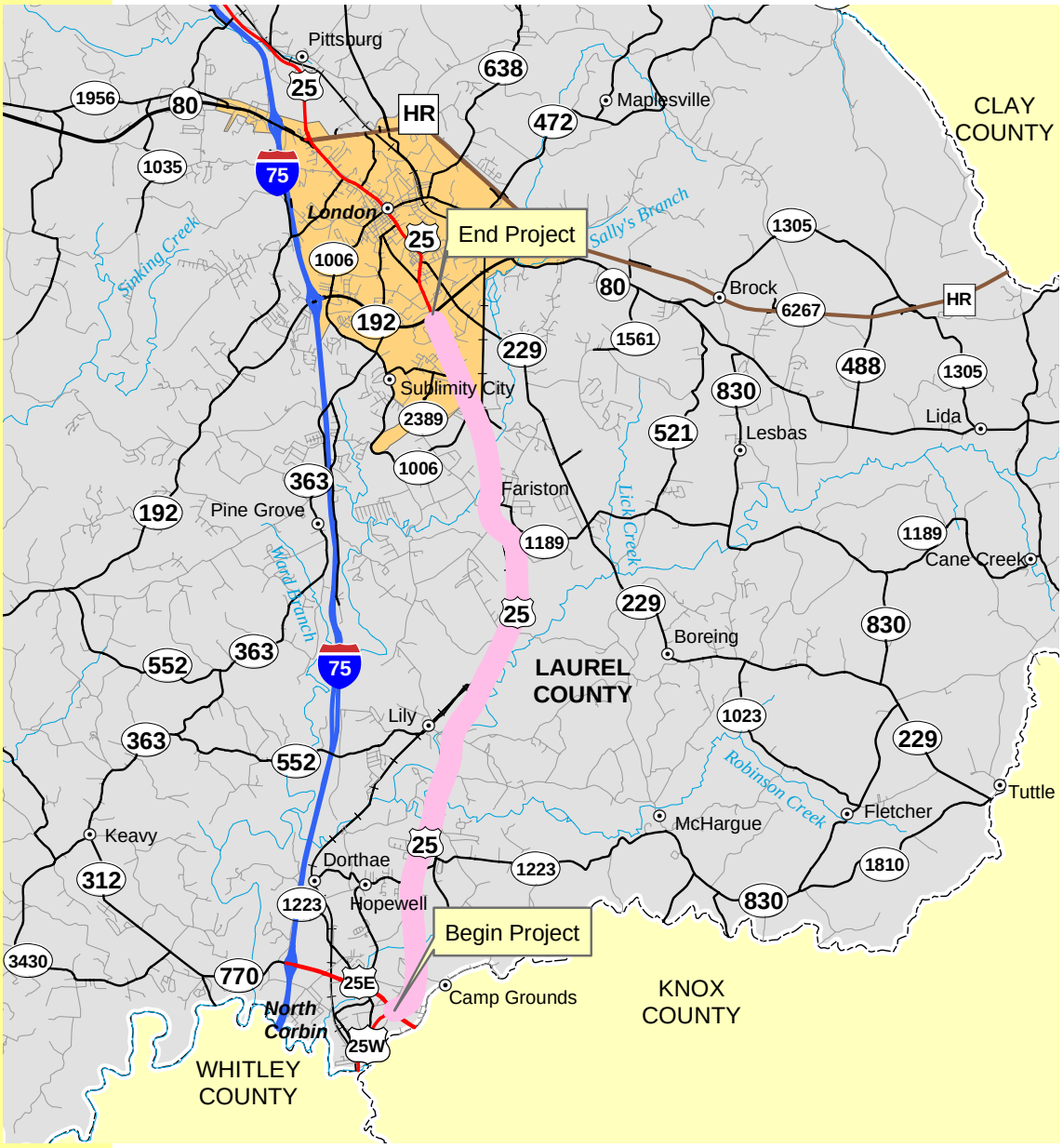
SCOPING STUDY

US 25; ITEM 11-8201

LAUREL COUNTY

FROM CORBIN TO LONDON



FINAL REPORT

July 2006

Prepared by:
Kentucky Transportation Cabinet
Division of Planning

Kentucky
UNBRIDLED SPIRIT

KENTUCKY TRANSPORTATION CABINET

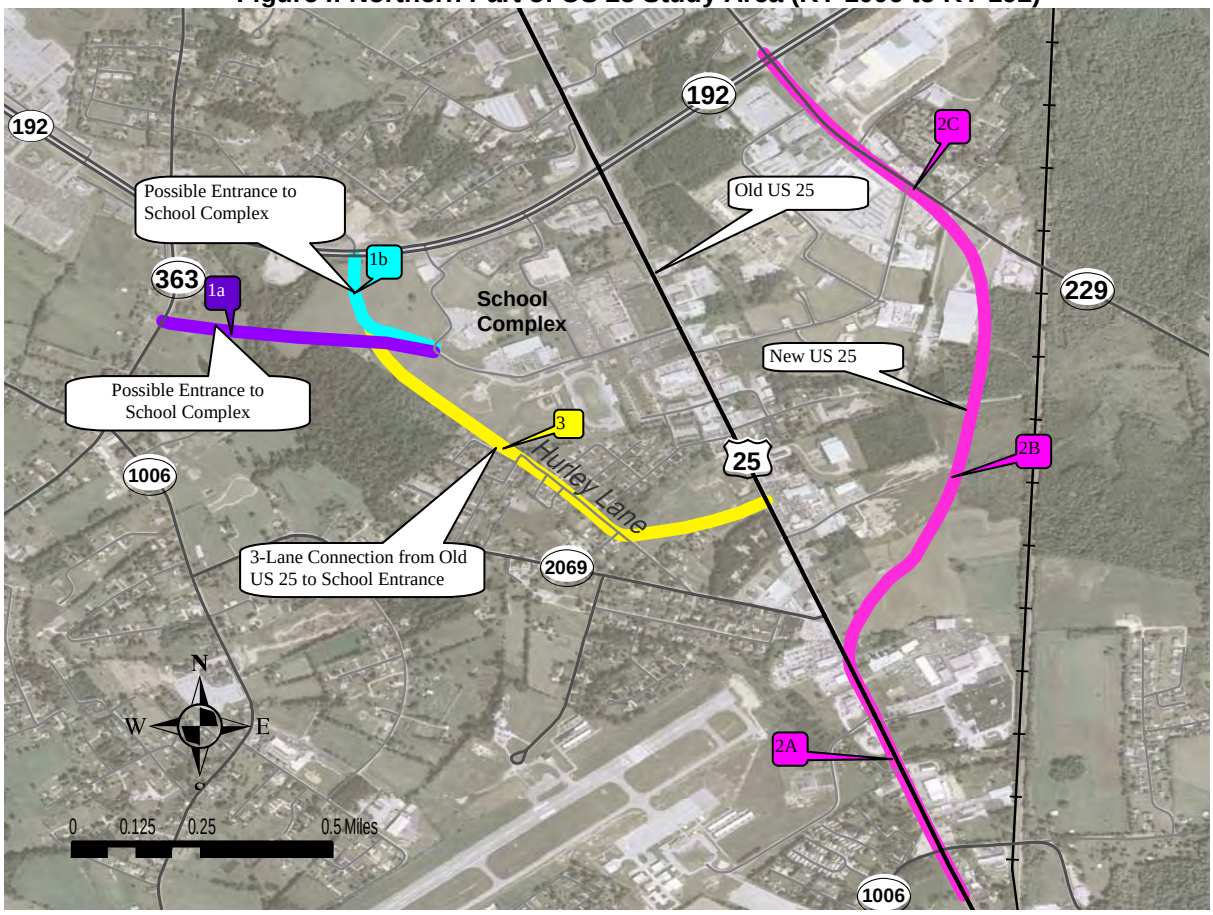
EXECUTIVE SUMMARY
SCOPING STUDY
LAUREL COUNTY
US 25 CORBIN TO LONDON
ITEM NO. 11-8201.00

The primary goals of this project are to address highway capacity and growth needs in Laurel County, improve safety by providing an improved route that complies with current design standards, and provide an alternative route during incidents or closures on I-75.

The project termini are defined as US 25 from milepoint 0.000 (US 25E in North Corbin) to MP 10.505 (KY 192 in London). Current year traffic ranges from about 13,000 vehicles per day near Lily to 25,000 vehicles per day near South Laurel High School (shown on map below as "School Complex"). Projected average daily traffic volumes, in the future year (2030), range from about 21,300 vehicles per day to 41,000 vehicles per day. Several areas with crash problems were identified during the study with the worst being on US 25 from the South Laurel High School Entrance to KY 192 Bypass.

Several different improvement concepts were developed as part of this study, resulting in five recommended priorities (Priorities 1, 2, and 3 are shown on Figure I below and all five priorities are shown on Figure II).

Figure I: Northern Part of US 25 Study Area (KY 1006 to KY 192)



Recommendations in order of priority are:

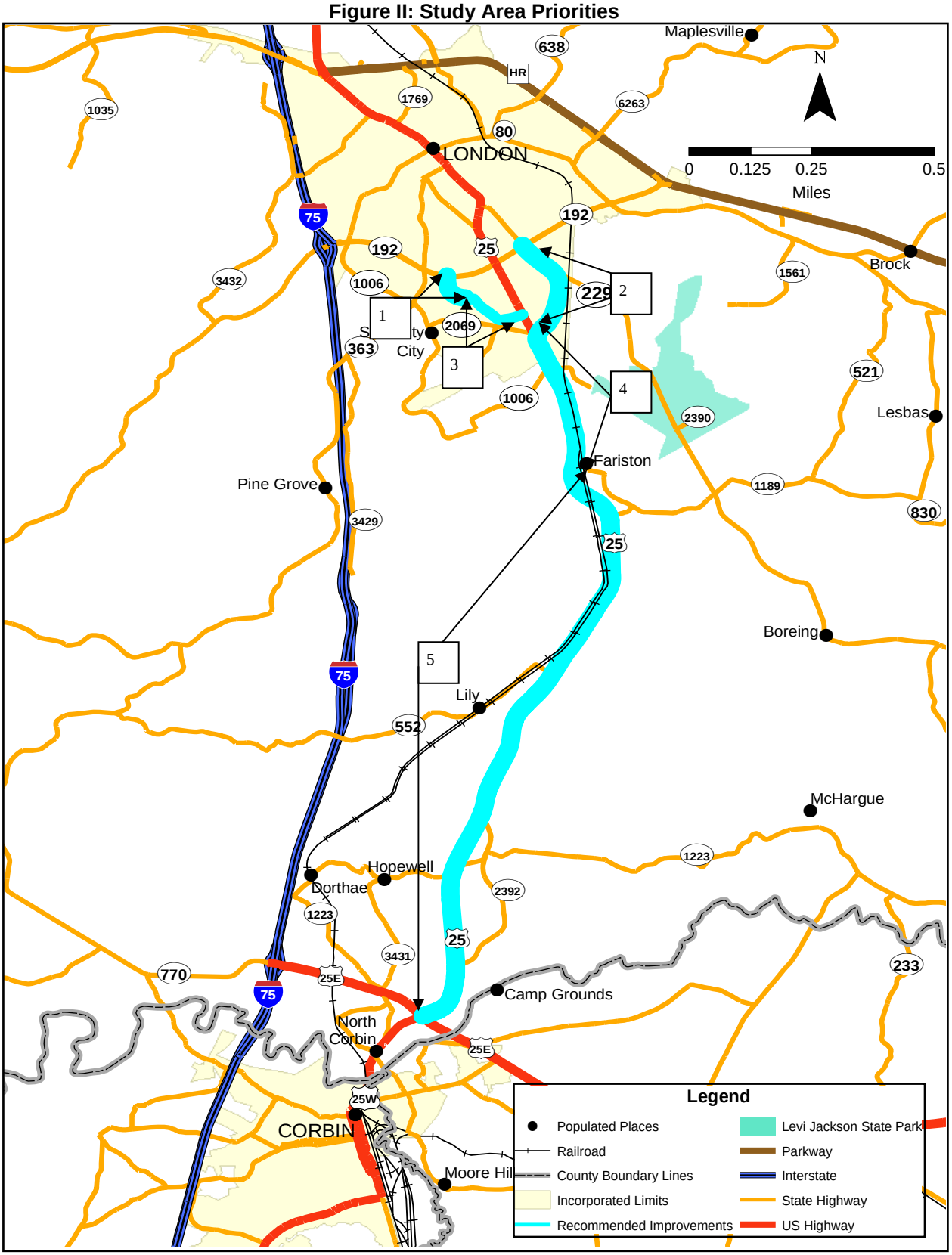
1) Construct back entrance to the school complex connecting the school to either (a) KY 363 or (b) KY 192. (Determining whether this connection should be made with KY 363 or KY 192 needs to be determined at the design phase after consultation with the schools and the public. At the time of the report, 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. This 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

Estimated costs by priority segment are:

Priority Segment	Length (miles)	Cost in Thousands					
		Design	ROW	Utilities	Construction	Cost/ Mile	Total
1	0.25	$500	$250	$100	$900	$7,000	$1,750
2	1.75	$2,325	$1,200	$475	$4,250	$4,714	$8,250
3	0.50	$1,000	$500	$200	$1,800	$7,000	$3,500
4	2.10	$1,500	$2,900	$1,000	$8,000	$6,381	$13,400
5	7.00	$4,000	$5,000	$3,000	$23,000	$5,000	$35,000
Total	11.60	$9,325	$9,850	$4,775	$37,950	$5,336	$61,900

Note: These cost estimates assume that priority one will connect the school complex to KY 192. If it is decided that the school should connect to KY 363 instead of KY 192, approximately $2 million should be added to the total cost of priority one in order to account for increased project length, utility expenses, and improvements to KY 363.

