

Executive Summary
TPR- State Route 317 (Bonny Oaks Drive)
From SR 17 to I-75
Chattanooga, Hamilton County, Tennessee

Purpose of the TPR

This report was initiated in response to a request to the Tennessee Department of Transportation (TDOT) from the Chattanooga Hamilton County/ North Georgia Transportation Planning Organization (TPO). The purpose of the TPR is to address current and future traffic deficiencies on Bonny Oaks Drive. It is expected that future deficiencies will be significant as a result of the Volkswagen (VW) manufacturing facility that is under construction and scheduled to open in 2011 in the Enterprise South Industrial Park.

Purpose and Need for Improvements

Safety- Of the three hundred fifty one (351) total crashes on Bonny Oaks Drive in 2006-2008, one hundred thirty one (131) occurred at the principle intersections. Jersey Pike experienced the most crashes with forty nine (49) reported in the three (3) year period, and its crash rate of 1.28 exceeded the critical rate of 1.27. The crash rate on the unimproved 4.77 mile segment of Bonny Oaks Drive of 3.546 exceeds both the statewide average crash rate of 2.652 and the critical crash rate of 3.038 for similar roadways.

Level of Service- In 2015, a LOS F, without improvements, is expected at three (3) intersections including Bonny Oaks Drive at Noah Reid Road, Bonny Oaks Drive at Enterprise South Boulevard, and Bonny Oaks Drive at Hickory Valley Road. By 2035, the following five (5) intersections will operate at LOS F: Bonny Oaks Drive at Noah Reid Road, Bonny Oaks Drive at Hickory Valley Road, Bonny Oaks Drive at Enterprise South Boulevard, Bonny Oaks Drive at Lee Highway and Bonny Oaks Drive at I-75 Southbound Ramps.

The Volkswagen Traffic Impact Study prepared by Volkert and Associates, Inc. explored adding auxiliary lanes at the LOS F intersections, but concluded that an acceptable LOS could not be achieved unless another through lane in each direction were constructed at each of the deficient intersections. Therefore, the primary constraint is confined to five (5) signalized intersections, but a through lane in each direction needs to be constructed which is not limited to the intersections.

Improvement Options

Option A: No-Build Option – Option A assumes no modifications or improvements will be made over the planning horizon to add capacity. Routine maintenance related activities as well as scheduled resurfacing, signing, and possible safety projects may occur. This option, however, does not support the proposed project's stated Purpose and Need for providing a transportation facility to enhance mobility, support economic development and improve safety.

Under this No Build scenario, several existing signalized intersections along Bonny Oaks Drive will need adjustments in signal timing to improve traffic operations for all movements. However,

congestion and delay will continually increase over time if upgrades are not planned for existing unsignalized intersections that already operate poorly.

Option B:Widen Along Existing Alignment- Option B plans to widen Bonny Oaks Drive from SR 17 to Interstate 75, a length of approximately 4.9 miles. This proposal would involve upgrading the existing two (2) lane sections of Bonny Oaks Drive to an improved five (5) lane urban section including sidewalks, curb and gutters and bike lanes. The typical section would consist of five (5) twelve (12) foot lanes with six (6) foot bike lanes, two (2) foot curb and gutter and five (5) foot sidewalks on both sides. The total estimated project cost of this option is \$ 49.8 million.

ITEM	COST
Construction	\$ 22,831,000
Preliminary Engineering (105)	\$2,283,000
Utility Relocation	\$21,087,000
Right-of-Way Acquisition	\$3,669,000
TOTAL*	\$49,870,000

*For estimating future costs, a compounded inflation rate of 10% per year will be applied.

The Bonny Oaks Drive project is identified in the Chattanooga-Hamilton County/ North Georgia Transportation Planning Organization 2035 Long-Range Transportation Plan as project Identification Number 15 (LRTP ID#15). Recommended improvements included widening the existing two-lane roadway to four (4) lanes with a twelve (12) foot center turn lane, five (5) foot sidewalks, six (6) foot bike lanes and two (2) foot curb and gutter.

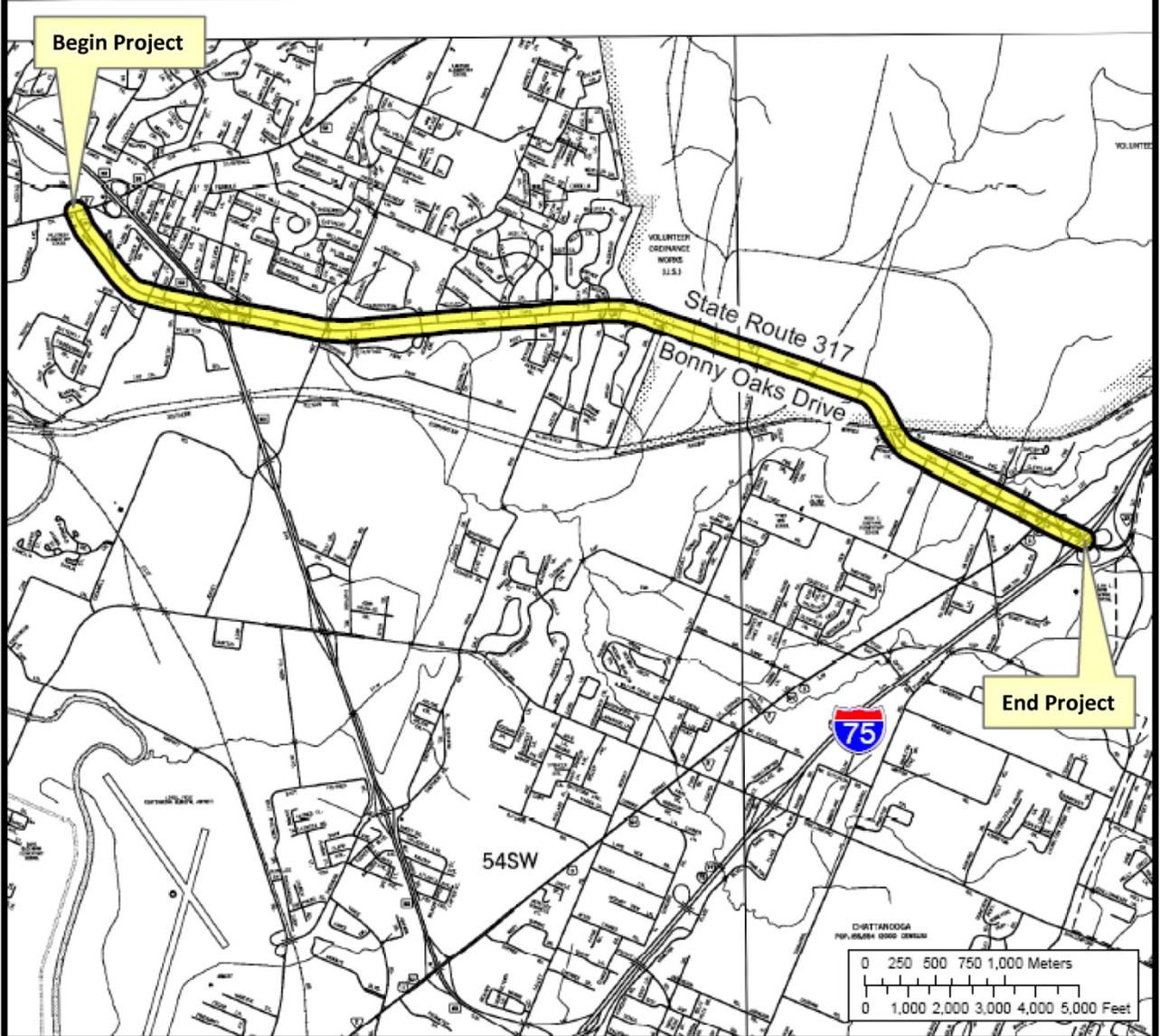
The City of Chattanooga has already made significant spot improvements including:

- Extending left turn lanes and right turn lanes at the Hickory Valley Road intersection (City)
- Adding left turn lanes at the entrance to Enterprise South Boulevard (County)
- Traffic signal installation at the Enterprise South Boulevard intersection (City)

Additional spot improvements are not recommended because they will have limited effect on traffic flow along Bonny Oaks Drive. The traffic study indicates that Bonny Oaks Drive will need to be a multi-lane facility by year 2015, four (4) years after the Volkswagen Plant opens.



**STUDY AREA LOCATION MAP
BONNY OAKS DRIVE (SR 317)
FROM SR 17 TO I-75
CHATTANOOGA, HAMILTON COUNTY, TENNESSEE**



 State Route 317 (Bonny Oaks Drive)

 500' Study Corridor

TRANSPORTATION PLANNING REPORT

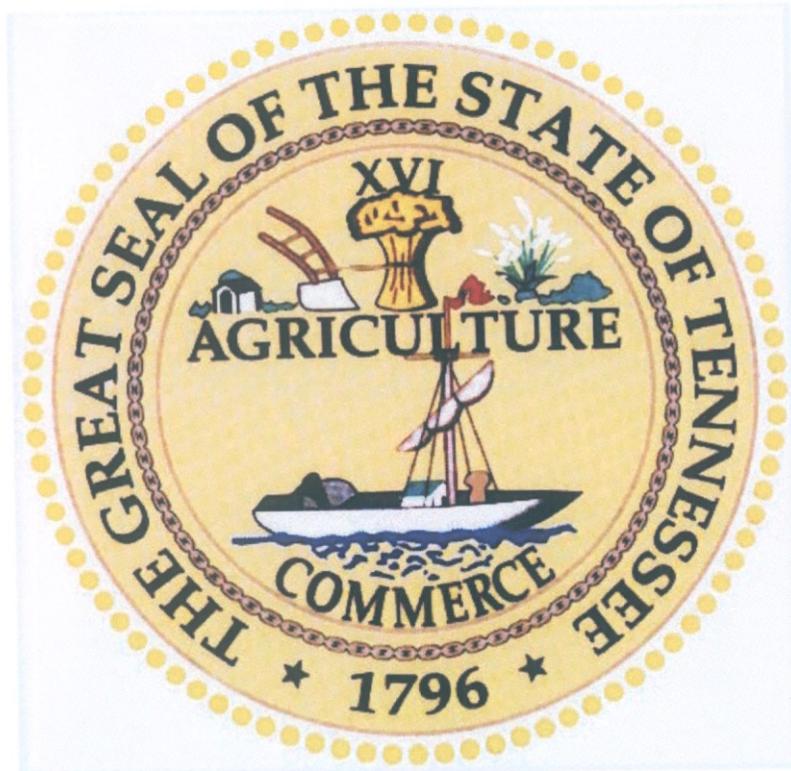
STATE ROUTE 317 (BONNY OAKS DRIVE)

FROM STATE ROUTE 17

TO INTERSTATE 75

CHATTANOOGA, HAMILTON COUNTY

PIN 112152.00



PREPARED BY
WILBUR SMITH ASSOCIATES
FOR THE
CITY OF CHATTANOOGA
AND

TENNESSEE DEPARTMENT OF TRANSPORTATION
PROJECT PLANNING DIVISION

Approved by:	Signature	DATE
CHIEF OF ENVIRONMENT AND PLANNING		12/22/10
TRANSPORTATION DIRECTOR PROJECT PLANNING DIVISION		12-22-10
TRANSPORTATION MANAGER 2 PROJECT PLANNING DIVISION		12/22/10

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

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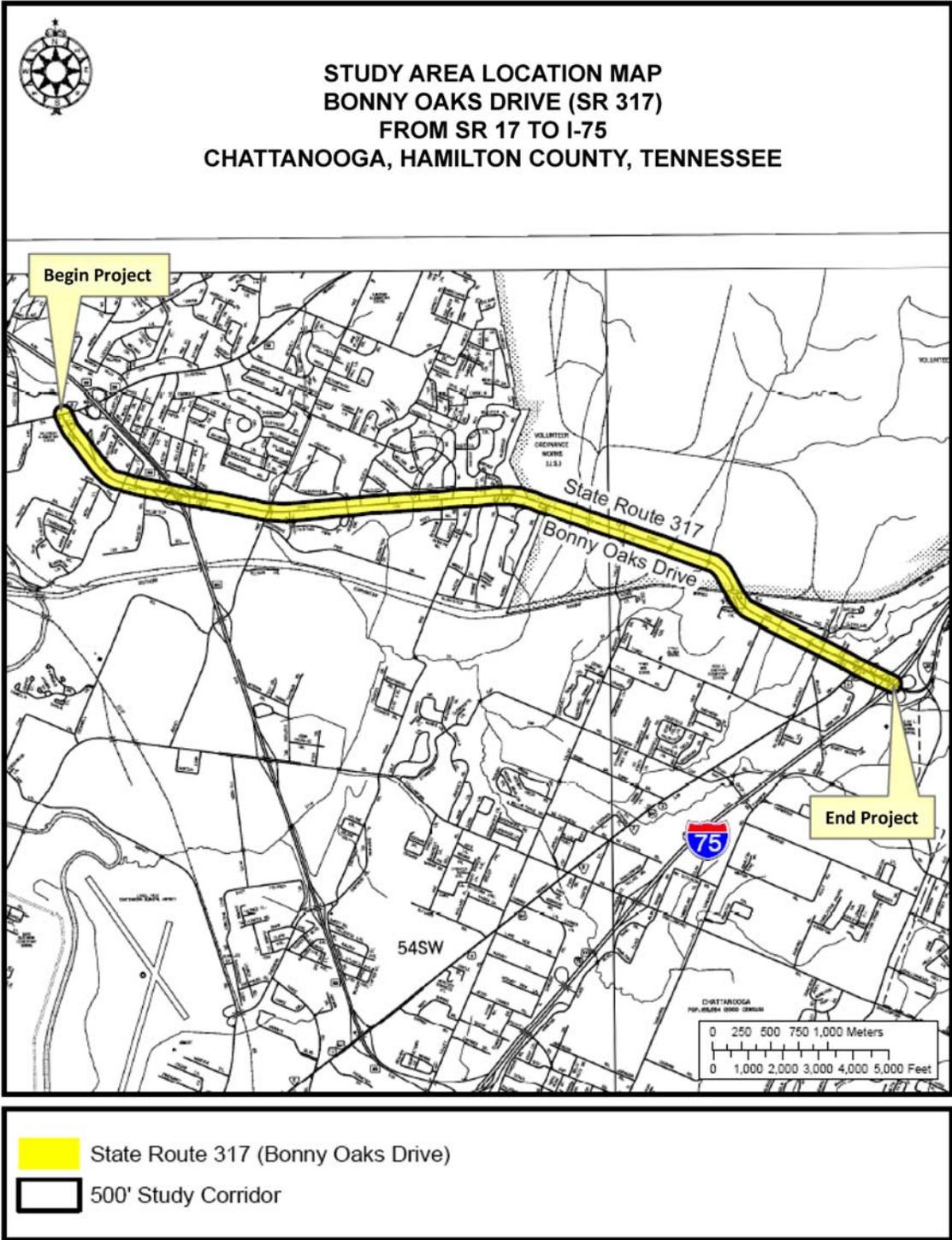
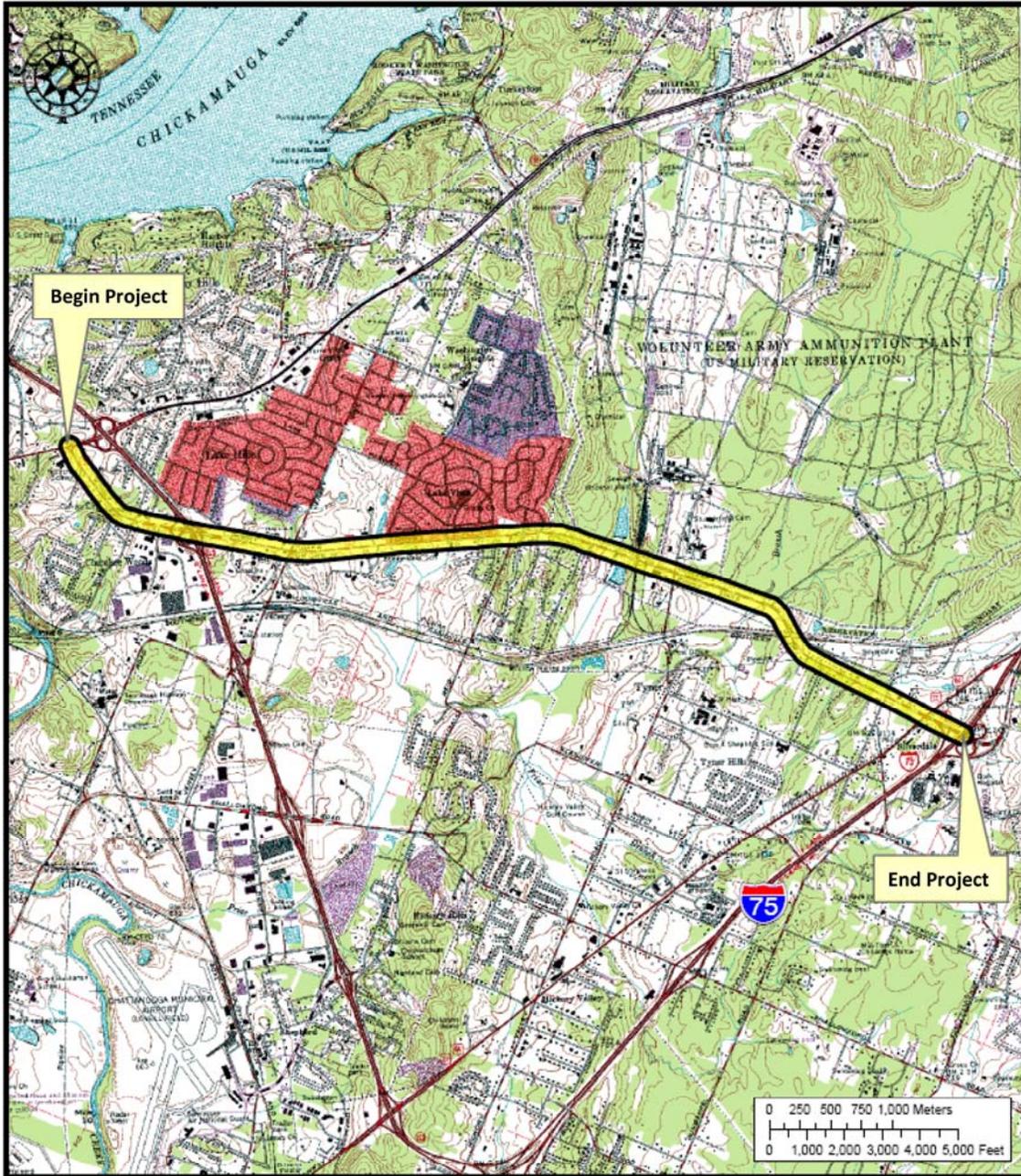


