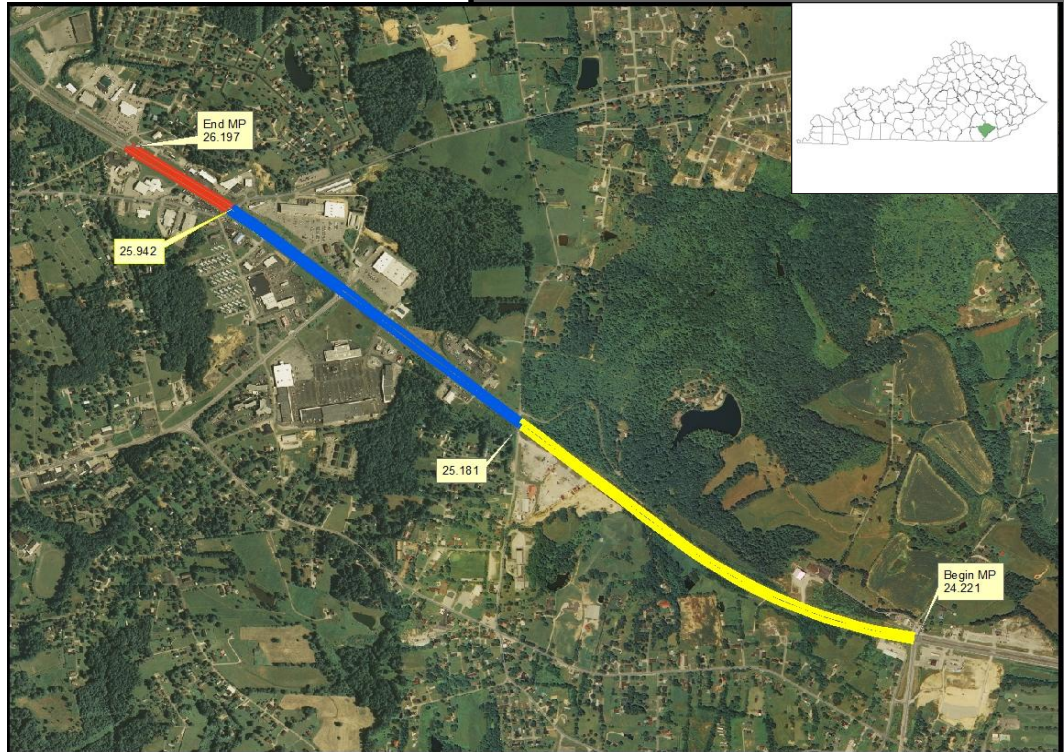


Data

Needs

Analysis



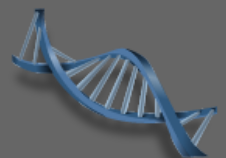
Scoping Study



US 25 E, Knox County
From Corbin Bypass to
Laurel County Line
Item No. 11-188.00

Prepared by the KYTC
Division of Planning
District 11

October 2012



I. PRELIMINARY PROJECT INFORMATION

County:	Knox	Item No.:	11-188.00
Route Number(s):	US 25E	Road Name:	Cumberland Gap Parkway
Program No.:	061 0025 024-026	UPN:	FD 52 61 US 25E 24.2-26.2
Federal Project No.:	NH 0251 032	Type of Work:	MAJOR WIDENING

2012 **Highway Plan Project Description:**

MAJOR WIDENING-ADDRESS SAFETY, CAPACITY, AND ACCESS MANAGEMENT ON US 25E FROM CORBIN BYPASS TO KNOX/LAUREL COUNTY LINE.

Beginning MP: 24.221 **Ending MP:** 26.197 **Project Length:** 1.976

Functional Class.: Urban Rural
 Arterial

State Class.: Primary Secondary

Route is on: NHS NN Ext Wt

MPO Area: Not Applicable

Truck Class.: AAA

% Trucks: 15.3

ADT (current): 26,163 (2010)

Terrain: Rolling

Access Control: None Permit Fully Controlled Partial Spacing:

Median Type: Undivided Divided (Type): Depressed (30')

Existing Bike Accommodations: Shared Lane **Ped:** Sidewalk

Posted Speed: 35 mph 45 mph 55 mph Other (Specify):

KYTC Guidelines Preliminarily Based on : 70 MPH Proposed Design Speed

COMMON GEOMETRIC

Roadway Data:	EXISTING	PRACTICES*	
No. of Lanes	4	4-6	Existing Rdwy. Plans available?
Lane Width	12	12	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Shoulder Width	4 in/10 out	8	Year of Plans: 1974
Max. Superelevation**		8%	<input checked="" type="checkbox"/> Traffic Forecast Requested
Minimum Radius**	5730	1820	Date Received: 8/1/2012
Maximum Grade	4.4%	4%	<input type="checkbox"/> Mapping/Survey Requested
Minimum Sight Dist.	1500	730	Date Requested:
Sidewalk Width(urban)	n/a	n/a	Type:
Clear-zone***	30	30-34	

Project Notes/Design Exceptions?:

*Based on proposed Design Speed, **AASHTO's A Policy on Geometric Design of Highways and Streets, ***AASHTO's Roadside Design Guide

Bridge No.*: (Bridge #1) (Bridge #2)

Sufficiency Rating

Total Length

Width, curb to curb

Span Lengths

Year Built

Posted Weight Limit

Structurally Deficient?

Functionally Obsolete?

[Existing Geotech data available?](#)

Yes No

*If more than two bridges are located on the project, include additions sheets.

