2011

US-25 DNA Pre-Design Scoping Study

KENTUCKY TRANSPORTATION CABINET

Laurel County: US- 25 Updated Area Review

Project Area A: KY-229 from MP 11.522 to MP 12.211 to include: US-25 from MP 11.200 to MP 11.400 and

Project Area B: Co

Prepared by:

Kentucky Transportation Cabinet

District 11 and Division of Planning

2/15/2011

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I. INTRODUCTION

A. Study Purpose

The purpose of the Data Needs Analysis (DNA) Scoping Study is to address the nine elements of purpose and need as defined by the National Environmental Policy Act (NEPA) in order to develop a draft Purpose and Need Statement for the project. This study will also provide a more defined project scope, possible alternatives and a planning-level cost estimate for each of these alternatives. The study area will also review possible environmental impacts and any other information that may be beneficial in the Project Development phase of this project.

B. Location

This project is located in Laurel County both inside and outside the southernmost city limits of London and east of the Interstate 75. See **Figure I-1** for a vicinity map of the project area. This project includes two separate project areas. Project Area A consists of KY-229 from mile point 11.540 to mile point 12.210 and includes the intersection with US-25 from mile point 11.200 to mile point 11.300 as well as Mardis Street. Project Area B includes US-25 between mile point 10.080 to mile point 10.180 for intersection with Commercial Drive, Commercial Drive, James Lewis Drive and intersection with KY-229 between mile point 11.110 and mile point 11.210. The project area is shown with aerial photography in **Figure I-2** and in **Exhibit 1** in **Appendix A**. The projects termini are also shown topographically in **Figure I-3** and in **Exhibit 2** in **Appendix A**. Photos were also taken along this portion of the US-421 Corridor to provide a more graphical representation of the area and they are provided in **Appendix B**.

II. PRELIMINARY PROJECT INFORMATION

A. Existing Conditions/Roadway Data

Data describing the existing conditions along the identified sections of US-25 and KY-229 was taken from the Division of Planning's Highway Information System (HIS) database. No data was available from the HIS database for Commercial Drive or James Lewis Drive due to being county roads that were originally considered to have low traffic volumes. The only available data was on US-25 and KY-229. Data came from the online version of the database and data was extracted in July 2010. **Table II-1** provided the classification and system information on sections of both roadways that directly impact Project Areas A & B.

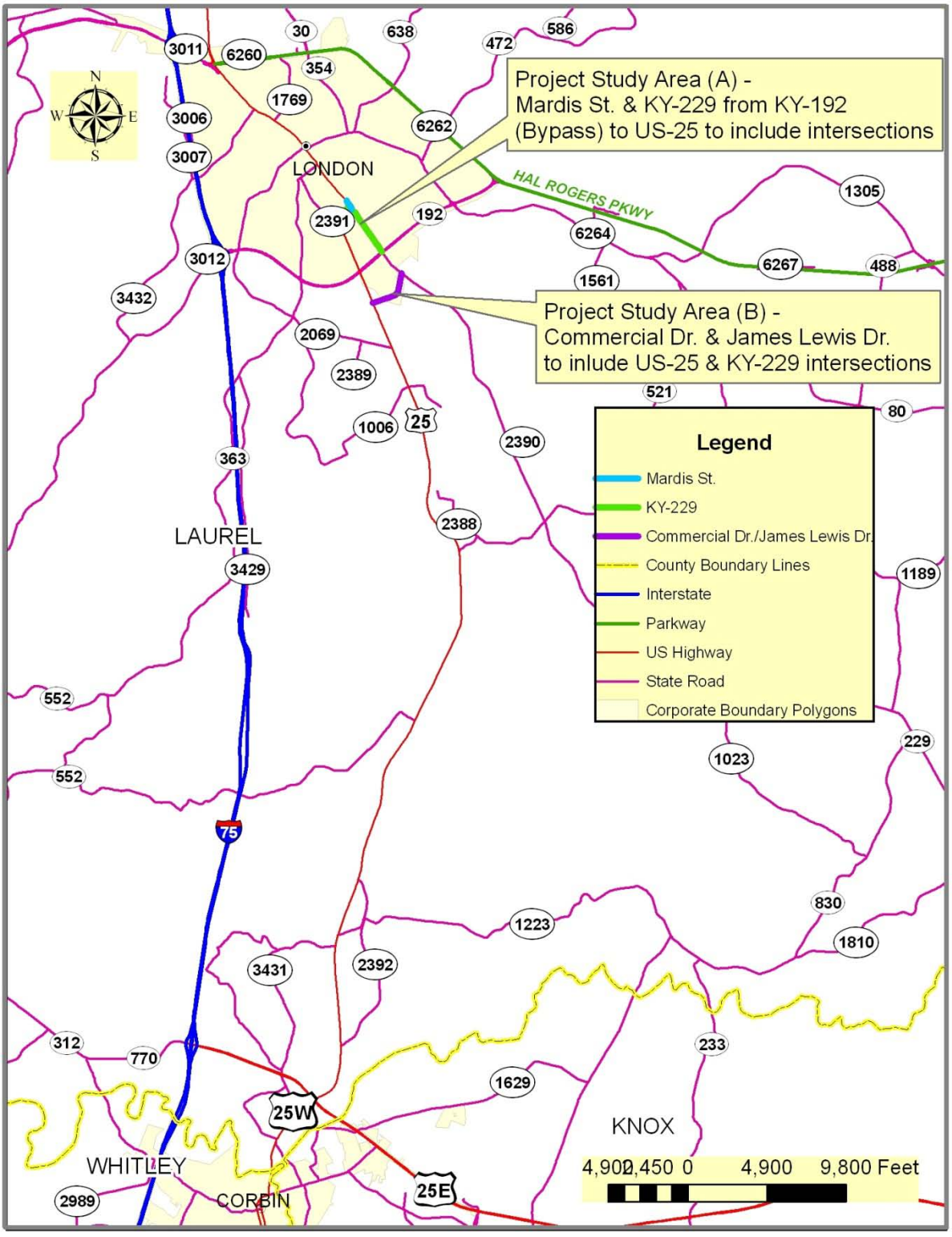


Figure I-1: Project Vicinity Map

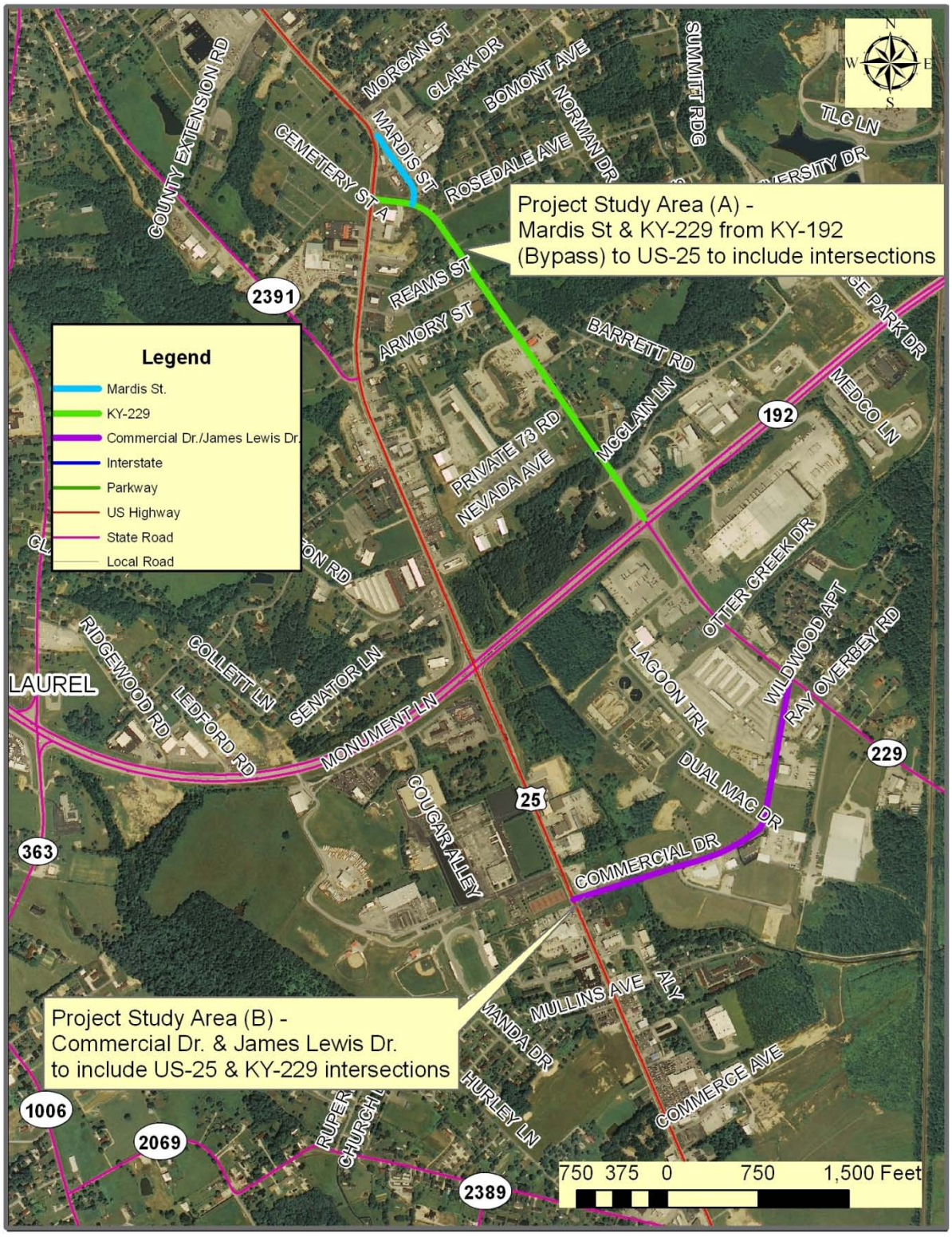


Figure I-2: Project Area Map

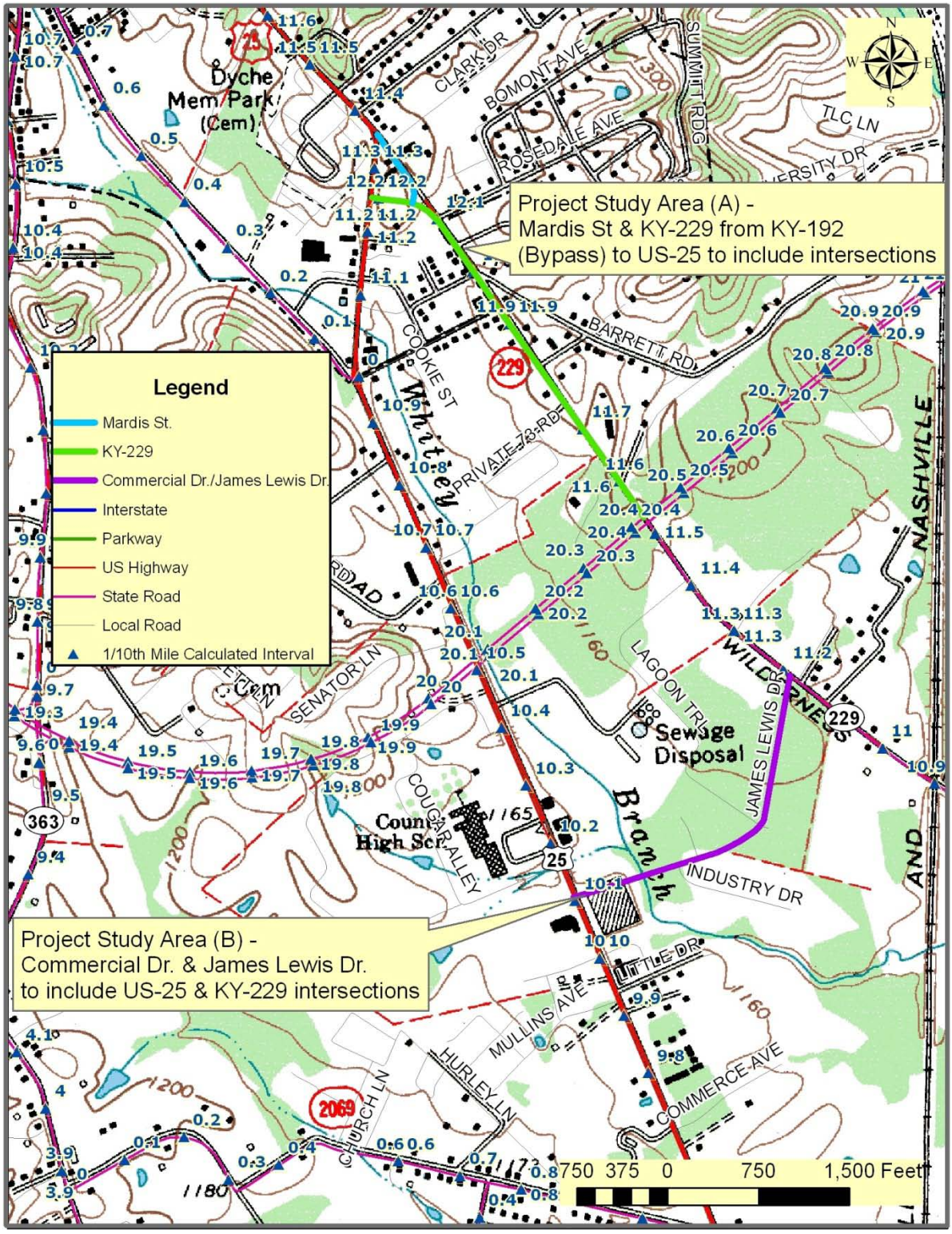


Figure I-3: Project Topographic Map

Route	Beginning MP	End MP	Functional Classification	Truck Weight Class	Coal Haul Highway System	Extended Weight Coal Haul Highway System
US-25	9.028	13.620	Urban Minor Arterial	AAA	Yes	Yes
KY-229	10.888	12.211	Urban Minor Arterial	AA	No	No

Source: Highway Information System (HIS) Database KYTC
AAA = 80,000 pounds gross load limit
AA = 62,000 pounds gross load limit

Table II-1: Existing Route Classification and Systems

Within Project Study Area A, only KY-229 is included in the National or Kentucky Scenic Byway System under the name "Wilderness Road Heritage Highway". The only portion of US-25 just north of Project Study Area (A) through downtown London, Kentucky is also a part of the "Wilderness Road Heritage Highway".

Both US-25 & KY-229 are located in generally flat terrain. Passing sight distance along US-25 within the study area was found to be 20 percent. This percentage is based upon the amount of stripping for passing in the cardinal direction within a designated segment of roadway.

There is only one horizontal curve along US-25 between mile points 10.000 and 11.400 that is greater than 6.0 degrees. This curve is located just north of the intersection of US-25 and KY-229 from mile point 11.2720 to mile point 11.3460. Even though this section of US-25 is not on KY-229, it will be significantly impacted by improvements to Project Area A. This curve was defined to have degree of curvature of 13.0 for a rounded radius of 440.7 feet with a posted speed limit of 25-35 miles per hour. Under the Geometric Design Guide for Urban Roads, used by the KYTC Division of Highway Design (Exhibit 700-04), at a design Speed of 45 mile per hour (as set by the current design team) and maximum super elevation of 4.0 percent, the radius should be 730.0 feet.

KY-229 has one horizontal curves located between mile point 12.090 and mile point 12.160 with a radius of 428.0 feet. This curve was designed to provide a perpendicular tie-in to the old US-25. Using the same reference as stated in the previous paragraph, the minimum radius allowed with a 45 mph design speed assuming a maximum super-elevation of 4.0 percent for this urban minor arterial street is 730.0 feet.

There are no vertical curves on US-25 in Laurel County between mile points 10.000 and mile point 11.400 that did not meet current design standards per the HIS database. However, there is a vertical curve along KY-229, just north of the KY-192 Bypass, between mile point 11.522 and mile point 12.211, there is a vertical curve that fell within the grade range of 4.5 to 6.4 percent. This curve also has private driveways and two county road intersections located mid-way up the grade in both directions as well as two access points at or near the

crest of this curve. The remaining portion of KY-229 between mile points 11.150 and 11.522 did not reveal concerns with vertical curves as the grade ranged from 0.5 to 2.4 percent.

US-25 from mile point 10.000 to mile point 10.300 is a two-lane highway with a two-way left turn lane (TWLTL) and from mile point 10.300 to mile point 10.505 is a four-lane highway with a TWLTL. The balance of US-25 from mile point 10.505 to mile point 11.400 is also a two-lane highway with a TWLTL. The shoulder width along this roadway is approximately two feet from mile point 10.000 to 10.300 and between mile points 11.200 to 11.500. The shoulder width along this roadway increases to ten foot shoulders between mile points 10.300 and 10.505. The driving surface of this entire section of roadway is asphalt pavement. US-25 from mile point 9.028 to mile point 10.162 was last resurfaced in 1990 with mile point 10.162 to mile point 10.505 being resurfaced in about 2005 due to construction of new turn lanes into South Laurel High School. The balance of US-25 from mile point 10.505 to 11.400 was reconstructed and resurfaced in 1997.

The entire length of the KY-229 corridor is an undivided two-lane highway with a constant lane width of eleven feet. The shoulders vary along the length of the corridor at a width between two to four feet. The two foot shoulder width occurs along KY-229 south of the intersection with KY-192 (Bypass), while a three foot shoulder exists north of this intersection between mile points 11.600 and mile points 12.211. The only four foot shoulder is located between mile points 11.522 and 11.600. The driving surface along this entire portion of KY-229 is asphalt pavement that was last resurfaced in 2008.

A proposed new back entrance into South Laurel High School also known as the "Southern Bypass" will connect from KY-363 (west end) through to the intersection of US-25 and Commercial Drive (east end). Even through Project Area B, consists primarily of Commercial Drive and James Lewis Drive, there is currently little information available on either roadway. These two local roads are undivided two-lane highways that have recently been resurfaced with a bituminous mixture. Both local roads are anticipated to be significantly impacted by increased traffic flow, once the Southern Bypass is complete.

There were three major crossroads identified along US-25 between mile points 10.000 and 11.400. These major crossroads were with KY-192 (Bypass) at mile point 10.505, KY-2392 at mile point 10.972 and KY-229 at mile point 11.255. The last actual Average Daily Traffic (ADT) count for KY-192 was identified in 2009 to be 23,800 vehicles per day and for KY-229 was identified in 2010 to be 4,640 vehicles per day. There are several minor roadways. One minor side road also known as KY-2392 was listed on the HIS database to have an Average Daily Traffic (ADT) count of 1,250 vehicles per day in 2008. The route log for minor crossroads and other important interconnections along this section of US-25 is shown in **Table II-1**.

KY-229 had only two major crossroads identified between mile points 11.000 and 12.211. These two major crossroads were with KY-192 (Bypass) at mile point 10.522 and US-25 at mile point 12.211. The last actual Average Daily Traffic (ADT) count for KY-192 covered the same section that included the US-25 intersection and was identified in 2009 to be 23,800 vehicles per day, while US-25 was identified in 2010 to be 14,100 vehicles per day. Several

minor side roads were also listed in the HIS route log. The route log for minor crossroads and other important interconnections along this section of US-25 is shown in **Table II-2**.