Figure 2



<p align="center">STUDY AREA TOPOGRAPHY STATE ROUTE 317 (BONNY OAKS DRIVE) FROM SR 17 TO I-75 CHATTANOOGA, HAMILTON COUNTY, TENNESSEE</p>	<p align="center">EAST CHATTANOOGA, TENN. 85085-A2-17-024 1969 PHOTO REVISIT 1976 DMA 1004 II S/N 478183 V44 UTM 16 NAD 27</p>
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Figure 3

1.0 PURPOSE OF THE TPR

This Transportation Planning Report (TPR) is being prepared to identify the purpose and evaluate the need for and feasibility of proposed improvements along Bonny Oaks Drive (State Route 317) from SR 17 to Interstate 75. This planning document will address the anticipated development growth and associated traffic demands within project environs, and will establish the immediate, as well as long-term needs for improvement.

The purpose of this Transportation Planning Report is to analyze existing and projected traffic data and develop options for improving the roadway system along Bonny Oaks Drive. Presently, Bonny Oaks Drive (SR 317) functions as an east-west minor arterial roadway connecting SR 17 and Interstate 75. The length of the proposed improvement is approximately 4.9 miles.

The completed TPR document will provide the information needed to take this study to the next project development phase which may be a National Environmental Policy Act (NEPA) document, if federal funding assistance is identified.

2.0 HISTORY AND BACKGROUND

A Project Vicinity Map is shown in Figure 1. A Project Location Map (USGS Map 7.5, East Chattanooga, Tennessee, 1976) and an Area Location Map depict the study corridor and define the project termini in Figures 2 and 3 respectively.

This report documents analyses undertaken to evaluate the opportunities for improving traffic conditions on Bonny Oaks Drive. The onset of new industrial, residential and commercial developments in the environs of Bonny Oaks Drive is expected to add more traffic to the area, escalating safety concerns for both pedestrians and motorists.

Both the City of Chattanooga and Hamilton County have undertaken several localized projects as a result of the traffic impacts from residential, industrial, commercial and retail development on Bonny Oaks Drive. Over the years, several transportation planning studies have been conducted in the project area to address the need for roadway improvements in the vicinity of Bonny Oaks Drive. These studies include:

- State Route 317 Transportation Planning Report (2006) – The purpose of this study was to determine the feasibility of improving SR 317 from Interstate 75 to East Brainerd Road in Apison. The project was divided into five (5) sections. In Sections One (1) through Four (4), four (4) twelve (12) foot traffic lanes with a median were proposed. Section Five (5) was to incorporate two (2) twelve (12) foot traffic lanes and a twelve (12) foot center turn lane.
- The Chattanooga-Hamilton County/ North Georgia Congestion Management Process/Plan(CMP) (2008)-This report evaluated the Bonny Oaks Drive corridor for transportation system operations and performance and recommended alternative strategies for congestion management that meet State and local needs. The CMP identified that Bonny Oaks Drive operates

at unacceptable LOS conditions. Recommendations encouraged the implementation of alternative modes of transportation (i.e., bike lanes and public transit) and travel demand measures.

- Volunteer Ordnance Connector Route Advance Planning Report (2002)-This study evaluated the need for an access road across the Volunteer Army Ammunition Plant (VAAP) property. The roadway will provide greater access to the property and connect it to SR 58, Interstate 75, and SR 317 (Bonny Oaks Drive).
- Volkswagen Traffic Impact Study (February 2010)-This study, commissioned by the City, evaluated traffic patterns around Enterprise South Industrial Park and assessed commuter traffic as a result of the new Volkswagen plant. The traffic study included thirty-seven (37) study intersections and three (3) at-grade railroad crossings. Trip projections were based on number of employees and anticipated trips per suppliers and new industries to be located in the Park. Production from the plant is anticipated in early 2011.

The Volkswagen Traffic Impact Study was conducted by Volkert and Associates and it was reviewed and approved by TDOT. In so far as having valid traffic volumes and capacity/LOS results. Therefore, this TPR presents in a summary fashion the results of that study Volkswagen Traffic Impact Study, including the identification of operational concerns, an analysis of deficiencies, and a discussion of improvement options.

3.0 COMMUNITY PROFILE

Chattanooga is the fourth-largest city (behind Memphis, Nashville, and Knoxville) in the state of Tennessee and the seat of Hamilton County. Located in southeast Tennessee, nestled in a bend of the Tennessee River on Chickamauga and Nickajack Lake, near the Georgia state border, Chattanooga was one of the first US cities that led a citizen visioning process to develop specific long-range goals to improve and enhance the quality of life of residents and visitors. Such efforts resulted in the city receiving national recognition for its downtown revitalization projects and the 21st Century Waterfront Redevelopment Plan.

Also called the “Scenic City”, attractions like the Tennessee Aquarium and Civil War battlefield sites are a few cultural and natural attributes that bring in thousands of tourists yearly. Considered a gateway to the Deep South, Chattanooga provides strong north/south and east/west access via three (3) interstates: Interstate 24, Interstate 59, and Interstate 75.

According to the 2000 US Census, Chattanooga had a total population of 155,554 residents with a metropolitan population of approximately 476,531 residents. The 2000 census population for Hamilton County is 307,908. By 2007, Chattanooga’s estimated population had increased to 169,884 (a nine (9) percent increase) and the estimated metropolitan population had increased to 514,568 (a 9.26 percent increase) while Hamilton County increased to 330,168 (a 9.32 percent increase). The Chattanooga Metropolitan Statistical Area (MSA) includes Hamilton, Marion and Sequatchie counties in Tennessee and Catoosa, Dade and Walker counties in Georgia.

As depicted on the Project Vicinity Map (Figure 1), Bonny Oaks Drive (SR 317) is located northeast of the downtown Chattanooga area. The land uses along Bonny Oaks Drive primarily consist of light manufacturing and distribution facilities. Other area land uses include residential neighborhoods, churches, cemeteries, and a public elementary school. The area is named for the former Bonny Oaks Plantation and School (also referred to as the Dent House), which served as a home for wayward youths. The Bonny Oaks School and chapel are the only preserved portions from the site to be listed on the National Register of Historic Places. A historic marker is placed on Bonny Oaks Drive near the former plantation to commemorate the area's historic significance. Today, the remaining portions of the plantation are now the Bonny Oaks Industrial and Office Park. The Bonny Oaks Industrial and Office Park is primarily a light industrial/distribution and warehousing facility. Tenants include UPS, Federal Express, Frito Lay, Sears Repair Center and Lifetouch National Studios. The Park employs over 2,200 people.

The Enterprise South Industrial Park is located on Bonny Oaks Drive and was redeveloped from a portion (1,600 acres) of the former 7,000 acre Volunteer Army Ammunition Plant. The industrial park is now a certified Tennessee Valley Authority (TVA) "ready for development" megasite. The Park's proximity to Interstate 75 and other transportation facilities as well as the availability of on-site rail and public utilities attracted Volkswagen to locate its new North American manufacturing headquarters in this prime industrial park. Production from the automobile plant is anticipated for early 2011. With the development of the new Volkswagen Plant within the project environs, traffic is expected to grow significantly along Bonny Oaks Drive due to increased employment in the industrial park and from other developments that are proposed in the area. The new Volkswagen auto assembly plant is estimated to create 2,000 new jobs in the Chattanooga area. Volkswagen's supplier network is estimated to add 14,000 more jobs. It is anticipated that many of the suppliers will locate in or near Enterprise South Industrial Park.

Chattanooga and Hamilton County have an economic base that encompasses a vast array of manufacturers, retail and service industries that draw from eighteen (18) counties across Tennessee, Georgia and Alabama. Notable manufacturing and non-manufacturing facilities in the Chattanooga/Hamilton County area include the City of Chattanooga, McKee Foods, Pilgrim's Pride Corporation, US Xpress Enterprise Incorporation, Blue Cross Blue Shield of Tennessee, Hamilton County Department of Education, Erlanger Health System and Tennessee Valley Authority.

4.0 PURPOSE AND NEED FOR IMPROVEMENT

4.1 Safety

Traffic crash information for SR 317 was obtained from TDOT for the years 2006 through 2008 to study the number and types of crashes in the area. For that three (3) year span, 351 crashes were reported in the unimproved section from Log Mile 0.00 to 4.77 with 233 occurring at intersections, two (2) at a ramp and one-hundred sixteen (116) along the roadway outside of intersections. Just slightly more than forty-seven (47) percent (165) of all crashes were rear end and almost twenty-five (25) percent (eighty-seven (87)) were angle. Of the 351 total crashes, 247, or seventy (70) percent, were property damage only. Of the injury crashes, there were two (2) fatal crashes, eight (8) incapacitating injury crashes, and eighty-seven (87) injury crashes. Incapacitating injury crashes were nearly evenly spread among the following types: head on (2), pedestrian

(1), fixed object (1), angle (2) and rear end (2). Both fatalities occurred in roadway segments at LM 1.56 and LM 2.04. the 1.56 LM fatality was a head on collision and the 2.04 LM fatality was a fixed object collision.

Of the three hundred and fifty-one (351) total crashes, one hundred and thirty-one (131) occurred at the principal intersections as shown in Table 1. At Bonny Oaks Drive and Jersey Pike forty-nine (49) crashes were reported in the three (3) year period. This represented the highest number among the eight (8) intersections that were studied. The actual crash rate at this intersection exceeded the critical rate for similar roads. The intersection of SR 317 and Hickory Valley Road had the second most number of crashes with thirty (30) and its actual crash rate of 1.00 was slightly below the critical rate of 1.16. The crash rate worksheets are included in the appendix.

TABLE 1- CRASH SUMMARY

CRASH DATA ALONG BONNY OAKS DRIVE FOR 2006-2008														
BONNY OAKS DR CROSS STREET	LOG MILE	No. OF CRASHES	MANNER OF FIRST COLLISION							TYPE			CRASH RATES	
			Angle	Rear-end	Sideswipe	Fixed Object	Pedestrian	Head-on	Other	PDO	Injury	Fatality	Location	Critical
SB SR-153 ON & OFF-RAMP	0.7	4	1	3						2	2		0.33	1.42
NB SR-153 ON & OFF-RAMP	0.86	4		3	1					3	1		0.34	1.44
JERSEY PK	1.31	49	17	23	5	1		3		29	20		1.53	1.27
ADAMSON CIR & PRESERVATION DR	1.74	16	4	5	1	3		3		10	6		0.62	1.23
NOAH REID RD	2.42	12	3	6		3				9	3		0.57	1.24
BONNYSHIRE DR	2.91	13	3	7		2		1		10	3		0.57	1.22
HICKORY VALLEY RD	3.28	30	5	14	2	9				24	6		1.00	1.16
ENTERPRISE SOUTH BLVD	3.84	3		1	1	1				2	1		0.13	1.22
TOTAL		131	33	62	10	19	0	7	0	89	42	0	-	-

For the entire 4.77 mile unimproved length of Bonny Oaks Drive, the crash rate was 3.546, in 2006-2008, which is above the statewide average of 2.652 and above the critical rate of 3.038.

While Bonny Oaks Drive has a few vertical alignment issues, the most obvious deficiency is a lack of adequate shoulders. Especially adjacent to drainage ditches. In fact, west of Noah Reid Road, the ditches are steep due to the natural terrain. Sight distance appears to be inadequate looking to the east from Noah Reid Road. Oakwood Baptist Church is located on the north side of Bonny Oaks Drive near Lightfoot Mill Road, but their primary parking lot is on the south side, thus necessitating pedestrians walking across the street at a mid-block crosswalk. When Bonny Oaks Drive is improved, better pedestrian protection needs to be implemented or the parking lot relocated.

4.2 System Linkage

Bonny Oaks Drive carries the designation SR 317. In the city, the state route functions as an east-west urban minor arterial roadway crossing SR 153 and connecting SR 17 to Interstate 75. SR 317 extends from Chattanooga into Ooltewah, Collegedale, Apison, and ends in Bradley County at SR 60.

At the intersection of SR-153, Bonny Oaks Drive is a four (4) lane divided highway and continues eastwardly as a four (4) lane section through the Jersey Pike intersection. It transitions at the Preservation/Adamson Circle intersection to a two (2) lane facility that continues through the intersections of Noah Reid Road, Hickory Valley Road and Enterprise South Boulevard. There are left-turn lanes off Bonny Oaks Drive at these intersections with right-turn lanes at Hickory Valley Road and Enterprise South Boulevard. Just south of Silverdale Road, Bonny Oaks Drive transitions to a four (4) lane facility with a channelized eastbound left and dual westbound lefts at Lee Highway (SR 2). Near the I-75 ramp intersections, Bonny Oaks Drive is a six (6) lane facility.

