizabeth Smith, Teresa Estes, Kelly Henshaw, Terry Gladden

TRANSPORTATION PLANNING REPORT

STATE ROUTE 136 (SOUTH JEFFERSON AVENUE)

FROM STATE ROUTE 111 TO INTERSTATE 40
COOKEVILLE, PUTNAM COUNTY
PIN # 110348.00

PREPARED BY
HMB PROFESSIONAL ENGINEERS, INC.
FOR THE
TENNESSEE DEPARTMENT OF TRANSPORTATION
PROJECT PLANNING DIVISION

Approved by:	Signature	DATE
CHIEF OF ENVIRONMENT AND PLANNING		3/13/08
TRANSPORTATION DIRECTOR PROJECT PLANNING DIVISION		3-13-08
TRANSPORTATION MANAGER 2 PROJECT PLANNING DIVISION		3/7/08

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Backup Data

BACKGROUND

The Tennessee Department of Transportation (TDOT) prepared this study in response to a request from the Center Hill Rural Planning Organization (RPO) and the City of Cookeville to evaluate the corridor of State Route 136 (South Jefferson Avenue) in Putnam County, Tennessee. The specific area of study lies between Interstate 40 and State Route 111. This request was advanced due to the potential increase of commercial and retail development within this immediate area. The study corridor currently has a high volume of existing traffic and also has a significant amount of vehicular crashes over the past few years. Vicinity and location maps are provided in **Figures 1** and **2** for reference.

EXISTING CONDITIONS

The corridor of SR-136 (South Jefferson Avenue) located in the southern portion of the City of Cookeville, is classified as an urban minor arterial. This roadway is a major route that provides access to I-40 and SR-111, not only for local residents and Putnam County, but adjoining White County as well. The study area extends from SR-111 (Log Mile 0.00) located south of the City to I-40 (Log Mile 2.35). Traffic operations through the study area were divided and analyzed in three sections; 1) from SR-111 to Pigeon Roost Road, 2) from Pigeon Roost Road to Messenger Road, and 3) from Messenger Road to I-40. Three (3) different roadway cross-sections and right-of-way widths exist through the study area. The roadway cross-section consists of 12-ft travel lanes and 4-ft and 6-ft shoulders. Both the travel lanes and shoulders are comprised of asphalt.

Several side roads intersect SR-136 through the study area. The study area also contains two signalized intersections, one at W. Davis Road and the other at Bunker Hill Road near the I-40 interchange.

SR-136 – Looking south, near SR-111

From SR-111 to Messenger Road, the existing SR-136 roadway has two travel lanes. Base year (2012) annual average daily traffic (AADT) for this section is 10,860 vehicles. Existing right-of-way width along this particular area is approximately 80 feet.

SR-136 – Looking south, between Messenger Rd. and Sliger Rd.

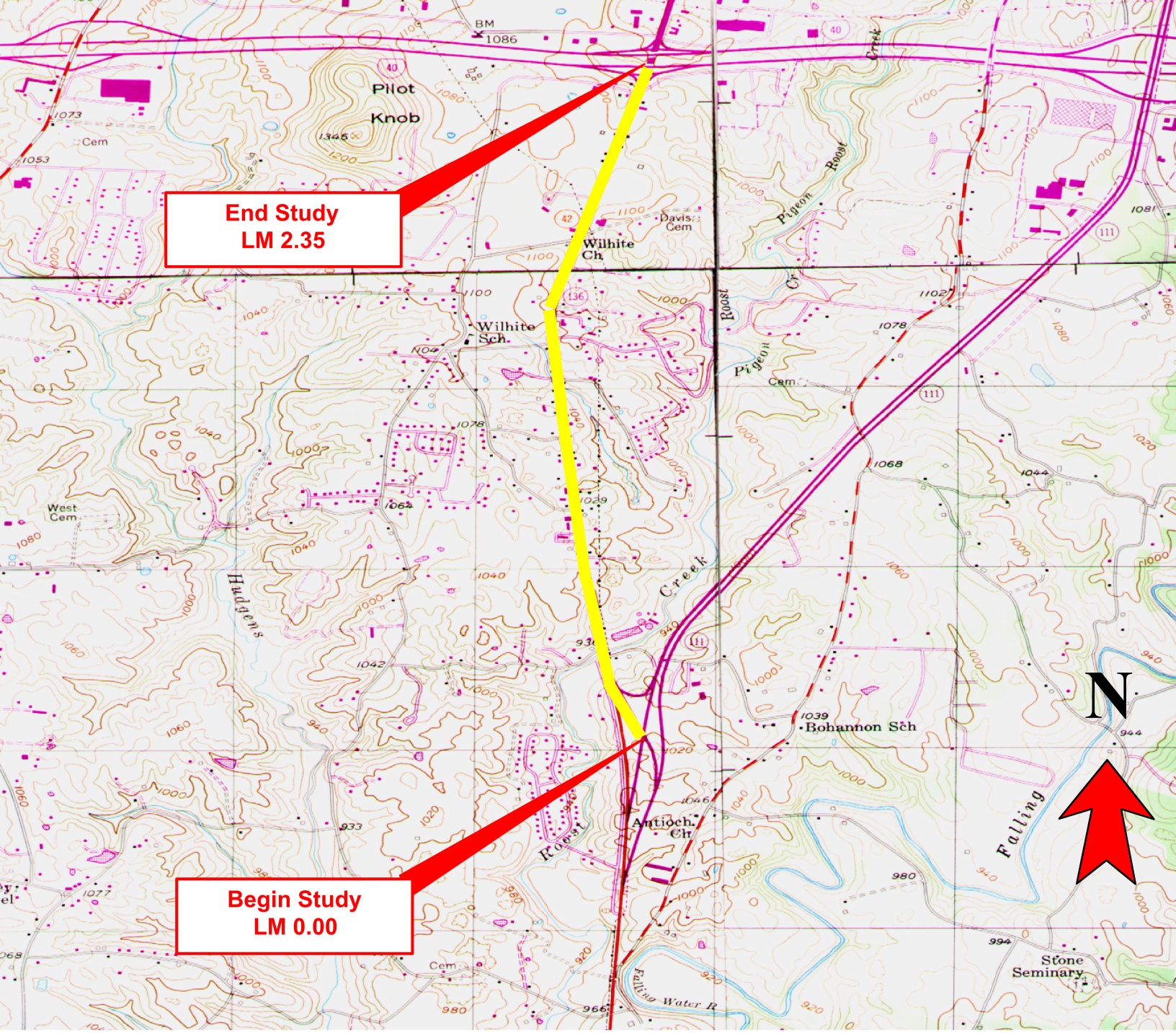
From Messenger Road to I-40, base year (2012) existing AADT is 16,390 vehicles. This section of existing roadway consists of three different pavement cross-sections and three differing right-of-way widths. Between Messenger Road and W. Davis Road, the existing roadway and right-of-way is consistent with the previously mentioned cross-section; two travel lanes and 80 feet right-of-way, respectively. At the signalized intersection of W. Davis Road and SR-136, the roadway section changes to four travel lanes; two lanes dedicated for southbound traffic, one lane dedicated for two-way left-turns, and one travel lane dedicated for northbound traffic. The right-of-way just north of this intersection widens to approximately 100-feet width. From W. Davis Road to just south of Bunker Hill Road, the existing roadway widens to five travel lanes; two lanes each direction with a two-way left turn lane. Auxiliary right-turn lanes are also present in this section of the study area. The existing right-of-way for this small section is approximately 140-feet of right-of-way.

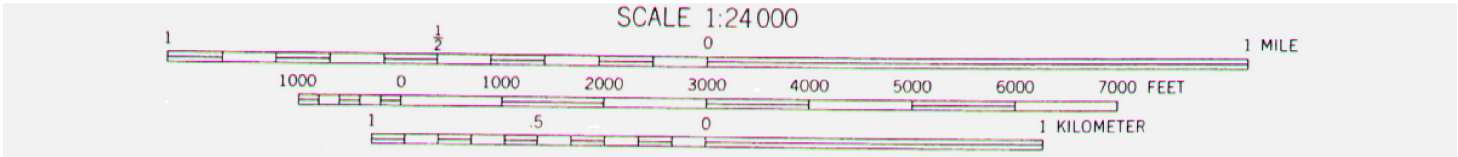
SR-136 – Looking north, just past W. Davis Rd.

The SR-136 study area is a mix of residential and heavy and light commercial/retail business. An approximate total of 17 existing single-family residential homes and 37 businesses were observed within in the study area at the time of this report. The heavy commercial/retail businesses are located predominantly near the I-40 interchange, from I-40 to W. Davis Road. This section also contains numerous driveway access points. The section from W. Davis Road to SR-111 consists of an almost equal mix of light commercial and residential. The Putnam County Solid Waste Facility and the City of Cookeville Wasterwater Treatment Plant are located near the SR-111 interchange. Two churches are also established within this section of the corridor.

Based upon City of Cookeville tax maps for the area, approximately 23 properties were observed as either vacant or appeared to be under construction throughout the study area. Most of these properties were located between SR-111 and W. Davis Road.

The City of Cookeville has identified this study area to be of significant economic importance. Because of the availability of real estate and access, the City anticipates this area will cultivate into one of the most preferred locations, ideal for retail and commercial development. Big box retail stores and hotels have recently located along this section of SR-136 near I-40. The City has indicated that plans for commercial developments are currently being discussed and foresees similar growth in the future. The City also anticipates the expansion of the county school system which has indicated an interest in purchasing real estate along SR-136 for the purpose of constructing a new elementary and middle school.





SR-136 Study Location

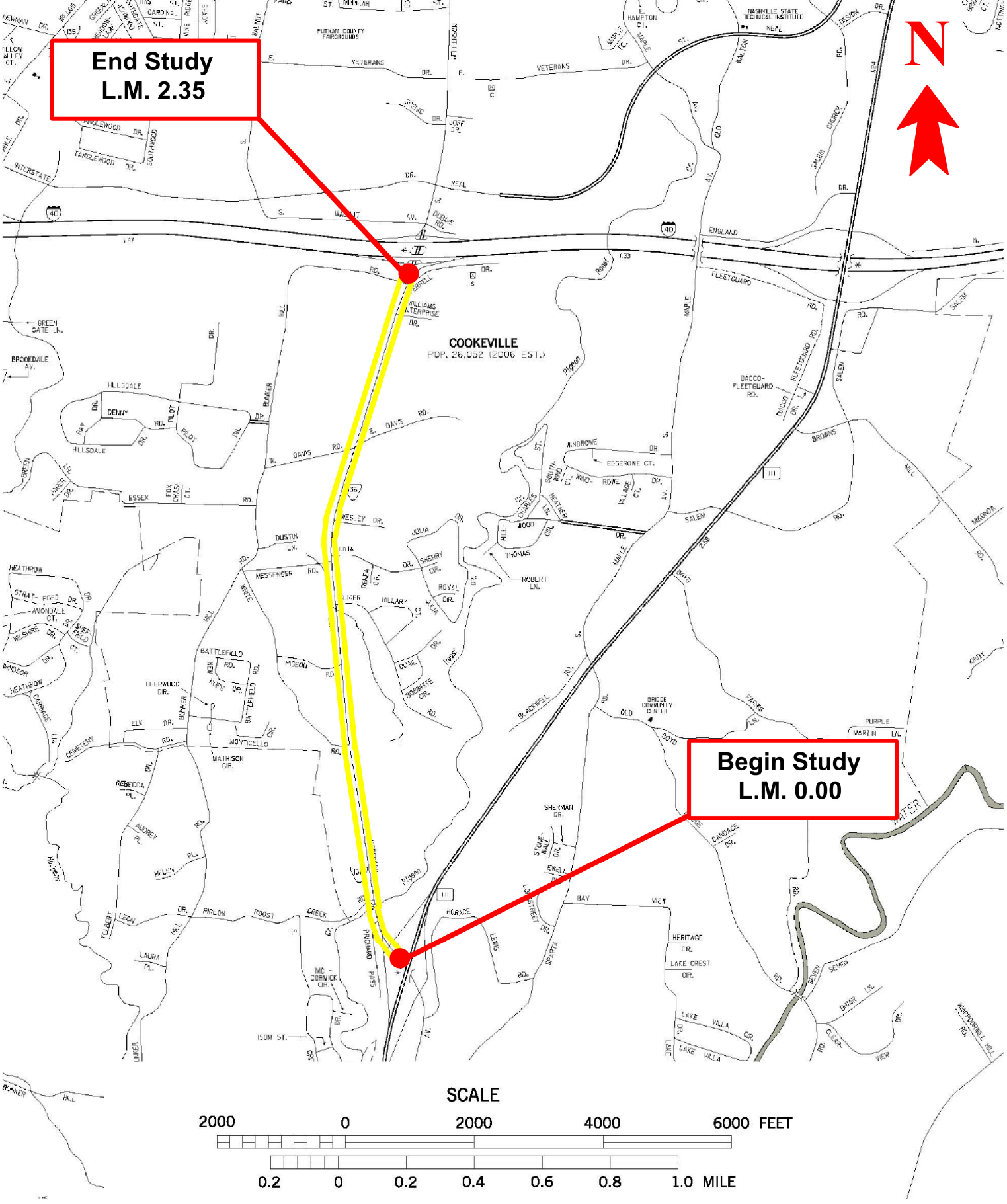
VICINITY MAP

SR-136 (S. JEFFERSON AVE.)

PUTNAM COUNTY, TN

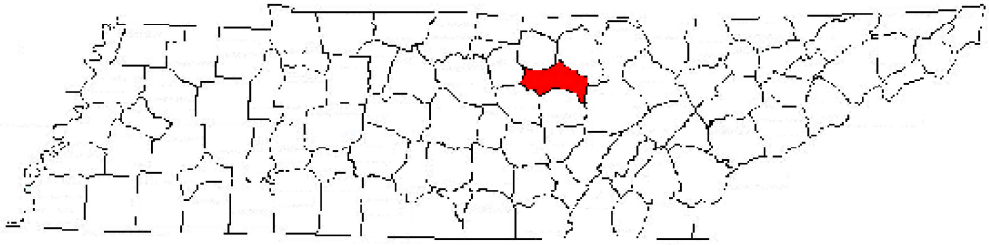
USGS BURGESS FALLS, DRY VALLEY, COOKEVILLE EAST AND COOKEVILLE WEST QUADRANGLES

Figure 1



STUDY LOCATION MAP

SR-136 (S. JEFFERSON AVE.)
PUTNAM COUNTY, TN
Figure 2



Crash Summary. For the years 2003 – 2005, TRIMS crash data obtained from TDOT indicated a total of 219 crashes reported along this section of SR-136. The crash data is divided into two parts, from SR-111 to just north of W. Davis Road, and from just north of W. Davis Road to I-40.

The segment from SR-111 to just north of W. Davis Road shows that 118 crashes occurred in this location. Of these, two fatalities occurred with four incapacitating injury crashes. Approximately 37 other injury crashes were reported. The manner of crashes in this section were predominantly rear-end related. A crash rate of 4.75 was calculated for this period, as compared to a statewide average crash rate of 2.34. The critical rate was determined to be 3.08 and the severity index was 0.45. The ratio of crashes/critical rate was 1.54 and the actual rate/statewide average was 2.03.

For the segment extending just north of W. Davis Road to I-40, a total of 101 crashes occurred. No fatalities were reported in this section however two incapacitating injuries occurred with 26 other injury related crashes. The manner of collision in this section is a mix of side-swipe and rear-end related crashes. A crash rate of 11.69 was calculated for this period, as compared to the statewide average crash rate of 2.65. The critical rate was determined to be 3.99 and the severity index was 0.30. The ratio of crashes/critical rate was 2.93 and the actual rate/statewide average was 4.41.

Crash data was also received from the City of Cookeville Police Department for years 2004-2006 and partial 2007 for the study corridor. This data indicated a high number of crashes and number of persons injured.

COMMUNITY PROFILE

The City of Cookeville is located in Putnam County, Tennessee. Geographically, Cookeville is located 79 miles east of Nashville and 101 miles west of Knoxville along Interstate 40 in the Upper Cumberland Region of Middle Tennessee. Cookeville is the county seat of Putnam County and is the largest of four cities within the county. The other municipalities are Baxter, Monterrey, and Algood. Incorporated in 1903, the City of Cookeville's current land area is 20.4 square miles.

Putnam County and Cookeville is a rapidly growing area located in the eastern portion of middle Tennessee. The county is home for some 62,000 people and its largest city, Cookeville, has about 26,000 residents. **Table 1** shows the general demographics for the City of Cookeville.

Table 1 – Population Demographics[2]

1990 Census	2000 Census	1990 – 2000 Increase	2003 Census	2000 – 2003 Increase
21,744	23,923	2,179 – 10.0%	26,052*	2,129 – 8.9%

*Special Census of annexed areas certified by the State of Tennessee, Department of Economic and Community Development.

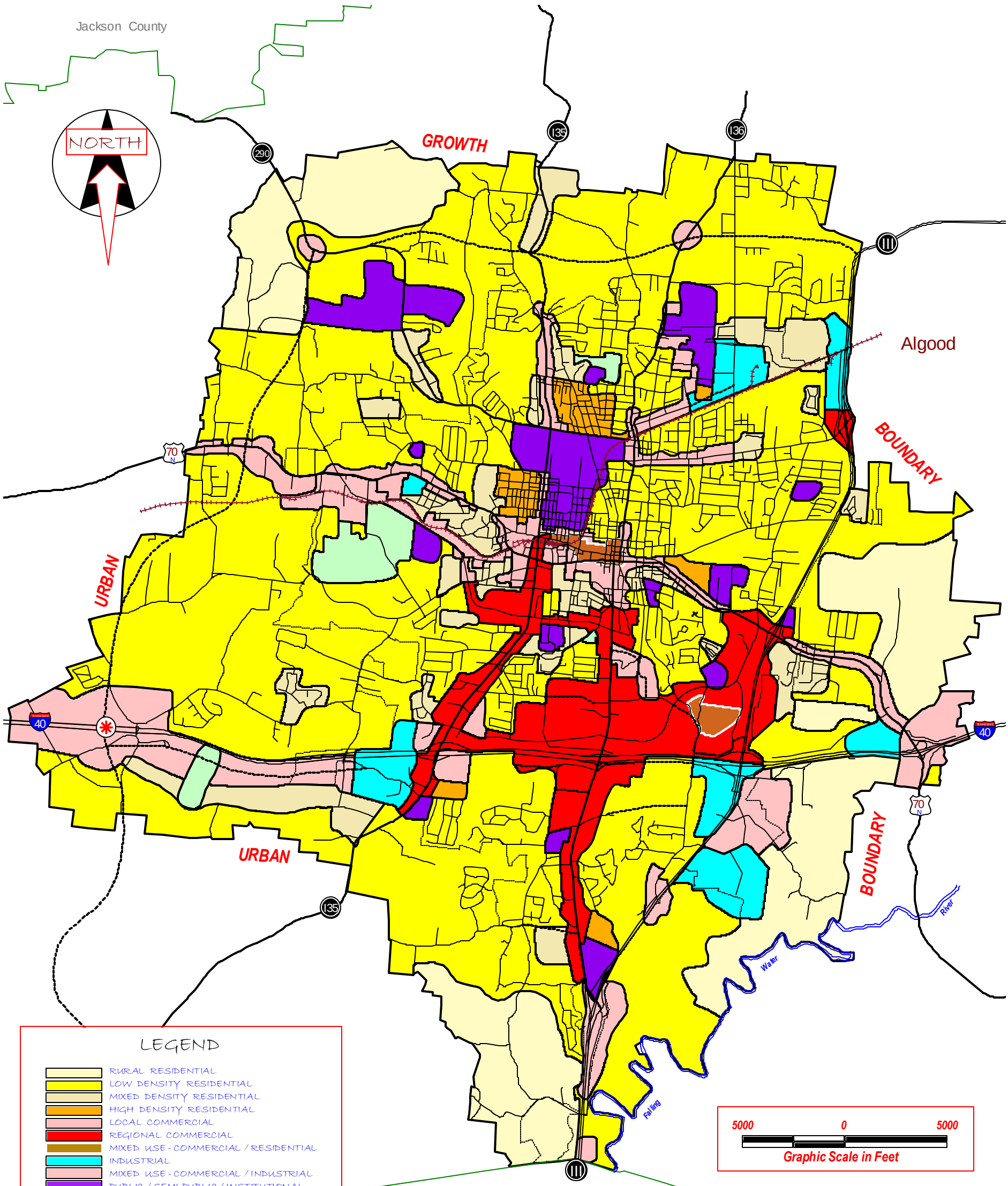
[2]**Source**: City of Cookeville Planning Department.

Forecasts by the City estimate the city population at year 2010 will be 67,128 and 73,308 by year 2020.

Cookeville is a regional center for employment, education, retailing, health care, manufacturing, and recreational/cultural activities. Approximately 15,000 Upper Cumberland Region residents travel to Cookeville each day to work, attend school, receive health care, shop, or participate in leisure time activities. Two of Cookeville's major employers, Russell Stover Candies, Inc. and Fleetguard, Inc., employ over 2000 persons alone. As well, Cookeville is the home to Tennessee Technological University which provides excellent educational opportunities for some 8,500 students.

According to the American Chamber of Commerce Researchers Association, Cookeville is one of the top 5 most economical cities in the nation. Total employment in the county has increased by 26%. Non-manufacturing jobs increased 42% during the last ten years.

The City of Cookeville has established the land use along SR-136 as an area of regional commercial activity. As outlined in the City's conceptual land use plan, SR-136 is identified as a major commercial area south of Interstate 40 and is critical to the growth and continued development of the City. A copy of Cookeville's conceptual land use plan has been included in **Figure 3** on the following page.