County	Route	Mile point	Description
Laurel	US 25	10.004	APT COMPLEX ST
Laurel	US 25	10.107	COMMERCIAL DR
Laurel	US 25	10.162	LAUREL TECH COLLEGE ST
Laurel	US 25	10.394	MONUMENT LN
Laurel	US 25	10.505	KY 192
Laurel	US 25	10.606	SENATOR LN
Laurel	US 25	10.650	HAMPTON RD
Laurel	US 25	10.675	NEVADA AVE
Laurel	US 25	10.837	W CARTER RD
Laurel	US 25	10.972	ARMORY ST/KY 2391
Laurel	US 25	11.084	REAMS ST
Laurel	US 25	11.122	GREER AVE/LONDON STOCKYARD ST
Laurel	US 25	11.128	LONDON STOCKYARD ST
Laurel	US 25	11.157	MADISON SQ
Laurel	US 25	11.223	CEMETERY ST A
Laurel	US 25	11.255	KY 229
Laurel	US 25	11.389	MORGAN ST
Laurel	US 25	11.4390	BALSINGER ST/CEMETERY ST A

Source: Highway Information System (HIS) Database KYTC

Table II-1: US-25 Route Log

County	Route	Mile point	Description
Laurel	KY 229	11.118	RAY OVERBEY ST
Laurel	KY 229	11.167	BROWN LN
Laurel	KY 229	11.187	JAMES LEWIS DR
Laurel	KY 229	11.297	OTTER CREEK DR
Laurel	KY 229	10.412	LAGOON TRAIL
Laurel	KY 229	10.522	KY 192
Laurel	KY 229	10.614	MCCLAIN LN/SHELTER LN
Laurel	KY 229	10.752	NEVADA AVE
Laurel	KY 229	10.819	BARRETT RD
Laurel	KY 229	10.931	ARMORY ST
Laurel	KY 229	11.996	REAMS ST
Laurel	KY 229	12.103	ROSEDALE AVE
Laurel	KY 229	12.147	MARDIS ST
Laurel	KY 229	12.211	US 25

Source: Highway Information System (HIS) Database KYTC

Table II-2: KY-229 Route Log

B. Utilities

The following are names of utilities in the area and contact information for those utilities. The actual location of these utilities will need to be verified in future project phases.

Electric:

Jackson Energy Cooperative
177 Barbourville Road
London, Kentucky 40744
Office: (606) 864-2363
jackener@jacksonenergy.com

E. ON ~ U.S. & Kentucky Utilities Company
Greg Geiser
Planning & Scheduling for Highway Relocations
820 West Broadway; P. O. Box 32020
Louisville, Kentucky 40232-2020
Office: (502) 627-3708
Cell: (502) 376-9510
Fax: (502) 217-2179
Greg.Geiser@eon-us.com

Cable:

New Wave Communications
Darrel Nave
5026 South Highway 27
Somerset, Kentucky 42501-6058
Office: (606) 678-9215, Ext. #3
Fax: (606) 679-7111
dnave@newwavecom.com

Time Warner Communications
Elbert Lamb/Earl Finley
1617 Foxhaven Drive
Richmond, Kentucky 40475
Office: (859) 626-4816

Telecommunications:

Windstream Communications, Inc.
Bowman Hail
719 North Main Street
London Ky. 40741
Office: (606) 878-3258
Bowman.Hail@windstream.com

Kentucky Data Link
Rick Cunico
Windstream Communications, Inc.
3701 Communications Way
Evansville, IN 47715
Office: (812) 759-2831
richard.cunico@windstream.com

Gas:

Delta Natural Gas
Steve Lewis
Engineer
3617 Lexington Road
Winchester, Kentucky 40391
Office: (859) 744-6171, Ext. #122
Fax: (859) 744-3623
Slewis@deltagas.com

Water:

Laurel County Water District
1670 East Hal Rogers Parkway
London, Kentucky 40741
Office: (606) 878-9420

Laurel County Water District #2
Jeff Anderson
Project Manager
3910 South Laurel Road
London, Kentucky 40744
Office: (606) 878-2494
Office: (606) 523-5579
Fax: (606) 878-2448
Info.laurel@laurelwater.com

London Utility Commission
801 North Main Street, P.O. Box 918
London, Kentucky 40741
Main Office: (606) 864-2103
Water Plant: (606) 864-7551
Fax: (606) 864-2131
Luc1@kih.net

Sewer:

London Utility Commission
801 North Main Street, P.O. Box 918
London, Kentucky 40741
Main Office: (606) 864-2103
Wastewater Plant: (606) 864-7611
Fax: (606) 864-2131
Luc1@kih.net

It is important to note that there are several large diameter sewer force mains and gravity sewers in the area due to London Utility Commission Wastewater Treatment Plant (WWTP) being located in between Project Area A & Project Area B. The WWTP facility is located due south of KY-192 (Bypass), north of Commercial Drive and James Lewis Drive and between US-25 and KY-229. **Figure II-1** shows a current map of utilities found throughout Project Area A and Project Area B. There are overhead electric, cable, and telephone lines throughout both project areas as well as water and sewer lines. Further attention will be needed on locating gas lines in both project areas as no detailed information was available through our utilities GIS database.

C. Agency Coordination

The project team met on June 22, 2010 at the District 11 Manchester office to review and discuss this project, develop a purpose and need statement as well as identify possible alternatives. This study will discuss each of these areas in greater detail as presented in this meeting. A description of each alternative and cost estimate from District 11 will also be provided. See **Exhibit 1** in **Appendix C** for the 1st Project Team Meeting Minutes.

III. PROJECT PURPOSE AND NEED

A. Legislation

The following is a description of the project as it is listed in the 2010-2012 General Assembly's Enacted Roadway Plan.

- **Item #11-0147.00, Laurel County**

Phase	Fund	Year	Estimate
D:	SB2	2010	$3,130,000
R:	SP	2012	$2,000,000
U:	SP	2012	$800,000
C:			$0

DESCRIPTION:
WIDEN US-25 TO 5 LANES FROM KY-1006 TO KY-2069. CONSTRUCT A CONNECTOR FROM US-25 TO KY-229 UP TO KY-192 AND CONSTRUCT A BACK ENTRANCE TO THE SCHOOL FROM KY-192 BYPASS. (06CCR)

A Project Identification Form (PIF) was found as control number 11 063 B0025 46.30 and was last updated November 11, 2010. This PIF listed the construction cost for this project at $7,000,000, while the 2006 Study estimated construction to be $4,250,000. See **Exhibit 2** in **Appendix C** for a copy of the PIF on this project and **Exhibit 3** in **Appendix C** for a copy of the PIF found as control number 11 063 D0229 1.26 that includes the portion of KY-229 discussed as part of Item # 11-0147.00.

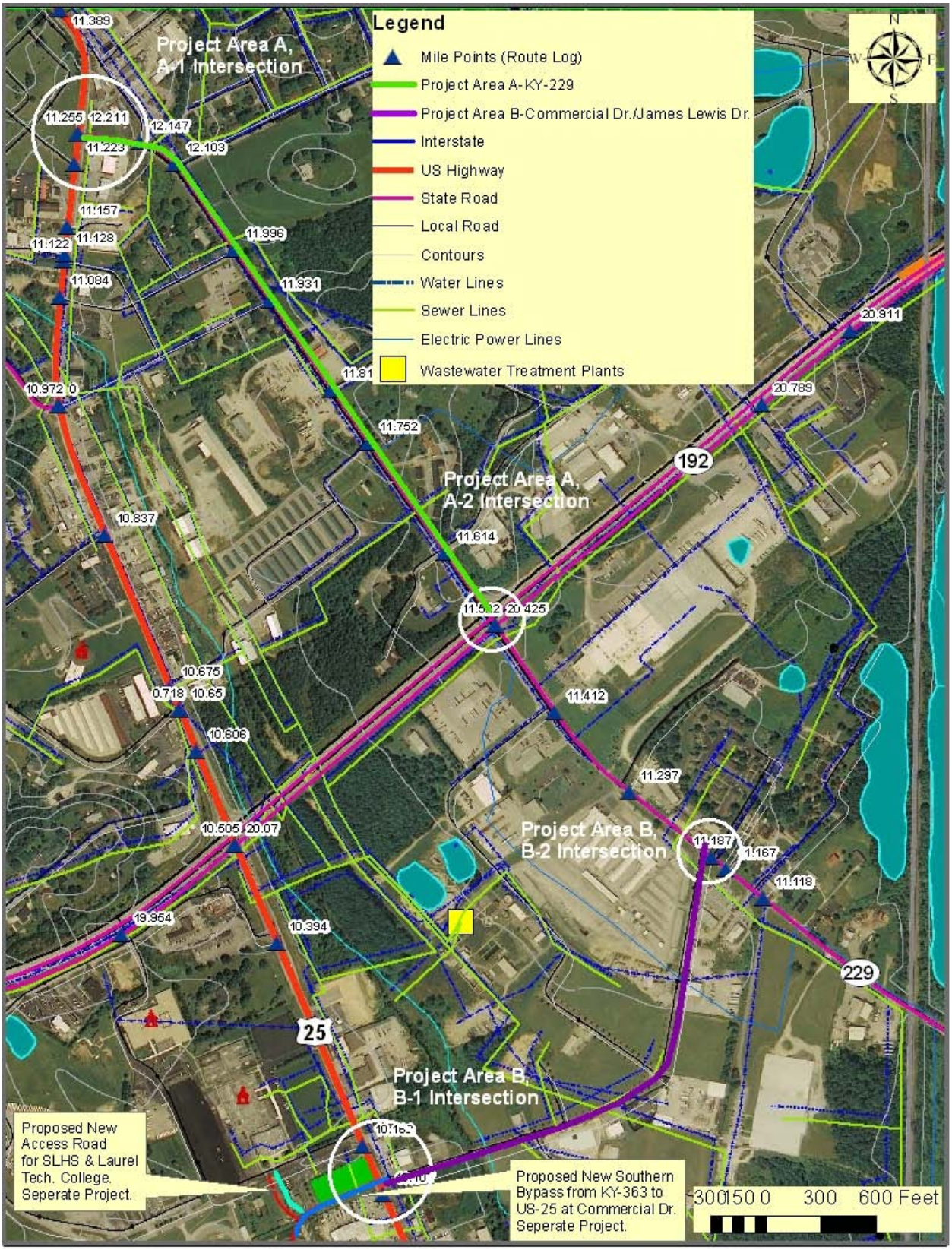


Figure II-1: Project Area Utilities Map

B. Project Status

A separate scoping study titled US-25 Laurel County from Corbin to London was originally identified under Item # 11-8201.00 and completed in July 2006. (This study will be known as the 2006 Study throughout the remainder of this document.) The priorities identified in the 2006 Study are shown in **Figure III-1,** described under the Executive Summary of the 2006 Study is stated as follows:

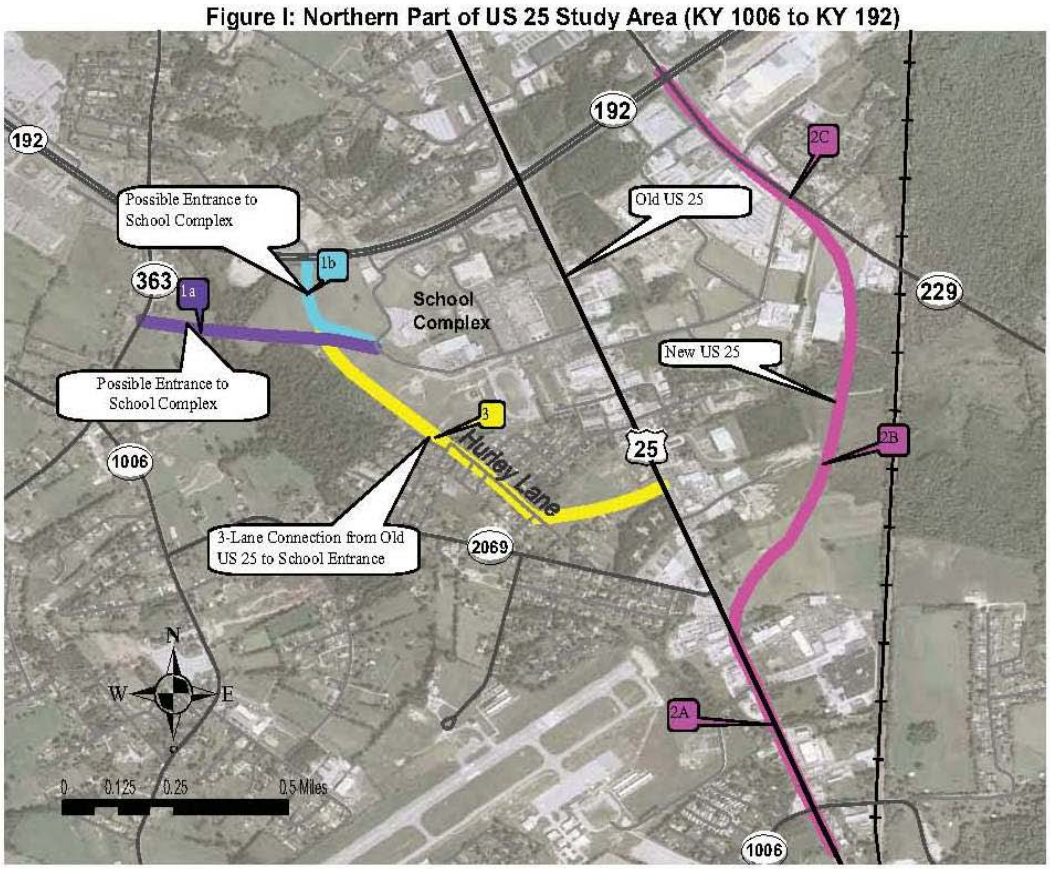


Figure III-1: 2006 Priority Projects Map

1. "Construct back entrance to the school complex connecting the school to either (a) KY-363 or (b) KY-192. (Determining whether this connection should be made with KY-363 or KY-192 needs to be determined at the design phase after consultation with the schools and the public. At the time of the report, the schools have not responded to letters or phone calls requesting their input. Origin-Destination information provided by the schools is vital to providing the correct access to the schools.)
2. Reconstruct/ Reroute US-25 from KY-1006 to KY-192
    a. Improve US-25 from KY-1006 to KY-2069
    b. Reroute US-25 from KY-2069 to KY-229
    c. Improve KY-229 from the intersection with new US-25 to KY-192.
3. Provide a new connection between the school and old US-25 by using part of Hurley Lane and an undeveloped plot of land adjacent to US-25. The priority should be

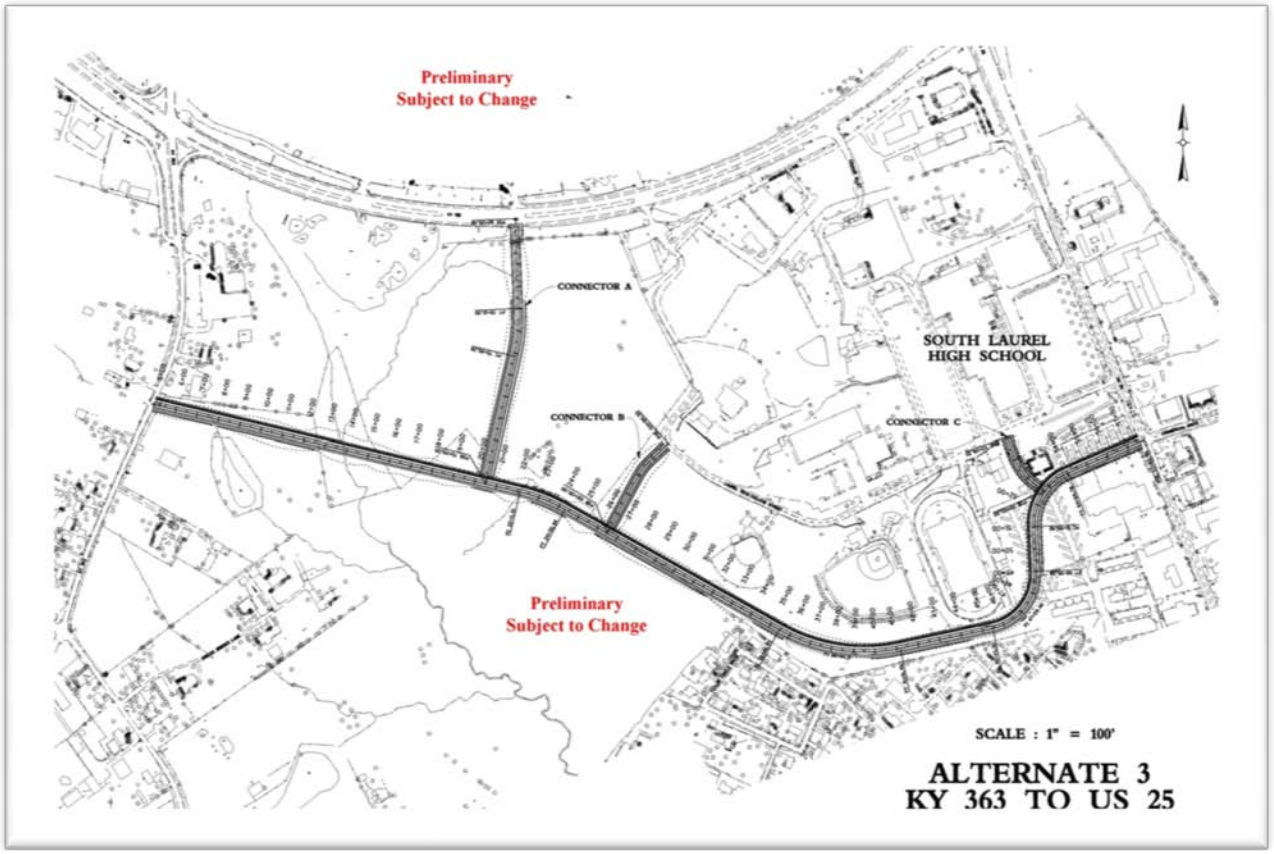
evaluated thoroughly after Priorities 1 and 2 have been constructed. Priorities 1 and 2 by themselves may reduce congestion enough to make Priority 3 a lower priority.
4. Expand US-25 between KY-1189 and KY-1006 to a four-lane rural highway.
5. Expand US-25 between US-25E and KY-1189 to a four-lane rural highway."

All of the above listed priorities were intended to help address highway capacity, growth and safety concerns along US-25 and around South Laurel High School, while still addressing the need for an alternative route in the area during incidents of closures on Interstate 75.

Of these priorities, only Priority 1 is still proceeding as recommended in the scoping study and is now entering Phase II Design. Priority 2, also known as the "New US-25", involves the widening of US-25 beginning just south of KY-1006 before redirecting traffic northeast away from US-25 onto KY-229. Once the New US-25 joins KY-229, starting between the railroad tracks and James Lewis Drive, this portion of KY-229 will also be widened to include the intersection with KY-192 (Bypass). This priority is ready to begin Phase 1-Design. Due to a change in conditions, all other priorities are being addressed differently from the approach identified in the 2006 Study.

