

PHASE I – Logan and Muhlenberg Counties

The meeting began at approximately 1:00 PM CT. Those attending were:

Rodney Kirtley	Muhlenberg County Judge Executive
Mary Murray	FHWA
Jessica Rich	FHWA
Gina Boaz	Green River ADD
Kyle Key	Barren River ADD
Craig Morris	Pennyrile ADD
Shane Shelby	Wilbur Smith Associates
Kevin McClearn	KYTC-District 2-Planning
Nick Hall	KYTC-District 2-Planning
Everett Green	KYTC-District 2-Pre-Construction
David McDowell	KYTC-District 2-Construction
Kenny Potts	KYTC-District 2-Traffic
Doug Taylor	KYTC-District 2-Environmental
Phillip Whitmer	KYTC-District 2-R/W
Jeff Moore	KYTC-District 3-Planning
Kenneth Cox	KYTC-District 3-Design
Kent Gilley	KYTC-District 3-Operations
Paul David Kees	KYTC District 3-Maintenance
Don McIntosh	KYTC-District 3-Construction
Renee Slaughter	KYTC-District 3-Environmental
Steve Hoefler	KYTC-Central Office-Design
James Simpson	KYTC-Central Office-Design
Daryl Greer	KYTC-Central Office-Planning
Steve Ross	KYTC-Central Office-Planning

Steve Ross opened the meeting with introductions and described the project as a programming study to recommend safety improvements on US 431 beginning in Logan County at the Tennessee state line, continuing north through Muhlenberg, McLean and ending in Daviess County at the Indiana state line. The project includes KYTC Districts 2 and 3 as well as three ADDS: the Barren River, Pennyrile and Green River. As listed in the FY 2003-2008 Six-Year Highway Plan, this project is divided into two phases. Phase I begins at the Tennessee state line and extends northward to the Muhlenberg/McLean County line. Phase II begins at the Muhlenberg/McLean County line and extends northward to the Indiana state line. The study is funded for \$300,000 for the planning phase only. No other phases have been approved or funded. This is an in-house study being managed by the Central Office Division of Planning. Wilbur Smith Associates (WSA) is preparing the Environmental Footprint/Overview.

- Prior study reports for US 431 were noted and described as follows:
  - April 2002 – US 431 Corridor Feasibility Study from Epleys Station to the Wendell H. Ford Western Kentucky Parkway – This study, prepared by the KYTC Division of Planning, recommend two-lane reconstruction west of the existing route. Reconstruction of US 431 from Epleys Station to Lewisburg is currently listed in the Six-Year Highway Plan for the Design Phase only, FY 2002 for \$850,000. GRW was selected for the design work and given a notice to proceed in September 2003. A Finding of No Significant Impact (FONSI) is projected for 2005.
  - December 1998 – US 431 Corridor Study, Central City to Owensboro – This study prepared by the Green River ADD recommended spot improvements along the existing corridor. (This is located in Phase II of the current study as listed in the Six-Year Highway Plan.)

Steve Ross distributed information packets and reviewed the following material:

- Project location maps for Logan and Muhlenberg County – corridor highlighted.
- Major Systems – This exhibit included information for Functional Classification, National Truck Network (NN), State System, National Highway System (NHS), and Defense Highway Network.
- Other Systems – This exhibit included information for Appalachian Development Highway System, Bike Route System, Forest Highway System and Scenic Byway System. While no Scenic Byway Systems were listed for US 431, the project team noted that there is an application for scenic byway status on a segment of US 431. Steve Ross will follow up on the application details. [*After the meeting, Cindy Griffin advised that the KYTC Division of Planning is recommending the segment of US 431 in Muhlenberg County between KY 176 at Drakesboro and KY 81 at South Carrollton for scenic byway status.*] The Division of Multimodal Programs has recommended that roadway cross sections should not obstruct or deter bicycle transportation at any of the bike routes along the corridor. In Logan County, the Southern Lakes Tour follows KY 591 and intersects US 431 at Adairville. In Muhlenberg County, the Midland Kentucky Tour follows KY 973 and intersects US 431 in Dunmor where it follows US 431 from MP 0.487 to MP 0.808. Regarding pedestrian facilities, the Division of Multimodal Programs has recommended that these be considered along the entire project in urban and suburban communities.
- Coal Haul - Tonnage along US 431 displayed by segment and county were shown on an exhibit for the years 2001 and 2002. The data noted an overall

decline in coal haul in the past year on US 431. The main exception is one segment showing a 617% increase for a 0.3 mile section in McLean County. No explanation was given other than it could be possibly due to a new mine opening. Judge Kirtley explained that he expects coal haul to increase in Muhlenberg County north of Drakesboro due to a planned \$3.3 billion powerplant north of Central City. Construction could begin in 2004, last five years, and employ 1200 construction workers. 500 permanent jobs could be created. The main entrance to this planned facility is to be on US 62 just east of US 431 and Central City. The Paradise Plant now gets the largest amount of the coal haul. Judge Kirtley stated that there are an estimated 300 years of coal reserves remaining.

- Route Log – This exhibit included intersection type and control information listed by county and mile point.
- Bridges – A listing of bridges on US 431 with bridge number, milepoint location, bridge type, features crossed, geometric data, load posting, structural function, substructure and superstructure condition, and sufficiency ratings was included. Several bridges in Logan and Muhlenberg Counties are listed as functionally obsolete. Narrow bridge width is also a concern along the route. Bridge No. B00056 at MP 27.713 in Muhlenberg County was noted in a previous report as needing to be replaced if the road was widened. No bridges are noted as being load posted. The team noted one bridge carrying US 431 over Pond Creek in Muhlenberg County at MP 12.448 was not included in the data presented.
- Geometric Characteristics – This exhibit listed number of lanes, divided/undivided, curbs, lane width, shoulder width, terrain and pavement type.
- Traffic Characteristics – This exhibit, listed by segment and county, included average daily traffic (ADT), percent trucks, design speed, posted speed limit, percent passing sight distance, volume to capacity (v/c) ratios and levels of service (LOS) for the current year. This exhibit also included ADT, v/c ratios and LOS for the projected year 2030. Low levels of service, D and E, were noted for both 2003 traffic and projected year 2030 traffic, except for the reconstructed 4-lane segment north of Russellville in Logan County, a short segment just north of the Tennessee border in Logan County and a short segment at the Western Kentucky Parkway in Muhlenberg County. There was a question as to whether traffic projections took into account the Tennessee State Route 840 project (proposed outer loop around Nashville). The answer given was that traffic projections were based on historical information for roads in Kentucky, based on functional classification, and the proposed project in Tennessee was not taken into consideration. The team noted that Tennessee has dropped work on the TN 840 project. However, there was some question

among the team as to whether this project may have been added back into Tennessee's plan. *[Note: Jeff Moore followed up after the meeting providing newspaper accounts indicating that the TN 840 project has been dropped.]* There was some confusion regarding the colors shown on the traffic maps. The exterior color bands indicate section breaks in the ADT. The interior color bands show changes in level of service.

- Crash Data – Crashes were identified and counted from 2000 through 2002 from State Police collision reports. Critical rate factors (CRF) were calculated for segments and 0.1 mile spots.
  - Logan County - The team noted that the data in Logan County looked unusual and that the segment from MP 13.896 to MP 20.590, with a CRF 1.053, has probably improved since the 4-lane opened two years ago. If the table presented at the meeting includes one year's data prior to the 4-lane, this might account for the odd results. The team also noted that "old 431" is now KY 3519. If some of these crashes are being miscoded due to confusion or ignorance regarding the new route number designations, that might also explain the unusual results. Also unexpected were two very high crash spots identified just north of the Tennessee border near Adairville. The team had no obvious answer as to why these large numbers and unusual crash types (several backing) would be recorded for these locations. *[After the meeting, Lance Meredith researched the collision reports for high crash spots in Logan County and found that a large number of the crashes were located incorrectly on the original police collision reports, including the two unusually high CRF spots just north of the Tennessee state line. The number of crashes on the new 4-lane section north of Russellville was actually much lower than what was shown in the meeting, with nearly half of those actual crashes involving deer.]*

Projects on US 431 in Logan County include a Safety-Hazard Elimination (HES) project, planned for design in 2003, between MP 4.09 and 4.2. The plan is to realign, eliminate offsets, and resurface at KY 663. A new Southern Russellville Bypass is listed in the Six-Year Highway Plan, scheduled for right-of-way acquisition in 2006. Already mentioned is a project listed in the Six-Year Highway Plan to reconstruct US 431 from Epleys Station north to Lewisburg.

- Muhlenberg County - There were four segments with CRF greater than one, totaling approximately 15 miles of roadway. There were also 26 spots identified with a CRF greater than one. The team noted HES projects underway that will address some of these spots: MP 22.4 (just north of KY 81) to 22.7 at South Carrolton, MP 23.9 to 24.1, and MP 24.3 (just north of Power Plant Drive) to 24.5 north of South Carrolton. These projects include vertical and horizontal realignment, shoulder widening, and

guardrail installation. Judge Kirtley noted that there have been two fatalities this year, one less than a week prior to this meeting, at a location known locally as “dead man’s curve.” The data presented in the handout packets are for the time period from January 2000 through December 2002 and will not show this most recent information. The Judge and other team member’s identified this curve on the crash handout as being near MP 6.35, Muhlenberg County, approximately one-half mile south of KY 2270. This spot has a CRF of 2.25 shown in the handouts. The team noted that a new HES project is planned for this location.

A graph showing the number of crashes by type from 1996 through 2002 was also provided. For Logan County, total crash numbers have doubled in these seven years given the available data. The increase has been relatively uniform from year to year. Single vehicle crashes top the list with rear-end crashes ranking next highest. For Muhlenberg County, there has only been a slight increase in total number of crashes, from approximately 135 in 1996 to 145 in 2002. The increase however has not been uniform, with some large fluctuations from year to year. The predominant type of reported crash is single vehicle. Rear-end crashes ranked next highest.

- Project Drive - Steve Ross noted that he planned to drive the route before Thanksgiving and that anyone interested in participating should contact him after the meeting. [*Jeff Moore, Kyle Key and David Martin participated in the project drive on November 12, 2003*]
- Environmental Issues- Some members of the team indicated they had not yet seen the draft environmental overview prepared by WSA. It was noted that copies have been sent to districts for comment and this was confirmed during discussion. Shane Shelby from WSA gave a summary of the environmental issues for Phase I of the study corridor noting that there is nothing major known at this time that might affect construction unless we get into relocation or major widening. Some of the issues presented were:
  - Logan County - There are water quality issues related to rivers and water sources. Schools, churches and cemeteries are located along the corridor. There are very few threatened/endangered species concerns; the Indiana bat was mentioned. Environmental justice areas include some minority and low income areas or “pockets.” There is a high percentage of prime farmland that would not likely interfere with spot improvements. There are also some underground storage tanks (UST’s) and gas/oil wells in the area. There are a few historic sites noted in the area and include two National Register listed structures in Russellville. In Russellville, there are 70 historic structures, with the possibility that a historic district may be established.

- Muhlenberg County –There is floodplain to consider near the Green River. Private water sources and water quality issues, schools, churches and cemeteries were noted along the corridor. There are a few more threatened/endangered species concerns in Muhlenberg County compared to Logan County. Environmental Justice issues are similar to those found in Logan County but without the numbers of isolated “pockets.” There are archaeological sites in the corridor but no National Register listed structures. There is not as much prime farmland as found in Logan County. Some UST’s were noted. The Peabody Wildlife Management Area (WMA), a privately owned area with public access, is located in the project corridor area but does not cross US 431.
- Environmental Justice (EJ) – A plan to handle the collection and organization of EJ data for this study was discussed. With three ADD’s involved in this project, it was decided to have each ADD collect EJ data for their respective areas. The Green River ADD will compile the data from the three ADD’s and submit a single document for the whole project. The end of February was suggested for submittal of the EJ study.
- Real Estate/Relocation – There are no relocation problems anticipated for the rural areas. There are some small community pockets or population clusters that could present difficulties in finding suitable relocation housing. Identification of the clusters and a more detailed evaluation will be needed to estimate the impacts. Bypasses may be necessary in some locations. Locations in Muhlenberg County could possibly push the project off alignment.
- Design Criteria will have to be determined on a spot by spot basis. A design speed of 55 mph will be used where possible. When selecting a typical section, increased dimension trucks will be considered as well as auxiliary/passing lanes.
- Logical Termini – As listed in the Six-Year Highway Plan, the termini for this phase of the study are the Tennessee/Kentucky state line on the south and the McLean/Muhlenberg County Line on the north. The team decided to keep the southern terminus but that a more logical break between Phases I and II would be the Western Kentucky Parkway. The team decided to exclude the improved four-lane segment of US 431 north of Russellville from the study. The revised termini then for Phase I will be from the Tennessee/Kentucky state line to Russellville at US 79, then from the beginning of the two-lane segment at Epleys Station north to the Western Kentucky Parkway.
- Other Discussion - Muhlenberg County Judge Executive Rodney Kirtley offered his services for the study and noted that US 431 is an economic link to Owensboro. Residents are now going to Bowling Green for shopping and services instead of Owensboro due to the traveling conditions along US 431.

- Goals & Objectives

- Safety improvements will be the primary focus of this study with the intent to identify and prioritize spots and/or segments. Priorities will be divided between short term and long term goals. Types of improvements for consideration will include:

- Lane widening
- Adding or widening shoulders
- Adding auxiliary truck lanes and/or passing lanes

It was noted that numerous communities and businesses rely on US 431 for access. The team recognizes that addressing existing safety issues and making an improvement at one location may result in a new problem surfacing at a different location where there had previously been none. The team will work to anticipate this type of situation when making its recommendations.

- Access and Connection – It was discussed that improving access and connection between communities is desirable. It was noted that US 431 is strategically placed between two parkways and provides access to services in Owensboro. While secondary to safety, access and regional connectivity benefits should be considered.

- Time Frame - Daryl Greer estimated project completion by the end of 2004.
- Public involvement - The team will seek public input through agency coordination. Local officials and ADD transportation and/or safety committee input will also be used in the study. Since there are no future phases approved, and it is difficult to anticipate what future phases might result from the recommendations made in this study, no formal officials or public meetings will be held.
- Report documentation – The study report will examine existing roadway and traffic conditions as well as environmental issues. Recommendations will be made for safety improvements. Reports will be distributed to FHWA, ADD, KYTC district, and central office personnel.

The Phase I meeting adjourned at approximately 2:45 PM CT.

PHASE II – McLean and Daviess Counties

After a short break following Phase I, the meeting resumed with a separate Phase II discussion at approximately 3:00 PM CT. Those attending were:

Mary Murray	FHWA
Jessica Rich	FHWA
Gina Boaz	Green River ADD
Shane Shelby	Wilbur Smith Associates
Kevin McClearn	KYTC-District 2-Planning
Nick Hall	KYTC-District 2-Planning
Everett Green	KYTC-District 2-Pre-Construction
David McDowell	KYTC-District 2-Construction
Kenny Potts	KYTC-District 2-Traffic
Doug Taylor	KYTC-District 2-Environmental
Phillip Whitmer	KYTC-District 2-R/W
Steve Hoefler	KYTC-Central Office-Design
Daryl Greer	KYTC Central Office Planning
Steve Ross	KYTC-Central Office-Planning

Since there were no new members for the Phase II discussion, the meeting continued without introductions.

- Prior study reports for US 431 were noted and described as follows:

Referencing the Phase I discussion, the only prior report pertaining to Phase II of this study is:

- December 1998 – US 431 Corridor Study, Central City to Owensboro – This study prepared by the Green River ADD recommended spot improvements along the existing corridor.

Information packets for Phase II were distributed and material reviewed as follows:

- Project location maps for McLean and Daviess County – corridor highlighted.
- Major Systems – This exhibit included information for Functional Classification, National Truck Network (NN), State System, National Highway System (NHS), and Defense Highway Network.
- Other Systems – This exhibit included information for Appalachian Development Highway System, Bike Route System, Forest Highway System and Scenic Byway System. Referencing discussion held during the Phase I



portion of the meeting, the project team noted that there is an application for scenic byway status on a segment of US 431. Steve Ross will follow up on the details. *[After the meeting, Cindy Griffin advised that the KYTC Division of Planning is recommending the segment of US 431 in Muhlenberg County between KY 176 at Drakesboro, and KY 81 at South Carrollton for scenic byway status.]* Also noted was a Greenbelt bike path in the city of Owensboro.

- Coal Haul – Tonnage along US 431 displayed by segment and county were shown on an exhibit for the years 2001 and 2002. Discussion during the Phase I portion of the meeting was referenced, noting mainly a decline in coal haul from 2001 to 2002 but the strong possibility of an increase with the construction of a new power plant near Central City. No new or additional information was presented for Phase II discussion.
- Route Log – This exhibit included intersection type and control information listed by county and milepoint.
- Bridges – A listing of bridges on US 431 with bridge number, milepoint location, bridge type, features crossed, geometric data, load posting, structural function, substructure and superstructure condition, and sufficiency ratings was included. Four bridges in McLean County are listed as functionally obsolete. Narrow bridge width is also a concern along the route. Only one bridge, No. B00049 at MP 8.543 in Daviess County, carrying US 431 over Panther Creek, is listed as requiring load posting. Its worst condition noted was a “satisfactory” superstructure rating (minor deterioration).
- Geometric Characteristics – This exhibit included number of lanes, divided/undivided, curbs, lane width, shoulder width, terrain and pavement type. Generally, the geometrics as presented for Phase II are good except for narrow shoulder widths south of the urban area of Owensboro.
- Traffic Characteristics – This exhibit, listed by segment and county, included average daily traffic (ADT), percent trucks, design speed, posted speed limit, percent passing sight distance, volume to capacity (v/c) ratios and levels of service (LOS) for the current year. This exhibit also included ADT, v/c ratios and LOS for the projected year 2030. McLean and Daviess Counties include mostly low levels of service, D and E, for both 2003 traffic and projected year 2030. The team noted a partially completed loop road intersecting US 431 near the rural/urban break south of the bypass and mall area in Owensboro. Completion/extension of this road across US 431 and to the west will most likely affect traffic along US 431 in the vicinity. Referencing the Phase I discussion, there was some confusion regarding the colors shown on the traffic maps. The exterior color bands indicate section breaks in the ADT. The interior color bands show changes in level of service.

- Crash Data – Crashes were identified and counted from 2000 through 2002 from State Police collision reports. Critical rate factors were calculated for segments and 0.1 mile spots.
  - McLean County - There were no high crash segments identified in McLean County, however, five 0.1 mile spots were identified with a CRF greater than one. Two of these spots are at intersections already identified for improvement. One is a scheduled Six-Year Highway Plan project to reconstruct the intersection of US 431 and KY 136 at Livermore in McLean County. Its letting is planned for the day after this meeting. Another spot at the intersection of US 431 and KY 1080 is an HES project planned to begin near year's end to add left turn lanes, improve vertical alignment and sight distance. Intersections of US 431 with KY 250 and KY 85 are spots with relatively high critical rate factors. The team noted that there is less than optimal sight distance at the KY 85 intersection. Currently there is a flashing beacon at this intersection, and the addition of stop bars has been recommended.
  - Daviess County - One continuous segment, from MP 10.632 to MP 14.670, with a high critical rate factor, was identified through the urban segment of Owensboro. Individual 0.1 mile spots with critical rate factors greater than one occurred frequently in that urban section. The rural segment south of Owensboro had a relatively low critical rate factor, less than one-half. Only one 0.1 mile spot in the rural section of Daviess County had a critical rate factor greater than one. That spot is at the intersection of US 431 and KY 140 and was noted by the team as having less than optimal sight distance.

A graph showing the number of crashes by type from 1996 through 2002 was also presented for each county. In McLean County, total crashes for the seven year period showed a very slight increase with single vehicle crashes leading the list and rear end crashes ranking next highest. In Daviess County, there was a significant reduction in total crashes since 1996, from approximately 430 to 100 crashes per year. In Daviess County, rear end crashes, and then angle collisions topped the list as would be expected in this more urban setting. It was also noted that there was a sharp spike in crashes for both McLean and Daviess Counties in the year 2000, which was unexplained.

- Environmental Issues– Referencing the Phase I discussion, some members of the team indicated they had not yet seen the draft environmental overview prepared by WSA. It was noted that copies have been sent to districts for comment and this was confirmed during discussion. Shane Shelby from WSA gave a summary of the environmental issues for Phase II of the study corridor.
  - McLean – Expect fewer surface water impacts than Phase I. There are flood prone areas in the corridor including floodplain issues at Livermore. Wetlands are mostly associated with the rivers. Private water sources are comparatively few. There are a handful of churches, schools and cemeteries. The Livermore Bridge was noted as being unique and of historic significance. There is potential for a historic district in Livermore with 18 or 19 structures from the Civil War period. There are currently no National Register structures, but there is potential that there will be after further evaluation. Endangered/threatened species concerns in this phase include the copperbelly water snake. There are some archaeological sites scattered along US 431 but most are located off the corridor. Also noted were locks and boating/regatta activities. A soil survey obtained by WSA identified prime farmland. Shane Shelby noted that polygon data may be available and asked if this would be something wanted for this project. The answer given was that if the polygon data would allow us to present the prime farmland data on a map the way we are showing other environmental footprint features, then yes, we would want the data in that form. There are scattered gas and oil wells around Livermore. Also noted are fault lines.
  - Daviess County – There are surface water streams, notably Panther Creek, and wetland areas around Panther Creek. There is flooding in the area south of the mall. There are several endangered/threatened species concerns. There are 13 socioeconomic locations identified along the corridor in Daviess County, the majority in Owensboro. Owensboro is home to the world's largest sassafras tree. There are 111 historic structures (22 are National Register listed) as well as an historic district in Owensboro. There are no known archaeological sites along the corridor. An estimated 64% of Daviess County is harvested cropland. There are over 200 underground storage tanks, 110 in Owensboro. There are also fault lines identified in southern Daviess County.
- Environmental Justice (EJ) – Referencing Phase I discussion, a plan to handle the collection and organization of EJ data for this study was discussed. With three ADD's involved in this project, it was decided to have each ADD collect EJ data for their respective areas. The Green River ADD will compile the data from the three ADD's and submit a single document for the whole project. The end of February was suggested for submittal of the EJ study.

