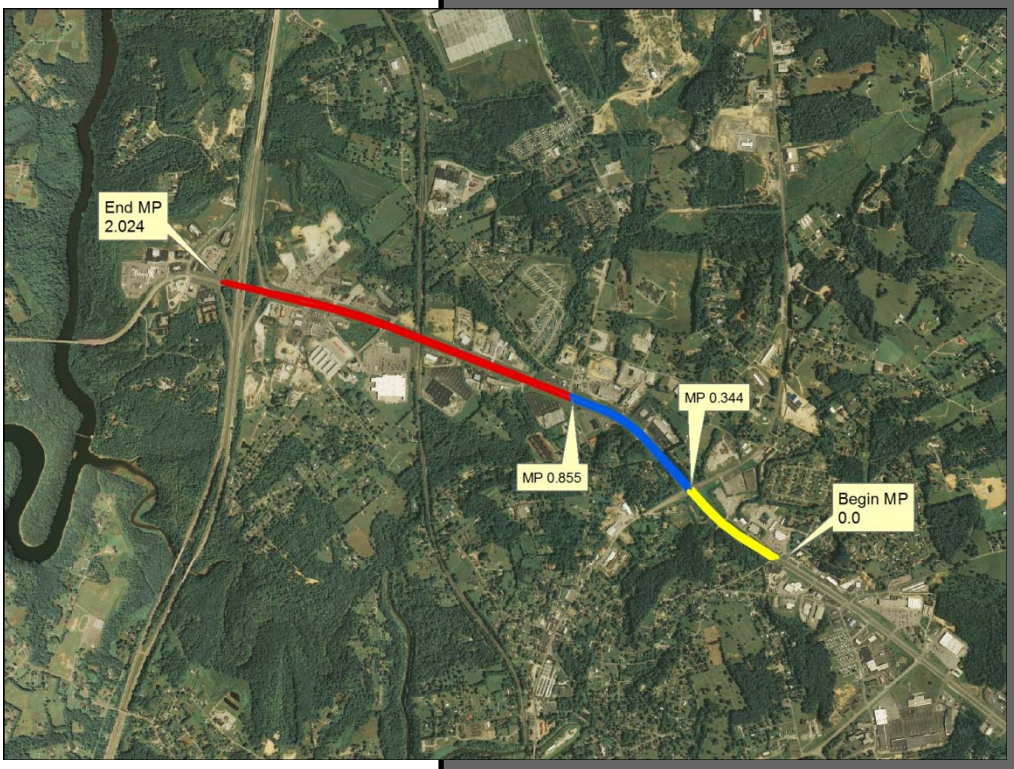
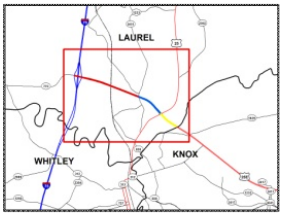
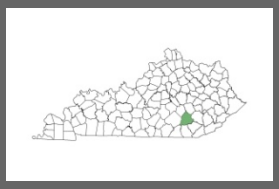
Data Needs Analysis





Scoping Study



US 25 E, Laurel County
From I-75 to Knox/Laurel County Line
Item No. 11-185.00

Prepared by the KYTC
Division of Planning
District 11

October 2012

KENTUCKY TRANSPORTATION CABINET

I. PRELIMINARY PROJECT INFORMATION

County: Laurel **Item No.:** 11-185.00
Route Number(s): US 25E **Road Name:** Cumberland Gap Parkway
Program No.: 063 0025 000-002 **UPN:** FD 52 63 US25E 0-2.024
Federal Project No.: NH 0251 031 **Type of Work:** MAJOR WIDENING

2012 **Highway Plan Project Description:**

MAJOR WIDENING - ADDRESS SAFETY, CAPACITY, AND ACCESS MANAGEMENT ON US 25E FROM KNOX/LAUREL COUNTY LINE TO KY 770.