These changes have lead to other concerns that will be identified and discussed through this DNA Pre-Design Scoping Study. Since completing the 2006 Study, conditions surrounding the desired back entrance to South Laurel High School have evolved to directly impact Priority 1 and Priority 3 of the 2006 Study. Priority 1b (Connector A) has recently been removed from consideration by the project team (See **Exhibit 1** in **Appendix C** for the 1st Project Team Meeting Minutes), while Priority 1a is still planned to connect to KY-363 (site of new Lowe's location) with a change in the eastern termini location. See **Figure III-2** for a plan view of the proposed revision to the South Laurel High School Back Entrance. This change in termini for Priority 1a was due to the Laurel County School Board deciding to not allow public traffic through the South Laurel High School Campus. Instead, those representing the school have offered to provide land south of the football field to route traffic around the campus to the intersection of US-25 and Commercial Drive that is now known as the "New Route/New Southern Bypass". Phase II design is now ready to begin for this approach. Refer to the March 31, 2008 completed Traffic Forecast Technical Report-Laurel County: New Connector to South Laurel High School, by the KYTC Division of Planning, (See **Figure III-3** and associated **Table III-1)** for traffic related information on this revised priority keeping in mind Priority 1b (Connector A) shown in this figure is no longer being considered.

This change in route has also contributed to the desire to remove Priority 3 (Hurley Lane) from consideration as this new route will serve the purpose of access for the school as well as direct the majority of thru traffic away from the school to US-25. While Priority 2 is still moving forward, the 2006 Study limited the review area to end at the intersection of KY-192 (Bypass) and KY-229/"New US-25". Therefore, consideration was not given to the added demand of continued traffic north along KY-229 beyond this intersection to the intersection with US-25/Main Street in downtown London, nor to the increased traffic demand upon Commercial Drive and James Lewis Drive to the New US-25 once the "New Route/New Southern Bypass" is complete.



Note: Connector A is no longer being considered.

Figure III-2: 2006 Priority 1 - Revised Back Entrance to SLHS Map

The current status of these remaining priorities is the main reason for review of two new project areas due to the possible impacts from rerouted traffic. The new project limits to be considered were previously shown in **Figure I-2 & I-3** and are discussed as follows:

- Project Area A – is along KY-229 from mile point 12.211 at Intersection A-1 (intersection of US-25 and KY-229) on south to mile point 11.522 at Intersection A-2, (intersection of KY-192 to KY-229).
- Project Area B – runs along Commercial Drive/James Lewis Drive from mile point 11.110 at Intersection B-1 (intersection of US-25 with Commercial Drive) on east along Commercial Drive/James Lewis Drive to mile point 11.195 at Intersection B-2 (intersection of KY-229 with James Lewis Drive).

Traffic Forecast Technical Report
Laurel County: New Connector to South Laurel High School (Item No. 11-147.10)

SEGMENT AND TURN MOVEMENT LOCATION MAP

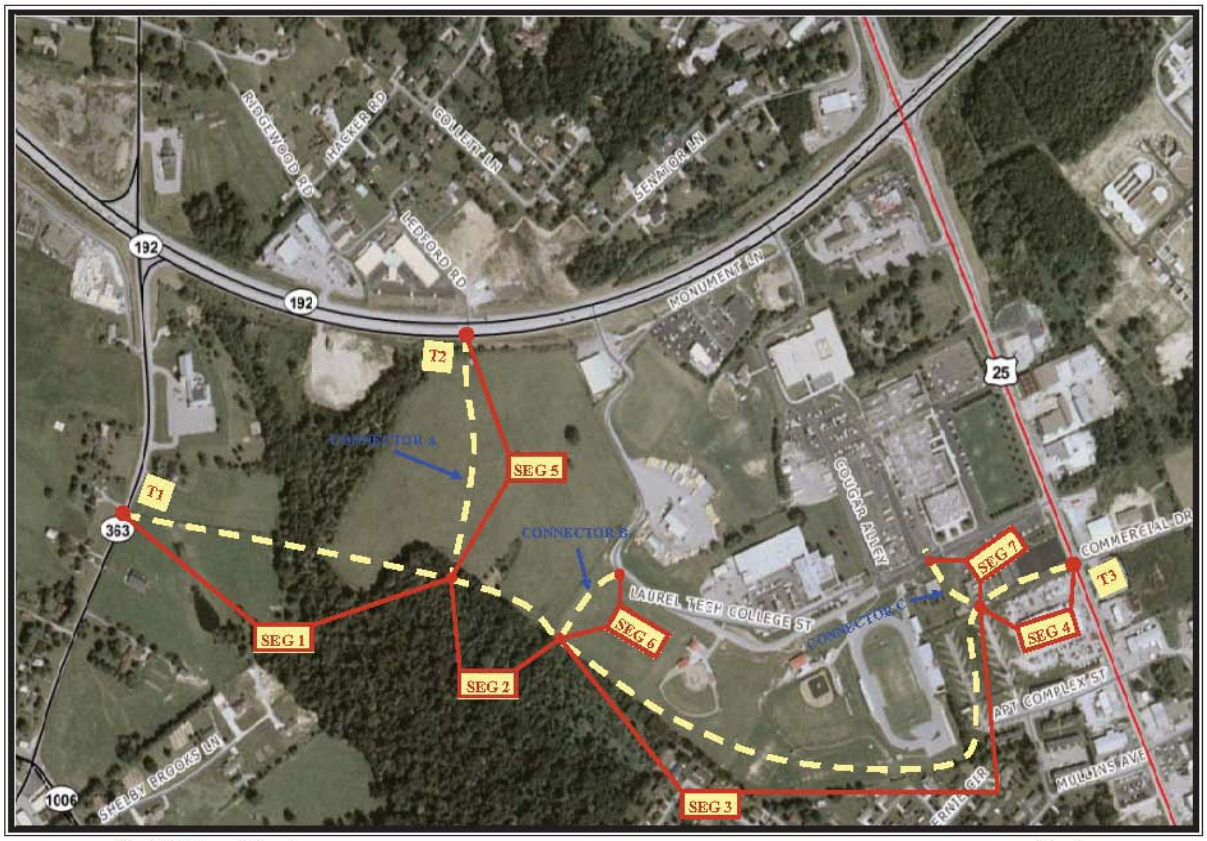


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Figure III-3:
2008 Priority 1 - Revised SLHS Back Entrance Segment & Turn Movement Location Map

Traffic Forecast Technical Report
Laurel County: New Connector to South Laurel High School (Item No. 11-147.10)

SEGMENT SUMMARY (BUILD)

Segment	Route	From	To	2008 ADT	2008 DHV	2028 ADT	2028 DHV	2028 Truck %	2028 DHV Truck%	20 Year ESALs
1	New Connector	KY 363	Connector A	2,000	650	8,000	1,200	11%	10%	1,100,000
2	New Connector	Connector A	Connector B	3,500	800	7,000	1,600	11%	10%	1,200,000
3	New Connector	Connector B	Connector C	1,000	200	5,000	700	12%	12%	800,000
4	New Connector	Connector C	US 25	4,000	800	8,000	1,200	16%	15%	1,600,000
5	Connector A	New Connector	KY 192	2,000	650	8,000	1,200	11%	10%	1,100,000
6	Connector B	New Connector	CS 1134	3,500	800	5,000	1,200	11%	10%	900,000
7	Connector C	New Connector	CS 1134	3,500	800	5,000	1,200	16%	15%	1,000,000

Table III-1: 2008 Priority 1 – Revised SLHS Back Entrance Segment Summary

C. System Linkage

Both US-25 and KY-229 are utilized as direct routes to Corbin, Kentucky and Barbourville, Kentucky, respectively. US-25 is also designated as an "Alternative Route" in the event of an emergency on Interstate 75 between London and Corbin. See **Figure III-4** and **Exhibit 3** in **Appendix A** for more local system linkage information.

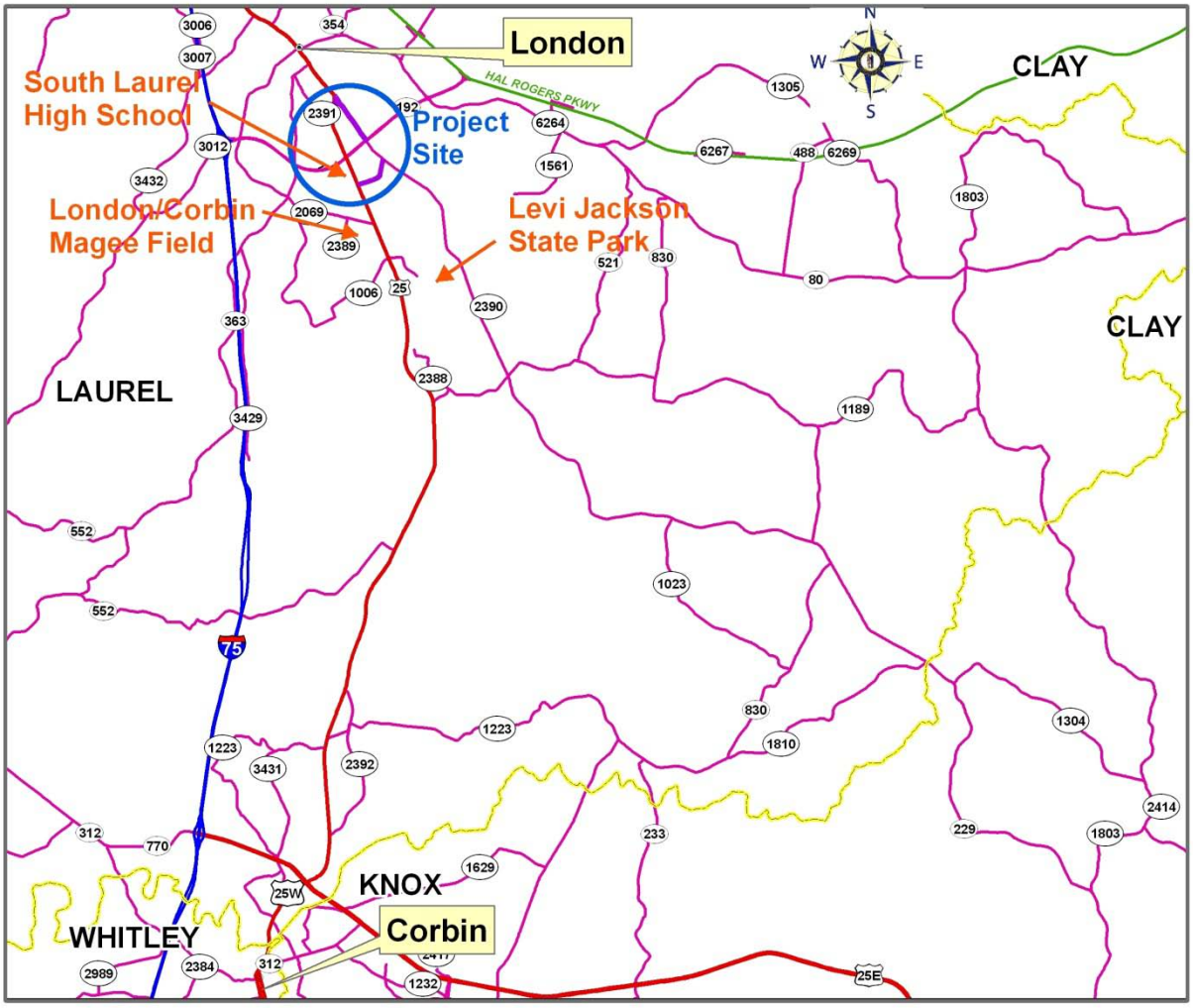

Figure III-4: System Linkage Map

The current road classification for both US-25 and KY-229 is important in helping to better understand the system linkage. See the previous discussion under Section II. Prelimarily Project Information, sub-section A. Existing Conditions/Roadway Data to include **Table II-1** Existing Route Classifications and Systems for detailed information on both US-25 and KY-229 from the HIS database.

No information was available for Commercial Drive and James Lewis Drive in the HIS database.

D. Modal Interrelationships

There is no mass public transit on this route.

The only rail line that is located near this area is owned and operated by CSX (formerly C&O) Transportation. This rail line runs mainly north and south somewhat paralleling Interstate 75 through Laurel County but crosses over KY-229 just south of Project Area B. It has been noted that train related delays have caused traffic to back up to the intersection of KY-229 and James Lewis Drive, which is located in Project Area B.

E. Social Demands and Economic Development

There were several social demands and potential areas for development in the near vicinity to both Project Area A and Project Area B. These social demands and development potentials are listed as follows:

Social Demands

- South Laurel High School is located just west of the project site.
- Levi Jackson State Park is located just southeast of the project site off of KY 1006.
- Laurel Lake is located west of the project site.
- Crooked Creek Country Club and Golf Course is to the southeast of the project site, off of US-229.
- New Lowes Store is located west of project site on KY-363 and proposed back entrance roadway (Item # 11.147.10).

Development Potential

- Heavy Industrial Development is located both north and south of the project site.
- Significant Commercial Development is located throughout the project area.
- An Industrial Park is located along Commercial Drive and James Lewis Drive with potential for future growth.
- Laurel Grocery Distribution is located along KY-229 just to the east of the project area.

F. Transportation Demand

The two defined project areas were broken up into four sections relative to the information provided through the HIS and HPMS database systems. These sections were defined as follows:

- Section 1- covers the area along US-25 around Project Area B -Intersection B-1 at the intersection of US-25 and Commercial Drive.
- Section 2- includes the area along US-25 around Project Area A-Intersection A-1 at the intersection of US-25 and KY-229.
- Section 3- consists of the area along KY-229 called Project Area A from the intersection with US-25 to and including the intersection with KY-192 (Bypass) also known as Intersection A-2.
- Section 4- covers the area along KY-229 around Project Area B-Intersection B-2 at the intersection of KY-229 and James Lewis Drive.

Figure III-5 shows breakout Section1 for Project Area B on US-25 between mile points 10.000 and 10.505 to include ADT and Truck percentages among other specific information for this location. This section of US-25 has generally followed a 3.0 percent growth rate with a significant increase sometime between 1995 and 2001. The Average Daily Traffic (ADT) projected trend ranges from 34,500 vehicles per day to 41,000 vehicles per day by 2030 for the no build scenario per the Laurel County Traffic Forecast No-Build and Build US-25 Widening, Item # 11-8201.00 completed November 7, 2005. This traffic can be viewed in detail in the 2006 US-25 Laurel County from Corbin to London Scoping Study under Appendix E.

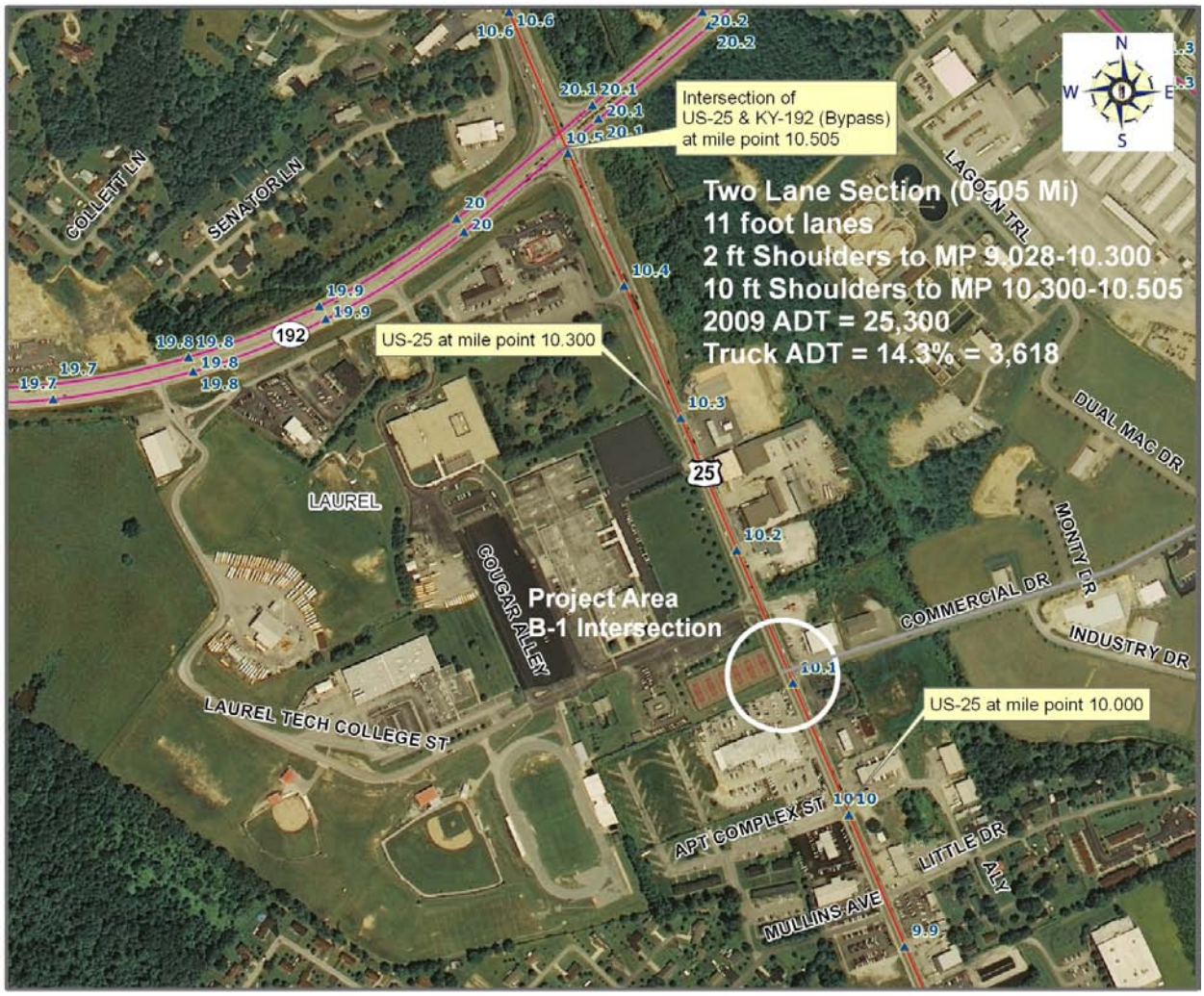

Figure III-5: Section 1 – US-25 (from MP 10.000 to MP 10.505)

Another area reviewed for historical traffic demands was the northern most portion of Project Area A identified as Section 2. This section consists of US-25 from mile point 11.200 to mile point 11.400 to include the intersection of US-25 and KY-229 and can be seen in **Figure III-6**. This figure also lists some important information regarding this location to include ADT and truck percentages.

Historical review of Section 2 showed a growth rate of 0.5 percent or less with a significant increase sometime between 1985 and 1993 along this portion of US-25. **Figure III-7** shows this historical information graphically from mile point 10.972 to mile point 12.163.