- Real Estate/Relocation – Fewer small community clusters are expected than for Phase I. The team noted the community of Island was one such location.
- Intelligent Transportation Systems (ITS), Bike & Pedestrian Facilities – The team identified no obvious need for ITS on this project, Phase I or II. The Division of Multimodal Programs has recommended that roadway cross sections should not obstruct or deter bicycle transportation at any of the bike routes along the corridor. In Daviess County, the Ramblin' River Tour follows US 60 and intersects US 431 on the extreme north end in Owensboro. The Kentucky TransAmerica Trail follows KY 140 and crosses US 431 at Utica. The project team noted that the planned Greenbelt bike trail in Owensboro will cross south of the mall. Regarding pedestrian facilities, the Division of Multimodal Programs has recommended that these be considered along the entire project in urban and suburban communities.
- Logical Termini – As listed in the Six-Year Highway Plan, Phase II of this project begins at the McLean/Muhlenberg County Line and extends north to the Kentucky/Indiana border. Referencing discussion held in the Phase I meeting, the project team recommended breaking Phase I and II at the Western Kentucky Parkway instead of the Muhlenberg/McLean County line. The team maintained that recommendation during Phase II discussion and also recommended moving the northern terminus to the intersection of US 431 with the Owensboro bypass, eliminating from the study the urban segment north of the bypass.
- Other Discussion - The Green River ADD is looking at US 431 south of the bypass for widening. Gina Boaz noted that McLean County Judge Executive, Larry Whitaker, chairs Green River ADD's transportation committee and recommended contacting him prior to driving the project corridor for input or participating in the drive. Steve Ross said that he is planning to drive the project sometime prior to Thanksgiving and he will contact Judge Whitaker. Anyone else wanting to participate should contact Steve Ross after the meeting. *[Note that after the meeting, the Phase II project drive was held on November 19, 2003. Judge Whitaker was contacted and invited to participate but was unavailable for the drive. The Judge did discuss his concerns and identified locations to inspect. Nick Hall and David Martin participated in the drive.]*

- Goals & Objectives:

Referencing discussion held in the Phase I meeting, study goals are as follows:

- Safety improvements will be the primary focus of this study with the intent to identify and prioritize spots and/or segments. Priorities will be divided between short term and long term goals. Types of improvements for consideration will include:

- Lane widening
- Adding or widening shoulders
- Adding auxiliary truck lanes and/or passing lanes

It was noted that numerous communities and businesses rely on US 431 for access. The team recognizes that addressing existing safety issues and making an improvement at one location may result in a new problem surfacing at a different location where there had previously been none. The team will work to anticipate this type of situation when making its recommendations.

- Access and Connection – It was discussed that improving access and connection between communities is desirable. It was noted that US 431 is strategically placed between two parkways and provides access to services in Owensboro. While secondary to safety, access and regional connectivity benefits should be considered.
- Time Frame – Referencing discussion held in the Phase I meeting, Daryl Greer estimated project completion by the end of 2004.
- Public involvement - Referencing discussion held in the Phase I meeting, the team will seek public input through agency coordination. Local officials and ADD transportation and/or safety committee input will also be used in the study. Since there are no future phases approved, and it is difficult to anticipate what future phases might result from the recommendations made in this study, no formal officials or public meetings will be held.
- Report documentation – Referencing discussion held in the Phase I meeting, the study report will examine existing roadway and traffic conditions as well as environmental issues. Recommendations will be made for safety improvements. Reports will be distributed to FHWA, ADD, KYTC district, and central office personnel.

The Phase II meeting adjourned at approximately 4:00 PM CT.

**AGENDA**  
**INITIAL TEAM MEETING**  
**SCOPING STUDY FOR SAFETY IMPROVEMENTS**

**US 431**  
**FROM THE TENNESSEE TO THE INDIANA BORDER**  
**LOGAN, MUHLENBERG, MCLEAN AND DAVIESS COUNTIES**

**Meeting Location:** Career Advancement Center  
50 Career Way  
Central City, KY 42330

**Meeting Date:** October 23, 2003

**Meeting Time:** 1:00 P.M. – 4:00 P.M. CT

**Phase I – Tennessee Border to the Muhlenberg/McLean County Line**

- 1) Introduction and Purpose
- 2) Project Goals and Objectives
  - a) Project area
  - b) Prior reports
  - c) Roadway Conditions
    - i) Traffic data
    - ii) Crash data
    - iii) Existing geometry
    - iv) Other
  - d) Identify additional information needed to document problems
    - i) Environmental Footprint
    - ii) Environmental Justice
    - iii) Real Estate/Relocation Information
    - iv) Other (ITS/Bikes/Ped.)
  - e) Identify logical termini
  - f) Benefits of proposed project
  - g) Develop project goals and objectives
- 3) Probable Design Criteria
  - a) Functional class
  - b) ADT/DHV
  - c) Design speed
  - d) Typical section
  - e) Other criteria
- 4) Agency Coordination Needs
- 5) Public Involvement Needs
- 6) Documentation/Reports
  - a) Information to include/not include in report
  - b) Level of detail
  - c) Distribution
- 7) Q & A

Break

**AGENDA**  
**INITIAL TEAM MEETING**  
**SCOPING STUDY FOR SAFETY IMPROVEMENTS**

**US 431**  
**FROM THE TENNESSEE TO THE INDIANA BORDER**  
**LOGAN, MUHLENBERG, MCLEAN AND DAVIESS COUNTIES**

**Phase II – Muhlenberg/McLean County Line to the Indiana Border**

- 8) Introduction and Purpose
- 9) Project Goals and Objectives
  - a) Project area
  - b) Prior reports
  - c) Roadway Conditions
    - i) Traffic data
    - ii) Crash data
    - iii) Existing geometry
    - iv) Other
  - d) Identify additional information needed to document problems
    - i) Environmental Footprint
    - ii) Environmental Justice
    - iii) Real Estate/Relocation Information
    - iv) Other (ITS/Bikes/Ped.)
  - e) Identify logical termini
  - f) Benefits of proposed project
  - g) Develop project goals and objectives
- 10) Probable Design Criteria
  - a) Functional class
  - b) ADT/DHV
  - c) Design speed
  - d) Typical section
  - e) Other criteria
- 11) Agency Coordination Needs
- 12) Public Involvement Needs
- 13) Documentation/Reports
  - a) Information to include/not include in report
  - b) Level of detail
  - c) Distribution
- 14) Q & A
- 15) Adjourn

Final Minutes – Team Meeting 2  
February 17, 2005  
US 431, Item No. 02-8106.00  
Career Advancement Center  
Central City, Kentucky

The meeting began at approximately 1:00 PM CT. Those attending for the complete Phase I discussion and portions (noted below) of the Phase II discussion were:

Gina Boaz	Green River ADD
Craig Morris	Pennyrile ADD
Lance Meredith	Barren River ADD
Kevin McClearn	KYTC-District 2-Planning
Nick Hall	KYTC-District 2-Planning
Everett Green	KYTC-District 2-Pre-Construction
Phillip Whitmer	KYTC-District 2-Right of Way
Mark Brasher	KYTC-District 2-Traffic
David McDowell	KYTC-District 2-Construction
Jeff Moore	KYTC-District 3-Planning
Renee Slaughter	KYTC-District 3-Environmental
Travis Spidel	KYTC-District 3-Planning
Jim Wilson	KYTC-Central Office-Planning
Steve Ross	KYTC-Central Office-Planning

Steve Ross opened the meeting with introductions, discussed the purpose of the study (safety improvements to US 431) and reviewed the project goals from the first team meeting. The primary goal established for the study is to look at safety improvements, primarily spot-type improvements that can be implemented for relatively low cost within a reasonable time frame. The secondary goal for the project is to improve access and regional connectivity along US 431. The need for improved access to Owensboro from McLean and Muhlenberg Counties was specifically noted from resource agency coordination responses and discussion from the first project team meeting.

### **Environmental Justice**

An Environmental Justice and Community Impact Report was prepared by the three Area Development Districts (ADD's). Jennifer Wedding, Green River ADD (GRADD); Craig Morris, Pennyrile ADD (PADD); and John Matheney, Barren River ADD (BRADD); prepared their portions of the report. The full document was compiled by Jennifer Wedding of the GRADD. Since Jennifer was not available for this meeting, Craig Morris led the discussion of the Environmental Justice (EJ) issues for those segments of the corridor included in the GRADD and the PADD. Lance Meredith who recently replaced John Matheney as BRADD Planner, presented the BRADD portion.

In the Phase I study area, the following EJ concerns were identified:



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- Logan County, Adairville - There are two apartment complexes located one block east of US 431 that contain concentrations of low-income and elderly residents.
- Logan County, Lewisburg - A low-income area located in Lewisburg was identified through a separate reconstruction project investigation (Epleys to Lewisburg, KYTC Item No. 03-273.00) and will be looked at more intensely as part of that process.
- Muhlenberg County, Drakesboro and Cleaton - There were six African American neighborhoods identified, three each in Drakesboro (along the west side of US 431) and Cleaton (along the east side of US 431).

In the Phase II study area, the following EJ concerns were identified:

- Muhlenberg County, Central City – There is a high black population in Census Tract 9602, primarily due to the Green River Correctional Complex (Prison). There was an African American neighborhood identified in Central City that is adjacent, on the west side, to US 431. Also, there were two nursing homes and one apartment complex identified in Central City with high concentrations of elderly residents.
- McLean County – There were no EJ locations identified of particular concern within the study area of McLean County.
- Daviess County – The only area that might require additional study in Daviess County is Tract 17.01, Block Group 4, located along the west side of US 431 south of the Owensboro bypass. This location contains elevated numbers of minority, low-income, elderly and disabled population.

### **Resource Agency Coordination**

The Division of Planning requested comments from various resource agencies and public officials to identify issues associated with potential improvements along the study corridor. Steve Ross presented a summary of the responses (reference handout: Resource Agency Coordination Response Summary). The Kentucky Education Cabinet responded that it had no comments at this time. Jeff Moore recommended that the Division of Planning contact the Education Cabinet and ask that our request for comments be forwarded to the various school districts within the study corridor. It was noted that at least one new school is planned in the study area (Beechmont-Browder) and it would be helpful to know of similar projects, including proposed site locations, before the project team makes any final recommendations for safety improvements. The Division of Planning will

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follow-up to obtain additional information from the Education Cabinet regarding proposed school projects within the study area.

### **Related Projects**

Discussion regarding related projects was included in the Alternatives Development and Recommendations portion of the meeting noted below.

### **Other**

The only other discussion was that cost estimates would need to be prepared for the safety improvements identified. After developing a list of improvement alternatives, the division of Planning will request cost estimates from the respective District offices.

### **Alternatives Development and Recommendations, Phase I**

A handout was presented to meeting attendees titled, "US 431 Recommendations Development." This handout listed 0.1 mile spot locations with critical crash rate factors greater than 0.9. Each spot location was numbered by phase number followed by a hyphen and a sequential number beginning with one at the south end of the project corridor. Each spot location included the following tabulated data: number of fatal, injury and property damage only (PDO) crashes; number of lanes; whether the lanes were divided or undivided; lane width; shoulder width; terrain; average daily traffic (ADT); truck percentage; design speed; posted speed; percent passing sight distance; volume/capacity (v/c) ratio; 2003 Level of Service (LOS). Also provided were the numbers and types of crashes at each location (e.g., 2 collisions with fixed objects); comments from public officials and resource agencies at or near each high-crash spot location and any additional information at these locations from crash segment analysis. In a few cases, segments longer than 0.1 miles were included for consideration if they had been noted as a possible high crash location by an agency or public official through the Resource Agency Coordination process.

The project team was asked to evaluate each spot or segment based on the data presented and also provide any additional information that might be helpful in deciding whether to include it in a list for recommended improvements. The team was then asked to prioritize each spot (or segment) as high, medium or low based on need for safety improvement, and then to suggest recommended improvements. During the discussion, team members noted that some of the data may need to be reevaluated for accuracy. Specifically, the design speeds that had been pulled from a Highway Information System (HIS) extract looked high in several records. Also, police collision reports will need to be pulled for many locations to more accurately identify the problems before making final recommendations. And, team members from district offices will take the list back with them to review with maintenance personnel for more detailed problem

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identification. Following is a list of each location presented at the meeting and a brief description of the team's recommendations and/or follow-up required. The crash statistics cited are for the three year period from January 1, 2000 through December 31, 2002.

Spot 1-1, Logan County, MP 1.485 - 1.585

The location of this spot is the KY 591 intersection in Adairville. The critical crash rate factor, CRF, was 0.917. This is a 4-way stop that has had several unusual accidents involving driver inattentiveness. Buildings are located very close to the roadway and the intersection is located at the northwest corner of the town square. Improvements here would be difficult to implement. No recommendations short of a bypass were recommended by the project team.

Preliminary Team Recommendation: Drop from list of recommended improvements for this study.

Spot 1-2, Logan County, MP 13.796 - 13.896

The location is the intersection of US 79 in Russellville. The critical rate factor was 1.076. Problems include a high volume of traffic and trucks with tight turning radii at the intersection, business entrances located close to the intersection and properties located close to the roadway. The US 431 southern bypass project in Russellville will address the problems associated with this intersection by reducing traffic volume and providing trucks an alternate route.

Preliminary Team Recommendation: Drop from list of recommended improvements for this study.

Spot 1-3, Logan County, MP 23.900 - 24.000

The location is Lewisburg, between KY 107 and KY 106. The critical rate factor was 1.258. This location will be addressed as a result of the Epleys to Lewisbug, US 431 reconstruction project, Item No. 3-273.00.

Preliminary Team Recommendation: Drop from list of recommended improvements for this study.

Spot 1-4, Logan County, MP 29.952 – 30.052

The location is Hollow Bill, just north of HW McPherson Road. The critical rate factor was 1.618. Five of the six collisions at this spot were during bad weather conditions (wet or icy roads) on curves. The District and ADD personnel noted a history of crash problems at this location including a multiple fatality. This spot is also within the limits of a project listed on the Unscheduled Projects List (UPL) for relocation and assigned a medium (Local, ADD and District) priority. The terrain is rough in this area and the only conceivable improvement would be total reconstruction to improve the horizontal and vertical geometry.

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Preliminary Team Recommendation: Assign High Priority to reconstruct as described in the UPL from MP 28.900 to MP 31.050 (Logan/Muhlenberg County Line).

MP 31.043, Logan County - Added Spot

This location was recommended to be added to the list by District 3 personnel and is located at the intersection with KY 1293, almost on the Logan/Muhlenberg County line. While the CRF was not greater than 1.00 at this location, District 3 personnel noted poor sight distance and a potential for crashes.

Preliminary Team Recommendation: Assign medium priority for intersection improvements.

Spot 1-5, Muhlenberg County, MP 0.364 – 0.464

This spot is located at the intersection of KY 973. Only four crashes were cited here for a CRF of 0.983. None of the crashes involved fatalities. The team agreed that four crashes over a three-year period are probably not statistically significant.

Preliminary Team Recommendation: Drop from list of recommended improvements for this study.

Spot 1-6, Muhlenberg County, MP 3.400 – 3.500

Six crashes were documented at this spot. The CRF was 1.688. This spot includes one narrow bridge carrying US 431 over Rocky Creek. The bridge width is 21.5 feet. Four of the six crashes were “sideswipe-opposite direction.” No injury or fatality crashes were documented. This bridge has been identified for replacement under HES 02-984 and accepted, but not a high priority.

Preliminary Team Recommendation: Assign high priority to replace or widen Rocky Creek Bridge.

MP 3.634, Muhlenberg County - Added Spot

This is the location of a bridge carrying US 431 over Rocky Creek Branch, immediately north of the preceding spot location. The bridge is similar to the Rocky Creek bridge and is also only 21.5 feet wide.

Preliminary Team Recommendation: Assign medium priority to replace or widen Branch of Rocky Creek Bridge.

Spot 1-7, Muhlenberg County, MP 3.930 – 4.030

This spot is about one mile south of Union Ridge Road and had a CRF of 1.688. Four of the six total crashes were “run-off-road” crashes. Also, four occurred

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during wet, dark conditions. Lencie Meredith noted that this is often indicative of an edgeline problem (worn/faded or nonexistent). If there is an existing edgeline and it is in good condition (reflective), then this type of crash problem could instead be due to geometry.

Preliminary Team Recommendation: Assign low priority to realign/widen. Follow-up is necessary to first determine existence/condition of edgeline and roadway geometry.

MP 6.0 – 7.0, Muhlenberg County

This segment was noted by Kentucky State Police Post 2 (Madisonville) as a high crash site. Crash data did not support this and the project team could not identify any obvious problem.

Preliminary Team Recommendation: Do nothing unless follow-up identifies an obvious problem.

Spot 1-8, Muhlenberg County, MP 6.3 – 6.4

This tight curve in Belton is known locally as “Dead Man’s Curve,” the site of recent fatalities and has already undergone improvements to correct sight distance deficiencies. There were eight total crashes for a CRF of 2.25. More work is scheduled for 2006 to widen the roadway and realign the curve under HES 2-900.

Preliminary Team Recommendation: Drop from list of recommended improvements for this study.

Spot 1-9, Muhlenberg County, MP7.420 – 7.520

Located between KY 2270 and KY 246, this spot had a CRF of 1.125 due to only four crashes over a three year period. No fatalities or injuries were cited. The project team had no additional information for this location and agreed that four crashes over a three-year period are probably not statistically significant.

Preliminary Team Recommendation: Drop from list of recommended improvements for this study.

Spot 1-10, Muhlenberg County, MP 7.950 – 8.050

This spot at the intersection of KY 246 had a total of 10 crashes for a CRF of 2.813. Three of these collisions were “rear end” and another three were “angle” collisions. Team members noted bifurcated turn lanes on KY 246 and a gas station on one of the corners possibly contributing to the crashes. They also noted that this intersection is just south of the Hughes-Kirk Elementary School.

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Preliminary Team Recommendation: Assign high priority for intersection improvements.

Spot 1-11, Muhlenberg County, MP 8.950 – 9.050

This spot, just south of Sylvania Street had six total crashes for a CRF of 1.186. Three of the crashes were “angle” collisions. The team noted no apparent problems at this location. They also noted that this may be just south of the proposed site of the new Beechmont-Browder Elementary School.

Preliminary Team Recommendation: Assign low priority and investigate further for improvement recommendations.

Spot 1-12, Muhlenberg County, MP 9.734 – 9.834

This spot in Browder includes the intersection of KY 70. There were nine total crashes for a CRF of 1.665. Three of the crashes were “angle” collisions and two were “rear end.” Team members noted that this intersection has bifurcated turning lanes on the east approach of KY 70. This is also within the limits (MP 8.0 – 9.90) of a location noted by Kentucky State Police Post 2 (Madisonville) for consideration as a possible high crash site.

Preliminary Team Recommendation: Assign High priority for intersection improvements.

Spot 1-13, Muhlenberg County, MP 10.222 – 10.322

This spot located north of KY 70 had six total crashes for a CRF of 1.076. Three of these crashes were “sideswipe-opposite direction” and three were “single vehicle” collisions. Team members noted sharp, reverse curves in this area.

Preliminary Team Recommendation: Assign Medium priority to reconstruct to correct horizontal alignment. Follow-up to check length of proposed reconstruction.

Spot 1-14, Muhlenberg County, MP 11.400 – 11.500

This spot includes the intersection of KY 176 in Drakesboro and had 10 crashes for a CRF of 1.71. Team members noted that this is a signalized intersection with no turn lanes and a “Pantry” store on the corner. Southbound coal trucks on US 431 turn eastbound on KY 176 to serve the Paradise Steam Plant. Muhlenberg High School is also accessed from this location by traveling westbound on KY 176. Five of the 10 crashes at this spot were “angle” collisions.

Preliminary Team Recommendations: Assign Medium priority for intersection improvements.

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Spot 1-15, Muhlenberg County, MP 11.982 – 12.082

This spot includes the KY 2107 intersection. There were a total of six crashes for a CRF of 0.908. Three of the crashes were “angle” collisions, two were “head on” and one was an “opposing left turn.” This spot is within the limits (MP 11.0 – 12.10) of a location noted by Kentucky State Police Post 2 (Madisonville) for consideration as a possible high crash site.

Preliminary Team Recommendations: Assign Low priority for intersection improvements.

One of the recommendations of Kentucky State Police (KSP) Post 2 (Madisonville), was to place additional signage upon approach to “high crash zones” stressing extra caution. Project team members noted that placing these types of signs is a liability problem and not an acceptable solution to addressing safety issues. Team members also recommended addressing this comment in the report write-up with an explanation as to why KSP’s recommendation for warning signs could not be implemented.

Spot 1-16, Muhlenberg County, MP 14.096 – 14.196

This spot is located approximately one mile south of Cleaton Road. There were a total of six crashes for a CRF of 0.908. Half of these crashes were coded “collision with animal.”

Preliminary Team Recommendation: Drop from list of recommended improvements for this study.

Spot 1-17, Muhlenberg County, MP 15.150 – 15.250

This spot is at the intersection of Cleaton Road. There were a total of nine crashes for a CRF of 1.464. Three of these crashes were “angle” collisions, two were “rear end” and two were “sideswipe-same direction.” Team members noted that there is a railroad grade-separation project planned north of this location, but it will probably not extend to this intersection.

Preliminary Team Recommendation: Assign Medium priority for intersection improvements/turn lanes.

That completed all discussion for Phase 1 of the study. After a short break, the meeting resumed with Phase II discussion of alternatives at approximately 2:30 PM CT. Those still attending were:

Gina Boaz  
Kevin McClearn

Green River ADD  
KYTC-District 2-Planning

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Nick Hall	KYTC-District 2-Planning
Everett Green	KYTC-District 2-Pre-Construction
Phillip Whitmer	KYTC-District 2-Right of Way
Mark Brasher	KYTC-District 2-Traffic
David McDowell	KYTC-District 2-Construction
Jim Wilson	KYTC Central Office Planning
Steve Ross	KYTC-Central Office-Planning

## **Alternatives Development and Recommendations, Phase II**

### Spot 2-1, Muhlenberg County, MP 17.400 – 17.500

This spot includes the Wendell H. Ford Western Kentucky Parkway interchange. There were a total of seven crashes for a CRF of 1.723. Two of the crashes were “vehicle entering/leaving entrance” and two were “angle” collisions. With four, twelve-foot lanes and ten-foot shoulders, the roadway section as well as the geometry are good at this location.

Preliminary Team Recommendation: Assign Low priority to reconstruct interchange as a long-term recommendation.

*The following Spots, 2-2 through 2-8, are located within Central City, are very closely spaced, share common features and problems, and may need to be considered as one complete segment for improvement recommendations.*

### Spot 2-2, Muhlenberg County, MP 17.912 – 18.012

This spot located within Central City had seven total crashes for a CRF of 1.019. According to HIS records, this spot includes a transition from 10-foot to 2-foot shoulders. Three of the crashes recorded at this location were “rear end,” two were “opposing left turn” and two were “sideswipe-same direction.” Team members also noted an overhead railroad bridge nearby that trucks sometimes impact resulting in traffic delays.

Preliminary Team Recommendation: No recommendation at this time. Follow-up to determine whether parking is allowed along this spot. We may include this spot with others for a long term bypass solution that is outside the scope of this study.

*Kentucky State Police Post 2 (Madisonville) noted crash problems between MP 18.24 and 19.117 which includes Spots 2-3 through 2-8.*

### Spot 2-3, Muhlenberg County, MP 18.265 – 18.365

This spot located within Central City had 28 total crashes for a CRF of 3.247. This spot includes the intersection of Strouds Lane and according to HIS records is where a 2-foot shoulder transitions to curb-and-gutter. There were 10 “angle” collisions and eight “rear end” collisions recorded at this spot.



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Preliminary Team Recommendation: Assign Medium/High priority for intersection improvements.

Spot 2-4, Muhlenberg County, MP 18.378 – 18.478

This spot located within Central City had a total of 17 crashes for a CRF of 1.657. This spot includes the intersection of Harrison Avenue. There were 10 “angle” collisions and three “rear end” collisions recorded at this spot.

Preliminary Team Recommendation: No recommendation at this time. Follow-up to determine whether parking is allowed along this spot. We may include this spot with others for a long term bypass solution that is outside the scope of this study.

Spot 2-5, Muhlenberg County, MP 18.479 – 18.579

This spot located within Central City had a total of 17 crashes for a CRF of 1.627. There were seven “single vehicle,” four “rear end,” three “angle,” and three “head on” collisions.

Preliminary Team Recommendation: No recommendation at this time. Follow-up to determine whether parking is allowed along this spot. We may include this spot with others for a long term bypass solution that is outside the scope of this study.