II. PROJECT PURPOSE AND NEED

A. Legislation

The following funding was listed in the 2012 General Assembly's Enacted Highway Plan.	<i>Funding</i>	<i>Phase</i>	<i>Year</i>	<i>Amount</i>
	NH	D	2012	\$1,280,000
	NH	R	2015	\$1,800,000
	NH	U	2015	\$1,000,000
	NH	C	2017	\$7,000,000

B. Project Status

Design funds for this project have been authorized. There is currently a HSIP construction project for the intersection of US 25E and KY 1629. Right turn lanes are to be constructed on US 25E. Additionally turn lanes and shoulder are to be added to KY 1629. Several vertical alignment deficiencies are being addressed on KY 1629. In 2011, Central Office completed the Corbin Small Urban Area Study and is available on the planning website under planning studies and reports for District 11. This study includes this portion of road.

C. System Linkage

US 25E is a part of the National Highway System and the National Truck Network. This segment of US 25E connects I-75 (Exit 29) and the City of Corbin to the entire southeast region of Kentucky. In addition to all the local traffic, it is heavily used by motorists as a route to the Bristol races and a detour when Interstate 75 is closed on Jellico Mountain. It is classified as partial urban arterial and partial rural arterial. The classification is not likely to change as a result of this project.

D. Modal Interrelationships

This section of US 25E has no known modal interrelationships. This project is on a coal haul route.

E. Social Demands & Economic Development

Most of the recent growth in Corbin has been on the Corbin Bypass, which ties in at the end of this project. The Corbin Bypass is the recent home of several industrial developments and a college. This section of US 25E has numerous commercial and retail developments. The project on US 25E will address access management, which will consider additional traffic expected as new development continues in the study area. However, it is noteworthy to mention the City of Barbourville does have a 18" main line that runs along the South side of US 25E on KYTC right of way.

F. Transportation Demand

The last actual traffic counts for these sections from CTS are: Section 1 - 17,241 (2011), Section 2 - 23,202 (2010), Section 3 - 26,163 (2010). These may be viewed in Exhibit 1. Traffic counts for all three sections have decreased over the last 10 years. However, the Corbin Bypass was open to traffic in 1997 and would account for much of the reduced traffic volumes.

II. PROJECT PURPOSE AND NEED (cont.)

G. Capacity

Section 3 is the most congested length of the study area. Sections 1 and 2 may become an issue in the future. The potential for development on US 25E could further impact the capacity of the roadway.

H. Safety

Collision stats for Section 1: Collision locations can be seen in Exhibit 1. The CRF for this section is 1.358.
Collision stats for Section 2: Collision locations can be seen in Exhibit 2. The CRF for this section is 2.145. This section has two of Kentucky's Top 30 Worst Intersections.
Collision stats for Section 3: Collision locations can be seen in Exhibit 3. The CRF for this section is 1.378.
Collision data was obtained from the Kentucky State Police database for a three year period from January 1, 2009 to December 31, 2011 for the project limits. Exhibit 5, Exhibit 6 and Exhibit 7 show the collision data for mile point 25.5 to mile point 26.2 (Laurel/Knox County Line). Exhibit 5 shows the traffic collisions for 2 years before the traffic signal was installed in front of the Kroger development. Exhibit 6 shows the traffic collisions for 2 years after the traffic signal was installed in front of the Kroger development. Exhibit 5 and 6 have very little change in number or type of collisions. However, with addition of the signal, the location of the majority of the collisions did shift. Exhibit 7 shows the most recent 2 year period for traffic collisions in the same vicinity. Exhibit 7 shows a noticeable decrease in collisions while having a higher ADT than the time periods in Exhibit 5 and 6. This would imply the more recent traffic safety measures installed in the area have a positive impact.

I. Roadway Deficiencies

This entire section has four 12-ft lanes with a 30-ft depressed median. These sections meet KYTC's Common Geometric Practices for Rural and Urban Arterials. Section 1 is a Rural Arterial and Sections 2 & 3 are Urban Arterials. There are several signalized and non-signalized intersections and access points throughout the sections. The existing alignment is within the minimum criteria for horizontal curvature and grade. This section appears to have no significant drainage problems.
Although there are no obvious deficiencies along this section of US 25E, two of the intersections have extremely high accident rates which have led to various improvements. In 2008, the intersection of US 25E with KY 1629 had double red heads installed on traffic signals with retroreflective backplates to increase visibility. In 2010, at the same intersection left turn lanes were reconstructed to offset one another. In Fall 2010 and Spring 2011, high friction treatment was placed on US 25E southbound lanes approaching the intersection with KY 1629. This was done in hopes to reduce wet road type crashes. In 2011, flashing yellow arrows for left turns were also installed at this intersection. Also in 2011, new signal heads to the right of the intersections were installed at both US 25E's intersection with KY 1629 and KY 312. The majority of this section of roadway was identified in the Corbin SUA Study to have a composite adequacy component (safety, service and condition) of 6.499.

Draft Purpose and Need Statement:

Need: US 25E from the Knox/Laurel County line to the Corbin Bypass (KY 3041) is congested during peak traffic periods. The need for the project is to reduce congestion and collisions through this section of US 25E. Growth is expected to continue. There are also collision patterns at intersections with KY 1629, KY 312, KY 2417 and KY 3041 (Corbin Bypass). This section of road has a CRF of 1.25.
Purpose: The purpose of this project is to provide reliable, safe, and efficient travel along US 25E by widening and improving access management.