Figure II: Study Area Priorities



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I. INTRODUCTION

A. Study Purpose

The purpose of this scoping study was to: (a) evaluate US 25 from Corbin to London and determine possible alternatives to improve safety and traffic flow that can be used for future programming documents; (b) provide data to be used when and if the project enters the design phase; and (c) provide background information that can be utilized in the National Environmental Policy Act (NEPA) documentation for the project. Tasks undertaken as part of this effort included:

- Identifying project goals and issues,
- Defining the need for the project,
- Determining project termini and potential corridors,
- Describing the conditions along the existing roadways,
- Identifying preliminary environmental concerns,
- Identifying priority segments for future programming activities,
- Estimating the project costs, and
- Initiating contact with public officials and agencies.

One of the steps in this process was the collection of technical and resource agency input concerning the project. This was accomplished by:

- Compiling information from existing data and reports,
- Establishing a project team to provide direction and review for the study, and
- Coordination with resource agencies and local officials.

The collected information was evaluated to accomplish the following:

- Evaluate the project description and logical termini,
- Address the geometrics, level of service, vehicle crashes, and other issues that are influencing the project,
- Address, in general terms, the project design criteria,
- Document known environmental concerns, and
- Develop a draft statement of project goals.

B. Programming and Schedule

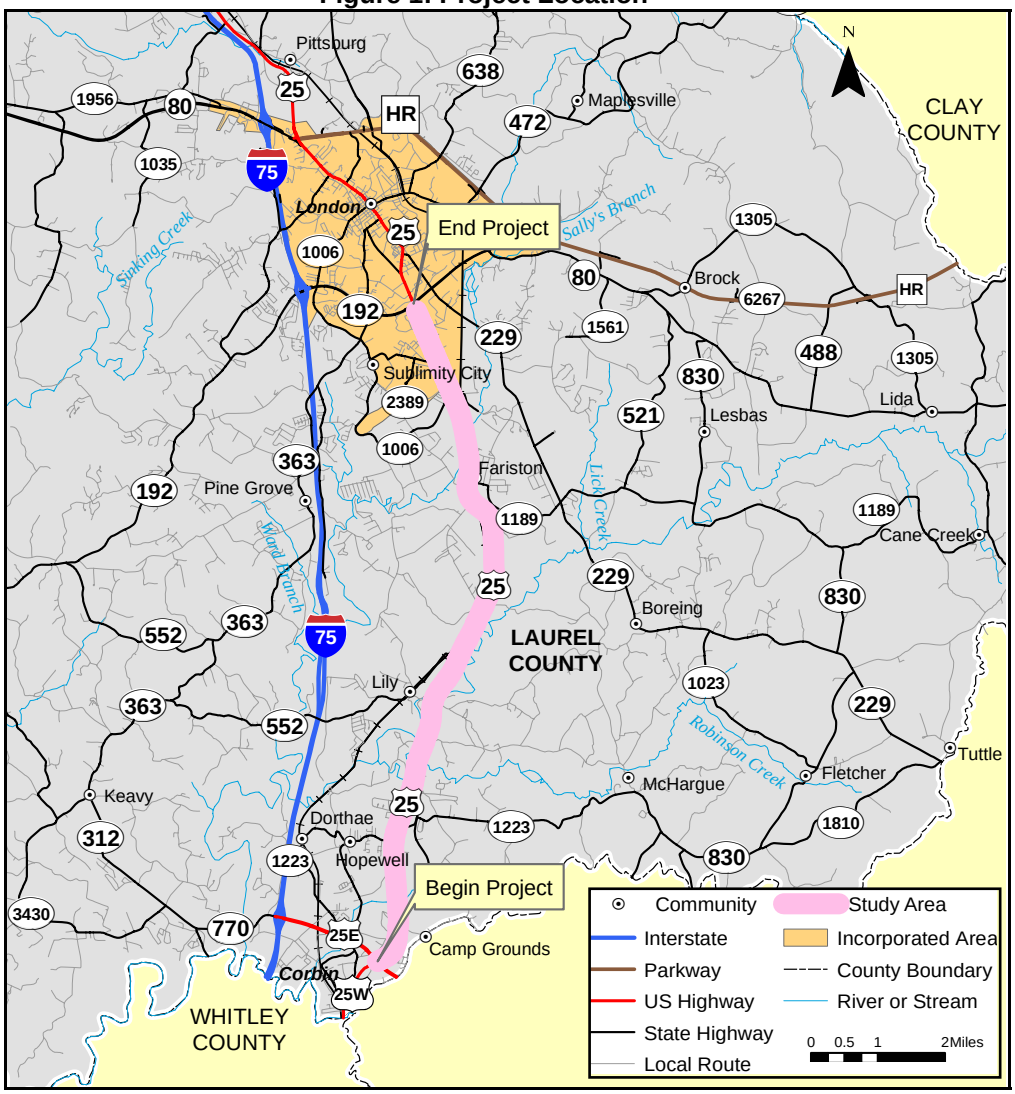
The project is described in the addendum to the February 2004 Recommended Six-Year Highway Plan (FY 2005-2010) as a “Scoping Study- US 25 between Corbin and London.” No future project phases are defined or scheduled at this time.

II. PROJECT LOCATION, EXISTING CONDITIONS, AND TRAFFIC

A. Project Location

The project termini are from US 25E at MP 0.000 in Corbin to KY 192 (London Bypass) at MP 10.505 in London. The entire study area is within Laurel County.

Figure 1: Project Location



B. Existing Highway Features

Data on the existing conditions along US 25 were taken from the Division of Planning's Highway Information System (HIS) database. The US 25 corridor is located in generally rolling terrain. Seventy percent of the study area has sufficient passing sight distance. There is only one horizontal curve along this roadway segment greater than 3.5 degrees. This horizontal curve is from milepoint 0.132 to 0.401. Further, there are four

vertical curves along this roadway segment with grades steeper than 2.5% as shown in the table below.

Table 1: Vertical Curve Information

County Name	Route	Begin MP	End MP	Percent Grade (Range)
Laurel	US 25	0.474	1.042	2.5 - 4.4%
Laurel	US 25	1.042	1.610	2.5 - 4.4%
Laurel	US 25	1.989	2.747	2.5 - 4.4%
Laurel	US 25	3.088	3.258	4.5 - 6.4%

US 25 in the study segment is mostly a two-lane rural highway. The northern 1.5 miles of the study area are in the incorporated area of London. There are several short sections of US 25 with either a center two-way-left-turning-lane (TWLTL) or truck climbing lane. A breakdown of the lane configurations for the US 25 corridor between the Cumberland Gap Parkway (US 25E) and the London Bypass (KY 192) are shown below in Table 2.

Table 2: Lane Configurations

Milepoints	No. of Lanes	Description
0 to 0.1	4	2 thru, 2 left, and 1 right for a short distance
0.1 to 0.3	2	
0.3 to 0.85	3	2 thru, truck lane for south bound
0.85 to 1.05	2	
1.05 to 1.9	3	2 thru, one TWLTL
1.9 to 2.2	4	2 thru, one TWLTL, and one north bound truck lane
2.2 to 2.9	3	2 thru, south bound truck lane that is also used as left turn lane at two spots
2.9 to 3.4	2	
3.4 to 4.1	3	2 thru, TWLTL
4.1 to 4.2	2	
4.2 to 4.4	3	2 thru, left turn
4.4 to 4.7	2	
4.7 to 4.9	3	2 thru, left turn
4.9 to 7.0	2	
7.0 to 7.1	3	2 thru, left turn at KY 1189
7.1 to 7.5	2	
7.5 to 7.8	3	2 thru, TWLTL, TWLTL becomes a left turn lane at Fariston Road
7.8 to 9.028	2	
9.028 to 10.4	3	2 thru, TWLTL
10.4 to 10.5	4	2 thru, 2 left

Table 3 gives general route information.

Table 3: General Route Information

From	To	% Trucks	Lane Width (Feet)	Shoulder Width (Feet)	Posted Speed Limit
US 25E	KY 1223	18.9	12	10 (Earth)	55
KY 1223	KY 552	18.9	12	10 (Earth)	55
KY 552	KY1189	17.3	12	10 (Earth)	55
KY 1189	KY 1006	15.5	12	10 (Earth)	55
KY 1006	S. Laurel HS	9.3	11	Curbed	45
S. Laurel HS	KY 192	9.3	11	Curbed	45

There are five bridges inside the study area. Four of these bridges exceed 100 feet in length, with the longest being 245 feet. These same four bridges are also listed as being functionally obsolete. The Federal Highway Administration, Bridge Division's, *National Bridge Inventory Database* defines functionally obsolete bridges as "those with deck geometry (e.g., lane width), load carrying capacity, clearance, or approach roadway alignment that no longer meet the criteria for the system of which the bridge is a part." Table 4 shows information for the bridges inside the US 25 study area.

Table 4: Bridge Information

Bridge No	Milepoint	Features Intersected	Bridge Length	Bridge Width	Sufficiency Rating	Location
B00026	1.040	HORSE CREEK	23	30.0	95.0	.25 MI N OF S-JCT KY 2392
B00024	3.275	ROBINSON CREEK	144	26.2	58.7	.40 MI N OF N-JCT KY 2392
B00027	4.140	LAUREL RIVER AT LILY	129	35.4	78.2	.65 MI SOU. OF JCT KY 552
B00022	7.190	CSX RAILROAD	245	31.1	65.2	.20 MI N OF JCT KY 1189
B00025	8.435	LITTLE LAUREL RIVER	132	31.1	77.1	.50 MI S OF S-JCT KY 1006

C. Highway Systems

US 25 in the study area includes segments of different functional classifications. The functional classes for each segment are shown below in Table 5.

Table 5: Functional Classes

Begin MP	End MP	Urban Area	Functional Classification	Description
0.000	0.677	Corbin	Urban Principal Arterial	From US 25E to the NUL of Corbin at Hanes Baker Road
0.677	9.028	Rural	Rural Major Collector	From the NUL of Corbin at Hanes Baker Road to SUL of London at KY 1006
9.028	10.505	London	Urban Minor Arterial Street	From SUL of London at KY 1006 to KY 192

D. Vehicle Crash Analysis

On US 25 in the study area, a total of 809 vehicle crashes were recorded with valid reference points during the five year period between January 1, 2001 and December 31, 2005. 208 of the crashes produced injuries to at least one person, while nine crashes resulted in fatalities. Table 6 shows a segmental analysis of US 25 in the study area.

Table 6: Segment Critical Rate Factors

January 1, 2001 to December 31, 2005 Crash Data for Segments							
Begin MP	End MP	ADT	Crashes				CRF**
			Fatal	Injury	PDO*	Total	
0.000	2.097	15500	2	53	127	182	1.033
2.098	4.821	14000	2	59	107	168	0.824
4.822	6.952	13000	3	12	34	49	0.322
6.953	9.027	14000	1	36	78	115	0.723
9.028	10.161	21000	0	32	128	160	0.635
10.162	10.505	25000	1	16	118	135	1.349

* PDO- Property Damage Only

** CRF- Critical Rate Factor- The critical rate factor is the quotient of the crash rate for a roadway spot or segment divided by the critical crash rate for roadway spots or sections based on the roadway type, number of lanes, and median type. The critical crash rate is the sum of the average crash rate for a given roadway type plus a factor which measures the exposure (vehicle miles of travel) to possible crashes. A critical rate factor greater than one is indicative of the statistical probability that crashes are not occurring randomly at that spot or segment.

A spot crash analysis was done for very 0.1 mile spot along the entire study area to pinpoint the location of crash problems. Crashes between January 1, 2003 and December 31, 2005 were used for this analysis. Twelve spots were identified as having a critical rate factor greater than one. Specific crash data summaries were then prepared for each of the spots. Tables 7 and 8 show the result of this analysis. The spots highlighted in yellow have either been recently improved or are scheduled in the Six-Year Highway Plan to be improved. These spots should continue to be evaluated to see if the improvements have lowered the Critical Rate Factors.

Table 7: Spot Critical Rate Factors

ID	Begin MP	End MP	ADT	Crashes				CRF
				Fatal	Injury	PDO	Total	
Spot 1	0.000	0.099	15500	0	6	22	28	1.750
Spot 17	1.600	1.699	15500	0	4	4	8	1.118
Spot 21	2.000	2.099	14000	1	3	7	11	1.640
Spot 33	3.200	3.299	14000	0	5	5	10	1.096
Spot 37	3.600	3.699	14000	0	6	6	12	1.790
Spot 42	4.100	4.199	14000	0	5	6	11	1.206
Spot 70	6.900	6.999	14000	0	3	7	10	1.096
Spot 76	7.500	7.599	14000	0	2	6	8	1.193
Spot 90	8.900	8.999	14000	0	2	8	10	1.096
Spot 91	9.000	9.099	21000	0	4	10	14	1.160
Spot 102	10.100	10.199	25000	0	8	23	31	1.349
Spot 106	10.500	10.599	25000	1	7	58	66	4.315

Note: Spot location definitions are shown below, and a full route log for the US 25 study area can be found in Appendix G.

Spot Locations

Spot 1: US 25E
Spot 17: Powers LN
Spot 21: KY 1223
Spot 33: Robinson Ck
Spot 37: Echo Valley/Lily Sc RD
Spot 42: Slate Ridge/S Lily RD
Spot 70 : KY 1189
Spot 76 : Fariston RD
Spot 90: S of KY 1006
Spot 91: KY 1006
Spot 102: Schools
Spot 106: KY 192

These high crash spots were then analyzed to determine patterns due to weather, roadway conditions, manner of collision and light condition. This analysis can be seen in Table 8. As an example to interpreting the table:

At Spot 1 (US 25E), 23 of the 28 crashes occurred in clear weather on dry roads, and 24 were in daylight. A total of 19 of the 28 crashes were rear-end crashes.