Spot 2-6, Muhlenberg County, MP 18.670 – 18.770

This spot located within Central City had a total of 10 crashes for a CRF of 1.197. This spot includes the intersection of KY 70. There were four “angle,” three “rear end,” two “head on,” and one “sideswipe-same direction” collisions.

Preliminary Team Recommendation: No recommendation at this time. Follow-up to determine whether parking is allowed along this spot. We may include this spot with others for a long term bypass solution that is outside the scope of this study.

Spot 2-7, Muhlenberg County, MP 18.862 – 18.962

This spot located within Central City had a total of 15 crashes for a CRF of 2.399. This spot includes the intersection with KY 277. There were seven “rear end” and six “angle” collisions. Team members noted this was a signalized intersection and is aligned on a skew with commercial businesses located on the corners. They also noted that this may be a location where traffic approaches the intersection over a crest vertical curve with limited sight distance resulting in rear end crashes.

Preliminary Team Recommendation: Assign Medium/High priority for intersection improvements.

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Spot 2-8, Muhlenberg County, MP 19.062 – 19.162

This spot located in Central City had a total of six crashes for a CRF of 1.075. All six crashes were “rear end, both vehicles moving” type crashes. Team members had no additional input on this location.

Preliminary Team Recommendation: Follow-up with further investigation as to spot conditions and possible crash causes. We may include this spot with others for a long term bypass solution that is outside the scope of this study.

Spot 2-9, Muhlenberg County, MP 21.430 – 21.530

This spot located in South Carrollton includes the intersection with KY 189. There were five total crashes for a CRF of 1.198. Two of the crashes were “sideswipe-same direction.” Team members noted that there may be left turn lanes on all approaches at this intersection.

Preliminary Team Recommendation: Assign Low priority for intersection improvements.

MP 22.0 to 24.347, Muhlenberg County

*Kentucky State Police Post 2 (Madisonville) identified this segment as worthy of consideration as a high crash site. This segment includes the Spots 2-10 through 2-12. Improvements to this segment will be addressed by the spot improvement recommendations that follow.*

Spot 2-10, Muhlenberg County, MP 22.298 – 22.398

This spot located in South Carrollton includes the intersection with KY 81. There were 16 total crashes at this location for a CRF of 3.669. There were seven “rear end” crashes included in the total. Team members noted that HES project 2-976 begins just north of this spot (MP 22.4 – 22.7) and does not include the KY 81 intersection.

Preliminary Team Recommendation: Assign High priority for intersection improvements.

Spot 2-11, Muhlenberg County, MP 22.398 – 22.498

This spot located in South Carrollton begins at the KY 81 intersection. There were ten total crashes for a CRF of 1.97. Four of the crashes were “single vehicle,” two were “angle” collisions and two were “rear end.” This spot is included in HES project 2-976 for horizontal and vertical realignment, shoulder widening, and guard rail installation. This project does not include improvements to the intersection at KY 81.

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Preliminary Team Recommendation: Drop from list of recommended improvements for this study.

Spot 2-12, Muhlenberg County, MP 24.250 – 24.350

This spot located in South Carrollton is just north of Power Plant Drive. There were 12 total crashes for a CRF of 2.533. 10 of the crashes were “single vehicle” type collisions. Muhlenberg County Judge Kirtley noted the curve near the Kentucky Utilities plant as a location to consider for improvements. Team members noted that HES project 2-977 was originally two projects with the following limits: MP 23.9 – 24.1 and MP 24.3 – 24.5. These two projects were combined for horizontal and vertical realignment, shoulder widening, and guardrail installation. This spot will be addressed by this project.

Preliminary Team Recommendation: Drop from list of recommended improvements for this study.

MP 0.0 – 1.5 and MP 1.0 – 2.5 (overlap noted), McLean County

Kentucky State Police (Henderson) recommended a segment in McLean County from the levee at the Muhlenberg County line north to MP 1.5 for widening and shoulder upgrade; and from MP 1.0 to 2.5 for shoulder upgrades. The team looked at the crash data for the segment from 0.000 to 4.354 and noted 26 total crashes for a 0.341 CRF. This data included two fatalities over that 3 year period. Project team members noted that the roadway sits up high on a narrow fill with deep ditches on each side. HIS data show 2-foot shoulders. Shoulder upgrades would involve bringing in large amounts of additional fill material given the height of the existing fill and length of the segment.

Preliminary Team Recommendation: Drop from list of recommended improvements for this study. The study team considered recommending guard rails for this segment but decided against that recommendation. The reasoning was that there is a low CRF and the addition of guard rails on such a narrow segment of road would have a confining effect and could cause some drivers to “hug” the centerline, with the potential for head-on collisions and additional fatalities.

Spot 2-13, McLean County, MP 2.450 – 2.550

This spot located in Island includes the intersection with KY 85. There were five total crashes for a CRF of 0.976. Three of the crashes were “angle” collisions. Team members noted that this intersection is “Old” KY 85 and not the bypass that was recently constructed. Kentucky State Police (Henderson) recommended adding turning lanes at the intersection with Main Street in Island.

Preliminary Team Recommendation: Assign Low priority for intersection improvements.

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MP 5 – 11.6, McLean County

Kentucky State Police recommend shoulder upgrades on this segment of US 431. The team looked at crash data and noted no particularly high CRF's from segment analysis. However, Spots 2-14 through 2-18 are included within this segment's limits. Improvements to this segment will be addressed by the spot improvement recommendations that follow.

Spot 2-14, McLean County, MP 5.450 – 5.550

This spot in Livermore includes the Third Street intersection. There were six total crashes for a CRF of 1.035. Five of the six crashes at this spot were at the Third Street intersection. Four crashes were "rear end" collisions and two were "angle" collisions. Mayor Eaton noted in a response to our Resource Agency Coordination request for information that the intersection at the foot of the Green River Bridge is probably the most dangerous in the community. Livermore Mayor Eaton supports widening due to business prospects it would bring to Livermore. Team members noted that there is poor access control (continuous entrances from road to gas station and other businesses) at this location and that there is no one particular intersection causing problems from the bridge north. This location was recently converted from 2-lane to 3-lane and team members suggested evaluating updated crash data that applies to this reconstructed section.

Preliminary Team Recommendation: Assign Medium priority for 3-lane curb and gutter improvements with access control. Evaluate updated crash data for the reconstructed section.

Spot 2-15, McLean County, MP 6.038 – 6.138

This spot in Livermore includes the intersection with KY 136. There were 13 total crashes for a CRF of 2.348. Six of the crashes were "rear end" collisions and four were "angle" collisions. This location is currently under construction to be completed in May or June of 2005 under KYTC Item No. 2-9.00.

Preliminary Team Recommendation: Drop from list of recommended improvements for this study.

Spot 2-16, McLean County, MP 8.265 – 8.365

This spot includes the intersection with KY 1080. There were nine total crashes for a CRF of 1.557. This spot is within the limits of HES project, 2-972, to cut back embankments to improve sight distance and add left turn lanes on US 431 at KY 1080.

Preliminary Team Recommendation: Drop from list of recommended improvements for this study.

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Spot 2-17, McLean County, MP 9.300 – 9.400

This spot is located just north of the intersection of Barrett Hill Road. There were seven total crashes for a CRF of 1.211. Three of the crashes were “angle” collisions. Team members had no additional information immediately available on this spot.

Preliminary Team Recommendation: Assign Low priority for intersection improvements. Conduct more detailed analysis of crashes and reevaluate.

Spot 2-18, McLean County, MP 9.800 – 9.900

This spot includes the intersection with KY 250. There were seven total crashes for a CRF of 1.272. Four of the crashes were “rear end” collisions. Team members noted that this is a residential area with Buck Creek Baptist Church and a business (ADS Pipe) located near the intersection. They also noted that many students take KY 250 westbound to high school in Calhoun via this intersection.

Preliminary Team Recommendation: Assign Low/Medium priority for intersection improvements. Conduct more detailed analysis of crashes and reevaluate.

Spot 2-19, Daviess County, MP 2.599 – 2.699

This spot in Utica includes the intersection with KY 140. There were 10 total crashes for a CRF of 1.108. Three of the crashes were “angle” collisions, three were “single vehicle,” two were “rear end,” and two were “head on.” There are flashing beacons at this intersection and a Citgo Station on one corner. Team members noted a sight distance problem when approaching from the east on KY 140, that it is necessary to pull up close to US 431 in order to see. It was also noted that there is a historical marker just north of this intersection at the site of a Civil War skirmish. According to the Environmental Overview prepared for this study, this site has not been assessed for National Register potential.

Preliminary Team Recommendation: Assign Medium priority for intersection improvements and turning lanes.

MP 2.599 – 4.968, Daviess County

Kentucky State Police (Henderson) recommend horizontal and vertical alignment and routine road repairs for this segment. While there were no high crash spots noted within these limits, team members noted the terrain is rolling and there can be problems trying to pass for vehicles that get stuck behind slow moving farm equipment.

Preliminary Team Recommendation: Assign Medium priority for passing lanes. Conduct more detailed analysis of crashes and reevaluate.

*Spots 2-20 through 2-24 are located in the general vicinity of the Mall on US 431 outside the Owensboro Bypass.*

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Spot 2-20, Daviess County, MP 10.650 – 10.750

This spot had 14 total crashes for a CRF of 1.552. Seven of the crashes were “angle” collisions, five were “rear end” and two were “opposing left turn.” Team members noted that the location of this spot could include the light at Applebees. If so, then corrective action would probably have to be handled locally by petitioning the developer since the side streets are controlled by the property owners.

Preliminary Team Recommendation: Conduct a more detailed analysis of the crash data and reevaluate.

Spot 2-21, Daviess County, MP 10.800 – 10.900

This spot had 22 total crashes for a CRF of 2.439. 10 of the crashes were “rear end” collisions, four were “angle,” four were “opposing left turn,” three were sideswipe-same direction,” and one was “single vehicle.” Team members noted that this is probably the middle entrance at the mall. This middle entrance is unsignalized but located between two signalized intersections. Team members suggested there was a left turn problem for vehicles exiting from the mall.

Preliminary Team Recommendation: Assign High priority to close median and eliminate left turns at this mall entrance.

Spot 2-22, Daviess County, MP 10.950 – 11.050

This spot includes the intersection of Southtown Boulevard. There were 30 total crashes for a CRF of 1.703. 16 of the crashes were “rear end” collisions and another eight were “angle” collisions. Team members noted that Southtown Boulevard is going to be widened to three outbound lanes, five lanes total, under project 2-221.00. This state-funded project is just finishing up with the design phase.

Preliminary Team Recommendation: Drop from list of recommended improvements for this study.

Spot 2-23, Daviess County, MP 11.150 – 11.250

This spot includes the intersection with Carlton Drive. There were 33 total crashes for a CRF of 1.873. 17 of the crashes were “rear end” collisions, nine were “angle,” five were “opposing left turn,” and two were “backing.” Team members noted that this intersection is not signalized and the traffic backs up here. The backups could be due to the signal north of Carlton Drive.

Preliminary Team Recommendation: Conduct a more detailed analysis of the crash data and reevaluate.

Final Minutes – Team Meeting 2  
February 17, 2005  
US 431, Item No. 02-8106.00  
Career Advancement Center  
Central City, Kentucky

Spot 2-24, Daviess County, MP 11.267 – 11.367

This spot includes the Owensboro Bypass interchange. There were 60 total crashes for a CRF of 2.681. 43 of these crashes were “rear end” collisions. Team members noted that both intersections for the ramps on each side of the bypass are signalized. Vehicles coming off the ramp and turning left to go southbound may be accelerating to make it through the light, but then reach the next light for the ramps south of the bypass unprepared to stop, resulting in the large number of “rear end” collisions.

Preliminary Team Recommendation: Conduct a more detailed analysis of the crash data and reevaluate.

The meeting adjourned at approximately 4:10 PM CT.

**AGENDA**  
**2<sup>ND</sup> TEAM MEETING**  
**SCOPING STUDY FOR SAFETY IMPROVEMENTS**

**US 431**  
**FROM THE TENNESSEE TO THE INDIANA BORDER**  
**LOGAN, MUHLENBERG, MCLEAN AND DAVIESS COUNTIES**

**Meeting Location:** Career Advancement Center  
50 Career Way  
Central City, KY 42330

**Meeting Date:** February 17, 2005

**Meeting Time:** 1:00 P.M. – 4:00 P.M. CT

**Phase I – Tennessee Border to the WK Parkway**

- 1) Introductions, Review and Purpose
- 2) Environmental Justice
- 3) Resource Agency Coordination Responses
- 4) Related Projects
- 5) Other
- 6) Alternatives Development and Recommendations

Break

**Phase II – WK Parkway to the Owensboro Bypass**

- 7) Introductions, Review and Purpose
- 8) Environmental Justice
- 9) Resource Agency Coordination Responses
- 10) Related Projects
- 11) Other
- 12) Alternatives Development and Recommendations
  
- 13) Adjourn



Phase 1										
Logan County - No high crash segments										
Spot 1-1	From MP	To MP	Fatal	Injury	PDO	Total	CRF			
	1.485	1.585	0	3	2	5	0.917			
Adairville, 4-way stop, primarily inattention										
2 Collision with fixed object, single vehicle										
3 Angle collision										
No. of Lanes	Divided/Undivided	Lane Width	Shoulder Width	Terrain						
2	U	12	curbed	Rolling						
2003 ADT	Truck %	Design Speed	Posted Speed	% Passing Sight Dist	v/c	2003 LOS				
4170	12.8	70	35	30	0.20	E				
SPT 1-2	From MP	To MP	Fatal	Injury	PDO	Total	CRF			
	13.796	13.896	0	0	8	8	1.076			
Russellville, Intersection US431/US79, four involved trucks										
4 Vehicle backing (1 at dusk)										
2 Vehicle entering/leaving entrance										
1 Collision with fixed object, head on (dark, highway lighted)										
1 Angle collision, one vehicle turning left										
No. of Lanes	Divided/Undivided	Lane Width	Shoulder Width	Terrain						
2	U	10	2	Rolling						
2003 ADT	Truck %	Design Speed	Posted Speed	% Passing Sight Dist	v/c	2003 LOS				
8870	9.4	45	35	not avail	0.37	E				





SPOT 1-6	From MP	To MP	Fatal	Injury	PDO	Total	CRF		
	3.400	3.500	0	0	6	6	1.688		
	Rocky Creek Bridge is at MP 3.454, 21' wide								
	Branch of Rocky Creek Bridge is at MP 3.634, 21.5' wide								
	Muhlenberg County Judge Kirtley noted two narrow bridges near Penrod								
	1	Collision with animal							
	4	Sideswipe - opposite directions							
	1	Rear end in traffic lanes, both vehicles moving							
	3	dark		1 ice, 1 wet					
	2	U	Lane Width 10	Shoulder Width 2	Terrain Rolling				
	2003 ADT	Truck %	Design Speed	Posted Speed	% Passing Sight Dist	v/c	2003 LOS		
	2850	not avail	65	55	20	0.14	D		
SPOT 1-7	From MP	To MP	Fatal	Injury	PDO	Total	CRF		
	3.930	4.030	0	3	3	6	1.688		
	About 1 mile south of Union Ridge Road								
	4	Ran off roadway, one vehicle with earth embankment/ditch							
	1	Head on							
	1	Collision with fixed object							
	1	dawn, 4 dark	4 wet						
	No. of Lanes	Divided/Undivided	Lane Width	Shoulder Width	Terrain				
	2	U	10	2	Rolling				



	2003 ADT	Truck %	Design Speed	Posted Speed	% Passing Sight Dist	v/c	2003 LOS		
	2850	not avail	65	55	20	0.14	D		
<b>SPOT 1-9</b>	<b>From MP</b>	<b>To MP</b>	<b>Fatal</b>	<b>Injury</b>	<b>PDO</b>	<b>Total</b>	<b>CRF</b>		
	7.420	7.520	0	0	4	4	1.125		
	Between KY 2270 and KY 246								
	2	Rear end							
	1	Angle							
	1	Collision with non-fixed object							
			All dry						
	<b>No. of Lanes</b>	<b>Divided/ Undivided</b>	<b>Lane Width</b>	<b>Shoulder Width</b>	<b>Terrain</b>				
	2	U	10	1	Rolling				
	<b>2003 ADT</b>	<b>Truck %</b>	<b>Design Speed</b>	<b>Posted Speed</b>	<b>% Passing Sight Dist</b>	<b>v/c</b>	<b>2003 LOS</b>		
	2850	not avail	70	55	40	0.14	D		
<b>SPOT 1-10</b>	<b>From MP</b>	<b>To MP</b>	<b>Fatal</b>	<b>Injury</b>	<b>PDO</b>	<b>Total</b>	<b>CRF</b>		
	7.950	8.050	0	6	4	10	2.813		
	Intersection KY 246								
	3.000	Rear end							
	3.000	Angle							
	1.000	Head on							
	1.000	Ran off road							
	1.000	Sideswipe							
	1.000	Vehicle entering/leaving entrance							
	2	dark	All dry						



and additional signage upon approach to "high crash zones" stressing extra caution.										
From MP	To MP	Fatal	Injury	PDO	Total	CRF				
2.873	11.982	0	55	99	154	1.191				
No. of Lanes	Divided/ Undivided	Lane Width	Shoulder Width	Terrain	From MP	To MP				
2	U	11	2	Flat	2.300	11.776				
2003 ADT	Truck %	Design Speed	Posted Speed	% Passing Sight Dist	v/c	2003 LOS	From MP	To MP		
6240	not avail	70	45	100	0.30	E	9.834	9.970		
5310	not avail	70	45	100	0.26	E	9.669	9.834		
5310	not avail	70	55	100	0.26	D	9.300	9.669		
5310	not avail	70	55	0	0.26	E	8.550	9.300		
5310	not avail	40	55	0	0.26	E	8.530	8.550		
5310	not avail	40	35	0	0.26	E	8.400	8.530		
5310	not avail	70	35	40	0.26	E	8.020	8.400		
2850	not avail	70	45	40	0.14	E	7.520	8.020		
SPOT 1-12	From MP	To MP	Fatal	Injury	PDO	Total	CRF			
	9.734	9.834	0	5	4	9	1.665			
	Intersection KY 70 at Browder (MP 9.834)									
	3	ANGLE								
	2	REAR END								
	1	HEAD ON								
	1	SIDESWIPE-OPPOSITE DIRECTION								
	1	SIDESWIPE-SAME DIRECTION								
	1	SINGLE VEHICLE								
	2	dark	1	wet						



No. of Lanes	2	Divided/Undivided	U	Lane Width	10	Shoulder Width	1	Terrain	Rolling												
2003 ADT	5310	Truck %	not avail	Design Speed	70	Posted Speed	45	% Passing	100	v/c	0.26	2003 LOS	E								
<b>SPOT 1-13</b>	<b>From MP</b>	<b>To MP</b>	<b>Fatal</b>	<b>Injury</b>	<b>PDO</b>	<b>Total</b>	<b>CRF</b>														
	10.222	10.322	0	2	4	6	1.076														
	North of KY 70, no bridge, no intersection																				
	3 SIDESWIPE-OPPOSITE DIRECTION																				
	3 SINGLE VEHICLE																				
	2 dark																				
	All dry																				
No. of Lanes	2	Divided/Undivided	U	Lane Width	10	Shoulder Width	1	Terrain	Rolling												
2003 ADT	6240	Truck %	not avail	Design Speed	65	Posted Speed	55	% Passing	30	v/c	0.30	2003 LOS	E								
<b>SPOT 1-14</b>	<b>From MP</b>	<b>To MP</b>	<b>Fatal</b>	<b>Injury</b>	<b>PDO</b>	<b>Total</b>	<b>CRF</b>														
	11.400	11.500	0	4	6	10	1.71														
	Intersection KY 176 at Drakesboro (MP 11.467)																				
	5 ANGLE																				
	2 SINGLE VEHICLE																				
	2 REAR END																				
	1 OPPOSING LEFT TURN																				





	No. of Lanes	Divided/ Undivided	Lane Width	Shoulder Width	Terrain				
	2	U	12	1	Rolling				
	2003 ADT	Truck %	Design Speed	Posted Speed	% Passing Sight Dist	v/c	2003 LOS		
	8210	not avail	70	55	50	0.36	E		
<b>SPOT 1-17</b>	<b>From MP</b>	<b>To MP</b>	<b>Fatal</b>	<b>Injury</b>	<b>PDO</b>	<b>Total</b>	<b>CRF</b>		
	15.150	15.250	0	1	8	9	1.464		
	Intersection Cleaton Road (MP 15.184)								
	3	ANGLE							
	2	REAR END							
	2	SINGLE VEHICLE							
	2	SIDESWIPE-SAME DIRECTION							
	2	dark	1	wet					
	No. of Lanes	Divided/ Undivided	Lane Width	Shoulder Width	Terrain				
	2	U	12	1	Rolling				
	2003 ADT	Truck %	Design Speed	Posted Speed	% Passing Sight Dist	v/c	2003 LOS	From MP	To MP
	7060	not avail	70	55	70	0.34	D	15.184	16.538
	8210	not avail	70	55	50	0.36	E	11.982	15.184
	<b>Phase 2</b>								
	<b>Muhlenberg County - Two high crash segments:</b>								
	From MP 17.484 to 19.462, 125 crashes, CRF 1.948, downtown Central City, includes 8 spots								
	From MP 21.481 to 24.232, 64 crashes, CRF 1.238, South Carrollton, includes 4 spots								