Beginning MP: 0 **Ending MP:** 2.024 **Project Length:** 2.024

Functional Class.: ☑ Urban ☐ Rural — Arterial
State Class.: ☑ Primary ☐ Secondary
Route is on: ☑ NHS ☑ NN ☑ Ext Wt
MPO Area: Not Applicable
Truck Class.: AAA
In TIP: ☐ Yes ☐ No
% Trucks: 11.1
ADT (current): 26,794 2011
Terrain: Rolling
Access Control: ☐ None ☑ Permit ☐ Fully Controlled ☐ Partial Spacing:
Median Type: ☐ Undivided ☑ Divided (Type): Depressed (40') Flush (24')
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**

Roadway Data:	**EXISTING**	**COMMON GEOMETRIC PRACTICES***
No. of Lanes	4	4-6
Lane Width	12	12
Shoulder Width	2 in/10 out	8
Max. Superelevation**		6%
Minimum Radius**	735	1630
Maximum Grade	6.4%	6%
Minimum Sight Dist.	1500	730
Sidewalk Width(urban)	n/a	n/a
Clear-zone***	30	30-34

Existing Rdwy. Plans available? ☑ Yes ☐ No
Year of Plans: 1967
☑ Traffic Forecast Requested
Date Received: 8/1/2012
☐ Mapping/Survey Requested
Date Requested:
Type:

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.*:	063B00058R	063B00058L
Sufficiency Rating	89.9	89.9
Total Length	145	145
Width, curb to curb	40	40
Span Lengths	40-60-40	40-60-40
Year Built	1968	1968
Posted Weight Limit	None	None
Structurally Deficient?	No	No
Functionally Obsolete?	No	No

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 funds was listed in the 2012 General Assembly's Enacted Highway Plan.

Funding	*Phase*	*Year*	*Amount*
NH	D	2013	$1,300,000
NH	R	2014	$2,100,000
NH	U	2015	$1,500,000
NH	C	2016	$7,500,000

B. Project Status

Design funds for this project have been authorized. 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. In this study, southern Laurel County was included. The intersection improvement for US 25E and KY 3431 was identified as one of the short term improvement recommendations for this study. This area is within the limits of this project and will be address.

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 motorist as a route to the Bristol races and a detour when Interstate 75 is closed on Jellico Mountain. It is classified as urban arterial. The classification is not likely to change as a result of this project.

D. Modal Interrelationships

The City of Corbin is commercially served by CSX Railroad. The active lines run north to south through the city. A railroad switchyard is located south of this project. However, US 25E at mile point 1.4 in Laurel County has twin structures that overpass the railroad. This project is on a coal haul route.

E. Social Demands & Economic Development

This section of US 25E has numerous commercial and retail developments. The project area is accessed by interstate traffic and includes typical interchange development. There are numerous gas stations, restaurants, and hotels. Additionally, within the two miles of the project includes two high traffic generators for the area: Wal-Mart and Lowe's. 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 an 18" raw water 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 - 26,163 (2010), Section 2 - 24,241 (2011), and Section 3 - 26,794 (2011). These sections may be viewed in Exhibit 1. There seems to be a significant truck volume within the project limits due to a weigh station that opened on I-75 just North of Exit 29 in 2000. Some truck traffic will bypass the weigh station using Exit 29 and Exit 38. However, traffic counts for all three sections have decreased over the last 10 years. The Corbin Bypass was open to traffic in 1997 and would account for much of the reduced traffic volumes. Additionally, counters in Section 2 and Section 3 are now using Piezo loops which provide for a more accurate count than previous used counters.

II. PROJECT PURPOSE AND NEED (cont.)

G. Capacity

There is congestion in the area. Section 3 is closest to the interstate and experiences a high truck volume with turn movements in and out of several gas stations. The other commercial developments and businesses such as Wal-Mart, and Lowe's in the area produce high traffic volume. Additionally the intersection of US 25, US 25E and US 25W is locally known as "Malfunction Junction". This intersection experiences frequent backups and delays. According to the Corbin SUA Study, in 2009 this 2.024 mile section preformed at a LOS D and an estimated 2035 LOS E.

H. Safety

Collision stats for Section 1: Collision locations can be seen in Exhibit 2. The CRF for this section is 0.804.
Collision stats for Section 2: Collision locations can be seen in Exhibit 3. The CRF for this section is 1.278.
Collision stats for Section 3: Collision locations can be seen in Exhibit 4. The CRF for this section is 1.397.

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 shows a total of 292 collisions over the three year time period. Over half of those accidents were rear end collisions. Most collisions in Sections 1 and 2 are at the signalized intersections. Although Section 3 has clusters of collisions at the signalized intersections, it also has an array of collisions scattered along US 25E between the intersections. This section has the highest traffic volume and significantly more accidents.