Collector Streets

- Jersey Pike- Jersey Pike is a two (2) lane facility in the study area/ 2009 AADT-10,970; Speed Limit -40 mph.
- Hickory Valley Road- Hickory Valley Road is a two (2) lane facility /2009 AADT -5,790; Speed Limit-35 mph.
- Noah Reid Road- Noah Reid Road is a two (2) lane facility that connects Bonny Oaks Drive and Shallowford Road/2009 AADT-1,350; Speed Limit-30 mph.
- Apison Pike (SR 317)-Apison Pike is a two (2) lane facility providing access from the Collegedale area to the Enterprise South vicinity/2009 AADT-16,050; Speed Limit-35 mph.
- Lee Highway (SR 2)-Lee Highway (SR 2) is a four (4) lane facility with median turn lanes from the intersection of Hunter Road and Mountain View Road to east of the Ooltewah-Ringgold Road intersection. 2009 AADT-28,460; Speed Limit 45 mph.

4.3 Level of Service Analyses

The Volkswagen Traffic Impact Study conducted by Volkert and Associates, Inc. evaluated the existing transportation network in the vicinity of the new Volkswagen site located in the Enterprise South Industrial Park. Figure 4 shows the nine (9) principal intersections on Bonny Oaks Drive (SR 317) from I-75 to SR-153 that was analyzed as part of the study. With the anticipation of Volkswagen beginning production in early 2011, scenarios were developed for Existing Conditions (2008), Opening Day (2011), and horizon years 2015 and 2035.

The nine (9) intersections were studied to evaluate existing and future traffic conditions, capacity and levels of service. Based on the results of the specific horizon year analyses, the assessment includes recommendations for intersection improvements considered necessary to facilitate safe and efficient traffic flow to and from the facility. The study intersections along Bonny Oaks Drive include:

1. SR 317 (Bonny Oaks Drive) and SR 153 Northbound Ramps
2. SR 317 (Bonny Oaks Drive) and SR 153 Southbound Ramps
3. SR 317 (Bonny Oaks Drive) and Jersey Pike
4. SR 317 (Bonny Oaks Drive) and Noah Reid Road
5. SR 317 (Bonny Oaks Drive) and Hickory Valley Road
6. SR 317 (Bonny Oaks Drive) and Enterprise South Boulevard
7. SR 317 (Bonny Oaks Drive) and Lee Highway (SR 2/US 11)
8. SR 317 (Bonny Oaks Drive) and Interstate 75 Northbound Ramps
9. SR 317 (Bonny Oaks Drive) and Interstate 75 Southbound Ramps

Trip generation and trip distribution was evaluated to and from the proposed Volkswagen site and scenarios developed for each study intersection. Synchro 7 traffic software was used to analyze the intersections. The traffic analysis includes traffic capacity/operations, possible street relocations, intersection/geometry improvements, signal timing and access options for the study area.

BONNY OAKS DRIVE TPR-STUDY INTERSECTIONS



Figure 4

A “Level of Service” (LOS) index was used to gauge the operational performance along Bonny Oaks Drive. There are six levels ranging from “A” to “F” with “F” being the worst. Each level represents a range of operating conditions. Table 2 shows the criteria related to each LOS as described in the **2000 Highway Capacity Manual (HCM), Special Report 209 published by the Transportation Research Board (TRB)**.

The LOS analysis completed for this route utilized the projected base year (2015) design hour volumes (DHV) and design year (2035) DHV with existing geometry (the No-Build Option) as well as the proposed build option improvements for the corridor.

Conditions for AM and PM peak hours were modeled for the existing roadway network and a LOS and capacity analysis performed for each of the study intersections. The results are shown in Table 3.

Existing traffic characteristics from the Volkswagen Traffic Impact Study conducted by Volkert and Associates, Inc. traffic study revealed that most intersections on Bonny Oaks Drive operate at a LOS D or better during both AM and PM peak hour periods. The exceptions are the northbound SR 153 unsignalized ramp, which operates at a LOS F in the AM and PM peak hours and northbound Noah Reid Road, which operates at LOS F in the PM peak hour. In the AM peak hour, the northbound unsignalized movement at Noah Reid Road operates at LOS D. Signalized intersections that also operate at LOS D include Lee Highway in the PM peak hour and the I-75 southbound ramp in the AM peak hour.

TABLE 2- LOS CRITERIA

Level of Service	Average Control Delay in seconds per vehicle	
	Signalized Intersections	Stop-controlled Intersections
A	≤ 10	≤ 10
B	> 10 and ≤ 20	> 10 and ≤ 15
C	> 20 and ≤ 35	> 15 and ≤ 25
D	> 35 and ≤ 55	> 25 and ≤ 35
E	> 55 and ≤ 80	> 35 and ≤ 50
F	> 80	> 50

TABLE 3- EXISTING CONDITIONS

Bonny Oaks Drive @	AM LOS	PM LOS
SR-153 NB Ramps*	F	F
SR-153 SB Ramps*	B	A
Jersey Pike	B	C
Noah Reid Road (NB)*	D	F
Hickory Valley Road	C	C
Enterprise South Boulevard	A	B
Lee Highway	C	D
I-75 Southbound Ramps	D	C
I-75 Northbound Ramps (Free-flow Movements)	--	--

*For unsignalized intersections, the LOS provided is for the conflicting movement.

4.4 Transportation Demand

The Bonny Oaks Drive (SR 317) project is identified in the Chattanooga-Hamilton County/ North Georgia Transportation Planning Organization 2035 Long-Range Transportation Plan as project Identification Number 15 (LRTP ID#15). Recommended improvements included widening the existing two-lane roadway to four (4) lanes with a twelve (12) foot center turn lane, five (5) foot sidewalks, six (6) foot bike lanes and two (2) foot curb and gutter. The Chattanooga-Hamilton County/ North Georgia Transportation Planning Organization recently updated its Long-Range Transportation Plan. The updated LRTP 2035 was adopted February 16, 2010. The plan update was amended in the FY 2008-2011 TIP (February 2009). An air quality conformity analysis will also be required by the TPO as a result of this inclusion.

4.5 Legislation

This report is being prepared in response to a request from the City of Chattanooga in cooperation with the Tennessee Department of Transportation (TDOT) and the Chattanooga- Hamilton County Regional Planning Agency (CHCRPA). However, there is no legislative mandate from the state for this improvement.

4.6 Social Demands or Economic Development

The improvements proposed in this report will enhance traffic mobility and access along Bonny Oaks Drive. Increased capacity, better safety, and improved traffic operations along Bonny Oaks Drive are needed to accommodate travel demands to and from the VW Plant in the Enterprise South Industrial Park. An improved corridor will facilitate development that will support the VW Plant.

4.7 Modal Inter-relationships

Greenways

The Trust for Public Lands has taken the lead for providing an interconnected greenway system linking vital recreational facilities with major activity centers in the Chattanooga-Hamilton County-North Georgia (CHCNGA) region. The Parks, Recreation, Arts & Culture Department has several such Greenways: South Chickamauga Creek Greenway including the Brainerd Levee, the North Chickamauga Creek (around Greenway Farm), and the Tennessee Riverwalk (in partnership with Hamilton County). The Chattanooga Greenway Master Plan calls for creating greenway trails along tributaries of the Tennessee River and connecting them to the Riverpark. The City is planning to construct a greenway system as an element of the redevelopment of the Enterprise South Industrial Park to include multi-use trails to link neighboring city parks to the industrial park.

Public Transit

The Chattanooga Area Regional Transportation Authority (CARTA), the City's public transportation provider, operates seventeen (17) routes including a free downtown shuttle service using electric buses. CARTA also provides paratransit van services, called Care-A-Van. CARTA has provided transportation needs for its users by providing expanded services to improve the availability of transportation to residential neighborhoods. Presently, no transit stops are located on Bonny Oaks Drive. However, with the expected increase in employment in the Enterprise South Industrial Park, the opportunity for the City to introduce modal choices including transit and ride share options are recommended. During the January 29, 2009 field review, it was suggested that the Chattanooga Area Regional Transportation Authority (CARTA) evaluate the need for a bus route to serve the Enterprise South Industrial Park and the Bonny Oaks Drive area. The investment in public transit provides the opportunity to reduce congestion, improve air quality and offer an alternate choice of travel for choice riders or individuals living within the vicinity of the bus route who lack a vehicle or the ability to drive. In addition, the 2030 LRTP and CARTA are continuing to develop a vision that will identify increased service frequency and route expansions.

Railroad

Despite the high level of freight rail activity in the Chattanooga area, there is no passenger rail service in the city for either commuters or long-distance travelers. The Tennessee Valley Railroad Museum and The Incline Railway offer rail excursions as tourist attractions. Recent studies call for Chattanooga to become a major stop in a north-south high speed commuter rail connecting Atlanta to Nashville. However, this potential project is in the early planning stage.

Chattanooga serves as a major freight hub with Norfolk-Southern (NS) and CSX. Within the project vicinity, three (3) railroad bridges cross over Bonny Oaks Drive. A main-lane

rail facility is owned by Norfolk-Southern and runs along the southeast side of Enterprise South Industrial Park. The dual rail spurs to Enterprise South are served by the Hamilton County Railroad Authority. In 2011, (the expected opening date of the Volkswagen Plant) approximately eighty (80) percent of the automobiles produced will be shipped via rail. As development of the Volkswagen Plant occurs, intermodal activity is expected to increase.

Freight

The TPO developed the *Freight Transportation Study and Plan –Phase 1 (January 2008)* to assess present and future impacts that freight transportation has on the CHCNGA regional transportation network. The goal of the Phase 1 study was to identify the need for freight planning within the TPO area. A second study (*Phase 2, December 2008*) is underway to evaluate the potential impacts of the Volkswagen assembly plant on freight movements in the area. The Volkswagen Plant and its main supplier plants housed at the Enterprise South Industrial Park will have a significant effect on freight movement to and from Bonny Oaks Drive to access Interstate 75, SR 153, and SR 58.

Bicycle Facilities

The *Chattanooga Urban Area Bicycle Facilities Master Plan* outlines a twenty (20) year plan for additional bike lanes and route improvements in the region. Within the next twenty (20) years, the City of Chattanooga has proposed to integrate bicycle facilities as a part of the City's transportation strategy.

As a result of recent bicycle planning efforts, the City of Chattanooga has received national recognition as a "Bicycle Friendly Community" for its commitment to provide safe accommodations and facilities for bicyclists. Additionally, the American Planning Association (APA) selected Chattanooga as its 2007 recipient of the APAs National Planning Award for Implementation. Within several years, Chattanooga has utilized over \$300,000 in federal Surface Transportation Program (STP) funds for the creation of dedicated bike lanes, share-the-road bike routes, bike racks on buses and public spaces, and for printing bicycling brochures and bikeway maps. Presently, there are no designated bike lanes on Bonny Oaks Drive for bicycle traffic. However, the 2030 LRTP (Project B-63) identified utilizing shoulders for bike lanes on Bonny Oaks from SR 17 to Interchange 75. Option B proposes the addition of six (6) foot bike lanes along both sides of the study corridor.

Pedestrian Facilities (Sidewalks)

The LRTP recommends that funding for pedestrian and bicycle facilities be considered as a scope element included in state highway and transit projects.

In 2003, the *Chattanooga Urban Area Sidewalk-Streetscape Policy Guide* was produced by the Chattanooga Urban Metropolitan Planning Organization (MPO). This guide provided strategies for placement of appropriate sidewalks to increase pedestrian activity in the area. Pedestrian facilities are very limited on Bonny Oaks Drive but are planned as part of the recommended improvements to the corridor. Portions of the existing five (5) lane section between Preservation Drive and SR 153 are already equipped with sidewalks. Option B proposes to provide sidewalks on both sides of Bonny Oaks Drive from SR 17 to I-75. These improvements will provide safe and proper connections for pedestrians to nearby land uses, offer a diversity of transportation

alternatives and contribute to a balanced multimodal transportation system in the CHCNGA region.

4.8 Geometric Deficiencies

Traffic will significantly increase due to increased employment in the Enterprise South Industrial Park and the anticipated increase in industrial and residential development that will support that employment.

According to the Volkswagen Traffic Impact Study conducted by Volkert and Associates, Inc., the unsignalized SR 153 northbound ramp terminal at Bonny Oaks Drive operates at LOS F in the AM and PM peak hours and will need to be signalized. In the PM peak hour, the northbound Noah Reid Road approach is also LOS F. The side street volumes are not of the magnitude to warrant a traffic signal. By 2015, the report forecasts that many of the signalized intersections will fail unless an additional through lane and new turn lanes are added.

5.0 EXISTING CONDITIONS

5.1 Description of Study Area (Geometrics)

Bonny Oaks Drive (SR 317) is functionally classified as an urban minor arterial roadway which runs east-west connecting SR 17 (SR 58) and SR 153 on the western terminus to US 11 (Lee Highway) and Interstate 75 at the eastern end. The project length is a total distance of approximately 4.9 miles. The majority of the route consists primarily of a two (2)-lane roadway with very little or no shoulders in some areas. The 2009 Average Annual Daily Traffic (AADT) volumes ranges from approximately 17,400 vehicles per day (vpd) to 19,800 between SR 17 to west of the Enterprise South Industrial Park and approximately 16,900 vpd to 21,600 vpd between of SR 153 and Interstate 75. Existing right-of-way varies between 60 feet and 250 feet. Heading west on Bonny Oaks Drive from the interstate, the posted speed limit is 45 MPH. Near Wimberly Drive, the posted speed limit increases to 50 MPH and reduces back to 45 MPH from Heritage Park Drive to SR 17.

SR 153 is a multi-lane facility from Interstate 75 at Exit 4, extending northward across Chickamauga Lake to SR 29. In 2009, traffic volumes on SR 153 ranged from 65,000 to 73,200 vpd, north and south of the Bonny Oaks Drive interchange. A four (4) lane, median divided facility is already provided on Bonny Oaks Drive through the SR 153/Bonny Oaks Drive interchange. West of the interchange, the four (4) lane section ties into a three (3) lane section before tapering back to two (2) lanes at SR 17. Heading east from the interchange, Bonny Oaks Drive becomes a five (5) lane section towards Jersey Pike. From Jersey Pike to Preservation Drive, Bonny Oaks Drive is a multi-lane facility with four (4) traffic lanes (two (2) lanes in each direction), a two (2) way left turn lane (TWLTL), sidewalks and curb and gutter on both sides. From Preservation Drive, Bonny Oaks Drive tapers back to a two (2) lane facility before approaching the recently improved intersection at the Enterprise South Industrial Park entrance. From the industrial park, the route transitions back to two (2) lanes to Silverdale Road.

Recent improvements to the Bonny Oaks Drive/Silverdale Road intersection were part of TDOT's construction of the new I-75/Exit 7 interchange to provide direct access to Enterprise South. This improvement of Bonny Oaks Drive between Jenkins Road (which

is east of I-75) to Silverdale Road consists of a five (5) lane section with sidewalks and curb and gutter to the project terminus at Interstate 75.

As previously mentioned, there are no existing bike lanes along Bonny Oaks Drive and sidewalks are limited along the five (5) lane section on Bonny Oaks Drive between Preservation Drive and SR 153. As part of the I-75, Exit 7 interchange improvements, sidewalks were constructed from US 11 to Silverdale Road. Near the western terminus of the project, west of Preservation Drive/Heritage Park Drive sidewalks are available on both sides of the roadway to Powers Court. From Powers Court, a sidewalk is available on the north side of Bonny Oaks Drive to Redlands Drive, east of the SR 153 interchange. Oakview Baptist Church, located east of Lightfoot Mill Road, provides a mid-block crossing for members from the parking lot to the church. A pedestrian crossing sign designates the where pedestrians cross.