<b>SPOT 2-1</b>	<b>From MP</b>	<b>To MP</b>	<b>Fatal</b>	<b>Injury</b>	<b>PDO</b>	<b>Total</b>	<b>CRF</b>						
	17.400	17.500	0	3	4	7	1.723						
	Central City, interchange Parkway (MP 17.484)												
	<b>No. of Lanes</b>	<b>Divided/Undivided</b>	<b>Lane Width</b>	<b>Shoulder Width</b>	<b>Terrain</b>								
	4	D	12	10	Rolling								
	<b>2003 ADT</b>	<b>Truck %</b>	<b>Design Speed</b>	<b>Posted Speed</b>	<b>% Passing Sight Dist</b>	<b>v/c</b>	<b>2003 LOS</b>	<b>From MP</b>	<b>To MP</b>				
	7570	7.7	70	55	30	0.13	A	17.484	17.528				
	7570	not avail	70	55	30	0.13	A	17.290	17.484				
<b>SPOT 2-2</b>	<b>From MP</b>	<b>To MP</b>	<b>Fatal</b>	<b>Injury</b>	<b>PDO</b>	<b>Total</b>	<b>CRF</b>						
	17.912	18.012	0	3	4	7	1.019						
	Central City												
	Transition from 10' to 2' shoulders												
	<b>No. of Lanes</b>	<b>Divided/Undivided</b>	<b>Lane Width</b>	<b>Shoulder Width</b>	<b>Terrain</b>	<b>From MP</b>	<b>To MP</b>						
	2	U	12	2	Flat	17.955	18.278						
	2	U	12	10	Flat	17.810	17.955						
	<b>2003 ADT</b>	<b>Truck %</b>	<b>Design Speed</b>	<b>Posted Speed</b>	<b>% Passing Sight Dist</b>	<b>v/c</b>	<b>2003 LOS</b>						
	8720	7.7	70	45	0	0.36	E						
	[REDACTED]												
	KY State Police Post 2, Madisonville:												
	High crash sites in need of consideration:												
	MP 18.24- 19.117												
	Includes Spots 2-3 through 2-8												
	KSP recommends clearing alongside roadway for maximum sight distance												

and additional signage upon approach to "high crash zones" stressing extra caution.											
From MP	To MP	Fatal	Injury	PDO	Total	CRF					
16.538	19.462	0	30	107	137	1.627					
No. of Lanes	Divided/Undivided	Lane Width	Shoulder Width	Terrain	From MP	To MP					
2	U	12	curbed	Rolling	18.962	19.389					
2	U	12	curbed	Rolling	18.879	18.962					
2	U	10	curbed	Rolling	18.825	18.879					
2	U	12	curbed	Rolling	18.820	18.825					
2	U	12	curbed	Rolling	18.679	18.820					
2	U	12	curbed	Rolling	18.525	18.679					
2	U	12	curbed	Rolling	18.391	18.525					
2	U	12	curbed	Flat	18.278	18.391					
2	U	12	2	Flat	17.955	18.278					
2003 ADT	Truck %	Design Speed	Posted Speed	% Passing Sight Dist	v/c	2003 LOS	From MP	To MP			
6250	1.7	70	35	not avail	0.30	E	18.962	19.389			
8360	1.7	70	35	not avail	0.36	E	18.879	18.962			
8360	1.7	70	35	not avail	0.36	E	18.825	18.879			
8360	1.7	70	35	not avail	0.36	E	18.820	18.825			
9810	1.7	70	35	not avail	0.43	E	18.679	18.820			
16400	1.7	70	35	not avail	0.71	E	18.525	18.679			
16400	1.7	70	35	not avail	0.71	E	18.391	18.525			
16400	1.7	70	35	100	0.67	E	18.390	18.391			
12800	1.7	70	35	100	0.52	E	18.278	18.390			
8720	7.7	70	35	100	0.36	E	18.241	18.278			
8720	7.7	70	35	0	0.36	E	18.087	18.241			
SPOT 2-3	From MP	To MP	Fatal	Injury	PDO	Total	CRF				
	18.265	18.365	0	4	24	28	3.247				

Central City, intersection W. Stroude Lane (MP 18.330)											
Transition from 2 shoulder to curb and gutter											
	<b>No. of Lanes</b>	<b>Divided/Undivided</b>	<b>Lane Width</b>	<b>Shoulder Width</b>	<b>Terrain</b>	<b>From MP</b>	<b>To MP</b>				
	2	U	12	curbed	Flat	18.278	18.391				
	2	U	12	2	Flat	17.955	18.278				
	<b>2003 ADT</b>	<b>Truck %</b>	<b>Design Speed</b>	<b>Posted Speed</b>	<b>% Passing Sight Dist</b>	<b>v/c</b>	<b>2003 LOS</b>	<b>From MP</b>	<b>To MP</b>		
	12800	1.7	70	35	100	0.52	E	18.278	18.390		
	8720	7.7	70	35	100	0.36	E	18.241	18.278		
	<b>SPOT 2-4</b>	<b>From MP</b>	<b>Fatal</b>	<b>Injury</b>	<b>PDO</b>	<b>Total</b>	<b>CRF</b>				
		18.378	0	3	14	17	1.657				
Central City, intersection Harrison Ave (MP 18.392)											
	<b>No. of Lanes</b>	<b>Divided/Undivided</b>	<b>Lane Width</b>	<b>Shoulder Width</b>	<b>Terrain</b>	<b>From MP</b>	<b>To MP</b>				
	2	U	12	curbed	Rolling	18.391	18.525				
	2	U	12	curbed	Flat	18.278	18.391				
	<b>2003 ADT</b>	<b>Truck %</b>	<b>Design Speed</b>	<b>Posted Speed</b>	<b>% Passing Sight Dist</b>	<b>v/c</b>	<b>2003 LOS</b>	<b>From MP</b>	<b>To MP</b>		
	16400	1.7	70	35	not avail	0.71	E	18.391	18.525		
	16400	1.7	70	35	100	0.67	E	18.390	18.391		
	12800	1.7	70	35	100	0.52	E	18.278	18.390		
	<b>SPOT 2-5</b>	<b>From MP</b>	<b>Fatal</b>	<b>Injury</b>	<b>PDO</b>	<b>Total</b>	<b>CRF</b>				
		18.479	0	2	15	17	1.627				
Central City, no intersection, no bridge											
	<b>No. of Lanes</b>	<b>Divided/Undivided</b>	<b>Lane Width</b>	<b>Shoulder Width</b>	<b>Terrain</b>						
	2	U	12	curbed	Rolling						

		2003 ADT	16400	Truck %	1.7	Design Speed	70	Posted Speed	35	% Passing Sight Dist	not avail	v/c	0.71	2003 LOS	E
	<b>SPOT 2-6</b>	<b>From MP</b>				<b>Fatal</b>		<b>Injury</b>		<b>PDO</b>		<b>Total</b>		<b>CRF</b>	
			18.670		18.770		0		4		6		10		1.197
		Central City, intersection KY 70 (MP 18.679)													
		<b>No. of Lanes</b>		<b>Divided/ Undivided</b>		<b>Lane Width</b>		<b>Shoulder Width</b>		<b>Terrain</b>					
			2		U		12		curbed		Rolling				
		2003 ADT	9810	Truck %	1.7	Design Speed	70	Posted Speed	35	% Passing Sight Dist	not avail	v/c	0.43	2003 LOS	E
			16400		1.7		70		35		not avail		0.71		E
	<b>SPOT 2-7</b>	<b>From MP</b>				<b>Fatal</b>		<b>Injury</b>		<b>PDO</b>		<b>Total</b>		<b>CRF</b>	
			18.862		18.962		0		4		11		15		2.399
		Central City, intersection KY 277 (MP 18.962)													
		<b>No. of Lanes</b>		<b>Divided/ Undivided</b>		<b>Lane Width</b>		<b>Shoulder Width</b>		<b>Terrain</b>		<b>From MP</b>		<b>To MP</b>	
			2		U		12		curbed		Rolling		18.879		18.962
			2		U		10		curbed		Rolling		18.825		18.879
		2003 ADT	8360	Truck %	1.7	Design Speed	70	Posted Speed	35	% Passing Sight Dist	not avail	v/c	0.36	2003 LOS	E
	<b>SPOT 2-8</b>	<b>From MP</b>				<b>Fatal</b>		<b>Injury</b>		<b>PDO</b>		<b>Total</b>		<b>CRF</b>	
			19.062		19.162		0		1		5		6		1.075



Central City, no intersection, no bridge									
No. of Lanes	2	Divided/Undivided	U	Lane Width	12	Shoulder Width	curbed	Terrain	Rolling
2003 ADT	6250	Truck %	1.7	Design Speed	70	Posted Speed	35	% Passing Sight Dist	not avail
								v/c	0.30
								2003 LOS	E
Vehicle Enforcement recommended widening in S. Carrollton area (see Phase 2 spots 9-12)									
<b>SPOT 2-9</b>	<b>From MP</b>	<b>To MP</b>	<b>Fatal</b>	<b>Injury</b>	<b>PDO</b>	<b>Total</b>	<b>CRF</b>		
	21.430	21.530	0	1	4	5	1.198		
South Carrollton, intersection KY 189 (MP 21.481)									
No. of Lanes	2	Divided/Undivided	D	Lane Width	11	Shoulder Width	10	Terrain	Rolling
	2	U		11	10	10		Rolling	Rolling
2003 ADT	3810	Truck %	1.7	Design Speed	60	Posted Speed	55	% Passing Sight Dist	0
								v/c	0.19
								2003 LOS	C
KY State Police Post 2, Madisonville: High crash sites in need of consideration: MP 22.0 - 24.347 Includes Spots 2-10 through 2-12									
KSP recommends clearing alongside roadway for maximum sight distance and additional signage upon approach to "high crash zones" stressing extra caution.									

	<b>From MP</b>	<b>To MP</b>	<b>Fatal</b>	<b>Injury</b>	<b>PDO</b>	<b>Total</b>	<b>CRF</b>		
	24.232	27.779	1	16	27	44	0.696		
	21.481	24.232	0	24	40	64	1.238		
	<b>No. of Lanes</b>	<b>Divided/ Undivided</b>	<b>Lane Width</b>	<b>Shoulder Width</b>	<b>Terrain</b>	<b>From MP</b>	<b>To MP</b>		
	2	U	11	2	Rolling	21.660	27.779		
	<b>2003 ADT</b>	<b>Truck %</b>	<b>Design Speed</b>	<b>Posted Speed</b>	<b>% Passing Sight Dist</b>	<b>v/c</b>	<b>2003 LOS</b>	<b>From MP</b>	<b>To MP</b>
	4750	8.7	70	55	20	0.23	D	24.232	26.411
	5340	8.7	65	55	20	0.26	D	22.465	24.232
	5340	8.7	65	45	20	0.26	E	22.450	22.465
	5340	8.7	65	45	30	0.26	E	22.398	22.450
	3810	1.7	65	45	30	0.19	E	21.663	22.398
<b>SPOT 2-10</b>	<b>From MP</b>	<b>To MP</b>	<b>Fatal</b>	<b>Injury</b>	<b>PDO</b>	<b>Total</b>	<b>CRF</b>		
	22.298	22.398	0	6	9	15	3.439		
	South Carrollton, intersection KY 81 (MP 22.398)								
	<b>No. of Lanes</b>	<b>Divided/ Undivided</b>	<b>Lane Width</b>	<b>Shoulder Width</b>	<b>Terrain</b>				
	2	U	11	2	Rolling				
	<b>2003 ADT</b>	<b>Truck %</b>	<b>Design Speed</b>	<b>Posted Speed</b>	<b>% Passing Sight Dist</b>	<b>v/c</b>	<b>2003 LOS</b>		
	3810	1.7	65	45	30	0.19	E		
<b>SPOT 2-11</b>	<b>From MP</b>	<b>To MP</b>	<b>Fatal</b>	<b>Injury</b>	<b>PDO</b>	<b>Total</b>	<b>CRF</b>		
	22.398	22.498	0	6	8	14	2.758		
	South Carrollton, intersection KY 81 (MP 22.398)								
	HES 2-976, MP 22.4 - 22.7, Horz. & Vert. Realignment, shoulder widening, install guardrail								

	Does the HES project include the intersection at KY 81?												
	No. of Lanes	Divided/Undivided	Lane Width	Shoulder Width	Terrain								
	2003 ADT	Truck %	Design Speed	Posted Speed	% Passing Sight Dist	v/c	2003 LOS						
<b>SPOT 2-12</b>	<b>From MP</b>	<b>To MP</b>	<b>Fatal</b>	<b>Injury</b>	<b>PDO</b>	<b>Total</b>	<b>CRF</b>						
	24.250	24.350	1	5	6	12	2.533						
	South Carrollton, just north of Power Plant Drive (MP 24.232)												
	HES 2-977, 23.9 - 24.1 and MP 24.3 - 24.5, Horz. & Vert. Realignment, shoulder widening, install guardrail												
	Muhlenberg County Judge Kirtley noted curve near KU plant												
	No. of Lanes	Divided/Undivided	Lane Width	Shoulder Width	Terrain								
	2	U	11	2	Rolling								
	2003 ADT	Truck %	Design Speed	Posted Speed	% Passing Sight Dist	v/c	2003 LOS						
	5340	8.7	65	45	30	0.26	E						
	<b>McLean County - No high crash segments</b>												
	<b>KY State Police, Henderson</b>												
	<b>From the levee at the Muhlenberg Co. line north to MP 1.5, widen and upgrade shoulders.</b>												
	<b>From MP 1.0 - 2.5, upgrade shoulders</b>												
	<b>From MP</b>	<b>To MP</b>	<b>Fatal</b>	<b>Injury</b>	<b>PDO</b>	<b>Total</b>	<b>CRF</b>						
	0.000	4.354	2	13	11	26	0.341						

No. of Lanes	Divided/ Undivided	Lane Width	Shoulder Width	Terrain	From MP	To MP		
2	U	12	2	Rolling	1.045	2.585		
2	U	12	2	Flat	0.000	1.045		
<b>2003 ADT</b>	<b>Truck %</b>	<b>Design Speed</b>	<b>Posted Speed</b>	<b>% Passing Sight Dist</b>	<b>v/c</b>	<b>2003 LOS</b>	<b>From MP</b>	<b>To MP</b>
5420	8.7	70	45	75	0.26	E	2.485	2.500
5840	8.7	70	45	75	0.28	E	2.100	2.485
4070	8.7	70	45	75	0.20	E	1.980	2.100
4070	8.7	70	55	75	0.20	C	1.045	1.980
4070	8.7	70	55	100	0.18	C	0.000	1.045
<p>KY State Police, Henderson, recommend adding turning lanes at intersection with Main Street in Island</p> <p>See spot 2-13, is KY 85 the same as Main Street?</p>								
<b>SPOT 2-13</b>	<b>From MP</b>	<b>To MP</b>	<b>Fatal</b>	<b>Injury</b>	<b>PDO</b>	<b>Total</b>	<b>CRF</b>	
	2.450	2.550	0	3	2	5	0.976	
Island, Intersection KY 85 (MP2.485)								
No. of Lanes	Divided/ Undivided	Lane Width	Shoulder Width	Terrain	From MP	To MP		
2	U	12	2	Rolling				
<b>2003 ADT</b>	<b>Truck %</b>	<b>Design Speed</b>	<b>Posted Speed</b>	<b>% Passing Sight Dist</b>	<b>v/c</b>	<b>2003 LOS</b>	<b>From MP</b>	<b>To MP</b>
5420	8.7	70	45	75	0.26	E	2.485	2.500
5840	8.7	70	45	75	0.28	E	2.100	2.485

KY State Police recommend shoulder upgrades between MP 5 and 11.6										
From MP	To MP	Fatal	Injury	PDO	Total	CRF				
6.038	11.573	0	29	47	76	0.650				
4.354	6.038	1	5	19	25	0.526				
No. of Lanes	Divided/ Undivided	Lane Width	Shoulder Width	Terrain	From MP	To MP				
2	U	12	3	Rolling	8.250	11.573				
2	U	12	2	Rolling	3.045	8.250				
2003 ADT	Truck %	Design Speed	Posted Speed	% Passing Sight Dist	v/c	2003 LOS	From MP	To MP		
5900	not avail	70	55	60	0.29	D	10.507	11.573		
5900	not avail	70	55	0	0.29	D	9.852	10.507		
6620	not avail	70	55	60	0.32	D	8.300	9.852		
6620	not avail	70	55	80	0.32	D	8.265	8.300		
6000	7.0	70	55	80	0.29	D	6.770	8.265		
6000	7.0	70	45	80	0.29	E	6.650	6.770		
6000	7.0	70	45	0	0.29	E	6.280	6.650		
6170	7.0	70	45	0	0.30	E	6.038	6.280		
8360	7.0	70	45	0	0.36	E	5.800	6.038		
7370	7.0	70	45	0	0.36	E	5.530	5.800		
6650	7.0	70	45	0	0.32	E	5.185	5.530		
6650	7.0	70	55	0	0.32	D	4.954	5.185		
See spots 2-14 through 2-18.										
SPOT 2-14	From MP	To MP	Fatal	Injury	PDO	Total	CRF			
	5.450	5.550	0	1	5	6	1.035			

Livermore, Third Street Intersection, MP 5.516											
Livermore Mayor, Eldon Eaton supports widening due to business prospects it would bring to Livermore.											
Mayor Eaton notes that intersection at foot of Green River Bridge is probably most dangerous in the community.											
5 of the 6 crashes at this spot location were at the Third Street Intersection, MP 5.516.											
<b>No. of Lanes</b>	<b>Divided/Undivided</b>	<b>Lane Width</b>	<b>Shoulder Width</b>	<b>Terrain</b>							
2	U	12	2	Rolling							
<b>2003 ADT</b>	<b>Truck %</b>	<b>Design Speed</b>	<b>Posted Speed</b>	<b>% Passing Sight Dist</b>	<b>v/c</b>	<b>2003 LOS</b>	<b>From MP</b>	<b>To MP</b>			
6650	7.0	70	45	0	0.32	E	5.185	5.530			
6650	7.0	70	55	0	0.32	D	4.954	5.185			
<b>SPOT 2-15</b>	<b>From MP</b>	<b>Fatal</b>	<b>Injury</b>	<b>PDO</b>	<b>Total</b>	<b>CRF</b>					
	6.038	0	7	6	13	2.348					
Livermore, intersection KY 136 (MP 6.038)											
2-9.00, Reconstruct KY 136 intersection in Livermore											
<b>No. of Lanes</b>	<b>Divided/Undivided</b>	<b>Lane Width</b>	<b>Shoulder Width</b>	<b>Terrain</b>							
2	U	12	2	Rolling							
<b>2003 ADT</b>	<b>Truck %</b>	<b>Design Speed</b>	<b>Posted Speed</b>	<b>% Passing Sight Dist</b>	<b>v/c</b>	<b>2003 LOS</b>					
6170	7.0	70	45	0	0.30	E					
<b>SPOT 2-16</b>	<b>From MP</b>	<b>Fatal</b>	<b>Injury</b>	<b>PDO</b>	<b>Total</b>	<b>CRF</b>					
	8.265	0	3	6	9	1.557					
Intersection KY 1080 (MP 8.265)											
HES 2-972, Intersection KY 1080, Vert. Realignment and cutback embankment to improve sight distance											



<b>Daviess County - One high crash segment:</b>										
From MP 10.632 to 11.367 (Owensboro Bypass), CRF 2.174, including about 5 spots										
<b>SPOT 2-19</b>	<b>From MP</b>	<b>To MP</b>	<b>Fatal</b>	<b>Injury</b>	<b>PDO</b>	<b>Total</b>	<b>CRF</b>			
	2.599	2.699	0	4	6	10	1.108			
Intersection KY 140 (MP 2.599), Utica										
KY State Police, Henderson, recommend adding turning lanes at intersection KY 140										
<b>No. of Lanes</b>	<b>Divided/ Undivided</b>	<b>Lane Width</b>	<b>Shoulder Width</b>	<b>Terrain</b>						
2	U	12	2	Rolling						
<b>2003 ADT</b>	<b>Truck %</b>	<b>Design Speed</b>	<b>Posted Speed</b>	<b>% Passing Sight Dist</b>	<b>v/c</b>	<b>2003 LOS</b>				
8990	not avail	70	55	0	0.39	D				
KY State Police, Henderson, recommend Horz. & Vert. Alignment and routine road repairs, north of Utica (MP 2.599?) to MP 5.0.										
Zero passing sight distance between MP 2.599 to 4.968 noted in table below.										
<b>From MP</b>	<b>To MP</b>	<b>Fatal</b>	<b>Injury</b>	<b>PDO</b>	<b>Total</b>	<b>CRF</b>				
0.000	10.632	4	48	89	141	0.471				
<b>No. of Lanes</b>	<b>Divided/ Undivided</b>	<b>Lane Width</b>	<b>Shoulder Width</b>	<b>Terrain</b>	<b>From MP</b>	<b>To MP</b>				
2	U	12	2	Rolling	0.000	4.968				
<b>2003 ADT</b>	<b>Truck %</b>	<b>Design Speed</b>	<b>Posted Speed</b>	<b>% Passing Sight Dist</b>	<b>v/c</b>	<b>2003 LOS</b>	<b>From MP</b>	<b>To MP</b>		
8990	not avail	70	55	0	0.39	D	2.599	4.968		
6930	not avail	70	55	36	0.34	D	1.287	2.599		
6930	not avail	65	55	25	0.34	D	0.000	1.287		





	29200	6.0	70	35	100	0.50	C	
<b>SPOT 2-23</b>	<b>From MP</b>	<b>To MP</b>	<b>Fatal</b>	<b>Injury</b>	<b>PDO</b>	<b>Total</b>	<b>CRF</b>	
	11.150	11.250	0	7	24	31	1.760	
	Just outside Owensboro Bypass, Int. Carlton Drive (MP 11.155)							
	<b>No. of Lanes</b>	<b>Divided/Undivided</b>	<b>Lane Width</b>	<b>Shoulder Width</b>	<b>Terrain</b>			
	4	D	12	10	Flat			
	<b>2003 ADT</b>	<b>Truck %</b>	<b>Design Speed</b>	<b>Posted Speed</b>	<b>% Passing Sight Dist</b>	<b>v/c</b>	<b>2003 LOS</b>	
	29200	6.0	70	35	100	0.50	C	
<b>SPOT 2-24</b>	<b>From MP</b>	<b>To MP</b>	<b>Fatal</b>	<b>Injury</b>	<b>PDO</b>	<b>Total</b>	<b>CRF</b>	
	11.267	11.367	0	13	47	60	2.681	
	Owensboro, interchange US 60, Owensboro Bypass (MP 11.367)							
	<b>No. of Lanes</b>	<b>Divided/Undivided</b>	<b>Lane Width</b>	<b>Shoulder Width</b>	<b>Terrain</b>	<b>From MP</b>	<b>To MP</b>	
	4	U	12	10	Flat	11.322	11.471	
	4	D	12	10	Flat	10.632	11.322	
	<b>2003 ADT</b>	<b>Truck %</b>	<b>Design Speed</b>	<b>Posted Speed</b>	<b>% Passing Sight Dist</b>	<b>v/c</b>	<b>2003 LOS</b>	
	29200	6.0	70	35	100	0.50	C	

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The meeting began at approximately 1:05 PM CT. Those attending were:

Gina Boaz	Green River ADD
Craig Morris	Pennyrile ADD
Lance Meredith	Barren River ADD
Kevin McClearn	KYTC-District 2-Planning
Nick Hall	KYTC-District 2-Planning
Everett Green	KYTC-District 2-Pre-Construction
Jeff Moore	KYTC-District 3-Planning
Allen Cox	KYTC-District3-Maintenance
James Simpson	KYTC-Central Office-Design
Wheeler Nevels	KYTC-Central Office-Maintenance
Steve Ross	KYTC-Central Office-Planning

Steve Ross opened the meeting with introductions and briefly discussed the results of the second team meeting and that the primary purpose of this third meeting would be to continue with the spot analysis. The team will look at more detailed information collected from police collision reports for those spots that required follow-up and/or additional information. The team will also identify any outstanding items necessary to complete the study report.

### **Recent Correspondence**

Handouts were distributed to the team including a newspaper article discussing a push by Representative Yonts to four-lane US 431 throughout Kentucky, a letter of support for widening US 431 from Mayor Boarman of Whitesville and a letter of support and resolution for widening US 431 from Mayor Yassney of Russellville. Also included in the handout were the Cabinet's responses to those letters acknowledging the importance of US 431 and explaining that the potential for widening has been studied, but would be costly for the entire route and best accomplished over the long-term.

The goals of this study were revisited by the team, the primary goal being to improve safety with an emphasis on identifying high crash spots along the corridor that could be addressed with limited funding. It was discussed that the team has not confined itself to considering only safety when looking at improvement alternatives. Secondary goals established at the beginning of the study include improving access and connectivity.

### **Alternatives Development and Recommendations**

A handout was presented to meeting attendees titled, "Alternatives Development and Recommendations." This handout listed the spot locations and descriptions from the second team meeting with additional notes in blue from a more detailed

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review of the crash data and police collision reports. The project team reviewed this updated information and made final recommendations for improvements at each location.

The team made a decision to prioritize the crash spots based on critical rate factor, rather than the “high, medium, low” method begun in the second team meeting. The crash data evaluated initially was from 2000–2002. In the follow-up evaluation for this meeting, crash data was also collected and evaluated for 2003–2004.