I. Roadway Deficiencies

This entire section has four 12-ft lanes. From mile point 0.0 to 1.74 there is a 40'depressed median. From mile point 1.74 to 2.024, the roadway has a 24' flush median. Shoulder width varies from 0'-10'. This route is classified as a Principal Arterial roadway. 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. These sections appear to have no significant drainage problems.

In 2007, at various locations within the project limits, KYTC has offset turn lanes, constructed right turn lanes and lengthened left turn lanes to assist in congestion issues and safety concerns.

Draft Purpose and Need Statement:

Need: The need for this project is to reduce congestion and collisions through this section of US 25E. US 25E from the Knox/Laurel County line to KY 770 is congested during peak traffic periods. Growth is expected to continue. There are also collision patterns at intersections with US 25, KY 3431, Steward Road and the I-75 Northbound on/off ramps. This section of road has a CRF of 1.378.

Purpose: The purpose of this project is to provide reliable, safe and efficient travel along US 25E by addressing capacity issues 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.#: 74 of the 2012 STIP **TIP Pg.#:**

Laurel 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 Laurel County are Indiana bat, gray bat, Cumberland elktoe, Cumberlandian combshell, oyster mussel, littlewing pearlymussel, fluted kidneyshell, rabbitsfoot, little spectaclecase, Cumberland bean pearlymussel, blackside dace, white-fringeless orchid and virginia spiraea. 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 investigate 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, Horse Creek, 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