Table 8: Spot Crash Analysis

Crash Factor	Spots											
	1	17	21	33	37	42	70	76	90	91	102	106
Weather												
Clear	23	5	5	8	7	6	5	7	4	9	23	41
Cloudy	2	2	4	1	3	4	1	0	3	4	5	21
Rain	3	1	1	1	2	1	2	1	2	1	2	4
Snow/Sleet/Hail/Sandstorm	0	0	1	0	0	0	2	0	1	0	1	0
Roadway												
Dry	23	6	8	8	9	9	7	5	6	11	26	57
Wet	4	2	3	2	3	2	3	2	3	2	2	8
Ice/Other	1	0	0	0	0	0	0	1	1	1	3	1
Manner of Collision												
Angle	4	3	6	1	6	6	3	4	1	4	9	3
Backing	0	0	0	0	0	0	0	0	0	0	2	0
Head-on	1	0	0	0	0	0	0	1	0	0	0	0
Opposing Left Turn	0	0	1	0	0	0	0	0	0	0	1	0
Rear End	19	4	4	7	4	2	4	0	8	10	16	60
Sideswipe	2	0	0	0	2	3	2	2	0	0	3	3
Single Vehicle	2	1	0	2	0	0	1	1	1	0	0	0
Light Condition												
Dark	4	2	3	1	1	4	0	2	0	2	1	8
Dawn/Dusk	0	2	0	0	0	0	0	1	0	1	2	5
Daylight	24	4	8	9	11	7	10	5	10	11	28	53

E. Traffic and Level of Service

The average daily traffic volume (ADT) in the Year 2005 varied from about 13,000 vehicles per day (vpd) to 25,000 vpd. Projected future year (2030) average daily traffic volumes, based on traffic forecasts run on the London traffic model performed by KYTC traffic forecasters, range from 21,300 vpd to 41,000 vpd for the no build scenario. (The entire traffic forecast including turning movements at major intersections can be found in Appendix E.)

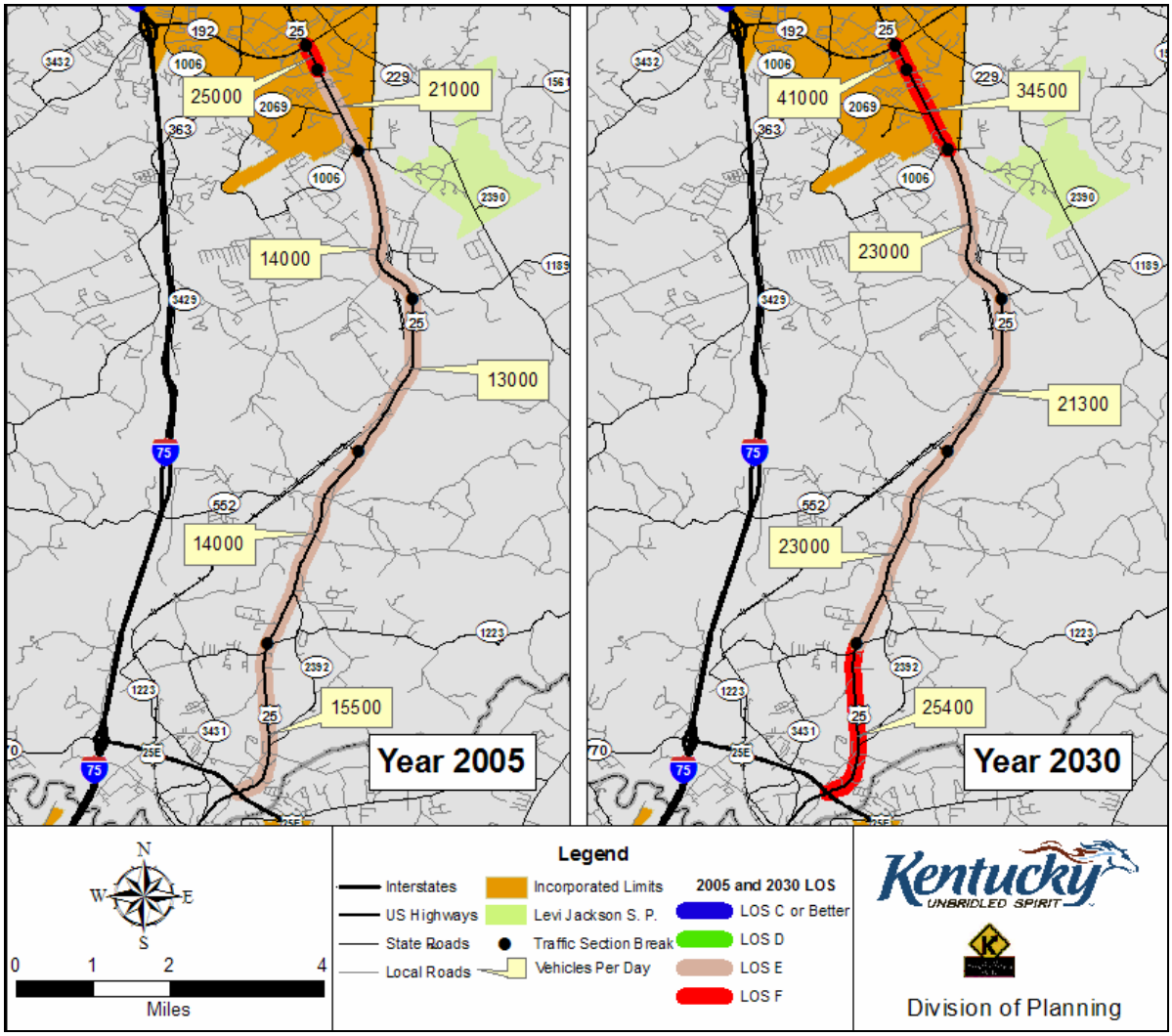
Level of Service (LOS) is a measure of the quality of traffic service provided by a specific highway facility. It ranges in scale from A to F, with A being the best and F being the worst. LOS C is considered stable flow and is acceptable in most situations. LOS in the study area is at an E for most of the study area in both the current and future year. LOS from the South Laurel High School entrance (MP 10.162) up to the London Bypass (KY 192 at MP 10.505) is operating at a LOS F in the current year (2005). LOS F generally represents gridlock during the peak hour of the day. Table 9 shows traffic and LOS for the US 25 study area.

Table 9: Traffic and Level of Service

From	To	2005 ADT	2005 LOS	2030 ADT	2030 LOS
US 25E	KY 1223	15500	E	25400	F
KY 1223	KY 552	14000	E	23000	E
KY 552	KY1189	13000	E	21300	E
KY 1189	KY 1006	14000	E	23000	E
KY 1006	S. Laurel HS	21000	E	34500	F
S. Laurel HS	KY 192	25000	F	41000	F

Figure 2 depicts traffic conditions in the current year (2005) and future year (2030).

Figure 2: 2005 and 2030 Traffic and Level of Service



Due to the current Level of Service (LOS) F (Shown in Figure 2) and crash history (shown in part D of this section) of the segment of US 25 between KY 1006 and KY 192, much of the study focused on this northern segment of the US 25 study area.

III. CABINET, PUBLIC, AND AGENCY INPUT

A. First Project Team Meeting

A scoping study project team meeting was conducted on September 7, 2005. The purpose of the meeting was to discuss the project and to assist in determining issues and concerns needed to be addressed by the study. A copy of the minutes is included in Appendix A. The project team developed a list of problems associated with the existing roadway. These included:

- Slower drivers impede traffic and other drivers take chances trying to pass them, creating a dangerous situation.
- There are a large number of trucks in the area. Major truck generators include AISIN, a waste management site, and many other businesses along US 25 and the surrounding area. AISIN supplies Toyota and most of their outgoing shipments probably go north.
- The intersection of US 25 and the bypass backs up and does not adequately handle the traffic.
- US 25 is the only alternative corridor for I-75 shutdowns between Corbin and London. Crashes frequently occur during inclement weather on I-75 at the Laurel Creek Bridge, forcing the interstate to close down and divert traffic onto US 25.
- Nine highway fatalities have occurred along the study area over the past five years. Many of these have involved trucks. Speed has also been a contributing factor in many of the crashes.

The team also discussed benefits to improving US 25 between Corbin and London. These included:

- If there is an incident on I-75, an improved corridor between Corbin and London is needed to handle the detoured traffic.
- Safety improvements especially near the schools are needed.
- Increased capacity could help relieve the congestion and delay along US 25.

After discussing problems throughout the study area and benefits to improving US 25, the team developed a preliminary list of goals and objectives a project in the area should accomplish. These goals and objectives include:

1) Increase Capacity,
2) Improve Safety, and
3) Provide a relief route for I-75.

B. Local Officials Meeting

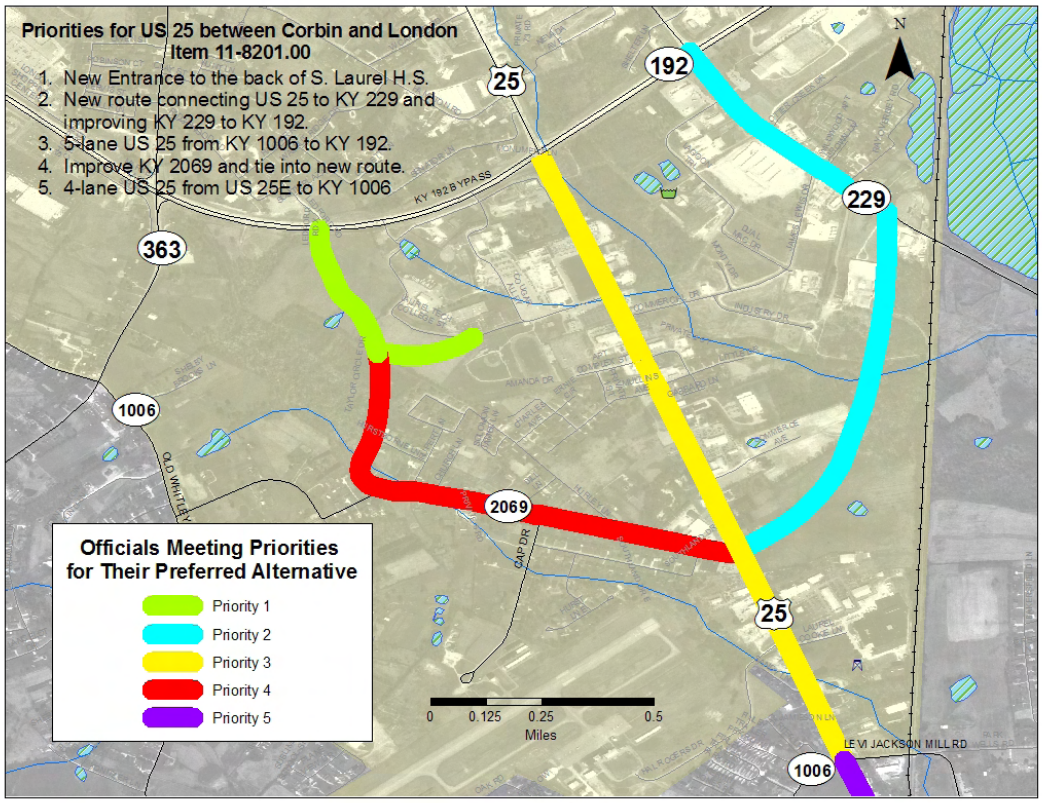
A local officials meeting was held November 30, 2005 at the Cumberland Valley Area Development District. Eighteen local officials and five KYTC associates were present for the meeting. A copy of the minutes is included in Appendix B.

Officials decided that a combination of expanding existing US 25, providing a back entrance into the school complex, a new eastern connection to KY 229, and a new connection from KY 2069 to KY 192 were all needed to handle the projected US 25 traffic.

The priorities for US 25 between Corbin and London as developed by the local officials are as follows (see Figure 3):

1. Back entrance to school complex connecting to KY 192.
2. Eastern connection from US 25 to KY 229 and improving existing KY 229 up to KY 192.
3. Five-lane US 25 from KY 2069 up to KY 192. Seven-lane US 25 (Two right turn lanes, four thru lanes, and a two-way-left-turning lane) from KY 1006 up to KY 2069.
4. Improve KY 2069 and connect into new route to the back of the school complex.
5. Improve the remainder of the US 25 study area (from US 25E up to KY 1006) to a four-lane rural highway.

Figure 3: Officials Meeting Top Priorities



C. Resource Agency Coordination

Since no further project development phases were funded at the time of this study, public meetings were not held during the course of the study. However, early agency coordination letters were sent out to various resource agencies, interested organizations, local officials, and internal Cabinet offices to obtain input and comments on the study area. The purpose of the letter was to obtain opinions and evaluate the potential impacts associated with this project. Copies of the request letter, mailing list, and the responses are included in Appendix D. Issues identified and concerns raised as a result of this process include:

- Aisin Automotive Casting, LLC
  Aisin representatives shared the following observations:
  - There are days when overweight trucks will avoid the scales on I-75 and this restricts the usefulness of the local highway as well as makes travel more dangerous;
  - There are occasional traffic problems on I-75 and vehicles take US 25 to bypass the problem. The potential for more crashes is realistic with continued growth; and
  - The schools from Hunter Hills to South Laurel High School need our protection and the continued growth of Aisin will further burden the present traffic flow.

  Options Aisin Automotive have recognized include a 5-lane highway including turn lane, 4-lane with traffic light(s) at both schools and/or the intersection of US 25 and KY 552, and a 3-lane highway including a full turn lane from Corbin to London.