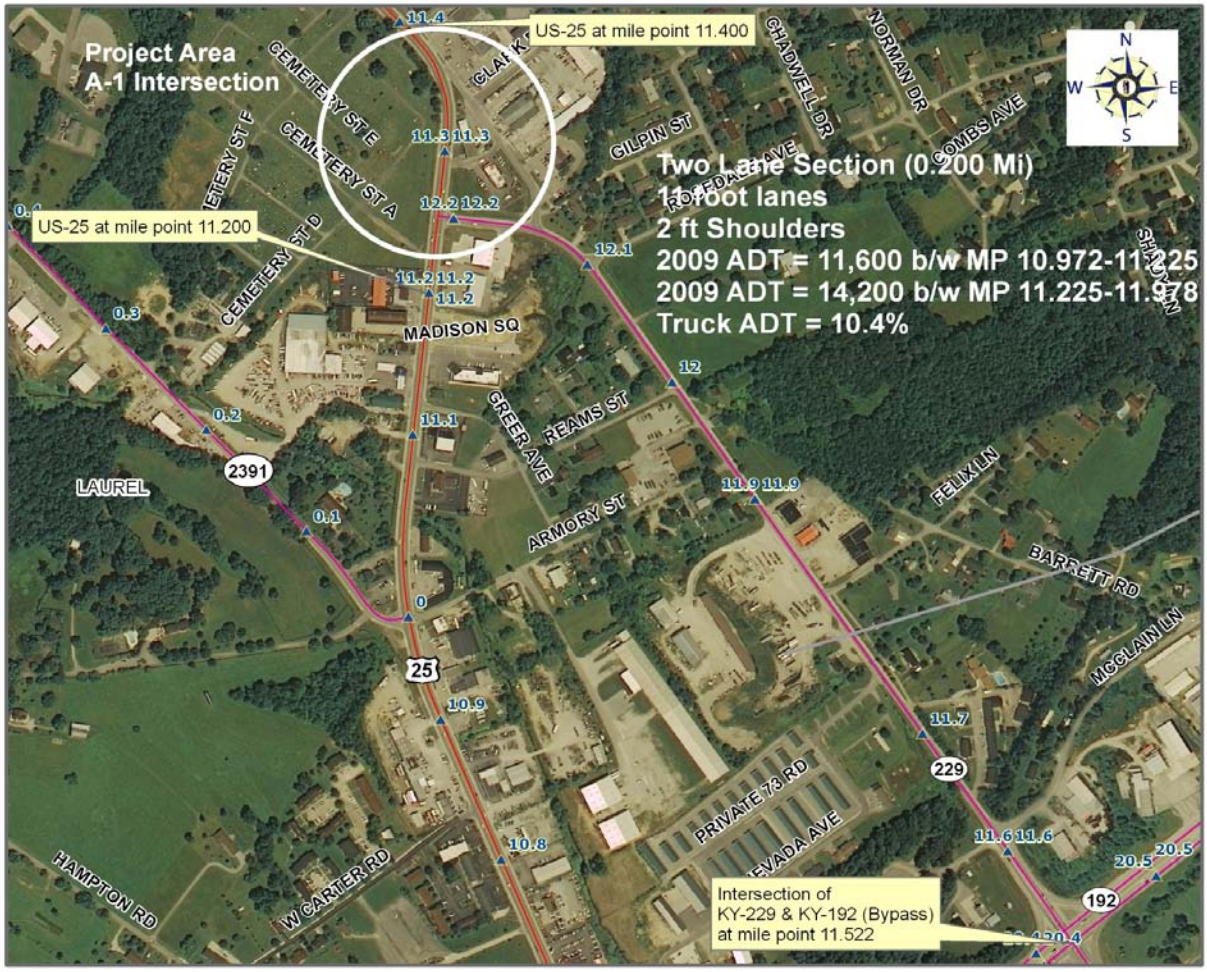

Figure III-6: Section 2 - US-25 (from mile point 11.200 to mile point 11.400)

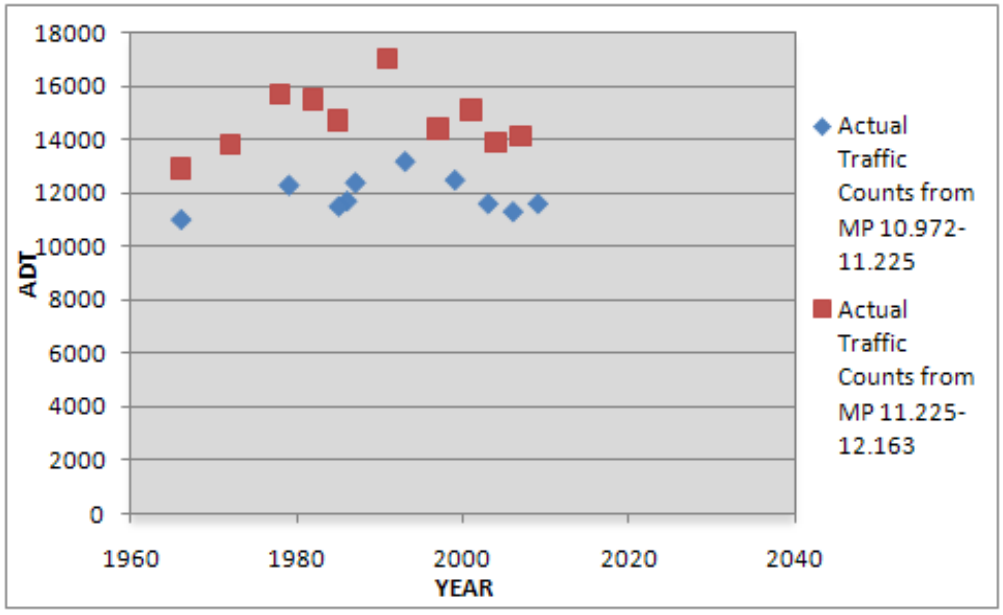

Figure III-7: Section 2 - US-25 Historical Traffic Demand (from MP 10.972 to MP 12.163)

Section 3 was also reviewed for historical demands from transportation through the balance of Project Area A. The information provided for this section begins from the intersection with KY-192 (Bypass) at mile point 11.522 and proceeds north along KY-229 to the intersection with US-25 at mile point 12.211. This section is shown in **Figure III-8**.

The historical traffic demand for Section 3 is graphically displayed in **Figure III-9**. The most recent actual traffic count was completed in 2010 with a count of 4,640 vehicles per day. Based upon actual traffic counts collected for this section from 1966 to 2007, a historical 1.2% growth rate was identified with a significant increase sometime between 1987 and 1991.

The last section of Project Area B, known as Section 4, starts at mile point 11.150 and ends at the intersection with KY-192 (Bypass) at mile point 11.522. This section of roadway can be seen in **Figure III-10** and includes a list of some important information relative to this location.

Section 4 had the most recent actual traffic count performed in 2009 with an ADT of 9,230 vehicles per day. The historic traffic count data through Section 4 showed a 4.2% growth rate. This historical information is shown in **Figure III-11** with a significant increase in growth rate occurring from 1998 to 2002.

District 11 is in the process of requesting a model to cover for all four sections of this study. Section 1 is in need of an updated traffic forecast on the New Southern Bypass and intersection with US-25 and Commercial Drive due to the recent removal of Connector A to KY-192(Bypass) from the original forecast.

Figure III-8: Section 3 – KY-229 (from MP 11.522 to MP 12.211)

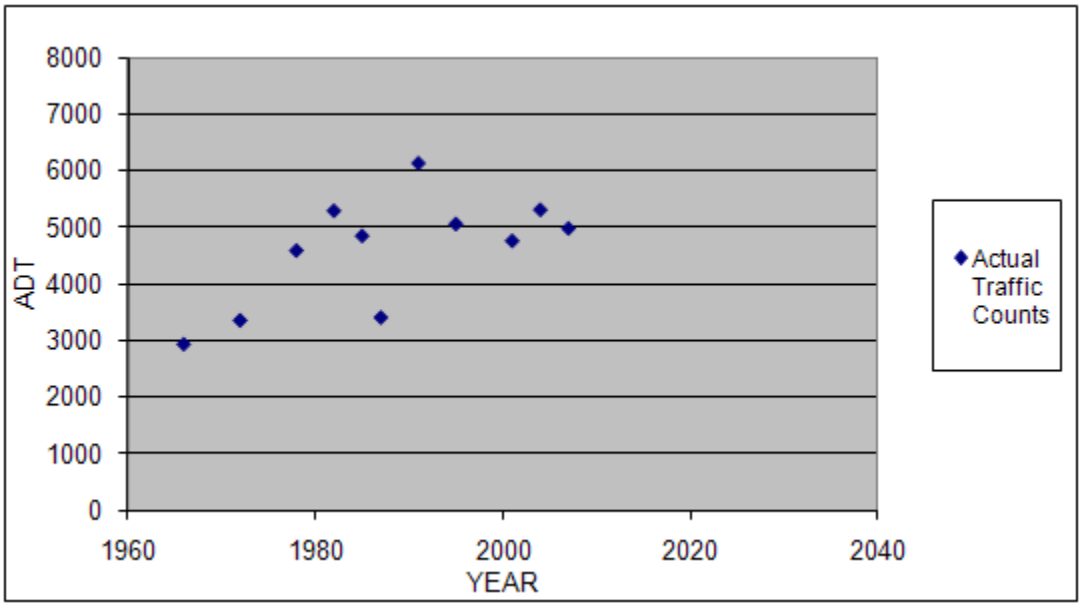

Figure III-9: Section 3 - KY-229 Historical Traffic Demand (from MP 11.522 to MP 12.211)

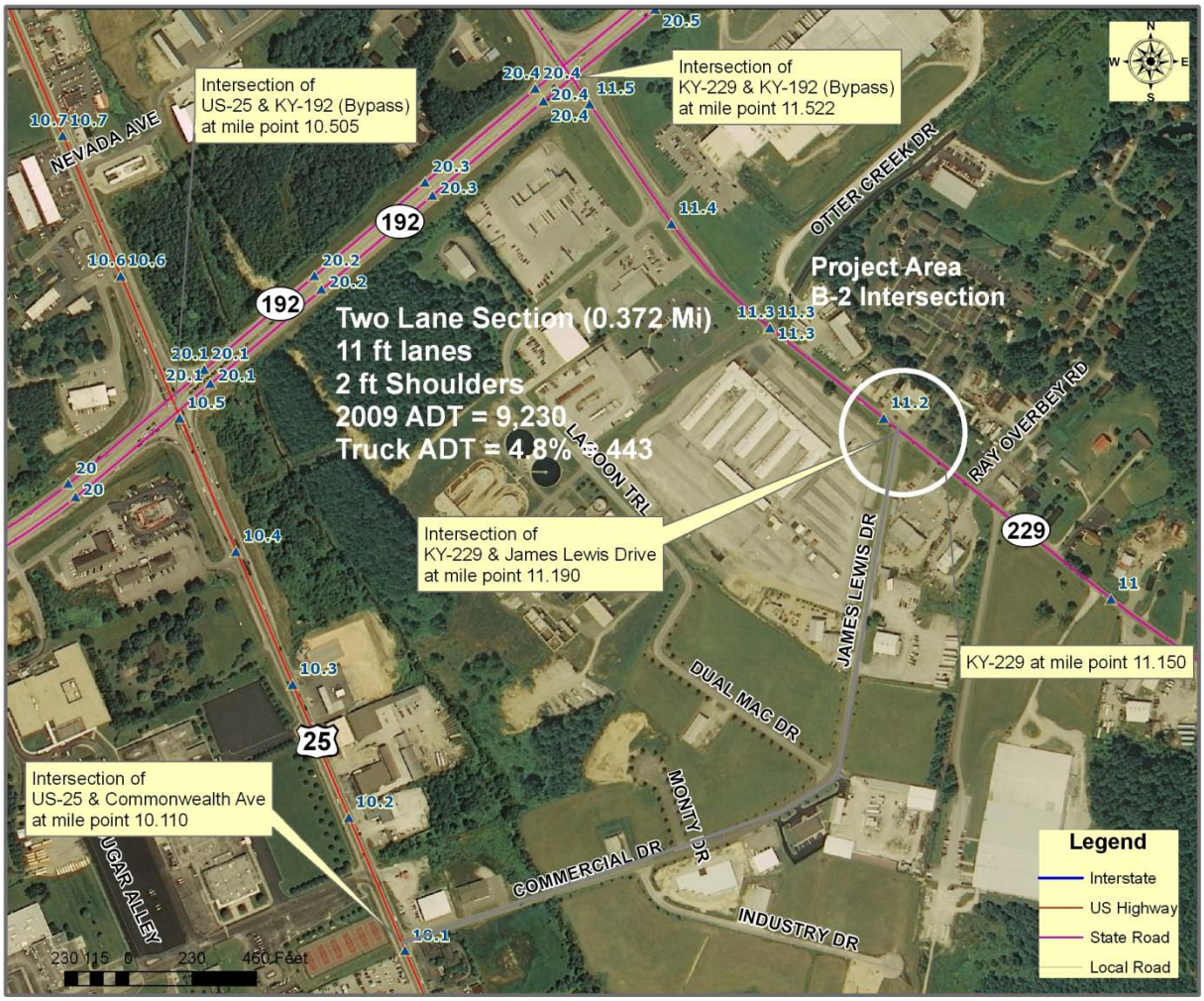

Figure III-10: Section 4 – KY-229 (from MP 11.140 to MP 11.240)

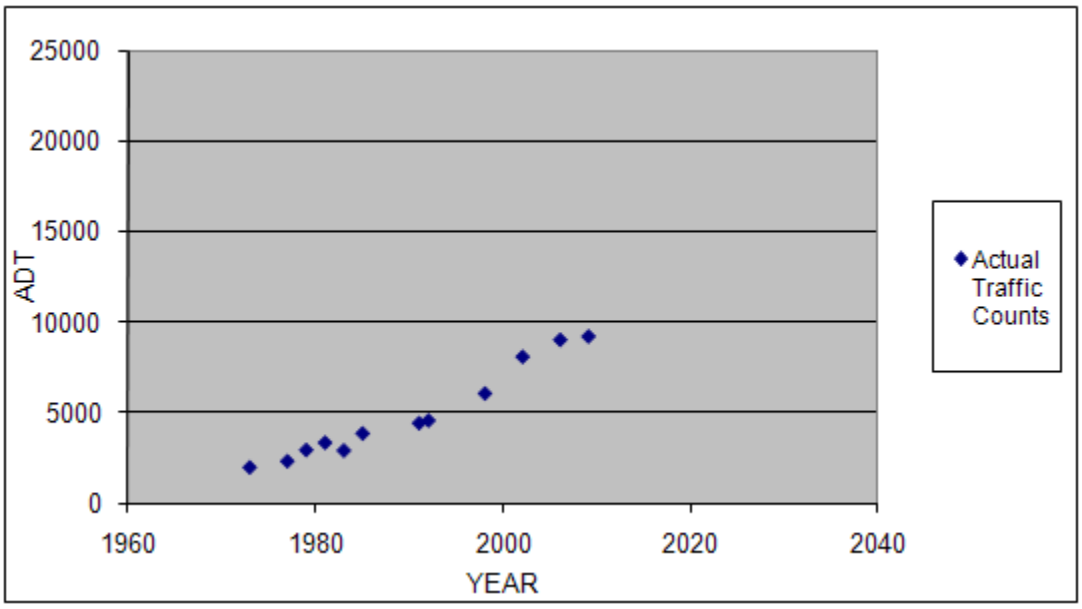

Figure III-11: Section 4 - KY-229 Historical Traffic Demand (from MP 11.140 to MP 11.522)

G. Capacity

All four sections of roadway were reviewed through the volume to service flow ratio (VSF), International Roughness Index (IRI), Adequacy Rating (based on capacity, roughness and crashes) and Future ADTs. The following is a summation of findings for each of the sections:

1. US-25 (from mile point 10.000 to mile point 10.505)
    - Two-lane highway (from MP 10.000-10.300) & two-lane highway with TWLTL (from MP 10.300 to 10.505)
    - VSF = 1.11 (from MP 9.028-10.300) & 1.06 (from MP 10.300-10.505)
    - IRI = 97.0 (from MP 9.028-10.300) & 98.0 (from MP 10.300-10.505)
    - Adequacy Rating = 15.15% (from MP 9.028-10.300) & 21.56% (from MP 10.300-10.505)
    - Current ADT (2009) = 25,300 vehicles per day
    - Future ADT (2030) = 34,500 vehicles per day to 41,000 vehicles per day @ 2.0% growth rate for No-Build (per Laurel County Traffic Forecast No-Build and Build US 25 Widening, Item # 11-8201.00). An updated traffic forecast will be requested.
    - Consideration needs to be given to increasing the number of through lanes on this corridor to accommodate current and 2030 projected ADT.

2. US-25 (from mile point 11.200 to mile point 11.400)
    - Two-lane highway
    - VSF = 0.67 (from MP 10.972-11.255) & 0.43 (from MP 11.255-12.163)
    - IRI = 91.0 (from MP 10.972-11.255) & 113.0 (from MP 11.255-12.163)
    - Adequacy Rating = 39.09 percent (from MP 10.972-11.255) & 43.52 percent(from MP 11.255-12.163)
    - Current ADT (2009) = 11,600 vehicles per day (from MP 10.972 to MP 11.225) and 14,200 vehicles per day (from MP 11.225 to MP 11.978)
    - Future ADT (2030) = A traffic forecast will be requested (from MP 10.972-11.225)
    - Future ADT (2030) = A traffic forecast will be requested (from MP 11.255-12.163)

3. KY-229 (from mile points 11.522 to 12.211)
    - Two-lane highway
    - VSF = 0.50
    - IRI = 146.0
    - Adequacy Rating = 51.71 percent
    - Current ADT (2009)= 5,260 vehicles per day
    - Future ADT (2030) = A traffic forecast will be requested

4. KY-229 (from mile point 11.150 to mile point 11.522)
    - Two-lane highway
    - VSF = 0.67 (from MP 10.888-11.522)
    - IRI = 94.0

- Adequacy Rating = 16.06 percent
- Current ADT (200)= 9,230 vehicles per day
- Future ADT (2030) = A traffic forecast will be requested (from MP 8.837-11.522)
- If the AADT continues to grow at the same rate identified historically, consideration may need to be given to increasing the number of through lanes on this corridor.

US-25 in Section 1 was the only location where the VSF was greater than 0.70 with a value of 1.11. The adequacy rating for this section of roadway was also the lowest at 15.15%, which means out of 100 roadways of this same functional class in Kentucky, approximately 85% were rated better than this section.

H. Safety

The Kentucky Collision Analysis for the Public Database maintained by the Kentucky State Police was utilized for the collection of collision data over a three year period from January 1, 2007 through December 31, 2009. Crash locations were discussed for each of the four separate sections (previously identified) to include manner of collision and type of collision. This collision data was also used to calculate Critical Rate Factors (CRF) in accordance with the procedure described in *Analysis of Traffic Crash Data in Kentucky (2005-2009)*, published by the Kentucky Transportation Center.

Figure III-12 shows a map of both project areas and the crashes in and around these locations. As identified in this map, there are four separate intersections of concern that are directly connected to either Project Area A or Project Area B. This study will focus on those areas where the CRF is greater than 1.0.

The first area reviewed was Section 1 on US-25 between mile points 10.000 and 10.505, the western portion of Project Area B. Within this section, the intersection of US-25 and Commercial Drive is approximately 150 feet from an existing signalized intersection with Laurel Technical College Street and the main entrance to South Laurel High School (SLHS) Campus. **Figure III-13** shows the orientation of the adjacent intersection to the west side of Project Area B as well as a location and breakdown of crash types in the high CRF location.

This location had a significant number of rear end and angle collisions at the intersections of US-25 with Commercial Drive and Laurel Technical College Street. There were a total of 34 collisions identified from January 1, 2007 through December 31, 2009 that occurred between mile points 10.080 and 10.180. Of these 34 collisions, five resulted in injuries and the rest were property damage only (PDO) collisions, resulting in a CRF of 2.04.

Upon further review of individual crash reports, several motorists involved in angle collisions noted not seeing opposing traffic until they had entered the intersection with US-25 from either Commercial Drive or Laurel Technical College Street. This can in part be attributed to the multiple access points in this location. The majority of collisions in Section 1 occurred during the day in dry weather conditions.