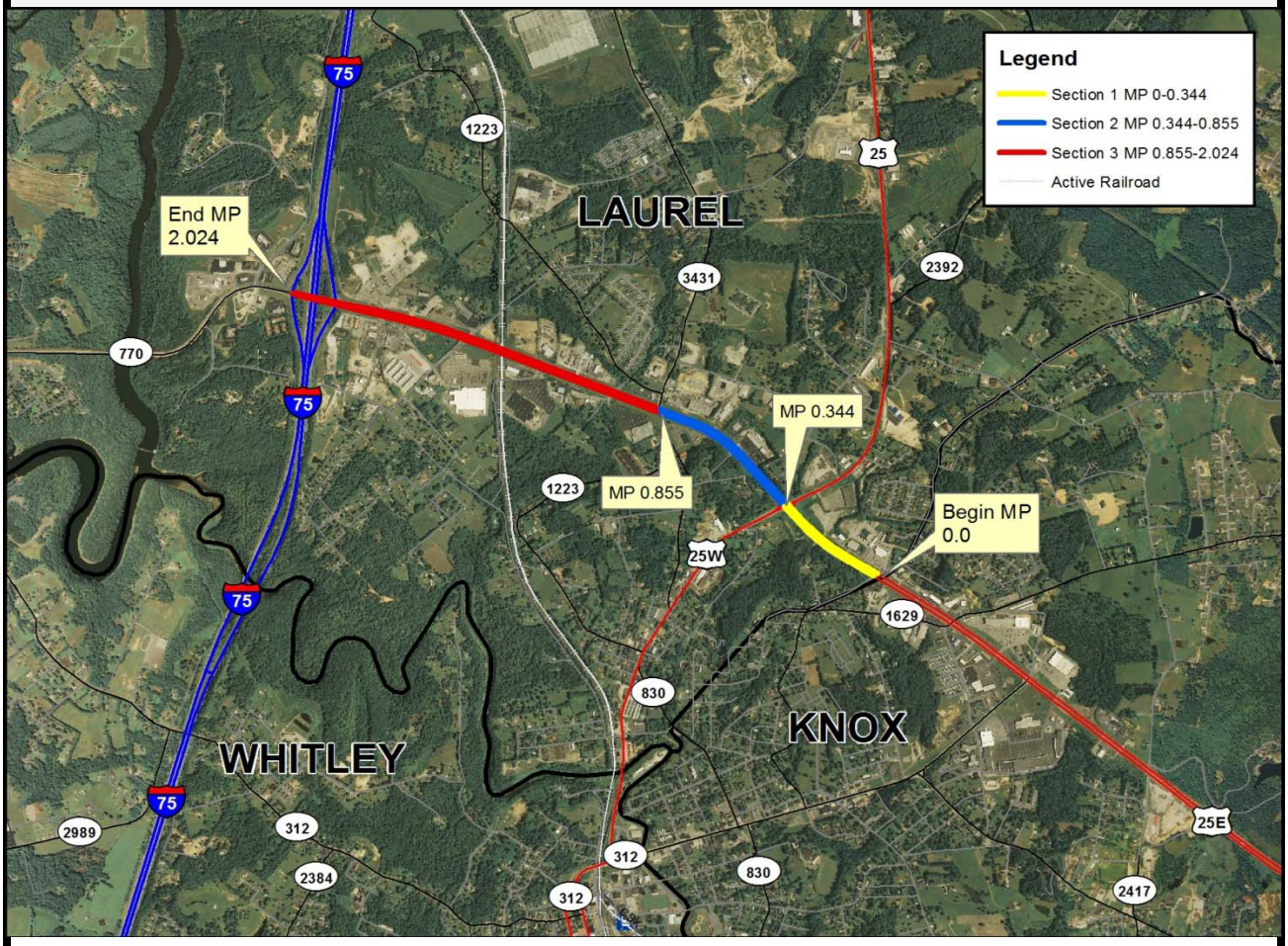
IV. POSSIBLE ALTERNATIVES

A. Alternative 1: No Build

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

B. Alternative 2: Widen US 25E

From mile point 0.0 to mile point 0.35, continue with 4 lane template to tie into the current design project, the US 25, US 25E and US 25W interchange. Widen US 25E from 4 lanes to 6 lanes from mile point 0.35 to 2.024. At mile point 1.4 are two bridges that overpass the railroad to be also widened.



Planning Level Cost Estimate:

Phase	Estimate	
Design	$480,000	*
R/W	$2,200,000	
Utilities	$950,000	
Const	$9,569,300	
Total	**$13,199,300**	

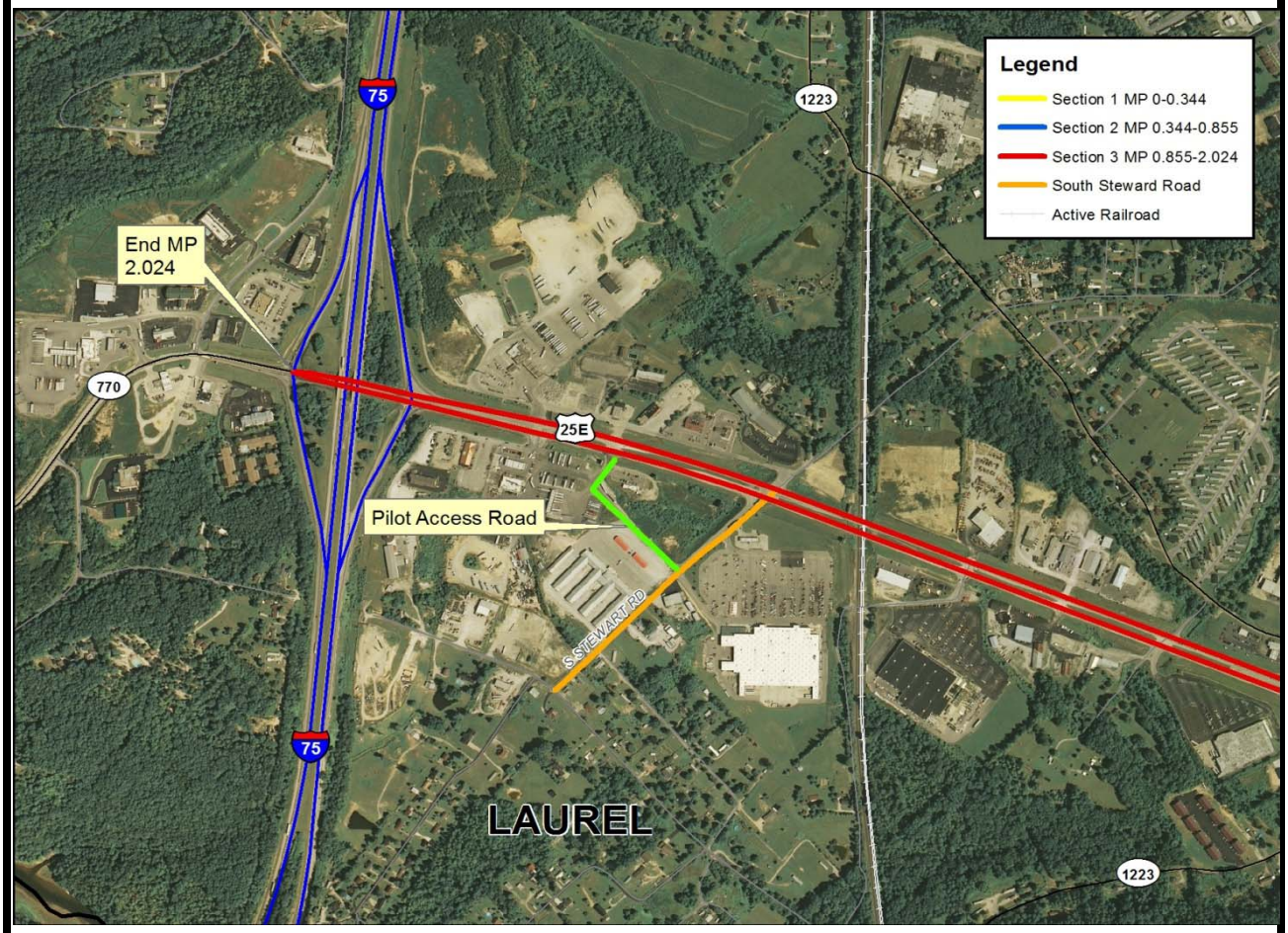
IV. POSSIBLE ALTERNATIVES (cont.)