Resolution No. R03 - 02 - 04

EXHIBIT 1

AMENDED

FUTURE LAND USE CONCEPT PLAN

COOKEVILLE PLANNING AREA

PURPOSE AND NEED

The objective of this report is to analyze the traffic operations along a corridor of SR-136, from SR-111 to I-40, based upon several factors; 1) congestion, 2) safety and geometrics issues, and 3) socio-economic and infrastructure demands to the local community. This study was initiated due to the expanding base of commercial and retail development, as well as potential industrial development, occurring within the area. These entities are a contributing factor of additional traffic to an already congested local and commuter transportation system. Also of significant interest is the number of vehicular crashes occurring in this area.

The primary need along SR-136 (South Jefferson Avenue) is to provide for improved local and regional mobility and access. Several specific needs are included in this goal.

1. Provide an improved north/south route to serve demand for local and regional access to the interstate and neighboring counties.
2. Improve safety and mobility along SR-136.
3. Accommodate the increased traffic demand spurred by commercial development along the corridor within the local and neighboring communities.
4. Create an opportunity for additional economic growth within the City of Cookeville and Putnam County by providing an improved transportation system.

PROPOSED IMPROVEMENTS

Proposed improvements would involve upgrading the existing two-lane roadway along this section of SR-136 to a four-lane roadway section with a continuous two-way left-turn lane. Two options were considered for this project, the No-Build Option and Option A. The No-Build Option, as the name implies, would not have any improvements implemented along the corridor other than general maintenance and safety improvements necessary. Option A would follow the existing SR-136 corridor and incorporate two optional proposed roadway typical sections. Right-of-way necessary to construct the project will be dependant upon several factors such as terrain, environmental conditions, and land use.

Option A – Proposed improvements to SR-136 would be based upon utilizing the existing roadway as much as possible. Widening and improvements would occur to both sides of the roadway in order to create a proposed five-lane roadway from an existing two-lane road. Some shifting may be required in areas to minimize impacts to homes, businesses, and/or environmental resources. In addition, shifting of the roadway may also be necessary to address horizontal geometry and safety deficiencies. It should be noted that deviation from the existing centerline may have a greater impact upon right-of-way costs. Variable typical sections were considered for the proposed improvements. The selected typical section should be used consistently throughout the entire corridor. Two typical sections were deliberated for Option A.

1. An urban section would utilize four @ 12-ft travel lanes, a 12-ft continuous left-turn lane, 10-ft shoulders, and curb and gutter. Right-of-way width for this section would be approximately 104-ft, depending upon the width of turn lane and shoulder width chosen. Sidewalks would be included with this section to satisfy pedestrian requirements. In conjunction, the 10-ft shoulder could be used as a bike lane to satisfy such needs, and could potentially be reduced in order to minimize right-of-way. A layout of this typical

section is with the **Corridor Plans** with this study. Estimated right-of-way cost is approximately $4,312,000* for this option. Construction costs were estimated be $17,897,000** using this typical section for the entire study length.

2. An alternative typical section would be to design a rural roadway section, essentially utilizing similar aspects of the urban section, 4 @ 12-ft travel lanes with a 12-ft continuous left-turn lane, 12-ft shoulders, but eliminate the curb and gutter for ditches. Pedestrian and bicycle traffic could utilize the shoulder. This type of section would match better to the beginning and ending termini of the project and provide continuity. A point of concern is that rural roadway sections tend to lend to higher vehicle speeds. Right-of-way width for this particular section is also dependant upon topography since slope lines and an additional buffer area should be incorporated inside the right-of-way. This dimension is approximately 150-ft. The typical section diagram for this alternative is shown in **Appendix C - Corridor Plans** with this study. Estimated right-of-way cost is approximately $5,606,000* for this typical section option. Construction cost were estimated to be $17,045,000** using this typical section for the entire study length.

A summary of estimated costs for the two proposed typical sections is shown below in **Table 2**.

Table 2 – Estimated Costs

Typical Section Option	ROW*	Construction**	PE (10% of Constr.)	Estimated Total
5 @ 12' lanes, 10' shldr, curb/gutter	$4,312,000	$17,897,000	$1,790,000	$23,999,000
5 @ 12' lanes, 12' shldr, open ditch	$5,606,000	$17,045,000	$1,705,000	$24,355,000

* Based upon estimated 2007 TDOT ROW costs per mile for urban areas with commercial development factor applied.
**Based upon 2007 TDOT costs per mile with terrain and construction factors applied. Does not include utility relocation costs.

For both typical sections, construction to improve SR-136 would begin at the SR-111 interchange by widening the existing two-lane road to a five-lane road up to W. Davis Road. This construction would encompass approximately 1.64 miles. The addition of the two proposed travel lanes would be added/dropped at the ramps for the interchange. Widening of SR-136 beyond this point would not be justified since the traffic report indicates a reduction in traffic volumes south of this interchange. Currently very little commercial/retail development exists in this area. In addition, widening may present issues because of the structure configuration and location of bridge piers for the SR-111 overpass.

From W. Davis Road to Bunker Hill Road, only one lane would need to be constructed based upon existing conditions, for a length of 0.56 miles. The proposed typical section would tie to the existing roadway at the I-40 interchange which is currently 6 @ 12-ft travel lanes with a 12-ft continuous left-turn lane. Based upon analysis and existing conditions, no further improvements to the I-40 interchange are necessary based upon the improvements of the SR-136 corridor.

Cost estimates for right-of-way and construction were based upon the two areas previously mentioned. Layout plan sheets have been developed to indicate the study corridor area for the

aforementioned typical sections. The layout sheets were developed from GIS information obtained from the City of Cookeville.

As discussed during the stakeholder field review, the Putnam County School District is considering the addition of an elementary and middle school that would have potential impact to the study corridor. Information provided by the Putnam County Department of Education indicates the department intends to construct a new PK-8 campus that will consist of approximately 600 PK-4 students and 600 5-8 students. The School Board and City of Cookeville anticipates the extension of West Cemetery Road to connect with SR-136 in order to allow access to this new campus. Opening of these facilities is expected by Fall 2010. This additional traffic was considered during analysis of the overall corridor.

Intersection improvements were also evaluated for SR-136 and William Enterprise Drive, near the I-40 interchange. Base year 2007 traffic shows an AADT of 1,750 vehicles, while design year 2012 AADT projects 1,920 vehicles. Based upon available data and traffic signal warrants, this intersection does not warrant signalization. A copy of the traffic report has been included in **Appendix B**. Further assessment of the intersection examined crash data. The crash rate for this intersection based upon TDOT TRIMS crash data for the period 2003-2005 was 0.82, below the statewide average of 1.74. A minimum actual to critical crash ratio threshold of 3.50 is required to qualify for safety improvements. Therefore, based upon the criteria this intersection does not qualify for safety improvements as well.

During a field review meeting held on October 23, 2007 at the City of Cookeville Municipal Building, representatives from the City stated that a continuous two-way left-turn lane would be preferred over a raised median section. They mentioned in similar situations where medians were constructed, the City would ultimately end up removing the median which essentially incurred additional costs to the City. Therefore a median roadway section was not evaluated for this report. Also, the City mentioned the bike lanes would be greatly welcomed as there is a bike/pedestrian plan developed that specifically addresses this corridor. A copy of these meeting minutes is located in **Appendix A**. During this meeting, these considerations and typical sections were briefly discussed. It was further discussed that details of this nature and other design specific criteria would be resolved during public involvement associated with the environmental evaluation of this project.

LEVEL OF SERVICE

Operating conditions within a transportation route are distinguished by a "Level of Service" (LOS) analysis. This analysis reflects the ability of the road to accommodate motor vehicle traffic and subsequent physical and psychological comfort levels of drivers. A LOS analysis considers several factors including traffic volumes, number of travel lanes, terrain, truck traffic, and turning movements. Existing and projected traffic volumes for this study report are included in **Appendix B** of this report. Project volumes are for the base year (present year + 5 years) and design year (present year + 25 years). Schematic diagrams of each intersection are also included with their respective traffic volume.

LOS is a qualitative measure that describes the character of traffic conditions related to speed and travel time, freedom to maneuver, congestion, etc. There are six levels of operation ranging from "A" to "F" with "F" being the worst. A description of the operating conditions for each level is provided in the following.

LOS	Traffic Flow Condition
A	Free flow operations. Vehicles are almost completely unimpeded in their ability to maneuver within the traffic stream. The general level of physical and psychological comfort provided to the driver is the highest.
B	Reasonably free flow operation. The ability to maneuver within the traffic stream is only slightly restricted and the general level of physical and psychological comfort provided to the driver is still high.
C	Flow speeds at or near free flow. Freedom to maneuver within the traffic stream is noticeably restricted and lane changes require more vigilance on the part of the driver. The drive notices an increase in tension because of the additional vigilance required for safe operation.
D	Speeds decline with increasing traffic. Freedom to maneuver within the traffic stream is more noticeably limited. The driver experiences reduced physical and psychological comfort levels.
E	At lower boundary, the facility is at capacity. Operations are volatile because there are no gaps in the traffic stream. There is little room to maneuver. The driver experiences poor physical and psychological comfort levels.
F	Traffic flow is breakdown. The number of vehicles entering the highway section exceeds the capacity or ability of the highway to accommodate the number of vehicles. There is little to no room to maneuver. The driver experiences poor physical and psychological comfort levels.

Traffic volumes have been developed by the Tennessee Department of Transportation (TDOT) based upon Year 2012 and Year 2032. These volumes are shown in the table below.

Table 3 – Projected Traffic Volumes

	DAILY TRAFFIC VOLUMES (VEHILCES PER DAY)	
LOCATION	**YEAR 2012 AADT**	**YEAR 2032 AADT**
State Route 136 (S.Jefferson Avenue)	12,550 veh / day	17,190 veh / day

Currently traffic volumes under existing conditions indicate this corridor is operating at LOS E for both directions along SR-136, for both base year 2012 and design year 2032 conditions. The roadway is deficient based upon the aforementioned conditions and will continue to rapidly deteriorate as traffic increases along the corridor.

Traffic volume was estimated for SR-136 considering additional traffic expected from the new school campus and extension of West Cemetery Road. To determine these volumes, it was assumed traffic from West Cemetery Road would increase projected SR-136 volumes by ten percent (10%). Trip generation calculations were then performed for the school and added to the roadway network. Projected 2012 and 2032 traffic for this condition is shown below in **Table 3a**.

Table 3a – Projected Traffic Volumes (with New School Campus)

	DAILY TRAFFIC VOLUMES (VEHILCES PER DAY)	
LOCATION	**YEAR 2012 AADT**	**YEAR 2032 AADT**
State Route 136 (S.Jefferson Avenue)	15,650 veh / day	21,210 veh / day

Results of the existing conditions analysis is shown below in **Table 4**.

Table 4 – Existing Peak Hour LOS (One Lane Each Direction)

LOCATION	**DIRECTION**	**YEAR 2012**		**YEAR 2032**	
		AM PEAK HOUR	**PM PEAK HOUR**	**AM PEAK HOUR**	**PM PEAK HOUR**
SR 136 (S. Jefferson Ave.), south of I-40	Northbound and Southbound	LOS E	LOS E	LOS E	LOS E
SR 136 (S. Jefferson Ave.), west of SR 111	Eastbound and Westbound	LOS E	LOS E	LOS E	LOS E

Results of analysis considering anticipated traffic from the new school campus due to extending West Cemetery shows the same LOS as presented in **Table 4** above for existing conditions.

LOS analysis shows that proposed improvements resulting in two travel lanes in each direction will result in a level of service not less than B for both AM and PM traffic in year 2012 and 2032. Results for this LOS analysis are shown in **Table 5**.

Table 5 – Projected Peak Hour LOS (Two Lanes Each Direction)

LOCATION	DIRECTION	YEAR 2012		YEAR 2032	
		AM PEAK HOUR	PM PEAK HOUR	AM PEAK HOUR	PM PEAK HOUR
SR 136 (S. Jefferson Ave.), south of I-40	Northbound	LOS A	LOS A	LOS A	LOS B
	Southbound	LOS A	LOS B	LOS A	LOS B
SR 136 (S. Jefferson Ave.), west of SR 111	Eastbound	LOS A	LOS A	LOS A	LOS B
	Westbound	LOS A	LOS A	LOS B	LOS A

LOS decreases slightly for the proposed conditions when analyzed with the additional traffic from the West Cemetery Road extension, as shown in **Table 5a**.

Table 5a – Projected Peak Hour LOS(Two Lanes Each Direction w/New School Campus)

LOCATION	DIRECTION	YEAR 2012		YEAR 2032	
		AM PEAK HOUR	PM PEAK HOUR	AM PEAK HOUR	PM PEAK HOUR
SR 136 (S. Jefferson Ave.), south of I-40	Northbound	LOS A	LOS B	LOS A	LOS B
	Southbound	LOS A	LOS B	LOS A	LOS B
SR 136 (S. Jefferson Ave.), west of SR 111	Eastbound	LOS A	LOS A	LOS A	LOS B
	Westbound	LOS A	LOS A	LOS B	LOS A

Further LOS analysis was calculated for the interchanges at the termini of the study area; SR-136 @ SR-111 and SR-136 @ Interstate 40. Based upon level of service analysis, the existing configuration of either interchange will not require modification based upon proposed improvements along SR-136 and will therefore perform acceptably. For the interchange at SR-136 and I-40, LOS A and B were noted with LOS C being the worst condition that will occur for AM peak hour traffic for year 2032.

For the interchange at SR-111, LOS analysis indicates the ramp from SR-136 to northbound SR-111 performs at either LOS A or B except for the ramp intersection for southbound and northbound SR-111 at SR-136. Peak hour for year 2012 AM indicates a LOS E or F at these particular locations due to minor vehicle queuing. This level of service could be addressed by either widening the roadway to separate left/right turns or by signalizing the intersection. Results for the LOS analyses at these interchanges are shown in **Table 6**.

Table 6 – Projected Peak Hour LOS at Interchanges

LOCATION	TURNING MOVEMENT	YEAR 2012		YEAR 2032	
		AM PEAK HOUR	PM PEAK HOUR	AM PEAK HOUR	PM PEAK HOUR
SR 136 (S. Jefferson Ave.) and Ramps for Westbound I-40	Overall Intersection	LOS B	LOS B	LOS C	LOS B
SR 136 (S. Jefferson Ave.) and Ramps for Eastbound I-40	Overall Intersection	LOS B	LOS B	LOS C	LOS B
SR 136 (S. Jefferson Ave.) and Ramps for Southbound SR 111	Westbound Left Turns and Thrus	LOS A	LOS A	LOS A	LOS B
	Southbound Left and Right Turns	LOS C	LOS B	LOS D	LOS C
SR 136 (S. Jefferson Ave.) and Ramps for Northbound SR 111	Eastbound Left Turns and Thrus	LOS A	LOS A	LOS A	LOS A
	Northbound Left and Right Turns	LOS E	LOS C	LOS F *	LOS E *

* At the northbound SR 111 off-ramp, the northbound left and right turning movements will operate poorly during both peak hours in Year 2032. During the AM peak hour, significant vehicle queues are projected (20+ vehicles). However, during the PM peak hour, the vehicle queues are not projected to exceed three vehicles. These conditions are typical for unsignalized intersections on major roadways, and the vehicle delays are projected to occur during short periods of time during typical weekdays. The projected traffic volumes are unlikely to satisfy traffic signal warrants for eight hours of a typical weekday unless significant development occurs in the vicinity of the interchange. Also, widening the northbound ramp to include separate left and right turn lanes is unlikely to reduce the AM peak hour delays and queues because the volume of northbound right turns at this location are very low.

Similarly, **Table 6a** shows the LOS analysis results at the I-40 and SR-111 interchanges with the additional traffic estimated from West Cemetery Road. The only substantial difference is the northbound ramps at SR-111 will warrant a signal sooner than expected.

Table 6a – Projected Peak Hour LOS at Interchanges w/New School Campus

LOCATION	TURNING MOVEMENT	YEAR 2012		YEAR 2032	
		AM PEAK HOUR	PM PEAK HOUR	AM PEAK HOUR	PM PEAK HOUR
SR 136 (S. Jefferson Ave.) and Ramps for Westbound I-40	Overall Intersection	LOS B	LOS B	LOS C	LOS C
SR 136 (S. Jefferson Ave.) and Ramps for Eastbound I-40	Overall Intersection	LOS C	LOS B	LOS C	LOS C
SR 136 (S. Jefferson Ave.) and Ramps for Southbound SR 111	Westbound Left Turns and Thrus	LOS A	LOS A	LOS A	LOS B
	Southbound Left and Right Turns	LOS C	LOS B	LOS F	LOS C
SR 136 (S. Jefferson Ave.) and Ramps for Northbound SR 111	Eastbound Left Turns and Thrus	LOS A	LOS A	LOS B	LOS A
	Northbound Left and Right Turns	LOS F	LOS D	LOS F	LOS F

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. The guiding principles are discussed in the following paragraphs as they relate to the options for improving the study area of SR-136.

Guiding Principle 1: Preserve and Manage the Existing Transportation System

The corridor of State Route 136, from State Route 111 to Interstate 40, is a major route for the City of Cookeville and Putnam County. Approximately two-thirds of this corridor is currently a two-lane roadway that accommodates an annual average daily traffic of 12,550 vehicles. Traffic volumes will continue to increase with the continued commercial and retail development. Option A is intended to reduce traffic volumes, increase safety, reduce vehicle delays, and improve operation of the existing transportation system.

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

The City of Cookeville is currently home to several large manufacturing industries within the area. Improvement of the SR-136 corridor will create improved and safer access not only to commercial and industrial areas, but residential areas as well for the future. Commercial development is already prominent near the I-40 interchange. As local and regional development occurs, improvements will be necessary to address an expanding market while accommodating regional commuter activity. Improvement options should be reviewed along with discussion and input between local officials and stakeholders.

Guiding Principle 3: Support the State's Economy

An increase in commercial development is expected along the entire corridor of SR-136 as it is anticipated this area will become attractive for restaurants, entertainment, and shopping. SR-136 (South Jefferson Avenue) is a vital route not only for the City of Cookeville but Putnam County as well. This highway serves as a major commuter route as well as providing direct and indirect access for industry located within the county and outlying areas. Because of the regional accessibility, an industrial area could potentially be developed south of the SR-111 interchange at SR-136.

Guiding Principle 4: Maximize Safety and Security

A high rate of crashes occurred along the corridor for the years 2003 to 2005. Crash rates were determined to be 4.75 and 11.69 for the areas from SR-111 to W. Davis Road and from W. Davis Road to I-40, which are above the statewide averages of 2.34 and 2.65, respectively. By comparison, the City of Cookeville Police Department reported 197 crashes occurred along the corridor from years 2004 to 2007, with 66 of these crashes injury related. The two-lane rural roadway section is not conducive to the high traffic volumes and numerous driveways along the corridor. Many of the crashes can be attributed to high vehicular speeds in what could be considered an urbanized commercial area. Widening improvements would assist in alleviating crashes by providing additional traffic capacity. Addressing geometric issues, such as horizontal and vertical alignment, sight and stopping distances, etc., allows for safer operation of the overall facility at speeds designed for the traffic volumes, surrounding area, and usage of the roadway.

Guiding Principle 5: Build Partnerships for Livable Communities

Over 15,000 persons, over half of the City of Cookeville's total population, commute to Cookeville each day from the surrounding Upper Cumberland Region. Communication and involvement with stakeholders who utilize this corridor is crucial to the overall community in order to promote and encourage commuters to travel to Cookeville.

Guiding Principle 6: Promote Stewardship of the Environment

A detailed environmental study will be necessary to implement the improvements described by each option. Public involvement will be essential in determining the best possible solution to various situations along the corridor. The options discussed do not pose a significant impact to the environment.

Guiding Principle 7: Promote Financial Responsibilities

Preliminary cost estimates have been developed for right-of-way, construction, and preliminary engineering based on the various roadway typical sections considered for this report. The estimated costs are summarized in **Table 7** below. These per mile estimated costs are offered for assessment purposes. Fluctuation of these costs are anticipated due to inflation and unforeseen conditions. The goal is to follow a comprehensive planning process that will promote coordination among public and private operators of transportation systems, and support efforts that will provide stable funding for the public component of this system. A fiduciary responsibility is necessary for the development and implementation of projects to minimize costs to the taxpayer.

Table 7 – Summary of Estimated Costs

Typical Section Option	ROW	Construction**	PE (10% of Constr.)	Estimated Total
5 @ 12' lanes, 10' shldr, curb/gutter	$4,312,000	$17,897,000	$1,790,000	$23,999,000
5 @ 12' lanes, 12' shldr, open ditch	$5,606,000	$17,045,000	$1,705,000	$24,355,000

**Based upon 2007 TDOT costs per mile with terrain and construction factors applied. Does not include utility relocation costs which could potentially be estimated at $2,000,000 - $4,000,000.

PRELIMINARY ENVIRONMENTAL ANALYSIS

Information provided by TDOT and a field level survey conducted of the project area indicates there are no known historic properties within the study area.

A review within the Area of Potential Effects (APE) displays there is some potential impact to floodplain located near the southern termini of the project, near SR-111, due to Pigeon Roost Creek. The APE is the geographic area in which an activity may directly or indirectly impact the environment. A floodplain map, as provided by the Federal Emergency Management Agency (FEMA), indicates an area near the southern portion of the corridor lies within the designated zone due to Pigeon Roost Creek. The limited improvements should have minimal impact or

effect, if any, to the existing flood zone. A copy of the floodplain map is provided on the following pages in **Figure 4a** and **4b**.

Pigeon Roost Creek is part of the Caney Fork River Basin. As indicated by the Tennessee Department of Environment and Conservation (TDEC), Pigeon Roost Creek is on 303(d) list for sensitive waters of the state.

