

# **PROGRAMMING STUDY**

## **US 62 FROM LEITCHFIELD TO CLARKSON**

### **GRAYSON COUNTY**

#### **ITEM NUMBER 4-8303.00**

**Kentucky Transportation Cabinet**  
**Division of Planning**  
**August 2008**



## **EXECUTIVE SUMMARY**

### Programming Study

Grayson County – Item Number 4-8303

US 62 from Leitchfield to Clarkson

This programming study was conducted to develop and evaluate alternatives for improving US 62 in Grayson County, starting at KY 3155 in eastern Leitchfield and ending approximately 2.5 miles west at KY 224 in Clarkson. This study was developed using a project team approach, with the project team being composed of personnel from the Kentucky Transportation Cabinet's Central Office and Elizabethtown Highway District Office, and the Lincoln Trail Area Development District. The process of developing this programming study included analyzing existing roadway and traffic conditions; developing a draft purpose and need statement; coordinating with resource agencies to identify their concerns related to transportation improvements in the area; investigating environmental concerns in the area, including environmental justice and community impacts; and developing and evaluating potential improvement alternatives. No public involvement was included as part of this study.

This segment of US 62 serves a large number of vehicles traveling between Leitchfield and points east, as well as local traffic that uses the route to access the extensive commercial, industrial, and residential developments in the area. The existing two-lane rural route currently handles approximately 11,000 vehicles per day, 7% of which are heavy vehicles, and is expected to carry between 18,000 and 20,000 vehicles per day in Year 2030. This equates to current and future levels of service of D and E, respectively. Several high-crash locations were identified along the route, and there are parking and drainage concerns in the Clarkson area. The goals established for this project are to improve safety, address parking and drainage issues in Clarkson, improve pedestrian access, and reduce delays for through traffic.

Several alternative improvement strategies were identified, including spot improvements and operations projects. Two spot improvements were

considered: Realigning the S-curve near the midpoint of the project and rebuilding the segment of US 62 in the built-up area of Clarkson. However, due to the short length of the project and concerns about abrupt changes in cross-section, the project team recommends rebuilding the entire route at once rather than making spot improvements. Two operations projects were recommended to be carried forward, including making shoulder improvements in the S-curve and at improving sight distance at the KY 88 intersection in the Clarkson area. For a long-term improvement, the project team recommends reconstructing the entire route with an urban cross-section, which would have a total estimated cost of \$15.4 million. Phased cost estimates for the build alternatives that were considered are presented Table ES-1, with the recommended alternative highlighted.

Table ES-1: Cost Estimates for Build Alternatives; Recommended Alternative Highlighted

		Length (miles)	Phased Costs (\$)				Total Cost (\$)
			Design	Right-of-Way	Utilities	Construction	
Rural Per-Mile Costs		1	538,000	1,000,000	880,000	3,500,000	<b>6,000,000</b>
Urban Per-Mile Costs		1	588,000	1,000,000	880,000	4,000,000	<b>6,500,000</b>
<b>Alternative 1: 3-lane urban cross section throughout project</b>	Entire Corridor	2.5	1,470,000	2,500,000	2,200,000	10,000,000	<b>16,300,000</b>
	Clarkson Area	0.7	411,600	700,000	616,000	2,800,000	<b>4,600,000</b>
	S-Curve	0.6	352,800	600,000	528,000	2,400,000	<b>3,900,000</b>
<b>Alternative 2: Mostly 3-lane rural cross section; 3-lane urban section in Clarkson</b>	Entire Corridor	2.5	1,380,000	2,500,000	2,200,000	9,100,000	<b>15,400,000</b>
	Clarkson Area	0.7	411,600	700,000	616,000	2,800,000	<b>4,600,000</b>
	S-Curve	0.6	322,800	600,000	528,000	2,100,000	<b>3,600,000</b>

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## **1.0 INTRODUCTION**

### **1.1 Study Purpose**

The purpose of this programming study is to develop and evaluate alternatives for improving the segment of US 62 in Grayson County from KY 3155 in eastern Leitchfield to KY 224 in Clarkson. This study is intended to provide an estimate of funding needs for potential improvements within the study corridor and to provide information that can be used when and if these improvements are carried forward to the design phase. This study is also intended to satisfy requirements of the National Environmental Policy Act (NEPA) regarding consideration of environmental issues.