III. PRELIMINARY ENVIRONMENTAL OVERVIEW

A. Air Quality

Project is in: Attainment area Nonattainment or Maintenance Area PM 2.5 County

STIP Pg.#: 135/2012-2018

TIP Pg.#:

Knox Co is attainment for all monitored air pollutants. Review of the project during the environmental phase will determine increase in pollutants should additional lanes be developed. Air quality during construction will be controlled with good construction practices.

B. Archeology/Historic Resources

Known Archeological or Historic Resources are present

A phase I archaeological survey will determine cultural significance and if eligible sites are located in the project footprint. No historic resources have been identified.

C. Threatened and Endangered Species

The USGS Quadrangle is Corbin. Current species listed for Knox County are Myotis sodalis, Indiana bat, Alasmidonta atropurpurea, Cumberland elktoe, Phoxinus cumberlandensis, blackside dace, and Etheostoma susanae, Cumberland darter. Future study will address the requirements of USFWS and prevent detriment to the protected species.

D. Hazardous Materials

Potentially Contaminated Sites are present Potential Bridge or Structure Demolition

Fueling stations or where petroleum products have been used can be identified for hazardous materials during phase I investigations and determine if phase II will be necessary. Other possible hazardous materials to look for will be asbestos in structures.

E. Permitting

Check all that may apply: Waters of the US MS4 area Floodplain Impacts Navigable Waters of the US Impacts
Are 401/404 Permits likely to be required? Yes No Impacts to: Wetlands Stream/Lake/Pond
 ACE LON ACE NW ACE IP DOW IWQC Special Use Waters

The USGS Quadrangle is Corbin. Wetlands are not identified on the project. A water of the United States with impacts below ordinary high water will require coordination with the officers of the CORP and DOW. Construction activities may need a USACE 404 permit and a DOW 401 permit. Additionally, a surface water KYR 10 permit may be required for construction disturbance.

F. Noise

Are existing or planned noise sensitive receptors adjacent to the proposed project? Yes No
Is this considered a "Type I Project" according to the [KYTC Noise Analysis and Abatement Policy?](#) Yes No

G. Socioeconomic

Check all that may apply: Low Income/Minority Populations affected Relocations Local Land Use Plan available

H. Section 4(f) or 6(f) Resources

The following are present on the project: Section 4(f) Resources Section 6(f) Resources

Anticipated Environmental Document:

CE Level 3



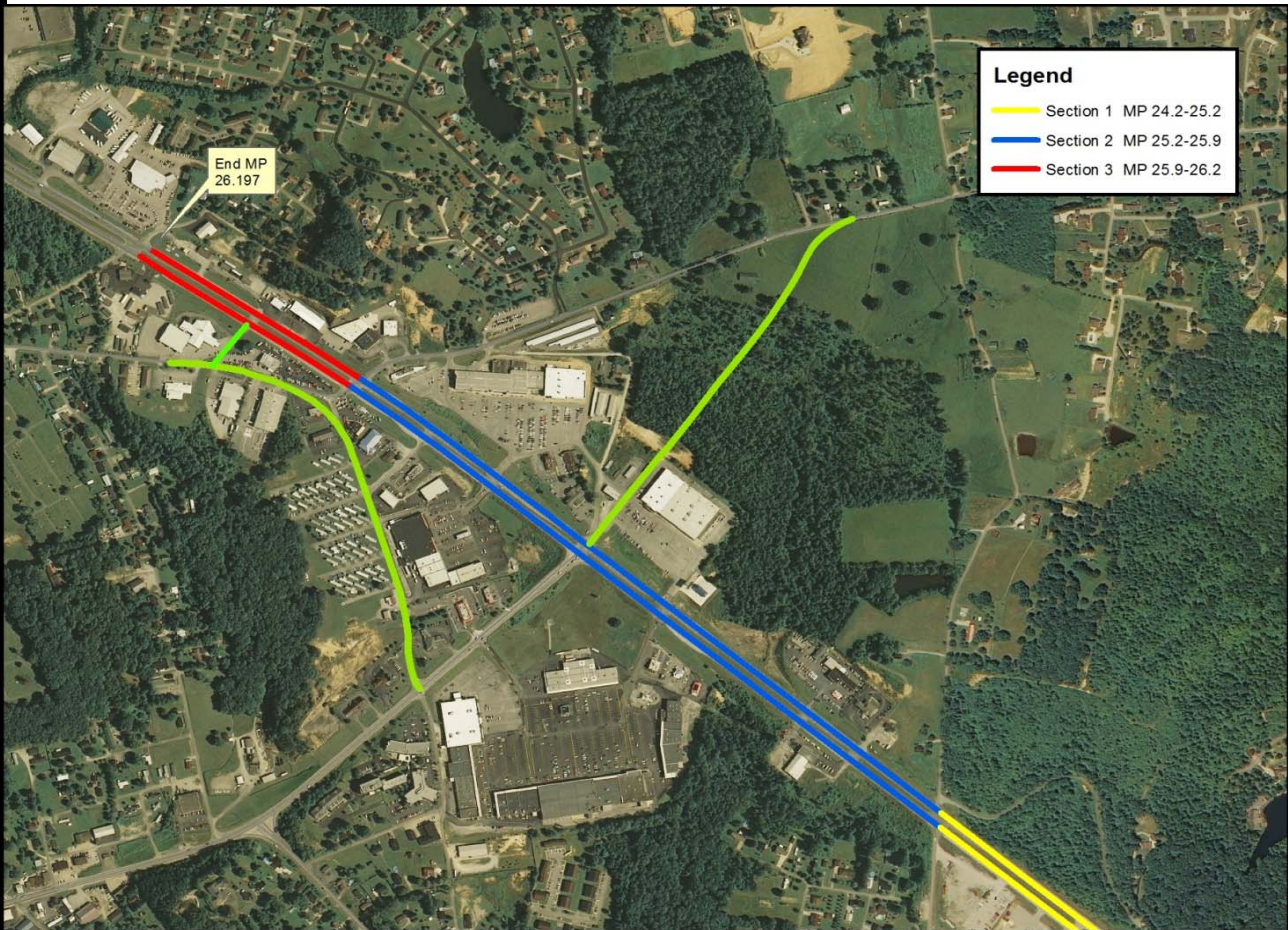
IV. POSSIBLE ALTERNATIVES

A. Alternative 1: No Build

This alternate does not address the needs identified in this project.

B. Alternative 2: Realign KY 1629

Two intersections on section 2 in this project are listed on the State's Top 30 Worst Intersections. The intersection of US 25E and KY 1629 is at a very dangerous location. Eastbound traffic climbs a long steep hill, tops the hill and just past the crest is the traffic signal. Drivers perceive a clear stretch of roadway, and then as they top the hill oftentimes must slam on the brakes for traffic sitting at the signal that could not be seen as they were approaching it. The signal installed in front of the Kroger development has compounded the problems creating an entire stretch of accidents between three intersections. In efforts to correct this problem, several steps are needed in this solution. First KY 1629 is to be realigned to connect into KY 312 on the northeast side of US 25E (as seen on the map below). Additionally on the southwest side of US 25E, KY 1629 is to tie into Commonwealth Avenue, correcting several design deficiencies. The existing signalized intersection at KY 1629 is to be removed and relocate signal to tie this portion of KY 1629 to US 25E to the west of the existing location. This location should have adequate sight distance. The intersection in front of Kroger is to be removed. KY 1629 and Commonwealth Avenue are to be widened with turning lanes to tie into KY 312. The signal at McDonalds needs to be relocated to this intersection. Portions of KY 312 will also need widening to accommodate an increase in local traffic.

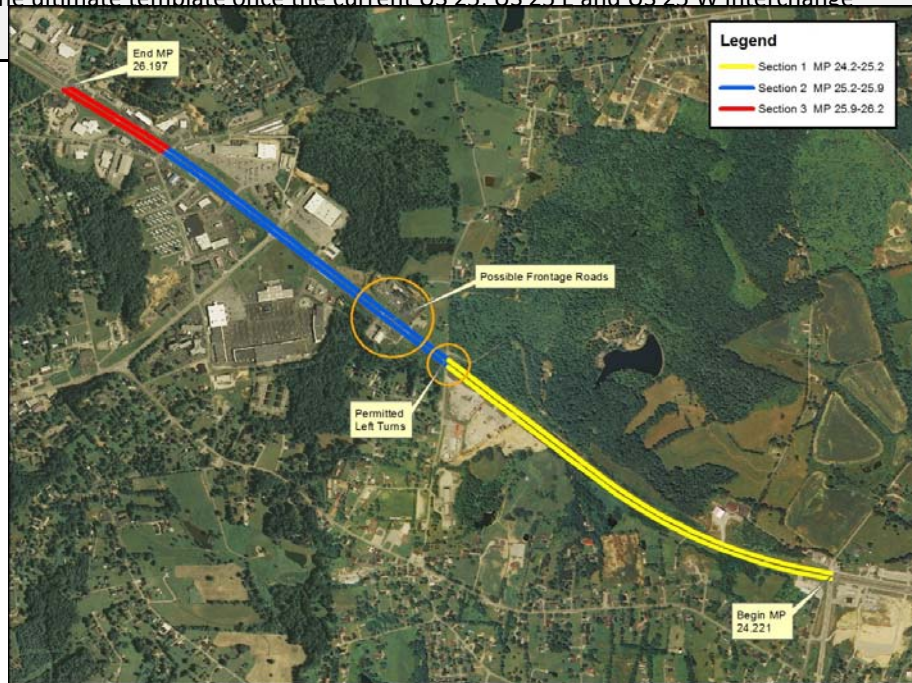


IV. POSSIBLE ALTERNATIVES (cont.)

Alternative 2 Planning Level Cost Estimate:	<u>Phase</u>	<u>Estimate</u>
	Design	\$450,000
	R/W	\$2,185,000
	Utilities	\$575,000
	Const	\$5,600,000
	Total	\$8,810,000

C. Alternative 3: Widen US 25E

Access management practices should be applied to the entire project length. To improve congestion, right turns will be allowed at all existing entrances however left turns will be allowed only at approved locations. The project will limit left turn lanes to signalized intersections with one exception (see map below). Section 1 may not warrant six lanes. It can achieve the desired results from access management only. On Section 2, access points can be reduced at several businesses by creating one main entrance by constructing a frontage road. Section 3 will require a four lane design with anticipation of a six lane ultimate template once the current US 25, US 25 E and US 25 W interchange project is complete.