An evaluation of existing environmental conditions was noted during the stakeholder field review and noted in the Preliminary Environmental Evaluation checklist. A copy of the form is provided on the following pages.

SUMMARY

SR-136 (S. Jefferson Avenue) in Putnam County is a two-lane arterial roadway that serves an increasingly high volume of both commuter, local, and industrial vehicles each day. SR-136 serves as a connector not only for outlying areas within Putnam County and other neighboring counties, but provides access to Interstate 40 and downtown Cookeville which is critical to industry located in the region. The population of Cookeville has continued to grow, increasing approximately 8.9% from 2000 to 2003. This area along SR-136 is one of the last remaining undeveloped areas in the Cookeville corporate limits. The availability and cost of real estate in the surrounding area makes this corridor attractive to commercial and retail development. As this growth and expansion occurs within Cookeville, local development will contribute more vehicles to the local transportation system.

The traffic analysis reveals that for the base year 2012, AADT is 12,550 vehicles and the SR-136 corridor operates at LOS E. Future year 2032 AADT projects 17,190 vehicles for this area and will continue to operate at LOS E. The high traffic volumes combined with high posted speed limits creates a high number of crashes and the crash rate along the corridor is above the Tennessee statewide average crash rate. Analysis has shown that the recommended roadway sections will improve traffic operation for the base and future year to LOS A or B.

Improvements to the SR-136 corridor, from SR-111 to I-40, are necessary to achieve the following criteria:

- Address operational and safety concerns for current and project traffic.
- Provide greater commuter access to local and regional transportation facilities.

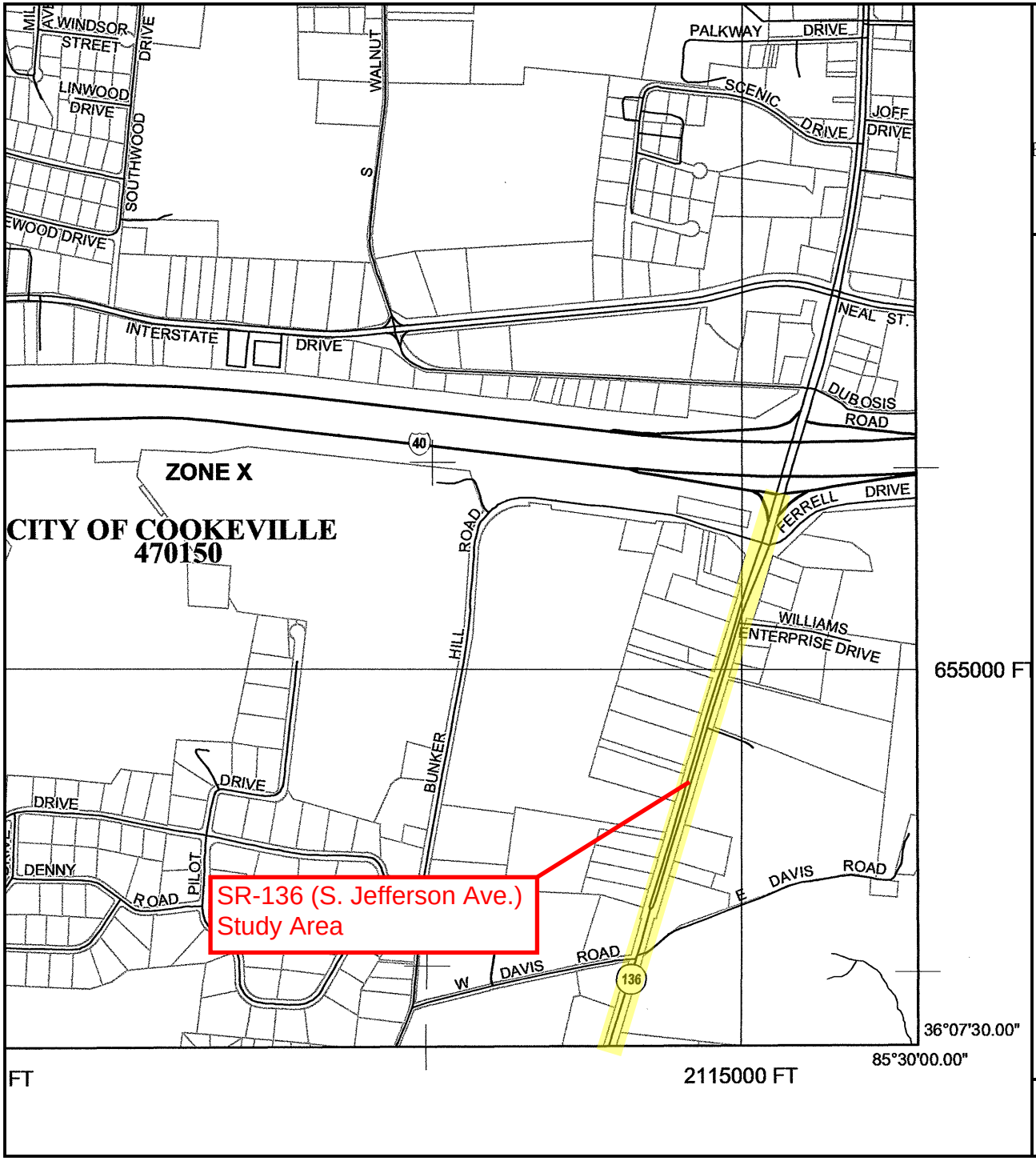
Two alternative typical section options were considered in addressing the purpose and need of this project. The following is a summary of these options.

Section 1

- Construct an urban-type roadway consisting of 4 @ 12’ travel lanes having a 12’ continuous two-way left turn lane, 10’ shoulders, and curb and gutter with sidewalks.
- Approximate right-of-way width is 104’ for this typical section.
- Estimated Right-of-Way Cost = ±$4,312,000.
- Estimated Construction Cost = ±$17,897,000.

Section 2

- Construct an open ditch roadway section consisting of 4 @ 12’ travel lanes with a 12’ continuous two-way left turn lane, 12’ shoulders, and open ditch.
- Estimated right-of-way width for this section can vary from approximately 150’ to 200’.
- Estimated Right-of-Way Cost = ±$5,606,000.
- Estimated Construction Cost = ±$17,045,000.



MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

FIRM

FLOOD INSURANCE RATE MAP

PUTNAM COUNTY, TENNESSEE

AND INCORPORATED AREAS

PANEL 120 OF 400

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
PUTNAM COUNTY	470149	0120	D
COOKEVILLE, CITY OF	470150	0120	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

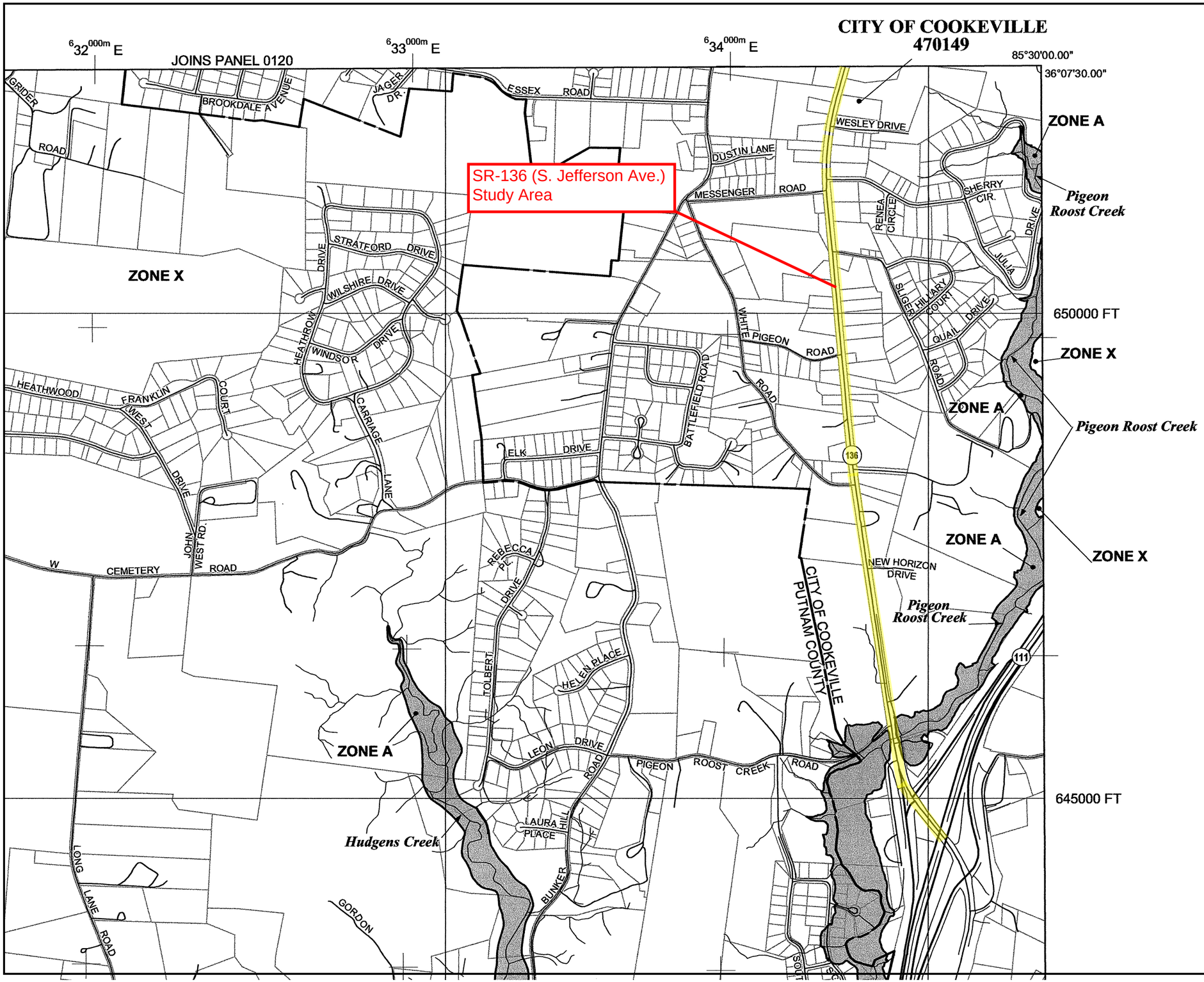
MAP NUMBER
47141C0120D

EFFECTIVE DATE
MAY 16, 2007

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

Figure 4a



MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

FIRM

FLOOD INSURANCE RATE MAP

PUTNAM COUNTY, TENNESSEE

AND INCORPORATED AREAS

PANEL 285 OF 400

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
PUTNAM COUNTY	470149	0285	D
COOKEVILLE, CITY OF	470150	0285	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
47141C0285D

EFFECTIVE DATE
MAY 16, 2007

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

Figure 4b

Preliminary Environmental Evaluation

If preliminary field reviews indicate the presence of any of the following facilities or Economic, Social and Environmental categories (ESE), place the number of facilities in the blank opposite the item. Where more than one location option is to be considered, place its letter designation in the blank.

		Option
1.)	Hazardous Material Site or Underground Storage Tanks.....	
2.)	Floodplains.....	X
3.)	Historical, archaeological, cultural, or natural landmark, or cemeteries.....	
4.)	Airport.....	
5.)	Residential establishment.....	X
6.)	Urban area, city, town, or community..... (Cookeville, Est. Pop. 25,065)	X
7.)	Commercial area, shopping center.....	X
8.)	Institutional usages:	
	a. School or other educational institution.....	
	b. Hospital or other medical facility.....	
	c. Church or other religious institution.....	X
	d. Public Building, e.g., fire station.....	X
	e. Defense installation.....	
9.)	Agricultural land usage.....	
10.)	Forested land.....	
11.)	Industrial park, factory.....	
12.)	Recreational usages:	
	a. Park or recreational area, State Natural Area.....	
	b. Wildlife refuge or wildlife management area.....	
13.)	Waterway:	
	a. Lake.....	
	b. Pond.....	
	c. River.....	
	d. Stream.....	X
	e. Spring.....	
14.)	Railroad Crossings.....	
15.)	Location coordinated with local officials.....	
16.)	Other.....	

Figure 5

2007 COST DATA SHEET - STATE ROUTE 136, PUTNAM COUNTY, TN

ROW Cost Per Mile x ROW Factor + Construction Cost Per Mile x Terrain Factor x Construction Factor
+ PE Cost (10% of Construction Cost) x Distance

Base Per Mile ROW Cost* $845,000

Right Of Way (ROW) Factor**

Area	Factor
CBD	3.25
CBD Urbanized	12.50
Heavy Commercial (High Rise, Large Building)	3.25
Strip Commercial	3.25
Fringe (Mixed, Residential/Commercial)	1.75
Industries (Factories, Warehouse)	1.75
Light Residential (1/4- Acres)	1.75
Medium Residential (Acres+)	1.75
Heavy Residential (Apartments)	1.75
Public Use (Parks, School)	1.75
Rural	1.00

Base Per Mile Construction Cost *** $2,684,000

Terrain Factor **

Area	Factor
Flat	1.00
Rolling	1.30
Mountainous	2.30
Heavy Mountainous	3.90

Construction Factor**

Recommendation	Factor	Recommendation	Factor
New 2 Lane	1.00	New 4 Lane	2.00
Reconstruct 2 Lane	1.00	Reconstruct 4 Lane	2.00
Reconstruct 3 Lane	1.50	Reconstruct 4 to 6 Lane	2.00
Reconstruct 2 to 4 Lane	2.00	Reconstruct 4 to 7 Lane	2.50
Reconstruct 2 to 5 Lane	2.50	New 4 Lane Interstate	3.60
Reconstruct 2 to 6 Lane	2.90	Add 2 Interstate Lanes	3.50
Reconstruct 2 to 7 Lane	3.30	Add 4 Interstate Lanes	3.60

Interstate Urbanized Area Factor **** = Construction Factor x 1.5

Preliminary Engineering Cost 10% of construction cost

* Cost based on a per mile ROW cost for a rural area from cost data supplied by the Programming Office for previous need studies.

** Factor based on cost data supplied by the Programming Office for previous need studies.

*** Cost based on constructing a 2 lane road on level terrain from cost data supplied by the Programming Office for previous need studies.

**** Factor based on interchange / interchange modification cost in urbanized areas.

From SR-111 (LM 0.00) to W. Davis Rd. (LM 1.69)

STATE ROUTES				Construction			
		Area Factor	Terrain Factor	Factor	Area Factor	Length	
ROW	$845,000	1.75				1.69	$2,499,088
CON	$2,684,000	1.05	1.30	2.50		1.69	$15,478,964
PE					0.10		$1,547,896
Total Cost							$ 19,525,947

Note: Construction Cost includes 1.05 factor for curb & gutter typical section.

From W. Davis Rd (LM 1.69) to I-40 (LM 2.35)

STATE ROUTES				Construction			
		Area Factor	Terrain Factor	Factor	Area Factor	Length	
ROW	$845,000	3.25				0.66	$1,812,525
CON	$2,684,000	1.05	1.30	1.00		0.66	$2,418,016
PE					0.10		$241,802
Total Cost							$ 4,472,342

Note: Construction Cost includes 1.05 factor for curb & gutter typical section.

Total Estimated ROW	$4,312,000
Total Estimated Construction	$17,897,000
Total Estimated PE	$1,790,000
Total Estimated Cost	**$23,999,000**

SR-136 (South Jefferson Avenue)
From Sr-111 to I-40
Cookeville, Putnam County

Figure 6

5 @ 12' Lanes , 10' Shldr, curb gutter

2007 COST DATA SHEET - STATE ROUTE 136, PUTNAM COUNTY, TN

ROW Cost Per Mile x ROW Factor + Construction Cost Per Mile x Terrain Factor x Construction Factor
+ PE Cost (10% of Construction Cost) x Distance

Base Per Mile ROW Cost* $845,000

Right Of Way (ROW) Factor**

Area	Factor
CBD	3.25
CBD Urbanized	12.50
Heavy Commercial (High Rise, Large Building)	3.25
Strip Commercial	3.25
Fringe (Mixed, Residential/Commercial)	1.75
Industries (Factories, Warehouse)	1.75
Light Residential (1/4- Acres)	1.75
Medium Residential (Acres+)	1.75
Heavy Residential (Apartments)	1.75
Public Use (Parks, School)	1.75
Rural	1.00

Base Per Mile Construction Cost *** $2,684,000

Terrain Factor **

Area	Factor
Flat	1.00
Rolling	1.30
Mountainous	2.30
Heavy Mountainous	3.90

Construction Factor**

Recommendation	Factor	Recommendation	Factor
New 2 Lane	1.00	New 4 Lane	2.00
Reconstruct 2 Lane	1.00	Reconstruct 4 Lane	2.00
Reconstruct 3 Lane	1.50	Reconstruct 4 to 6 Lane	2.00
Reconstruct 2 to 4 Lane	2.00	Reconstruct 4 to 7 Lane	2.50
Reconstruct 2 to 5 Lane	2.50	New 4 Lane Interstate	3.60
Reconstruct 2 to 6 Lane	2.90	Add 2 Interstate Lanes	3.50
Reconstruct 2 to 7 Lane	3.30	Add 4 Interstate Lanes	3.60

Interstate Urbanized Area Factor **** = Construction Factor x 1.5

Preliminary Engineering Cost 10% of construction cost

* Cost based on a per mile ROW cost for a rural area from cost data supplied by the Programming Office for previous need studies.

** Factor based on cost data supplied by the Programming Office for previous need studies.

*** Cost based on constructing a 2 lane road on level terrain from cost data supplied by the Programming Office for previous need studies.

**** Factor based on interchange / interchange modification cost in urbanized areas.

From SR-111 (LM 0.00) to W. Davis Rd. (LM 1.69)

STATE ROUTES				Construction			
		Area Factor	Terrain Factor	Factor	Area Factor	Length	
ROW	$845,000	1.75		1.30		1.69	$3,248,814
CON	$2,684,000		1.30	2.50		1.69	$14,741,870
PE					0.10		$1,474,187
Total Cost							$ 19,464,871

NOTE: Construction Factor of 1.30 applied to ROW based upon add'l area anticipated for open ditch typical section.

From W. Davis Rd (LM 1.69) to I-40 (LM 2.35)

STATE ROUTES				Construction			
		Area Factor	Terrain Factor	Factor	Area Factor	Length	
ROW	$845,000	3.25		1.30		0.66	$2,356,283
CON	$2,684,000		1.30	1.00		0.66	$2,302,872
PE					0.10		$230,287
Total Cost							$ 4,889,442

NOTE: Construction Factor of 1.30 applied to ROW based upon add'l area anticipated for open ditch typical section.

Total Estimated ROW	$5,606,000
Total Estimated Construction	$17,045,000
Total Estimated PE	$1,705,000
Total Estimated Cost	**$24,355,000**

SR-136 (South Jefferson Avenue)
From Sr-111 to I-40
Cookeville, Putnam County

Figure 7

5 @ 12' Lanes, 12' Shldr, open ditch

Appendix A – Field Review Meeting Minutes

DEPARTMENT OF TRANSPORTATION
BUREAU OF PLANNING AND DEVELOPMENT
PLANNING DIVISION

FIELD REVIEW REPORT

Region	County	Project No.	Type of Report:
2	Putnam	99107-7086-04	Transportation Planning Report (TPR)

Route No. & Termini:	Date	Date of Inspection
SR-136 (South Jefferson Avenue) From SR-111 to I-40	10/24/07	10/23/07

Inspection Made By:

Don Van Hook – TDOT Survey
Greg Taylor – TDOT Design
Barry McClendon – TDOT Survey
Jim Shipley – City of Cookeville
James Mills – City of Cookeville
Michael Swallop – HMB Professional Engineers, Inc.
Gillian Fischbach – Fischbach Transportation Group, Inc.
Mike Biggs – HMB Professional Engineers, Inc.
Tommy Winningham – City of Cookeville
Greg Brown – City of Cookeville
Glen Paschal – TDOT Traffic
Gary Chapman – TDOT Survey
C.L. Tilley – TDOT Planning
Leigh Ann Tribble – FHWA
Gary Webber – TDOT Planning

Written Comments Received From:
None

General Comments:

1. Introductions to all parties attending, HMB explained and discussed the background and scope of the project.
2. The City stated it would like to see a five lane urban section.
3. HMB states that there are a significant amount of crashes in this corridor. Most crashes on the south end are rear-end crashes, while the northern portion sees more side swipes. There have been two fatalities in the past three years, along with four severe crashes. Crash data indicates these occurred in the southern portion of the project.

4. It was suggested to consider a section having five lanes with shoulders with the potential for a seven lane section in the future. Future traffic does not warrant a seven lane section.
5. A question was asked if adding bicycle lanes would be considered. The City of Cookeville stated it welcomes bicycle lanes. It was stated that a 92 foot section with the shoulder used as a bicycle path could be considered. The City has already adopted a bike/pedestrian plan and has considered bike lanes for this corridor.
6. It was explained that this study is not tied to any particular design. This project involves a corridor study, and is to show a preliminary section, not a specific ROW. Problems should be identified and typical sections recommended with costs.
7. It was stated that there is a significant difference in the amount of traffic between north and south of SR-111 due to commuters and industry. Putnam County is a regional area which sees a lot of traffic from neighboring counties.
8. HMB reviewed the posted speeds of the sections. Starting from the north terminal at I-40 going south, the speeds are 40 mph, then 45 mph, then 55 mph near SR-111.
9. A question was raised about the presence of any historic or environmentally sensitive sites. HMB responded that as of this date no known sites exist. However, there are two churches, one of which is a rescue mission.
10. There is potential for a K-8 school campus holding 1500 students to be built near the south end of the project. It is estimated that this school will open in approximately two to three years. This is in the City's major road plan, and funds have already been allocated. The property is currently in negotiation. There is also potential for W. Cemetery Road to be extended and tied into White Road. The intersection at this school would probably need to be signalized.
11. It was stated that this project is number one on the RPO priority list.
12. A question was raised by TDOT personnel as to whether any large development is planned south of SR-111. The City stated that when it extends utilities, such as water and sewer, there could be development in this region. There are potential talks of an industrial area south of SR-111. It was reminded that the SR-136 designation ends at SR-111.
13. TDOT personnel stated that the next phase after the TPR would be an environmental study with public input.
14. TDOT personnel stated that options other than a five lane section would be suggested, such as a four lane section with a median and a no-build. It was stated that a median section works well in a rural area, but the City has problems with medians and eventually ends up removing them when further development occurs.
15. The City prefers curb and gutter along the corridor to control access.
16. TDOT personnel stated that a safety study was requested for William Enterprise Road. This intersection near I-40 was studied by TDOT but did not meet the requirements for signalizing. TDOT personnel agreed to send HMB a copy of this information.
17. HMB made closing comments and reminded everyone that copies of this report will be sent to each person, who may make additional comments or questions.