The following items were included in the development of this study:

- Analyze existing roadway and traffic conditions, and identify concerns that should be addressed;
- Coordinate with resource agencies to identify their concerns related to transportation improvements in the study corridor;
- Develop a draft Purpose and Need Statement;
- Investigate environmental concerns in the study area, including environmental justice and community impacts;
- Develop and evaluate potential improvement alternatives; and
- Recommend improvements to be carried forward.

### **1.2 Study Process**

This study was conducted using a project team approach. The project team included representatives from the Kentucky Transportation Cabinet (KYTC) Central Office, the KYTC Elizabethtown Highway District Office, and the Lincoln Trail Area Development District (LTADD). In addition, agency coordination was conducted to solicit input from a variety of resource agencies.

Two project team meetings were conducted. At the initial project team meeting held on May 1, 2007, existing conditions were reviewed, issues and concerns

were identified, and goals and objectives were defined. At the second project team meeting held on February 28, 2008, a draft purpose and need statement was developed, several improvement alternatives were discussed, environmental and community concerns and resource agency responses were reviewed, and a final recommendation was made. Complete minutes for these meetings are included in Appendix B.

### 1.3 Programming

This study was funded in the *Enacted Six-Year Highway Plan 2007-2012* as Item Number 04-8303.00, "Reconstruct US-62 from Leitchfield to Clarkson," with beginning and ending mile points of 23.000 and 25.463, respectively. No funding is programmed for future project phases at this time. On the Unscheduled Projects List, improving US 62 between Leitchfield and Clarkson is ranked as the top local priority, the second highest regional priority, and the fifth highest priority at the district level.

## **2.0 EXISTING CONDITIONS**

### 2.1 Project Location

The project begins at the intersection of KY 3155, the William Thomason Byway, in eastern Leitchfield and continues in an easterly direction to the intersection of KY 224, East Main Street, in Clarkson. The total length of this corridor is approximately 2.5 miles. Exhibit 1 in Appendix A contains a map showing the project location.

Land use along the study corridor consists of a mixture of residential, commercial, and industrial developments. In general, the western portion of the study corridor contains primarily low-density residential development. Several industrial and commercial developments are concentrated near the midpoint of the project. The eastern end of the project, near Clarkson, is the most heavily developed and consists of a mixture of residential and commercial properties. Farms and undeveloped land are scattered throughout the area.

## 2.2 Roadway Characteristics

Data related to the existing roadway characteristics for this section of US 62 was obtained from the Division of Planning's Highway Information System (HIS) database. Additional information on existing conditions was obtained from field visits and meetings with personnel from the Highway District Office in Elizabethtown. Exhibit 2 in Appendix A contains photographs illustrating the existing conditions.

This section of US 62 is classified in the State System as a state secondary route. The portion of the route within the Leitchfield city limits is functionally classified as an urban minor arterial street, and the remainder is functionally classified as a rural major collector. The truck weight class is AAA, and the route is not on the National Highway System. The speed limit is 55 miles per hour (MPH), except in the Clarkson area at the eastern end of the project, where it is reduced to 35 MPH.

The terrain in this area ranges from flat to rolling, with vertical grades exceeding 2.5% in only one quarter-mile segment, where they fall within the 2.5% to 4.4% range. Horizontal curvature is generally mild; the main exception is an S-curve near the Walter T. Kelley Company Beehive Factory. The Oak Wood Lane intersection is located at the western end of this curve. This curve was identified by the project team as a significant safety concern.

The existing cross section consists primarily of two ten-foot through lanes, with two-foot paved shoulders. Left-turn lanes exist at the KY 3155 intersection and in the S-curve near the Beehive Factory. In the Clarkson area, the shoulders have been widened to accommodate on-street parking. However, this additional paved area combined with the generally flat terrain has led to drainage problems in the area. Isolated sidewalks exist along US 62 in the Clarkson area, but they do not provide good continuity for pedestrian traffic. Outside of Clarkson, a



railroad track runs parallel to US 62. US 62 diverges away from the railroad track near the S-curve and in the Clarkson area.