Two tables (separately attached Excel spreadsheets) summarize the spots/segments selected by the team and their recommendations. The first table lists spots/segments for Phase I, the southern phase, from the Tennessee state line to the Wendell H. Ford Western Kentucky Parkway. The second table lists spots/segments for Phase 2, the northern phase, from the Wendell H. Ford Western Kentucky Parkway to the Owensboro Bypass.

Given the large number of spots identified on US 431 through Central City, an additional bypass option was considered and discussed. This idea was finally rejected by the team for several reasons. Trucks that exceed 11'-4" vertical clearance can already bypass Central City on the west side via US 62 and KY 189. To extend this bypass south of the Parkway would likely require an unconventional interchange to avoid much of the existing development in that area. A bypass on the east side of town would have to avoid a correctional facility, mine lands, wetlands and the Green River. The difficulty and cost of an additional or improved bypass if not unfeasible, would likely exceed the cost of the combined spot improvements.

### **Cost Estimates**

It was discussed that cost estimates would need to be developed for the improvements recommended by the team. A letter will go out to each District requesting these estimates after this meeting. Estimates will need to be broken down by Design, Right-Of-Way, Utility Relocation and Construction phases.

### **Outstanding Items**

There were no additional items brought forward for consideration by the team.

The meeting adjourned at 4:00 PM CT.

## **AGENDA**

US 431  
3<sup>rd</sup> Team Meeting  
Career Advancement Center  
Central City, KY  
1-4 PM CT  
November 1, 2005

- Welcome and Introductions
- Recent Correspondence
- Review updated/detailed crash information from police collision reports and update recommendations and prioritizations for safety improvements.
- Request cost estimates for safety improvements.
- Identify any other outstanding items necessary to complete the
- Adjourn

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## **Alternatives Development and Recommendations, Phase I**

### Spot 1-1, Logan County, MP 1.485 - 1.585 [KY591](#)

The location of this spot is the KY 591 intersection in Adairville. The critical crash rate factor, CRF, was 0.917. This is a 4-way stop that has had several unusual accidents involving driver inattentiveness. Buildings are located very close to the roadway and the intersection is located at the northwest corner of the town square. Improvements here would be difficult to implement. No recommendations short of a bypass were recommended by the project team.

Preliminary Team Recommendation: **Drop from list of recommended improvements for this study.**

*Intersection CRF: 0.53 (2000-2002)*

### Spot 1-2, Logan County, MP 13.796 - 13.896

The location is the intersection of US 79 in Russellville. The critical rate factor was 1.076. Problems include a high volume of traffic and trucks with tight turning radii at the intersection, business entrances located close to the intersection and properties located close to the roadway. The US 431 southern bypass project in Russellville will address the problems associated with this intersection by reducing traffic volume and providing trucks an alternate route.

Preliminary Team Recommendation: **Drop from list of recommended improvements for this study.**

### Spot 1-3, Logan County, MP 23.900 - 24.000

The location is Lewisburg, between KY 107 and KY 106. The critical rate factor was 1.258. This location will be addressed as a result of the Epleys to Lewisbug, US 431 reconstruction project, Item No. 3-273.00.

Preliminary Team Recommendation: **Drop from list of recommended improvements for this study.**

### Spot 1-4, Logan County, MP 29.952 – 30.052 [Hollow Bill](#)

The location is Hollow Bill, just north of HW McPherson Road. The critical rate factor was 1.618. Five of the six collisions at this spot were during bad weather conditions (wet or icy roads) on curves. The District and ADD personnel noted a history of crash problems at this location including a multiple fatality. This spot is also within the limits of a project listed on the Unscheduled Projects List (UPL) for relocation and assigned a medium (Local, ADD and District) priority. The terrain is rough in this area and the only conceivable improvement would be total reconstruction to improve the horizontal and vertical geometry.

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Preliminary Team Recommendation: **Assign High Priority to reconstruct as described in the UPL from MP 28.900 to MP 31.050** (Logan/Muhlenberg County Line).

[Spot 1-4a](#), MP 31.043, Logan County - Added Spot [KY 1293](#)

This location was recommended to be added to the list by District 3 personnel and is located at the intersection with KY 1293, almost on the Logan/Muhlenberg County line. While the CRF was not greater than 1.00 at this location, District 3 personnel noted poor sight distance and a potential for crashes.

Preliminary Team Recommendation: **Assign medium priority for intersection improvements.**

*Intersection CRF: 0.23 (2000-2002) not a typo – same as spot 1-5 at KY 973*

*This spot would be included within the limits (MP28.9 – 31.05) noted above for spot 1-4.*

[Spot 1-5](#), Muhlenberg County, MP 0.364 – 0.464 [KY 973](#)

This spot is located at the intersection of KY 973. Only four crashes were cited here for a CRF of 0.983. None of the crashes involved fatalities. The team agreed that four crashes over a three-year period are probably not statistically significant.

Preliminary Team Recommendation: Drop from list of recommended improvements for this study. *Reconsider, see below.*

*Suggest revise limits to include cluster of intersections in Dunmor between MP 0.4 and 0.559. There were 7 crashes in this segment in 2003-2004*

*7 Total crashes (3injury, 4 PDO) 2003-2004*

*2 Angle (1 injury, 1 PDO)*

*One at the intersection of Elm St., vehicle crossing westbound*

*One pickup pulling small trailer pulling from side street (Oak St?) onto northbound US 431 into path of southbound vehicle*

*2 Sideswipe opposite direction (2 PDO)*

*One of these was attempting to turn left on KY 973*

*2 Single vehicle (1 injury, 1 PDO)*

*Both eastbound on KY973, failed to stop at US 431*

*1 Rear end (injury)*

*Pulled from driveway onto northbound US 431( immediately north of curve) into path of northbound vehicle coming out of left hand curve.*

*CRF: 2.384 (2003-2004) Segment MP 0.4 – 0.599.*

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*Intersection CRF: 0.23 (2000-2002) not a typo – same as spot 1-4 at KY 1293. This includes only the intersection at KY 973 – does not include the other driveways and intersections within the noted segment.*

*Suggest intersection improvements to KY 973 combined with access control to reduce number of conflict points at this cluster of intersections and driveways between MP 0.4 and 0.559.*

Spot 1-6, Muhlenberg County, MP 3.400 – 3.500

Six crashes were documented at this spot. The CRF was 1.688. This spot includes one narrow bridge carrying US 431 over Rocky Creek. The bridge width is 21.5 feet. Four of the six crashes were “sideswipe-opposite direction.” No injury or fatality crashes were documented. This bridge has been identified for replacement under HES 02-984 and accepted, but not a high priority.

Preliminary Team Recommendation: **Assign high priority to replace or widen Rocky Creek Bridge.**

MP 3.634, Muhlenberg County - Added Spot

This is the location of a bridge carrying US 431 over Rocky Creek Branch, immediately north of the preceding spot location. The bridge is similar to the Rock Creek bridge and is also only 21.5 feet wide.

Preliminary Team Recommendation: **Assign medium priority to replace or widen Branch of Rocky Creek Bridge.**

Spot 1-7, Muhlenberg County, MP 3.930 – 4.030

This spot is about one mile south of Union Ridge Road and had a CRF of 1.688. Four of the six total crashes were “run-off-road” crashes. Also, four occurred during wet, dark conditions. Lencie Meredith noted that this is often indicative of an edgeline problem (worn/faded or nonexistent). If there is an existing edgeline and it is in good condition (reflective), then this type of crash problem could instead be due to geometry.

Preliminary Team Recommendation: Assign low priority to realign/widen. Follow-up is necessary to first determine existence/condition of edgeline and roadway geometry.

*This section of road does have edge lines. Four crashes involved vehicles rounding curve and then seeing vehicles stopped or slowed resulting in run-off-road type crashes to avoid rear end collision. Three of these were during wet conditions. Suggest keep team’s recommendation to realign/widen.*



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MP 6.0 – 7.0, Muhlenberg County

This segment was noted by Kentucky State Police Post 2 (Madisonville) as a high crash site. Crash data did not support this and the project team could not identify any obvious problem.

Preliminary Team Recommendation: Do nothing unless follow-up identifies an obvious problem.

[Spot 1-7a, Muhlenberg County, MP 6.146 – 6.246](#)

*5 Total crashes, (2 injury, 3 PDO) 2000-2002*

*2 Head-on (2 injury)*

*Both were southbound vehicles that crossed centerline.*

*2 Single vehicle (2 PDO) Both were tractor-trailers*

*Northbound tractor trailer lost load of 5 steel beams into guard rail.*

*Southbound tractor trailer dropped off road into ditch and*

*overcorrected (said was run off road by southbound pickup truck)*

*1 Sideswipe opposite direction (PDO)*

*Passenger vehicles swapped mirrors.*

*CRF: 1.406*

*There were no crashes within this spot during 2003-2004. Immediately south at MP 5.964, there was a fatal head-on crash where a northbound pickup truck lost control on a wet road in a curve and crossed into the southbound lane. The only other crash during this time period in the vicinity was at MP 5.972 where a northbound motorcycle in a curve, on a dry road, ran off the road, not under proper control.*

*Some of these crashes may have occurred at the curve in Belton if they were not located precisely in the collision report. Suggest realignment from MP 5.96 to the MP 6.2 if not already addressed by improvements associated with Belton Curve project, 02-900.00 (between MP 6.2 and 6.4).*

Spot 1-8, Muhlenberg County, MP 6.3 – 6.4 [Curve at Belton](#)

This tight curve in Belton is known locally as “**Dead Man’s Curve**,” the site of recent fatalities and has already undergone improvements to correct sight distance deficiencies. There were eight total crashes for a CRF of 2.25. More work is scheduled for 2006 to **widen the roadway and realign the curve under HES 2-900.**

Preliminary Team Recommendation: **Drop from list of recommended improvements for this study.**

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Spot 1-8a, Muhlenberg County, MP 6.964, Intersection KY 2270

*Total 3 crashes 2000-2002 (1 injury, 2 PDO)*

*1 Rear end (injury) northbound at intersection KY 2270*

*1 Angle (PDO) vehicle pulled from gas station into path of southbound vehicle*

*1 Single vehicle (PDO) Fell asleep.*

*Total 2 crashes 2003-2004 (2 PDO)*

*2 Angle (2 PDO)*

*Eastbound Unit 1 pulled into intersection into path of southbound Unit 2.*

*Unit 1 turning northbound from driveway into path of south bound unit 2.*

*Intersection CRF: 0.68 (2003-2004) This number would be skewed high due to two crashes being incorrectly located at this spot in the crash records.*

*Crashes predominantly due to inattention. There is a gas station at the northeast corner of the unsignalized intersection with KY 2270.*

*No suggested improvements at this location.*

Spot 1-9, Muhlenberg County, MP 7.420 – 7.520

Located between KY 2270 and KY 246, this spot had a CRF of 1.125 due to only four crashes over a three year period. No fatalities or injuries were cited. The project team had no additional information for this location and agreed that four crashes over a three-year period are probably not statistically significant.

Preliminary Team Recommendation: **Drop from list of recommended improvements for this study.**

Spot 1-10, Muhlenberg County, MP 7.950 – 8.050 [KY 246](#)

This spot at the intersection of KY 246 had a total of 10 crashes for a CRF of 2.813. Three of these collisions were “rear end” and another three were “angle” collisions. Team members noted bifurcated turn lanes on KY 246 and a gas station on one of the corners possibly contributing to the crashes. They also noted that this intersection is just south of the Hughes-Kirk Elementary School.

Preliminary Team Recommendation: **Assign high priority for intersection improvements.**

*Intersection CRF: 1.28 (2000-2002)*

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Spot 1-11, Muhlenberg County, MP 8.950 – 9.050

This spot, just south of Sylvania Street had six total crashes for a CRF of 1.186. Three of the crashes were “angle” collisions. The team noted no apparent problems at this location. They also noted that this may be just south of the proposed site of the new Beechmont-Browder Elementary School.

Preliminary Team Recommendation: Assign low priority and investigate further for improvement recommendations.

*One of these crashes was a duplicate. One was fluke where the wheel came off a pickup truck. One was an animal collision. One involved a driver who fell asleep. Another was mislocated. The remaining crash was an angle collision where unit 1 was westbound on Sylvania turning left onto US 431, pulled into path of southbound unit 2. There were only two crashes recorded for 2003-2004, both of these were single vehicle run-off-road.*

*There are a cluster of intersections in this area and Sylvania Street intersects on a heavy skew. However, collision reports do not indicate problems at this spot. Suggest either keep on list at a low priority to realign Sylvania and control access, or remove from list.*

Spot 1-12, Muhlenberg County, MP 9.734 – 9.834 [KY 70](#)

This spot in Browder includes the intersection of KY 70. There were nine total crashes for a CRF of 1.665. Three of the crashes were “angle” collisions and two were “rear end.” Team members noted that this intersection has bifurcated turning lanes on the east approach of KY 70. This is also within the limits (MP 8.0 – 9.90) of a location noted by Kentucky State Police Post 2 (Madisonville) for consideration as a possible high crash site.

Preliminary Team Recommendation: **Assign High priority for intersection improvements.**

*Intersection CRF: 1.21 (2000-2002)*

Spot 1-13, Muhlenberg County, MP 10.222 – 10.322

This spot located north of KY 70 had six total crashes for a CRF of 4.076. Three of these crashes were “sideswipe-opposite direction” and three were “single vehicle” collisions. Team members noted sharp, reverse curves in this area.

Preliminary Team Recommendation: Assign Medium priority to reconstruct to correct horizontal alignment. Follow-up to check length of proposed reconstruction.

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*Two of the single vehicle crashes were deer collisions. The other single vehicle was a northbound pickup that ran off the road. Two of the sideswipe collisions involved vehicles swapping mirrors. One of these involved a coal truck. The remaining sideswipe also involved a dump truck. All were during dry conditions.*

*4 Total crashes not including deer collisions.  
Revised CRF: 0.717 (2000-2002)*

*No crashes were recorded for this spot in 2003-2004.*

*Suggest keeping team recommendation for realignment but consider lowering the priority. Limits of the series of reverse curves are between MP 10.2 and 10.7. Topography will be an issue.*

Spot 1-14, Muhlenberg County, MP 11.400 – 11.500 [KY 176](#)

This spot includes the intersection of KY 176 in Drakesboro and had 10 crashes for a CRF of 1.71. Team members noted that this is a signalized intersection with no turn lanes and a “Pantry” store on the corner. Southbound coal trucks on US 431 turn eastbound on KY 176 to serve the Paradise Steam Plant. Muhlenberg High School is also accessed from this location by traveling westbound on KY 176. Five of the 10 crashes at this spot were “angle” collisions.

Preliminary Team Recommendations: **Assign Medium priority for intersection improvements.**

*Intersection CRF: 1.00 (2000-2002)*

*13 Total crashes 2003-2004 (4 injury, 9 PDO)  
4 Left turns  
3 Rear end  
3 Single vehicle (includes 2 DUI)  
3 From private entrance*

*CRF: 2.833 (2003-2004)*

*Suggest keeping team recommendation for intersection improvements. Consider high priority.*

Spot 1-15, Muhlenberg County, MP 11.982 – 12.082 [KY2107](#)

This spot includes the KY 2107 intersection. There were a total of six crashes for a CRF of 0.908. Three of the crashes were “angle” collisions, two were “head on” and one was an “opposing left turn.” This spot is within the limits (MP 11.0 – 12.10) of a location noted by Kentucky State Police Post 2 (Madisonville) for consideration as a possible high crash site.

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Preliminary Team Recommendations: **Assign Low priority for intersection improvements.**

One of the recommendations of Kentucky State Police (KSP) Post 2 (Madisonville), was to place additional signage upon approach to “high crash zones” stressing extra caution. Project team members noted that placing these types of signs is a liability problem and not an acceptable solution to addressing safety issues. Team members also recommended addressing this comment in the report write-up with an explanation as to why KSP’s recommendation for warning signs could not be implemented.

*Intersection CRF: 0.29 (2000-2002)*

Spot 1-16, Muhlenberg County, MP 14.096 – 14.196

This spot is located approximately one mile south of Cleaton Road. There were a total of six crashes for a CRF of 0.908. **Half of these crashes were coded “collision with animal.”**

Preliminary Team Recommendation: **Drop from list of recommended improvements for this study.**

Spot 1-17, Muhlenberg County, MP 15.150 – 15.250

This spot is at the intersection of Cleaton Road. There were a total of nine crashes for a CRF of 1.464. Three of these crashes were “angle” collisions, two were “rear end” and two were “sideswipe-same direction.” Team members noted that there is a railroad grade-separation project planned north of this location, but it will probably not extend to this intersection.

Preliminary Team Recommendation: **Assign Medium priority for intersection improvements/turn lanes.**

### **Alternatives Development and Recommendations, Phase II**

Spot 2-1, Muhlenberg County, MP 17.400 – 17.500 *Parkway Interchange*

This spot includes the Wendell H. Ford Western Kentucky Parkway interchange. There were a total of seven crashes for a CRF of 1.723. Two of the crashes were “vehicle entering/leaving entrance” and two were “angle” collisions. With four, twelve-foot lanes and ten-foot shoulders, the roadway section as well as the geometry are good at this location.

Preliminary Team Recommendation: **Assign Low priority to reconstruct interchange as a long-term recommendation.**

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*The following Spots, 2-2 through 2-8, are located within Central City, are very closely spaced, share common features and problems, and may need to be considered as one complete segment for improvement recommendations.*

Spot 2-2, Muhlenberg County, MP 17.912 – 18.012 [Section change north of Parkway Interchange](#)

This spot located within Central City had ~~seven~~ total crashes for a CRF of ~~1.019~~. According to HIS records, this spot includes a transition from 10-foot to 2-foot shoulders. Three of the crashes recorded at this location were “rear end,” ~~two were “opposing left turn”~~ and two were “sideswipe-same direction.” Team members also noted an ~~overhead railroad bridge~~(See Spot 2-5 for RR overpass) nearby that trucks sometimes impact resulting in traffic delays.

Preliminary Team Recommendation: No recommendation at this time. Follow-up to determine whether parking is allowed along this spot. We may include this spot with others for a long term bypass solution that is outside the scope of this study.

*5 Total crashes (2 injury, 3 PDO)  
3 Rear end (1 injury, 2 PDO)  
2 Sideswipe same direction (1 injury, 1 PDO)*

*Revised CRF: 0.728*

*Roadway section narrows just north of interchange in this spot. Vehicles either stopped to make turns off US 431 or turning left onto US 431. Entrances to Pizza Hut and Fast Eddy’s were noted in reports. One pedestrian hit while adjusting tie-downs while parked on shoulder. Other than this instance, there was no indication of any parking along US 431 noted in the collision reports.*

*CRF is less than one. No suggestions for short term improvements.*

*Kentucky State Police Post 2 (Madisonville) noted crash problems between MP 18.24 and 19.117 which includes Spots 2-3 through 2-8.*

Spot 2-3, Muhlenberg County, MP 18.265 – 18.365 [Everly Brothers Blvd. \(US 62\) and W. Stroud Lane](#)

This spot located within Central City had 28 total crashes for a CRF of 3.247. This spot includes the intersection of Strouds Lane and according to HIS records is where a 2-foot shoulder transitions to curb-and-gutter. There were 10 “angle” collisions and eight “rear end” collisions recorded at this spot.

Preliminary Team Recommendation: Assign Medium/High priority for intersection improvements.

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*25 Total crashes (4 injury, 21 PDO)*

*11 Angle (2 injury, 9 PDO)*

*8 Rear end (2 injury, 6 PDO)*

*3 Sideswipe same direction (3 PDO)*

*2 Backing (2 PDO)*

*One to allow tractor-trailer to turn.*

*One tractor-trailer rolled back – driver out of vehicle.*

*1 Single Vehicle (PDO) Fell asleep and ran off road.*

*Revised CRF: 2.899*

*Intersection CRF: 1.62 (US 62) (2000-2002)*

*6 Crashes involved tractor-trailers. 4 of the six were making wide turns (3 at Everly Brothers Blvd.)*

*Turning movements and rear end collisions at intersections and entrances were noted – crashes primarily due to inattention. Entrances to Wendy's and McDonald's both noted along this spot. US 62 is signalized with turn lanes.*

*No specific short term recommendations beyond team's suggestion for intersection improvements. Consider high priority given the CRF.*

Spot 2-4, Muhlenberg County, MP 18.378 – 18.478 [Harrison Avenue](#)

This spot located within Central City had a total of ~~17~~ crashes for a CRF of ~~1.657~~. This spot includes the intersection of Harrison Avenue. There were ~~10~~ "angle" collisions and three "rear end" collisions recorded at this spot.

Preliminary Team Recommendation: No recommendation at this time. Follow-up to determine whether parking is allowed along this spot. We may include this spot with others for a long term bypass solution that is outside the scope of this study.

*15 Total crashes (3 injury, 12 PDO)*

*11 Angle (3 injury, 8 PDO)*

*2 at Harrison St.*

*9 remaining were all leaving parking lots from: Ponderosa, Dairy Queen, IGA, Old National Bank (exiting from the entrance only lane), etc., to enter US 431*

*3 Rear end (3 PDO)*

*1 Single vehicle (PDO) at Harrison, tire blew out.*

*Revised CRF: 1.462*

*From Harrison Avenue, MP 18.392, north to the Railroad overpass, MP 18.525, there is strip development (KFC, Dairy Queen, Dollar Store, etc.) and a two-way*



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*left-turn lane (length: 0.13 mile). There are numerous access points and driveways into parking lots, but no parking directly along US 431.*

*No large numbers of crashes noted at Harrison, which is unsignalized. The majority of crashes are for vehicles exiting parking lots from the multiple access points along US 431.*

*Suggest access management to reduce number of access points along US 431.*

Spot 2-5, Muhlenberg County, MP 18.479 – 18.579 *Railroad Overpass*

This spot located within Central City had a total of ~~17~~ crashes for a CRF of ~~1.627~~. There were ~~seven~~ “single vehicle,” four “rear end,” three “angle,” and ~~three~~ “head on” collisions.

Preliminary Team Recommendation: No recommendation at this time. Follow-up to determine whether parking is allowed along this spot. We may include this spot with others for a long term bypass solution that is outside the scope of this study.

*20 Total crashes (2 injury, 18 PDO)*

*13 Single vehicle (13 PDO) All were trucks that hit RR overpass.  
(8 northbound, 5 southbound)*

*4 Rear end (4 PDO)*

*3 Angle (2 injury, 1 PDO)*

*Revised CRF: 1.914*

*From Harrison Avenue, MP 18.392, north to the Railroad overpass, MP 18.525, there is strip development (KFC, Dairy Queen, Dollar Store, etc.) and a two-way left-turn lane (length: 0.13 mile). There are numerous access points and driveways into parking lots, but no parking directly along US 431.*

*Nearly two-thirds of the crashes at this spot were trucks hitting the railroad overpass. The nine over-height trucks that hit the overpass blamed inattention, misreading the warning signs, and not noticing the warning signs in time to stop.*

*Suggest adding warning signs further in advance of the overpass with greater visibility. Also consider tell-tales.*

Spot 2-6, Muhlenberg County, MP 18.670 – 18.770 *E. Broad St. (KY 70) & Morehead St.*

This spot located within Central City had a total of ~~40~~ crashes for a CRF of ~~1.197~~. This spot includes the intersection of KY 70. There were four “angle,” three “rear end,” ~~two~~ “head on,” and one “sideswipe-same direction” collisions.