Planning Level Cost Estimate:

<u>Phase</u>	<u>Estimate</u>
Design	\$450,000
R/W	\$1,900,000
Utilities	\$475,000
Const	\$3,820,000
Total	\$4,485,450

V. Summary

This project has several key concepts to be applied including but not limited to access management, widening sections to six lanes, addition of frontage roads and realigning and/or widening several approaches. The first concept to address is access management. Although the project description lists major widening, the project team feels access management and additional turn lanes will correct the majority of congestion issues drivers' experience. With the combination of Alternative 2 and 3, the project team feels the goal will be successfully met.

The alternates listed within this DNA Study are intended to convey conceptual considerations and are not the only alternatives that will be considered as long as other innovative alternates meet the purpose and need of this project while remaining within the scope and budget of the project.

Alt #	Description	D (\$)(NH)	R (\$)(NH)	U (\$)(NH)	C (\$)(NH)	Total (\$mil)
1	No Build	-	-	-	-	-
2	Realign KY 1629	450,000	2,185,000	575,000	5,600,000	\$8,810,000
3	Widen US 25E	450,000	1,900,000	475,000	3,820,000	\$4,485,450
-	Current Hwy Plan Estimated Cost	900,000	4,085,000	1,050,000	9,420,000	\$13,295,450
-	Current Pre-Con Estimated Cost	1,280,000	1,800,000	1,000,000	7,000,000	\$11,080,000