Due to the extensive roadside development, the access point density outside of Clarkson is quite high at approximately 30 access points per mile. Within the Clarkson area, the access point density is even higher. A high access point density can adversely affect traffic operations and safety.

### 2.3 Traffic Characteristics

Two traffic count stations are located within this section of US 62. Station 321 covers the section from the beginning of the study limits at MP 23.000 to the outskirts of Clarkson at MP 25.249. Station C07 covers the remainder of the study area. Average daily traffic (ADT) for these two count stations, measured in vehicles per day (vpd), were obtained from the Division of Planning's Traffic and Equipment Management Branch. ADT values were available from 1978 to 2005 for Station 321, and from 1980 to 2004 for Station C07. This historic data was used to calculate growth rates for each station and to estimate current (Year 2007) and future (Year 2030) ADT values for each station. The results of this analysis are presented in Table 1.

Table 1: Traffic Volumes and Levels of Service

Segment Description		KY 3155 (MP 23.000) to KY 88 (MP 25.249)	KY 88 (MP 25.249) to KY 224 (MP 25.463)
Count Station		321	C07
Year 2007	ADT (vpd)*	10,600	11,000
	DHV (vph)†	1,220	Not Calculated
	LOS‡	D	Not Calculated
Annual Growth Rate		2.3%	2.6%
Year 2030	ADT (vpd)*	17,900	20,100
	DHV (vph)†	1,790	Not Calculated
	LOS‡	E	Not Calculated
Notes:			
* Average Daily Traffic, which has units of vehicles per day			
† Design Hour Volume, which has units of vehicles per hour			
‡ Level of Service			

A special traffic count was performed as part of this planning study to determine the percentage of heavy trucks in the traffic stream. Based on data obtained on April 25, 2005, heavy trucks make up 7% of the peak hour traffic. Data obtained from this traffic count is provided in Appendix C.

The segment from KY 3155 to KY 88 includes over 90% of the length of the study corridor. For this segment, the Average Daily Traffic (ADT) volumes were factored to obtain Design Hour Volumes (DHV) for both 2007 and 2030. These Design Hour Volumes were then used in combination with known roadway and traffic characteristics to calculate the level of service (LOS) for both the existing and future design hours. LOS is a subjective measurement of how well a transportation facility is operating, and ranges from A, which indicates free-flow conditions, to F, which indicates that the traffic demand exceeds the capacity of the facility. A design hour level of service of C is considered acceptable in rural areas, while a level of service D is acceptable in urban areas. For rural two-lane highways such as US 62, level of service is based primarily on percent time spent following. Using the HCS+ computer program for two-lane highways, the 2007 design hour level of service was found to be D. The 2030 design hour level of service is expected to drop to E if no improvements are made. Printouts containing the details of the LOS analysis are included in Appendix C.

The segment of US 62 from KY 88 to KY 224 includes less than 10% of the study corridor. The land adjacent to this short segment is heavily developed, and there are numerous access points, including a signalized intersection at KY 224. For this reason, it would be inappropriate to perform a rural two-lane highway level of service analysis for this segment. Instead, level of service will be controlled primarily by intersection delays. Because the information required to perform such an analysis was not readily available, and because of the short length of this segment in relation to the remainder of the project, no design hour volumes or levels of service were calculated for this segment. However, intersection level of service should be taken into consideration during the design phase when turning movement volumes are available.

Traffic information is presented graphically in Exhibit 3 in Appendix A.

## 2.4 Safety

Crash data was used to calculate critical rate factors in accordance with the procedure described in *Analysis of Traffic Crash Data in Kentucky (2001-2005)*, published by the Kentucky Transportation Center. A critical rate is the crash rate for a given type of roadway at which it can be said with 99.5% certainty that crashes are not occurring at random. A critical rate factor (CRF) is the ratio of the actual crash rate at the location of interest to the critical rate; therefore, a CRF approaching or greater than 1.00 indicates that there is a high probability that crashes are due to some factor other than random chance. The data used in this analysis was obtained from the Collision Reports Analysis for Safer Highways (CRASH) database maintained by the Kentucky State Police for the time period beginning on January 1, 2004 and ending on December 31, 2006.