Truck traffic along Bonny Oaks Drive is four (4) percent daily with most being single units (about two (2) percent) and multi-unit (about two (2) percent) trucks transporting goods to and from the industrial parks. The 2009 AADT is estimated at 17,650 vpd with the total number of trucks being 706 (343 single unit trucks; 363 multi-unit trucks).

To maintain efficient travel along Bonny Oaks Drive, both the city and county have completed some short-term improvement projects to offer better flow of through movements and address capacity concerns particularly at major intersections in the vicinity of the industrial parks. These short-term improvements that have been completed include:

- Extending left turn lanes and right turn lanes at the Hickory Valley intersection (City)
- Adding left turn lanes at entrance to Enterprise South Boulevard (County)
- Traffic signal installation at the Enterprise South Boulevard intersection (City)

Motorists continue to experience significant traffic congestion and delays on the remaining unimproved two (2) lane sections as a result of heavy left turns from Bonny Oaks Drive. Other locations have possible vertical and horizontal alignment issues which create sight distance problems at several cross streets.

5.2 Major Structures

Three (3) railroad bridges cross over Bonny Oaks Drive. All three (3) railroad bridges are currently long enough to span only the two (2) lane roadway cross section that exists on Bonny Oaks Drive.

The eastern most rail line is a Norfolk-Southern main line. Bonny Oaks Drive has a two (2) lane cross section at this location and is subject to a 13'-7" low clearance. The inadequate clearance height creates concerns for trucks hauling to and from the industrial parks. With an expected increase in truck traffic along Bonny Oaks Drive, the structure is more likely to be damaged due to its height deficiency. Plans to reconstruct the bridge are addressed in Section 8.0.

The "middle" Bonny Oaks Drive rail crossing is a short rail line located near Hickory Valley Road and the Enterprise Park South Entrance. This line will be heavily utilized in the day-to-day Volkswagen plant operations but improvements to the rail line itself are not necessary. Modifications to this structure will be considered as the Build Option enters the design phase.

Improvements are currently underway on the westernmost of the three (3) rail bridges. The improvements include expanding the existing overhead railroad bridge to a span width that will accommodate five (5) twelve (12) foot traffic lanes, five (5) foot sidewalks on both sides and six (6) foot bike lanes.

South of Bonny Oaks Drive, the Hamilton County Railroad Authority has at-grade railroad crossings located on Hickory Valley Road and Noah Reid Road. In addition, both Norfolk-Southern and CSX share an at-grade crossing at Jersey Pike. Jersey Pike is classified as a two (2) lane collector roadway that links to SR 153 south of Bonny Oaks Drive. Approximately 10,900 vpd utilize this section of Jersey Pike. Hickory Valley Road and Noah Reid Road are also two (2) lane collector roads which carry an annual average daily traffic (AADT) volume of approximately 5,600 vpd and 1,350 vpd, respectively. These at-grade crossings delay vehicular traffic for at least five (5) to thirty (30) minutes with only Jersey Pike offering a readily accessible detour. This temporarily reduces the roadway capacity to zero depending on the speed of trains and the length of delay. Trains performing switching operations can block, not only these intersections, but other streets within its vicinity, including traffic diverting to and from Bonny Oaks Drive. This extended delay occurs at least twice daily adversely affecting emergency services and presents other quality of life issues in the area. The combination of increasing roadway and rail traffic volumes in the future will only add to the travel delays caused by long and slow moving trains blocking the at-grade intersections. With this continuing trend, an increase in the potential for crashes can also be expected.

This information is being provided because it was a significant issue noted in the traffic study. It is being presented in this TPR document to make readers aware of the issue as it relates to Bonny Oaks Drive. However, these at-grade railroad crossings are outside the scope of this study.

Information pertaining to the location of bridges and culverts within the study area were obtained using the TDOT TRIMS database. Of the structures identified, the underpass (Log Mile 0.79) that is part of the SR-153/ Bonny Oaks Drive interchange was recently improved. Several culverts including those crossing Friar Branch and Poe Branch will have to be evaluated for reconstruction or modifications as part of the proposed roadway improvements.

5.3 Multi-modal Facilities

Bonny Oaks Drive is primarily two (2) lanes on the eastern and western ends of the corridor. Presently, sidewalks and shoulders are limited along Bonny Oaks Drive. However, west of Preservation Drive to Redland Drive there exists a five (5) lane section with sidewalks on both sides. Presently, there are no bike lanes or transit stops along the roadway. During the field review (January 29, 2009), it was noted that CARTA (Chattanooga Area Regional Transportation Authority) will evaluate the need for public transportation on Bonny Oaks Drive.

6.0 FIELD REVIEW INFORMATION

A preliminary field investigation within the environs of the proposed project was performed on Thursday, January 29, 2009. The items discussed during the course of the field investigation are summarized in the Appendix (TPR Field Review- SR 81). Those representatives in attendance included:

NAME	AGENCY
Danielle Hagewood	TDOT
Paul Lane	TDOT
Bob Brown	TDOT Region 2
Steve Allen	TDOT
Mellissa Taylor	TPO
Patrick Hall	TPO
Jim Johnson	TDOT- Region 2 Design
Gary Chapman	TDOT-Region 2 Survey
Jackie Wolfe	TDOT-Region 2 ROW
Alan Wolfe	TDOT- Region 2 Traffic Manager
Scott Medlin	TDOT –Region 2 Project Manager
Dawn Michelle Foster	Wilbur Smith Associates
Hollis Loveday	Wilbur Smith Associates
Bob Bowers	Wilbur Smith Associates
Fritz Brogdon	Volkert
Karen Headlee	Volkert
Bill Payne	City of Chattanooga- City Engineer
Steve Leach	City of Chattanooga- Public Works
John Van Winkle	City of Chattanooga- Traffic Engineering
Trevor Hamilton	Chamber of Commerce-Economic Development
Leigh Ann Tribble	FHWA
Kelly Martin	CHCRPA
Barry McClendon	TDOT-Survey
Wes Hughen	TDOT – Region 2
Ken Flynn	TDOT-Region 2 Construction
Landon Castleberry	TDOT Traffic
Cynthia Allen	TDOT Planning
Nermine Nashed	TDOT Planning
Dennis Malone	City of Chattanooga

The meeting with the representatives consisted of two (2) parts: A Pre-Site Visit and the field review.

Pre-Site Meeting-The Pre-Site Visit meeting helped area stakeholders discuss the study scope with TDOT officials and provide information for agency and utility coordination. The meeting also assisted in the preparation of a timeline to gather supporting information considered necessary for the TPR.

Field Review-Representatives attending the field review stopped at several principal intersections on Bonny Oaks Drive to address initial concerns and give suggestions. Topics of discussion included the potential impacts to the public park/soccer field,

drainage, utility relocations, railroad bridges, environmental justice and potential roundabouts at several locations.

At the intersection of Bonny Oaks Drive and Lightfoot Mill Road, the City of Chattanooga had considered the placement of a roundabout. The city began discussion with representatives of Oakwood Baptist Church (located on the northeast corner) who had concerns regarding their parking lot located on the southeast corner. The city requested that a roundabout design be considered at this intersection as part of the improvements along Bonny Oaks Drive. This consideration will take place as the Build Option enters the design phase of development.

7.0 OPTIONS FOR IMPROVEMENT (SPOT AND CORRIDOR)

7.1 Corridor Improvements

This TPR document examines operational and safety improvement options along Bonny Oaks Drive. During the field review, new roadway options were discussed with TDOT, FHWA, City of Chattanooga and TPO representatives. The project is approximately 4.9 miles and is bounded by industrial, commercial and residential uses.

During the field review, comments from area stakeholders as well as the City, TPO and TDOT representatives addressed issues relative to reconstructing Bonny Oaks Drive on new alignment as another build option. Because of the environmental features located within the environs of the study corridor (public parks, schools, churches, wetlands, historic sites) TDOT and the other stakeholders concluded that the most appropriate corridor in which to make improvements to Bonny Oaks Drive is along its existing location. Therefore no new location options for horizontal alignment were considered.

Besides the no build option (Option A), one build option (Option B) will be evaluated. Spot improvements are not recommended because they will have limited effect on traffic flow along Bonny Oaks Drive. The traffic study indicates that Bonny Oaks Drive will need to be multi-lane by year 2015, four (4) years after the VW plant opens. Thus, a three (3) lane typical section will not provide the needed throughput mainline capacity that Bonny Oaks Drive will require accommodating short-term traffic needs. A four (4) lane cross section has the required throughput capacity, but the lack of a turn lane will result in the inside lane being used as a left-turn lane. The build option will be developed with careful consideration of the study area keeping in mind the objectives of the city and the TPO to provide an efficient transportation link from SR 17 to I-75.

The options examined are summarized below:

7.1.1 Option A -No-Build Option

Option A assumes no modifications or improvements will be made over the planning horizon to add capacity. Routine maintenance related activities as well as scheduled resurfacing, signing, and possible safety projects may occur. This option, however, does not support the proposed project's stated Purpose and Need for providing a transportation facility to enhance mobility, support economic development and improve safety.

Under this No Build scenario, several existing signalized intersections along Bonny Oaks Drive will need adjustments in signal timing to improve traffic operations for all

movements. However, congestion and delay will continually increase over time if upgrades are not planned for existing unsignalized intersections that already operate poorly.

Although, Option A is less disruptive to the existing land uses and causes no impacts to environmental features in the area due to construction, Option A does not promote or provide the necessary infrastructure that could support further economic opportunities in the area. In addition, the disadvantages of this no-build option include continued inadequate operating conditions and safety concerns inherent with increased traffic volumes, inadequate roadway geometrics, and deficient vertical and horizontal alignment.

7.1.2 Option B- Widen Along Existing Alignment

This proposal involves upgrading the existing two (2) lane sections of Bonny Oaks Drive to an improved five (5) lane section consistent with the recently improved portion from Silverdale Road to the Interstate 75. Proposed improvements for Bonny Oaks Drive consist of a five (5) lane urban section including sidewalks, curb and gutters and bike lanes.

The alignment for Option B is illustrated on aerial photography in the Appendices of the report. Option B is proposed to improve roadway continuity from SR 17 to Interstate 75. A 500 foot study corridor was utilized based on the vicinity of the option within the project limits. This corridor width will provide the needed area to encompass a feasible roadway placement to address the purpose and need of the project. Option B alignment begins at its western terminus at SR 17 and run approximately 4.9 miles along its existing centerline. Build Option B includes tying into the five (5) lane section at Silverdale Road.

The bids for construction of a new railroad overpass (Hamilton County Railroad Authority) went out in April 2009. According to conversations with the railroad consultant, the designs and recommended Right-of-Way width/bridge length of 81'-3" was previously approved by TDOT Region 2 Design office. The Right-of-Way is measured between the edges of the north side abutment of the east wall to the end of the south side abutment of the west wall (skewed alignment). The railroad bridge was completed in October 2010.

The railroad overpass is designed for a 16'-6" clearance. It was discussed during the field review to recommend lowering this portion of the roadway to accommodate proper clearance of the railroad overpass. Discussions with the railroad have taken this into consideration. As for the railroad footings, they are being constructed approximately two (2) feet lower than the existing bridge footing elevations so as to allow lowering of Bonny Oaks Drive if needed to attain the 16'-6" vertical clearance across the length of the railroad bridge.

The primary adverse effects of Option B include: 1) temporary construction impacts (dust, siltation, equipment noise, etc.) during the construction period; 2) impacts to the environment to be determined in detail during the NEPA phase of the study.

Potential environmental impacts as well as other factors (i.e., topography and existing land use) will determine roadway geometrics prior to the right-of-way phase. Further public involvement will be initiated in the early phase of the environmental process.

7.2 Projected Levels of Service

Volkswagen Plant Opening Day (2011)

With the anticipation of the VW plant opening in 2011, Table 4 shows the LOS results for opening day for AM and PM conditions.

TABLE 4- VOLKSWAGEN PLANT- OPENING DAY INTERSECTION LOS

Bonny Oaks Drive @	AM LOS	PM LOS
SR-153 NB Ramps*	F	F
SR-153 SB Ramps*	B	A
Jersey Pike	C	C
Noah Reid Road (NB)	E	F
Hickory Valley Road	D	D
Enterprise South Boulevard	C	C
Lee Highway	C	D
I-75 Southbound Ramps	F	D
I-75 at Northbound Ramps (Free-Flow Movements)	--	--

Source: Volkswagen Traffic Impact Study; February 2010 Prepared by Volkert

*For unsignalized intersections, the LOS provided is for the conflicting movement.

The results of further analysis revealed that several intersections along Bonny Oaks Drive will need adjustments to signal timing to improve traffic operations for opening day of the VW facility. These intersections include:

- Bonny Oaks Drive at Jersey Pike
- Bonny Oaks Drive at Hickory Valley Road
- Bonny Oaks Drive at Enterprise South Boulevard
- Bonny Oaks Drive at Lee Highway
- Bonny Oaks Drive at I-75 SB Off-Ramp

Additionally, to accommodate acceptable traffic operations for opening day, the Volkert and Associates, Inc. Volkswagen Traffic Impact Study recommended that the intersection of Bonny Oaks Drive at SR-153 northbound off Ramp will need intersection improvements including traffic signal installation.

Base Year 2015

TDOT estimates 2015 AADT volumes at 26,600 vpd. Table 5 shows the LOS results of the intersection analyses for Year 2015 during both AM and PM peak hours. The summary of intersection analyses below indicates an acceptable performance (LOS D or above) or proposed improvements for each intersection. The first step is to identify improvements that will improve intersection operations (e.g., modifying from a stop-controlled intersection to signal control). Based on the analyses, Bonny Oaks Drive will operate more efficiently with signal timing adjustments to the following intersections:

- Bonny Oaks Drive at Jersey Pike
- Bonny Oaks Drive at Hickory Valley Road
- Bonny Oaks Drive at Enterprise South Boulevard
- Bonny Oaks Drive at Lee Highway
- Bonny Oaks Drive at I-75 SB Off-Ramp

Further proposed improvements in the traffic study include adding a through lane in both east-and westbound directions on Bonny Oaks Drive from Jersey Pike to I-75 to ease and improve traffic flow in the vicinity of the industrial and manufacturing facilities along

Bonny Oaks Drive (see Table 6). Thus, in 2015, the Volkert report recommends widening Bonny Oaks Drive to two (2) through lanes in each direction.

TABLE 5- 2015 INTERSECTION LOS

Bonny Oaks Drive @	AM LOS	PM LOS
SR-153 NB Ramps*	B	A
SR-153 SB Ramps*	B	B
Jersey Pike	C	C
Noah Reid Road (NB)*	F	F
Hickory Valley Road	F	E
Enterprise South Boulevard	F	F
Lee Highway	C	E
I-75 Northbound Ramps (Free-Flow Movements)	--	--

Source: Volkswagen Traffic Impact Study; February 2010 Prepared by Volkert and Associates, Inc.

*For unsignalized intersections, the LOS provided is for the conflicting movement.

TABLE 6- RECOMMENDATION FOR INTERSECTION IMPROVEMENTS-YEAR 2015

INTERSECTION	RECOMMENDATIONS	
	AM Peak Hour	PM Peak Hour
Bonny Oaks Drive at Jersey Pike	Signal timing adjustment	OK
Bonny Oaks Drive at Noah Reid Road	Signal timing adjustment	Additional EBT and WBT lanes (Bonny Oaks Drive)
Bonny Oaks Drive at Hickory Valley Road	Additional EBT and WBT lanes (Bonny Oaks Drive) and signal timing adjustment	Additional EBT and WBT lanes (Bonny Oaks Drive) and signal timing adjustment
Bonny Oaks Drive at Enterprise South Boulevard	Additional EBT and WBT lanes (Bonny Oaks Drive) and signal timing adjustment	Additional EBT and WBT lanes (Bonny Oaks Drive) and signal timing adjustment
Bonny Oaks Drive at Lee Highway	OK	Signal timing adjustment
Bonny Oaks Drive at I-75 SB	Signal timing adjustment	Signal timing adjustment

Source: Volkswagen Traffic Impact Study; February 2010 Prepared by Volkert and Associates, Inc.