- London-Corbin Airport Board
  The airport board suggested that a traffic light be installed at the intersection of US 25 and Hal Rogers Drive. Traffic exiting from the London-Corbin Airport is forced to wait for extended periods. This often leads to vehicles pulling to the center turning lane in an effort to get onto US 25. The airport board stated that this has caused some crashes and numerous near misses.

- London Downtown
  Concerns and inputs from London Downtown are as follows:
  - Consider 4-laning the entire section from London to Corbin with additional turn lanes and with additional acceleration lanes at the exits for the cookie factory, ACS, and South Laurel High School.
  - Traffic lights are necessary to control traffic and reduce the accident rate.
  - Main Street traffic, in downtown London, already has a large volume of vehicles. When I-75 is blocked between London and Corbin, additional traffic uses US 25 and adds to the already

heavy load. London Downtown recommends that a bypass be developed around London using the Hal Rogers Parkway and KY 192 to alleviate the traffic congestion on Main Street.
    - London Downtown recommends that the Kentucky Transportation Cabinet seek and plan additional roads to allow traffic access to and from South Laurel High School.

- Kentucky Cabinet for Health and Family Services; Department for Public Health
  The Department for Public Health does not find any specific issues or concerns regarding the development of this project.

- Kentucky Commerce Cabinet; Department of Fish & Wildlife Resources (KDFWR)
  The Kentucky Fish and Wildlife Information System indicates that no federally threatened or endangered (T&E) fish and wildlife are known to occur in the Lily and London 7.5 minute USGS quadrangles. The database is dynamic and only represents current knowledge of the various species distributions. The KDFWR recommends the following for the portions of the project that cross intermittent and perennial streams:
    - Development/excavation during a low flow period to minimize disturbance,
    - Preservation of tree canopy overhanging the stream,
    - Use of a comprehensive sediment control plan consisting of silt barriers, diversion ditches, and immediate seeding, and mulching of disturbed areas during and upon completion of the project,
    - Excavation of stream channel for placement of bridge piers should be kept at a minimum, and
    - The existing corridor should be used as the main crossing of streams during bridge construction, if possible, in order to minimize impacts to the aquatic resources.

- Kentucky Commerce Cabinet; Department of Parks
  The proposed highway will impact Levi Jackson State Park. The Park is located approximately one mile driving distance from US 25. The Cumberland Gap Trail is in the vicinity of US 25. The Parks Department and the Department of Transportation are coordinating a Transportation Enhancement (TE) Grant to improve part of the trail. The Department of Parks also has a recently reconstructed location sign next to US 25 near Fariston, Kentucky. The sign is constructed of mortared stone and would most likely be in the construction area of the proposed route. At this time, the Department of Parks cannot determine whether the project will impact the Levi Jackson State Park's grounds.

- Kentucky Education Cabinet
  The Education Cabinet had no comment other than to ensure that a notice was, and is routinely, sent to the affected local school district.
- Kentucky Environmental and Public Protection Cabinet; Division for Air Quality
  The Division for Air Quality stated that the project must meet the conformity requirements of the Clean Air Act as amended and the transportation planning provisions of Title 23 and Title 49 of the United States Code, and meet Kentucky Division for Air Quality Regulations 401 KAR 63:010 and 401 KAR 63:005. The Division also suggests an investigation into compliance with applicable regulations in the local governments.
- Kentucky Environmental and Public Protection Cabinet, Division of Conservation
  The Division of Conservation states there are no agricultural districts established along the project area; therefore, land enrolled in the Agricultural District Program will not have to be mitigated by the Department of Transportation. The Division of Conservation would like to see the issue of the loss of farmland addressed. They also would like erosion and sedimentation controlled once earth-disturbing activities have begun. Best management practices are recommended to be utilized to prevent nonpoint source water pollution.
- Kentucky Environmental and Public Protection Cabinet, Division of Forestry
  Potential impacts for proposed highway improvements are minimal along US 25 from US 25E to KY 192. The Division of Forestry observes that US 25 crosses Laurel River and Robinson Creek. Both of these water crossings have two-lane bridges that, if expanded, will need to address fill dirt and/or erosion issues that will directly affect water quality. In addition, the portion of highway improvements from the Laurel River crossing south to Fariston is low lying on the west side of US 25 and acts as a flood plain for Laurel River during heavy rainfall events. If fill dirt is used, erosion and water quality issues will need to be addressed. This highway project will have minimal impacts on timber, wildlife, and recreation.
- Kentucky Environmental and Public Protection Cabinet; Division of Mine Reclamation and Enforcement
  The mine permit #863-8005 is an active coal preparation plant located near Fariston. The plant and associated facilities do not entail coal removal activities. Review of records associated with the ‘mined-out’ coal beds does not indicate the presence of any abandoned or active underground mines within the area of interest.
- Kentucky Justice and Public Safety Cabinet, Department of Kentucky Vehicle Enforcement

The Department of Kentucky Vehicle Enforcement agrees with the desire to improve US 25, especially for closures of I-75 as well as attempting to lower crash and fatality rates. One issue they would like to see addressed is truck traffic utilizing a bypass route around the weigh station in Laurel County. If the trucking industry learns that a bypass route around the scales is accessible and in good condition, it creates an open invitation to "go around" the scales. Other than that issue, they see no great problems this would cause Kentucky Vehicle Enforcement.

- Kentucky Transportation Cabinet; Geotechnical Branch
  The Geotechnical Branch completed an office review of the project study area. A project in the study area will encounter quaternary alluvium consisting of sand, sandy silt, and clay, and is found mainly along the larger stream valleys. The Alluvium ranges from 0 to 10 feet in depth. Bedrock to be encountered is mainly sandstone, siltstone, shale, and coal of the Breathitt Formation and the Corbin Sandstone Member of the Lee Formation.

  The only commercial coal bed that is anticipated to be encountered is the Lily Coal Bed of the Breathitt Formation. The thickness ranges from 0 to 42 inches. The Lily Coal Bed has been strip mined and underground mined.

  Geotechnical Concerns Include:
  - Underground mines may be encountered in the Lily Coal Bed on the East side of the Laurel River in the vicinity of Lily. The approximate thickness of the mined coal bed is 36 inches. Any mine openings encountered in cuts will require back-stowing of the mine openings to support the above cut slopes. Extra right-of-way may be required. Mines encountered below grade may require over excavating the grade and back-filling with select granular embankment or back-stowing.
  - Sandstone for use in rock roadbed may be in short supply from roadway excavation if encountered in the Breathitt Formation.
  - Sandstone from the Corbin Sandstone may be in abundant supply when the formation is encountered in excavations, but the quality of the material may not meet the specifications for rock roadbed. The sandstone is generally poorly cemented and friable.
  - Spread footings should be suitable for the structures as deep overburdens are not anticipated.

- Kentucky Transportation Cabinet; Permits Branch
  The permits branch offered the following comments:
  - Classify this project as a partially controlled access facility.
  - Access points should be set on the plans in accordance with 603 KAR 5:120.

- New deeds for all adjoining property owners need to be executed to identify the access control.
- Design speed should be the same as anticipated posted speed.
- Access control fence should be installed with the project.
- Notify the permits branch if this roadway is to be placed on the National Highway System.

- Scenic Kentucky

  Scenic Kentucky believes that improvements to US 25 between London and Middlesboro have the potential to make the area one of the premier scenic sites in the state and the Southeast. The drive slowly invites motorist to savor the natural beauty of the mountains. This rare experience can become a memorable one if the following suggested elements are incorporated in the redesigned roadway.
  - Entry points outside each city should be clearly evident by creating stunning stands of native hardwood trees and vegetation at the entrances,
  - Interpretive pull-off areas are readily available,
  - Uniform fences reflecting the rural history of the surrounding landscape are required,
  - Rusticated guardrails or steel backed timber guardrails are used throughout the roadway,
  - Billboards are not allowed along the scenic highway. Billboards currently in place, e.g. Barbourville are phased out or removed, and
  - An environmentally sensitive designed bikeway will attract increased visitors to the area.

  In summary, a parkway design that completely focuses on the area's natural beauty will serve as a magnet for the traveling public. The KYTC's leadership in context sensitive design related to parkways will provide a rare opportunity to make a statement that will be a lasting legacy for our citizens.

- University of Kentucky; Kentucky Geological Survey

  Comments include:
  - Physiographic Region: The study area is in the Eastern Kentucky Coal Field physiographic region, which is underlain by sandstone, siltstone, shale, coal, underclay, sand, silt, and clay.
  - Karst Potential: A project in the study area should not encounter any karst features such as sinkholes or caves.
  - Landslide Potential: A project in the study area probably will encounter pre- or post-landslide hazards.
  - Unconsolidated Sediments: A project in the study area will encounter unconsolidated sediments at or near stream drainage, such as sand, silt, and clay.
  - Resource Conflicts: A project in the study area should not encounter any resource conflicts such as prior ownership of oil and gas wells or coal property for mining.

- Materials Suitability: A project in the study area will not encounter any material suitable for construction stone.
- Fault Potential: A project in the study area should not encounter faults.
- Earthquake Ground Motions: A project in the study area has probable peak ground acceleration (PGA) due to earthquake ground motion of 0.09g. There would be a low potential for liquefication or slope failure in the strata within this structure and with unconsolidated sediments at or near streams caused by earthquake bedrock ground motion.

- U.S. Department of Agriculture; Natural Resources Conservation Service (NRCS)
  NRCS is concerned with potential impacts that the proposed highway project might have upon prime farmland soils and additional farmlands of statewide importance.

- U.S. Department of Homeland Security; United States Coast Guard
  Pursuant to the Coast Guard Authorization Act of 1982, it has been determined there is not a waterway in the US 25 study area over which the Coast Guard exercises jurisdiction for bridge administration purposes. A Coast Guard bridge permit is not required.

- U.S. Department of the Army; Nashville District, Corps of Engineers
  Based on a review of the proposed study area on the Corbin and Lily U.S. Geological Survey Quadrangle maps, the highway improvements would likely involve stream construction activities in or over Horse Creek and tributaries, Robinson Creek and tributaries, Laurel River, Little Laurel River, Whitley Branch and tributaries, and several other unnamed steams in the London vicinity. The Laurel River is considered a Navigable Water of the United States (NWUS) up to the head of slack waters of Dorothea Lake (just southeast of the Cumberland Memorial Gardens Cemetery). They strongly encourage avoidance of impacts to the Laurel River. If a bridge is necessary, it must be adequately designed so as not to interfere with navigation.

  A cursory desk review by the Corps did not reveal the presence of jurisdictional wetlands. However, they suggest additional surveys to determine if federally regulated wetlands exist and the extent of potential impacts. Any wetlands found adjacent, bordering, or contiguous to streams are also considered Wetlands of the United States (WUS) and thus fall under the Corps' jurisdiction. Please note that the Corps' permit review includes application of the Section 404(b)(1) Guidelines.

IV. ENVIRONMENTAL AND SOCIOECONOMIC OVERVIEW

A. Environmental Overview

The Division of Planning developed an environmental overview to identify issues that may require particular consideration in subsequent project development phases. This environmental overview identifies the following US 25 project issues likely to require consideration during any US 25 roadway improvements. (See Figure 4: Environmental Footprint).

Culturally Sensitive Locations

- Two cemeteries
- Numerous churches
- Eight Schools
- Numerous businesses of varying size
- Levi Jackson State Park

Historical Overview

At this time there are no known concerns regarding properties listed on or eligible for the National Register of Historic Places; however, the project area will need to be surveyed and if historic structures are identified, a baseline study will need to be developed. Although this is not the original alignment of US 25, the potential exists for the presence of structures older than fifty years, especially in the vicinity of Fariston and Lily. There is also a drive-in theater north of Lily that, depending on its condition, may be potentially eligible for the National Register. A search of the GIS database revealed one previously surveyed site near Levi Jackson State Park. However, no recommendations can be made without further investigation.

Archaeological Overview

No known significant archaeological sites are located within the US 25 project area's corridor. Very little archaeological work has been conducted within the corridor, and few archaeological sites have been recorded in the vicinity. Most surveys were the result of industrial parks or residential development. No significant sites were identified.

A number of significant sites are located within two kilometers of the corridor. These include a Woodland Mound complex adjacent to Laurel River and the McNitt Party Massacre (1786) site and segments of the Wilderness Road, both located in The Levi Jackson State Park.

Historic archaeological sites may be present within the corridor. Archival research and a historic structures survey would be beneficial in identifying significant historic resources early in project development.

Prehistoric archaeological sites may also be present within the corridor. If present, significant sites would likely be located in alluvial areas adjacent to Laurel River, Horse Creek, and Robinson Creek. There are no known areas that contain sink holes, springs, or rock shelters.