Critical rate factors for relatively long segments of the study corridor were calculated to determine the overall level of safety throughout the corridor. The study corridor was divided into three segments based on changes in functional classification and traffic volumes. The results of this analysis are presented in Table 2. The only segment of concern is the segment between KY 88 and KY 224 in the Clarkson area, which has a CRF of 0.99. This segment of the study corridor has a number of closely spaced intersections, including a signalized intersection at KY 224, as well as on-street parking.

Table 2: Summary of Crash Data for Segments

Segment Begin Point	Segment End Point	Average Daily Traffic (vpd)	Number of Crashes on Segment (Jan. 2004 - Dec. 2006)				Segment Total Crash Rate (per HMVM)	Critical Crash Rate	Critical Rate Factor
			Fatality Crashes	Injury Crashes	Property Damage Only	Total Crashes			
MP 23.000	MP 23.777	10,110	0	6	15	21	244	392	0.62
MP 23.777	MP 25.249 (KY 88)	10,110	0	8	21	29	178	329	0.54
MP 25.249 (KY 88)	MP 25.463 (KY 224)	10,410	0	4	8	12	492	499	0.99

Critical rate factors were also calculated for one-tenth-mile spots along the corridor. Three spots were found to have a CRF greater than 1.00. One of these spots is located near the western limits of the study area, while the other two are located in the Clarkson area. In addition, the spot from MP 24.0 to MP 24.1, which is located in the S-curve near the Beehive Factory, has a critical rate factor approaching 1.00, indicating that this is a potentially high-crash location. A summary of the crash data for high-crash spots is presented in Table 3.

Table 3: Summary of Crash Data for High-Crash Spots

Milepoint Range	Intersecting Road(s)	Average Daily Traffic	Number of Crashes at Spot (Jan. 2004 - Dec. 2006)				Spot Total Crash Rate	Critical Crash Rate	Critical Rate Factor
			Fatality Crashes	Injury Crashes	Property Damage Only	Total Crashes			
23.1 to 23.2	Entrance	10,110	0	3	5	8	0.7	0.68	1.06
24.0 to 24.1	Commercial Entrance; Driveways	10,110	0	4	3	7	0.6	0.65	0.98
25.2 to 25.3	KY 88	10,260	0	0	11	11	1.0	0.64	1.52
25.37 to 25.47	KY 2191 S. PATTERSON ST. SPRING STREET KY 224	10,410	0	4	4	8	0.7	0.64	1.10

Detailed crash information for the high-crash spots is presented in Table 4 and summarized below:

- The spot from MP 23.1 to MP 23.2 is located near the western limit of the study area and has a CRF of 1.06. Nothing stands out as a contributing factor at this location. Crashes are almost evenly split between single-vehicle, rear-end, and angle crash types.
- The spot from MP 24.0 to MP 24.1 is located in the S-curve near the Beehive Factory and has a CRF of 0.98. While this is the lowest CRF among the identified high-crash spots, the majority of the crashes at this location involve injuries. Single-vehicle crashes are the most common crash type at this location, indicating that the curvature of the roadway may be a contributing factor.
- The spot from MP 25.2 to MP 25.3 is located at the KY 88 intersection in Clarkson. With a CRF of 1.52, this spot has the highest crash rate among the identified high-crash spots. There are a number of very closely spaced access points at this location, and sight distance is obscured by

utility poles adjacent to the route. Angle crashes make up the majority of crashes at this location.

- The spot from MP 25.37 to MP 25.47 includes the KY 224 intersection and has a CRF of 1.10. A traffic signal was installed at this location in January of 2005, and the on-street parking was converted from angled spaces to parallel spaces. A review of crash data before and after installation of the traffic signal indicates that the crash rate at this intersection was reduced considerably.