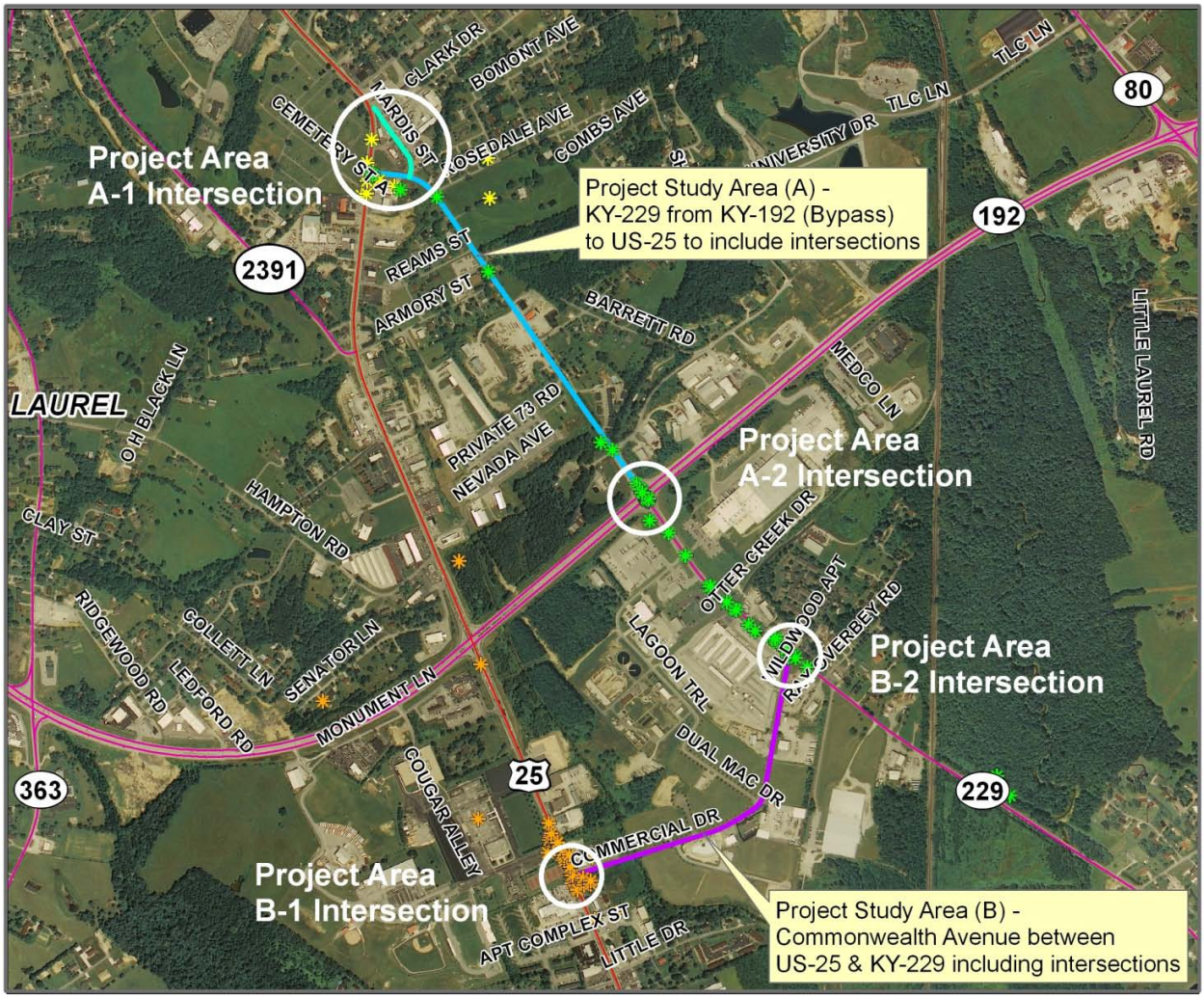

Figure III-12: Collision Locations in and around Project Areas A and B

In regard to the close proximity of the two intersections of Commercial Drive and Laurel Technical College Street, a traffic signal study should be conducted to consider relocating this traffic signal to the intersection of the proposed New Southern Bypass with US-25 and Commercial Drive due to the anticipated increased traffic demand at that intersection. This approach was also agreed to by the Laurel County School Board as they have requested the traffic signal at US-25 and Laurel Technical College Street be relocated to the intersection of the proposed New Southern Bypass with that of US-25 and Commercial Drive. The school board has also proposed to provide right-of-way for the New Southern Bypass in an attempt to draw traffic away from SLHS for safety and security reasons. Once the New Southern Bypass is complete, the school board is also requesting that the current SLHS main entrance to US-25 be closed to require school traffic to utilize the connector roads to the New Southern Bypass.

Figure III-13: Section 1 – US-25 High CRF Collision Location (from MP 10.080 to MP 10.180)

Section 2 also had a collision analysis performed on US-25 from January 1, 2007 to December 31, 2009 specifically between mile points 11.200 and 11.300, to make up the northern most portion of Project Area A. This review resulted in the identification of 12 total collisions with two injuries, ten PDOs and zero fatalities. **Figure III-14** shows the locations of these collisions as well as the manner in which they occurred. Please note that the two rear end collisions not shown directly on US-25 were actually on US-25 and identified as "Rear End in Traffic Lane Both Vehicles Moving" at 11.223 and 11.255 mile points. These 12 collisions resulted in a 0.1 mile spot CRF of 1.09. A segment collision analysis of the location between mile points 11.255 and 12.163 found a CRF of 1.14.

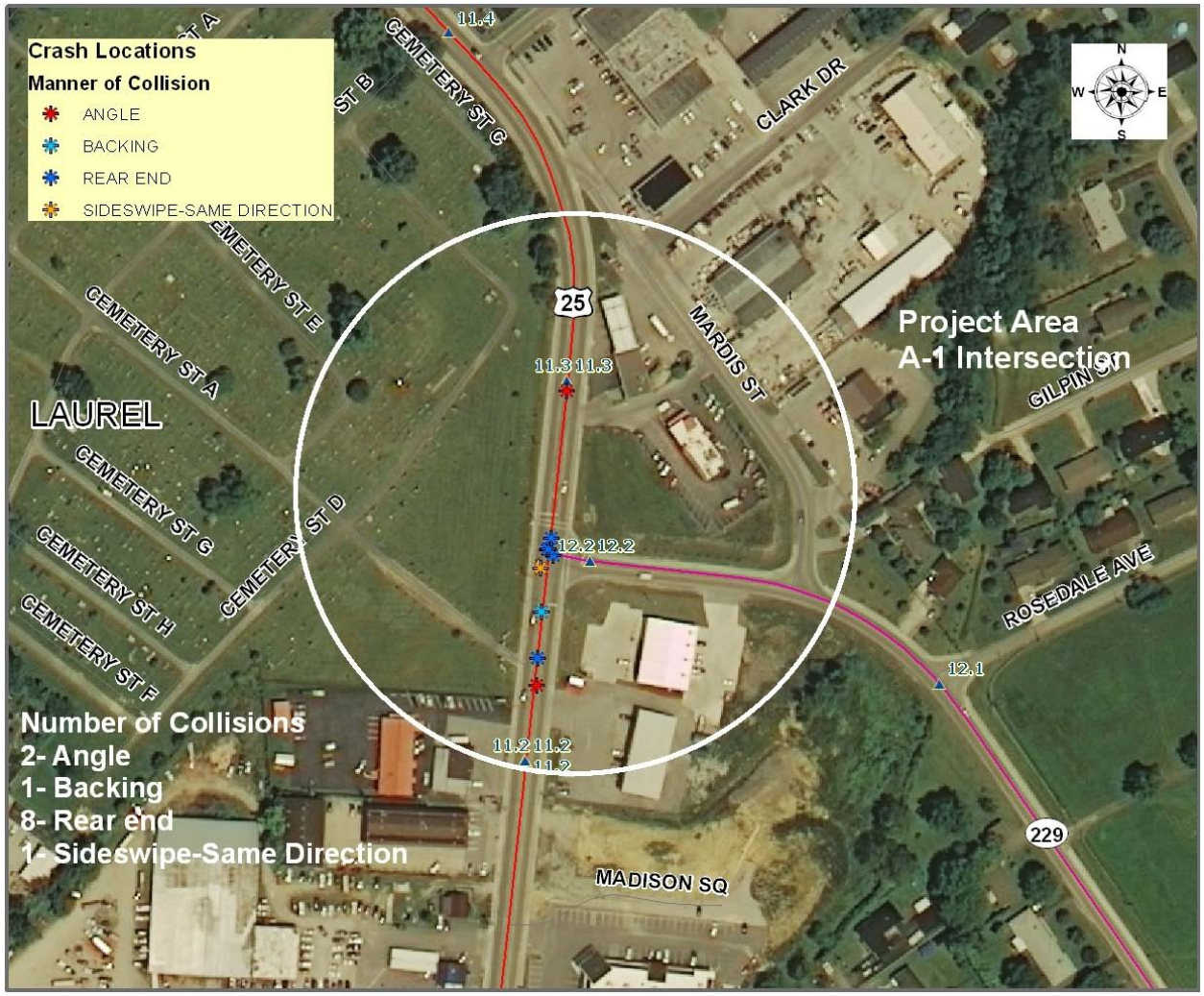

Figure III-14: Section 2- US-25 High CRF Collision Location (from MP 11.200 to MP 11.300)

Of the 12 total collisions, there were several different collision types that included: eight rear ends, two angles, one backing and one sideswipe with two cars going in the same direction. All of these collisions occurred during daylight with the majority taking place in dry weather conditions. Further review of individual crash reports indicate that the majority of the rear ends occurred along southbound US-25 approaching the US-25 and KY-229 intersections. Motorists from these reports noted not having adequate time to see the signal or stopped vehicle in front of them before having to stop at the intersection. Review of this intersection with the project team indicated that there have been previous discussions on making the section of US-25 between mile points 11.225 and 11.415 a one-way route. Previous discussion also included reworking the intersection entirely since the other side/through roads were never closed to through traffic as originally intended. US-25 currently is a two-lane roadway with a two way left turn lane (TWLTL) in the middle.

A collision analysis was also performed for Section 3 on KY-229 from mile point 11.522 to mile point 12.211, including the intersection of KY-229 and KY-192 (Bypass). There were a total of 22 collisions between mile point 11.422 (to include the southern side of the KY-229 and KY-192 (Bypass) intersection) and mile point 12.211 between January 1, 2007 and December 31, 2009. See **Figure III-15** for an aerial view of Section 3 as well as the location of the associated collisions. Of these collisions, there were two injuries, 20 PDOs and zero fatalities. The types of collisions were identified as follows: three angles, 15 rear ends, one single vehicle, one backing and two sideswipes in the opposite direction. Nearly all of these collisions occurred during the day and under dry weather conditions.

Of these collisions, the majority occurred in and around the KY-229 and KY-192 (Bypass). **Figure III-16** provides a close up view of the intersection of KY-229 and KY-192 (Bypass) as well as the location of these collisions. From mile point 11.511 to mile point 11.622 there were 15 collisions: one injury, 14 PDO and zero fatalities. Of these collisions, three were angles and the remaining 12 collision types were rear ends. These rear end collisions were close to evenly split from either direction along KY-229 when approaching this intersection. The 0.10 mile spot collision analysis found the following high CRF ratings between mile points 11.422 and 11.522 to have a CRF of 1.08 and between mile points 11.522 to 11.622 to have a CRF of 1.22.

For the segment collision analysis, the initial segment began at mile point become 11.447 to include the approach to this intersection. The result of the segment collision analysis found that both segments on either side of the intersection had a high CRF with mile points 11.447 to 11.522 having a CRF of 1.44, and mile points 11.522 to 11.600 having a CRF of 1.21.

The project team noted that the intersection functions well at this location during the weekdays, but becomes congested when the flea market, located at KY-229 and James Lewis Drive, is in operation during the weekends. Speeding concerns were also raised regarding this location as well as the need to review extending the left turn lane on Southbound KY-229 approaching the intersection with KY-192 (Bypass).

The last section to have a collision analysis performed was Section 4 along KY-229 between mile points 10.880 and 11.522 to address the east side of Project Area B. There were a total of 26 collisions and of these there were five different manners of collisions with no fatalities. There were six reported injury crashes and 23 PDO crashes. Of these 26 collisions, all but three occurred during the day and the majority of the collisions happened in dry weather. **Figure III-17** shows the locations of these collisions from mile point 11.140 to mile point 11.522 as well as the manner in which they occurred. As noted in **Figure III-18**, the majority of these collisions around the intersection of KY-229 and James Lewis Drive were angle collisions.

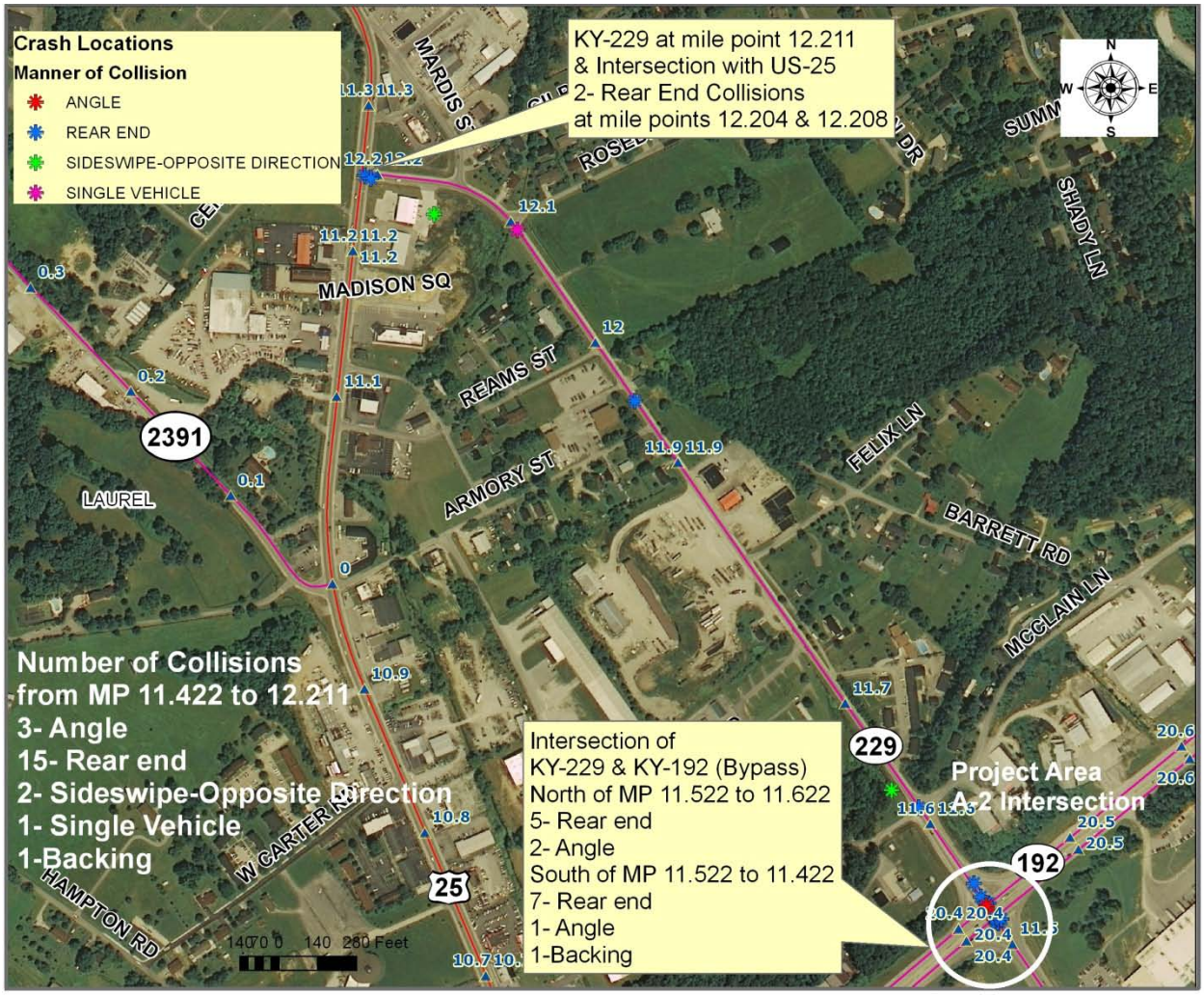

Figure III-15: Section 3- KY-229 Collision Location (from MP 11.422 to MP 12.211)

Section 4 has a high CRF location between mile points 11.140 and 11.240 with a CRF of 1.54 at the intersection of KY-229 and James Lewis Drive. The District noted this portion of the KY-229 corridor has significant traffic generators including: the flea market (corner of KY-229 & James Lewis Drive), city public works facility, Laurel Grocery Distribution, FedEx Distributor, and other access points. The intersection of KY-229 and James Lewis Drive forms a "Y" intersection and has an approximate 25 ft offset with that of Brown Lane. A CSX mainline railroad crossing is also located just south of this intersection that is known to cause gridlock in the area. Multiple access points in and around this intersection have contributed

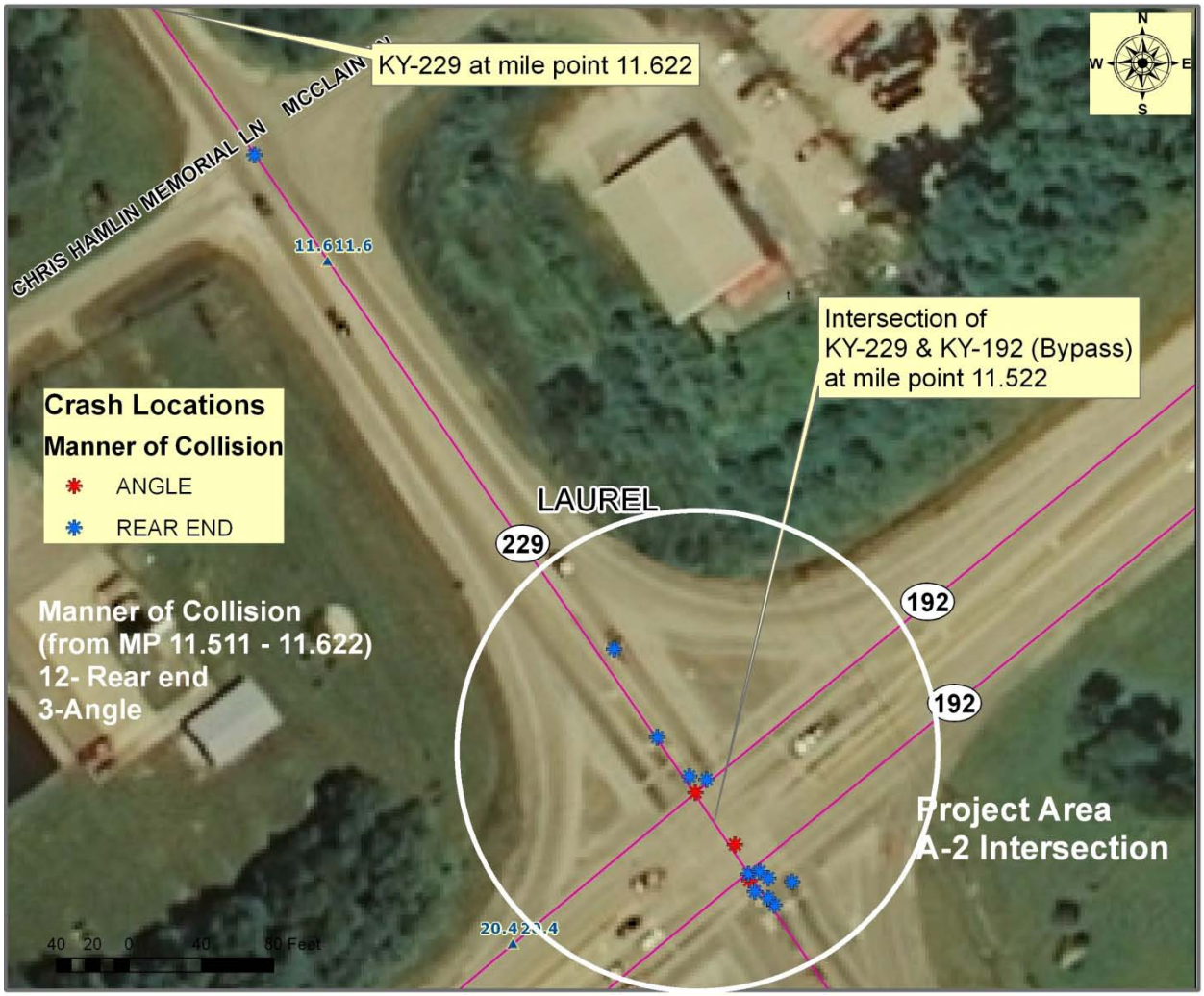

Figure III-16: Section 3- KY-229 High CRF Collision Location (from MP 11.511 to MP 11.622)

to collisions at this location. Consideration should be given to limiting access points and possibly relocating this intersection to provide a perpendicular connection to KY-229. The majority of crashes were associated with vehicles entering /leaving the gas station or being hit by a vehicle trying to avoid another car turning onto KY-229 from James Lewis Drive.