Design Year 2035

TDOT estimates an AADT of 39,990 vpd for the 2035 design year. A Design Hour Volume (DHV) of eleven (11) percent produces an estimated 4,309 vehicles in the design hour with four (4) percent truck traffic. Table 7 shows the LOS results of the intersection analyses for Year 2035 during both AM and PM peak hours. These analyses were performed with the assumption that the recommended 2015 improvements had been implemented.

TABLE 7- 2035 INTERSECTION LOS

Bonny Oaks Drive @	AM LOS	PM LOS
SR-153 NB Ramps*	C	C
SR-153 SB Ramps*	B	B
Jersey Pike	E	F
Noah Reid Road (NB)	F	F
Hickory Valley Road	F	F
Enterprise South Boulevard	F	F
Lee Highway	F	F
I-75 Northbound Ramps (Free-Flow Movement)	--	--

Source: Volkswagen Traffic Impact Study; February 2010 Prepared by Volkert and Associates, Inc.

*For unsignalized intersections, the LOS provided is for the conflicting movement.

7.3 Bicycle and Pedestrians

According to the adopted Chattanooga Urban Area Bicycle Facilities Master Plan, Bonny Oaks Drive (SR 317) is currently planned for six (6) foot bike lanes in each direction. Bicycle and pedestrians should be accommodated where feasible throughout the project, but not at locations that pose unsafe conditions for those users.

8.0 EARLY ENVIRONMENTAL SCREENING

In preparation of Transportation Planning Reports (TPR), the Tennessee Department of Transportation (TDOT) has introduced an early environmental screening (EES) process for the study area. By screening the latest available Geographic Information Systems (GIS) environmental data during the early stages of study planning TDOT and the public will be better prepared to anticipate potential environmental issues and mitigation requirements. This screening process involves using GIS to assess environmental data as it spatially relates to the project’s Area of Potential Effect (APE). In broad terms, the GIS environmental data reviewed in this TPR include the following layers:

8.1 1,000 ft ESS Corridor

Community Impact- Cemetery Sites

- Hancock Cemetery
- Tyner Baptist Church Cemetery Property
- Hancock Cemetery Property

Low impact on the proposed project is anticipated due to a cemetery abutting the study area or corridor. Avoidance and/or mitigation efforts will be required as part of the NEPA process.

• Institutions-Churches, Schools, Hospitals

One school, Hillcrest Elementary School (a primary grade school for students of grades Pre-Kindergarten to Grade Five (5)) is located south of the western terminus of the project at SR 17 and Bonny Oaks Drive. Seven (7) churches are also located within the project study area. Impacts to the school and church properties are likely. Additional design will be needed to locate and design the proposed transportation project in such a

way that avoids or minimizes the project's adverse effects to the churches and/or potential 4(f) takes of the school property.

- Sensitive Community Populations

Severe impact to sensitive community populations cannot be avoided. Preliminary maps reveal that the study area contains a minority population of twenty-four (24) percent. Residents within the study area were also identified as linguistically isolated. The maps also revealed that thirteen (13) percent of the persons within the study area live below the state poverty level.

- Ecology- Rare and Protected Species: Bats

No project impact is anticipated.

- Railroads and Public Lands

Railroad- Three (3) railroad overpasses cross Bonny Oaks Drive. A main-line rail facility is owned by Norfolk-Southern and runs along the southeast side of Enterprise South Industrial Park. Two (2) dual rail spurs to Enterprise South are served by both CSX and Norfolk Southern. The rail spurs are operated by the Hamilton County Railroad Authority.

An impact on the railroad cannot be avoided because the lines are within the project study area corridor. Grade separation is preferred to be maintained at all three (3) existing railroad crossings, which will require close coordination with the Highway Rail Grade Crossing Program and the TDOT Right - of - Way Division-Utilities Section. However, a more thorough traffic review on the proposed Bonny Oaks Drive project to determine at-grade or grade separation will need to occur, and this will require additional coordination with the railroad. A determination of the type of design for the rail structure is needed. Additional herbicide maintenance will likely be needed. Early and continuing coordination efforts are necessary between TDOT and the railroad agencies for discussion during preliminary planning and the review and approval of the final design plans. Reimbursement will be necessary if any of the railroad facilities require relocation. The design effort includes studies to determine type of crossing as well as time to design the crossing. The design will have to be reviewed and approved by the railroad, and items to be reviewed will include: property acquisition, vertical and horizontal clearances, drainage, maintenance of traffic during construction and/or relocation of railroad facilities to accommodate roadway improvements and contract for reimbursement. Maintenance agreements with the railroad will need to be resolved and implemented. Typical maintenance includes mowing and clearing of the right-of-way and/or repairs of signalized at-grade intersections. Other maintenance that will apply to the project railroad crossing includes bridge inspection and repairs for either signalized at-grade intersection or grade separation of railroad.

8.2 2,000 ft EES Corridor

- National Register Sites- The Dent House, formerly known as the Bonny Oaks Plantation and School, is a National Register historic property within the project study area or corridor. The Bonny Oaks School and chapel are the only preserved portions from the site to be listed on the National Register of Historic Places. A historic marker is on Bonny Oaks Drive near the vicinity of the former plantation. Today, the remaining portions of the plantation are now the Bonny Oaks Industrial and Office Park.

Medium impact on the project is anticipated. There may be visual or audible effects upon the survey site and/or historic property that need to be considered and minimized. An

environmental impact will necessitate coordination with the Tennessee State Historic Preservation Office (TN-SHPO) as part of the NEPA process. With more precise project location and design, direct impacts of the tract can be avoided and not require any taking of the surveyed sites or listed properties. Indirect effects (visual and audible) upon the surveyed sites or listed properties need to be reviewed. Measures should be taken to avoid the National Register property and to minimize the projects adverse effects or potential 4(f) takes or impacts.

- Superfund Sites

No project impact is anticipated as there are no known contaminated land tracts abutting or within the project study area or corridor.

- Pyritic Rock/ Geotechnical

No project impact is anticipated. Pyritic rock is not known to occur in the study area/corridor or project does not involve excavation. Limestone (symbolized as a dark green) and dolomite (symbolized as light green) are present.

- TWRA Lakes and other Public Lands

Soccer Park- This project is anticipated to have a substantial impact as a public park. Redoubt Recreation Soccer Park is located at 6900 Bonny Oaks Drive, directly across from Enterprise South Boulevard. It is not possible to locate the proposed transportation improvements within the existing study corridor in such a way that it avoids any impacts or takings of the park property. A high level of effort and time will be required for Section 4(f) documentation to resolve the proposed project's environmental impact on the park. Additional design will be needed to locate and design the proposed transportation project in such a way that it minimizes impacts or takings of the park property. Indirect impacts (audible and visual) to the park may occur and need to be studied. If there is an indirect impact, additional work will be needed to design the appropriate mitigation measures.

8.3 4,000 ft EES Corridor

- Terrestrial Species

Some impact on the proposed project is predicted as there is a known rare or state protected terrestrial species (*Rallus elegans*), a marsh bird known as king rail, located within the property study area or corridor. A survey for the species may be required.

- TDEC Conservation Sites and TDEC Scenic Waterways

The site of the Volunteer Army Ammunition Plant (VAAP) is listed as a TDEC Conservation Site. Additional analysis, coordination, and negotiation will be required to resolve Section 4(f) issue(s) associated with the TDEC Conservation Site.

There are no TDEC scenic waterways located in the study corridor.

- Large Wetland Impacts

Twelve (12) Large Wetland areas are listed within the study area. A substantial impact to the project is probable as there is greater than two (2) acres of wetlands within the study area or corridor. Compensatory mitigation will be required. Design efforts will be needed to avoid and minimize impacts to wetlands to the maximum extent practicable.

- Tennessee Natural Areas Program

There is no anticipated impact on Tennessee Natural Areas, as the study area or corridor does not include a Natural Area.

- Tennessee Wildlife Management Area

Minimal impact on the project is anticipated as the site of the former Volunteer Army Ammunition Plant (VAAP) is classified as a Tennessee Wildlife Management Area (WMA) and located within the project study area. There is the potential to avoid an impact or taking (bisecting or fragmenting) to the wildlife management area through more detailed location and design of the proposed transportation project. With additional effort to locate and design the proposed project, there will be no impacts to the WMA.

8.4 10,000 ft EES Corridor

- Aquatic Species

Some impact on the proposed project is likely as there is a known occurrence of a rare or state protected aquatic species Chickamauga crayfish (*Cambarus extraneus*), located within the study area or corridor. A survey for the species will be required.

- Caves

No impact is anticipated as there are no caves identified in the EES in the proposed project study area or corridor.

As of the publication of this document, the GIS data within each layer was current relevant to the date of its publication. The TDOT EES Scoring Sheets are listed in the Appendix. This data will be updated as part of the ongoing project development process.

9.0 ASSESSMENT OF CORRIDOR OPTIONS

9.1 TDOT's Seven Guiding Principles

The Tennessee Department of Transportation has adopted seven (7) guiding principles against which all proposed 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 Option B for improving the corridors within the study area.

9.2 Guiding Principle 1: Preserve and Manage the Transportation System

The Chattanooga-Hamilton County/ North Georgia TPO is responsible for identifying future transportation needs within its TPO boundary and developing effective ways to meet those needs. The TPO identified the need to improve Bonny Oaks Drive in the 2035 LRTP Update (ID #15). The improvement recommendations outlined in the LRTP update (widen to five (5) lanes to include bike lanes and sidewalks) are supported by findings in this study.

Addressing the safety and operational needs of Bonny Oaks Drive will improve the overall transportation system in the region by providing the infrastructure to adequately address the movement of people and goods. Crash data analyses of Bonny Oaks Drive

indicate that the crash rate was 3.546, in 2006-2008, which is above the statewide average of 2.652 and above the critical rate of 3.038.

Option B will provide for route continuity and upgrade the deficient horizontal and vertical alignments that exist along SR 317 (Bonny Oaks Drive). Preserving the existing transportation network and replacing failed systems are tasks critical to the promotion and effective management to provide better regional connectivity, particularly from SR 17 to I-75. Modifications on Bonny Oaks Drive will allow for efficient traffic movement particularly through signalized intersections. Therefore, Option B will help to preserve and manage the existing transportation system.

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

Option B will provide the capacity needed to address Chattanooga's travel demands. Emphasis to increase the capacity and improve traffic operations along SR 317 is necessary to accommodate the travel demands anticipated by Enterprise South Industrial Park, a regionally significant industrial park. Along with the development of the new Volkswagen Plant, many of its suppliers are expected to locate at or near Enterprise South. An increase in the workforce in the area will stimulate demands for continued residential and business growth in the area. Additionally, improved mobility for the residential population within the project environs will also enhance the quality of life for area residents.

9.4 Guiding Principle 3: Support the State's Economy

Volkswagen will become a major employer in Hamilton County. The automobile manufacturing facility will employ over 2,000 workers and its suppliers will add an estimated 14,000 more jobs. The Enterprise South Industrial Park will access Bonny Oaks Drive via I-75, SR 153 or SR 58. Tennessee's 2010 unemployment rate for October was 9.4 percent, unchanged from the September rate. Hamilton County had an 7.8 percent unemployment rate, unchanged from the previous month. The national unemployment rate for October 2010 was 9.6 percent, unchanged from the September rate. Typically, adequate transportation facilities are directly correlated to the economic vitality and vitality of any region in the state. The proposed widening on Bonny Oaks Drive will improve the traffic flow for commuters traveling to and from a major employment center as well as improve mobility for freight traffic moving goods along Bonny Oaks Drive accessing I-75 and these nearby state routes.

9.5 Guiding Principle 4: Maximize Safety and Security

The No Build Option will not improve safety, and Bonny Oaks Drive will continue to produce crash rates above the statewide average and critical rate for similar facilities. Option B will likely meet or exceed current design standards and provide for safe operations to help reduce the crash frequency along the unimproved portion of Bonny Oaks Drive. In addition, Bonny Oaks Drive lacks shoulders and contains an undesirable ditch line, both of which contribute to sideswipe and striking fix object crashes that are common in the unimproved segments.

Option B will provide a five (5) foot sidewalk and six (6) foot bike lanes on each side of Bonny Oaks Drive to accommodate both pedestrians and bicyclists. These additions will serve as a buffer for pedestrians and bicyclists that utilize the corridor. The proposed five (5) lane section will provide the opportunity to straighten curves and improve Noah Reid Road by eliminating the acute angle at which it intersects Bonny Oaks Drive and improving its sight distance. It will also eliminate the ditches, thereby providing a

drainage system that is safer to motorists. Option B will provide a continuous five (5) section from SR 17 to I-75. The addition of a two (2) way left-turn lane (TWLTL) will improve mobility, decrease delay, and reduce the risk of rear-end crashes associated with left turning vehicles.

9.6 Guiding Principle 5: Build Partnerships for Livable Communities

As identified in the CHCRA Long-Range Plan, this proposed project is part of the comprehensive vision and guide for the Chattanooga community to enhance the quality of life by integrating growth with the conservation of resources. This proposed project is part of both short and long range goals and strategies that public and private community leaders use to implement these objectives.

Throughout the development of the TPR, TDOT staff has coordinated with the City of Chattanooga, Chattanooga-Hamilton County Regional Planning Agency (CHCRPA), TPO, utility representatives and area stakeholders to identify their concerns and objectives. These meetings are documented in the Appendix, Volume One of this report. The public involvement process will continue as mandated by the provisions of the National Environmental Policy Act (NEPA).

9.7 Guiding Principle 6: Promote Stewardship of the Environment

An appropriate environmental document will be prepared in order to fully address the impact of any proposed build option. An EES has been conducted and the results shown in Section 8.0 of this report. To determine a project's potential benefit or harm to the environment, the National Environmental Policy Act of 1969 (NEPA) requires an assessment of environmental impacts prior to making decisions on projects that have federal involvement (i.e., funding or permitting). The environmental information will be made available to public officials as well as local citizens to be included in the decision-making processes.

9.8 Guiding Principle 7: Emphasize Financial Responsibility

Prioritizing proposed transportation projects that promote the growth of jobs and economic development are vital in the funding for proposed new construction investments which include planning, design and right-of-way. The combined efforts of Volkswagen, City of Chattanooga and TDOT resulted in a transparent and accountable process for identifying improvements on Bonny Oaks Drive as a regional transportation need.

10.0 COST ESTIMATE

10.1 Option A- No Build

No cost is associated with this option.

10.2 Option B- Widen Along Existing Alignment

The estimated construction costs are based on the existing topography, road alignment, and proposed typical sections. Construction costs include mobilization, pavement removal, earthwork drainage, paving, utility relocation, guardrail, and other related construction items. The estimated cost for Option B is \$49.8 million which includes ROW, utility relocation, and engineering.

11.0 SUMMARY

Bonny Oaks Drive (SR 317) is functionally classified as an urban minor arterial roadway which runs east-west connecting SR 17, SR 58 and SR 153 on the western terminus to US 11 (Lee Highway) and Interstate 75 at the eastern end. This TPR reviewed existing operational and geometric conditions, conducted capacity analyses for future traffic projections and identified the study location corridor to illustrate the recommendations that will improve safety and operational conditions along the state route, thereby addressing the purpose and need. The TPR's primary purpose is to help establish the immediate and long term needs for improving Bonny Oaks Drive and to examine viable options for meeting those long term needs.