Preliminary Team Recommendation: No recommendation at this time. Follow-up to determine whether parking is allowed along this spot. We may include this spot with others for a long term bypass solution that is outside the scope of this study.

*9 Total crashes (3 injury, 6 PDO)*

*4 Angle (4 PDO)*

*2 crashes, northbound vehicle avoided rear end with vehicle turning right onto Morehead St.*

*1 crash, northbound emergency vehicle turning left onto Broad through red light.*

*1 crash, vehicle exiting Methodist Church Parking lot (southeast corner of US 431 and Broad St.)*

*3 Rear End (2 injury, 1 PDO)*

*(1 at Broad southbound, 1 at Broad northbound, 1 at Morehead southbound)*

*1 Sideswipe Same Direction (PDO)*

*Northbound vehicle swung left prior to making right turn onto Morehead St (not a truck). Second unit pulled along right side and was sideswiped.*

*1 Head-on (injury)*

*Northbound Unit 1 passed left turning Unit-X on the right and hit southbound unit 2 turning left onto Morehead St.*

*Revised CRF: 1.317 includes E. Broad St. (KY 70) and Morehead St.*

*Intersection CRF: 0.34 (2000-2003) Includes E. Broad St. (KY 70) only.*

*Broad St. (KY 70) is signalized with left turn lanes. Morehead St. is unsignalized without turn lanes. There appears to be some difficulty for vehicles when northbound, making the right turn at Morehead Street. Three crashes involved right turning vehicles at this location. One was sideswiped while swinging wide. There does not appear to be parking along US 431 at this spot.*

*Suggest intersection improvements at Morehead St. including turn lanes.*

Spot 2-7, Muhlenberg County, MP 18.862 – 18.962 [East Reservoir St. \(KY 277\)](#)

This spot located within Central City had a total of ~~15~~ crashes for a CRF of ~~2.399~~. This spot includes the intersection with KY 277. There were seven “rear end” and six “angle” collisions. Team members noted this was a signalized intersection and is aligned on a skew with commercial businesses located on the corners. They also noted that this may be a location where traffic approaches the intersection over a crest vertical curve with limited sight distance resulting in rear end crashes.

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Preliminary Team Recommendation: Assign Medium/High priority for intersection improvements.

*14 (4 injury, 10 PDO)*

*7 Rear End (2 injury, 5 PDO)*

*4 northbound, 2 southbound, 1 eastbound*

*5 Angle (2 injury, 3 PDO)*

*4 ran red light (2 of these were southbound, 2 were westbound)*

*Remaining angle collision was eastbound in right turn lane, pulled into path of southbound vehicle. (Attempting to cross into Scott Market?)*

*1 Single Vehicle (PDO) pedestrian ran into street, arm hit mirror*

*1 Sideswipe Same Direction (PDO) avoiding rear end collision*

*Revised CRF: 2.239*

*Intersection CRF: 1.52 (2000-2002)*

*Nearly one-half of the crashes were rear-end collisions, predominantly northbound (due to crest vertical curve south of intersection?). Over one-quarter of the crashes involved drivers running a red light (none of these were northbound). Scott Market (Southeast corner, access to US 431 immediately south of intersection, with gas pumps) is one of the businesses noted in the reports. Islands dividing right turning movements are located on Reservoir Street. One collision report sketch appeared to show a vehicle using the right turn lane from eastbound Reservoir Street to cross US 431 immediately south of the intersection to access Scott Market.*

*Suggest keeping team's original recommendation for intersection improvements. As part of these improvements, consider constructing median to stop crossing movements into businesses from the right turn lanes off Reservoir Street. Consider northbound approach beacons at crest of hill south of intersection synchronized with traffic light.*

Spot 2-8, Muhlenberg County, MP 19.062 – 19.162 [Pendleton Street](#)

This spot located in Central City had a total of ~~six~~ crashes for a CRF of ~~4.075~~. All six crashes were "rear end, both vehicles moving" type crashes. Team members had no additional input on this location.

Preliminary Team Recommendation: Follow-up with further investigation as to spot conditions and possible crash causes. We may include this spot with others for a long term bypass solution that is outside the scope of this study.

*5 Total Crashes (1 injury, 4 PDO)*

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*5 Rear End (1 injury, 4 PDO)  
(3 southbound, 2 northbound)*

*Revised CRF: 0.896*

*This is the signalized intersection at Pendleton Street. All crashes occurred during daylight hours during clear conditions on a dry, straight and level road. These were all typical rear end type crashes in traffic caused by following too closely and inattention.*

*Suggest for short term: Intersection improvements (add turn lanes) Long term: Bypass.*

Spot 2-9, Muhlenberg County, MP 21.430 – 21.530 [Phillip Stone Way \(KY189\)](#)  
This spot located in South Carrollton includes the intersection with KY 189. There were **five** total crashes for a CRF of **4.198**. Two of the crashes were “sideswipe-same direction.” Team members noted that there may be left turn lanes on all approaches at this intersection.

Preliminary Team Recommendation: Assign Low priority for intersection improvements.

*4 Total Crashes (4 PDO)  
2 Sideswipe same direction  
(One trying to pass in emergency lane)  
1 angle  
(Tried to pass left turning vehicle)  
1 Single Vehicle  
(DUI)*

*Revised CRF: 0.958  
Intersection CRF: 0.56 (2000-2002)*

*There were only two crashes at this location during 2003-2004. One of these was a fatality. In that fatal crash, southbound unit one tried to pass and met northbound unit 2 head-on. This occurred at 2:06 PM in November. It was raining.*

*There are left turn lanes, full shoulders and one merge ramp. The intersection appears to be in good shape and collision reports don't indicate a problem the roadway.*

*Suggest remove from of list.*

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MP 22.0 to 24.347, Muhlenberg County

*Kentucky State Police Post 2 (Madisonville) identified this segment as worthy of consideration as a high crash site. This segment includes the Spots 2-10 through 2-12. Improvements to this segment will be addressed by the spot improvement recommendations that follow.*

Spot 2-10, Muhlenberg County, MP 22.298 – 22.398

This spot located in South Carrollton includes the intersection with KY 81. There were 16 total crashes at this location for a CRF of 3.669. There were seven “rear end” crashes included in the total. Team members noted that HES project 2-976 begins just north of this spot (MP 22.4 – 22.7) and does not include the KY 81 intersection.

Preliminary Team Recommendation: **Assign High priority for intersection improvements.**

Spot 2-11, Muhlenberg County, MP 22.398 – 22.498

This spot located in South Carrollton begins at the KY 81 intersection. There were ten total crashes for a CRF of 1.97. Four of the crashes were “single vehicle,” two were “angle” collisions and two were “rear end.” This spot is included in [HES project 2-976](#) for horizontal and vertical realignment, shoulder widening, and guard rail installation. This project does not include improvements to the intersection at KY 81.

Preliminary Team Recommendation: **Drop from list of recommended improvements for this study.**

Spot 2-12, Muhlenberg County, MP 24.250 – 24.350

This spot located in South Carrollton is just north of Power Plant Drive. There were 12 total crashes for a CRF of 2.533. 10 of the crashes were “single vehicle” type collisions. Muhlenberg County Judge Kirtley noted the curve near the Kentucky Utilities plant as a location to consider for improvements. Team members noted that **HES project 2-977** was originally two projects with the following limits: MP 23.9 – 24.1 and MP 24.3 – 24.5. These two projects were combined for horizontal and vertical realignment, shoulder widening, and guardrail installation. This spot will be addressed by this project.

Preliminary Team Recommendation: **Drop from list of recommended improvements for this study.**

MP 0.0 – 1.5 and MP 1.0 – 2.5 (overlap noted), McLean County

Kentucky State Police (Henderson) recommended a segment in McLean County from the levee at the Muhlenberg County line north to MP 1.5 for widening and shoulder upgrade; and from MP 1.0 to 2.5 for shoulder upgrades. The team

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looked at the crash data for the segment from 0.000 to 4.354 and noted 26 total crashes for a 0.341 CRF. This data included two fatalities over that 3 year period. Project team members noted that the roadway sits up high on a narrow fill with deep ditches on each side. HIS data show 2-foot shoulders. Shoulder upgrades would involve bringing in large amounts of additional fill material given the height of the existing fill and length of the segment.

Preliminary Team Recommendation: **Drop from list of recommended improvements for this study.** The study team considered recommending guard rails for this segment but decided against that recommendation. The reasoning was that there is a low CRF and the addition of guard rails on such a narrow segment of road would have a confining effect and could cause some drivers to “hug” the centerline, with the potential for head-on collisions and additional fatalities.

Spot 2-13, McLean County, MP 2.450 – 2.550

This spot located in Island includes the intersection with KY 85. There were five total crashes for a CRF of 0.976. Three of the crashes were “angle” collisions. Team members noted that this intersection is “Old” KY 85 and not the bypass that was recently constructed. Kentucky State Police (Henderson) recommended adding turning lanes at the intersection with Main Street in Island.

Preliminary Team Recommendation: Assign Low priority for intersection improvements.

*Intersection CRF: 0.44 (2000-2002)*

*Three of the five crashes involved vehicles pulling out from KY 85, failing to stop and/or yield.*

*2003-2004 crash data show 3 total crashes (1 fatal, 1 injury, 1 PDO)  
2 angle (1 injury, 1 PDO)  
1 single vehicle (fatal)*

*The fatal crash involved a northbound vehicle that ran off the road and overcorrected, rolling four times. Conditions were clear and dry, daylight (10:20 AM) and a straight segment of road.*

*Both of the 2003-2004 angle collisions involved drivers who pulled out into US 431 from KY 85. One driver stated he thought the intersection was a 4-way stop.*

*Suggest keeping original team recommendation for intersection improvements, possibly including signing improvements.*

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MP 5 – 11.6, McLean County

Kentucky State Police recommend shoulder upgrades on this segment of US 431. The team looked at crash data and noted no particularly high CRF's from segment analysis. However, Spots 2-14 through 2-18 are included within this segment's limits. **Improvements to this segment will be addressed by the spot improvement recommendations that follow.**

Spot 2-14, McLean County, MP 5.450 – 5.550

This spot in Livermore includes the Third Street intersection. There were six total crashes for a CRF of 1.035. Five of the six crashes at this spot were at the Third Street intersection. Four crashes were "rear end" collisions and two were "angle" collisions. Mayor Eaton noted in a response to our Resource Agency Coordination request for information that the intersection at the foot of the Green River Bridge is probably the most dangerous in the community. Livermore Mayor Eaton supports widening due to business prospects it would bring to Livermore. Team members noted that there is poor access control (continuous entrances from road to gas station and other businesses) at this location ~~and that there is no one particular intersection causing problems from the bridge north~~. This location was recently converted from 2-lane to 3-lane and team members suggested evaluating updated crash data that applies to this reconstructed section.

Preliminary Team Recommendation: Assign Medium priority for 3-lane curb and gutter improvements with access control. Evaluate updated crash data for the reconstructed section.

*Crashes north of the bridge are bunched at the Third Street intersection. This is a T-intersection (the stem is Third Street on the west side of US 431). Aerial photograph shows opposite Third Street, across US 431 on the east side, is a gas station (Sam's) with an extended parking lot with continuous access. The access along the east side of this intersection may no longer be the same depending on the reconstruction that has been done.*

*2003-2004 crash data show only 3 crashes at this location:*

- 1 Angle (injury)*
- 2 Rear End (0 injury, 2 PDO)*

*2005 – No crashes have been recorded as of September 30.*

*Suggest that if reconstruction has addressed access problems at this intersection, then remove from list. Otherwise, keep original team recommendation for 3-lane curb and gutter with access control.*

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Spot 2-15, McLean County, MP 6.038 – 6.138

This spot in Livermore includes the intersection with KY 136. There were 13 total crashes for a CRF of 2.348. Six of the crashes were “rear end” collisions and four were “angle” collisions. This location is currently under construction to be completed in May or June of 2005 under **KYTC Item No. 2-9.00**.

Preliminary Team Recommendation: **Drop from list of recommended improvements for this study.**

Spot 2-16, McLean County, MP 8.265 – 8.365

This spot includes the intersection with KY 1080. There were nine total crashes for a CRF of 1.557. This spot is within the limits of **HES project, 2-972**, to cut back embankments to improve sight distance and add left turn lanes on US 431 at KY 1080.

Preliminary Team Recommendation: **Drop from list of recommended improvements for this study.**

Spot 2-17, McLean County, MP 9.300 – 9.400 [Congested area north of Barrett Hill Rd.](#)

This spot is located just north of the intersection of Barrett Hill Road. There were seven total crashes for a CRF of 1.211. Three of the crashes were “angle” collisions. Team members had no additional information immediately available on this spot.

Preliminary Team Recommendation: Assign Low priority for intersection improvements. Conduct more detailed analysis of crashes and reevaluate.

<i>7 Total Crashes</i>	<i>(3 injury, 4 PDO)</i>
<i>3 Angle</i>	<i>(1 injury, 2 PDO) one involved tire failure</i>
<i>2 Single Vehicle</i>	<i>(1 injury, 1 PDO) both hydroplaned</i>
<i>1 Rear End</i>	<i>(PDO)</i>
<i>1 Head On</i>	<i>(injury) avoiding rear end collision</i>

*CRF: 1.211*

*Police collision reports indicate this is not an intersection problem, but involves vehicles turning and/or stopped waiting to turn, at a short, busy segment of road with no less than eight driveways (four on each side of US 431) immediately north of the Barrett Hill Road intersection. Aerial photograph suggests heavy commercial, industrial or agricultural activity at this location.*

*Suggest access improvements. Also suggest investigating drainage/pavement improvements to address hydroplaning. Note further mention of hydroplane incidents in following descriptions.*



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Spot 2-18, McLean County, MP 9.800 – 9.900 [KY 250](#)

This spot includes the intersection with KY 250. There were ~~seven~~ total crashes for a CRF of ~~4.272~~. Four of the crashes were “rear end” collisions. Team members noted that this is a residential area with Buck Creek Baptist Church and a business (ADS Pipe) located near the intersection. They also noted that many students take KY 250 westbound to high school in Calhoun via this intersection.

Preliminary Team Recommendation: Assign Low/Medium priority for intersection improvements. Conduct more detailed analysis of crashes and reevaluate.

*6 Total Crashes (3 injury, 3 PDO)*

<i>4 Rear End</i>	<i>(2 injury, 2 PDO)</i>
<i>1 Single Vehicle</i>	<i>(injury) hydroplane</i>
<i>1 Angle</i>	<i>(PDO) avoiding rear end collision</i>

*Revised CRF: 1.091*

*Intersection CRF: 0.60 (KY 250 only)(2000-2002)*

*This spot includes two T-intersections, offset: The south-most is the west leg, KY 250; the north-most is the east leg, Buck Creek Church Road. On the east side of US 431, across from KY 250 is a parking lot for Buck Creek Baptist Church.*

*Five of the six crashes involved stopped vehicles waiting to turn.*

*Suggest realigning intersection and adding turn lanes. Also suggest eliminating church parking access directly off US 431. Also suggest investigating drainage/pavement improvements to address hydroplaning. Note further mention of hydroplane incidents in following descriptions.*

Spot 2-19, Daviess County, MP 2.599 – 2.699 [KY 140](#)

This spot in Utica includes the intersection with KY 140. There were ~~40~~ total crashes for a CRF of ~~4.408~~. ~~Three~~ of the crashes were “angle” collisions, three were “single vehicle,” two were “rear end,” ~~and two~~ were “head on.” There are flashing beacons at this intersection and a Citgo Station on one corner. Team members noted a sight distance problem when approaching from the ~~east~~ on KY 140, that it is necessary to pull up close to US 431 in order to see. It was also noted that there is a historical marker just north of this intersection at the site of a Civil War skirmish. According to the Environmental Overview prepared for this study, this site has not been assessed for National Register potential.

Preliminary Team Recommendation: Assign Medium priority for intersection improvements and turning lanes.



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13 total crashes	(6 injury, 7 PDO)
7 Angle	(5 injury, 2 PDO)
3 Single Vehicle	(0 injury, 3 PDO) (2 hydroplane)
2 Rear End	(1 injury, 1 PDO)
1 Head On	(0 injury, 1 PDO)

Revised CRF: 1.441  
Intersection CRF: 0.99 (2000 – 2002)

*This is the intersection with KY 140. The intersection has flashing beacons and there is a Citgo Station on the northeast corner. An embankment on the southwest corner obstructs views to the south from the west leg. There is also a slight skew to the intersection adding to the difficulty in getting a good view looking south from the west leg. Five of the crashes involved an eastbound vehicle pulling into the path of a northbound vehicle (One of these was listed as a single vehicle because the northbound driver ran off the road to avoid the collision. The other four were angle collisions. Two of these resulted in injuries).*

*Note the two hydroplane crashes and see write-up in the next segment for MP 2.599 – 4.968 regarding other hydroplane crashes in this area.*

*Suggest cut back embankment, realign intersection and add turn lanes.*

#### MP 2.599 – 4.968, Daviess County

Kentucky State Police (Henderson) recommend horizontal and vertical alignment and routine road repairs for this segment. While there were no high crash spots noted within these limits, team members noted the terrain is rolling and there can be problems trying to pass for vehicles that get stuck behind slow moving farm equipment.

Preliminary Team Recommendation: Assign Medium priority for passing lanes. Conduct more detailed analysis of crashes and reevaluate.

*54 total crashes including Spot 2-19. (1 fatal, 24 injury, 29 PDO)  
CRF: 0.695*

*41 total crashes excluding Spot 2-19 (1 fatal, 18 injury, 22 PDO)  
25 Single Vehicle (1 fatal, 12 injury, 12 PDO) (8 hydroplane)  
8 Rear End (2 injury, 6 PDO)  
4 Angle (3 injury, 1 PDO) (1 hydroplane)  
3 Sideswipe Opposite Direction (1 injury, 2 PDO)  
1 Sideswipe Same Direction (avoiding rear end collision), (0 injury, 1 PDO)  
CRF: 0.548*

*One fatal crash was noted: A single vehicle veered off the road on the right side and then overcorrected crossing back across both lanes off the left side of the road. This crash occurred during daylight hours (10:52 AM) on a clear day on a dry road. Sands Road intersects US 431 at the location where the vehicle first veered off the road. Sands road runs north-south and has a sharp bend at the south end where it intersects US 431 at a right angle, in a curve on US 431. This was a 36 year old female driver with 1 male and 3 female passengers. The driver and one passenger resided in Owensboro. The other three passengers were from Evansville, IN, Utica, KY, and Dallas, TX. DUI was not suspected. The driver was the only fatality.*

*Only 2 crashes were associated with passing (One involved a garbage truck being passed, the other a tractor trailer was being passed.)*

*The combination of driveway access and rolling terrain was noted as a factor when turning vehicles were rear ended after the vehicle approaching from behind topped the crest of a hill.*

*There were 9 hydroplane crashes noted including 2 within Spot 2-19 (plus 3 additional potential hydroplane crashes). These hydroplane crashes occurred throughout the corridor with 4 (plus one of the potential hydroplane crashes) concentrated around MP 3.5.*

*The CRF is well below one. Over half of the crashes were single vehicle and of these, almost one-third involved hydroplaning. Suggest drainage and/or pavement improvements.*

*Spots 2-20 through 2-24 are located in the general vicinity of the Mall on US 431 outside the Owensboro Bypass.*

Spot 2-20, Daviess County, MP 10.650 – 10.750

This spot had 14 total crashes for a CRF of 1.552. Seven of the crashes were “angle” collisions, five were “rear end” and two were “opposing left turn.” Team members noted that the location of this spot could include the light at Applebees. If so, then corrective action would probably have to be handled locally by petitioning the developer since the side streets are controlled by the property owners.

Preliminary Team Recommendation: Conduct a more detailed analysis of the crash data and reevaluate.

*South Mall/Wal-Mart Entrance*

*15 Total crashes (3 injury, 12 PDO)*

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6 Rear End (0 injury, 6 PDO)  
(2 southbound, 4 northbound)  
9 Angle (3 injury, 6 PDO)

Revised CRF: 1.663

*The Mall is located on the west side of US 431. There are two Mall entrances off of US 431 separated by approximately 0.12 miles. This spot includes the south Mall entrance which is signalized with left turn lanes. The entrance on the east side is for Wal-mart and Owensboro Center. Typical rear end crashes in stopped traffic due to inattention were noted. Vehicles crossing US 431 were noted trying to beat the light getting from the Mall to Wal-mart and vice versa.*

*No suggested roadway improvements to correct inattention and impatience. Intersection is already signalized with turn lanes.*

Spot 2-21, Daviess County, MP 10.800 – 10.900

This spot had 22 total crashes for a CRF of 2.439. 10 of the crashes were “rear end” collisions, four were “angle,” four were “opposing left turn,” three were “sideswipe-same direction,” and one was “single vehicle.” Team members noted that this is probably the middle entrance at the mall. This middle entrance is unsignalized but located between two signalized intersections. Team members suggested there was a left turn problem for vehicles exiting from the mall.

Preliminary Team Recommendation: Assign High priority to close median and eliminate left turns at this mall entrance.

*North Mall/Wal-Mart Entrance*

16 Total crashes (6 injury, 10 PDO)  
9 Rear End (6 injury, 3 PDO)  
(5 southbound, 4 northbound)  
5 Angle (0 injury, 5 PDO)  
2 Sideswipe Same Direction (0 injury, 2 PDO)

Revised CRF: 1.774

*The Mall is located on the west side of US 431. There are two Mall entrances off of US 431 separated by approximately 0.12 miles. This spot includes the north Mall entrance which is unsignalized and has a median break with left turn lanes. The entrance on the east side is for Wal-mart. Typical rear end crashes in stopped traffic due to inattention were noted. Left turns to/from Wal-Mart and the Mall resulted in angle collisions – vehicles crossing multiple lanes – left turn*

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*versus vehicle continuing straight – failure to yield – in one case, view of oncoming traffic obstructed by vehicle sitting in turn lane.*

*Suggest keeping team recommendation to close median.*

Spot 2-22, Daviess County, MP 10.950 – 11.050 [Southtown Blvd.](#)

This spot includes the intersection of Southtown Boulevard. There were 30 total crashes for a CRF of 1.703. 16 of the crashes were “rear end” collisions and another eight were “angle” collisions. Team members noted [that Southtown Boulevard is going to be widened to three outbound lanes, five lanes total, under project 2-221.00.](#) This state-funded project is just finishing up with the design phase.

Preliminary Team Recommendation: **Drop from list of recommended improvements for this study.**

Spot 2-23, Daviess County, MP 11.150 – 11.250 [Carlton Drive, Salem Dr./Goetz Rd.](#)

This spot includes the intersection with Carlton Drive. There were ~~33~~ total crashes for a CRF of ~~1.873~~. ~~17~~ of the crashes were “rear end” collisions, ~~nine~~ were “angle,” ~~five~~ were “opposing left turn,” and ~~two~~ were “backing.” Team members noted that this intersection is not signalized and the traffic backs up here. The backups could be due to the signal north of Carlton Drive.

Preliminary Team Recommendation: Conduct a more detailed analysis of the crash data and reevaluate.