A more detailed analysis of all the collision data can be seen in **Appendix D**.

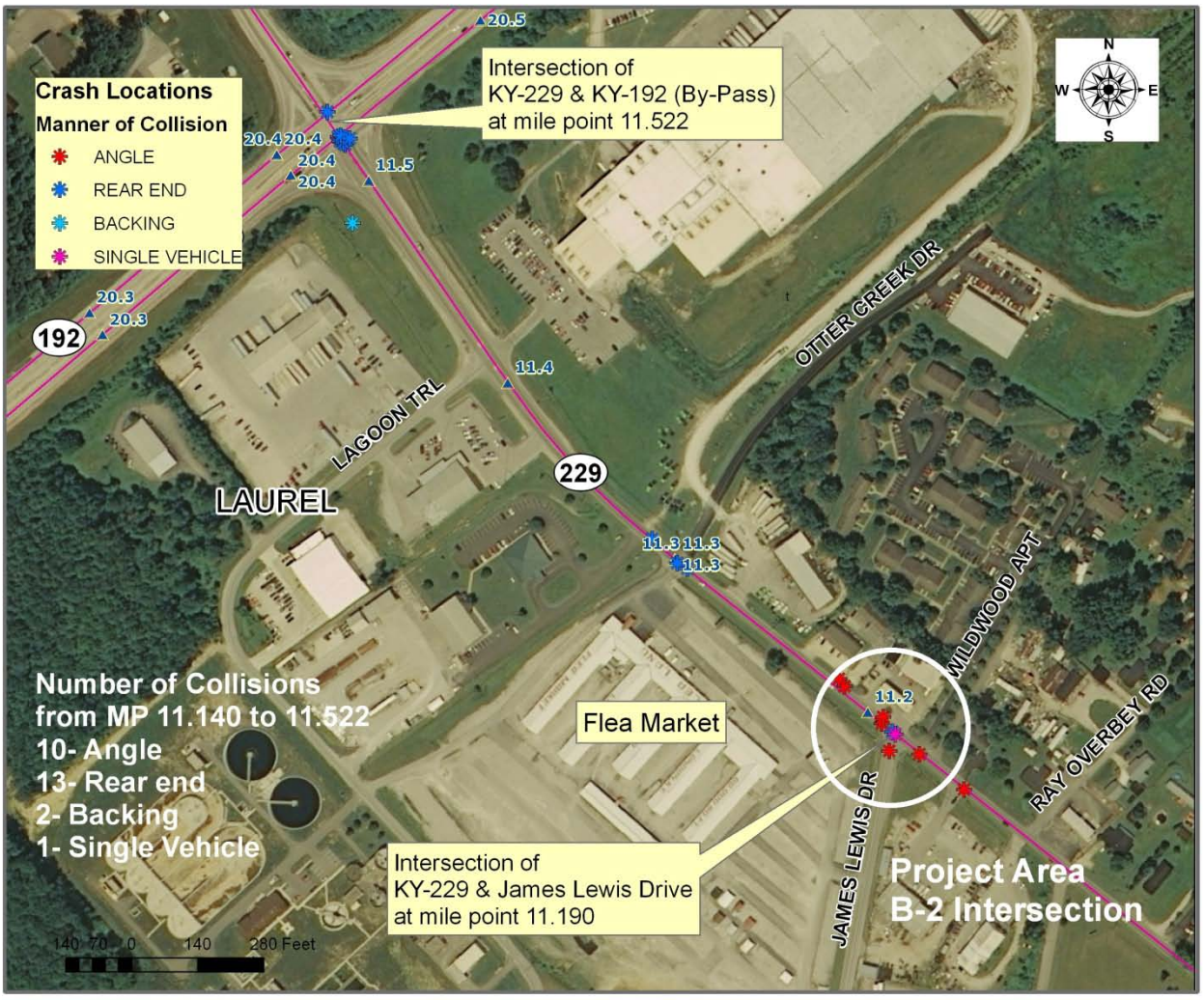

Figure III-17: Section 4- KY-229 Collision Locations (from MP 11.140 to MP 11.522)

Figure III-18: Section 4- KY-229 High CRF Collision Locations (from MP 11.140 to MP 11.240)

I. Roadway Deficiencies

Section II, Item A. Existing Conditions/Roadway Data of this report discusses the HIS database for both US-25 and KY-229. **Table III-2** shows the breakdown in existing conditions for both identified sections of US-25 and KY-229 verses that of current geometric design practices for an Urban Minor Arterial Street. According to the Common Geometric Practices for Urban Minor Arterial Streets (Other Than Freeways) as stated in the Kentucky Highway Design Guidance Manual, the pavement width should be 11 feet minimum per lane and 12 feet desirable for free flow conditions. The manual for this functional classification states the shoulder width should be four foot minimum and eight foot desirable for both residential and commercial settings. The design speed for this type of rural roadway under current design standards would range from 30 to 60 miles per hour. There are horizontal and vertical curves requiring a reduced speed due to not meeting the current design standards. These curves were also previously discussed in **Section II** of this report in greater detail. A copy of the current geometric design standards is provided in **Exhibit 3** in **Appendix C**.

Existing Conditions	Geometric Practices
Section 1- US-25 (MP 10.000 to MP 10.505) – Posted speed limit of 45 mph	
1. 11 ft lanes (from MP 9.028- MP 10.300)	1. 11 ft lanes (Minimum)
2. 11 ft lanes (from MP 10.300- MP 10.505)	2. 11 ft lanes (Minimum)
3. 2 ft shoulders (from MP 9.028- MP 10.300)*	3. 8 ft shoulders (Desirable)
4. 10 ft shoulders (from MP 10.300- MP 10.505)	4. 4 ft shoulders (Minimum)
Section 2- US-25 (MP 11.200 to MP 11.400) – Posted speed limit of 25-35 mph	
1. 11 ft lanes (from MP 10.972- MP 11.225)	1. 11 ft lanes (Minimum)
2. 11 ft lanes (from MP 11.225- MP 11.978)	2. 11 ft lanes (Minimum)
3. 2 ft shoulders (from MP 10.972- MP 11.225)*	3. 8 ft shoulders (Desirable)
4. 2 ft shoulders (from MP 11.225- MP 11.978)*	4. 4 ft shoulders (Minimum)
Section 3- KY-229 (MP 11.522 to MP 12.211) – Posted speed limit of 45 mph	
1. 11 ft lanes (from MP 11.522- MP 11.600)	1. 11 ft lanes (Minimum)
2. 10 ft lanes (from MP 11.600- MP 12.211)*	2. 11 ft lanes (Minimum)
3. 4 ft shoulders (from MP 11.522- MP 11.600)*	3. 8 ft shoulders (Desirable)
4. 3 ft shoulders (from MP 11.600- MP 12.211)*	4. 4 ft shoulders (Minimum)
Section 4- KY-229 (MP 11.140 to MP 11.522) – Posted speed limit of 55 mph	
1. 11 ft lanes (from MP 8.8837- MP 11.447)	1. 11 ft lanes (Minimum)
2. 11 ft lanes (from MP 11.447- MP 11.522)	2. 11 ft lanes (Minimum)
3. 2 ft shoulders (from MP 8.8837- MP 11.447)*	3. 8 ft shoulders (Desirable)
4. 2 ft shoulders (from MP 11.447- MP 11.522)*	4. 4 ft shoulders (Minimum)

❖ Note: Asterisk and red indicates deficiency with current design standards.

Table III-2: All Sections – Roadway Deficiencies

Appendix B provides photographs throughout the two Project Areas with US-25 and KY-229. Current roadway plans are also provided in **Appendix E.**

Flooding is known to occur along the banks of Whitley Branch as identified in the Flood Insurance Rate Maps (FIRMs) of the project area shown in **Appendix F.** This creek crosses US-25 between mile point 11.000 and 11.100 and is not directly connected to Project Area A. Review of the design plan archives, a reinforced concrete double barreled 8x6 box culvert skewed to the roadway was identified in the 1996 US-25 Grade, Drain, and Surface Plans. The information from these plans relative to this culvert is also included in **Appendix E**.

Whitley Branch, however, does cross Commercial Drive as part of Project Area B near the half way mark between the US-25 and Commercial Drive intersection and the end of Commercial Drive at James Lewis Drive. A culvert was noticed during the initial field visit along Commercial Drive but no further information was available on this local roadway.

IV. PRELIMINARY ENVIRONMENTAL AND SOCIOECONOMIC OVERVIEW

US-25- Between Corbin and London Pre-Design Scoping Study Laurel County, Kentucky Environmental Justice and Community Impact Report was completed under Item No. 11-8201.00 by the Cumberland Valley Area Development District (CVADD). This report can be reviewed in Appendix F of the US-25 Laurel County from Corbin to London Scoping Study that was completed in July 2006 by the Kentucky Transportation Cabinet. This scoping study is also known throughout this report at the 2006 Study. From a brief review of this report, it appears that both Project Area A and Project Area B are within the defined area reviewed by the Environmental Justice Report.

An Environmental Overview was also performed as part of the 2006 Study to include an Environmental Footprint Map. The area identified under this overview, however, did not include all of Project Area A, which is located north of KY-192 (Bypass). As such, Planning Area A is pending completion during the early phase of engineering.

A. Air Quality

Per the KYTC, Division of Planning, Modal Programs website, Laurel County is in attainment for all monitored pollutants.

B. Archaeological Overview

C. Aquatic Ecosystems

D. Culturally Sensitive Locations

E. UST/Hazardous Materials

F. Historic Resources –Section 4(f), 106 and 6(f)

G. Noise

H. Permitting

I. Socioeconomic

J. Threatened and Endangered Species

V. PROJECT DRAFT PURPOSE AND NEED STATEMENT

US-25 provides a significant connection between the cities of London and Corbin as well as an alternate route during incidents or closures on Interstate 75. The need for this project is to address congestion and critical rate factors along US-25 for the purpose of reducing crashes, improving mobility, and connectivity in the area to accommodate social demands for schools, residential, retail, industrial and recreational opportunities.

VI. POSSIBLE ALTERNATIVES

Alternatives discussed within this section of the report were divided into those alternatives impacting Project Area A and those alternatives affecting Project Area B. A description of the two project areas were previously discussed and a map shown in **Figure I-2**.

A. Project Area A

1. Alternative #1

This option would be the No-Build alternative for Project Area A. The approach would be to wait and see what happens under current conditions into the near future before proceeding with any further significant financial investment relative to extending improvements on KY-229 north of KY-192 (Bypass) including the intersection of US-25 and KY-229.

This alternative would be the least expensive in terms of up-front costs and would have the least community and environmental impacts. Still, this approach would not adequately address the Purpose and Need of this project, which is to improve safety, aid future growth or address capacity concerns at this location.

2. Alternative #2

This alternative would be to revise the intersection of US-25 and KY-229 to current design standards. This change is being considered due to a high CRF at this intersection and the potential for redirection of traffic from the New US-25 onto KY-229 northbound to downtown London. In an attempt to more accurately anticipate future traffic patterns in and around this location, a traffic model is recommended.

This option attempts to minimize environmental and socioeconomic concerns (i.e. cemetery) as well as reduce the impact upon existing parcels around this location. See **Figure VI-1** for the proposed alignment and other improvements that are defined in greater detail in and around this location. Right of way and utilities will be an issue at this location. Please see **Figure II-1** for more information. These issues will need to be addressed in greater detail in future phases of the project.

Roadway deficiencies of Project Area A, along KY-229 from mile point 11.522 to 12.211, is not addressed within this alternative with the exception of

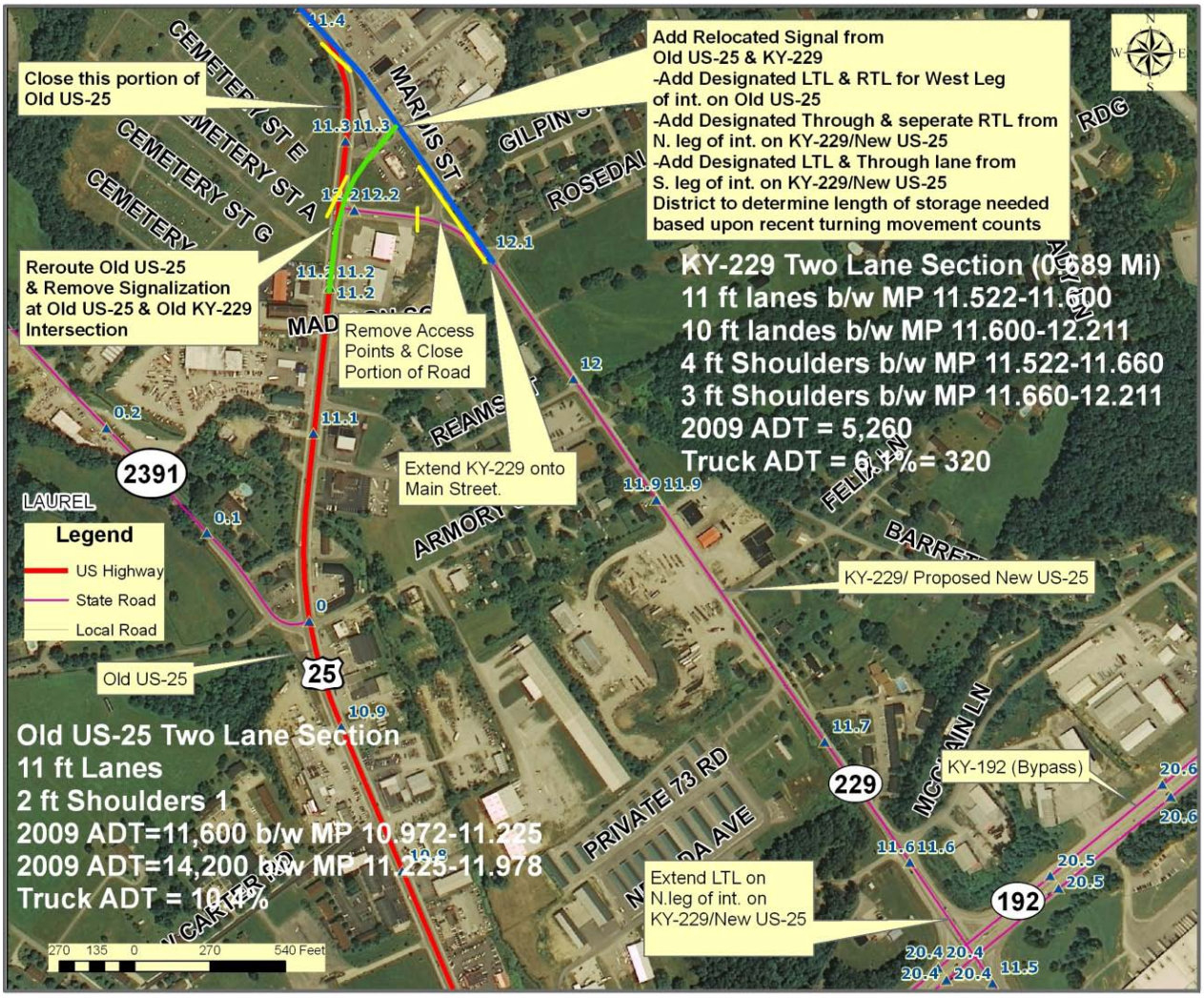

Figure VI-1: Project Area A - Alternative #2 Project Map and Details

recommending the extension of the left turn lane on the north leg of the KY-229 and KY-192 (Bypass). Modeling at this intersection is also recommended to provide a more accurate assessment of future ADTs within Project Area A.

The following **Table VI-1** shows a preliminary cost estimate for Alternative #2 provided by District 11 in 2010 dollars. This cost was developed on a cost per mile basis relative to similar projects in the area. The right of way cost for this alternative includes an estimated cost for relocating two businesses. Further design may provide a way to avoid or reduce this cost.

Alternative #2	Length (miles)	Phased Cost ($)				Total Cost ($)
		Design	Right-of-Way	Utilities	Construction	
	0.300	$425,000	$1,700,000	$100,000	$768,000	$3,000,000

Table VI-1: Project Area A-Alternative # 2 Preliminary Cost Estimate

Alternative #2 addresses the Purpose and Need Statement previously defined relative to safety, growth and congestion with a practical solutions approach to limiting improvements to high CRF locations that are at the intersections.

3. Alternative #3

This alternative is another proposed alignment approach to address the currently high CRF concerns at the US-25 and KY-229 intersection. Also, given the anticipated change in traffic patterns due to the proposed New US-25 route onto KY-229, this approach is considering KY-229 to become the main southern route to and from downtown London. Modeling is recommended at this intersection and along KY-229 as well as the intersection of KY-192 and KY-229 to confirm this anticipated change in traffic pattern. See **Figure VI-2** for the proposed alignment and other recommended improvements that are defined in greater detail in and around this location.

Based upon an initial site visit, there appears to be a few environmental (i.e. cemetery) and possible socioeconomic concerns to address. This alignment should minimally impact the cemetery adjacent to the Old US-25 roadway between mile points 11.200 and 11.300. This option would also require the purchase of a parcel containing a shell gas station that would necessitate the removal of several underground storage tanks at this location.

Right of way and utilities will be an issue at this location as well. Please see **Figure II-1** for more information. These issues will need to be addressed in greater detail in future phases of the project.

This approach does not address the current roadway deficiencies along the remaining portion of KY-229 with the exception of recommending the extension of the left turn lane on the north leg of the KY-229 and KY-192 (Bypass). Modeling at this intersection is also recommended to provide a more accurate assessment of future ADTs within Project Area A.