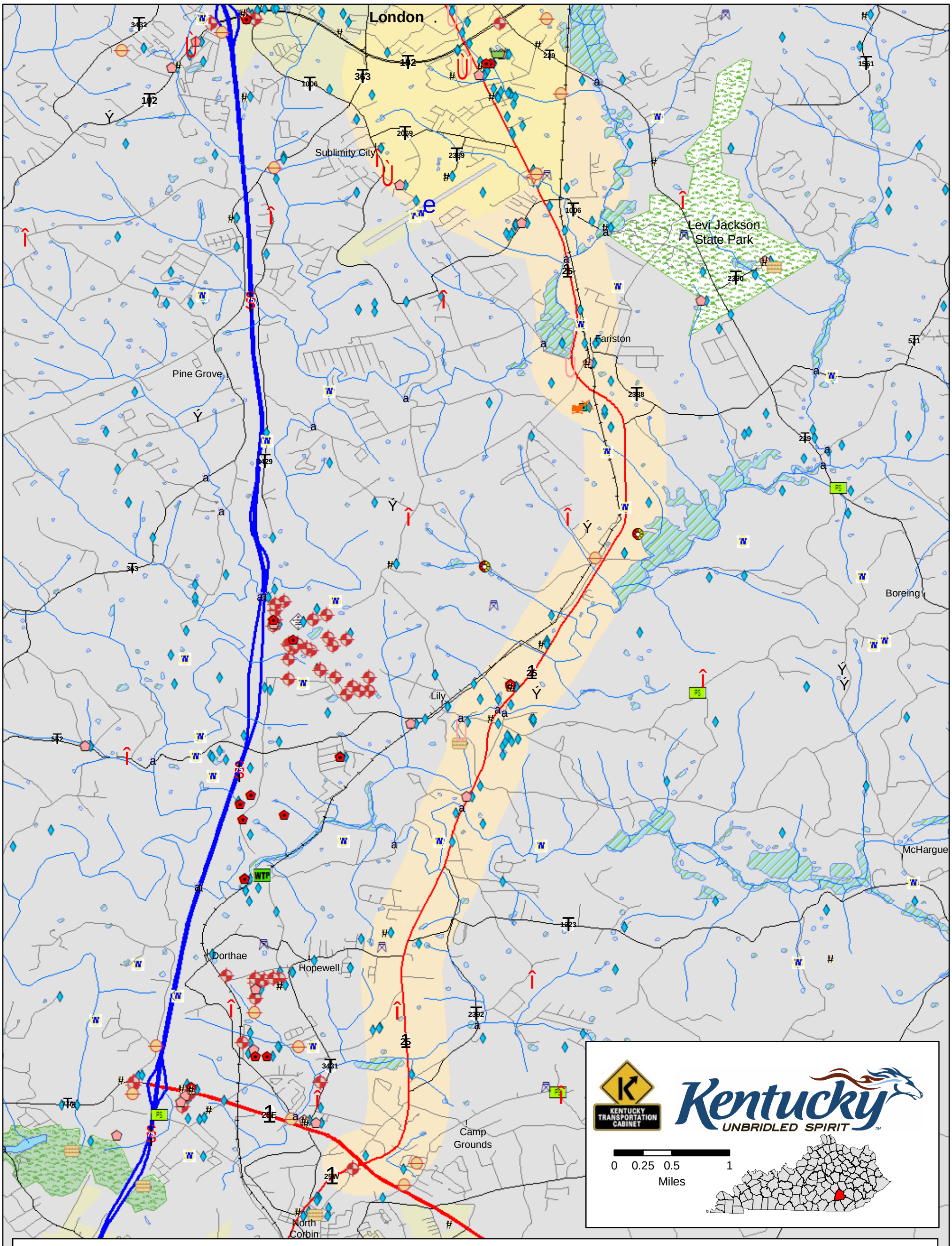


Figure 4: Environmental Footprint
US 25 Corbin to London; Item: 11-8201

Study Area	City	Cemetery	SuperFund Site	Water Treatment Plant	KPDES Outfall
Incorporated Area	Populated Place	Church	Coal Mine	Sewer Treatment Plant	KPDES Facility
Interstate	Non Public School	NREPC Facility	DSMRE Silt	Package Treatment Plant	Land Stewardship
US Highway	Public School	UST	GW Monitoring Well	Water Meter	DBNF Boundary
State Road	Bridge	Landfill	GW Well	Pump Station	Lake
Local Road	Airport	Old Landfill	Lift Station	Water Purchase Source	Wetland
Stream	Water Tank	Old Tire Dump			

In summary there are no known significant sites. Little work has been done in the area, but there is a potential for significant sites. At this stage no recommendations can be made for avoidance or alignment selection.

Aquatic Resources, Wetlands, and Ponds

- The Division of Forestry observes that US 25 crosses Laurel River and Robinson Creek. Both of these water crossings have two-lane bridges that, if expanded, will need to address fill dirt and/or erosion issues that will directly affect water quality. In addition, the portion of highway improvements from the Laurel River crossing south to Fariston is low lying on the west side of US 25 and acts as a flood plain for Laurel River during heavy rainfall events. If fill dirt is used, erosion and water quality issues will need to be addressed.
- Proposed highway improvements would likely involve stream construction activities in or over Horse Creek and tributaries, Robinson Creek and tributaries, Laurel River, Little Laurel River, Whitley Branch and tributaries, and several other unnamed steams in the London vicinity. The Laurel River is considered by the U.S. Army Corps of Engineers to be a Navigable Water of the United States (NWUS) up to the head of slack waters of Dorothea Lake (just southeast of the Cumberland Memorial Gardens Cemetery). The Corp strongly encourages avoidance of impacts to the Laurel River.
- Numerous wetlands are located in and around the study area and can be seen in Figure 4: Environmental Footprint.
- The Corps of Engineer's Review of the project area did not reveal the presence of federal jurisdictional wetlands. However, the Corps suggested additional surveys to determine if federally regulated wetlands do exist and the extent of potential impacts. Any wetlands found adjacent, bordering, or contiguous to streams are also considered Wetlands of the United States (WUS) and fall under the Corps' jurisdiction.
- No nationally or state listed wild and scenic rivers are located within the study area.

Threatened and Endangered Species

The Kentucky Fish and Wildlife's Information System indicates that no federally threatened or endangered (T&E) fish and wildlife are known to occur in the Lily and London 7.5 minute USGS quadrangles which includes the project area.

Managed Land Areas

The proposed highway may impact Levi Jackson State Park. The Park is located approximately one mile from US 25. The Cumberland Gap Trail is also in the vicinity of US 25. The Parks Department and the

Department of Transportation are coordinating a Transportation Enhancement (TE) Grant to improve part of the trail.

Farmlands

The Division of Conservation states that there are no agricultural districts established along the project area, therefore land enrolled in the Agricultural District Program will not have to be mitigated by the Department of Transportation.

Air Quality

The project must meet the conformity requirements of the Clean Air Act as amended and the transportation planning provisions of Title 23 and Title 49 of the United States Code, and meet Kentucky Division for Air Quality Regulations 401 KAR 63:010 and 401 KAR 63:005. The project is not expected to adversely impact air quality in the region.

Traffic Noise

The study area is mixed, mostly rural in nature, with more urbanized areas at each end. Several schools, churches, and cemeteries are located within the study area. Development in many places along the roadway is dense. If US 25 improvements are implemented, traffic noise may be an issue depending on the alternative chosen, but a need to maintain road access may render noise barriers ineffective.

Other Concerns

This highway project will have minimal impacts on timber, wildlife, and recreation.

Review of records associated with the 'mined-out' coal beds does not indicate the presence of any abandoned or active underground mines within the area of interest.

The only commercial coal bed that is anticipated to be encountered is the Lily Coal Bed of the Breathitt Formation. The thickness ranges from 0 to 42 inches. The Lily Coal Bed has been strip mined and underground mined.

Eleven known underground storage tanks (USTs) are located directly in the study area. Numerous other USTs are located just outside the study area. These USTs can be seen in the Figure 4: Environmental Footprint.

Geology

The Geotechnical Branch of the Kentucky Transportation Cabinet completed an office review of the project study area. They determined that the study area will encounter Quaternary Alluvium consisting of sand, sandy silt, and clay, and is found mainly along the larger stream valleys. The alluvium ranges from 0 to 10 feet in depth. Bedrock to be encountered is mainly sandstone, siltstone, shale and coal of the

Breathitt Formation and the Corbin Sandstone Member of the Lee Formation. Geotechnical Concerns Include:

- Underground mines may be encountered in the Lily Coal Bed on the east side of the Laurel River in the vicinity of Lily. The approximate thickness of the mined coal bed is 36 inches. Any mine openings encountered in cuts will require back-stowing of the mine openings to support the above cut slopes. Extra right-of-way may be required. Mines encountered below grade may require over excavating the grade and back-filling with select granular embankment or back-stowing.
- Sandstone for use in rock roadbed may be in short supply from roadway excavation if encountered in the Breathitt Formation.
- Sandstone from the Corbin Sandstone may be in abundant supply when the formation is encountered in excavations, but the quality of the material may not meet the specifications for rock roadbed. The sandstone is generally poorly cemented and friable.
- Spread footings should be suitable for the structures as deep overburdens are not anticipated.

In addition to the Geotechnical Branch's review of the study area, the Kentucky Geological Survey at the University of Kentucky also reviewed the project area. They made the following comments:

- Physiographic Region: The study area is in the Eastern Kentucky Coal Field physiographic region, which is underlain by sandstone, siltstone, shale, coal, underclay, sand, silt, and clay.
- Karst Potential: A project in the study area should not encounter any karst features such as sinkholes or caves.
- Landslide Potential: A project in the study area probably will encounter pre- or post-landslide hazards.
- Unconsolidated Sediments: A project in the study area will encounter unconsolidated sediments at or near stream drainage, such as sand, silt, and clay.
- Resource Conflicts: A project in the study area should not encounter any resource conflicts such as prior ownership of oil and gas wells or coal property for mining.
- Materials Suitability: A project in the study area will not encounter any material suitable for construction stone.
- Fault Potential: A project in the study area should not encounter faults.
- Earthquake Ground Motions: A project in the study area has probable peak ground acceleration (PGA) due to earthquake ground motion of 0.09g. There would be a low potential for liquefication or slope failure in the strata within this structure and with unconsolidated sediments at or near streams caused by earthquake bedrock ground motion.

B. Environmental Justice

The Cumberland Valley Area Development District (CVADD) conducted a review to identify environmental justice and community impact issues. The purpose of this review was to assist the Kentucky Transportation Cabinet in meeting the requirements of Federal Executive Order 12898, which states that "… each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations…" and hence to ensure equal environmental protection to all groups potentially impacted by potential improvements inside the study area. Although EO 12898 does not specifically address consideration of the elderly population, the U.S. Department of Transportation encourages the consideration of this demographic subset in Environmental Justice discussions. A copy of CVADD's Environmental Justice and community Impact Report is included in Appendix F.

Following a comprehensive review of demographic data from the U.S. Census Bureau, discussions with local officials regarding community features, and field observations, the CVADD staff has concluded that a defined Environmental Justice community does not exist within the study area.

Analysis of racial composition data resulted in one census block being identified in and around the study area that contained a percentage of minorities exceeding national and/or state averages. Following a comprehensive review of census block data and discussions with local officials, the minority concentration within the immediate study area would not be negatively impacted. The percentages of persons in the study area below the poverty level are quite high; however, discussions with local officials and a field review led to the conclusion that no concentration of individuals below the poverty level will be disproportionately affected by this project. Community leaders have expressed support for the proposed project and anticipated that it will provide an economic benefit by improving access and reducing congestion. Age analysis indicates that the distribution of elderly residents in the study area slightly exceeds the national and state averages, but no specific concentrations of elderly residents were discovered during the compilation of this report.

CVADD staff will continue to monitor the progress of this project and reevaluate the Environmental Justice Review to document any demographic and/or socioeconomic changes that may occur in and around the study area throughout the development of the project. Table 10 shows the results of CVADD's Environmental Justice Review. Detailed maps can be found in Appendix F.

Table 10: Census Data

Census Unit		% Minority Persons	% Low Income	% Elderly Persons
Tract	Block			
9705	3	4.2%	36.6%	21.5%
9706	3	4.6%	20.4%	18.9%
	4	4.4%	11.3%	16.3%
9707	1	4.6%	14.0%	9.5%
	2	2.7%	16.0%	17.7%
	3	2.9%	19.1%	14.1%
9710	1	1.4%	29.7%	10.7%
	2	2.4%	20.8%	24.1%
	3	2.4%	20.5%	13.2%
	4	0.8%	33.8%	14.3%
	5	0.9%	17.7%	12.5%
Kentucky		10.0%	15.8%	12.0%
United States		25.0%	12.4%	12.0%

V. PROJECT GOALS

As articulated by the Project Team, three goals were envisioned to be achieved by the completion of this project:

- Address highway capacity and growth needs in Laurel County,
- Improve safety by providing an improved route that complies with current design standards, and
- Provide an alternative route during incidents or closures on I-75.

In terms of meeting federal (FHWA, CEQ) and KYTC guidance for development of a purpose and need statement for subsequent project development phases, these three draft project goals reflect, respectively, the factors of capacity, safety/roadway deficiencies, and system linkage.

VI. ALTERNATIVES

Due to crash history and poor level of service (as discussed in Section II parts D and E) of the northern segment in the study area (US 25 from KY 1006 to KY 192) and the expected high price of right of way in this area, several alternatives were considered. For the remainder of the study area (US 25E to KY 1006), local officials and the project team agreed that the most feasible and beneficial alternative would be widening US 25 to a 4-lane rural highway.

In determining the recommended improvements to US 25 from KY 1006 to KY 192, the project team evaluated a no build alternative and five build alternatives before making a final recommendation. The build alternatives included:

1. Widen existing US 25,
2. Improve existing KY 2069, build new route from KY 2069 to KY 192, and build back entrance into the school complex,
3. Construct a new eastern route connecting US 25 to KY 229, and improve KY 229 up to KY 192,

4. Alternatives 2 and 3 combined, and
5. Turn US 25, from KY 2069 to KY 192, into one-way couplet system with 3-lanes in each direction.

Each alternative was evaluated by traffic modelers at the Kentucky Transportation Cabinet. Traffic modelers looked at two different models, the Kentucky Statewide Model with a base year of 2003 and the London Small Urban Area Model with a base year of 1995. It was determined that the London model yielded better results in the urban area. The London Model was used and synthesized (parameters such as travel time were adjusted) to run each alternative. The future year for the London model was 2020 and synthesized up to 2030.