18. The City of Cookeville requested a copy of the TPR report at such time it is complete.
19. A comment was made that some modifications may be required to the SR-111 interchange. In addition, future growth south of this interchange may also impact and affect improvements to this interchange.

SR136 (Jefferson Ave.) Putnam SR111 to I-40

10-23-07
Municipal Bldg

Name	Agency	Phone	E-mail
Don VanHook	TDOT Survey	423-892-3430	Hatton.Vanhook@state.tn.us
Greg Taylor	TDOT Design	423-510-1170	greg.taylor@state.tn.us
Barry McClendoon	TDOT Survey	423-510-1240	Robert.McClendoon@state.tn.us
Jim Shipley	City of CKVL	931-520-5240	jshipley@cookeville-tn.org
James Mills	City of Cookeville	931-520-5238	jam@cookeville-tn.org
Michael Swallop	HMB	301-748-8893	mswallop@umd.edu
Gillian Fischbach	FTG	615-771-8022	Gillian@FTGtraffic.com
Mike Biggs	~~HMB Engr.~~	615-361-4345	mbiggs@hmbpc.com
Tommy Winningham	City of Cookeville	931-520-5447	Traffic@cookeville-tn.org
Greg Brown	City of Cookeville	931-520-5247	gbrown@cookeville-tn.org
Glen Pascual	T.D.O.T Traffic	423-510-1208	Glen.Pascual@state.tn.us
Gary Chapman	TDOT Survey	423-510-1144	gary.chapman@state.tn.us
C.L. Tilley	TDOT Planning	615-741-5268	C.L.Tilley@state.tn.us
Leigh Ann Tribble	FHWA	615-781-5760	LeighAnn.Tribble@fhwa.dot.gov
Gary Webber	TDOT Planning	615-741-5372	Gary.Webber@state.tn.us

Appendix B – Traffic Report

TENNESSEE DEPARTMENT OF TRANSPORTATION
PROJECT PLANNING DIVISION

PROJECT NO.: _____ ROUTE: S.R.-136
COUNTY: PUTNAM CITY: COOKEVILLE
PROJECT PIN NUMBER: _____
PROJECT DESCRIPTION: FROM SOUTH OF S.R.-111 TO I-40.

DIVISION REQUESTING:

MAINTENANCE	☐	PAVEMENT DESIGN	☐
PLANNING	☒	STRUCTURES	☐
PROG. DEVELOPMENT & ADM.	☐	SURVEY & DESIGN	☐
PUBLIC TRANS. & AERO.	☐	TRAFFIC SIGNAL DESIGN	☐
		OTHER _____	☐

YEAR PROJECT PROGRAMMED FOR CONSTRUCTION: _____
PROJECTED LETTING DATE: _____

TRAFFIC ASSIGNMENT:

BASE YEAR		*SEE ATTACHMENTS DESIGN YEAR					DESIGN ROADWAY % TRUCKS		DESIGN AVERAGE DAILY LOADS	
AADT	YEAR	AADT	DHV	%	YEAR	DIR.DIST.	DHV	AADT	FLEX	RIGID
12,550	2012	17,190	1,719	10	2032	65-35	3	5		

REQUESTED BY: NAME GARY WEBBER DATE 5/17/07
DIVISION PLANNING
ADDRESS SUITE 900 J .K. POLK BLDG.
NASHVILLE, TN 37243

REVIEWED BY: TONY ARMSTRONG Tony Armstrong DATE 8·23·07
TRANSPORTATION MANAGER 1
SUITE 1000, JAMES K. POLK BUILDING

APPROVED BY: BILL HART Bill Hart DATE 8·23·07
TRANSPORTATION MANAGER 2
SUITE 900, JAMES K. POLK BUILDING

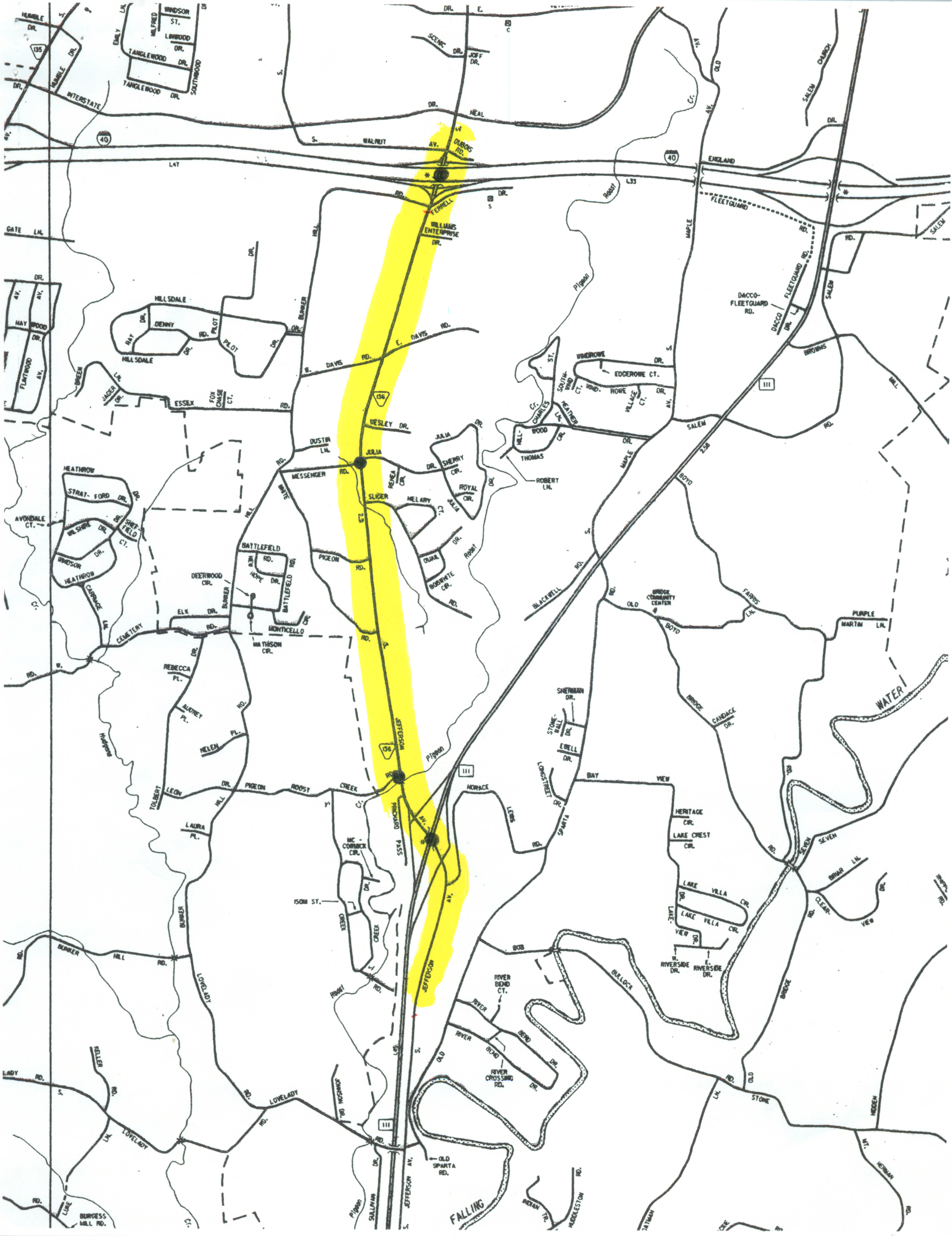
COMMENTS:

TRAFFIC BASED ON 2 -24 HOUR MACHINE COUNTS DATED: 6/19/07 AND ALL CYCLE COUNT STATIONS WITHIN THE PROJECT LIMITS. FUTURE TRAFFIC BASED ON CYCLE COUNT GROWTH TRENDS AND CALCULATIONS BY THE ADAM COMPUTER PROGRAM.

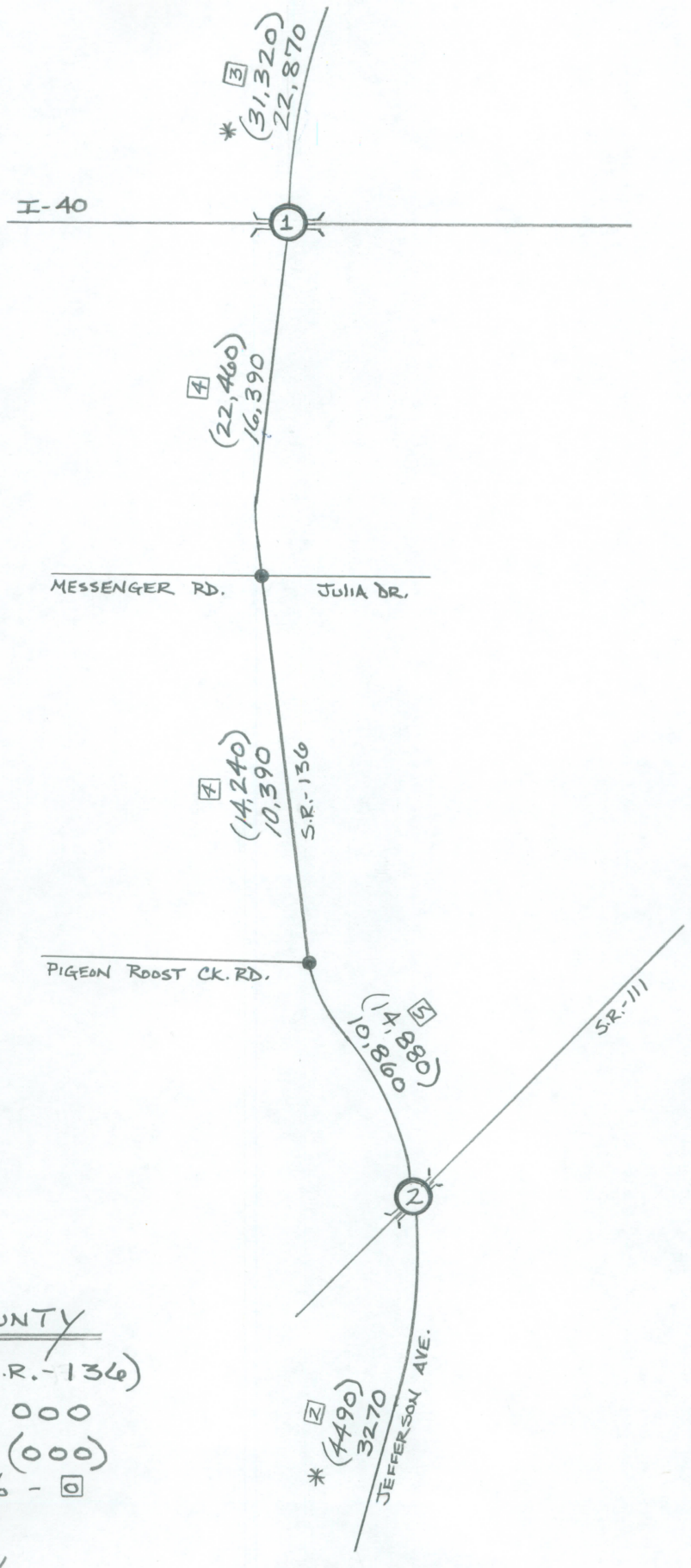
* INTERCHANGE & RAMP AADT's BASED ON 2-8 HOUR COUNTS DATED: 8/7/2007.

DHV'S ARE NOT REQUIRED FOR SIDE ROADS LESS THAN 1000 AADT.

NOTE: FOR BRIDGE REPLACEMENT PROJECTS, ADLs ARE NOT REQUIRED FOR AADT's OF 1000 OR LESS AND PERCENTAGE OF TRUCKS OF 7% OR LESS.
SEE ATTACHMENTS FOR TURNING MOVEMENTS AND/OR OTHER DETAILS. (REV. 11/6/06)



INTERSTATE
DR.
S. WALNUT AV.
DUBOIS RD.
NEAL DR.
SCENIC DR.
JOFF DR.
ENGLAND
FLEETGUARD
FERRELL RD.
WILLIAMS ENTERPRISE DR.
GATE LN.
HILLSDALE
DENNY
PILOT
BUNKER HILL
E. DAVIS RD.
W. DAVIS RD.
ESSEX RD.
FOX CHASE CT.
JAGER DR.
WESLEY DR.
DUSTIN LN.
JULIA
MESSENGER RD.
SLIGER
HILLARY CT.
SHERRY CIR.
ROYAL CIR.
JULIA DR.
HEATHROW
STRAT-FORD DR.
AVONDALE CT.
WILSHIRE DR.
SHEFFIELD CT.
WINDSOR DR.
CARRIAGE LN.
BATTLEFIELD RD.
HOPE DR.
DEERWOOD CIR.
MONTICELLO
MATHSON CIR.
PIGEON RD.
QUAIL
BOBWHITE CIR.
ELK DR.
CEMETERY RD.
REBECCA PL.
AUDREY PL.
HELEN PL.
TOLBERT
LEON DR.
PIGEON ROOST CREEK RD.
LAURA PL.
JEFFERSON AV.
PRICHARD PASS
MC CORMICK CIR.
ISOM ST.
CREEK DR.
HORACE LEWIS RD.
LONGSTREET DR.
SPARTA RD.
SHERMAN DR.
STONEWALL DR.
EWELL DR.
BAY VIEW
WINDROWE DR.
EDGEROWE CT.
VILLAGE CT.
MAPLE AV.
SALEM RD.
THOMAS
ROBERT LN.
BLACKWELL RD.
OLD BOYD
BRIDGE COMMUNITY CENTER
FARRIS LN.
PURPLE MARTIN LN.
WATER
CANDACE DR.
HERITAGE CIR.
LAKE CREST CIR.
LAKE VILLA CIR.
W. RIVERSIDE DR.
E. RIVERSIDE DR.
SEVEN
BRIAR LN.
CLEAR VIEW
BUNKER HILL RD.
LOVELADY RD.
BOB BULLOCK
RIVER BEND CT.
RIVER BEND DR.
RIVER CROSSING RD.
OLD STONE
HIDDEN
MT. HERMAN
JOHNSON DR.
OLD SPARTA RD.
SULLIVAN DR.
FALLING
HUDDLESTON
INDIAN TR.
BURGESS MILL RD.
KELLER
DACCO-FLEETGUARD RD.
BROWNS
MILL
136
111
40
135



PUTNAM COUNTY

-COOKEVILLE (S.R.-136)

2012 AADT - 000

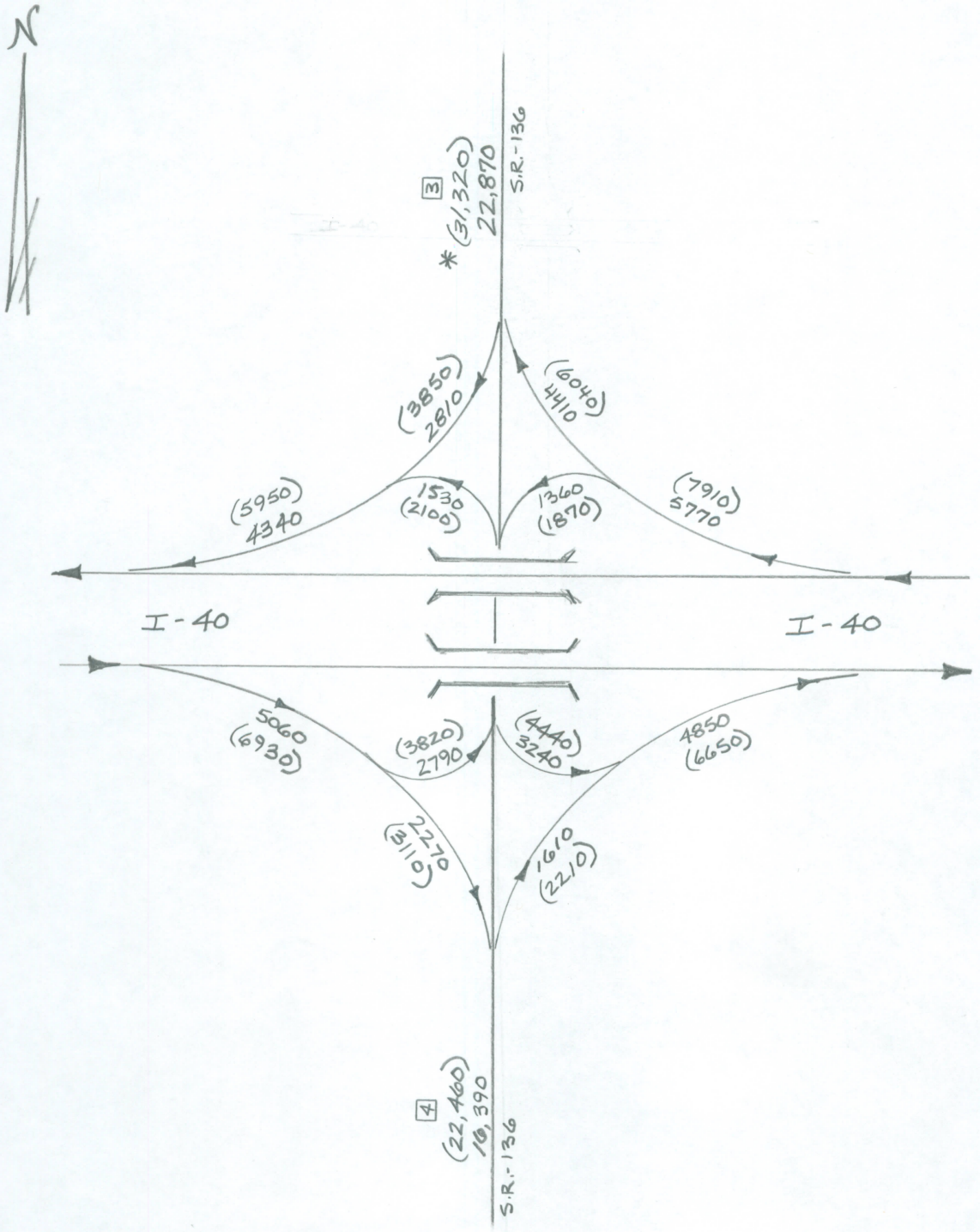
2032 AADT - (000)

ADT TRUCK % - 0

8/22/07

B. Davis

*-NOT INCLUDED IN COVERLETTER TRAFFIC



I-40 @ S.R.-136

PUTNAM COUNTY, COOKEVILLE

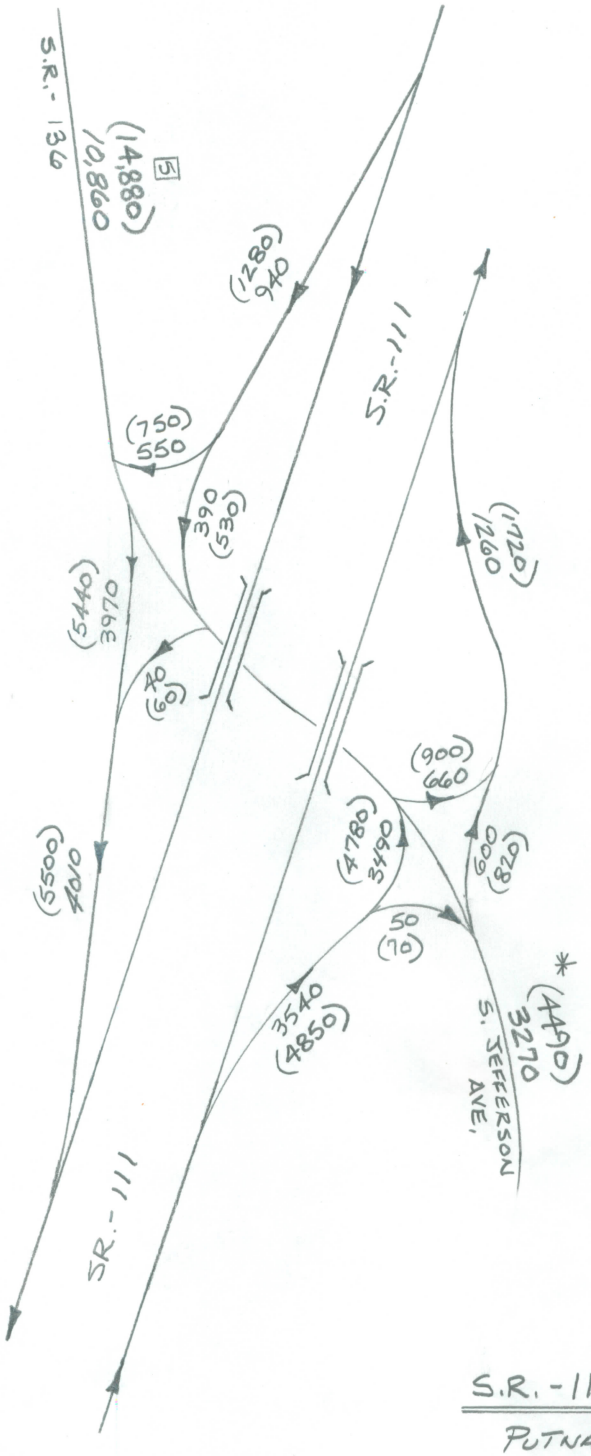
2012 AADT - 000

2032 AADT - (000)

ADT TRUCK % - [0]