B. Alternative #3: Apply Access Management

Apply access management practices to US 25E by allowing left turns only at signalized intersections, removing all other median crossovers, and allowing right in, right out turns at existing entrances. There are several locations where the use frontage roads will reduce access points on US 25E and channelize traffic to signalized intersections.

Oftentimes truck traffic uses the Huddle House entrance to turn left onto US 25E. However, Pilot has constructed an access road for their truck patrons to travel to South Steward Road to access US 25E at a signalized intersection. To improve flow in this area, the median crossover in front of Huddle House should be removed and right in, right out only permitted. Additionally, the access road needs improvement and on South Steward Road, the turn lanes to be extended to the access road.

Additionally, the project limits will need to be extended to include a portion of KY 770 to address the congestion entering and exiting numerous entrances immediately leaving the interstate ramps.



Planning Level Cost Estimate:

Phase	Estimate	
Design	$480,000	*
R/W	---	
Utilities	---	
Const	$3,965,000	
Total	**$4,445,000**	

* denotes Phase I estimate only

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 widening US 25E. Second, the project team feels access management, frontage roads and additional turn lanes will correct the congestion issues drivers experience. With the combination of Alternative 2 and 3, the project team feels the goal will be successfully met.

The alternatives 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 alternatives 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	Widen to 6 Lanes	480,000	2,200,000	950,000	9,569,300	13,199,300
3	Apply Access Management	480,000	---	---	3,965,000	4,445,000
-	Current Hwy Plan Estimated Cost	960,000	2,200,000	950,000	13,534,300	17,644,300
-	Current Pre-Con Estimated Cost	1,300,000	2,100,000	1,500,000	7,500,000	12,400,000