Table 4: Crash Details for High-Crash Spots

Milepoint Range		23.1-23.2	24.0-24.1	25.2-25.3	25.37-25.47
Intersecting Road(s)		Entrance	Commercial Entrance; Driveways	KY 88	KY 2191 S. PATTERSON ST. SPRING ST. KY 224
CRF		1.06	0.98	1.52	1.1
Crash Factors		Number of Applicable Crashes at Spot			
Weather	Clear	5	5	5	6
	Cloudy	0	2	4	1
	Rain	2	0	2	1
	Other	1	0	0	0
Roadway Condition	Dry	5	7	7	7
	Wet	2	0	4	1
	Ice/Other	1	0	0	0
Manner of Collision	Angle	3	1	6	1
	Backing	0	0	1	0
	Head-on	0	1	1	1
	Opposing Left Turn	0	0	1	1
	Rear End	2	1	2	3
	Sideswipe	0	0	0	1
	Single Vehicle	3	4	0	1
Light Condition	Dark	2	1	0	1
	Dawn/Dusk	0	2	1	0
	Daylight	6	4	10	7

Exhibit 4 in Appendix A contains a graphical presentation crash information, including the locations of the high-crash spots noted above.

### **3.0 PURPOSE AND NEED**

As part of the State Secondary Highway System, this section of US 62 serves a large number of vehicles traveling between Leitchfield and points east including the town of Clarkson and the Western Kentucky Parkway. The portion of the route within the Leitchfield city limits is functionally classified as an urban minor arterial, while the remainder is classified as a rural major collector.

The existing cross-section consists primarily of two ten-foot-wide travel lanes with narrow shoulders. Extensive development along the corridor has resulted in numerous closely-spaced access points. This causes delays for through traffic and creates a safety hazard in the built-up area of Clarkson. A sharp S-curve near the midpoint of the study corridor has also been identified as a high-crash location. Sidewalks exist only in a few isolated locations. This discourages pedestrian access to homes and business adjacent to the route. In addition, paved parking areas adjacent to US 62 in Clarkson combined with generally flat terrain have created drainage problems in that area. Construction of KY 3155 (the William Thomason Byway) around the east side of Leitchfield has led to increased truck traffic using US 62 to travel between the Western Kentucky Parkway and the industrial park on the north side of Leitchfield. This has created a need to better accommodate trucks, particularly at the KY 224 intersection.

The goals established for this project are to:

- Improve safety;
- Address parking and drainage concerns in Clarkson;
- Improve pedestrian access; and
- Reduce delays for through traffic.

### **4.0 ENVIRONMENTAL CONCERNS**

#### **4.1 Environmental Overview**

Information on potential environmental concerns was obtained through coordination with the KYTC Division of Environmental Analysis (DEA). DEA

completed a checklist addressing concerns related to archaeology; cultural and historic resources; socioeconomic, air quality and noise concerns; underground storage tanks and hazardous waste; ecology; and the need for special permits. This checklist is provided in Appendix D.

The KYTC Division of Planning prepared an environmental footprint based on available data. The environmental footprint, along with a list of environmental features occurring within 500 feet of the existing centerline is provided in Appendix D.

#### 4.2 Environmental Justice and Community Impacts

Environmental justice is required by Executive Order 12898, which was signed on February 11, 1994. This Executive Order 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...." The KYTC also considers elderly populations when evaluating environmental justice.

In order to identify potential environmental justice concerns, an *Environmental Justice and Community Impact Report* was prepared by the Lincoln Trail Area Development District (LTADD) to assess the community demographics within the study area. This report is included in Appendix E. LTADD found no communities that would be adversely affected by a transportation improvement project in this area. However, LTADD will continue to monitor the study area for environmental justice concerns throughout the development of the project.

### **5.0 AGENCY COORDINATION**

The KYTC Division of Planning solicited input regarding this Programming Study from a variety of agencies. Their responses are included in Appendix F and are summarized below.