Increased residential and commercial development in the project vicinity is expected due to the new Volkswagen facility located in the Enterprise South Industrial Park. Currently, Bonny Oaks Drive primarily consists of two (2) twelve (12) foot lanes, but lacks continuity in roadway width from SR 17 to Interstate 75. In order for this state route to function as a regional transportation link to carry the increasing vehicle and freight traffic, roadway improvements are necessary.

The purpose and need for improving Bonny Oaks Drive is summarized as follows:

Safety- Of the three hundred and fifty-one (351) total crashes, one hundred and thirty-one (131) occurred at the principal intersections identified in Table 3. Jersey Pike experienced the most crashes with forty nine (49) reported in the three (3) year period from 2006-2008. This intersection also produced a crash rate of 1.28, which exceeds the critical crash rate of 1.27. The entire segment of Bonny Oaks Drive has a crash rate of 3.546, and it exceeds the statewide rate of 2.652 and the critical average rate of 3.038, therefore there are causative factors that can be corrected. The historic 2006-2008 crash data supports the need to make safety improvements to Bonny Oaks Drive. The vertical alignment of the road, especially near Noah Reid Road, and its lack of shoulders are both contributing factors to many of the crashes.

Level of Service- In 2015, a LOS F, without improvements, is expected at three (3) intersections including Bonny Oaks Drive at Noah Reid Road, Bonny Oaks Drive at Enterprise South Boulevard, and Bonny Oaks Drive at Hickory Valley Road. By 2035, the following five (5) intersections will operate at LOS F unless Option B is constructed: Bonny Oaks Drive at Noah Reid Road, Bonny Oaks Drive at Hickory Valley Road, Bonny Oaks Drive at Enterprise South Boulevard, Bonny Oaks Drive at Lee Highway and Bonny Oaks Drive at I-75 Southbound Ramps.

The Volkert and Associates, Inc. Volkswagen Traffic Impact Study explored adding auxiliary lanes at the LOS F intersections, but concluded that an acceptable LOS could not be achieved unless another through lane in each direction were constructed at each of the deficient intersections.. Therefore, the primary constraint is confined to five (5) signalized, but a through lane in each direction needs to be constructed, which is not limited to the intersections.

Geometric Deficiencies- It is anticipated operations at the Enterprise South Industrial Park will necessitate the roadway improvements along Bonny Oaks Drive to facilitate safe and efficient transportation to and from the site.

A No-Build (Option A), and Option B were considered. Spot improvements were not considered to be a viable option because the VW Plant traffic study indicates significant intersection failure will occur by 2015 unless a through lane in each direction is added. The improvements and the estimated cost to each option are summarized below.

Option A: No-Build Option- Option A assumes no modifications or improvements will be made over the planning horizon to add capacity. Routine maintenance related activities as well as scheduled resurfacing, signing, and possible safety projects may occur. This option, however, does not support the proposed project's stated Purpose and Need for providing a transportation facility to enhance mobility, support economic development and improve safety.

Under this No Build scenario, several existing signalized intersections along Bonny Oaks Drive will need adjustments in signal timing to improve traffic operations for all movements. However, congestion and delay will continually increase over time if upgrades are not planned for existing unsignalized intersections that already operate poorly.

Option B: Widen Along Existing Alignment- Option B plans to widen SR 317 (Bonny Oaks Drive) from SR 17 to Interstate 75, a length of approximately 4.9 miles. This proposal would involve upgrading the existing two (2) lane sections of Bonny Oaks Drive to an improved five (5) lane urban section including five (5) foot sidewalks, two (2) foot curb and gutters and six (6) foot bike lanes. The cost of Option B is estimated at \$ 49.8 million.

Option B will:

- Promote economic growth potential for the City of Chattanooga by improving the major arterials to attract new residential, commercial and retail development;
- Increase the capacity on existing Bonny Oaks Drive to meet future traffic demand;
- Provide an improved LOS for motorists and truck traffic;
- Alleviate traffic congestion of through traffic during peak hours, particularly for commuters.

Option B supports the purpose and need for the proposed roadway improvements. Under the NEPA planning process, Build Option B will be further evaluated with additional studies to address horizontal and vertical alignment, right-of-way, utility relocations, environmental concerns, and structures.

TRANSPORTATION PLANNING REPORT

STATE ROUTE 317 (BONNY OAKS DRIVE)

FROM STATE ROUTE 17

TO INTERSTATE 75

HAMILTON COUNTY

PIN NO. 112152.00

APPENDIX

VOLUME I

Field Review

Bonny Oaks Drive (SR 317)
Transportation Planning Report
Meeting Minutes (Pre-Site Visit)
Thursday, January 29, 2009

Project Termini: SR 17 to I-75
Length of Project: 4.9 miles

As an element of the TPR process, a field review was conducted for the Bonny Oaks Drive TPR. A pre-meeting was held in the TDOT, Region 2 Office Auditorium before the actual field review. The meeting provided the opportunity to have attendees sign in and receive materials and information to be utilized during the field review. Please see the attached list of meeting attendees.

Steve Allen and Danielle Hagewood (TDOT) began the meeting with a round of introductions from attendees. Dawn Michelle Foster (WSA) discussed the project scope and provided a brief summary of the project.

Steve Allen addressed the need for clarifying information regarding the project's typical section. TDOT wants to work very closely with the TPO and the City to confirm the proposed typical section. Currently, the TPO identifies the proposed improvements to be four lanes, but the proposed improvements should also identify any median sections, including 2WLTL if appropriate. Steve Allen and Melissa Taylor (CHCRPA) will have further discussions on the typical section and will relay information to WSA.

This project is not in current 3-year plan for any funding. TPO discussed opportunity to utilize STP funds that might be available with other projects being shifted to economic stimulus projects.

Others were asked to provide updates and provide additional information that is relevant to the project.

A list of information provided by meeting attendees is outlined below:

- Traffic model should be completed and provided by the TPO by end of March
- TDOT to provide additional traffic on Bonny Oaks Drive/ SR 17 intersection
- TDOT recommends that the roadway be widened along existing location, no new location alternatives
- Study corridor= 500 ft
- 2035 Out year agreed
- TDOT now has all intersection counts and will provide those to WSA
-
- Projects within the project vicinity will be noted in the TPR to include
 - ○ Apison Pike
 - ○ Recent I-75 improvements at Exit 7

Bonny Oaks Drive TPR _Field Review
January 29, 2009 Pre-Site Visit

- Proposed Connector Road
- A discussion of immediate needs, spot improvements and/or Travel Demand Management (TDM) projects should be identified that would help alleviate traffic congestion at some locations
- Cost estimates-Particularly important – expected to be high in comparison to past
 - WSA will be tasked with developing cost estimates for the project
 - Utilize bid notes from TDOT
 - Inflation rates will be used (check with TDOT, TPO and others)
 - Railroad crossing improvement is considered “utility” for cost estimatingWSA responsibility to coordinate with RR re: cost
- Agency Coordination
 - WSA to set up meeting with the railroad representatives that should include Scott Medlin and Jim Byrd
- There are 3 railroad bridges over Bonny Oaks
 - Western location is a spur line and will be replaced this year. The replacement will accommodate 5 traffic lanes, sidewalks on both sides and 5 foot bike lanes on both sides.
 - Middle location is a spur line
 - Eastern location is a main Norfolk-Southern rail line
- Melissa Taylor (CHCRPA) stressed the need to follow an aggressive schedule. She hopes that road improvements could occur before 5 years, which would be a normal schedule. The TPR will take 3-6 months, followed by an approximate 1224 month environmental process after funding has been identified.
- There was a lengthy discussion of project termini versus NEPA documentation led by Steve Allen, Melissa Taylor and Leigh Ann Tribble (FHWA). EPA recently ruled on another Chattanooga project that the project design/construction termini must be consistent with that identified in the NEPA documentation. This decision runs counter to previous FHWA guidance and seemingly precludes construction project phasing. Verify that the termini identified in the LRTP will match the TPR and other environmental documents.

**Bonny Oaks Drive (SR 317) Transportation Planning
Report City of Chattanooga, Hamilton County,
Tennessee Notes from Field Visit- January 29, 2009
REVISED**

These notes were compiled during the field review. The group stopped at several principal locations on Bonny Oaks Drive to address initial concerns and suggestions. The following information was documented:

Western Termini- SR 17 at Bonny Oaks Drive

This intersection has not been improved. Speed limit in this section is 45 mph. Suggested improvements for this intersection consisted of improving the section eastward to SR153. Proposed typical section includes curb and gutter with sidewalk and bike lanes. Design guidelines for typical section should be evaluated to determine median type and width for an urban 4-lane curb and gutter section. Other suggestions for improvement included evaluating the feasibility of a 2-lane roundabout at the SR17/Bonny Oaks intersection.

Comments were made that the Hillcrest school access on SR 17, just south of the defined termini might impact intersection operations. During the design phase, the project termini should include improvements to reduce conflicts with the school entrance.

Consider signal timing improvements at the SR 17/ Bonny Oaks intersection should it remain signalized.

Lightfoot Mill at Bonny Oaks Drive

Speed limit on this section is 45 mph. This area was evaluated for a 2-lane roundabout by the City. Preliminary plans have been produced, but since the Bonny Oaks project the City may now shelve those plans. If so, the City will investigate the short-term need for signalization at the intersection. Part of the evaluation will identify truck traffic in the area. The TPO said that a model would be available to address vehicle classification for travel data to include classified trips and categories. TDOT will verify the model with a 2005 classification count and provide count to the city and WSA. Oakview Baptist Church is located at this intersection. The church has a parking lot located directly across Bonny Oaks to the south. The church has provided midblock crossing for members from the parking lot to the church. Current proposed improvements for the intersection include eliminating the mid-block crossing with pedestrians crossing at the intersection. Improvements at this intersection may impact the parking lot and cause displacement of several parking spaces.

Industry Drive at Bonny Oaks

Industry Drive is the only access (in/out) for vehicle and truck traffic into Industry Park, a small to moderate size industrial and office/warehouse development.

SR 153/ Bonny Oaks Drive Interchange

A seemingly adequate multi-lane section is already provided through the interchange area. Suggestions did include additional improvements to add bike lanes.

Restriping should be considered as an option. The TPO suggested that a separate multi-use bike path be considered in this section as well as in rural sections of the corridor. Within the interchange, accommodations for bicyclists could be made behind the guardrail in the westbound direction. FHWA noted that the area is within an access controlled facility and expressed concern that bicyclists should not be encouraged to ride in areas with no traffic signals and free-flow traffic at high speeds. The interchange ramps cause a disconnect with the bike lanes.

It was noted that CARTA (Chattanooga Area Regional Transportation Authority) will evaluate the need for public transportation on the corridor.

A large sinkhole /lake was noted south of the roadway between SR 153 and Jersey Pike.

Jersey Pike at Bonny Oaks Drive

This is a signalized intersection. This intersection was identified as an intersection improvement project. Accommodations for bicyclists were recommended. There is a substantial enclosed drainage system diagonally traversing the intersection. Two service stations with previously identified UST issues were noted.

Noah Reid Road at Bonny Oaks Drive

Suggested improvements included tying into the existing 5-lane section at Jersey Pike. This intersection has an existing sight distance issue. Significant traffic congestion currently occurs due to heavy left turns from Bonny Oaks Drive. Reducing the vertical grade and adding a turn lane would improve the sight distance and improve capacity. This could be considered an immediate need and was so noted as a potential spot improvement or Travel Demand Management (TDM).

The City offered a suggestion to expand to the north which may include acquiring the homes on the north side from Preservation Drive to just west of Noah Reid Road. The TPO addressed Environmental Justice (EJ)/ Title VI issues and suggested that the demographic (social and economic) data be evaluated to identify minority, low-income and disadvantaged populations.

Bonnyshire at Bonny Oaks Drive

This intersection is currently signalized; the City would like to evaluate this location for a roundabout. Truck traffic in the area should be evaluated.

The western most of three railroad bridges (Hamilton County Railroad Authority Short-line) is planned for improvements to expand the existing overhead railroad bridge to a span width that will accommodate a 5-lane roadway section with bike lanes and sidewalks.

Hickory Valley Road/ Enterprise Park South Entrance

This intersection will be evaluated for a 2-lane roundabout. Input from Volkswagen is needed. Truck traffic is expected to increase due to the construction of the VW plant. It was noted that Volkert/Cambridge Systematics Inc. is working on a freight study for the

area surrounding the VW plant. Data from the freight study should be obtainable within 4-6 months.

Hamilton County has another short line rail road line that is located here and will be heavily utilized by VW plant operations. This rail line which is not scheduled for improvements provides only a 2-lane section for Bonny Oaks Drive.

A traffic signal was installed in Fall 2008.

There is a public park south of Bonny Oaks at this location.

Public Park/Soccer Field Parking Area

FHWA mentioned that any proposed improvements should avoid impacts to the public park. Tennessee State Historic Preservation Office (TN-SHPO) must be contacted early to coordinate any proposed improvements.

A culvert of Poe Branch is located west of the park access. The City noted that a large regional detention facility will be constructed to serve the VW plant; construction is scheduled for May 2009.

Railroad Bridge

This is a mainline Norfolk Southern Bridge crossing. Bonny Oaks is provided only a 2 – lane cross section and is subject to a 13'-7" low clearance. May require grade reduction to provide recommended clearance.

Bonnyvale Lane at Bonny Oaks Drive

This section should be evaluated for potential spot improvements; particularly from Bonnyvale Lane to Lee Highway. It was also noted that Bonnyvale Lane has a potential sight distance issue.

Silverdale at Bonny Oaks Drive

The Silverdale intersection was recently improved as part of the interchange construction. Accommodations for bike lanes were suggested at this intersection.

I-75 at Bonny Oaks Drive

The interchange was recently improved, but should include accommodations for bicyclists.

Additional Comments: For the record, it was noted that during discussions of roundabouts that there were some attendees that did not embrace the roundabout design at several locations. Also, issues regarding Environmental Justice were mentioned as a possible concern within the project area and will be further examined during the environmental phase.