*51 Total crashes (14 injury, 37 PDO)  
23 Rear End (5 injury, 18 PDO)  
(15 northbound, 8 southbound)  
25 Angle (9 injury, 16 PDO)  
10 at Carlton: crossing multiple lanes and failure to yield to oncoming traffic, views obstructed by other vehicles, vehicles stopping to let traffic exit from Carlton - waving them into traffic.  
13 at Salem/Goetz: primarily failure to yield, running red, trying to beat yellow  
2 other entrances (Gas Station and Steak-n-Shake)  
2 Sideswipe Same Direction (0 injury, 2 PDO)  
1 Backing (0 injury, 1 PDO)*

*Revised CRF 2.895:  
Intersection CRF at Goetz (KY2699): 0.61(2000-2002)*

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*This spot includes Carlton Drive and Salem Drive/Goetz Road. Carlton (MP 11.155) is unsignalized and located between two signalized intersections: Fulton Drive (MP 11.066) to the south, and Salem/Goetz (MP 11.215) to the north; separated from Carlton by 0.09 mile and 0.06 mile respectively. There is a break in the median to allow left turns into and out of Carlton. Traffic backs up from Salem/Goetz contributing to the higher number of northbound rear end collisions. At least four vehicles exiting Carlton to turn left onto US 431 were hit by northbound drivers. The acute intersection angle may affect view to south for drivers exiting Carlton. Also, northbound US 431 vehicles in outside lane letting traffic out of Carlton block the view from Carlton of vehicles in the inside northbound lane on US 431. Vehicles in the US 431 southbound left turn lane also block the view of left turning vehicles exiting Carlton. Tractor-trailers in the left turn lanes on US 431 obstructed views at the intersection at Salem/ Goetz.*

*Suggest realigning Carlton to right angle and closing median. No suggestion for Salem/Goetz which is already signalized with turn lanes and has an intersection CRF less than one.*

Spot 2-24, Daviess County, MP 11.267 – 11.367 *Bypass Interchange*

This spot includes the Owensboro Bypass interchange. There were ~~60~~ total crashes for a CRF of ~~2.684~~. ~~43~~ of these crashes were “rear end” collisions. Team members noted that both intersections for the ramps on each side of the bypass are signalized. Vehicles coming off the ramp and turning left to go southbound may be accelerating to make it through the light, but then reach the next light for the ramps south of the bypass unprepared to stop, resulting in the large number of “rear end” collisions.

Preliminary Team Recommendation: Conduct a more detailed analysis of the crash data and reevaluate.

*(Intersection south ramps: MP 11.322, Overpass: MP 11.367, Intersection north ramps: MP 11.471)*

*31 Total Crashes*

*27 Rear End (6 injury, 21 PDO)  
(16 southbound, 9 northbound, 2 on ramps)  
4 Angle (0 injury, 4 PDO)  
(left turns to/from ramps, failure to yield)*

*Revised CRF: 1.385*

*Intersection CRF: 0.96 (2000-2002)*

*The rear end crashes were predominantly due to inattention. Distractions such as radio, passengers in back seat, looking away, checking mirrors, etc. were noted.*

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*There was no specific mention of drivers accelerating southbound toward next signal from north set of ramps. Suggest that southbound traffic from bypass is more prone to backups due to traffic around Mall and Wal-Mart. Intersections for both sets of ramps are already signalized with turn lanes. Improvements to spots discussed above, south of this interchange, may help alleviate traffic backups here. No other suggestions for roadway improvements to address rear end crashes and driver inattention.*

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Spot/Segment Number	County	BMP	EMP	Location Description	CRF	Proposed Action	Priority	Remarks
1-14	Muhlenberg	11.400	11.500	Int. KY 176, Drakesboro	2.833	Intersection Improvements	1	2.833 CRF for 2003-2004 (2000-2002 CRF was 1.71)
1-10	Muhlenberg	7.950	8.050	Int. KY 246, Beechmont	2.813	Intersection Improvements	2	Bifurcated turn lanes; gas station on corner; just south of Hughes Kirk Elementary School
1-5	Muhlenberg	0.400	0.500	Int. KY 973, MP 0.487	1.838	Intersection Improvements	3	1.838 CRF 2003-2004. 0.983 CRF 2000-2002. This spot included within Segment 1-5a
1-6	Muhlenberg	3.400	3.500	Rocky Creek Bridge	1.688	Bridge Replacement/Widening	4	Bridge width: 21.5 feet; Sideswipe crashes
1-7	Muhlenberg	3.930	4.030	1 mile south of Union Ridge Road	1.688	Realign/Widen	5	Combination of curve and vehicles entering/leaving driveways
1-12	Muhlenberg	9.734	9.834	Int. KY 70, Browder	1.665	Intersection Improvements	6	Unsignalized with bifurcated turn lanes
1-4	Logan	28.900	31.050	Hollow Bill	1.618	Reconstruction	7	Includes Spot 1-4a. CRF 1.618 is for 0.1 mile spot from MP 29.952 - 30.052. Complete segment CRF = 0.787.
1-17	Muhlenberg	15.150	15.250	Int. Cleaton Road	1.464	Intersection Improvements	8	Six of nine crashes involved left turns. Project to grade separate RR crossing at MP 15.674, KYTC Item No. 2-160.00, does not include improvements to this intersection.
1-7a	Muhlenberg	5.960	6.200	South of Belton	1.406	Realign/Widen	9	Curve south of Spot 1-8, vehicles crossing centerline.
1-4a	Logan	30.993	Muhlenberg 0.043	Int. KY 1293	1.348	Intersection Improvements	10	At Logan-Muhlenberg County line; District 3 is seeking funding for improvements
1-11	Muhlenberg	8.950	9.050	Int. Sylvania Street	1.186	Intersection Improvements	11	Cluster of street intersections in area. Sylvania intersects on a skew with a low east approach onto US 431; new school, Muhlenberg South Elementary is currently under construction and located immediately north of this spot.
1-6a	Muhlenberg	3.584	3.684	Branch of Rocky Creek Bridge	1.136	Bridge Replacement/Widening	12	Bridge width: 21.5 feet; immediately north of Spot 1-6, Rocky Creek Bridge
1-5a	Muhlenberg	0.000	0.513	Dunmor	0.933	Reconstruction	13	0.933 CRF 2003-2004. 0.708 CRF 2000-2002. Congested area with multiple street intersections; includes Spot 1-5.

**US 431 - Phase 1  
Preliminary Recommendations**

Spot/Segment Number	County	BMP	EMP	Location Description	CRF	Proposed Action	Prior-ity	Remarks
1-15	Muhlenberg	11.982	12.082	Int. KY 2107 between Drakesboro and Cleaton	0.908	Intersection Improvements	14	5 of 7 crashes involved left turns on/off of US 431
1-13	Muhlenberg	10.200	10.700	Reverse curves north of KY 70 between Browder and Drakesboro	0.717	Realignment (horizontal)	15	CRF 0.717 for 0.1 mile spot from MP 10.222 to MP 10.322.
1-8	Muhlenberg	6.300	6.400	Dead Man's Curve	2.250	Remove from list	na	Addressed by HES 2-900, MP 6.2 to MP 6.4
1-3	Logan	23.900	24.000	Lewisburg	1.258	Remove from list	na	Lewisburg
1-2	Logan	13.796	13.896	Int. US 79, Russellville	1.076	Remove from list	na	Addressed by Russellville Southern Bypass, Item No. 03-311.10
1-1	Logan	1.485	1.585	Int. KY 591, Adairville	0.917	Remove from list	na	Crashes due to inattention
1-16	Muhlenberg	14.096	14.196	1 mile south of Cleaton Road	0.908	Remove from list	na	Three of six crashes were animal collisions
1-9	Muhlenberg	7.420	7.520	At IGA, between KY 2270 and KY 246	0.844	Remove from list	na	Only one crash 2003-2004



## Preliminary Recommendations

Spot/Segment Number	County	BMP	EMP	Location Description	CRF	Proposed Action	Priority	Remarks
2-10	Muhlenberg	22.298	22.398	Int. KY 81, South Carrollton	3.669	Intersection Improvements	1	HES project 2-976.00 (MP 22.4 - 22.7) begins just north of this spot but does not include the intersection. No signal or turn lanes. RR grade crossing on KY 81 immediately west of intersection
2-3	Muhlenberg	18.265	18.365	Int. US 62, Central City	3.247	Intersection Improvements	2	Tight turning radius problem for trucks. Signaled for permitted left at busy intersection.
2-23	Daviess	11.150	11.250	Intersection with Carlton Drive and Salem Dr./Goetz Rd., Owensboro	2.895	Close the median between Salem/Goetz and Southtown Blvd.	3	Carlton Drive intersection unsignalized. Left turns problematic in/out.
2-7	Muhlenberg	18.862	18.962	Int. KY 277, Central City	2.239	Intersection Improvements	4	Skewed intersection with bifurcated turn lanes; gas stations on two corners
2-5	Muhlenberg	18.479	18.579	RR overpass, Central city	1.914	Bridge Replacement	5	13 of 20 crashes involved overheight trucks impacting RR bridge
2-21	Daviess	10.800	10.900	Mall Entrance, Owensboro	1.774	Close the median	6	Middle Mall entrance - Unsignalized
2-1	Muhlenberg	17.400	17.500	Parkway Interchange	1.723	Reconstruct Interchange	7	
2-20	Daviess	10.650	10.750	Mall Entrance, Owensboro	1.663	Intersection Improvements	8	South Mall entrance - Signalized
2-4	Muhlenberg	18.378	18.478	Section with TWLTL between Harrison St. and RR overpass, Central City	1.462	Reconstruct	9	Left turns and strip development with multiple entrances
2-19	Daviess	2.599	2.699	Int. KY 140, Utica	1.441	Intersection Improvements	10	Embankment on southwest corner obstructs views to south from west leg of intersection. Gas station on northeast corner.
2-6	Muhlenberg	18.670	18.770	Intersections with KY 70 (E. Broad) and Morehead St., Central City	1.317	Intersection Improvements	11	Tight turning radius with Methodist Church on southeast corner KY 70, signalized, left turn lane northbound only. Morehead Street immediately north, unsignalized, no turn lanes.
2-17	McLean	9.300	9.400	Immediately north of Barrett Hill Road	1.211	Reconstruct	12	Congested industrial/agricultural properties with multiple entrances.
2-18	McLean	9.800	9.900	Int. KY 250, Buck Creek Church Rd., Tichenor	1.091	Intersection Improvements	13	Offset intersections with Buck Creek Baptist Church, AFS Industries and chicken farm

**US 431 - Phase 2  
Preliminary Recommendations**

Spot/Segment Number	County	BMP	EMP	Location Description	CRF	Proposed Action	Prior-ity	Remarks
2-14	McLean	5.450	5.550	Int. Third St., Livermore	1.035	Reconstruction	14	Reconstruct consistent with 3-lane curb and gutter improvements to the north.
2-8	Muhlenberg	19.062	19.162	Int. Pendleton St., Central City	0.896	Intersection Improvements	15	Rear end crashes due to inattention.
2-19a	Daviess	2.599	4.968	From Utica to Browns Valley	0.695	Drainage/Pavement Improvements	16	Nine hydroplane crashes 2000-2002
2-12	Muhlenberg	24.250	24.350	Immediately north of Power Plant Drive, South Carrollton	2.533	Remove from list	na	Addressed by HES project 2-977.00 (MP 23.9 - 24.1 and MP 24.3 - 24.5))
2-15	McLean	6.038	6.138	Int. KY 136, Livermore	2.348	Remove from list	na	Addressed by KYTC Item No. 02-9.00
2-11	Muhlenberg	22.398	22.498	Immediately north of KY 81, South Carrollton	1.970	Remove from list	na	Addressed by HES project 2-976.00 (MP 22.4 - 22.7).
2-22	Daviess	10.950	11.050	Int. Southtown Blvd., Owensboro	1.703	Remove from list	na	Addressed by KYTC Item No. 02-221.00
2-16	McLean	8.265	8.365	Int. KY 1080, Nuckols	1.557	Remove from list	na	Addressed by HES project 2-972.00
2-24	Daviess	11.267	11.367	Bypass Interchange, Owensboro	1.385	Remove from list	na	Ramps are signalized with turn lanes. Collision reports do not indicate a problem with the roadway. Rear end crashes were due to inattention.
2-13	McLean	2.450	2.550	Int. old KY 85, Island	0.976	Remove from list	na	Only 3 crashes 2003-2004 including one fatal that was not intersection related.
2-9	Muhlenberg	21.430	21.530	Int. KY 189, Between Central City & South Carrollton	0.958	Remove from list	na	Collision reports do not indicate a problem with the intersection. Only 2 crashes 2003-2004.
2-2	Muhlenberg	17.912	18.012	Between Interchange and US 62, Central City	0.437	Remove from list	na	Only 4 collisions 2000-2002. Only 3 collisions 2003-2004.
2-12a	McLean	0.000	2.500	Levee north of Muhlenberg Co. line	0.341	Remove from list	na	Low CRF

**Alternatives Development and Recommendations, Phase I**

Spot 1-1, Logan County, MP 1.485 - 1.585 [KY591](#)

The location of this spot is the KY 591 intersection in Adairville. The critical crash rate factor, CRF, was 0.917. This is a 4-way stop that has had several unusual accidents involving driver inattentiveness. Buildings are located very close to the roadway and the intersection is located at the northwest corner of the town square. Improvements here would be difficult to implement. No recommendations short of a bypass were recommended by the project team.

Preliminary Team Recommendation: **Drop from list of recommended improvements for this study.**

*Intersection CRF: 0.53 (2000-2002)*

Spot 1-2, Logan County, MP 13.796 - 13.896

The location is the intersection of US 79 in Russellville. The critical rate factor was 1.076. Problems include a high volume of traffic and trucks with tight turning radii at the intersection, business entrances located close to the intersection and properties located close to the roadway. The US 431 southern bypass project in Russellville will address the problems associated with this intersection by reducing traffic volume and providing trucks an alternate route.

Preliminary Team Recommendation: **Drop from list of recommended improvements for this study.**

Spot 1-3, Logan County, MP 23.900 - 24.000

The location is Lewisburg, between KY 107 and KY 106. The critical rate factor was 1.258. This location will be addressed as a result of the Epleys to Lewisburg, US 431 reconstruction project, Item No. 3-273.00.

Preliminary Team Recommendation: **Drop from list of recommended improvements for this study.**

Spot 1-4, Logan County, MP 29.952 – 30.052 [Hollow Bill](#)

The location is Hollow Bill, just north of HW McPherson Road. The critical rate factor was 1.618. Five of the six collisions at this spot were during bad weather conditions (wet or icy roads) on curves. The District and ADD personnel noted a history of crash problems at this location including a multiple fatality. This spot is also within the limits of a project listed on the Unscheduled Projects List (UPL) for relocation and assigned a medium (Local, ADD and District) priority. The terrain is rough in this area and the only conceivable improvement would be total reconstruction to improve the horizontal and vertical geometry.

Preliminary Team Recommendation: **Assign High Priority to reconstruct as described in the UPL from MP 28.900 to MP 31.050 (Logan/Muhlenberg County Line).**

Spot 1-4a, MP 31.043, Logan County - Added Spot [KY 1293](#)

This location was recommended to be added to the list by District 3 personnel and is located at the intersection with KY 1293, almost on the Logan/Muhlenberg County line. While the CRF was not greater than 1.00 at this location, District 3 personnel noted poor sight distance and a potential for crashes.

Preliminary Team Recommendation: **Assign medium priority for intersection improvements.**

*Intersection CRF: 0.23 (2000-2002) not a typo – same as spot 1-5 at KY 973*

*This spot would be included within the limits (MP28.9 – 31.05) noted above for spot 1-4.*

Spot 1-5, Muhlenberg County, MP 0.364 – 0.464 [KY 973](#)

This spot is located at the intersection of KY 973. Only four crashes were cited here for a CRF of 0.983. None of the crashes involved fatalities. The team agreed that four crashes over a three-year period are probably not statistically significant.

Preliminary Team Recommendation: Drop from list of recommended improvements for this study. *Reconsider, see below.*

*Suggest revise limits to include cluster of intersections in Dunmor between MP 0.4 and 0.559. There were 7 crashes in this segment in 2003-2004*

*7 Total crashes (3injury, 4 PDO) 2003-2004*

*2 Angle (1 injury, 1 PDO)*

*One at the intersection of Elm St., vehicle crossing westbound*

*One pickup pulling small trailer pulling from side street (Oak St?) onto northbound US 431 into path of southbound vehicle*

*2 Sideswipe opposite direction (2 PDO)*

*One of these was attempting to turn left on KY 973*

*2 Single vehicle (1 injury, 1 PDO)*

*Both eastbound on KY973, failed to stop at US 431*

*1 Rear end (injury)*

*Pulled from driveway onto northbound US 431( immediately north of curve) into path of northbound vehicle coming out of left hand curve.*

*CRF: 2.384 (2003-2004) Segment MP 0.4 – 0.599.*

*Intersection CRF: 0.23 (2000-2002) not a typo – same as spot 1-4 at KY 1293.*

*This includes only the intersection at KY 973 – does not include the other driveways and intersections within the noted segment.*

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*Suggest intersection improvements to KY 973 combined with access control to reduce number of conflict points at this cluster of intersections and driveways between MP 0.4 and 0.559.*

*Businesses and residences are close to roadway within community of Dunmor, similar to Beechmont and South Carrollton. Any widening within this segment would have major impacts on utilities and significant right-of-way costs. US 431 has inadequate horizontal and vertical alignment within this segment from just south of the county line to just north of the intersection with KY 973, approximately 0.6 mile. In addition, there are wide access points, as mentioned above with issue of access control. Several of the approach roads within Dunmor (Dunmor Church Rd., Elm St., KY 973, and Oak St.) have inadequate sight distance.*

*District Observer recommends new alignment to the east of community of Dunmor, which would also alleviate safety issue at Spot 1-4a (Logan Co., just south of county line). New alignment would be approximately 1.2 mi. in length.*

Spot 1-6, Muhlenberg County, MP 3.400 – 3.500

Six crashes were documented at this spot. The CRF was 1.688. This spot includes one narrow bridge carrying US 431 over Rocky Creek. The bridge width is 21.5 feet. Four of the six crashes were “sideswipe-opposite direction.” No injury or fatality crashes were documented. This bridge has been identified for replacement under HES 02-984 and accepted, but not a high priority.

Preliminary Team Recommendation: **Assign high priority to replace or widen Rocky Creek Bridge.**

Spot 1-6a, MP 3.634, Muhlenberg County - Added Spot

This is the location of a bridge carrying US 431 over Rocky Creek Branch, immediately north of the preceding spot location. The bridge is similar to the Rocky Creek bridge and is also only 21.5 feet wide.

Preliminary Team Recommendation: **Assign medium priority to replace or widen Branch of Rocky Creek Bridge.**

*The roadway is flat with a slight horizontal curve. There is approximately 950 feet between the two bridges. District Observer recommends replacing both bridges and widening roadway to 12-foot lanes and wide shoulders between the two bridges.*

Spot 1-7, Muhlenberg County, MP 3.930 – 4.030

This spot is about one mile south of Union Ridge Road and had a CRF of 1.688. Four of the six total crashes were “run-off-road” crashes. Also, four occurred during wet, dark conditions. Lencie Meredith noted that this is often indicative of an edgeline problem (worn/faded or nonexistent). If there is an existing edgeline and it is in good condition (reflective), then this type of crash problem could instead be due to geometry.

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Preliminary Team Recommendation: Assign low priority to realign/widen. Follow-up is necessary to first determine existence/condition of edgeline and roadway geometry.

*This section of road does have edge lines. Four crashes involved vehicles rounding curve and then seeing vehicles stopped or slowed resulting in run-off-road type crashes to avoid rear end collision. Three of these were during wet conditions. Suggest keep team's recommendation to realign/widen.*

MP 6.0 – 7.0, Muhlenberg County

This segment was noted by Kentucky State Police Post 2 (Madisonville) as a high crash site. Crash data did not support this and the project team could not identify any obvious problem.

Preliminary Team Recommendation: Do nothing unless follow-up identifies an obvious problem.

Spot 1-7a, Muhlenberg County, MP 6.146 – 6.246

*5 Total crashes, (2 injury, 3 PDO) 2000-2002*

*2 Head-on (2 injury)*

*Both were southbound vehicles that crossed centerline.*

*2 Single vehicle (2 PDO) Both were tractor-trailers*

*Northbound tractor trailer lost load of 5 steel beams into guard rail.*

*Southbound tractor trailer dropped off road into ditch and overcorrected (said was run off road by southbound pickup truck)*

*1 Sideswipe opposite direction (PDO)*

*Passenger vehicles swapped mirrors.*

CRF: 1.406

*There were no crashes within this spot during 2003-2004. Immediately south at MP 5.964, there was a fatal head-on crash where a northbound pickup truck lost control on a wet road in a curve and crossed into the southbound lane. The only other crash during this time period in the vicinity was at MP 5.972 where a northbound motorcycle in a curve, on a dry road, ran off the road, not under proper control.*

*Some of these crashes may have occurred at the curve in Belton if they were not located precisely in the collision report. Suggest realignment from MP 5.96 to the MP 6.2 if not already addressed by improvements associated with Belton Curve project, 02-900.00 (between MP 6.2 and 6.4).*

*The segment between MP 6.146 and 6.246 includes the approach to "Dead Man's Curve." No suggestions for this segment.*

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*To the District Observer's surprise, the segment between MP 5.0 and MP 6.0 is not included in this report. This segment has several horizontal and vertical deficiencies. In one location at approx. MP 5.2, there looked to be a recent crash based on vehicle tracks in the ditch and large gouge marks in the pavement.*

*The intersection of Union Ridge Road at MP 5.072 should be listed for intersection improvements. The east and west approaches are offset by approximately 100 feet, located within a horizontal curve, and located just south of a crest vertical curve. There is almost no sight distance for vehicles on Union Ridge Road looking north, and the sight distance to the south is inadequate due to horizontal curve and skewed east approach. For vehicles crossing US 431, the driver must make several dangerous sight distance decisions. Of all the spot improvements that were visited for this report, it is the Observer's view that this intersection is one of the two worst, based on sight distance, speed, and number and type of vehicles using the intersection (also Spot 2-19). Realigning US 431 should be considered within this segment should be considered, although it will not be considered in this report since it was not listed as a specific spot improvement.*

Spot 1-8, Muhlenberg County, MP 6.3 – 6.4 [Curve at Belton](#)

This tight curve in Belton is known locally as “**Dead Man's Curve**,” the site of recent fatalities and has already undergone improvements to correct sight distance deficiencies. There were eight total crashes for a CRF of 2.25. More work is scheduled for 2006 to **widen the roadway and realign the curve under HES 2-900.**

Preliminary Team Recommendation: **Drop from list of recommended improvements for this study.**

[Spot 1-8a, Muhlenberg County, MP 6.964, Intersection KY 2270](#)

*Total 3 crashes 2000-2002 (1 injury, 2 PDO)*

*1 Rear end (injury) northbound at intersection KY 2270*

*1 Angle (PDO) vehicle pulled from gas station into path of southbound vehicle*

*1 Single vehicle (PDO) Fell asleep.*

*Total 2 crashes 2003-2004 (2 PDO)*

*2 Angle (2 PDO)*

*Eastbound Unit 1 pulled into intersection into path of southbound Unit 2.*

*Unit 1 turning northbound from driveway into path of south bound unit 2.*

*Intersection CRF: 0.68 (2003-2004) This number would be skewed high due to two crashes being incorrectly located at this spot in the crash records.*



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*Crashes predominantly due to inattention. ~~There is a gas station at the northeast corner of the unsignalized intersection with KY 2270.~~*

*No suggested improvements at this location.*

*There is no gas station at this location, but there is a post office and trash convenience center in the southwest quadrant. The two legs of KY 2270 at this intersection are offset by approximately 200 feet. There are major sight distance conflicts for the east approach with trees and signs to the north and an abandoned house and shrubs to the south. Vehicles must inch up into roadway to have any sight distance. Wide gravel access points exist within the intersection. District Observer recommends realigning east approach to line up with west approach. Doing so would require the replacement of a small (approx. 30-foot long) bridge over a creek just east of the intersection. A trailer and an abandoned house would also be in the path of realignment of the east approach.*

*At the minimum, sight distance could be improved by removing trees and signs, and, if right-of-way is purchased, an abandoned house.*

Spot 1-9, Muhlenberg County, MP7.420 – 7.520

Located between KY 2270 and KY 246, this spot had a CRF of 1.125 due to only four crashes over a three year period. No fatalities or injuries were cited. The project team had no additional information for this location and agreed that four crashes over a three-year period are probably not statistically significant.