**U.S. Coast Guard:** A Coast Guard permit is not required.

**U.S. Department of Agriculture, Natural Resources Conservation Service (NCRS):** The agency is concerned about potential impacts to prime farmland soils and additional farmlands of statewide importance. If federal money is used to convert important farmlands from agricultural to non-agricultural use, a form must be submitted to the local NCRS office. The agency provided GIS shapefiles containing basic soils information for Grayson County. KYTC used these shapefiles to generate a map showing basic soils information for the study area. This map is included with the response letter from NCRS.

**U.S. Environmental Protection Agency (EPA), Region 5:** The agency noted that Kentucky is located in Region 4, and stated that future project communications should be directed to that EPA office.

**Kentucky Cabinet for Health and Family Services, Facilities Management Division:** The agency does not own or lease property in the area and therefore does not have any concerns related to the project.

**Kentucky Commerce Cabinet:**

- **Department of Fish & Wildlife Resources:**
  - No federal/state threatened and/or endangered fish and wildlife species are known to occur in the project area.
  - The project has the potential to impact wetland habitats. Appropriate avoidance and/or mitigation measures should be taken.
  - The U.S. Army Corps of Engineers and the Kentucky Division of Water should be contacted prior to any work within waterways or wetland habitats.
  - The agency provided recommended practices for portions of the project that impact streams.
- **Department of Parks:** None of the Department's facilities will be impacted by the study.



**Kentucky Department of Agriculture:** No specific issues or concerns were identified.

**Kentucky Department of Military Affairs:** No specific issues or concerns were identified.

**Kentucky Environmental and Public Protection Cabinet (EPPC):**

- **Department for Environmental Protection:** The Department requested input from several agencies through the State Environmental Review Process. Responses were received from the EPPC Division of Water, Division of Waste Management, Division for Air Quality, and Department for Natural Resources. The comments received from these agencies are summarized individually.
- **Department for Natural Resources:** This agency provided comments both through the State Environmental Review Process and to the KYTC Division of Planning directly. The agency notes that the project is located in an area of known oil and gas exploration activity, and the agency provided a map from the Kentucky Mine Mapping Web site showing several oil and gas wells in the area.
- **Division for Air Quality:** The agency calls attention to Regulation **401 KAR 63:010** and Regulation **401 KAR 63:005**, which relate to fugitive emissions and open burning, respectively. 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 United States Code. An investigation into compliance with applicable local government regulations is also suggested.
- **Division of Conservation:** There are no agricultural districts established along the project area. However, the agency would like to see the issue of loss of farmland addressed and has listed resources for identifying farmland designations. In addition, the agency has concerns about erosion and sedimentation during and after earth-disturbing activities and

recommends that best management practices be utilized to prevent nonpoint source water pollution.

- **Division of Waste Management:** Solid waste generated by the project must be disposed of at a permitted facility. If encountered, underground storage tanks, asbestos, lead paint, and other contaminants must be properly addressed.
- **Division of Water:** The agency endorses the project. The project is located in karst terrain, and the agency has provided measures that should be taken to protect the area's groundwater. No floodplain or dam safety issues were identified.

#### **Kentucky Justice and Public Safety Cabinet**

- **Kentucky State Police:** The agency provided a summary of collisions on US 62 in the study area from January 1, 2006 to July 31, 2007 which shows that there were a total of eleven injury collisions during this time period. The agency notes that the area is heavily traveled due to the presence of schools and factories, with the heaviest daily travel periods from 7:00 to 8:00 A.M. and from 3:00 to 4:30 P.M. A list of factories using US 62 was also provided.
- **Kentucky Vehicle Enforcement:** The agency did not identify any concerns related to the project.

#### **Kentucky Transportation Cabinet**

- **Geotechnical Branch:** The branch provided an overview of the geological formations present in the study area. It was noted that most of the project is underlain by the Leitchfield Formation and will probably require a chemically modified roadbed. The branch also noted that a fault is present in the study area which may require special measures. A map was provided by the branch showing geological features within the study area.