These model runs considered effects that improving routes in the area may have. The roadways in and around this area were evaluated with the model to see the effect that particular improvements would be expected to have. The results of the model runs for each alternative are shown in the following sections.

A. No Build

The first model run considered the no-build option.

A traffic model run of the existing roadway geometry in the year 2030, shows US 25 operating at a LOS F, or gridlock conditions if no improvements are made. The LOS of each segment of roadway in the area can be seen in Table 11. This alternative shows a very poor roadway performance in the year 2030 if roadway improvements are not implemented.

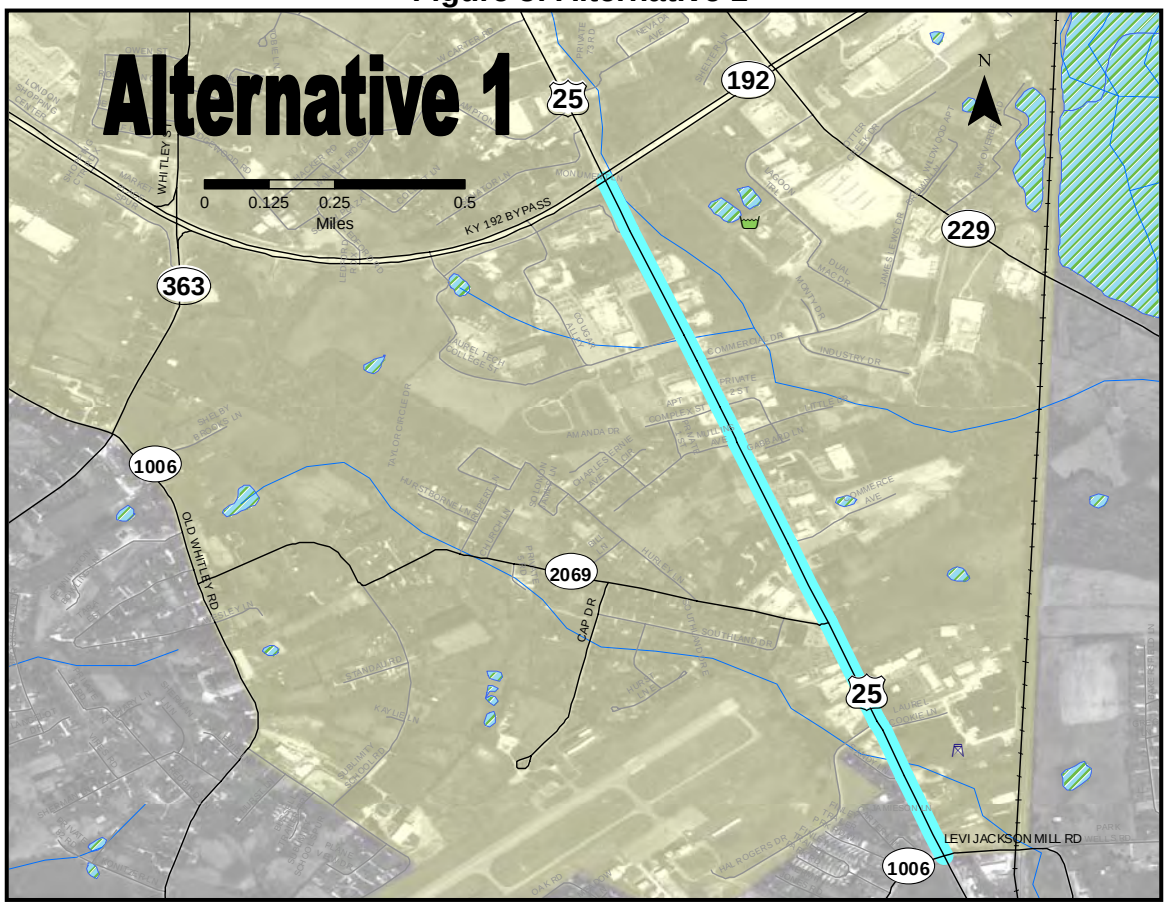
Table 11: No Build Scenario Synthesized Model Output

Route	From	To	No-Build 2030 ADT	No Build 2030 LOS
US 25	KY 192	School	41000	F
US 25	School	KY 2069	34500	F
US 25	KY 2069	KY 1006	34500	F
KY 2069	US 25	New Northern Route	4920	C
KY 2069	New Northern Route	KY 1006	4920	C
KY 229	New Eastern Route	James Lewis Dr	17800	E
KY 229	James Lewis Dr	KY 192	17800	E

B. Alternative 1

Alternative 1 consists of widening US 25 (See highlighted portion of Figure 5).

Figure 5: Alternative 1



This alternative was evaluated first as a 5-lane urban section (2 northbound lanes, 2 southbound lanes, 1 two-way-left-turning-lane (twltl)) and then as a 7-lane urban section (3 northbound lanes, 3 southbound lanes, 1 twltl). The traffic model gave the following synthesized output for US 25 where Alt 1A represents the 5-laning of US 25 and Alt 1B represents the 7-laning of US 25:

Table 12: Alternative 1 Synthesized Model Output

Route	From	To	Alt 1A 2030 ADT	Alt 1A 2030 LOS	Alt 1B 2030 ADT	Alt 1B 2030 LOS
US 25	KY 192	School	45990	E	46600	C
US 25	School	KY 2069	41710	E	42090	C
US 25	KY 2069	KY 1006	42790	E	43180	C
KY 2069	US 25	New Northern Route	5900	C	5900	C
KY 2069	New Northern Route	KY 1006	5240	C	5240	C
KY 229	New Eastern Route	James Lewis Dr	14070	E	13980	E
KY 229	James Lewis Dr	KY 192	17800	E	17550	E

Widening US 25 to five lanes still gave a poor LOS. Widening US 25 to seven lanes did give an adequate LOS, but upon discussions with

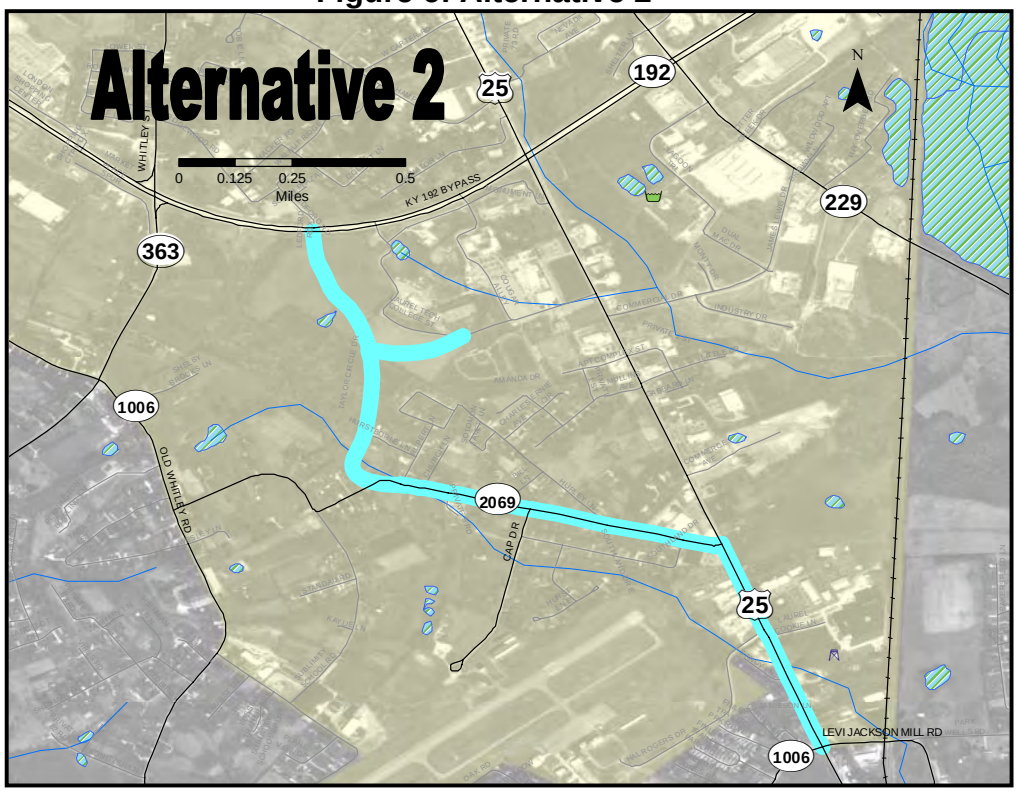
local officials and field visits, it was determined not feasible due to a high number of displacements and high cost of right-of-way.

C. Alternative 2

Alternative 2 possible improvements include (See highlighted portion of Figure 6):

- Improve existing KY 2069
- New highway from KY 2069 to KY 192
- New entrance to schools
- Widen US 25 from KY 1006 to KY 2069

Figure 6: Alternative 2



This alternative was evaluated four different ways, with each evaluation shown in Table 13.

- Alt 2A
  - Widen KY 2069 to 3 lanes,
  - New 3-Lane Section from KY 2069 to School,
  - New 5-Lane Section from School to KY 192,
  - New entrance to schools, and
  - Widen US 25 to 7-lanes from KY 1006 to KY 2069.
- Alt 2B
  - Widen KY 2069 to 5 lanes,
  - New 5-Lane Section from KY 2069 to KY 192,
  - New entrance to schools, and

    - Widen US 25 to 7-lanes from KY 1006 to KY 2069.
- Alt 2C
    - Widen KY 2069 to 3 lanes,
    - New 3-Lane Section from KY 2069 to School,
    - New 5-Lane Section from School to KY 192,
    - New entrance to schools,
    - Widen US 25 to 5-lanes from KY 2069 to KY 192, and
    - Widen US 25 to 7-lanes from KY 1006 to KY 2069.
- Alt 2D
    - Widen KY 2069 to 5-Lanes,
    - New 5-Lane Section From KY 2069 to KY 192,
    - Build new entrance to schools,
    - Widen US 25 to 5-lanes from KY 2069 to KY 192, and
    - Widen US 25 to 7-lanes from KY 1006 to KY 2069.

Table 13: Alternative 2 Synthesized Model Output

Route	From	To	Alt 2A 2030 ADT	Alt 2A 2030 LOS	Alt 2B 2030 ADT	Alt 2B 2030 LOS	Alt 2C 2030 ADT	Alt 2C 2030 LOS	Alt 2D 2030 ADT	Alt 2D 2030 LOS
US 25	KY 192	School	18760	E	18520	E	27470	C	29060	C
US 25	School	KY 2069	16200	E	15920	E	22740	C	25160	B
US 25	KY 2069	KY 1006	36700	E	36510	C	46460	C	25360	C
KY 2069	US 25	New Northern Route	25240	F	26150	C	26000	E	23940	C
KY 2069	New Northern Route	New School Entrance	26340	F	25930	C	23670	E	19960	C
KY 2069	New School Entrance	KY 192	32900	C	32890	C	26800	C	23660	C
KY 2069	New Northern Route	KY 1006	3320	B	3300	C	3800	C	4090	C
KY 229	New Eastern Route	James Lewis Dr	17340	E	17370	E	12470	E	12930	E
KY 229	James Lewis Dr	KY 192	19540	E	19670	E	16910	E	16520	E

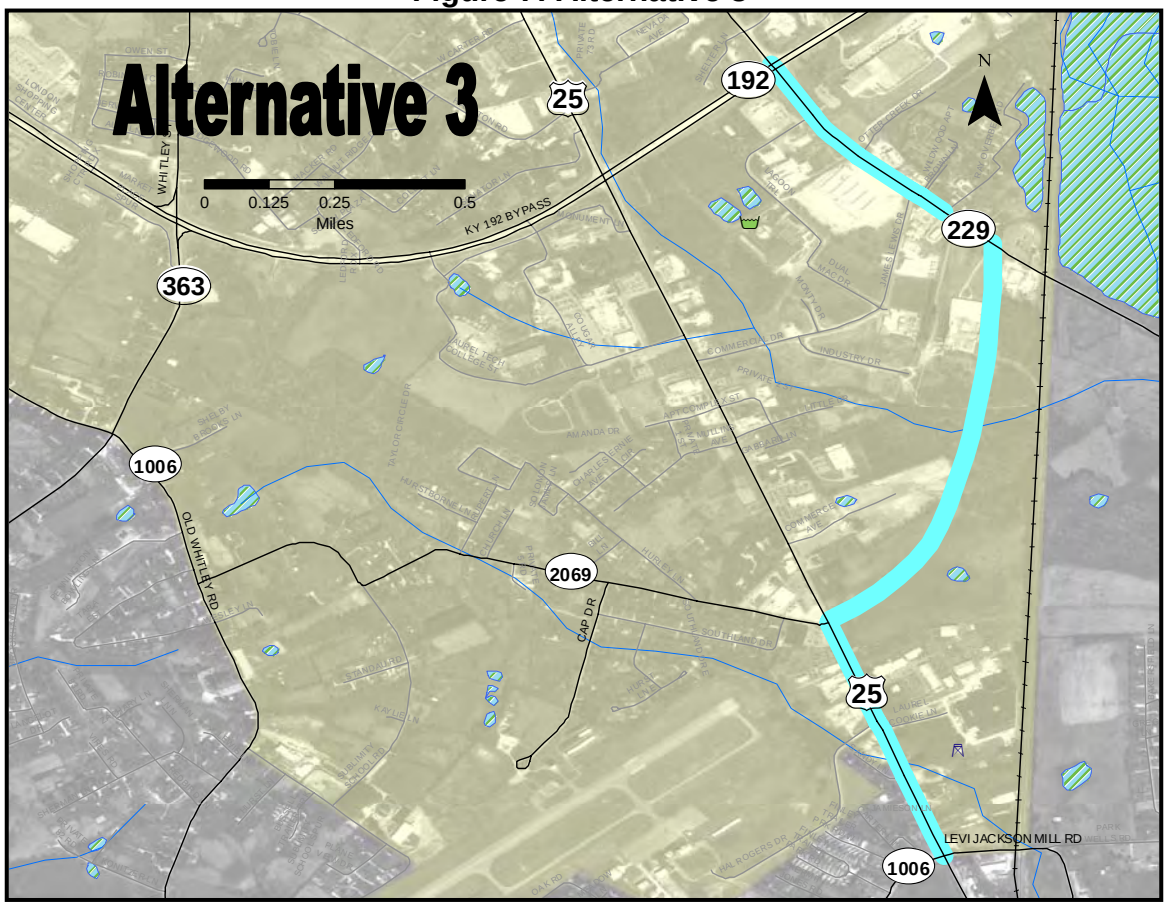
This alternative does make a significant impact to the congestion on US 25 after both KY 2069 and US 25 have been widened and KY 2069 tied in directly to KY 192. Widening of KY 2069 would require numerous relocations and would also change the residential characteristic of the roadway. Local officials stated that they expect residents in the area to be in favor of upgrading KY 2069 to a three-lane section, but residents would be against widening to five lanes. Officials also stated that their top priority was improving traffic conditions at the school complex, and were in favor of providing a back entrance to the school. Due to the large volume of traffic entering and leaving the school complex, a new back entrance should be included with any improvements to US 25 in the area.