8/22/07 B. Darke

N



S.R.-111 @ S.R.-136

PUTNAM COUNTY, COOKEVILLE

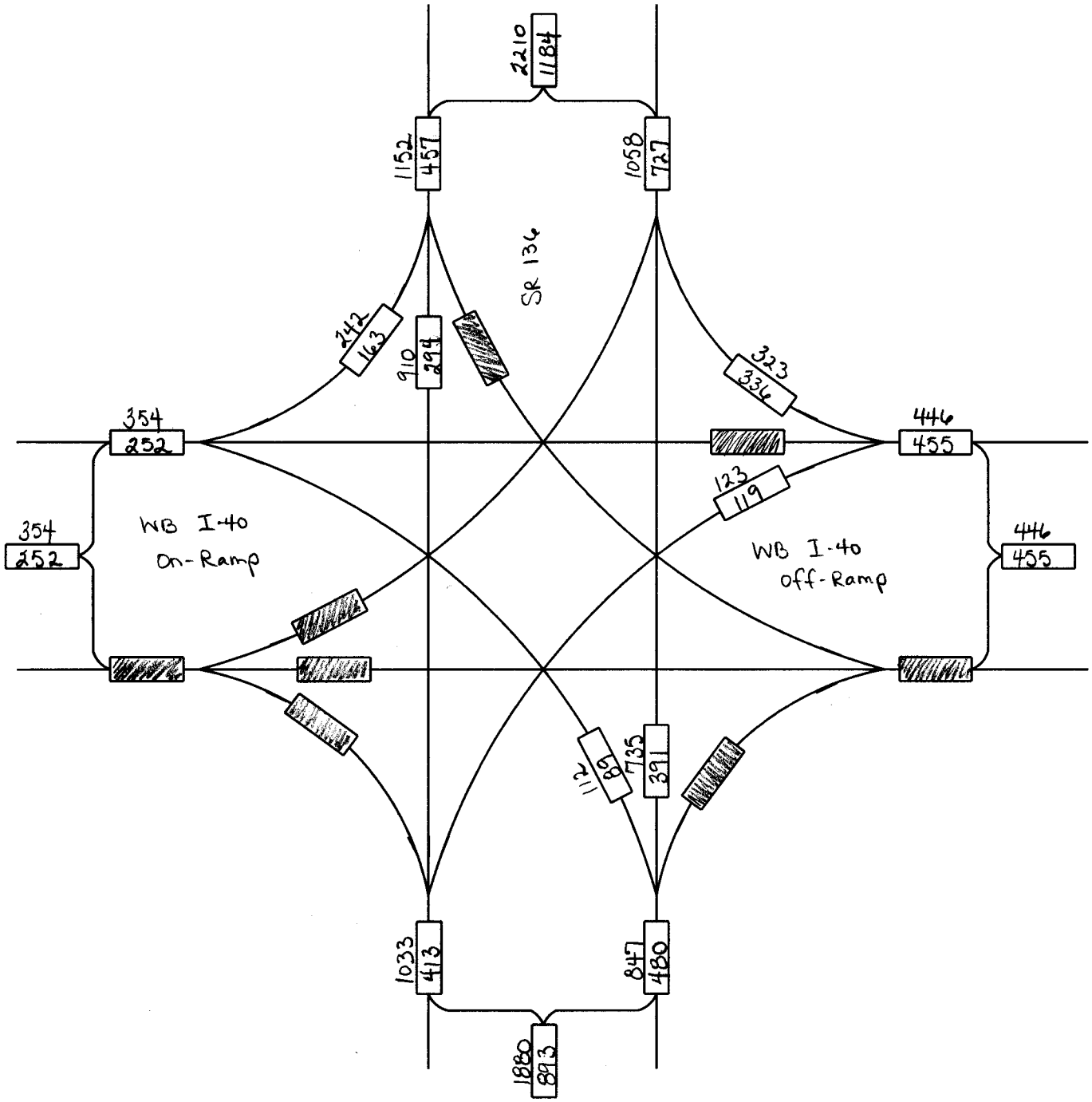
2012 AADT- 000

2032 AADT - (000)

ADT TRUCK % - 5

8/22/07 B. Baker

Fischbach
Transportation Group, Inc.
Traffic Engineering and Planning



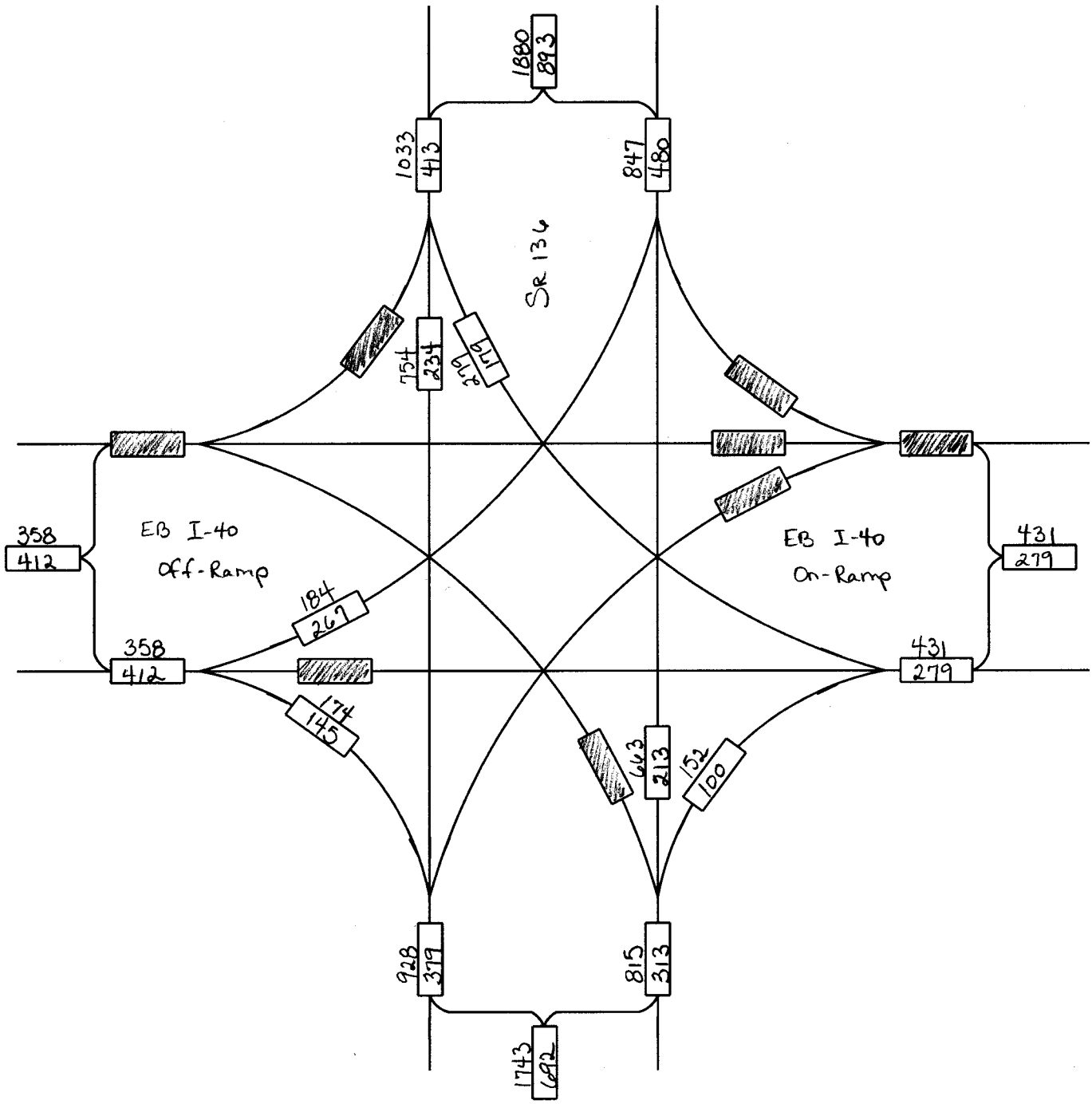
N

No Scale

XX - AM Peak Hour Volumes
XX - PM Peak Hour Volumes

Location I-40 @ SR 136 WB Ramps
Year 2012 DHVs
Description

Fischbach
Transportation Group, Inc.
Traffic Engineering and Planning



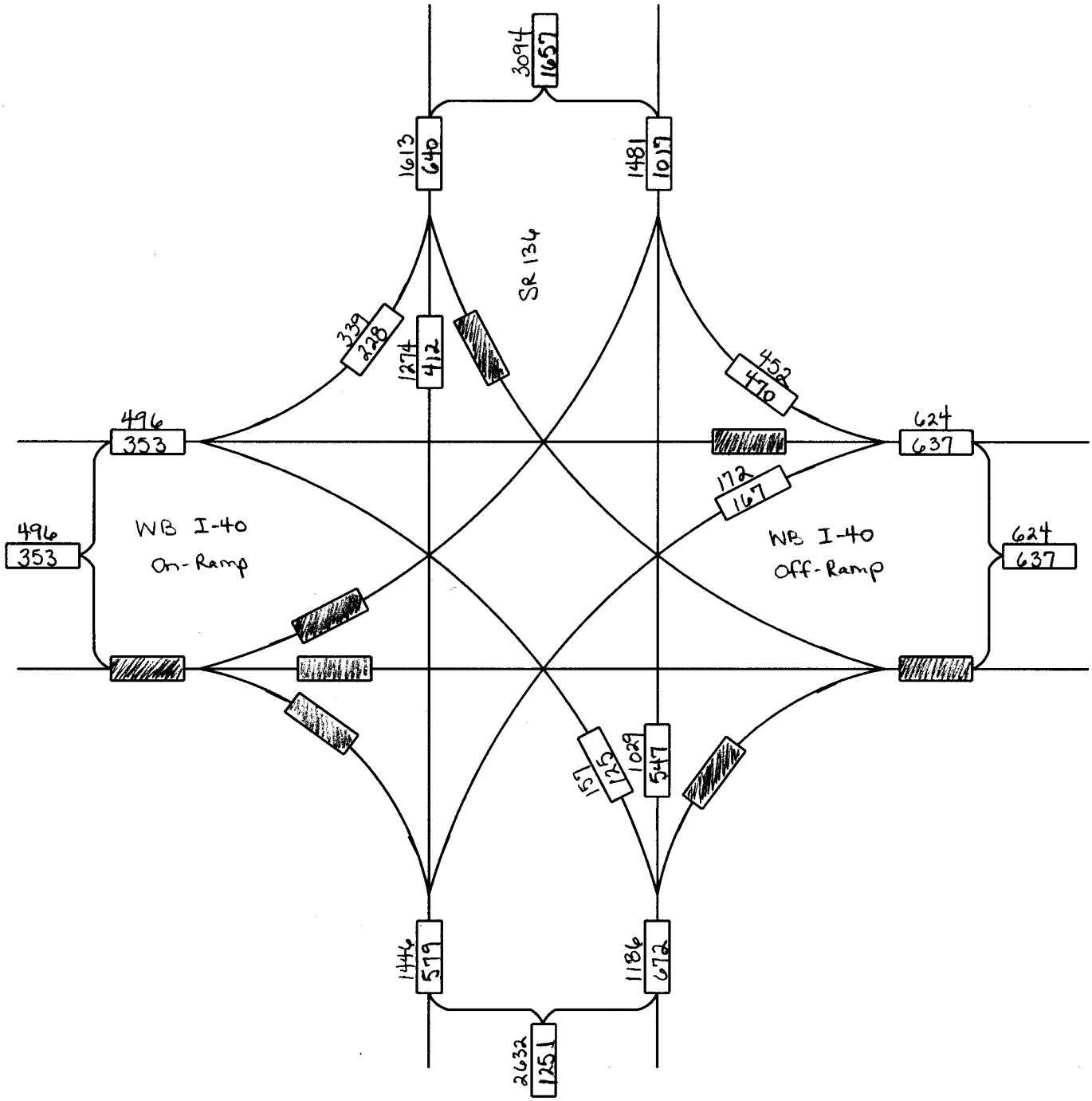
N

No Scale

XX - AM Peak Hour Volumes
XX - PM Peak Hour Volumes

Location I-40 @ SR136 EB Ramps
Year 2012 DHVs
Description

Fischbach
Transportation Group, Inc.
Traffic Engineering and Planning



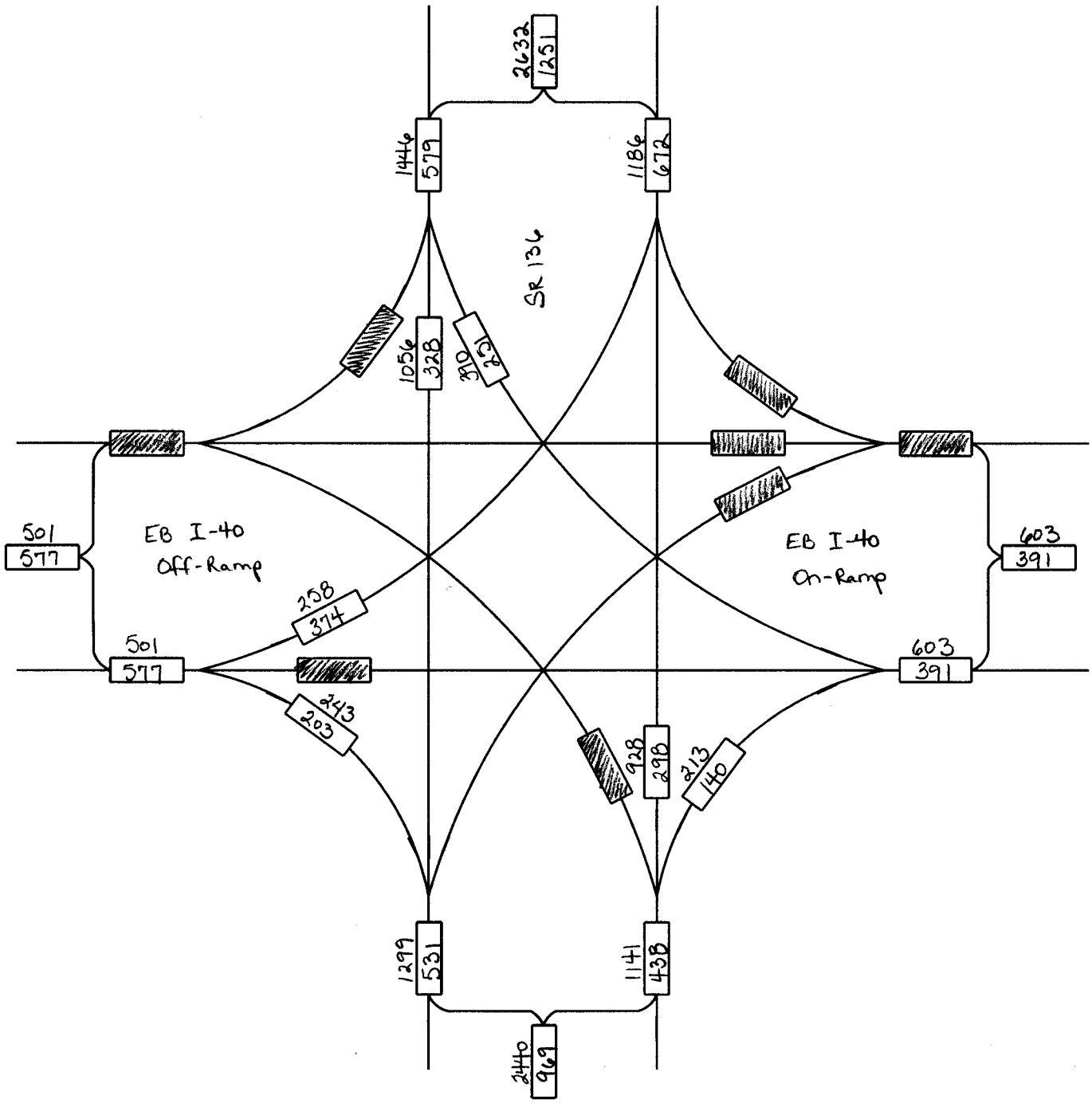
N

No Scale

XX - AM Peak Hour Volumes
XX - PM Peak Hour Volumes

Location I-40 @ SR 136 WB Ramps
Year 2032 DHVs
Description

Fischbach
Transportation Group, Inc.
Traffic Engineering and Planning



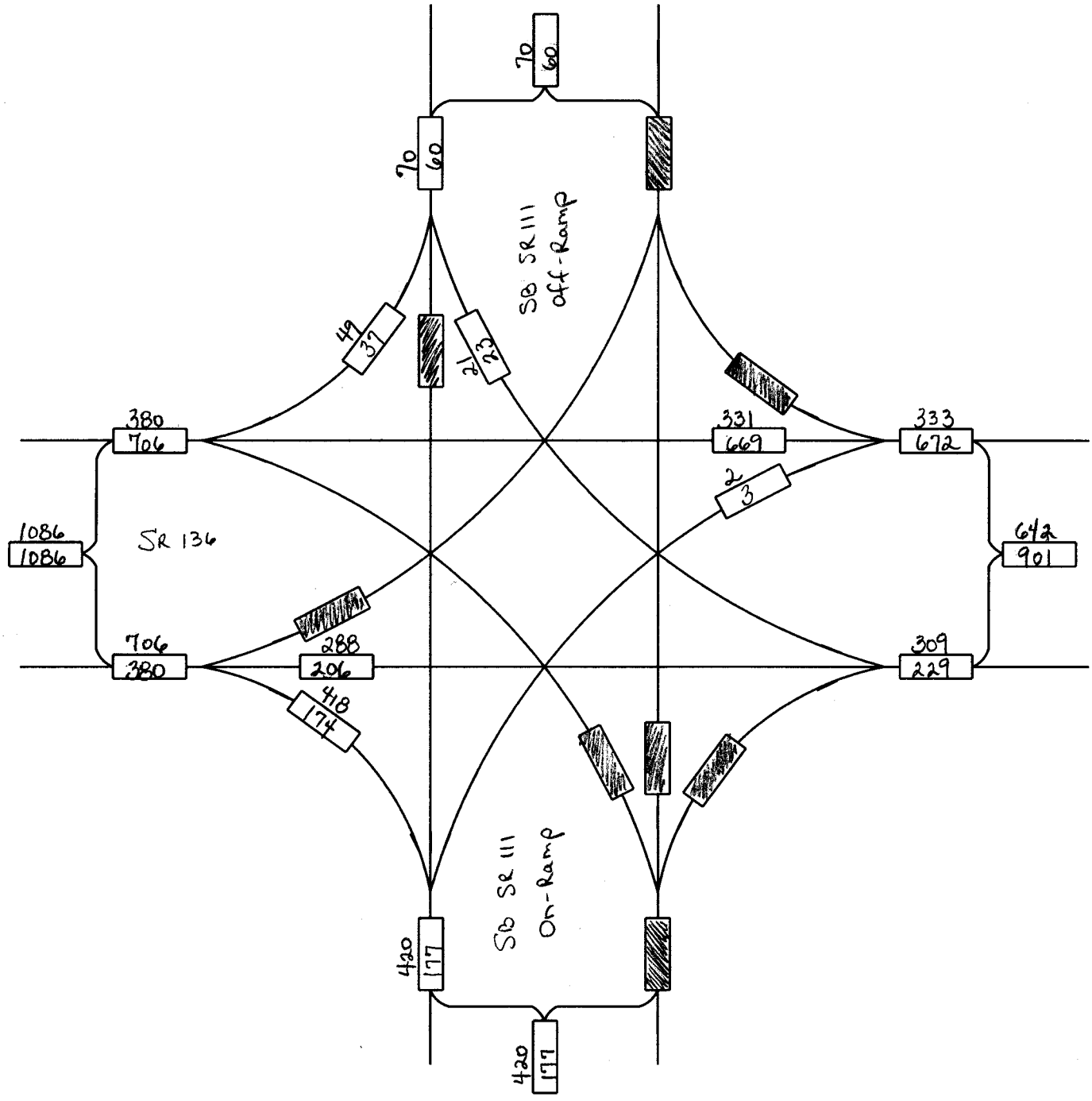
No Scale

N

XX - AM Peak Hour Volumes
XX - PM Peak Hour Volumes

Location I-40 @ SR136 EB Ramps
Year 2032 DHVS
Description

F i s c h b a c h
Transportation Group, Inc.
Traffic Engineering and Planning



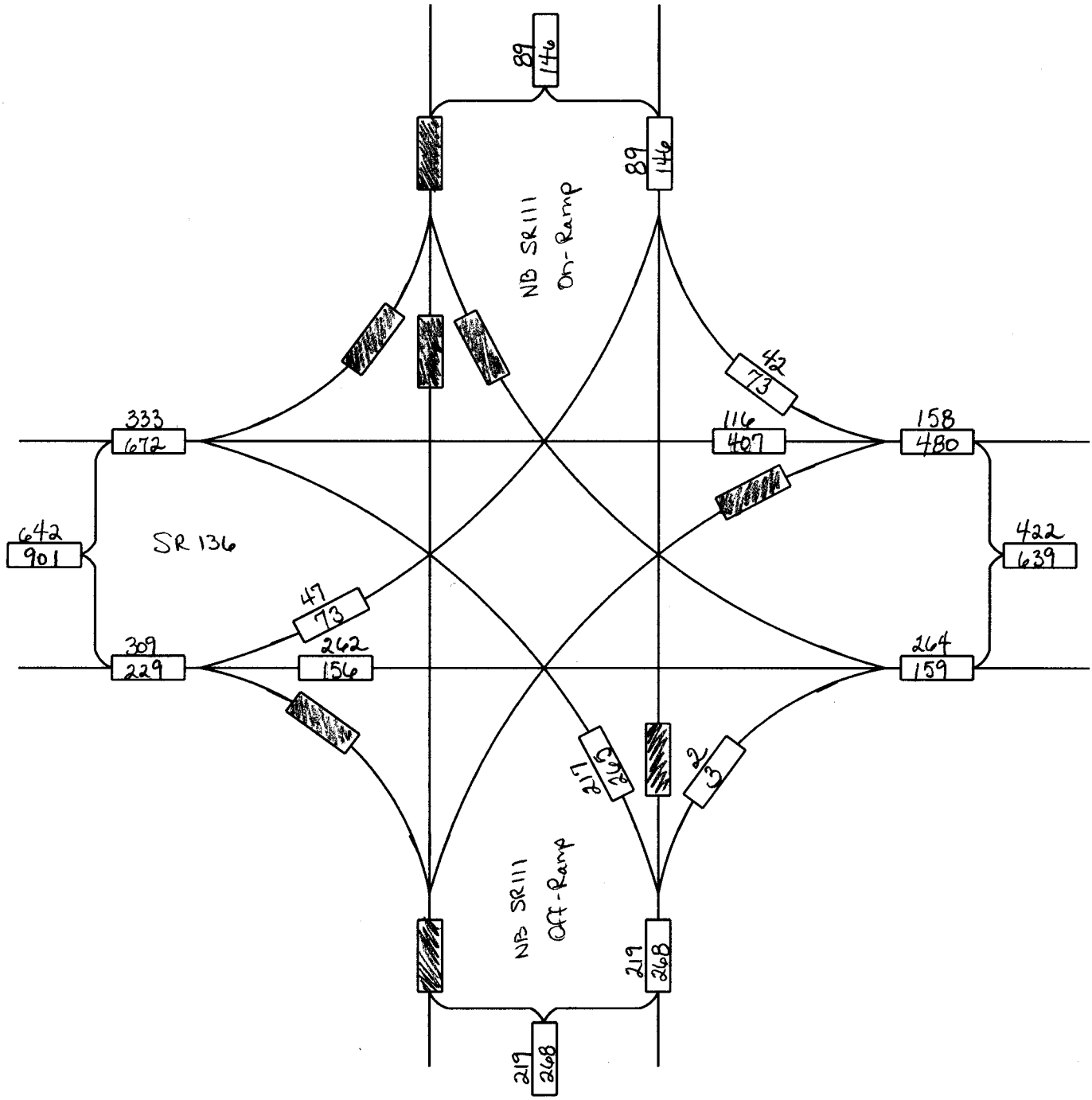
No Scale

N

XX - AM Peak Hour Volumes
XX - PM Peak Hour Volumes

Location SR 136 @ SR 111 SB Ramps
Year 2012 DHVs