**Bonny Oaks Drive (SR-317)
Transportation Planning Report
January 29, 2009 Field Review
Meeting Attendees**

Name	Agency	Phone	Email
Danielle Hagewood	TDOT	615.253.4001	danielle.hagewood@tn.gov
Dawn Michelle Foster	WSA	865.963.4300	dfoster@wilbursmith.com
Paul Lane	TDOT	615.253.2432	paul.lane@tn.gov
Steve Allen	TDOT	615.741.2208	steve.allen@tn.gov
Melissa Taylor	TPO	423.757.5216	taylor_melissa@mail.chattanooga.gov
Patrick Hall	TPO	423.757.5216	Hall_p@mail.chattanooga.gov
Jim Johnston- Region 2 (Design)	TDOT	423-510-1138	Jim.A.Johnston@tn.gov
Gary Chapman- Region 2 (Survey)	TDOT	423-510-1144	Gary.chapman@tn.gov
Jackie Wolfe- (ROW)	TDOT	423-510-1100	Jackie.wolfe@tn.gov
Alan Wolfe-Region 2 Traffic Manager	TDOT	423-510-1139	Alan.wolfe@tn.gov
Scott Medlin-Project Manager (Region 2)	TDOT	423-510-1118	Scott.medlin@tn.gov
Hollis Loveday	WSA	865-963-4300	hloveday@wilbursmith.com
Bob Bowers	WSA	865-963-4300	rbowers@wilbursmith.com
Fritz Brogdon	Volkert	423-842-3335	fbrogdon@volkert.com
Karen Headlee	Volkert	423-842-3335	kheadlee@volkert.com
Bill Payne (City Engineer)	City of Chattanooga	423-643-6160	payne_bill@mail.chattanooga.gov
Steve Leach (Public Works)	City of Chattanooga	423-643-6010	leach_steve@mail.chattanooga.gov
John VanWinkle (Traffic Engineering)	City of Chattanooga	423-643-5959	vanwinkle@mail.chattanooga.gov
Trevor Hamilton Economic Dev.	Chamber of Commerce	423-763-4335	thamilton@chattanoogachamber.com
Leigh Ann Tribble	FHWA	615-781-5760	LeighAnn.Tribble@dot.gov
Kelly Martin	CHCRPA	423-757-5216	Martin_k@mail.chattanooga.gov
Barry McClendon	TDOT-Survey		robert.mcclendon@tn.gov
Wes Hughen	TDOT		wesley.hughen@tn.gov
Ken Flynn	TDOT-Region 2 Construction		ken.flynn@tn.gov
Landon Castleberry	TDOT Traffic		landon.t.castleberry@tn.gov
Cynthia Allen	TDOT-Planning		cynthia.allen@tn.gov
Nermine Nashed	TDOT-Planning		nermine.nashad@tn.gov
Dennis Malone	City of Chattanooga		malone_d@mail.chattanooga.gov
Bob Brown	TDOT-Region 2		robert.b.brown@tn.gov

Cost Estimate

PROJECT COST SHEET
STATE ROUTE 317 (BONNY OAKS DRIVE) TPR
From SR 17 to I-75

Section: From SR 17 to Interstate 75
 Length: 26,160 feet (4.9 miles)

Right-of-Way

Land, (11.0 acres) Res=5.00 Com=10.0 -----	\$ 3,594,000
Improvements-----	\$ 0
Damages-----	\$ 0
Incidentals -----	\$ 0
Relocation Payments (3 residences)-----	\$ 75,000
(business & farm)	
(non-profits)	

Total Right-of-Way Cost-----**\$ 3,669,000**

Utility Relocation

Reimbursable -----	\$ 10,540,000
Non-reimbursable-----	<u>\$ 10,547,000</u>

Total Adjustment Cost-----**\$ 21,087,000**

Construction

Clear and Grubbing-----	\$ 115,000
Earthwork -----	\$ 3,000,000
Pavement Removal-----	\$ 10,000
Drainage (Includes Erosion Control) -----	\$ 2,440,000
Structures -----	\$ 0
Railroad Crossing or Separation (3 railroad bridges) ----	\$ 3,340,000
Paving -----	\$ 8,286,000
Retaining Walls -----	\$ 423,000
Maintenance of Traffic -----	\$ 250,000
Topsoil -----	\$ 75,000
Seeding-----	\$ 52,000
Sodding-----	\$ 88,000
Signing -----	\$ 25,000
Lighting -----	\$ 0
Signalization-----	\$ 500,000
Fence -----	\$ 5,000
Guardrail -----	\$ 145,000
Rip Rap or Slope Protection-----	\$ 90,000
Other Construction Items(8.5%)-----	\$ 1,602,000
Mobilization-----	\$ 310,000
Construction Cost -----	\$ 20,755,000
10% Eng. And Cont. -----	\$ 2,076,000

Total Construction Cost-----**\$ 22,831,000**

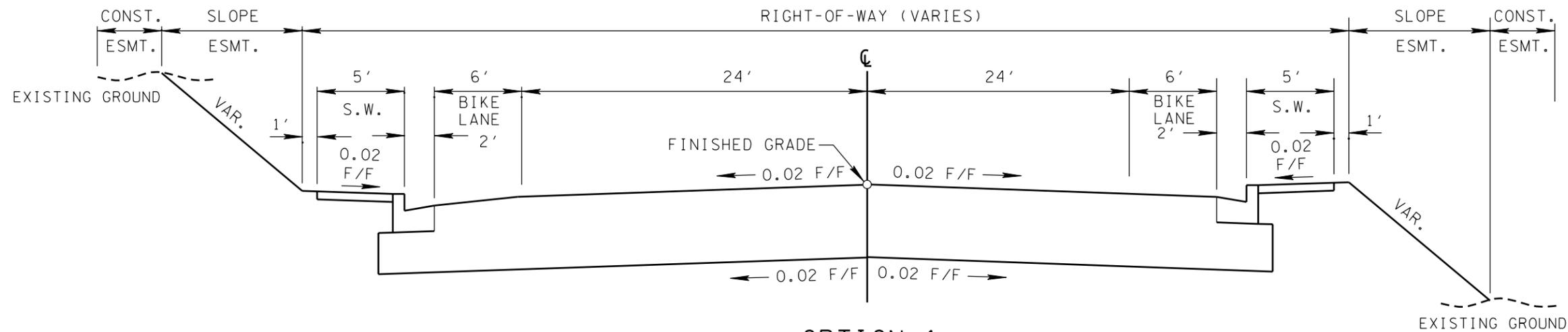
Preliminary Engineering (10% of Construction Cost)-----**\$ 2,283,000**

*Total Cost-----**\$49,870,000**

***For estimating future project costs, a compounded rate of 10% will be applied.**

Typical Section

TYPE	YEAR	PROJECT NO.	SHEET NO.
TPR	2010		1



OPTION 1
TYPICAL SECTION
S.R.317 (BONNY OAKS DRIVE)

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

**TYPICAL
SECTIONS**

Conceptual Layouts

TYPE	YEAR	PROJECT NO.	SHEET NO.
TPR	2010	CONCEPT	.1..



BEGIN PROJECT
STATE ROUTE 317
BONNY OAKS DRIVE

STATE ROUTE 58/STATE ROUTE 17

STATE ROUTE 153

BONNY OAKS DRIVE

SCHOOL

STATE ROUTE 317 (BONNY OAKS DRIVE)

BAYTON DRIVE

PROPOSED CORRIDOR

WATKINS TERRACE

CHURCH

LIGHTFOOT MILL ROAD

WILSON STREET

STATE ROUTE 153

HOMESTEAD AVENUE

LAKE HILLS

REDLAND DRIVE

CHURCH

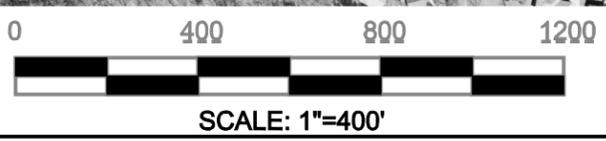
CHURCH

FIRE DEPARTMENT

LIGHTFOOT MILL ROAD

INDUSTRY DRIVE

STATE ROUTE 153



MATCHLINE SEE FIGURE 2

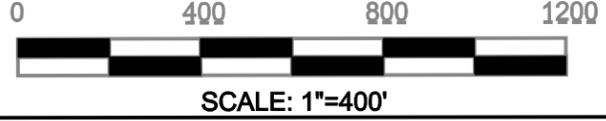
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

CONCEPTUAL
LAYOUT

TYPE	YEAR	PROJECT NO.	SHEET NO.
TPR	2010	CONCEPT	.2.

MATCHLINE SEE FIGURE 1

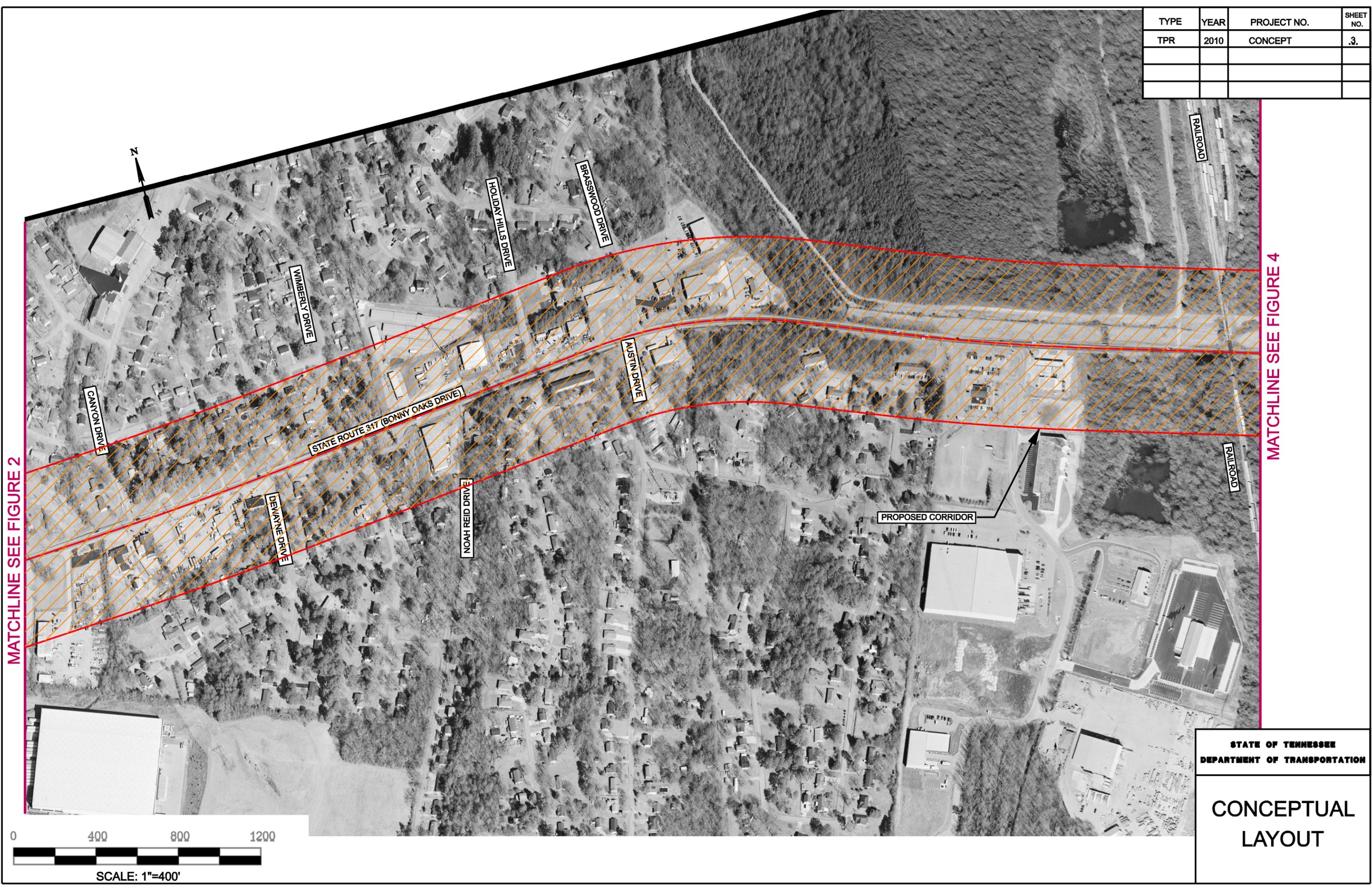
MATCHLINE SEE FIGURE 3



STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

CONCEPTUAL
LAYOUT

TYPE	YEAR	PROJECT NO.	SHEET NO.
TPR	2010	CONCEPT	.3.

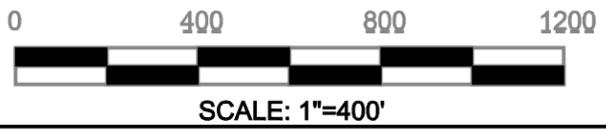


MATCHLINE SEE FIGURE 2

MATCHLINE SEE FIGURE 4

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

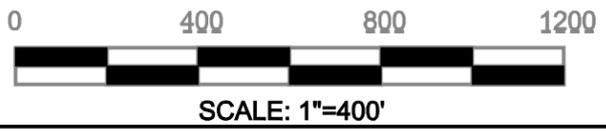
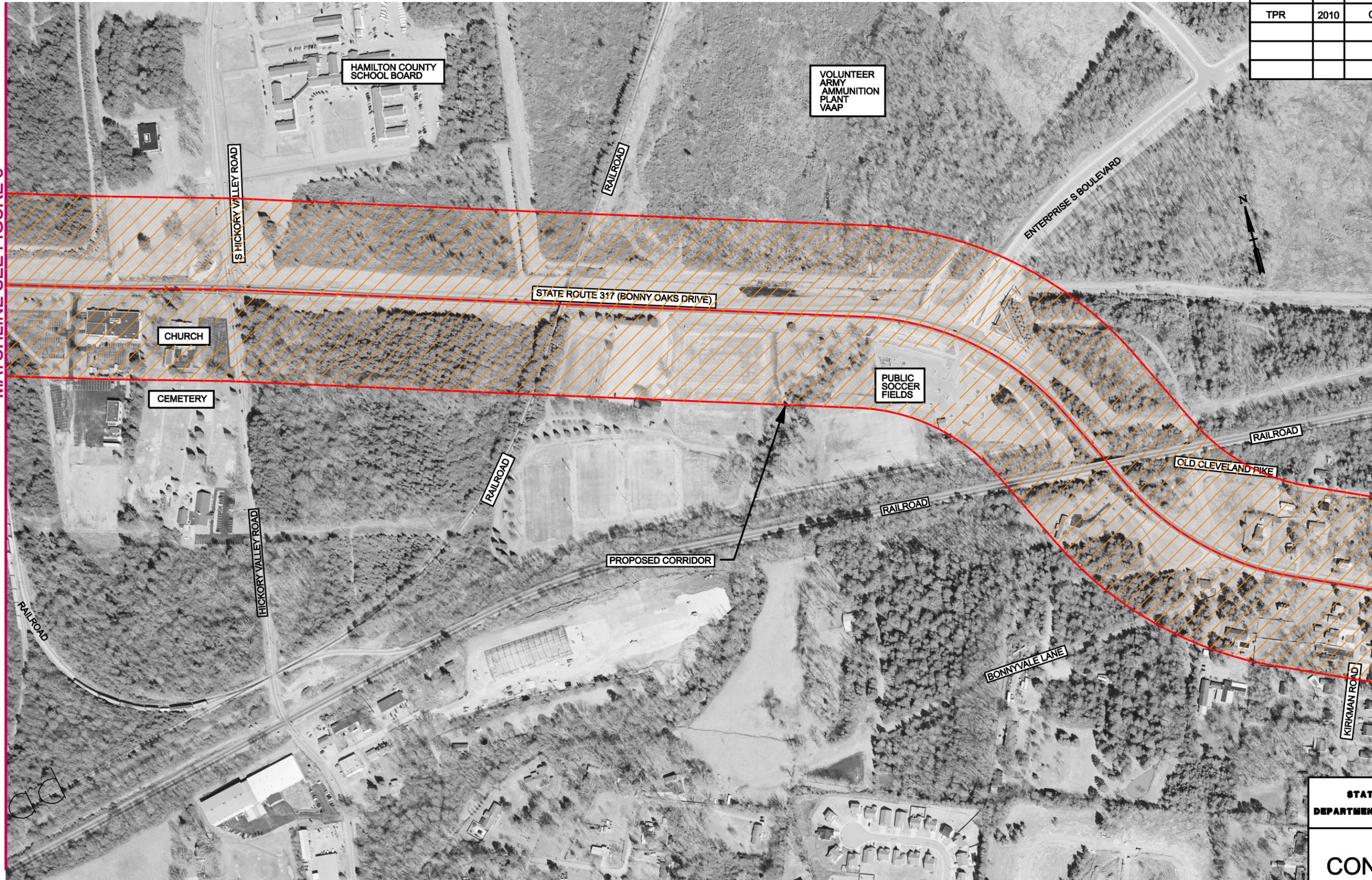
CONCEPTUAL
LAYOUT



TYPE	YEAR	PROJECT NO.	SHEET NO.
TPR	2010	CONCEPT	.4.