D. Alternative 3

Alternative 3 possible improvements include (See highlighted portion of Figure 7):

- Widen US 25 from KY 1006 to KY 2069,
- New highway from US 25 to KY 229, and
- Widen KY 229 from New Route to KY 192.

Figure 7: Alternative 3



This alternative was evaluated two different ways, with both evaluations shown in Table 14.

- Alt 3A
  - Widen US 25 to 5-lanes from KY 1006 to KY 2069,
  - New 3-Lane Section from US 25 to KY 229, and
  - Widen KY 229 to 5-lanes from New Route to KY 192.
- Alt 3B
  - Widen US 25 to 5-lanes from KY 2069 to KY 192,
  - Widen US 25 to 7-lanes from KY 1006 to KY 2069,
  - New 3-Lane Section from US 25 to KY 229, and
  - Widen KY 229 to 5-lanes from New Route to KY 192.

Table 14: Alternative 3 Synthesized Model Output

Route	From	To	Alt 3A 2030 ADT	Alt 3A 2030 LOS	Alt 3B 2030 ADT	Alt 3B 2030 LOS
US 25	KY 192	School	32950	F	37110	D
US 25	School	KY 2069	28450	F	29530	C
US 25	KY 2069	KY 1006	35350	B	42050	C
KY 2069	US 25	New Northern Route	6100	C	6070	C
KY 2069	New Northern Route	KY 1006	5360	C	5290	C
KY 2069	US 25	KY 229	8700	D	10390	D
KY 229	New Eastern Route	James Lewis Dr	24330	C	24260	C
KY 229	James Lewis Dr	KY 192	28030	C	27270	C

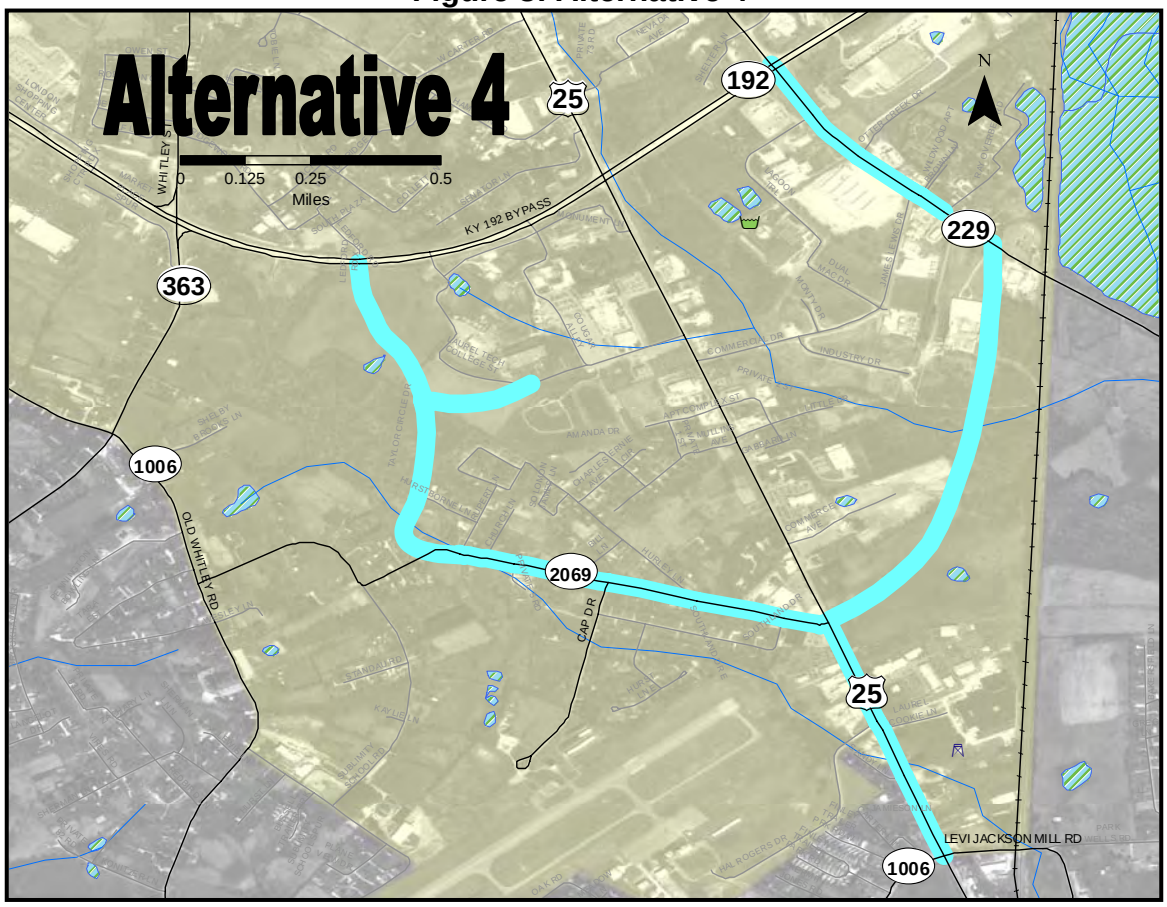
According to the model, Alternative 3 does significantly improve the traffic flow in the project area. Building a new easterly route that connects US 25 directly to KY 229 with a new three-lane route seems to be a very feasible and beneficial alternative. This new route is expected to require very few, if any, displacements. This alternative does not significantly improve the traffic situation at the school complex, but certainly should be considered.

E. Alternative 4

Alternative 4 possible improvements include (See highlighted portion of Figure 8):

- Widen KY 2069
- New highway from KY 2069 to KY 192
- New entrance to schools
- Widen US 25 from KY 1006 to KY 2069
- New highway extending KY 2069 northeasterly to KY 229
- Widen KY 229 from the new route to KY 192

Figure 8: Alternative 4



This alternative was evaluated four different ways, with each evaluation shown in Table 15.

- Alt 4A
  - Widen KY 2069 to 3 lanes,
  - New 3-lane section from KY 2069 to rear school entrance,
  - New 5-lane section from rear school entrance to KY 192,
  - New entrance to schools,
  - Widen US 25 to 7-lanes from KY 1006 to KY 2069,
  - New 3-lane section extending KY 2069 northeasterly to KY 229, and
  - Widen KY 229 to 5-lanes from new route to KY 192.
- Alt 4B
  - Widen KY 2069 to 5-lanes,
  - New 5-Lane section from KY 2069 to KY 192,
  - Build new entrance to schools,
  - Widen US 25 to 7-lanes from KY 1006 to KY 2069,
  - New 3-lane Section from US 25 to KY 229, and
  - Widen KY 229 to 5-lanes from new route to KY 192.
- Alt 4C
  - Widen US 25 to 5-lanes from KY 2069 to KY 192,

    - Widen US 25 to 7-lanes from KY 1006 to KY 2069,
    - Widen KY 2069 to 3-Lanes,
    - New 3-lane section from KY 2069 to rear school entrance,
    - New 5-lane section from rear school entrance to KY 192,
    - Build new entrance to schools,
    - New 3-lane section from US 25 to KY 229, and
    - Widen KY 229 to 5-lanes from new route to KY 192.
- Alt 4D
    - Widen US 25 to 5-lanes from KY 2069 to KY 192,
    - Widen US 25 to 7-lanes from KY 1006 to KY 2069,
    - Widen KY 2069 to 5-Lanes,
    - New 5-lane section from KY 2069 to KY 192,
    - Build new entrance to schools,
    - New 3-lane section from US 25 to KY 229, and
    - Widen KY 229 to 5-lanes from new route to KY 192.

Table 15: Alternative 4 Synthesized Model Output

Route	From	To	Alt 4A 2030 ADT	Alt 4A 2030 LOS	Alt 4B 2030 ADT	Alt 4B 2030 LOS	Alt 4C 2030 ADT	Alt 4C 2030 LOS	Alt 4D 2030 ADT	Alt 4D 2030 LOS
US 25	KY 192	School	19390	E	15040	E	23430	C	24920	C
US 25	School	KY 2069	12080	E	10910	E	16850	C	19410	B
US 25	KY 2069	KY 1006	35530	B	35090	B	44340	C	44350	C
KY 2069	US 25	New Northern Route	21990	E	22790	C	22970	E	21450	C
KY 2069	New Northern Route	New School Entrance	23160	E	23600	C	22750	E	19700	C
KY 2069	New School Entrance	KY 192	26950	C	27750	C	25650	C	23660	C
KY 2069	New Northern Route	KY 1006	3550	C	3770	B	4040	C	4180	B
KY 2069	US 25	KY 229	7040	D	7470	D	6730	D	6820	D
KY 229	New Eastern Route	James Lewis Dr	20820	B	21100	C	17810	B	17950	B
KY 229	James Lewis Dr	KY 192	22270	B	24740	C	21500	B	21620	B

Alternative 4 does significantly improve the traffic flow on US 25 between KY 1006 and KY 192. This alternative moves traffic off the main route to routes east and west. This alternative also greatly improves the traffic flow at the school complex by not only decreasing the congestion on US 25, but also providing a back entry into the schools. Alternative 4D requires widening existing KY 2069 to 5-lanes, which is undesirable due to the residential nature of the street. Alternative 4C is preferred since it only requires 3-laning KY 2069, but another alternative should be looked at to avoid using KY 2069 for development. Alternative 4C, modified to not include improving KY 2069, but still building a back connection from the school complex, is the preferred alternative.

F. Alternative 5

Alternative 5 improvements include (See highlighted portion of Figure 9):

- Turn US 25 into one-way couplet system from KY 2069 to just south of KY 192, with 3-lanes in each direction
- Widen US 25 to 7-lanes from KY 1006 to KY 2069

Figure 9: Alternative 5

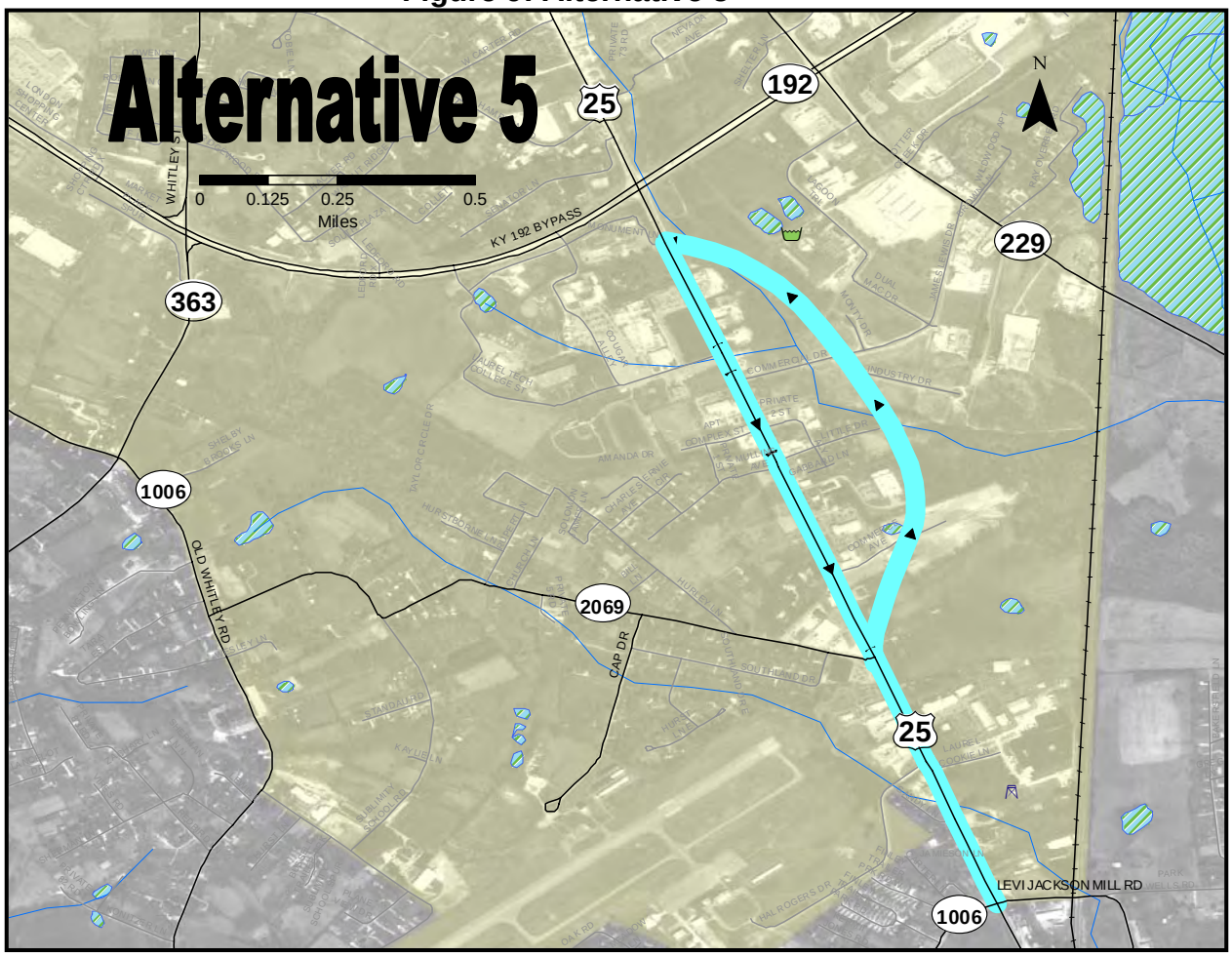


Table 16: Alternative 5 Synthesized Model Output

Route	From	To	Alt 5 2030 ADT	Alt 5 2030 LOS
US 25	KY 192	School	N-23630/S-22750	C
US 25	School	KY 2069	N-22080/S-19770	C
US 25	KY 2069	KY 1006	42760	C
KY 2069	US 25	New Northern Route	5850	C
KY 2069	New Northern Route	KY 1006	5170	C
KY 229	New Eastern Route	James Lewis Dr	14110	E
KY 229	James Lewis Dr	KY 192	17620	E