Description

Fischbach
Transportation Group, Inc.
Traffic Engineering and Planning

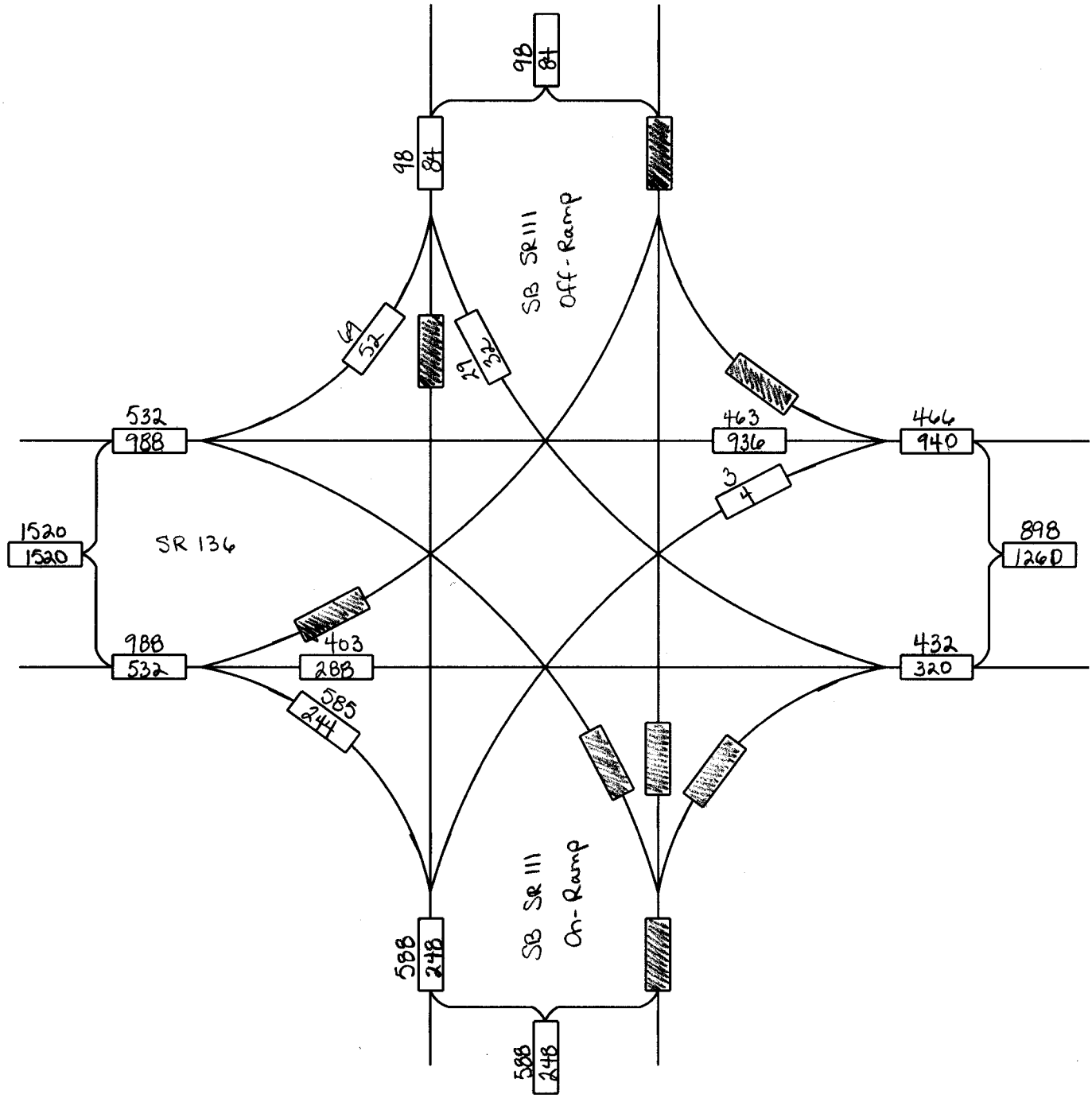


No Scale

XX - AM Peak Hour Volumes
XX - PM Peak Hour Volumes

Location SR 136 @ SR 111 NB Ramps
Year 2012 DHVs
Description

Fischbach
Transportation Group, Inc.
Traffic Engineering and Planning



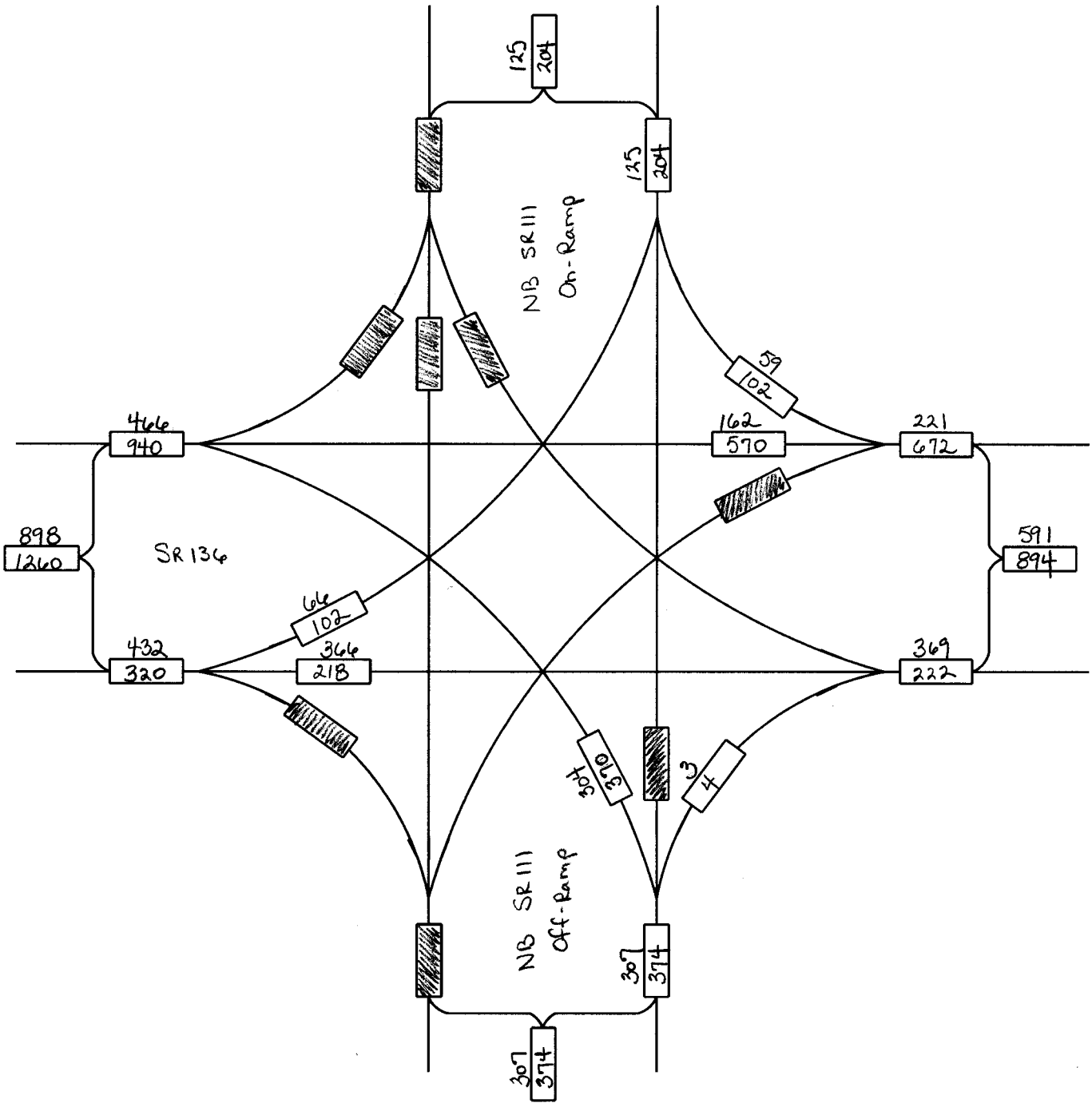
N

No Scale

XX - AM Peak Hour Volumes
XX - PM Peak Hour Volumes

Location SR136 @ SR111 SB Ramps
Year 2032 DHVs
Description

Fischbach
Transportation Group, Inc.
Traffic Engineering and Planning

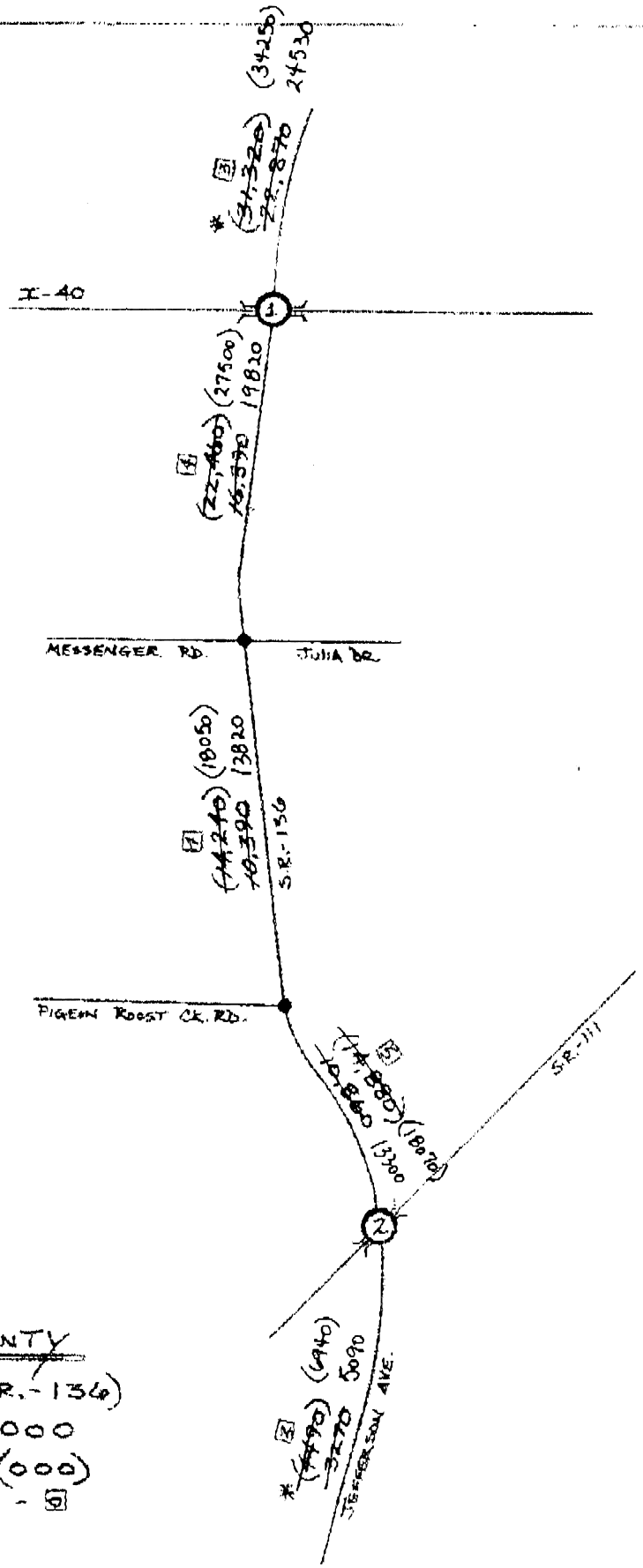


No Scale

N

XX - AM Peak Hour Volumes
XX - PM Peak Hour Volumes

Location SR 136 @ SR 111 NB Ramps
Year 2032 DHVs
Description

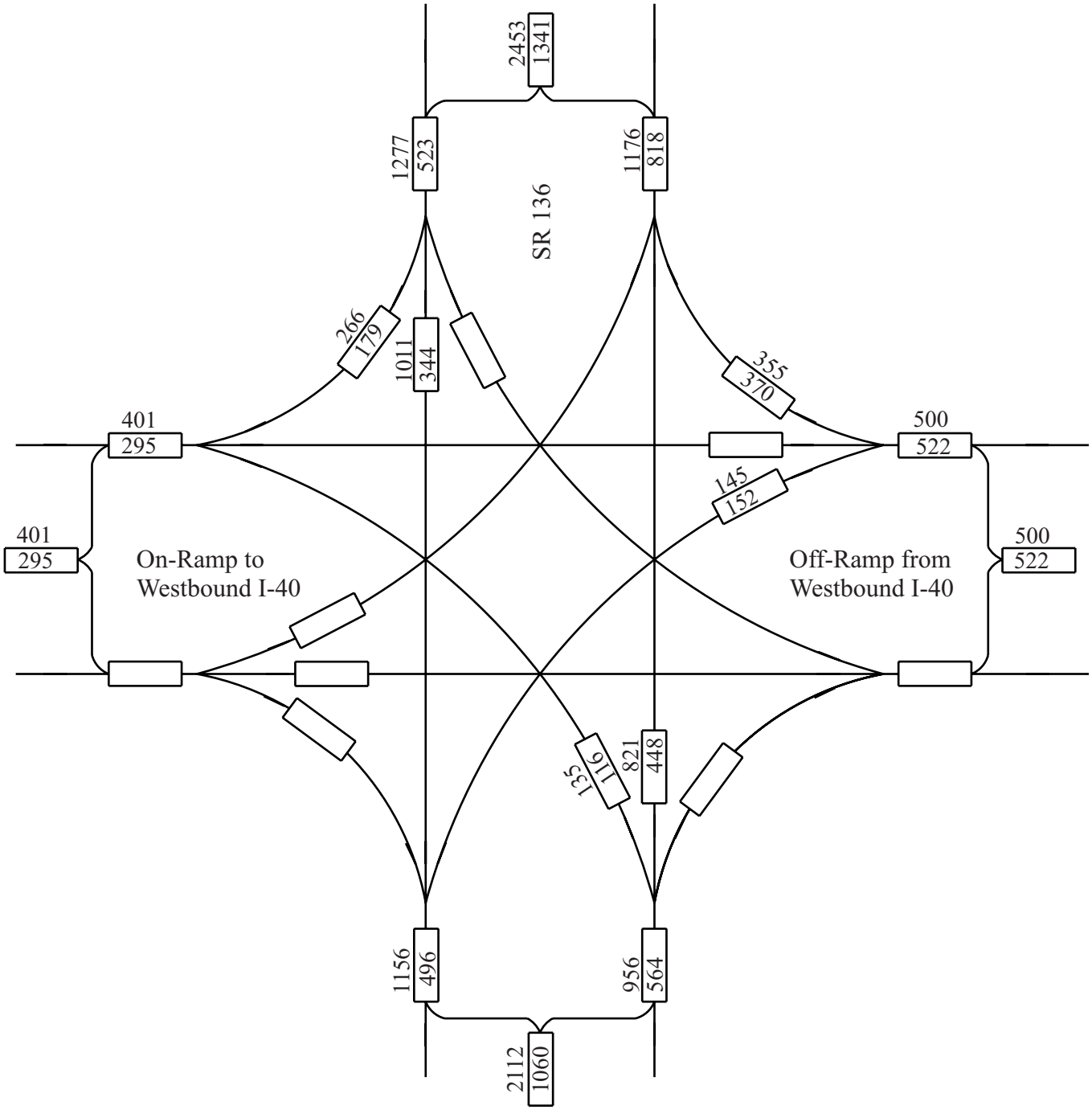


PUTNAM COUNTY
-COOKEVILLE (S.R.-136)
2012 AADT - 000
2032 AADT - (000)
ADT TRUCK % - [2]
8/22/07
B. Dahe

*-NOT INCLUDED IN COVERLETTER TRAFFIC

w/Add'l Traffic from W. Cemetery Rd.

F i s c h b a c h
Transportation Group, Inc.
Traffic Engineering and Planning



w/Add'l Traffic from W. Cemetery Rd.

N

No Scale

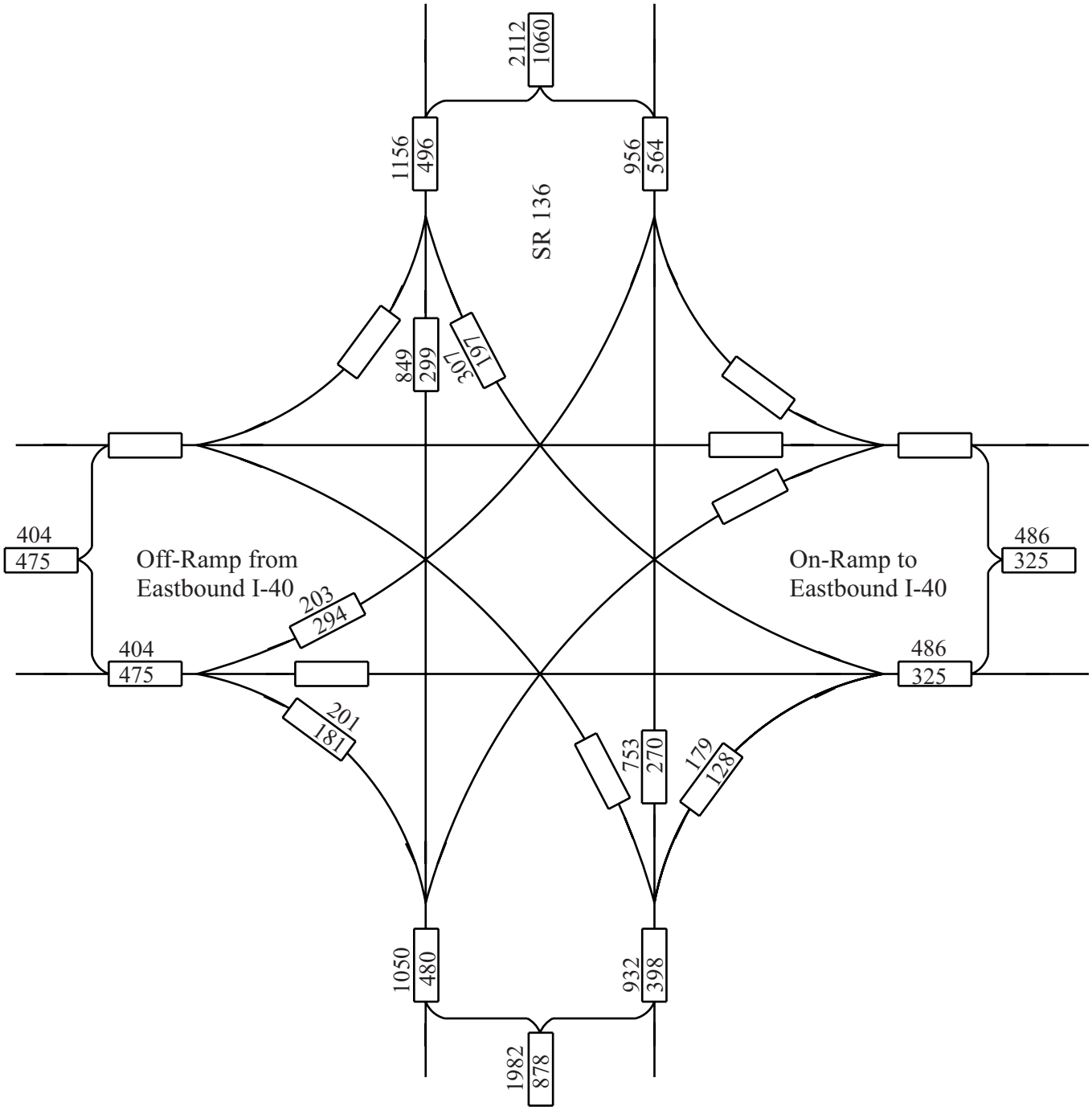
XX - AM Peak Hour Volumes
XX - PM Peak Hour Volumes

Location: SR 136 at Ramps for Westbound I-40

Year: Year 2012 DHVs

Description:

F i s c h b a c h
Transportation Group, Inc.
Traffic Engineering and Planning



w/Add'l Traffic from W. Cemetery Rd.