MATCHLINE SEE FIGURE 3

MATCHLINE SEE FIGURE 5

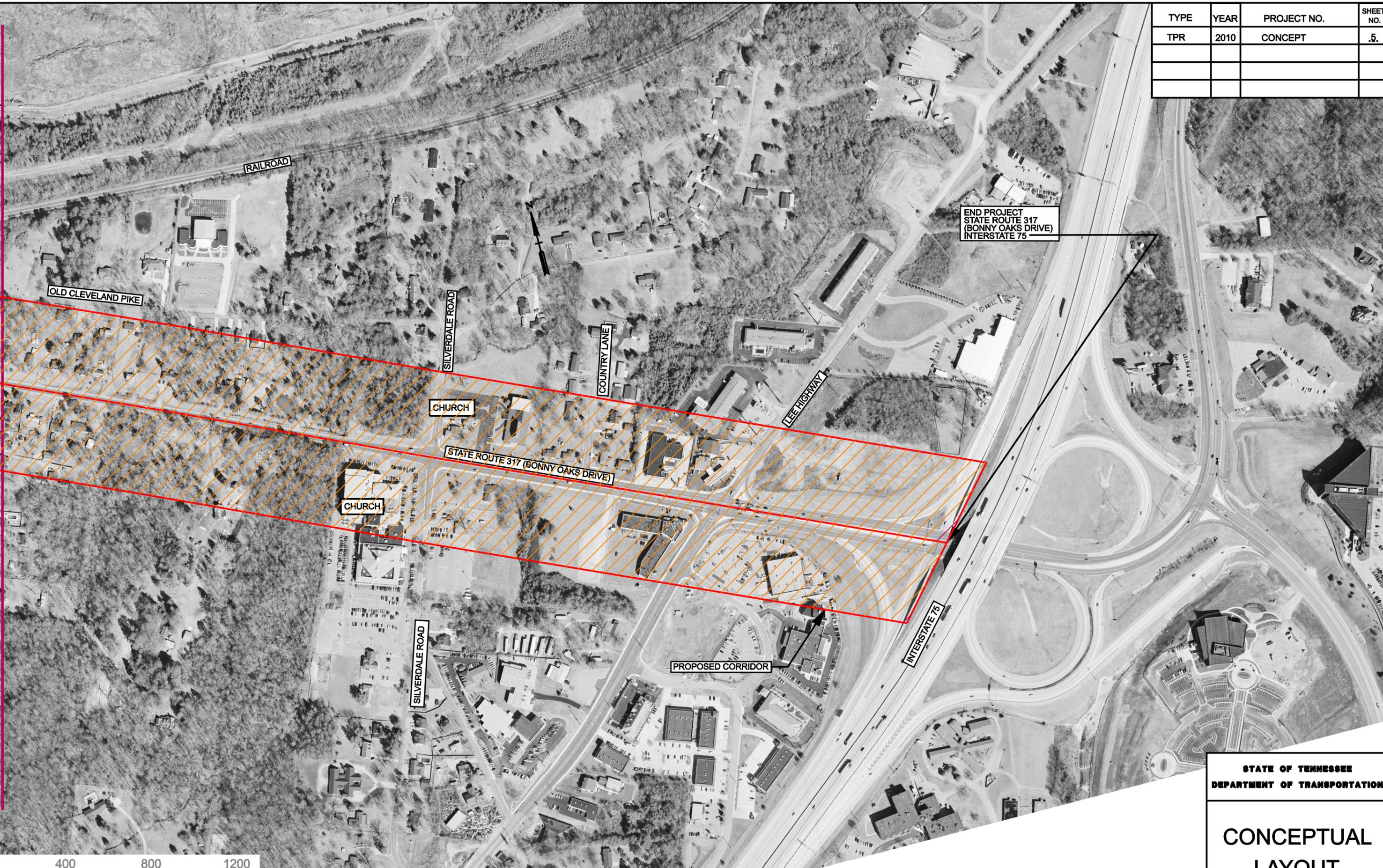


STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

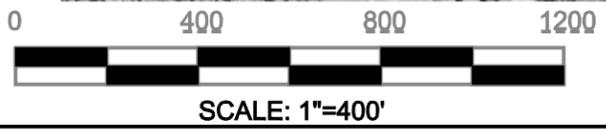
CONCEPTUAL
LAYOUT

TYPE	YEAR	PROJECT NO.	SHEET NO.
TPR	2010	CONCEPT	.5.

MATCHLINE SEE FIGURE 4



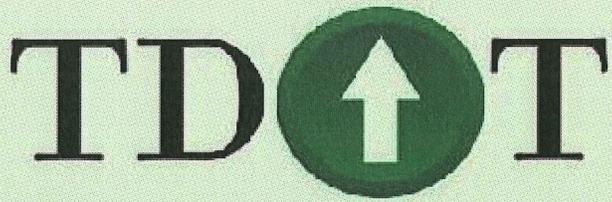
END PROJECT
STATE ROUTE 317
(BONNY OAKS DRIVE)
INTERSTATE 75



STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

CONCEPTUAL
LAYOUT

Early Environmental Screening (EES)



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

Project Score Factors

	Total Impacts Evaluated	Total Impacts to Evaluate	EES Evaluation
Project Impact Areas:	14	15	Incomplete
Date of Evaluation:	June 26, 2009		
Evaluation done by:	Gena Gilliam		
	Transportation Planner 3		
County:	Hamilton		
Route:	State Route 317		
PIN:	111831.00		
Termini:	From State Route 17 to Interstate 75		

Impact Ranking of Features Evaluated: Total by Rank

Features with No Impact 5

- Bat
- Superfund Sites
- Caves
- Pyritic Rock
- TWRA Lakes & Other Public Lands

Features with Low Impact 5

- Cemetery Sites & Cemetery Properties
- Terrestrial Species
- Aquatic Species
- TDEC Conservation Sites & TDEC Scenic Waterways
- Wildlife Management Areas

Features with Moderate Impact 1

- National Register Sites

Features with Substantial Impact2

Large Wetland Impacts

Railroads

Community Impacts Present:**Institutions:**

School

Church

Populations:

No population present

Minority populations 24%

Linguistically isolated populations

Populations below poverty - State average- 13%

EES Project Impact:**Complete**

Impacts Evaluated Within 1,000 Ft of Study Area

CEMETERY SITES & CEMETERY PROPERTIES

Impact**Project Impact
(Environmental, Time,
Cost, Design, and
Maintenance)**

- Low** - Low impact on the project is anticipated as there is a cemetery abutting the project study area or corridor. It is anticipated that a 'normal' effort will be required to complete this environmental review as part of NEPA.

INSTITUTIONS & SENSITIVE COMMUNITY POPULATIONS

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

Hospital	<input type="checkbox"/>	<input checked="" type="checkbox"/>
School	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Church	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Public Building	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Populations:

No population present	<input checked="" type="checkbox"/>	<input type="checkbox"/>
65 and older populations	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Disability populations	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Households without a vehicle	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Minority populations 24%	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Linguistically isolated populations	<input checked="" type="checkbox"/>	<input type="checkbox"/>

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

BAT

Impact

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

Impact

Project Impact (Environment, Time, Cost, Design, and Maintenance)	<input checked="" type="checkbox"/> Substantial – Great impact on the project is anticipated as a railroad lies within the project study area or corridor. An impact on the railroad cannot be avoided through more detailed planning or the railroad will be within 200 feet of the proposed transportation project. The initial idea is that there will be a grade separation of the railroad, relocation of the railroad and/or a complete reconstruction of an at-grade crossing. Coordination with the Tennessee DOT Safety Planning and Travel Data Office and the Tennessee DOT Right-Of-Way Division - Utilities Section should be initiated for at-grade crossing mitigation issues, and coordination with the Tennessee DOT Right-Of-Way Division - Utilities Section should be initiated for all other railroad issues involved on the proposed transportation project. Coordination with the Tennessee DOT Safety Planning and Travel Data Office and the Tennessee DOT Right-Of-Way Division - Utilities Section should be initiated for at-grade crossing mitigation issues, and coordination with the Tennessee DOT Right-Of-Way Division - Utilities Section should be initiated for all other railroad issues involved on a proposed transportation project. Anticipate a traffic review on the proposed transportation project to decide on at-grade or bridge crossing, in addition to coordination with the railroad. A determination may be needed of whether the rail structure is significant. Additional herbicide maintenance will likely be needed. Need to plan for 6-12 months of railroad coordination to secure land and for the railroad to review and approve design plans. Time to resolve maintenance agreements with the railroad will need to be resolved. Reimbursement may be necessary if railroad facility requires relocation. The design effort includes studies to determine type of crossing as well as time to design this crossing. The design will have to be reviewed and approved by the railroad, and items to be reviewed may include: property acquisition, vertical and horizontal clearances, drainage, and/or, relocation of railroad facilities to accommodate roadway improvements and contract for reimbursement. Maintenance agreements with the railroad will need to be resolved and implemented. Typical maintenance includes mowing and clearing of the right of way and/or repairs of signalized at-grade intersection. Other maintenance may apply to the project railroad crossing includes bridge inspection and repairs for either signalized at-grade intersection or grade separation of railroad.
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Impacts Evaluated Within 2,000 Ft of Study Area

NATIONAL REGISTER SITES

Impact

Project Impact (Environmental, Time, Cost, Design, and Maintenance)	<input checked="" type="checkbox"/> Moderate – Medium impact on the project is anticipated as there is a National Register historic property within the project study area or corridor. It is possible to avoid a taking of the historic property. There may be visual or audible effects upon the survey site and/or historic property that need to be considered and minimized. An environmental impact may
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still result and necessitate coordination with State Historic Preservation Office as part of NEPA. With more precise project location and design, direct impacts of the tract can be avoided and not require any taking of the surveyed sites or listed properties. Indirect effects (visual and audible) upon the surveyed sites or listed properties need to be reviewed.

SUPERFUND SITES

Impact

**Project Impact
(Environment, Time,
Cost, Design, and
Maintenance)**

None – No project impact is anticipated as there are no known contaminated land tracts abutting or within the project study area or corridor.

PYRITIC ROCK

Impact

**Project Impact
(Environment, Time,
Cost, Design, and
Maintenance)**

None – No project impact is anticipated. Pyritic rock is not known to occur in the study area/corridor or project does not involve excavation. Limestone (symbolized as dark green) and dolomite (symbolized as light green) are present.

TWRA LAKES & OTHER PUBLIC LANDS

Impact

**Project Impact
(Environment, Time,
Cost, Design, and
Maintenance)**

None – No impact on the project is anticipated as there are no parks located within or abutting the project study area or corridor.

Impacts Evaluated Within 4,000 Ft of Study Area

TERRESTRIAL SPECIES

Impact

**Project Impact
(Environment, Time,
Cost, Design, and
Maintenance)**

Low – Minimal impact on the project is predicted as there is a known rare or state protected terrestrial species located within the project study area or corridor. A survey for the species may be required.

TDEC CONSERVATION SITES & TDEC SCENIC WATERWAYS

Impact

Project Impact

(Environment, Time, Cost, Design, Maintenance)

- Low** – Minimal impact on the project is likely as a scenic waterway or TDEC Conservation Site is located within the project study area or corridor but no direct impact is expected. Coordination with the resource agencies will be necessary to determine if there may be any indirect effects upon the scenic waterway.

LARGE WETLAND IMPACTS

Impact

Project Impact (Environment, Time, Cost, Design, Maintenance)

- Substantial** – Regions 1, 2, and 3: A substantial impact to the project is probable as there is greater than 2 acres of wetlands within the project study area or corridor. Compensatory mitigation will be required. Design effort will be needed to avoid and minimize impacts to wetlands to the maximum extent practicable. If a floodplain is crossed by the project, floodplain culverts may be necessary.

TENNESSEE NATURAL AREAS PROGRAM

Impact

Project Impact (Environment, Time, Cost, Design, and Maintenance)

- None** – No impact on the project is anticipated as the project study area or corridor does not include a Natural Area.
- Low** – Minimal impact on the project is anticipated as the project study area or corridor abuts and/or is near (i.e., between 0.5 to 1.0 mile) a Natural Area.
- Moderate** – Medium environmental impact is anticipated as the project study area or corridor is less than 0.5 miles from a Natural Area. It may be necessary to coordinate with the Tennessee Department of Environment and Conservation on the project and to design avoidance/ minimization measures for the Natural Area (i.e., aesthetics, bridging, etc). Additional design may be required to locate and design the project to avoid indirect effects (i.e., aesthetics and audible) upon the Natural Area (i.e., bridging as opposed to culvert, etc).
- Substantial** – Substantial project impact is anticipated as the project has an impact to a Natural Area, and impacts to the Natural Area cannot be avoided. Tennessee Department of Transportation will have to coordinate with the Tennessee Department of Environment and Conservation on the project and to design minimization measures for the Natural Area (i.e., aesthetics, bridging, etc). A direct impact to a Natural Area is anticipated and cannot be avoided. In depth, additional design effort will be required and may include multiple alternatives to minimize impacts to the Natural Area and a longer than normal bridges with aesthetics.

WILDLIFE MANAGEMENT AREAS

Impact

Project Impact (Environment, Time, Cost, Design, and Maintenance)

- Low** – Minimal impact on the project is anticipated as a WMA is located within the project study area or corridor. However, there is the potential to avoid any takings or impacts to the WMA through more detailed location and design of the proposed transportation project. With additional effort to locate and design the project, there will be no impacts to the WMA.

Impacts Evaluated Within 10,000 Ft of Study Area

AQUATIC SPECIES

Impact

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

Impact

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

PIN 111831
1,000 Foot Corridor

Study Line ID: 111831_3301V01
Version Date: January 23, 2009
Created by: Tyler King

Cemetery Sites & Cemetery Properties

Cemetery Sites	<u>Total</u> = 1
Hancock Cemetery	
Cemetery Properties	<u>Total</u> = 2
Tyner Baptist Church Cemetery	
Hancock Cemetery	

Institutions & Sensitive Community Populations

Institutions:	<u>Total</u> = 8
School	Hillcrest Elementary
Church	Mount Joy Church
Church	Oakwood Church
Church	Calvary Church
Church	Tyner Church of Christ
Church	Lake Vista United Methodist CH
Church	Silverdale Cumberland Presbyte
Church	Silverdale Baptist Church

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

Bat	None were found
Railroads	Present

EES Report

PIN 111831
2,000 Foot Corridor

Study Line ID: 111831_3301V01
Version Date: January 23, 2009
Created by: Tyler King

National Register Sites

Total= 1

Bonny Oaks

Superfund Sites

None were found

Pyritic Rock

Classification

Total= 4

Dolomite

Knox Group

Knox Group

Knox Group

Knox Group

TWRA Lakes & Other Public Lands

TWRA Lakes

None were found

Other Public Lands

None were found

EES Report

PIN 111831
4,000 Foot Corridor

Study Line ID: 111831_3301V01
Version Date: January 23, 2009
Created by: Tyler King

Terrestrial Species

Rallus elegans

Total= 1

USESA

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TDEC Conservation Sites & TDEC Scenic Waterways

TDEC Conservation Sites

Total= 1

VOLUNTEER ARMY AMMUNITION PLANT

TDEC Scenic Waterways

None were found

Large Wetland Impacts

Total Acreage= 23.85

PEM1C	2.23	acres
PEM1Ch	1.42	acres
PFO1Fh	1.63	acres
POWHh	2.04	acres
POWHh	1.26	acres
POWHh	3.68	acres
POWHh	3.30	acres
POWHh	0.44	acres
POWHx	0.38	acres
POWHx	0.79	acres
POWHx	0.66	acres
PSS1A	6.03	acres

Tennessee Natural Areas Program

None were found

Wildlife Management Areas

Total= 1

Volunteer Army Ammunition Plant

EES Report

PIN 111831
10,000 Foot Corridor

Study Line ID: 111831_3301V01
Version Date: January 23, 2009
Created by: Tyler King

Aquatic Species

Cambarus extraneus

Total= 1

USES A

SPROT

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Caves

None were found