The following **Table VI-2** shows a preliminary cost estimate for Alternative #3 provided by District 11 in 2010 dollars. This cost was developed on a cost per mile basis relative to similar projects in the area. The right of way cost for this alternative includes an estimated cost for relocating one business. Further design may provide a way to reduce this cost.

As shown in this table, Alternative #3 is approximately a million dollars less than similar Alternative #2. This approach like that of Alternative #2 addresses the Purpose and Need Statement previously defined relative to safety, growth and congestion with spot improvements to high CRF locations at the intersections.

Figure VI-2: Project Area A - Alternative #3 Project Map and Details

Alternative #3	Length (miles)	Phased Cost ($)				Total Cost ($)
		Design	Right-of-Way	Utilities	Construction	
	0.325	$375,000	$850,000	$75,000	$680,000	$1,980,000

Table VI-2: Project Area A-Alternative # 3 Preliminary Cost Estimate

4. Alternative #4

This option would be to entirely rebuild Project Area A to current design standards. This would include addressing both horizontal and vertical curve deficiencies, and maximum widening to two 12 foot lanes with a TWLTL and 8 foot maximum shoulders from 10 foot lane and 3 foot shoulders throughout the majority of Project Area A. Due to a large vertical curve with multiple access points along the curve, the amount of cut and fill material may be a factor. Further review is needed in Phase 1 design to determine how best to reroute/connect the access points along the vertical curve back to KY-229. One option would be to consider adding an access road. The construction cost for this project will be considerably more than the previous alternatives and as such, requires this project be divided up into sections. **Figure VI-3** graphically presents this alternative in greater detail.

This alternative, like Alternative #2 & #3, would require additional right of way to rework the US-25 and KY-229 intersection. Turn lane lengths at all the intersections will be based on current design policy and modeling is recommended to provide a more accurate assessment of future ADTs along all of Project Area A.

In reviewing this alternative, some disadvantages must be noted. The most significant aspect, much like Alternative #3, would be from potential environmental impacts should the underground storage tanks need to be removed or the cemetery be adversely affected. Another impact would be the construction time due to the time needed to rework the vertical curve and reroute current access points would be longer than other alternatives. The cost associated with completing a project of this type is more than the other alternatives.

Significant utility relocation would need to occur making right of way an issue and all these factors will tie into the extended construction time to complete the project. Please see **Figure II-1** for more information. These issues will need to be addressed in greater detail in future phases of the project.

There were also several advantages identified for this option. This approach would address all geometric deficiencies, aid future growth, address congestion from US-25, and improve sight distance by bringing the roadway to current design standards. All these improvements will help to reduce safety concerns.

The following **Table VI-3** shows the preliminary cost estimate for Alternative #4 provided by District 11 in 2010 dollars. This cost was developed on a cost per mile basis relative to similar projects in the area. The right of way cost for this alternative includes an estimated cost for relocating one business. Further design may provide a way to avoid or reduce this cost.

When comparing the previous alternatives, Alternative #4 is approximately $1.5 to $2.0 million dollars more than the other two options due to this alternative addressing the concerns along the entire route of Project Area A.

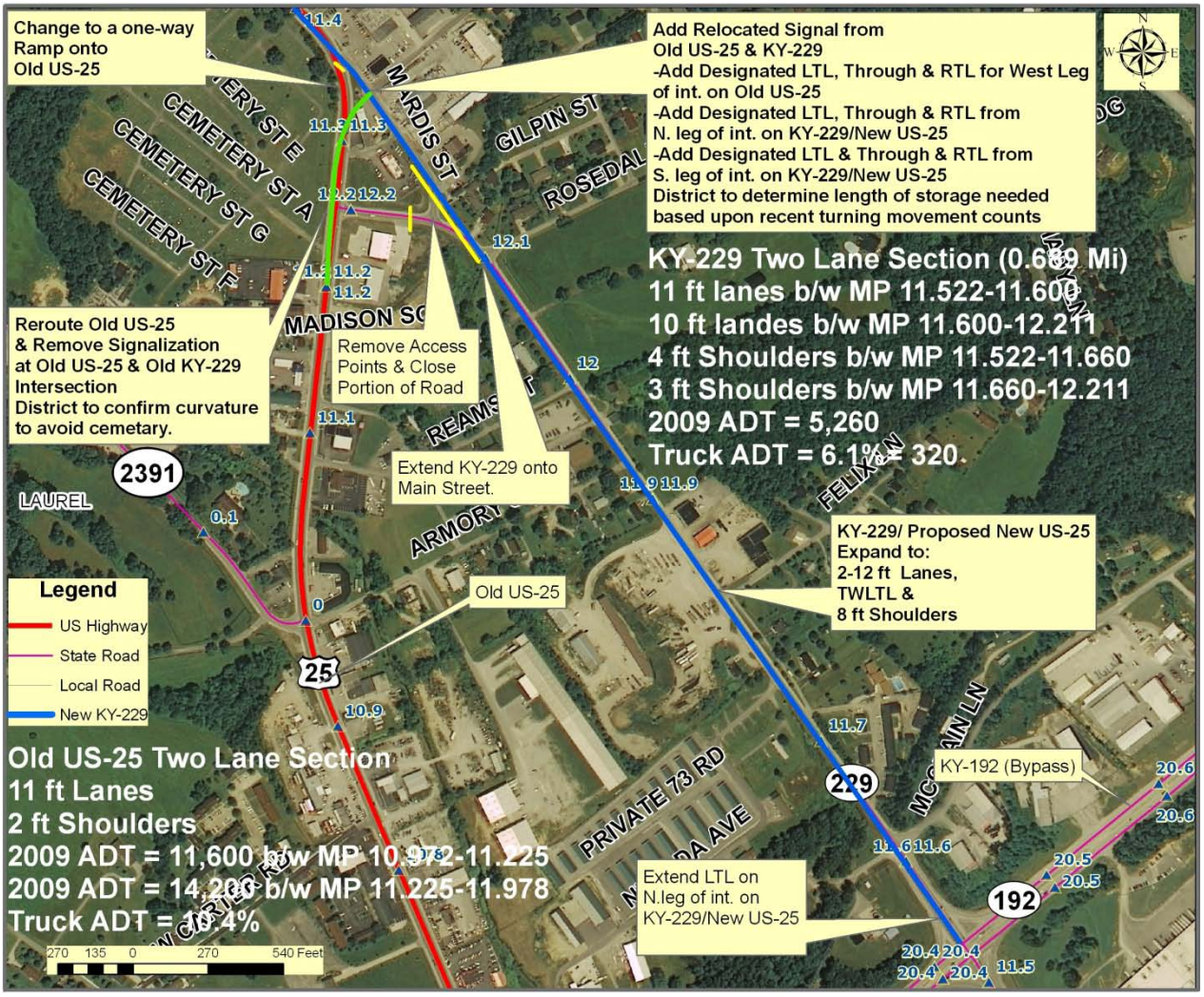

Figure VI-3: Project Area A - Alternative # 4 Project Map and Details

Alternative #4	Length (miles)	Phased Cost ($)				Total Cost ($)
		Design	Right-of-Way	Utilities	Construction	
	0.889	$1,100,000	$1,200,000	$231,000	$2,000,000	$4,500,000

Table VI-3: Project Area A-Alternative # 4 Preliminary Cost Estimate

5. Alternative #5

This alternative is similar to Alternative #4 but extends the proposed New US-25 typical cross section north along KY-229 through the intersection with KY-192 (Bypass) to the intersection with Old US-25. This option also updates all of Project Area A to current design standards. This includes addressing both horizontal and vertical curve deficiencies and widens the two 10 foot lanes and 3 foot shoulders along KY-229 to current standards. The New US-25 project previously identified as Priority 3 under the 2006 Scoping Study has been advertized for engineering services and an engineering firm was selected to begin Phase 1 design. Until a preliminary cross section is provided in Phase 1 design, actual dimensions are yet to be confirmed, but it is anticipated that the design will meet current design standards as previously discussed.

Connection to multiple access points throughout this portion of KY-229 will be a factor, especially along the large vertical curve. Further review is needed in Phase 1 design to determine how best to reroute/connect the access points along the vertical curve back to KY-229. One option would be to consider adding an access road. The construction cost for this project will be very similar to that of Alternative #4. See **Figure VI-4** for the proposed alignment and other recommended improvements that are defined in greater detail in and around this location.

Additional right of way would be required as with all the alternatives, except Alternative #1, to rework the US-25 and KY-229 intersection. Turn lane lengths at all the intersections will be based on current design policy and modeling is recommended to provide a more accurate assessment of future ADTs along all of Project Area A.

The most significant aspect of this option would be the cost associated with completing a project of this type. The time necessary for construction would also impact the community; however, Old US-25 would be a viable detour route during the majority of the construction phase. This alternative would also have to address potential environmental impacts from underground storage tanks and other concerns from impacting the cemetery located west of the US-25 and KY-229 intersection. Utility relocation will also be a significant factor in cost and construction time to complete the project, which may also lead to right of way issues. Please see **Figure II-1** for more information. These issues will need to be addressed in greater detail in future phases of the project.

This approach would address geometric deficiencies, attract traffic from a congested US-25, aid future growth and improve sight distance by bringing the roadway to current design standards. All these improvements should help to reduce safety concerns.

The following **Table VI-4** shows the preliminary cost estimate for Alternative #4 provided by District 11 in 2010 dollars. This cost was developed on a cost per mile basis relative to similar projects in the area. The right of way cost for this alternative

Figure VI-4: Project Area A - Alternative # 5 Project Map and Details

includes an estimated cost for relocating one business. Further design may provide a way to avoid or reduce this cost.

When comparing the previous alternatives, Alternative #4 and #5 are similar. Both of these alternatives are approximately $1.5 to $2.0 million dollars more than Alternative #2 and #3.

Alternative #5	Length (miles)	Phased Cost ($)				Total Cost ($)
		Design	Right-of-Way	Utilities	Construction	
	0.889	$1,100,000	$1,200,000	$231,000	$2,000,000	$4,500,000

Table VI-4: Project Area A-Alternative # 5 Preliminary Cost Estimate

B. Project Area B

1. Alternative #6

This option would be the No-Build alternative for Project Area B. This approach would be to wait and see what happens under current conditions into the near future before proceeding with any further significant financial investment relative to extending improvements on Commercial Drive and James Lewis Drive.

This alternative would be the least expensive in terms of up-front costs and would have the least environmental impact. However, congestion impacts are likely to increase in Project Area B should no improvements be made to this project area once the New Southern Bypass is in place. This bypass will connect KY-363 (west side with new Lowe's Shopping Center) to the intersection of Old US-25 and Commercial Drive (Project Area B, B-1 Intersection). This Alternative would not adequately address the Purpose and Need Statement to improve safety, aid future growth or address congestion concerns.

2. Alternative #7

This option addresses current and near future concerns at the intersection of Old US-25 and Commercial Drive. This intersection has been identified as the current end termini for the New Southern Bypass that goes around the SLHS from KY-363 to Old US-25. This New Southern Bypass is beginning Phase 2 Design as previously discussed.

The proposed improvements to this intersection, also known as Project Area B, B-1 Intersection, includes relocating the current light signal from the intersection of Old US-25 and Laurel Tech School Drive to this intersection of Old US-25 and Commercial Drive. The intersection should also be reworked to add a left turn lane (LTL) with a separate through and right turn lane (RTL) for all four legs (north, south, east and west) of this intersection on Old US-25. See **Figure VI-5** for a project map and more detailed description of proposed improvements in and around this intersection.

Additional right of way will be required at this intersection and utilities relocated to provide for the anticipated improvements. See **Figure II-1** for more information. Access management is highly recommended as well to include the closure of Laurel Technical College Street to Old US-25 due to the majority of collisions being associated with entry and exit issues at this location. These issues will need to be addressed in greater detail in future phases of the project.

A traffic signal warrant analysis is also recommended at the intersection of James Lewis Drive and KY-229. This intersection has also been referred to previously in this report as Project Area B, B-2 Intersection. Access management is highly recommended as well at this High CRF intersection due to the numerous angle collisions from vehicles entering and leaving the intersection at different locations.

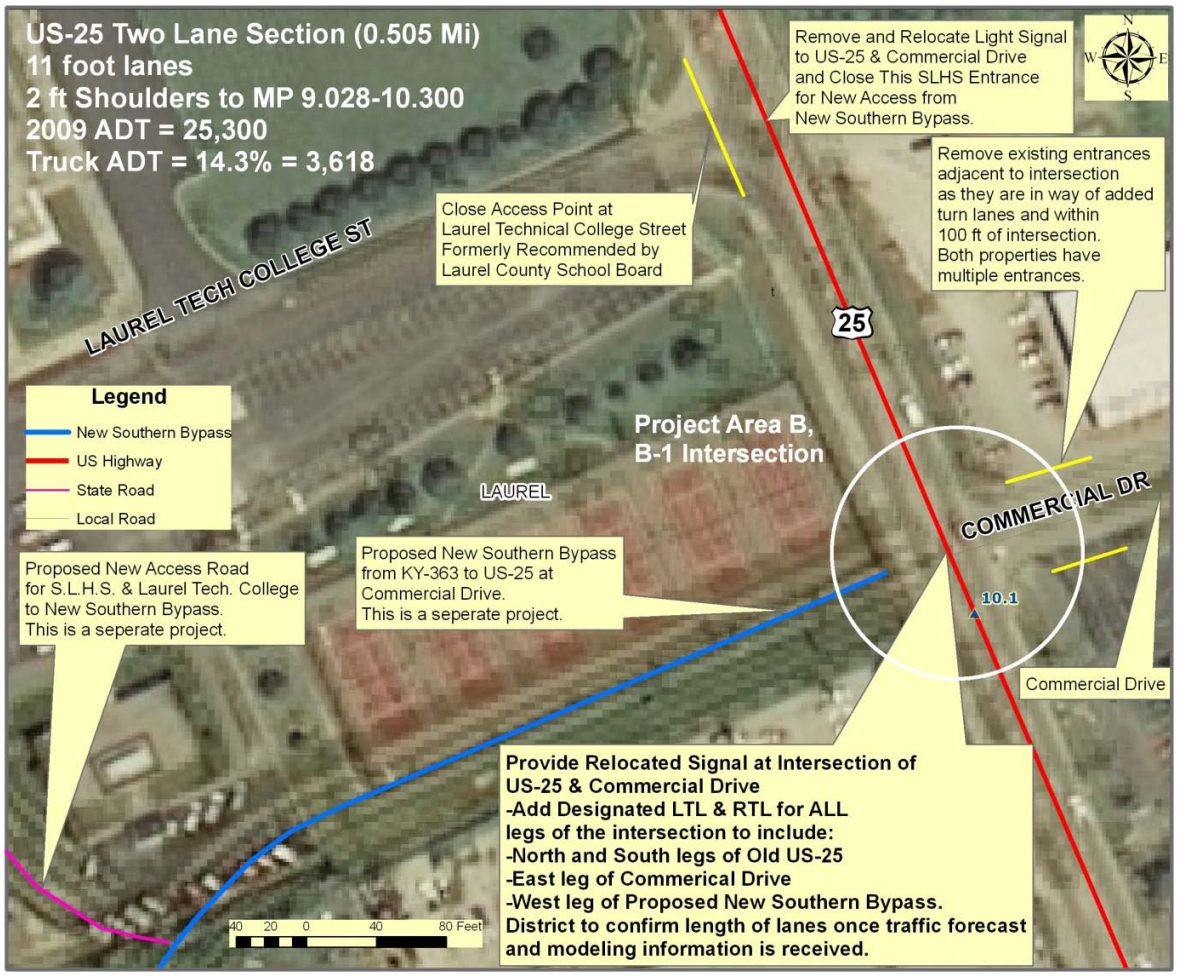

Figure VI-5: Project Area B - Alternative # 7 Project Map and Details

Traffic modeling is also recommended at both intersections to provide a more accurate assessment of the number of turn lanes and future ADTs at this location. This is especially important given that the connecting New Southern Bypass is currently in the design phase.

The following **Table VI-5** shows a preliminary cost estimate for Alternative #7 provided by District 11 in 2010 dollars. This cost was developed on a cost per mile basis relative to similar projects in the area.

Alternative #7	Length (miles)	Phased Cost ($)				Total Cost ($)
		Design	Right-of-Way	Utilities	Construction	
	0.100	$200,000	$125,000	$50,000	$430,000	$850,000

Table VI-5: Project Area B-Alternative # 7 Preliminary Cost Estimate

Minimal environmental and socioeconomic issues are expected with this alternative. This approach will address current safety issues at this high CRF intersection through access management, relocation of a traffic signal to this intersection and re-designing the intersection with current design standards with consideration for future traffic at these two high CRF intersections.

3. Alternative #8

This alternative is to primarily address concerns at the intersection of Old US-25 and Commercial Drive but also recognizes the need for improvements at the intersection of James Lewis Drive and KY-229. The New Southern Bypass is beginning Phase 2 Design as previously discussed and is connecting KY-363 to Old US-25 at this intersection.

The improvements to this intersection also identified as the Project Area B, B-1 Intersection, very slightly from that previously proposed in Alternative # 7. Both options include relocating the current traffic signal from the intersection of Old US-25 and Laurel Tech School Drive to this intersection of Old US-25 and Commercial Drive. This option includes intersection improvements such as adding a left turn lane (LTL) with a separate through and right turn lane (RTL) for both the north and south legs of this intersection on Old US-25. A separate LTL with a combined through and RTL for the west leg on the New Southern Bypass and the east leg on Commercial drive are also anticipated improvements. Modeling is recommended at this intersection to provide a more accurate assessment of future traffic patterns and ADTs at this location due to the proposed New Southern Bypass. Turn lane lengths at this intersection will be based on current design policy.

Additional right of way and utility relocation will be required at this intersection to provide the anticipated improvements. Depending on the number and length of turn lanes confirmed by the model, less additional property may be needed than that of Alternative #7. See **Figure II-1** for more detailed utility information. These issues will need to be addressed in greater detail in future phases of the project.

Access management is also recommended around the B-1 Intersection to include the closure of Laurel Technical College Street to Old US-25 and access points adjacent to the intersection. See previous **Section III B.** for further project history. See **Figure VI-6** for a project map and more detailed description of the proposed improvements in and around this intersection.

A traffic signal warrant analysis is also recommended at the intersection of James Lewis Drive and KY-229. This intersection has also been referred to previously in this report as Project Area B, B-2 Intersection. Access management is highly recommended as well at this intersection due to the numerous angle collisions from vehicles entering and leaving the intersection at different locations. Traffic forecasting and modeling of this intersection would also be beneficial in assessing any further needs for improvement.