N

No Scale

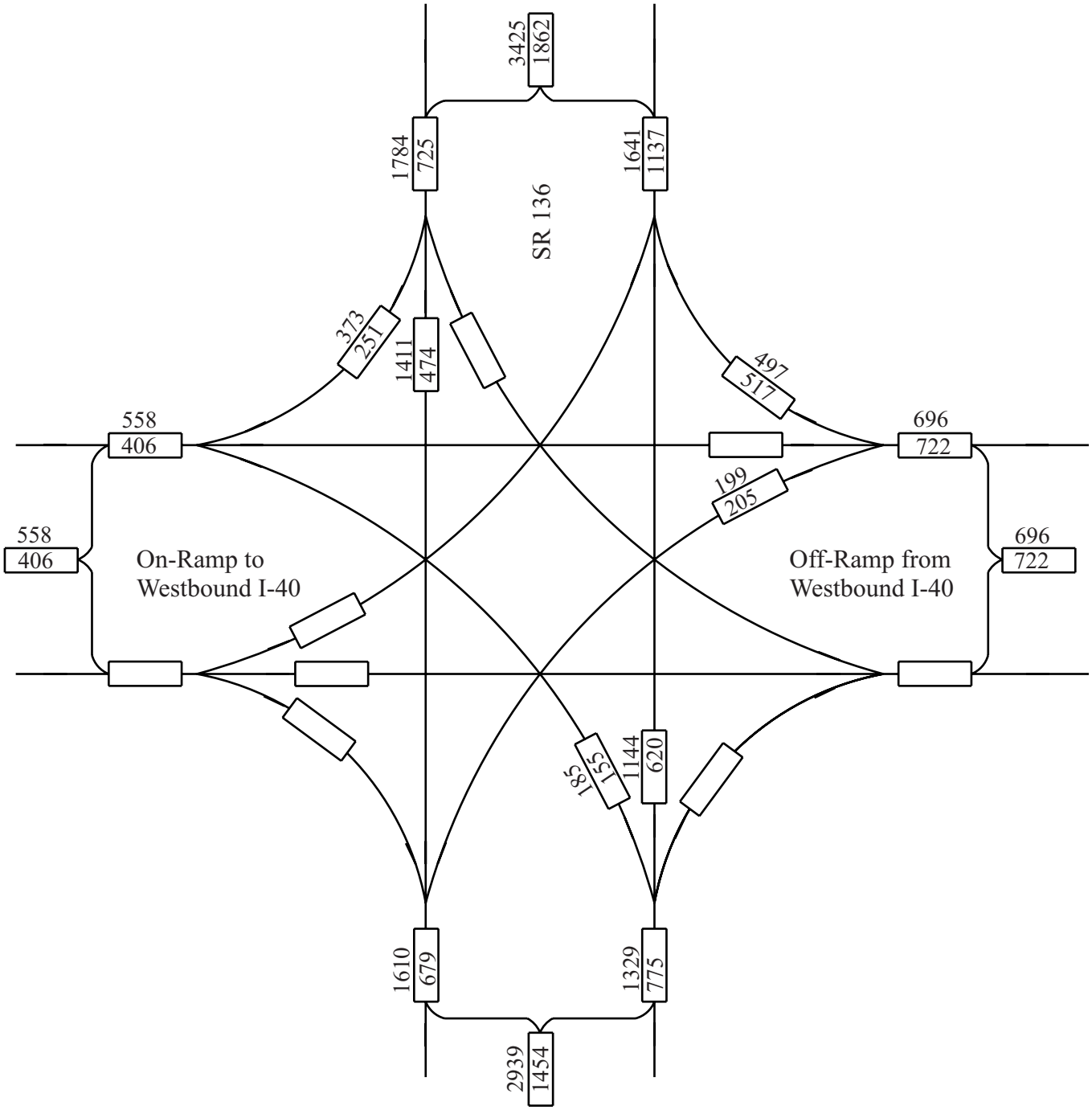
XX - AM Peak Hour Volumes
XX - PM Peak Hour Volumes

Location: SR 136 at Ramps for Eastbound I-40

Year: Year 2012 DHVs

Description:

F i s c h b a c h
Transportation Group, Inc.
Traffic Engineering and Planning



w/Add'l Traffic from W. Cemetery Rd.

N

No Scale

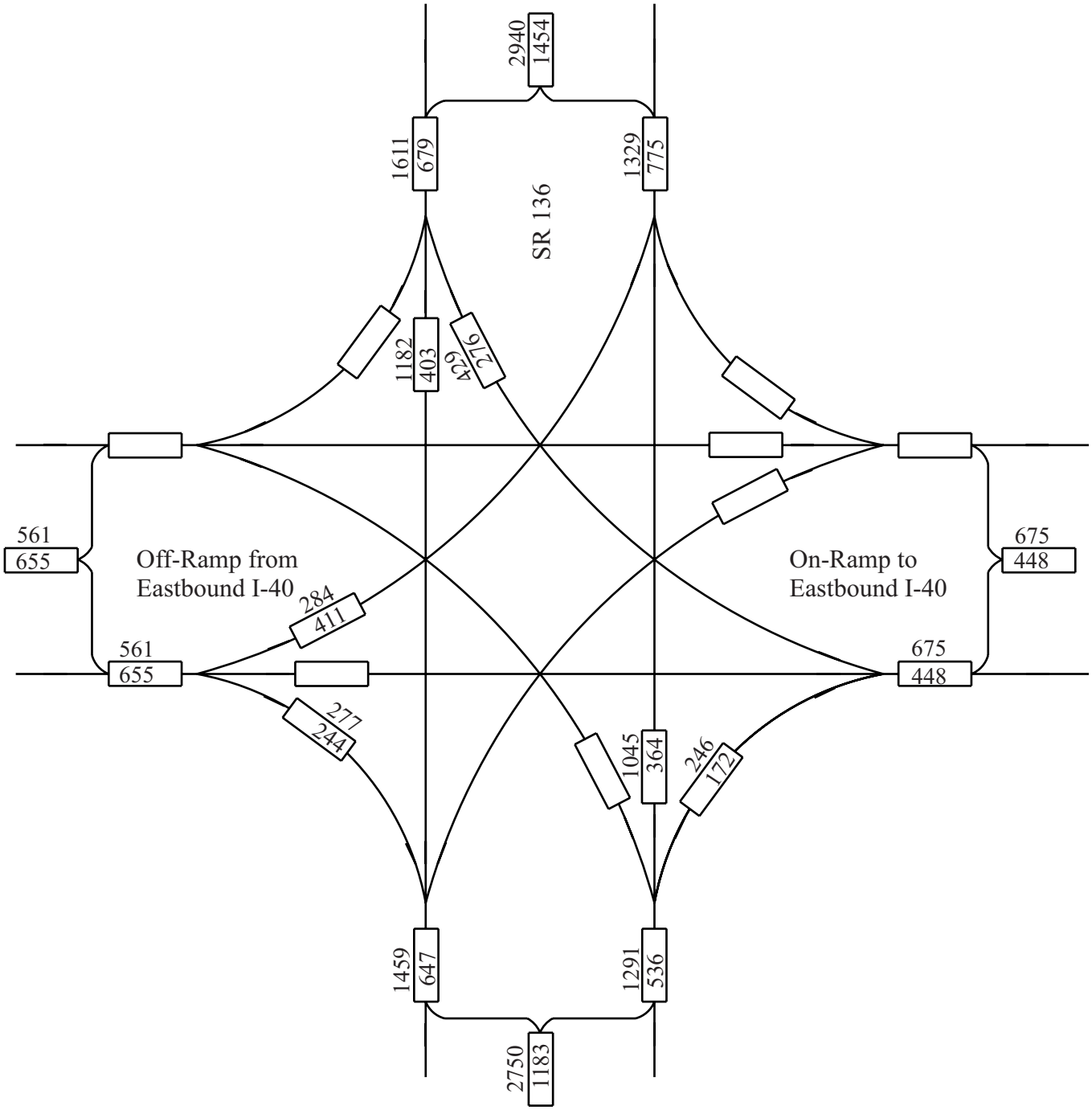
XX - AM Peak Hour Volumes
XX - PM Peak Hour Volumes

Location: SR 136 at Ramps for Westbound I-40

Year: Year 2032 DHVs

Description:

F i s c h b a c h
Transportation Group, Inc.
Traffic Engineering and Planning



w/Add'l Traffic from W. Cemetery Rd.

N

No Scale

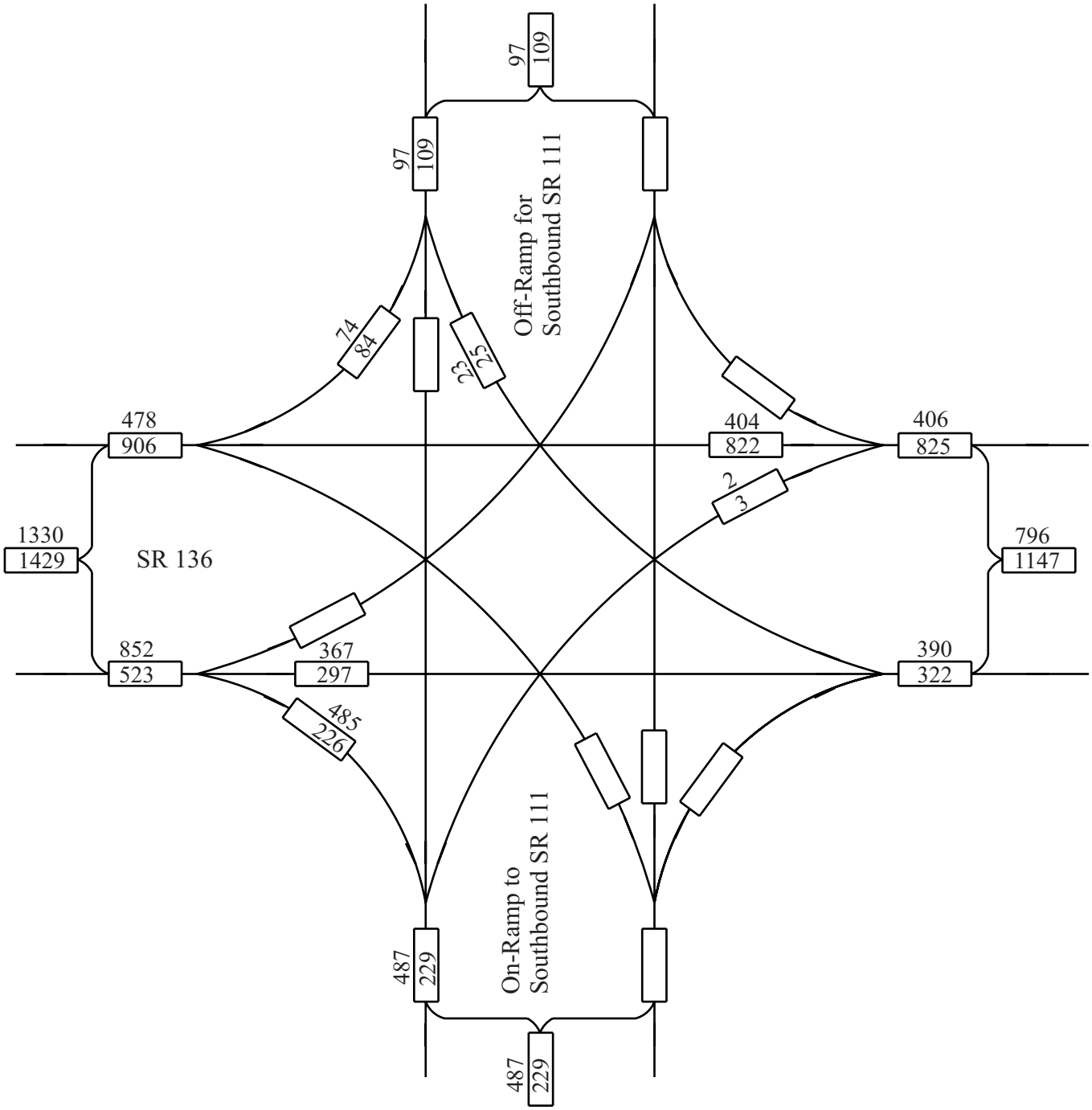
XX - AM Peak Hour Volumes
XX - PM Peak Hour Volumes

Location SR 136 at Ramps for Eastbound I-40

Year Year 2032 DHVs

Description

F i s c h b a c h
Transportation Group, Inc.
Traffic Engineering and Planning



w/Add'l Traffic from W. Cemetery Rd.

N

No Scale

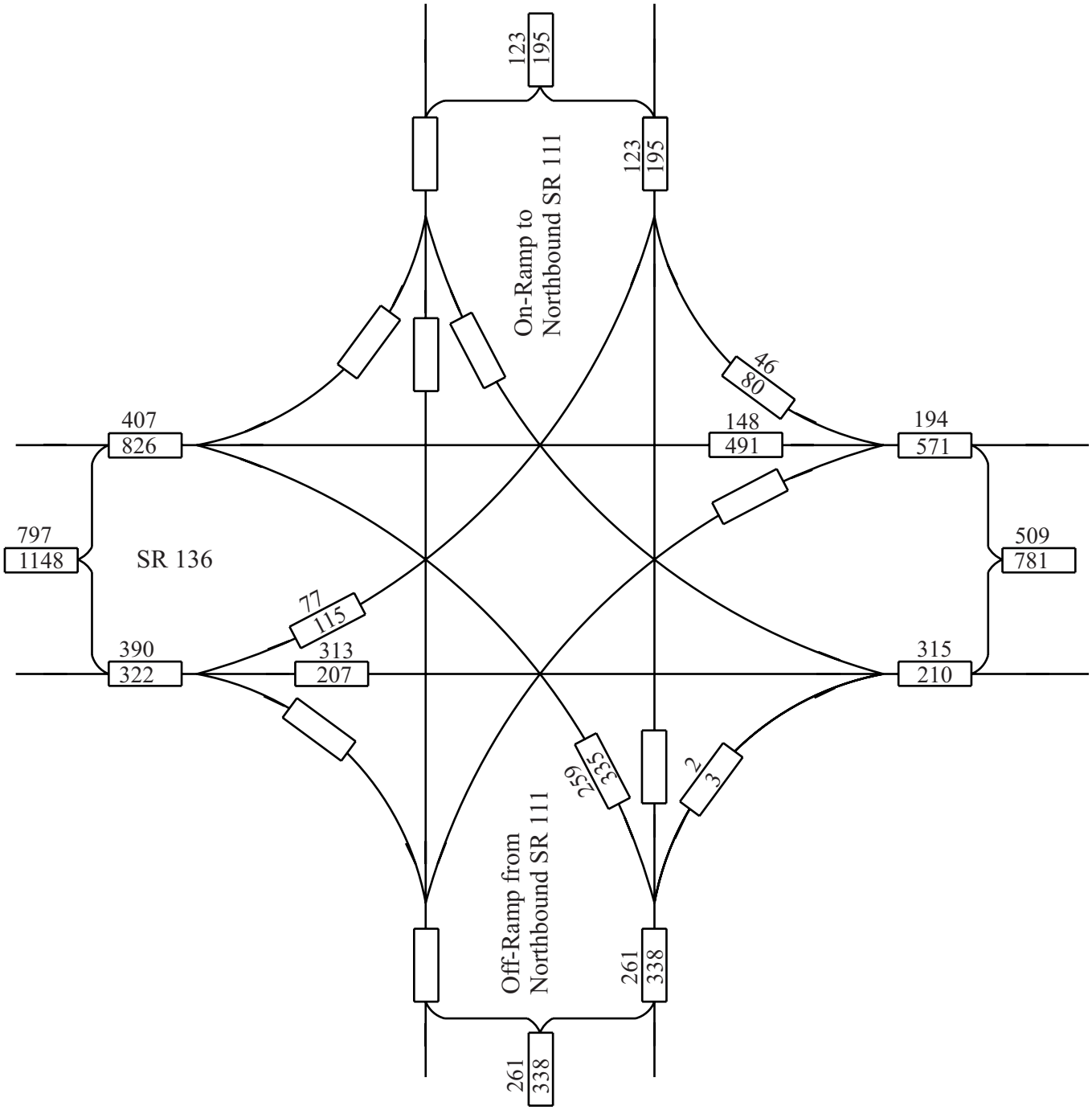
XX - AM Peak Hour Volumes
XX - PM Peak Hour Volumes

Location SR 136 at Ramps for Southbound SR 111

Year Year 2012 DHVs

Description

F i s c h b a c h
Transportation Group, Inc.
Traffic Engineering and Planning



w/Add'l Traffic from W. Cemetery Rd.

N

No Scale

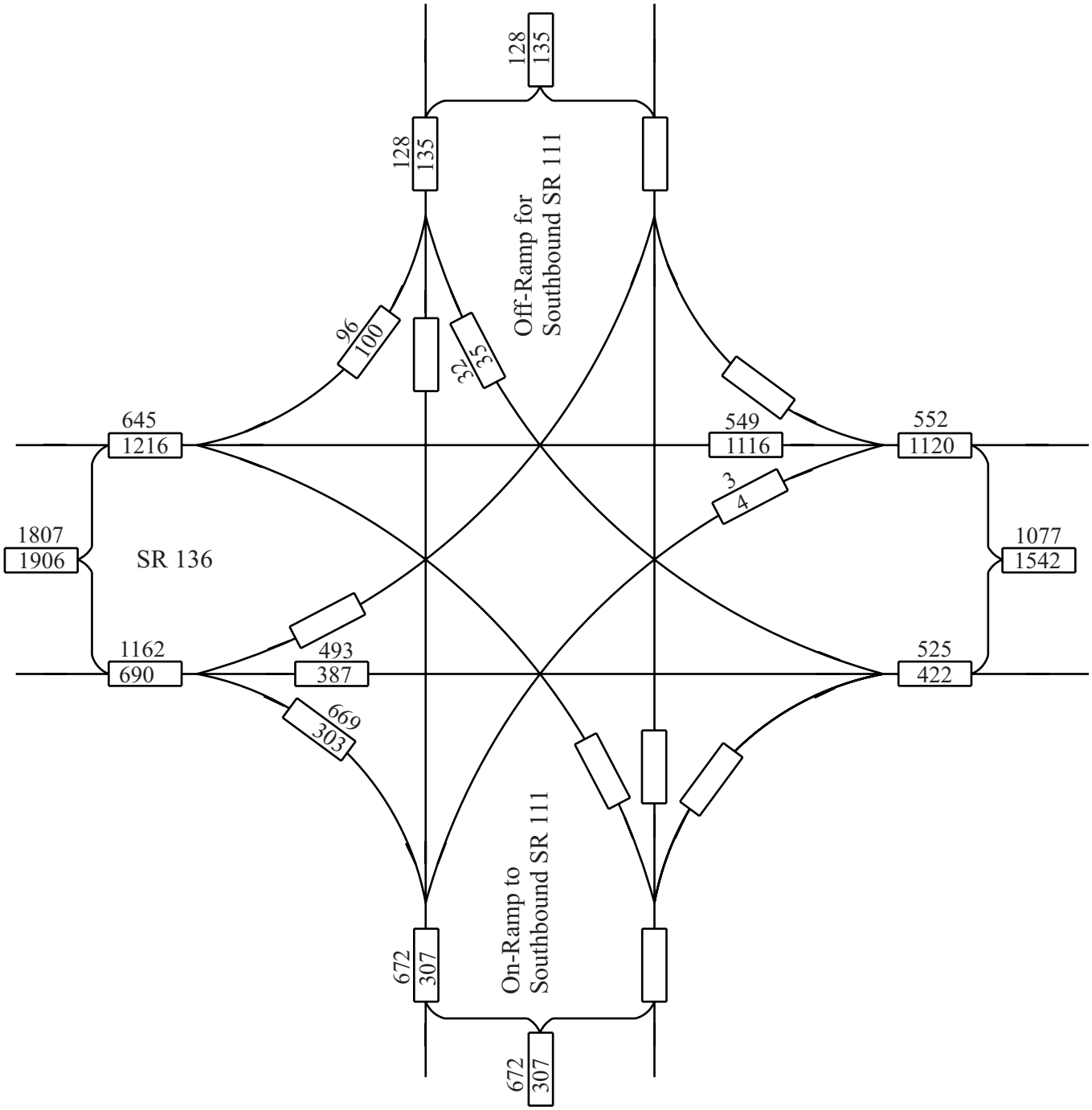
XX - AM Peak Hour Volumes
XX - PM Peak Hour Volumes

Location: SR 136 at Ramps for Northbound SR 111

Year: Year 2012 DHVs

Description:

Fischbach
Transportation Group, Inc.
Traffic Engineering and Planning



w/Add'l Traffic from W. Cemetery Rd.