Alternative 5 does greatly improve the traffic flow along US 25, but was not desirable to local officials. The local officials present at the officials meeting did not want to separate the traffic, and they believe businesses in the area will be against Alternative 5. This alternative would also be highly complicated, expensive, and difficult to build due to the recent and planned future expansions of the sewage treatment plant just east of US 25.

VII. RECOMMENDATIONS

A. Project Team Recommendations

On December 15, 2005, the project team met for the final team meeting. A copy of the minutes is included in Appendix C. The team made the following observations:

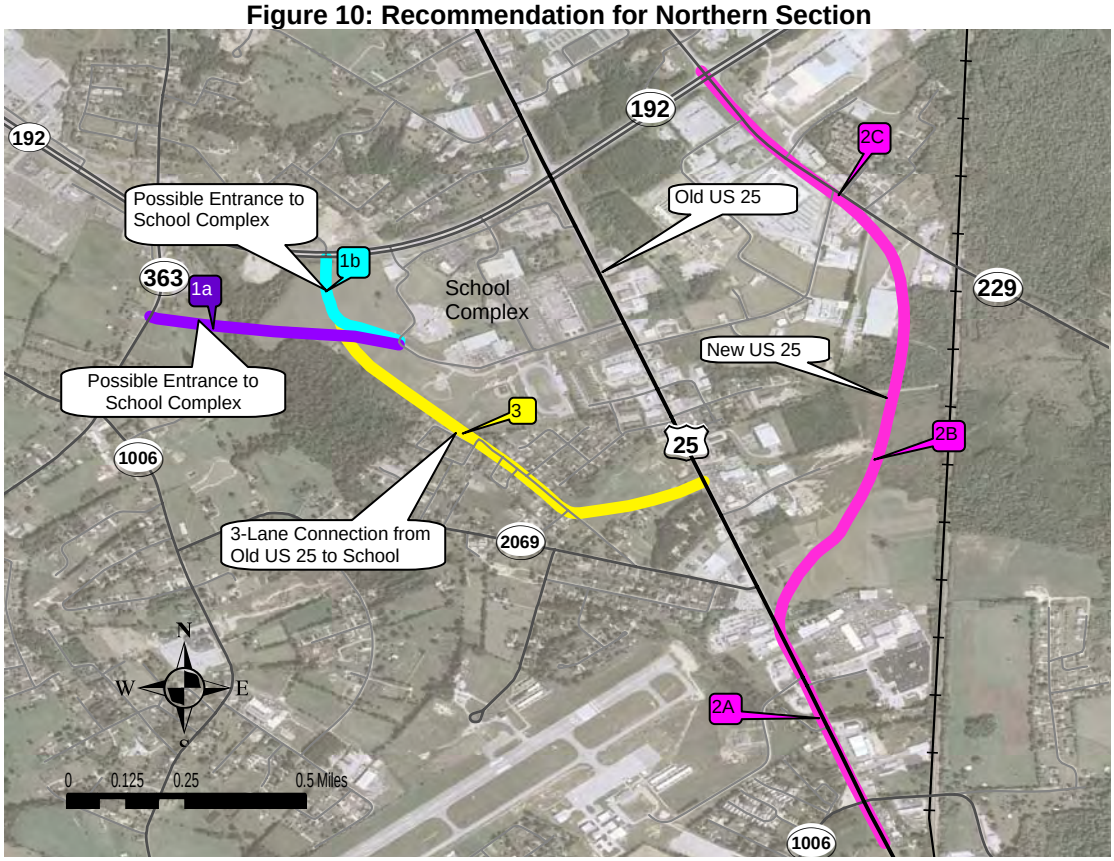
- The northern section of the project (KY 1006 to KY 192) is the most critical portion of the project.
- A 7-lane section from KY 1006 to KY 192 would be needed to handle the traffic, but is not feasible due to the current development in the area.
- The design year for this study will be 2030. The projected average daily vehicular traffic in 2030 ranges from 21,300 to 41,000 vehicles per day, with the highest volumes being between South Laurel High School and KY 192.

The team made the following recommendations:

- Coordination attempts should be made with the local city and county planners to develop an access management ordinance to maintain and improve access conditions on US 25, KY 192, KY 229, KY 2069, and KY 1006.
    - Develop an access management plan specifying medians, median opening location and design (both current and future), intersection design at full-median openings, current access points, future access points, and future access roads to be built along with future development.
    - Establish an advisory team made up of local roadway users, residents, and business owners to make access-related recommendations to the KYTC Design Team.
    - Develop a Memorandum of Understanding (MOU) between KYTC, the City of London, and Laurel County that will legally establish the access management plan as policy rather than simply guidance. The MOU will also establish procedure for review and decision making of access requests.
- The design speed should be 45 mph in the urban areas and 55 mph in rural areas.
- US 25 from US 25E to KY 1006 should be expanded to a 4-lane rural highway that meets current design standards.
- Bikeways/Pedways should be provided in urban areas and in the vicinity of the schools. Shoulders that meet current design standards can be used as bikeways for the rural sections of US 25.
- The functional classification of the highway should be a minor arterial throughout. The section of highway between KY 1006 and KY 192 would be classified as an urban minor arterial highway and the remainder classified as a rural minor arterial highway.

- For the northern section of the project (KY 1006 to KY 192), the recommendations and priorities from the officials meeting were generally agreed upon with a few minor changes (see Figure 3 for recommendations from the officials meeting). The following are the teams recommendations (see Figure 10 for clarification):
  1. Construct a back entrance to the school complex connecting the school to either the KY 192 Bypass or to KY 363 (Shown in Figure 10 as 1a and 1b). This connection needs to be determined 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 sufficient 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:
        - Widen to 4 thru lanes
        - Add a non-traversable median with controlled left turns and U-turn capabilities (see Appendix H, Median Guidelines)
        - Add right turning lanes for both the North and Southbound lanes
     b. Reroute US 25 with a new route from KY 2069 to KY 229
        - New 4-lane access controlled highway
        - Rework US 25/KY 2069 to provide a “T” intersection
        - Realign KY 229 to create a “T” shaped intersection with the new US 25.
     c. Widen KY 229 from the new intersection with US 25 to KY 192
        - Improve to a four-lane access controlled highway.
  3. Provide a new connection between the school and old US 25 by using part of Hurley Lane (approximately 0.3 miles) and an undeveloped plot of land adjacent to US 25. (This alternative was not discussed at the officials meeting, but due to their concerns over expanding KY 2069 this was evaluated after the meeting. Using this connection will give access to the back entrance of the school complex from US 25 and cause much less of a negative impact than using KY 2069 to make this connection.)

Figure 10: Recommendation for Northern Section

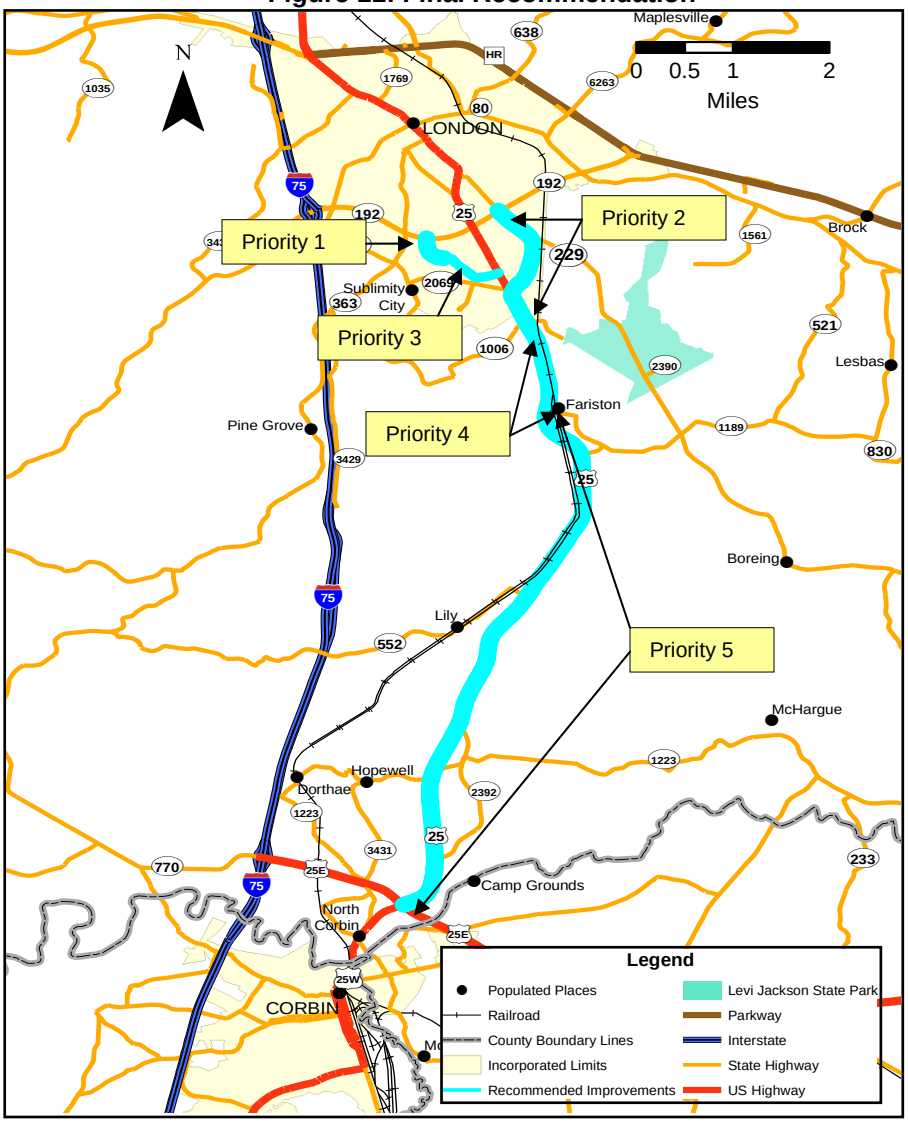


B. Priority Segments and Cost Estimates

It is recommended that the priorities for subsequent project development phases of this project be as follows:

1) Construct back entrance to the school complex connecting the school to KY 192 or KY 363.
2) Reconstruct/reroute US 25 from KY 1006 to KY 192 as shown in Figure 10.
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.
4) Expand US 25 between KY 1189 and KY 1006 to a 4-lane rural highway.
5) Expand US 25 between US 25E and KY 1189 to a 4-lane rural highway.

Figure 11: Final Recommendation



C. Programming Estimates

For programming purposes, priority segments one and two are recommended to be grouped together and moved forward as one project at an estimated total cost of $10,000,000. After these improvements have been made, priority Segment Three should be reevaluated to determine if the priorities have changed. It should be determined at that time if priority Segment Three is still needed, and if the priorities are still the same.

Table 17: Programming Estimates

Cost Data by Priority Segment							
Priority Segment	**Length (miles)**	**Design**	**ROW**	**Utilities**	**Construction**	**Cost/ Mile**	**Total**
1	0.25	$500,000	$250,000	$100,000	$900,000	$7,000,000	$1,750,000
2	1.75	$2,325,000	$1,200,000	$475,000	$4,250,000	$4,714,286	$8,250,000
3	0.50	$1,000,000	$500,000	$200,000	$1,800,000	$7,000,000	$3,500,000
4	2.10	$1,500,000	$2,900,000	$1,000,000	$8,000,000	$6,380,952	$13,400,000
5	7.00	$4,000,000	$5,000,000	$3,000,000	$23,000,000	$5,000,000	$35,000,000
Total	11.60	$9,325,000	$9,850,000	$4,775,000	$37,950,000	$5,336,207	$61,900,000

Note: These cost estimates assume that priority one will connect the school complex to KY 192. If it is decided that the school should connect to KY 363 instead of KY 192, $2 million should be added to the total cost of priority one in order to account for increased project length, utility expenses, and improvements to KY 363.

VIII. CONTACTS

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

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