VI. Tables and Exhibits

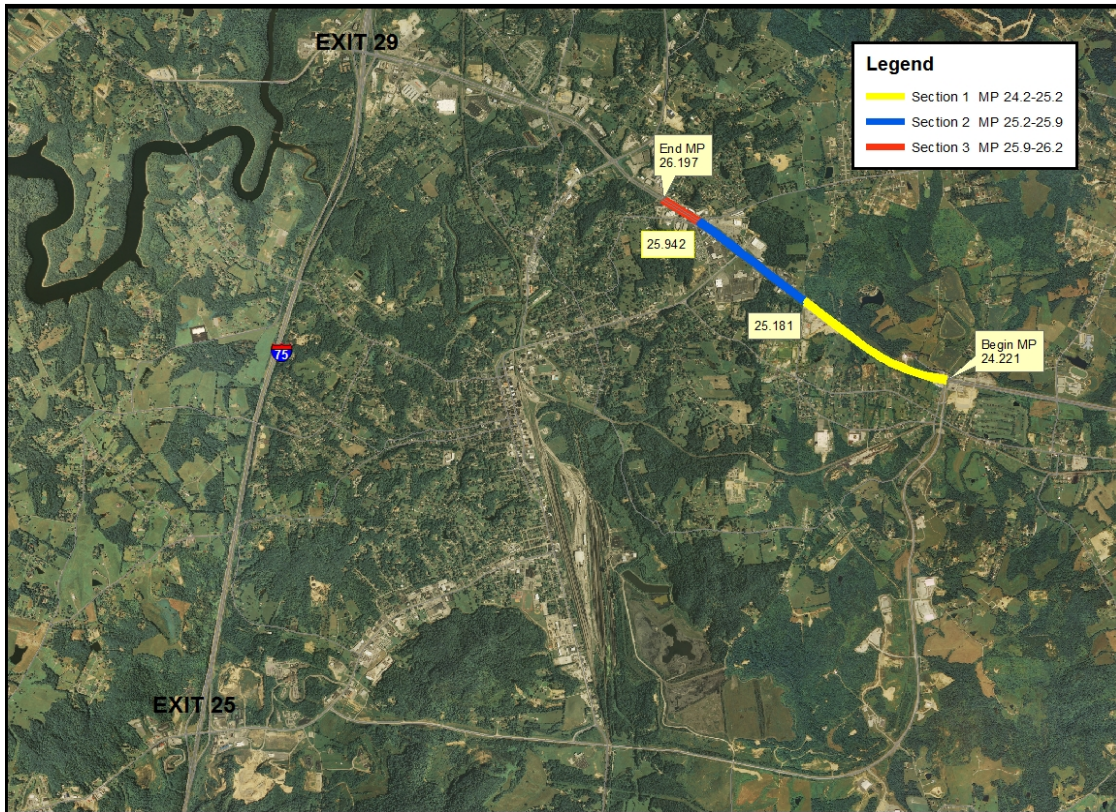


Exhibit 1: Project Location Map

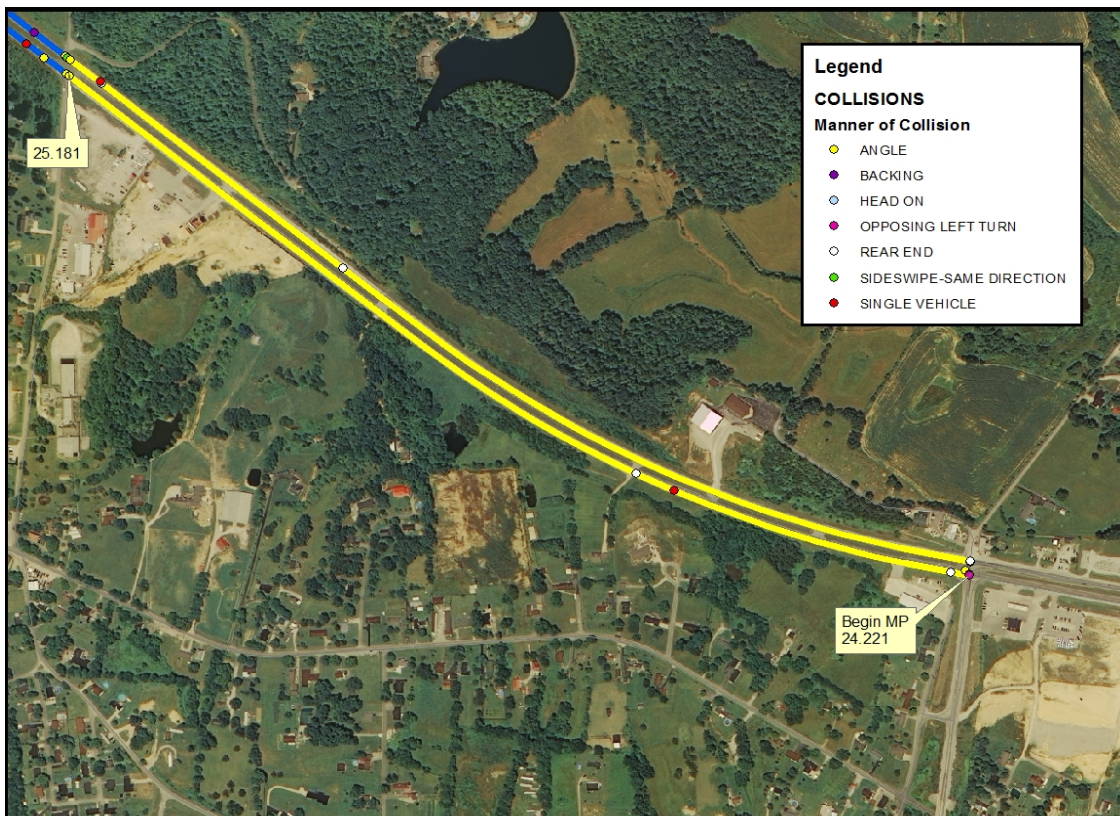


Exhibit 2: Collision Locations Section 1

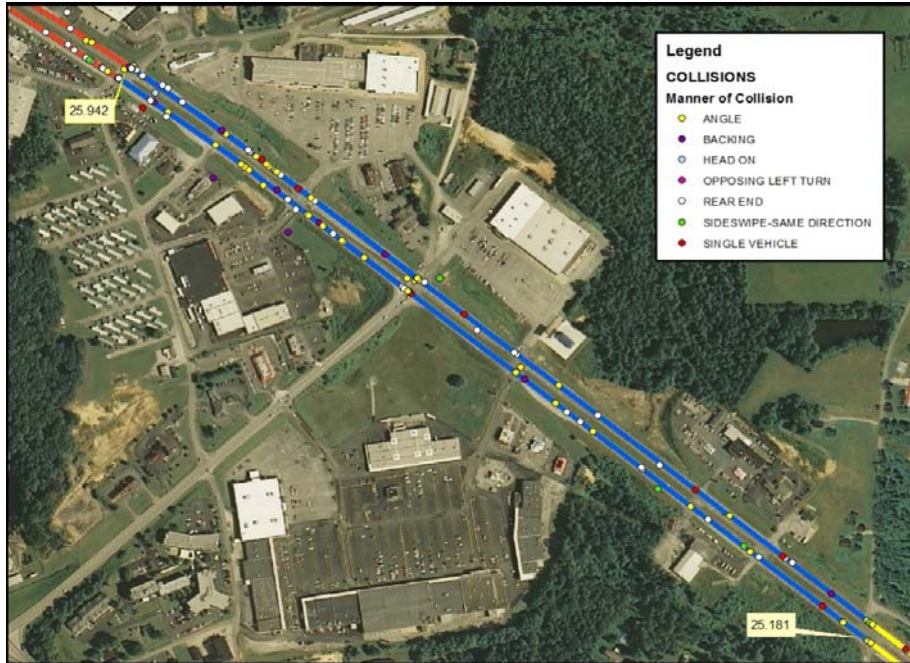