- **Kentucky Airport Zoning Commission:** If any construction equipment exceeds 200 feet above ground level, a permit will have to be obtained prior to use.
- **Office of Special Programs:** The office notes that the shoulders are currently two feet wide and recommends a minimum of four feet of paved shoulders beyond any rumble strips to accommodate cyclists. The office also recommends placing “Share the Road” signs to alert motorists to the possible presence of cyclists.
- **Permits Branch:** The branch provided a list of encroachment and recycler permits issued since 1994. The branch provided recommendations for implementing partial access control, if applicable, and requested to be notified if portions of the project are designated as partial control access or if the proposed roadway is to be placed on the National Highway System.

**University of Kentucky, Kentucky Geological Survey:** The agency provided a summary of geologic concerns in the study area. The main concerns appear to be karst features and faulted areas.

## **6.0 ALTERNATIVES CONSIDERED**

The project team considered several alternatives for the section of US 62 between Leitchfield and Clarkson, including the no-build alternative. These alternatives are discussed in detail below. Cost estimates for the design, right-of-way, utilities, and construction phases for each of the build alternatives are provided in Table 5. The assumed cross-sections that were used to generate these cost estimates are presented in Exhibit 5 in Appendix A.

### **6.1 No-Build Alternative**

This alternative would involve no reconstruction within the study corridor. This alternative would be the least expensive in terms of up-front costs and would have the least community and environmental impacts. However, this alternative would not adequately address the project goals of improving safety, addressing

parking and drainage concerns in Clarkson, improving pedestrian access, and reducing delays for through traffic.

## 6.2 Long-Term Improvements

Two long-term alternatives to improve the entire corridor were considered. These alternatives are discussed in detail below and are presented graphically in Exhibits 6 and 7 in Appendix A.

- Alternative 1: In this alternative, the entire route would be reconstructed with a three-lane urban cross-section consisting of one through lane in each direction, a two-way left-turn lane, sidewalks, and curb and gutter. The reconstructed route would generally follow the existing route, with the exception of the S-curve near the Walter T. Kelley Company Beehive Factory, which would be built on a new alignment. This alternative would provide good pedestrian access throughout the project, improve drainage in the Clarkson area, and reduce delays. Parking needs in the Clarkson area would also be addressed depending on the available right-of-way. The improved cross-section, the realignment of the S-curve, and the improved drainage in the Clarkson area should improve safety, and intersections with US 62 would be improved to meet current standards of sight distance and turning radii. The total estimated cost for this alternative is \$16.3 million.
- Alternative 2: This alternative is identical to Alternative 1, except that the portion of US 62 outside of the Clarkson area would be constructed with a three-lane rural cross-section instead of a three-lane urban cross-section. This alternative would provide good pedestrian access and improved drainage in the Clarkson area, and would reduce delays throughout the corridor. Parking needs in the Clarkson area would be addressed depending on the available right-of-way. Pedestrian access outside of the Clarkson area could be provided either on wider shoulders, which were assumed in calculating the cost estimates, or on a separate multi-use path. The improved cross section, the realignment of the S-curve, and the

improved drainage in the Clarkson area should improve safety, and intersections with US 62 would be improved to meet current standards of sight distance and turning radii. The total estimated cost for this alternative is \$15.4 million dollars.

### 6.3 Short-Term Improvements

Two potential short-term improvement locations were identified: The S-curve near the Walter T. Kelley Company Beehive Factory and the downtown Clarkson area. These alternatives are described in detail below, and their locations are shown in Exhibit 8 in Appendix A.

- S-Curve: This improvement would begin at approximately MP 23.6 and would end at approximately MP 24.2. This improvement would address safety problems, including the high-crash spot from MP 24.0 to MP 24.1. The realigned curve, including a short approach road to access the existing route, would have a length of approximately 0.6 mile and would cost an estimated \$3.9 million if rebuilt with a three-lane urban cross-section, or \$3.6 million if rebuilt with a three-lane rural cross-section.
- Clarkson Area: This improvement would begin at approximately MP 24.8 and would end at the KY 224 intersection at approximately MP 25.5. This section would be rebuilt with a three-lane urban cross-section with curb and gutter and sidewalks. Parking would be considered depending on the available right-of-way, and intersections would be improved to meet current standards of sight distance and turning radii. This improvement would reduce delays, address the drainage and parking issues in Clarkson, improve safety at two high-crash spots (the KY 88 and KY 224 intersections), and improve truck access at the KY 224 intersection. This project has a length of approximately 0.7 mile and an estimated cost of \$4.6 million.