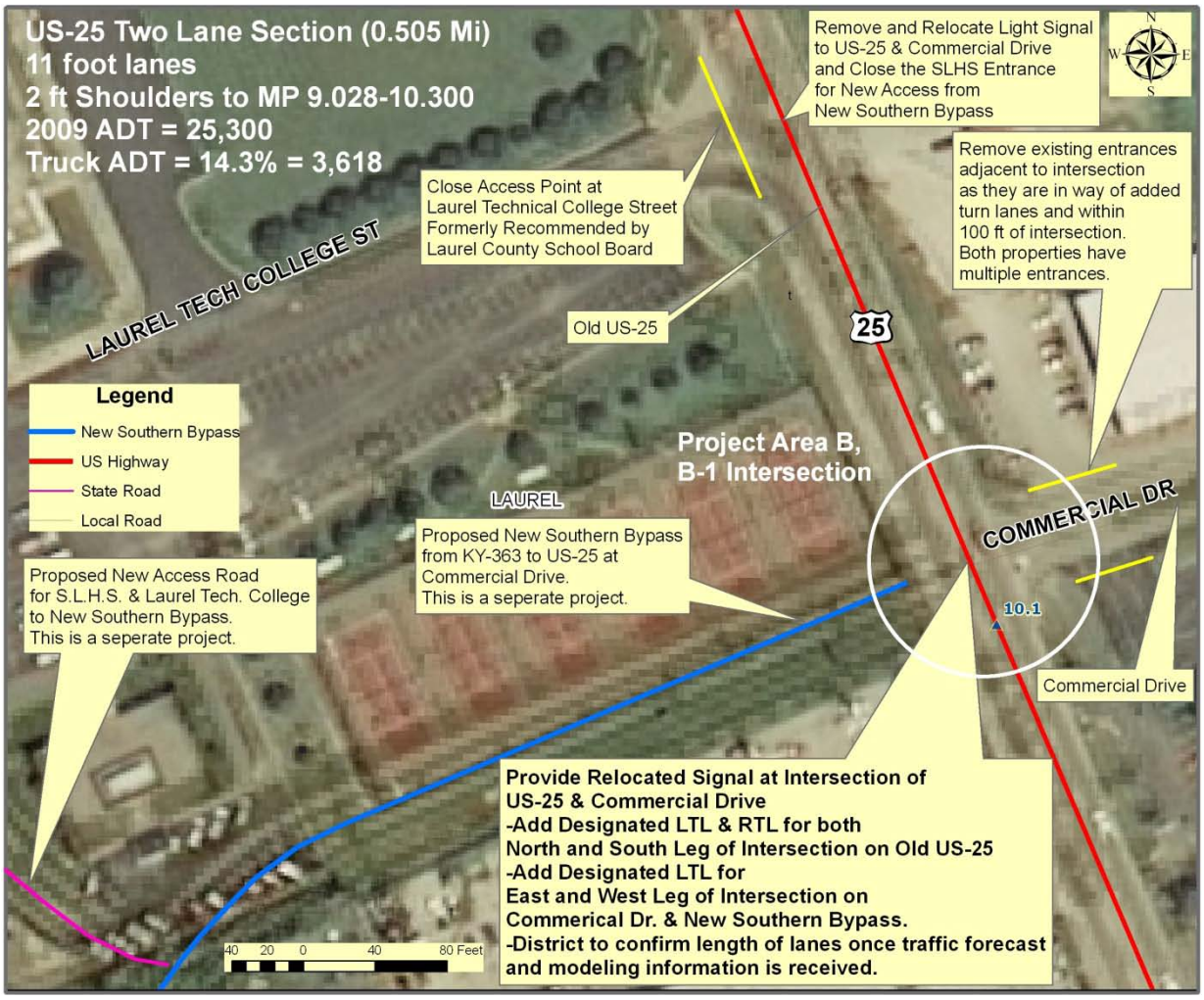

Figure VI-6: Project Area B - Alternative # 8 Project Map and Details

Minimal environmental and socioeconomic issues are expected with this alternative. This approach will address current safety issues at this high CRF intersection through access management, installation of a traffic signal at this intersection, and re-designing the intersection with current design standards with consideration for future traffic.

The following **Table VI-6** shows the preliminary cost estimate for Alternative #8 provided by District 11 in 2010 dollars. This cost was developed on a cost per mile basis relative to similar projects in the area. See **Exhibit 6** in **Appendix H** for a more detailed breakdown of the preliminary cost estimate.

Alternative #8	Length (miles)	Phased Cost ($)				Total Cost ($)
		Design	Right-of-Way	Utilities	Construction	
	0.100	$200,000	$125,000	$50,000	$430,000	$850,000

Table VI-6: Project Area B-Alternative # 8 Preliminary Cost Estimate

4. Alternative #9

This is the complete redesign alternative to include a portion of new alignment for Project Area B. Not only would the B-1 Intersection concerns in and around the intersection be addressed like in Alternative #8, but consideration would also be given to the anticipated change in traffic patterns from the proposed New Southern Bypass connecting directly to the locally owned Commercial Drive and James Lewis Drive. These local roadways are anticipated to provide a through route to the proposed New US-25 to be located along the current KY-229 around Project Area B. This through route would also help to attract traffic away from the already heavily congested and high CRF segment on Old US-25. See **Figure VI-7** for a project map and more detailed description of the proposed improvements for this alternative.

With the expected traffic pattern and added percentage of large trucks in the area, Project Area B, B-2 intersection of KY-229 and James Lewis Drive should no longer be utilized for through traffic due to the already high CRF and the skewed geometric nature of the intersection. Instead a new intersection would be created from the extension of Commercial Drive to the Proposed New US-25/KY-229. The James Lewis Drive Connection to KY-229 should also be closed to significantly reduce the high CRF at this location. The adjacent flea market, identified as a large traffic generator on the weekends, already has one access point on KY-229 in addition to the access point on James Lewis Drive.

Traffic wanting to access James Lewis Drive would be re-routed along KY-229 to the proposed perpendicular intersection with the Commercial Drive extension/New Southern Bypass. A traffic signal warrant analysis is recommended at this proposed intersection. The proposed New US-25 project is currently in the design phase. No definite location of the Proposed New US-25 re-route point onto KY-229 has been provided to date.

For those wanting access to James Lewis Drive, this alternative proposes redirecting traffic onto a new perpendicular connection with the proposed Commercial Drive extension. This new tie-in would allow for a back entrance into the flea market through James Lewis Drive, and also provide the needed distance between access points along the proposed Commercial Drive extension.

There does not appear to be any significant environmental or socioeconomic concerns regarding this alternative. This is based upon the review of the Environmental Footprint previously identified in the 2006 Study as Figure 4. The only concern noted is a Natural Resources Environmental Protection Cabinet (NREPC) facility located a little south of the Old US-25 and Commercial Drive, B-1 Intersection.

The disadvantages to this alternative would be the additional cost to implement, including added right-of-way and utility relocation. See **Figure II-1** for more utility information. These issues will need to be addressed in greater detail in future phases of the project.

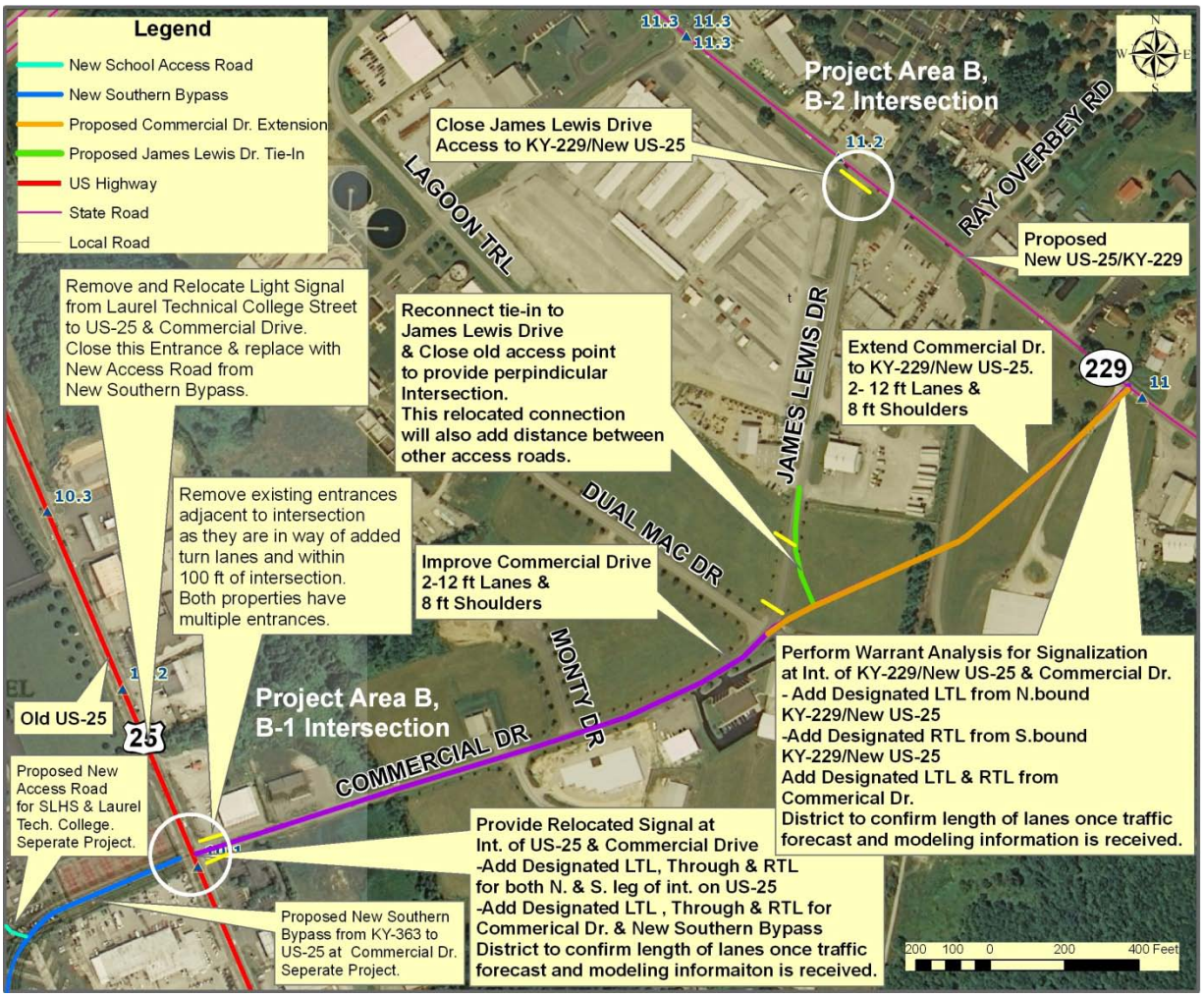

Figure VI-7: Project Area B - Alternative # 9 Project Map and Details

There is also the possibility that traffic modeling of Commercial Drive may show an increase in ADT to a point where this road may need to be considered to become a part of our state system.

The following **Table VI-7** shows the preliminary cost estimate for Alternative #9 provided by District 11 in 2010 dollars. This cost was developed on a cost per mile basis relative to similar projects in the area.

Alternative #9	Length (miles)	Phased Cost ($)				Total Cost ($)
		Design	Right-of-Way	Utilities	Construction	
	0.100	$412,000	$212,000	$85,000	$750,000	$1,500,000

Table VI-7: Project Area B-Alternative # 9 Preliminary Cost Estimate

The benefits to this approach would meet all the requirements of the Purpose and Need Statement. This alternative would most likely reduce safety concerns (rework or relocate intersections with high CRFs) and off-load congestion from Old US-25 (high CRF segment) onto Commercial Drive for a through route to the proposed New US-25/KY-229. This alternative would also aid anticipated growth in the area by extending the New Southern Bypass to accommodate social demands from schools, residential, retail, industrial and recreational opportunities, while improving overall mobility and connectivity for this southern portion of London and Laurel County.

5. Alternative #10

This alternative is most similar to Alternative #9 but does not include the portion of new alignment. This option would include improvements to the intersection of Old US-25 and Commercial Drive (B-1 Intersection) as previously stated in Alternative #8. However, when compared to the previous alternatives, this approach includes additional configuration improvements to the existing intersection of James Lewis Drive and KY-229 (B-2 Intersection). This option also addresses geometric concerns at key points along both Commercial Drive and James Lewis Drive to include the need for a four foot paved shoulder throughout Project Area B.

The geometric improvements to both Commercial Drive and James Lewis Drive would have to be made at the horizontal curve located at the transition point between the two local roadways. This curve would have to be reconstructed to meet current design standards for a two-lane undivided roadway of a similar functional type at a designated design speed for this roadway. It is recommended that the design speed for this section of roadway follow that of the proposed New Southern Bypass as Project Area B is a continuation of the New Southern Bypass. Since this is a local roadway, current geometric data on this curve in unavailable from the HIS database. See **Figure VI-8** for a project map and more detailed description of all the proposed improvements for this alternative in Project Area B.

With this new expected traffic pattern, there is added concern from tractor trailers accessing Project Area B through the skewed nature of the B-2 Intersection. It is recommended to rework this intersection to make it as perpendicular as possible to the New US-25/KY-229 in an attempt to provide for an adequate turning radius for large trucks at this industrial and commercial location.

Reworking this intersection will also increase the cost of this project due to the added right-of-way and utility relocation. See **Figure II-1** for more utility information. These issues will need to be addressed in greater detail in future phases of the project.

There is also the possibility that traffic modeling of Commercial Drive may show an increase in ADT to a point where this road may need to be considered to become a part of our state system.

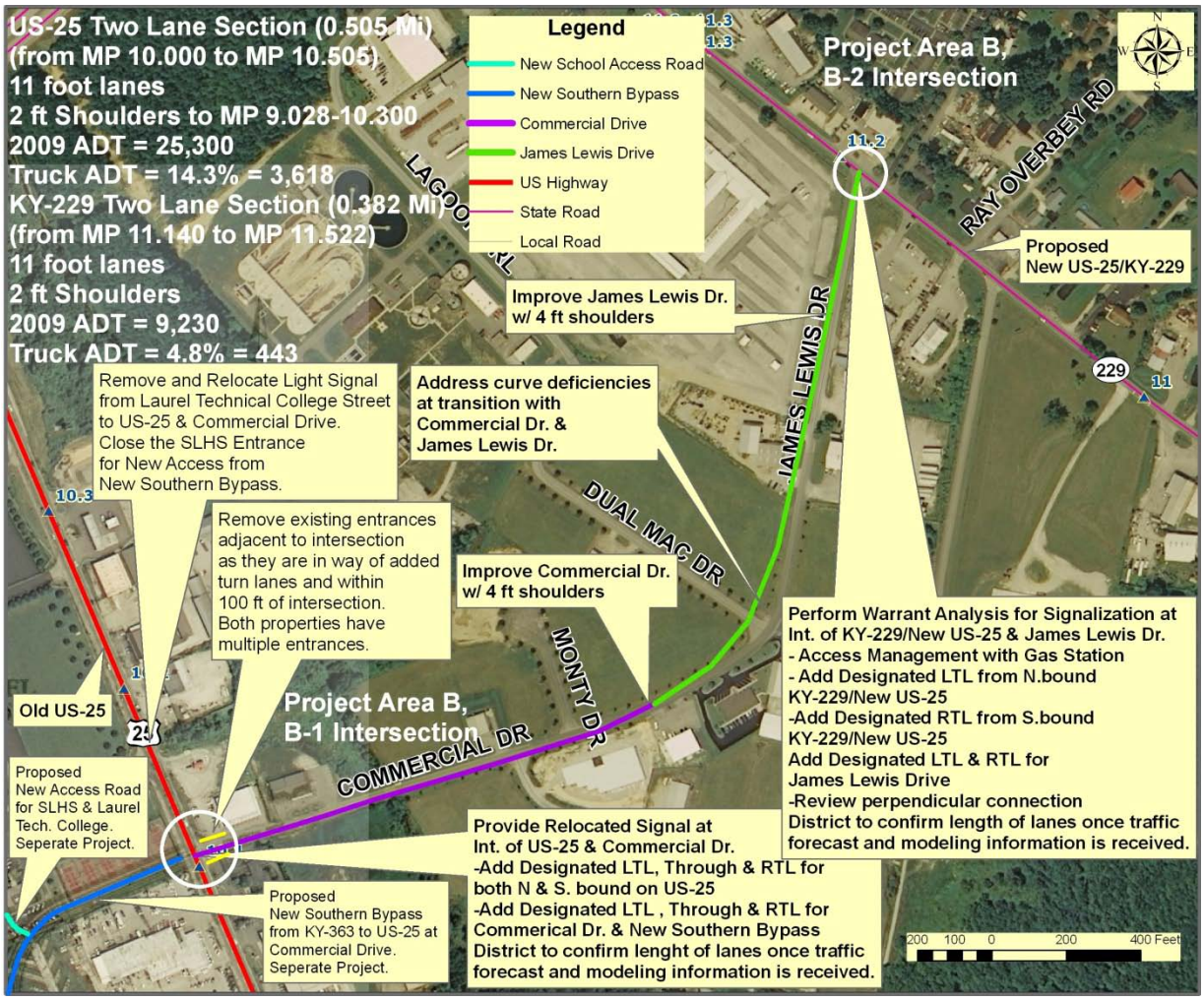

Figure VI-8: Project Area B - Alternative # 10 Project Map and Details

A traffic signal warrant analysis is recommended at this proposed intersection. It should also be noted that the proposed New US-25 project is currently in the design phase and as such, no definite location of the Proposed New US-25 reroute point onto KY-229 has been provided to date.

There does not appear to be any significant environmental or socioeconomic concerns regarding this alternative. This is based upon the review of the Environmental Footprint previously identified in the 2006 Study as Figure 4. The only concern is a Natural Resources Environmental Protection Cabinet (NREPC) facility located a little south of the Old US-25 and Commercial Drive, B-1 Intersection.

The benefits to this approach would also meet the requirements of the Purpose and Need Statement. This alternative would reduce safety concerns (access management and reworking intersections with high CRFs) and off-load some congestion from Old US-25 (high CRF segment) onto Commercial Drive and James Lewis Drive for a through route to the New US-25/KY-229. This alternative should accommodate social demands from schools, residential, retail and recreational opportunities, while

improving overall mobility and connectivity for this southern portion of London and Laurel County.

The following **Table VI-8** shows the preliminary cost estimate for Alternative #10 provided by District 11 in 2010 dollars. This cost was developed on a cost per mile basis relative to similar projects in the area.

Alternative #10	Length (miles)	Phased Cost ($)				Total Cost ($)
		Design	Right-of-Way	Utilities	Construction	
	0.100	$250,000	$200,000	$50,000	$550,000	$1,000,000

Table VI-8: Project Area B-Alternative # 10 Preliminary Cost Estimate

As noted in this table, the anticipated cost estimate for this project verses that of Alternative #9 is roughly a half a million dollars less. Relative to this cost estimate, one factor still uncertain is the cost to rework the intersection of James Lewis Drive to provide a much needed perpendicular connection to the New US-25/KY-229. The preliminary cost estimate for this alternative will increase should further right-of-way be required to make the perpendicular connection.

VII. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

At this point, modeling is recommended to confirm anticipated traffic patterns before a final recommendation can be provided. Several of these alternatives are based upon possible variations in traffic patterns. The associated preliminary cost estimate increased for an alternative that was based upon a greater anticipated volume of traffic.

The No-Build Alternative #1 does not look as if it is the best approach in Project Area A to address concerns especially given the presently high CRF issues at the intersection of US-25 and KY-229 and the intersection of KY-229 and KY-192 (Bypass). The No-Build Alternative #6 also does not appear to be an option in Project Area B given the New Southern Bypass and New US-25/KY-229 will directly connect to either end of Project Area B where there are currently high CRF intersections and segments. Neither of the two no-build alternatives addresses the Purpose and Need Statement previously discussed in Section V of this report.

VIII. CONTACTS

The following persons may be contacted if additional information is needed concerning the project or the study process:

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