Exhibit 3: Collision Locations Section 2

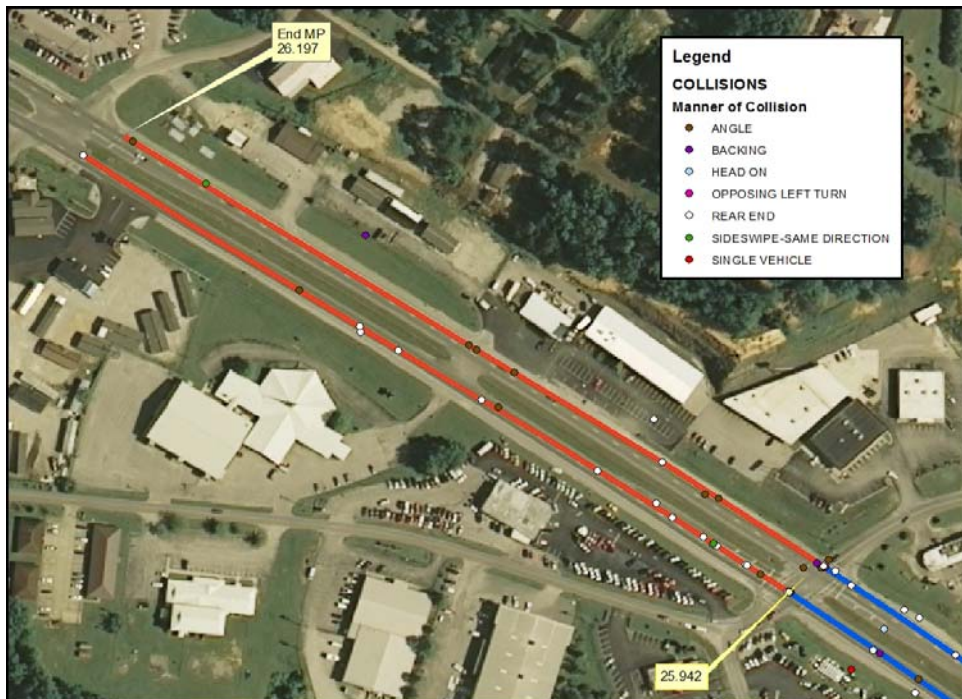


Exhibit 4: Collision Locations Section 3

Tables		
Manner of Collisions	Angle	86
	Backing	13
	Head on	1
	Opposing Left Turn	7
	Rear End	80
	Sideswipe	17
	Single Vehicle	10
	Total	204