VI. Tables and Exhibits

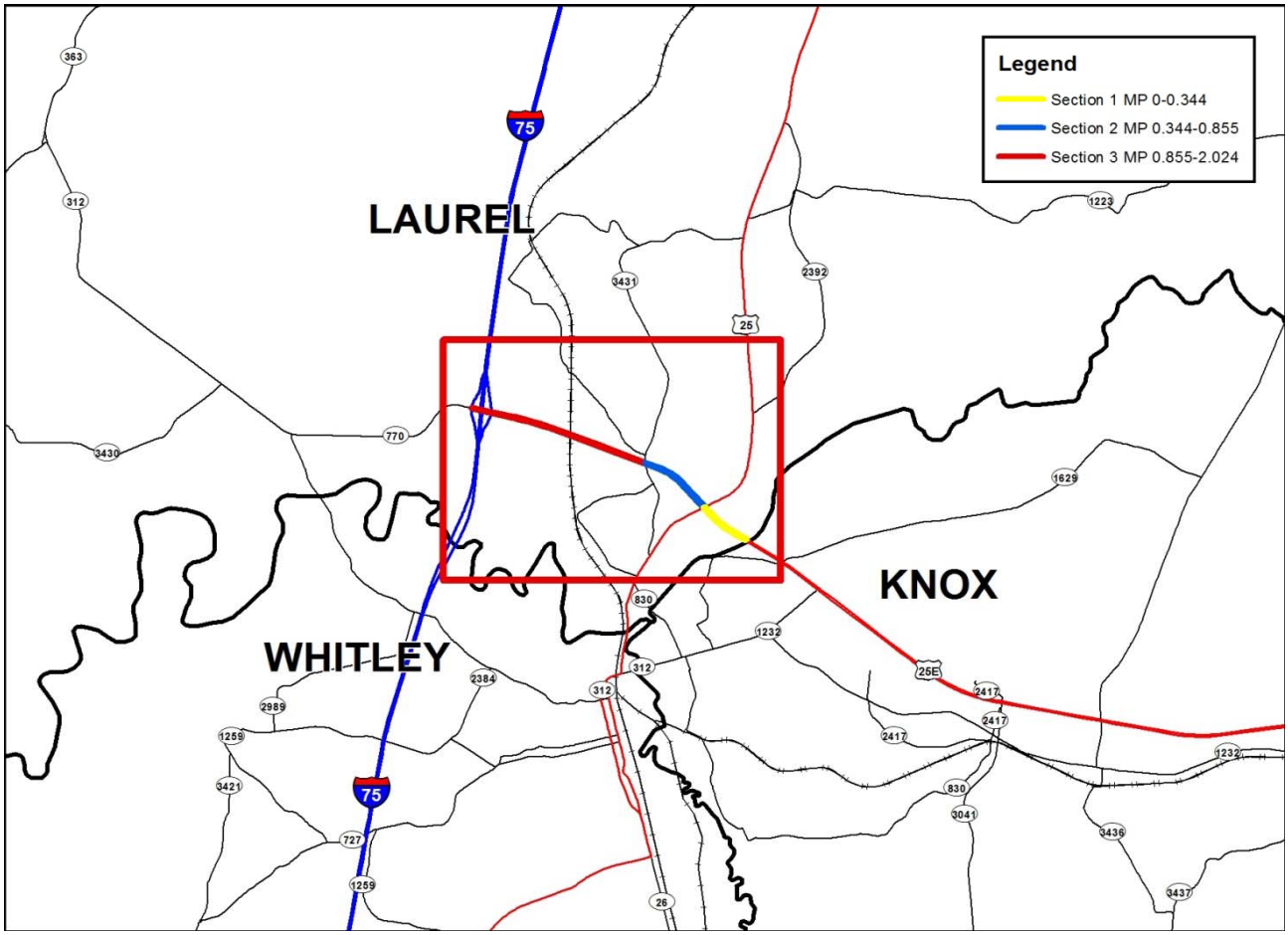


Exhibit 1: Project Location Map

VI. Tables and Exhibits (cont.)

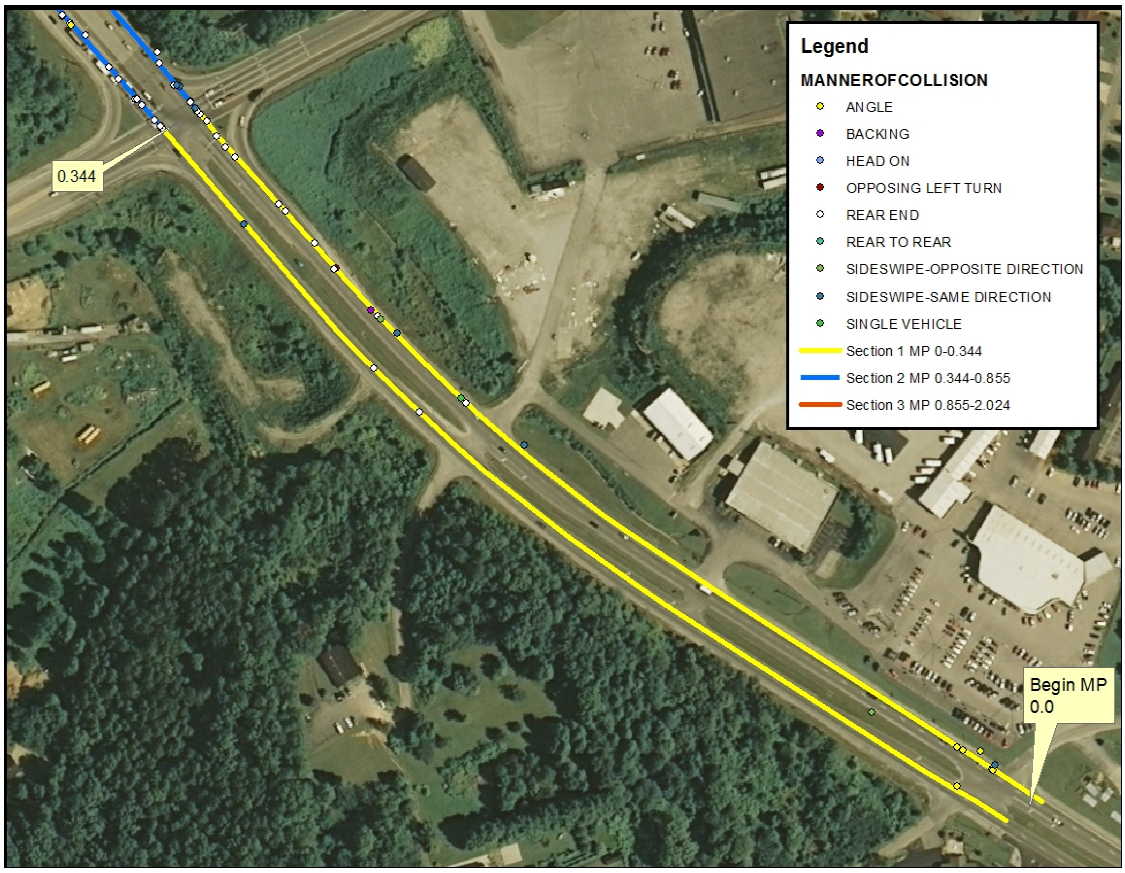