Table 5: Cost Estimates for Build Alternatives

		Length (miles)	Phased Costs (\$)				Total Cost (\$)
			Design	Right-of-Way	Utilities	Construction	
Rural Per-Mile Costs		1	538,000	1,000,000	880,000	3,500,000	<b>6,000,000</b>
Urban Per-Mile Costs		1	588,000	1,000,000	880,000	4,000,000	<b>6,500,000</b>
<b>Alternative 1: 3-lane urban cross section throughout project</b>	Entire Corridor	2.5	1,470,000	2,500,000	2,200,000	10,000,000	<b>16,300,000</b>
	Clarkson Area	0.7	411,600	700,000	616,000	2,800,000	<b>4,600,000</b>
	S-Curve	0.6	352,800	600,000	528,000	2,400,000	<b>3,900,000</b>
<b>Alternative 2: Mostly 3-lane rural cross section; 3-lane urban section in Clarkson</b>	Entire Corridor	2.5	1,380,000	2,500,000	2,200,000	9,100,000	<b>15,400,000</b>
	Clarkson Area	0.7	411,600	700,000	616,000	2,800,000	<b>4,600,000</b>
	S-Curve	0.6	322,800	600,000	528,000	2,100,000	<b>3,600,000</b>

## **7.0 RECOMMENDATIONS**

### **7.1 Long-Term Improvements**

The project team recommends that Alternative 1 be carried forward as a long-term improvement strategy for the US 62 corridor. While this alternative is expected to be slightly more expensive than Alternative 2, the project team feels that reconstructing the entire route with an urban cross-section will provide better pedestrian access throughout the corridor and would better compliment the rapid development that is occurring in the area. While the no-build alternative would be the least expensive and would have the least community and environmental impacts, this alternative would not adequately address the project goals of improving safety, addressing parking and drainage concerns in Clarkson, improving pedestrian access, and reducing delays for through traffic.

### **7.2 Short-Term Improvements**

While the short-term improvement alternatives could provide some relief, the project team feels that it would be more practical to reconstruct the entire route at once. If both short-term improvements were built, the cost of these improvements would be approximately \$8.5 million, or half the cost of rebuilding

the entire route, and would result in several transitions between improved and unimproved sections that could create new safety problems.

### 7.3 Operations Improvements

KYTC has recently made improvements at two of the high-crash locations. A turn-lane was added at the S-curve, which may have reduced the safety problem at this location. A signal was added at the KY 224 intersection, and nearby on-street parking was changed from angled to parallel spaces. A review of crash data before and after the signal installation indicates that crash rates in this area have declined significantly.

The project team recommends that the following additional operations improvements be made:

- At the KY 88 intersection, limited sight distance appears to be a factor in the high crash rate. The Elizabethtown Highway District Office will request HSIP funds to improve sight distance at this location by moving utility poles.
- The Elizabethtown Highway District Office has requested Highway Safety Improvement Program (HSIP) funds to increase shoulder widths at the S-curve. This should improve safety by providing a recovery area for vehicles that leave the roadway.

## **8.0 ACKNOWLEDGEMENTS AND CONTACT INFORMATION**

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- Patty Dunaway, Highway District 4 Chief District Engineer
- John Edwards, Highway District 4 Utilities
- Joseph Ferguson, Highway District 4 Environmental Coordinator
- Jude Filiatreau, Highway District 4 Maintenance

- Josh Hornbeck, Highway District 4 Planning
- E. L. Lewis, Highway District 4 Traffic
- Dean Loy, Highway District 4 Right-of-Way
- Michael Malham, Lincoln Trail Area Development District
- John W. Moore, Highway District 4 Design
- Paul Sanders, Highway District 4 Construction
- Gary Valentine, Highway District 4 Pre-Construction

The following individuals from the Kentucky Transportation Cabinet's Division of Planning may be contacted if additional information is required:

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