Exhibit 5: Collisions 2002-2003

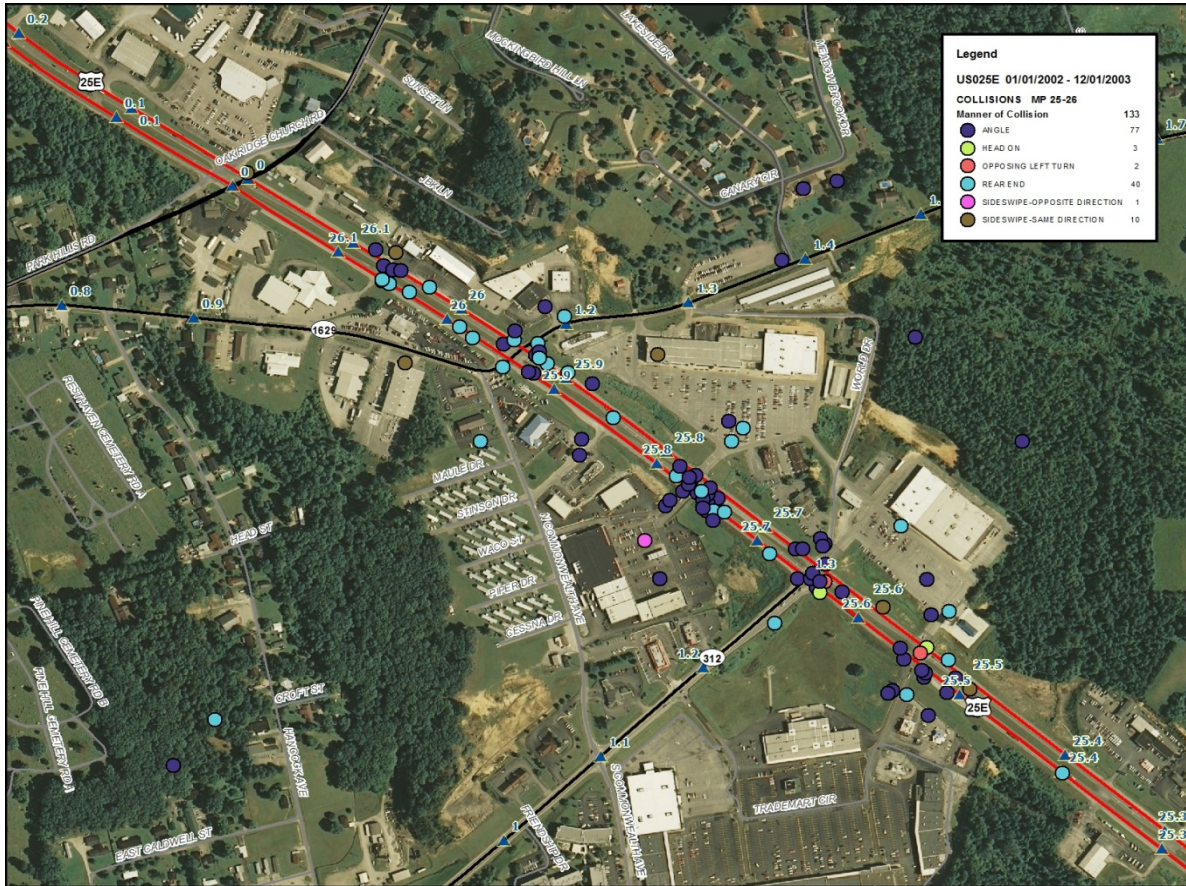


Exhibit 6: Collisions 2004-2005

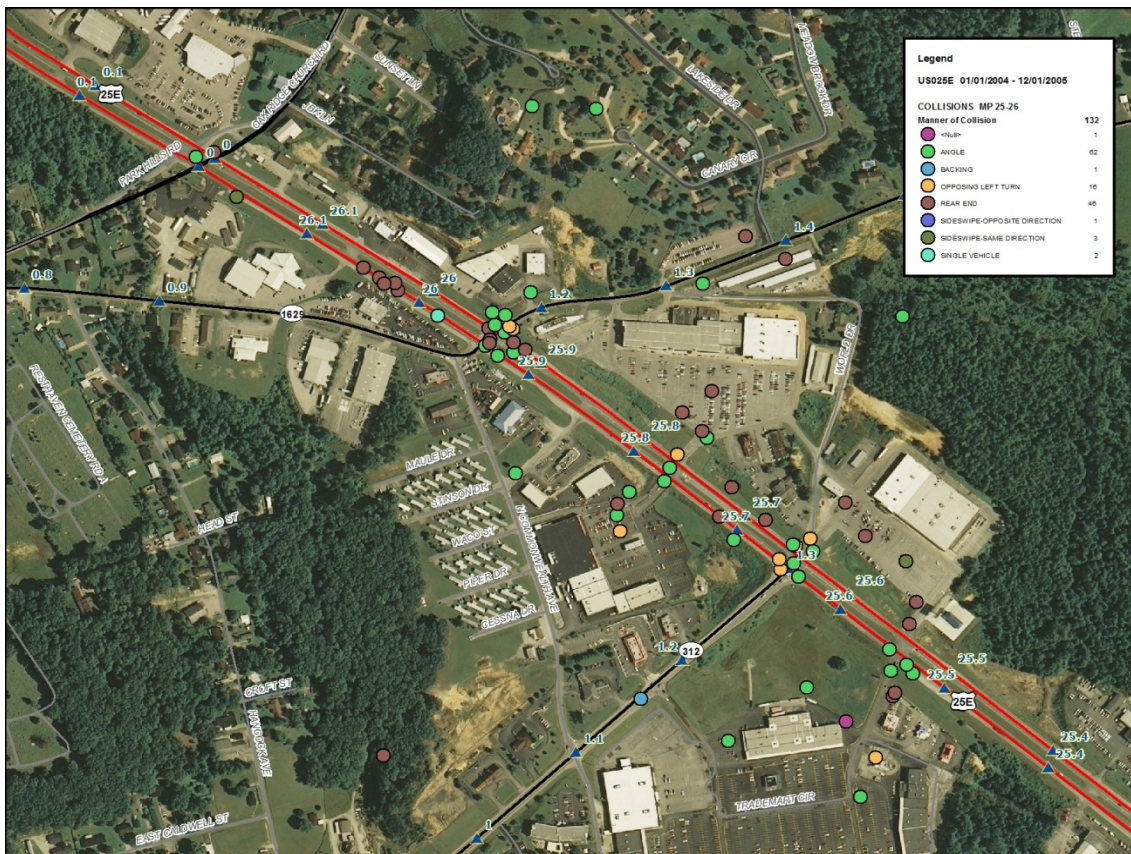


Exhibit 7: Collisions 2010-2011

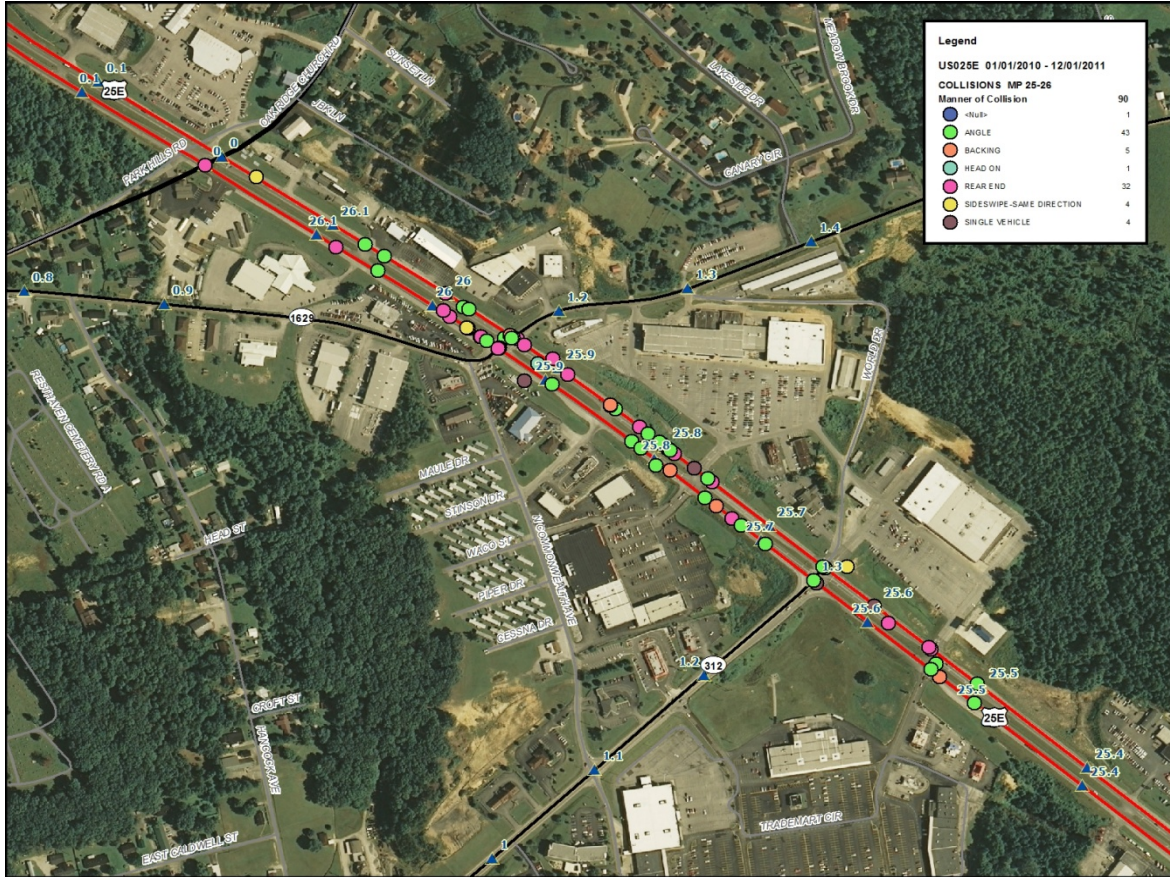


Exhibit 8: Vicinity Map