Exhibit 2: Collision Locations Section 1

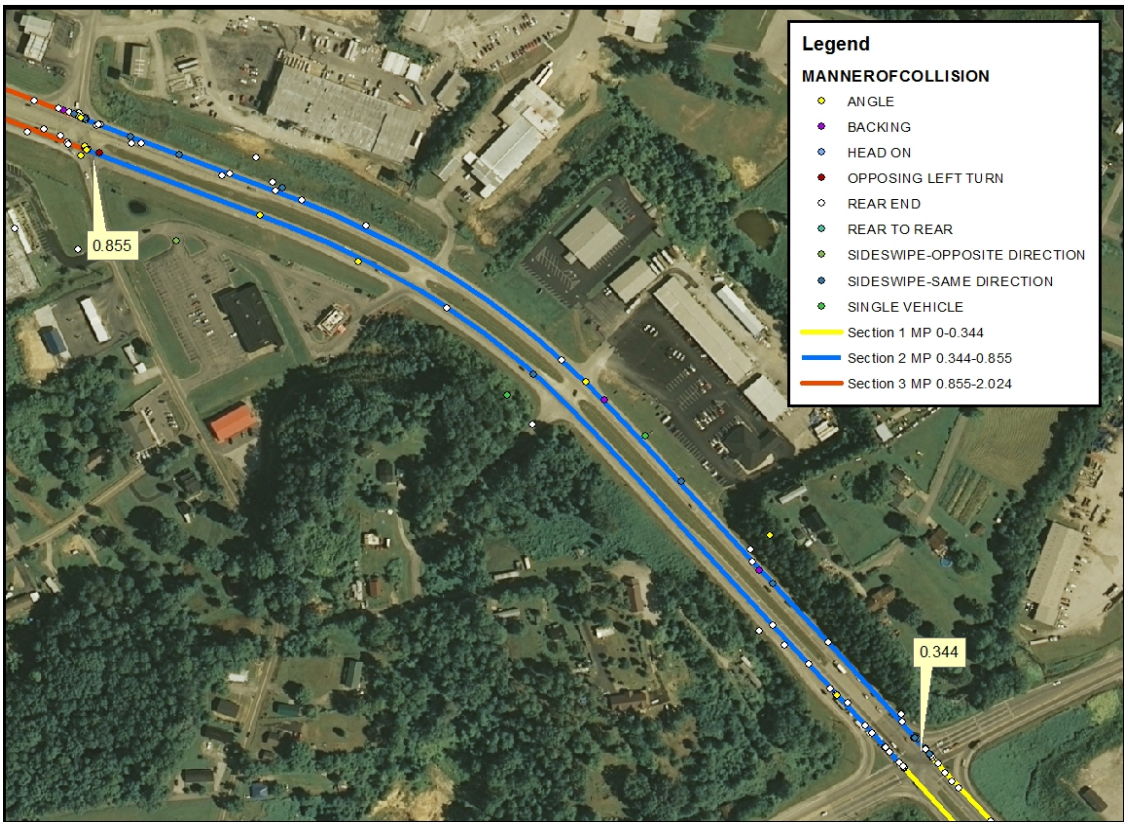


Exhibit 3: Collision Locations Section 2

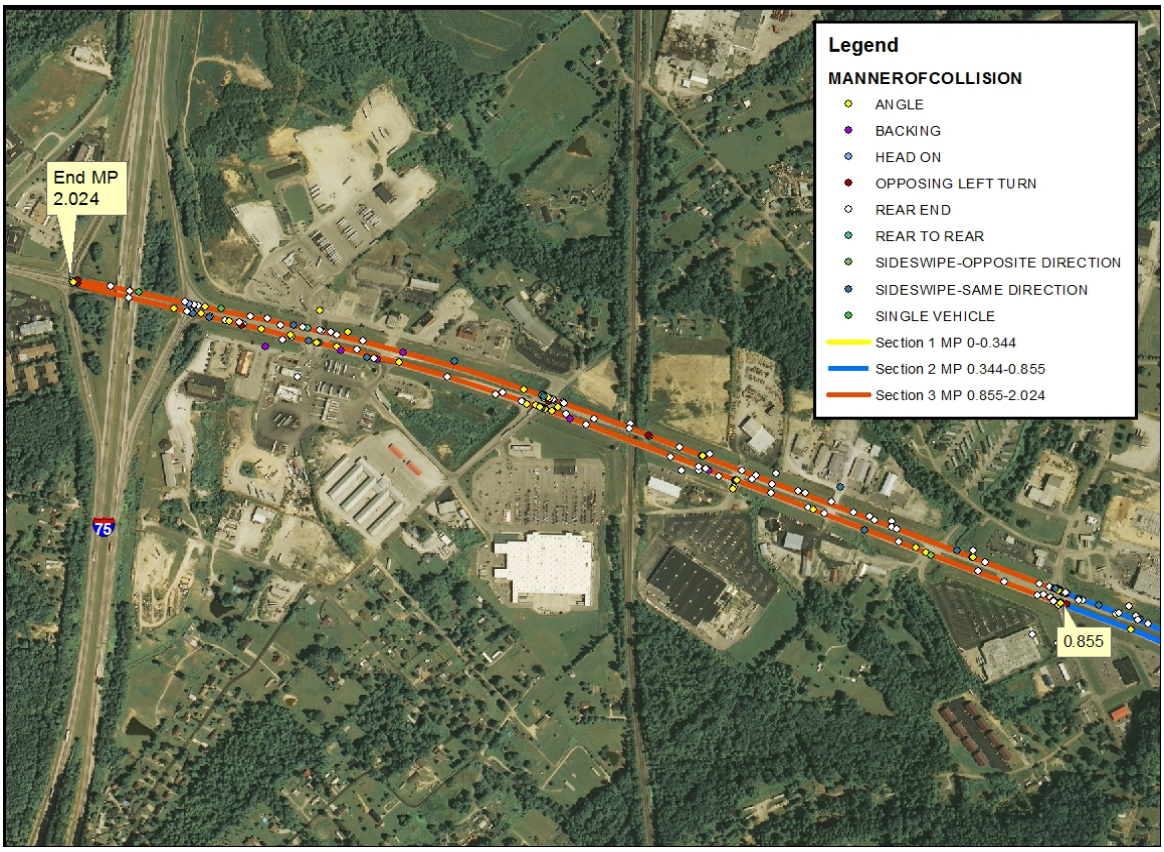


Exhibit 4: Collision Locations Section 3

Exhibit 5 : Manner of Collisions

Manner of Collisions

Angle	71
Backing	14
Head on	1
Opposing Left Turn	8
Rear End	153
Rear to Rear	1
Sideswipe	38
Single Vehicle	6
Total	**292**