N

No Scale

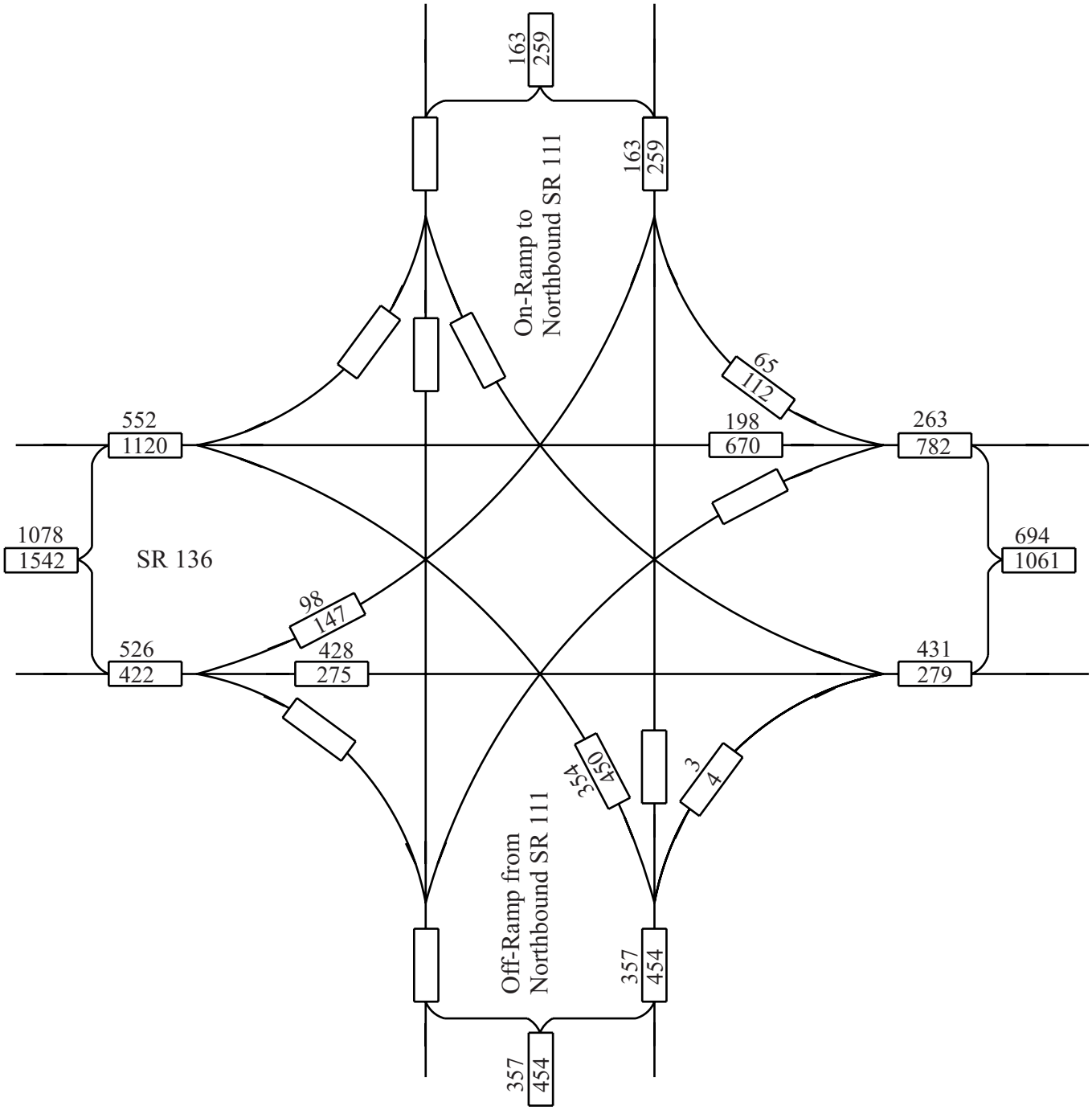
XX - AM Peak Hour Volumes
XX - PM Peak Hour Volumes

Location: SR 136 at Ramps for Southbound SR 111

Year: Year 2032 DHVs

Description:

F i s c h b a c h
Transportation Group, Inc.
Traffic Engineering and Planning



w/Add'l Traffic from W. Cemetery Rd.

N

No Scale

XX - AM Peak Hour Volumes
XX - PM Peak Hour Volumes

Location SR 136 at Ramps for Northbound SR 111

Year Year 2032 DHVs

Description

Appendix C – Corridor Plan Sheets

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

Index Of Sheets

SHEET NO.	DESCRIPTION
1	..... TITLE SHEET
2	..... TYPICAL SECTIONS
3-8	..... LAYOUT SHEETS

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING

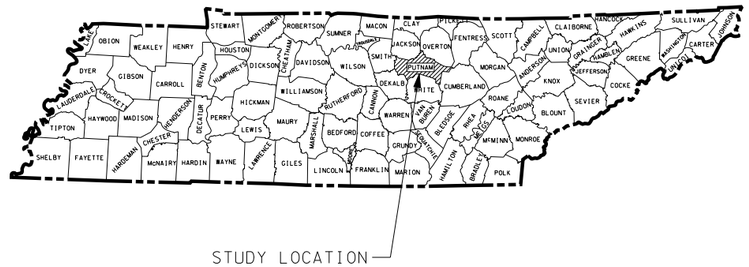
STATE ROUTE 136

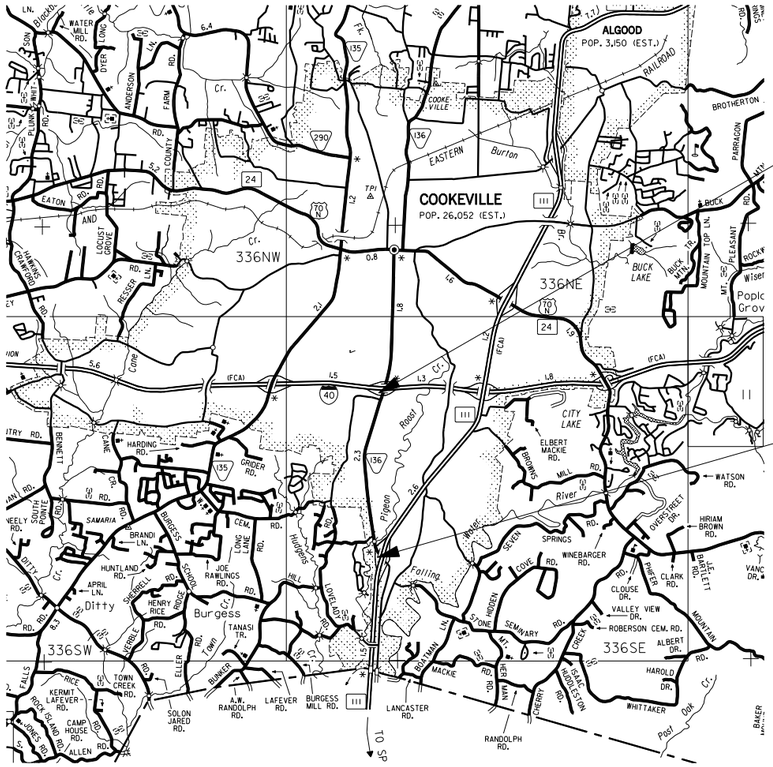
FROM STATE ROUTE 111
TO INTERSTATE 40

PUTNAM COUNTY

STATE HIGHWAY NO. 136 F.A.H.S. NO.

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





SCALE: 1"=

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 ROAD SP. SV. 2 _____

DESIGNER _____ CHECKED BY _____

P.E. NO. _____

PIN NO. 110348.00

APPROVED: _____
CHIEF ENGINEER

DATE: _____

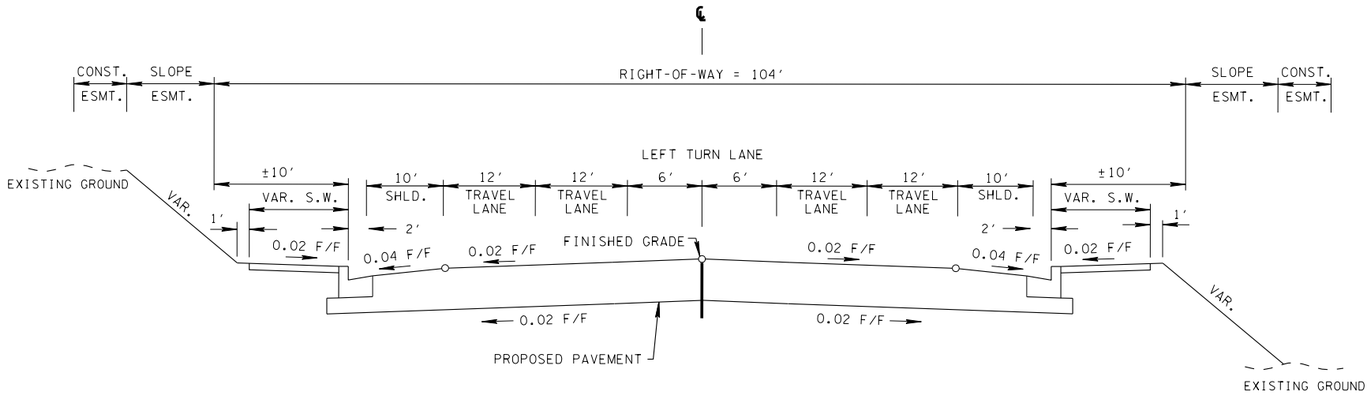
APPROVED: _____
COMMISSIONER

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED: _____ _____
DIVISION ADMINISTRATOR DATE

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

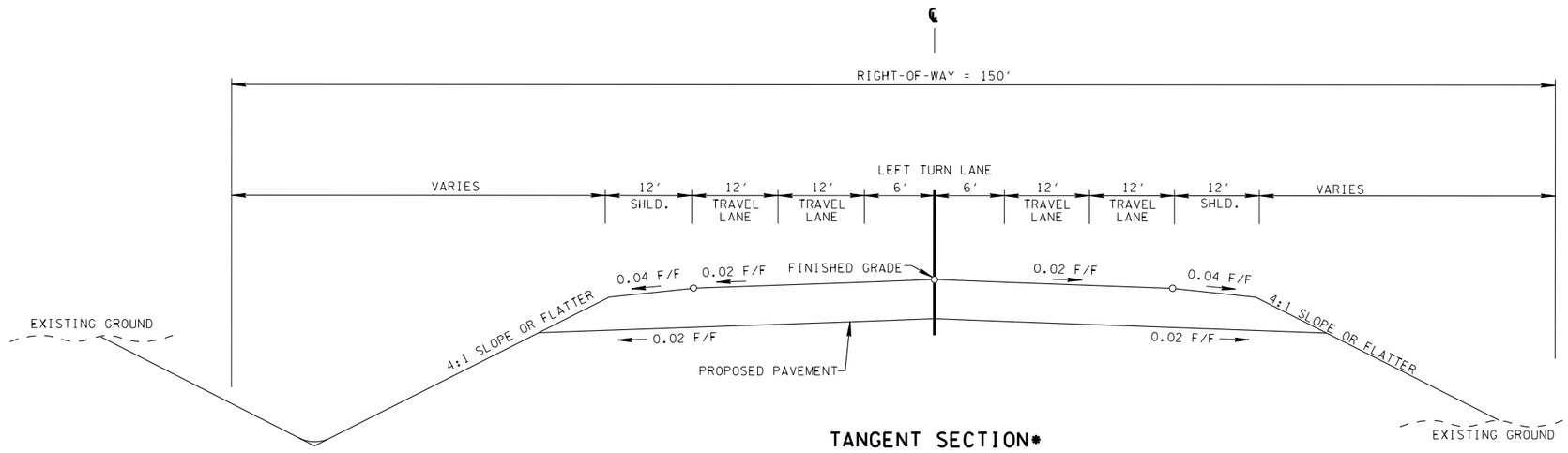
TYPE	YEAR	PROJECT NO.	SHEET NO.
		PIN #110348.00	2



TANGENT SECTION*

(BASED ON STD. DWG. RD01-TS-6A)

* TANGENT SECTIONS SHOWN FOR EXAMPLES ONLY. ACTUAL DIMENSIONS MAY VARY FROM FINAL DESIGN.



TANGENT SECTION*

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

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

TYPICAL SECTIONS
SR-136
S. JEFFERSON AVE.

NOT TO SCALE

12/26/2008 9:41:41 AM
G:\TDOT APR ON-CALL\HDII22.02 - SR-136 Putnam Co TPR\Cad\PuSR136Typical.dgn

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

TYPE	YEAR	PROJECT NO.	SHEET NO.
		PIN #110348.00	3

MATCHLINE - SEE SHEET 4

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

SR-136
S. JEFFERSON AVE.

SCALE = 1:100

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

TENNESSEE D.O.T.
DESIGN DIVISION

FILE NO.

TYPE	YEAR	PROJECT NO.	SHEET NO.
		PIN #110348.00	4

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

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

SR-136
S. JEFFERSON AVE.

SCALE = 1:200

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

TYPE	YEAR	PROJECT NO.	SHEET NO.
		PIN # 110348	5

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

SR-136
S. JEFFERSON AVE.

SCALE = 1:100

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

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

TYPE	YEAR	PROJECT NO.	SHEET NO.
		PIN #110348.00	6

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

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

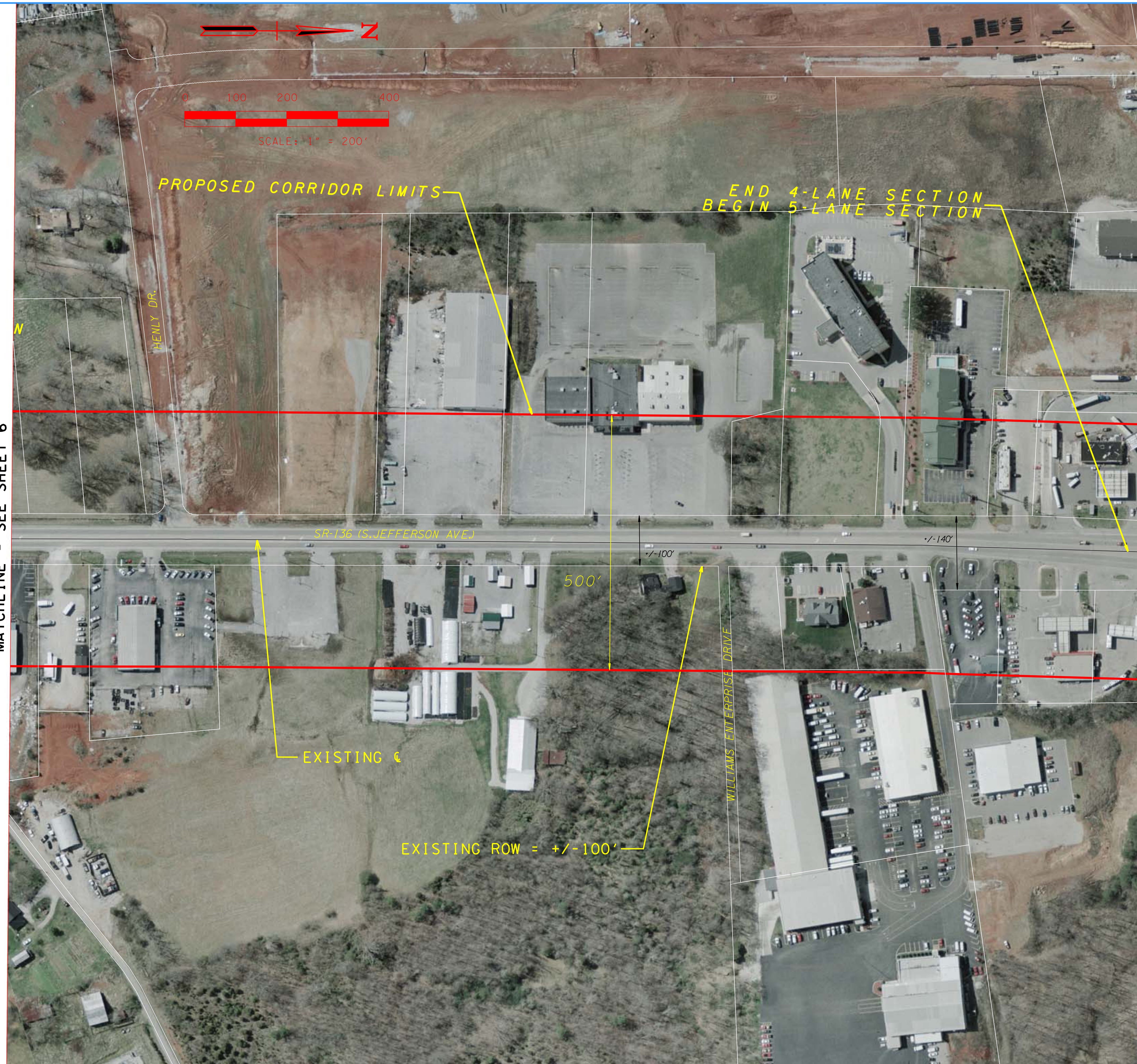
SR-136
S. JEFFERSON AVE.

SCALE = 1:200

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

TYPE	YEAR	PROJECT NO.	SHEET NO.
		PIN # 110348	7

MATCHLINE - SEE SHEET 6



MATCHLINE - SEE SHEET 8

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

SR-136
S. JEFFERSON AVE.

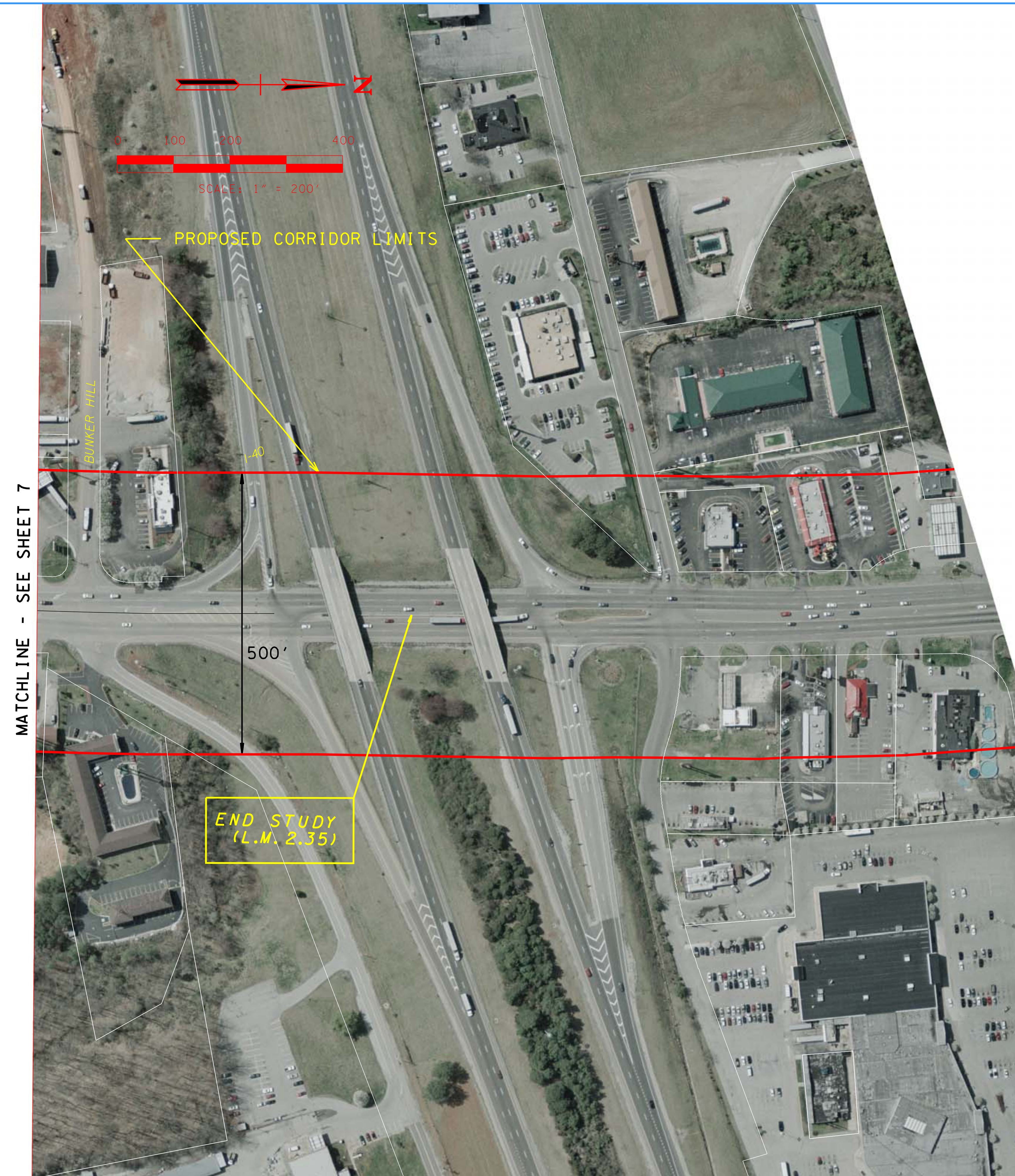
SCALE = 1:100

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

TENNESSEE D.O.T.
DESIGN DIVISION

FILE NO.

TYPE	YEAR	PROJECT NO.	SHEET NO.
		PIN # 110348	8



STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

SR-136
S. JEFFERSON AVE.

SCALE = 1:100

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