Preliminary Team Recommendation: **Drop from list of recommended improvements for this study.**

Spot 1-10, Muhlenberg County, MP 7.950 – 8.050 [KY 246](#)

This spot at the intersection of KY 246 had a total of 10 crashes for a CRF of 2.813. Three of these collisions were “rear end” and another three were “angle” collisions. Team members noted bifurcated turn lanes on KY 246 and a gas station on one of the corners possibly contributing to the crashes. They also noted that this intersection is just south of the Hughes-Kirk Elementary School.

Preliminary Team Recommendation: **Assign high priority for intersection improvements.**

*Intersection CRF: 1.28 (2000-2002)*

*It should be noted that Hughes-Kirk Elementary School closed in 2005. This intersection is located in the heart of Beechmont, a community with many residences and businesses close to the roadway. The sight distance at the intersection is adequate for a 35-mph roadway, but District Observer recommends eliminating the bifurcated lanes and making T-intersection. In addition, entrances will need to be delineated to improve the functionality of the intersection; currently there are wide access points within the intersection (gas station and bank).*



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*Observer notes that if a left turn lane is to be constructed on US 431, a two-way left-turn lane should be proposed within Beechmont, a half-mile length. However, even with an urban typical, many utilities and residences would be affected, and throughout Beechmont, there are wide access points for businesses.*

*Because of the congestion along the ¾-mile stretch of US 431 and the impact of widening for turn lanes within Beechmont, the District Observer recommends a bypass to the east but recognizes the high cost of this alternate. Even so, there will be a high cost to any widening (right-of-way acquisition and utility relocation) along the current alignment of US 431 within Beechmont.*

Spot 1-11, Muhlenberg County, MP 8.950 – 9.050

This spot, just south of Sylvania Street had six total crashes for a CRF of 1.186. Three of the crashes were “angle” collisions. The team noted no apparent problems at this location. They also noted that this may be just south of the proposed site of the new Muhlenberg South Elementary School.

Preliminary Team Recommendation: Assign low priority and investigate further for improvement recommendations.

*One of these crashes was a duplicate. One was fluke where the wheel came off a pickup truck. One was an animal collision. One involved a driver who fell asleep. Another was mislocated. The remaining crash was an angle collision where unit 1 was westbound on Sylvania turning left onto US 431, pulled into path of southbound unit 2. There were only two crashes recorded for 2003-2004, both of these were single vehicle run-off-road.*

*There are a cluster of intersections in this area and Sylvania Street intersects on a heavy skew. However, collision reports do not indicate problems at this spot. Suggest either keep on list at a low priority to realign Sylvania and control access, or remove from list.*

*There are many entrances within this short length of roadway. Residences are close to the roadway, so a two-way left-turn lane would be costly for right-of-way and utilities, although widening on west side would be a less expensive alternative. A left-turning lane was constructed just north of this segment at the entrance of the new elementary school. No problems were apparent to District Observer. Even though Sylvania St./Forsythe St. intersect US 431 at a skew, there is adequate sight distance since this segment of US 431 is in a long tangent section.*

Spot 1-12, Muhlenberg County, MP 9.734 – 9.834 [KY 70](#)

This spot in Browder includes the intersection of KY 70. There were nine total crashes for a CRF of 1.665. Three of the crashes were “angle” collisions and two were “rear end.” Team members noted that this intersection has bifurcated turning lanes on the east approach of KY 70. This is also within the limits (MP 8.0

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– 9.90) of a location noted by Kentucky State Police Post 2 (Madisonville) for consideration as a possible high crash site.

Preliminary Team Recommendation: **Assign High priority for intersection improvements.**

*Intersection CRF: 1.21 (2000-2002)*

*District Observer recommends eliminating the Y-ramps on the east approach (KY 70). No right-of-way would be needed for this cost-effective solution. Sight distance for east approach is slightly affected by slight vertical curve just south of the intersection and car lot vehicles parked close to roadway just north of the intersection. The west approach is a county road (Beechmont-Browder Road). Sight distance to the north for this approach is poor due to trees, bushes, and power pole.*

*Observer not sure if left-turning lane needed on US 431. If turn lanes are needed, one house on west side would be a potential relocation.*

Spot 1-13, Muhlenberg County, MP 10.222 – 10.322

This spot located north of KY 70 had six total crashes for a CRF of ~~1.076~~. Three of these crashes were “sideswipe-opposite direction” and three were “single vehicle” collisions. Team members noted sharp, reverse curves in this area.

Preliminary Team Recommendation: Assign Medium priority to reconstruct to correct horizontal alignment. Follow up to check length of proposed reconstruction.

*Two of the single vehicle crashes were deer collisions. The other single vehicle was a northbound pickup that ran off the road. Two of the sideswipe collisions involved vehicles swapping mirrors. One of these involved a coal truck. The remaining sideswipe also involved a dump truck. All were during dry conditions.*

*4 Total crashes not including deer collisions.  
Revised CRF: 0.717 (2000-2002)*

*No crashes were recorded for this spot in 2003-2004.*

*Suggest keeping team recommendation for realignment but consider lowering the priority. Limits of the series of reverse curves are between MP 10.2 and 10.7. Topography will be an issue.*

*District Observer recommends this location for new alignment. Approximately 4000 feet of new roadway would be needed to eliminate the horizontal and vertical deficiencies. This area is mostly undeveloped, so no relocations should be necessary.*

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Spot 1-14, Muhlenberg County, MP 11.400 – 11.500 [KY 176](#)

This spot includes the intersection of KY 176 in Drakesboro and had 10 crashes for a CRF of 1.71. Team members noted that this is a signalized intersection with no turn lanes and a “Pantry” store on the corner. Southbound coal trucks on US 431 turn eastbound on KY 176 to serve the TVA Paradise Steam Plant. Muhlenberg South High School is also accessed from this location by traveling westbound on KY 176. Five of the 10 crashes at this spot were “angle” collisions.

Preliminary Team Recommendations: **Assign Medium priority for intersection improvements.**

*Intersection CRF: 1.00 (2000-2002)*

*13 Total crashes 2003-2004 (4 injury, 9 PDO)*

*4 Left turns*

*3 Rear end*

*3 Single vehicle (includes 2 DUI)*

*3 From private entrance*

*CRF: 2.833 (2003-2004)*

*Suggest keeping team recommendation for intersection improvements. Consider high priority.*

*This intersection serves a large percentage of truck traffic with the primary truck movements utilizing the north and east approaches. Turning radii on every quadrant need to be improved. Left-turning lanes on US 431 would benefit this intersection, especially the north approach where left-turning coal trucks often queue. Entrances will need to be delineated to improve the functionality of the intersection; currently there are wide access points within the intersection. Drainage improvements will need to be a part of the intersection project, since there are very few ditches or pipes and wide access points tend to trap water along the roadway (especially at the wide gravel entrance to the restaurant). There are three old buildings, all of which seem to be abandoned, that are just outside of the right-of-way, so each will be adversely affected by any widening at the intersection. In addition, the gas pumps at Kangaroo may also be affected by any widening. Power poles are close to the edge of KY 176, and sewer manholes were also noted by the observer near the intersection.*

Spot 1-15, Muhlenberg County, MP 11.982 – 12.082 [KY2107](#)

This spot includes the KY 2107 intersection. There were a total of six crashes for a CRF of 0.908. Three of the crashes were “angle” collisions, two were “head on” and one was an “opposing left turn.” This spot is within the limits (MP 11.0 – 12.10) of a location noted by Kentucky State Police Post 2 (Madisonville) for consideration as a possible high crash site.

Preliminary Team Recommendations: **Assign Low priority for intersection improvements.**

One of the recommendations of Kentucky State Police (KSP) Post 2 (Madisonville) was to place additional signage upon approach to “high crash zones” stressing extra caution. Project team members noted that placing these types of signs is a liability problem and not an acceptable solution to addressing safety issues. Team members also recommended addressing this comment in the report write-up with an explanation as to why KSP’s recommendation for warning signs could not be implemented.

*Intersection CRF: 0.29 (2000-2002)*

*KY 2107 (old US 431) intersects US 431 at a severe skew (Y-type intersection) and where US 431 is in a long horizontal curve. KY 2107 could be realigned for approximately 400 feet to intersect as a T-intersection (similar to Webster County project Item 2-985), but because US 431 is in a long horizontal curve, other sight distance problems may be created. KY 2107 could also be realigned in just the last 100 feet or so to create a T-intersection (the better sight distance option), but the vertical alignment on KY 2107 would need to be adjusted to prevent vehicles stopped on KY 2107 from being stopped on a grade. Either one of these recommendations should avoid any relocations. Power poles are located on the west side of the intersection and would not be affected by any realignment of US 431.*

Spot 1-16, Muhlenberg County, MP 14.096 – 14.196

This spot is located approximately one mile south of Cleaton Road. There were a total of six crashes for a CRF of 0.908. **Half of these crashes were coded “collision with animal.”**

Preliminary Team Recommendation: **Drop from list of recommended improvements for this study.**

Spot 1-17, Muhlenberg County, MP 15.150 – 15.250

This spot is at the intersection of Cleaton Road. There were a total of nine crashes for a CRF of 1.464. Three of these crashes were “angle” collisions, two were “rear end” and two were “sideswipe-same direction.” Team members noted that there is a railroad grade-separation project planned north of this location, but it will probably not extend to this intersection.

Preliminary Team Recommendation: **Assign Medium priority for intersection improvements/turn lanes.**

*This intersection is located at MP 15.184, while the railroad crossing involved with SYP project Item 2-160 is at MP 15.764, so that project should not affect this spot improvement. This location involves high speed traffic (nearly tangent section) with a high percentage of coal trucks. There is a slight horizontal sight distance*

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*problem for vehicles in the east approach due to overhanging trees, which could be corrected with maintenance forces. If a turn lane is proposed, several power poles would be affected, but there are no other major right-of-way issues.*

## **Alternatives Development and Recommendations, Phase II**

### Spot 2-1, Muhlenberg County, MP 17.400 – 17.500 Parkway Interchange

This spot includes the Wendell H. Ford Western Kentucky Parkway interchange. There were a total of seven crashes for a CRF of 1.723. Two of the crashes were “vehicle entering/leaving entrance” and two were “angle” collisions. With four, twelve-foot lanes and ten-foot shoulders, the roadway section as well as the geometry are good at this location.

Preliminary Team Recommendation: **Assign Low priority to reconstruct interchange as a long-term recommendation.**

*Good sight distance, wide lanes and shoulders, 4-lane template in this location. No suggestion for improvements to US 431, but long-range goal should be to reconstruct for interstate-standard interchange for safety consideration of vehicles on parkway.*

*The following Spots, 2-2 through 2-8, are located within Central City, are very closely spaced, share common features and problems, and may need to be considered as one complete segment for improvement recommendations.*

### Spot 2-2, Muhlenberg County, MP 17.912 – 18.012 Section change north of Parkway Interchange

This spot located within Central City had ~~seven~~ total crashes for a CRF of ~~1.019~~. According to HIS records, this spot includes a transition from 10-foot to 2-foot shoulders. Three of the crashes recorded at this location were “rear end,” ~~two were “opposing left turn”~~ and two were “sideswipe-same direction.” Team members also noted an ~~overhead railroad bridge~~(See Spot 2-5 for RR overpass) nearby that trucks sometimes impact resulting in traffic delays.

Preliminary Team Recommendation: No recommendation at this time. Follow-up to determine whether parking is allowed along this spot. We may include this spot with others for a long term bypass solution that is outside the scope of this study.

*5 Total crashes (2 injury, 3 PDO)  
3 Rear end (1 injury, 2 PDO)  
2 Sideswipe same direction (1 injury, 1 PDO)*

*Revised CRF: 0.728*

*Roadway section narrows just north of interchange in this spot. Vehicles either stopped to make turns off US 431 or turning left onto US 431. Entrances to Pizza Hut and Fast Eddy’s were noted in reports. One pedestrian hit while adjusting tie-*

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*downs while parked on shoulder. Other than this instance, there was no indication of any parking along US 431 noted in the collision reports.*

*CRF is less than one. No suggestions for short term improvements.*

*To clarify above information, the 10-foot shoulder on the east side of US 431 ends at church, and narrower 2-foot shoulder runs ½ mile north to intersection with US 62 (See Spot 2-3). The 10-foot shoulder on the west side of US 431 runs the entire length with guardrail. This area just north of the parkway interchange has developed over the past two years: two new hotels in addition to an existing, one new restaurant in addition to an existing and one planned, and a new car wash. It is not uncommon to see semi-trucks parked in wide shoulder while drivers eat at adjacent restaurants. Suggest constructing two-way left turn lane. Could accomplish in some areas with equal widening by using existing shoulder; in area north to US 62, widen east side with less impact on adjacent properties. This spot improvement could tie into recommended added lane at intersection with US 62.*

*Kentucky State Police Post 2 (Madisonville) noted crash problems between MP 18.24 and 19.117 which includes Spots 2-3 through 2-8.*

Spot 2-3, Muhlenberg County, MP 18.265 – 18.365 [Everly Brothers Blvd. \(US 62\) and W. Stroud Lane](#)

This spot located within Central City had 28 total crashes for a CRF of 3.247. This spot includes the intersection of Strouds Lane and according to HIS records is where a 2-foot shoulder transitions to curb-and-gutter. There were 10 “angle” collisions and eight “rear end” collisions recorded at this spot.

Preliminary Team Recommendation: Assign Medium/High priority for intersection improvements.

*25 Total crashes (4 injury, 21 PDO)*

*11 Angle (2 injury, 9 PDO)*

*8 Rear end (2 injury, 6 PDO)*

*3 Sideswipe same direction (3 PDO)*

*2 Backing (2 PDO)*

*One to allow tractor-trailer to turn.*

*One tractor-trailer rolled back – driver out of vehicle.*

*1 Single Vehicle (PDO) Fell asleep and ran off road.*

*Revised CRF: 2.899*

*Intersection CRF: 1.62 (US 62) (2000-2002)*

*6 Crashes involved tractor-trailers. 4 of the six were making wide turns (3 at Everly Brothers Blvd.)*



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*Turning movements and rear end collisions at intersections and entrances were noted – crashes primarily due to inattention. Entrances to Wendy's and McDonald's both noted along this spot. US 62 is signalized with turn lanes.*

*No specific short term recommendations beyond team's suggestion for intersection improvements. Consider high priority given the CRF.*

*The biggest issue at this intersection in the opinion of the District Observer is the sight distance problem created by having northbound US 431 traffic "bypass" around the left turn lane. There is essentially no taper; the through lane gets added at Fast Eddy's. When vehicles are queuing in the left turn lane, sight distance is blocked for southbound vehicles turning left. This is especially the case when semi-trucks are queuing in the northbound left turn lane. A large number of trucks use this intersection: coal trucks entering Central City make a right turn onto US 62 eastbound to access coal mines, and the west approach of US 62 is the beginning of the truck route for US 431 around Central City. The southwest quadrant radius was improved in late 2001 to a 60-foot radius, but trucks are still hitting the guardrail that wraps around that quadrant. The southeast quadrant has a very small radius; the curb is destroyed and the landscaping blocks placed by the gas station are displaced due to trucks hitting them. Recommendation is to lengthen three-lane section of the south approach south and improve turning radius of southeast quadrant.*

Spot 2-4, Muhlenberg County, MP 18.378 – 18.478 *Harrison Avenue*

This spot located within Central City had a total of 47 crashes for a CRF of 4.657. This spot includes the intersection of Harrison Avenue. There were 40 "angle" collisions and three "rear end" collisions recorded at this spot.

Preliminary Team Recommendation: No recommendation at this time. Follow-up to determine whether parking is allowed along this spot. We may include this spot with others for a long term bypass solution that is outside the scope of this study.

*15 Total crashes (3 injury, 12 PDO)*

*11 Angle (3 injury, 8 PDO)*

*2 at Harrison St.*

*9 remaining were all leaving parking lots from: Ponderosa, Dairy Queen, IGA, Old National Bank (exiting from the entrance only lane), etc., to enter US 431*

*3 Rear end (3 PDO)*

*1 Single vehicle (PDO) at Harrison, tire blew out.*

*Revised CRF: 1.462*

*From Harrison Avenue, MP 18.392, north to the Railroad overpass, MP 18.525, there is strip development (KFC, Dairy Queen, Dollar Store, etc.) and a two-way left-turn lane (length: 0.13 mile). There are numerous access points and driveways into parking lots, but no parking directly along US 431.*

*No large numbers of crashes noted at Harrison, which is unsignalized. The majority of crashes are for vehicles exiting parking lots from the multiple access points along US 431.*

*Suggest access management to reduce number of access points along US 431.*

*Narrow turning lane and poor entrance radii ("dustpan" curb cuts), vehicles often must swing out into other lane to complete turn from entrance onto US 431. Tight entrance radii also cause vehicles to slow considerably in order to exit roadway, and grade problems with two of the three entrances of IGA require vehicles exiting US 431 to come nearly to a complete stop. Also, left turning movements conflict, especially between US 62 and Harrison Street where multiple high-volume access points exist (Wendy's, McDonald's, etc.).*

*In the 15 minutes that District Observer was on site, he witnessed two over-height semi-trucks turn around in the shopping center parking area to avoid low clearance overpass. There appears to be plenty of warning signage.*

Spot 2-5, Muhlenberg County, MP 18.479 – 18.579 [Railroad Overpass](#)

This spot located within Central City had a total of ~~17~~ crashes for a CRF of ~~1.627~~. There were ~~seven~~ "single vehicle," four "rear end," three "angle," and ~~three~~ "head on" collisions.

Preliminary Team Recommendation: No recommendation at this time. Follow-up to determine whether parking is allowed along this spot. We may include this spot with others for a long term bypass solution that is outside the scope of this study.

*20 Total crashes (2 injury, 18 PDO)*

*13 Single vehicle (13 PDO) All were trucks that hit RR overpass.  
(8 northbound, 5 southbound)*

*4 Rear end (4 PDO)*

*3 Angle (2 injury, 1 PDO)*

*Revised CRF: 1.914*

*From Harrison Avenue, MP 18.392, north to the Railroad overpass, MP 18.525, there is strip development (KFC, Dairy Queen, Dollar Store, etc.) and a two-way left-turn lane (length: 0.13 mile). There are numerous access points and driveways into parking lots, but no parking directly along US 431.*

*Nearly two-thirds of the crashes at this spot were trucks hitting the railroad overpass. The nine over-height trucks that hit the overpass blamed inattention, misreading the warning signs, and not noticing the warning signs in time to stop.*

*Suggest adding warning signs further in advance of the overpass with greater visibility.*



Spot 2-6, Muhlenberg County, MP 18.670 – 18.770 *E. Broad St. (KY 70) & Morehead St.*

This spot located within Central City had a total of ~~40~~ crashes for a CRF of ~~4.197~~. This spot includes the intersection of KY 70. There were four “angle,” three “rear end,” ~~two~~ “head on,” and one “sideswipe-same direction” collisions.

Preliminary Team Recommendation: No recommendation at this time. Follow-up to determine whether parking is allowed along this spot. We may include this spot with others for a long term bypass solution that is outside the scope of this study.

*9 Total crashes (3 injury, 6 PDO)*

*4 Angle (4 PDO)*

*2 crashes, northbound vehicle avoided rear end with vehicle turning right onto Morehead St.*

*1 crash, northbound emergency vehicle turning left onto Broad through red light.*

*1 crash, vehicle exiting Methodist Church Parking lot (southeast corner of US 431 and Broad St.)*

*3 Rear End (2 injury, 1 PDO)*

*(1 at Broad southbound, 1 at Broad northbound, 1 at Morehead southbound)*

*1 Sideswipe Same Direction (PDO)*

*Northbound vehicle swung left prior to making right turn onto Morehead St (not a truck). Second unit pulled along right side and was sideswiped.*

*1 Head-on (injury)*

*Northbound Unit 1 passed left turning Unit-X on the right and hit southbound unit 2 turning left onto Morehead St.*

*Revised CRF: 1.317 includes E. Broad St. (KY 70) and Morehead St.*

*Intersection CRF: 0.34 (2000-2003) Includes E. Broad St. (KY 70) only.*

*Broad St. (KY 70) is signalized with left turn lanes. Morehead St. is unsignalized without turn lanes. There appears to be some difficulty for vehicles when northbound, making the right turn at Morehead Street. Three crashes involved right turning vehicles at this location. One was sideswiped while swinging wide. There does not appear to be parking along US 431 at this spot.*

*Suggest intersection improvements at Morehead St. including turn lanes.*

*At Morehead Street intersection, US 431 is wide enough that straight-through vehicles are able to pass turning vehicles, even though the pavement is not striped for that. Possible solution would be to stripe for center turning lane between railroad overpass south of Broad Street (KY 70) and just north of Reynolds Street. Pavement appears to be wide enough for that simple, cost-*

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*effective solution. This would separate left-turning vehicles from through traffic in an area that has several adjacent businesses (same as exists south of the overpass (See Spot 2-4 and 2-5). Some curb and gutter construction could be added since most of the existing is non-effective due to past overlays.*

Spot 2-7, Muhlenberg County, MP 18.862 – 18.962 [East Reservoir St. \(KY 277\)](#)

This spot located within Central City had a total of ~~45~~ crashes for a CRF of ~~2.399~~. This spot includes the intersection with KY 277. There were seven “rear end” and six “angle” collisions. Team members noted this was a signalized intersection and is aligned on a skew with commercial businesses located on the corners. They also noted that this may be a location where traffic approaches the intersection over a crest vertical curve with limited sight distance resulting in rear end crashes.

Preliminary Team Recommendation: Assign Medium/High priority for intersection improvements.

*14 (4 injury, 10 PDO)*

*7 Rear End (2 injury, 5 PDO)*

*4 northbound, 2 southbound, 1 eastbound*

*5 Angle (2 injury, 3 PDO)*

*4 ran red light (2 of these were southbound, 2 were westbound)*

*Remaining angle collision was eastbound in right turn lane, pulled into path of southbound vehicle. (Attempting to cross into Scott Market?)*

*1 Single Vehicle (PDO) pedestrian ran into street, arm hit mirror*

*1 Sideswipe Same Direction (PDO) avoiding rear end collision*

*Revised CRF: 2.239*

*Intersection CRF: 1.52 (2000-2002)*

*Nearly one-half of the crashes were rear-end collisions, predominantly northbound (due to crest vertical curve south of intersection). Over one-quarter of the crashes involved drivers running a red light (none of these were northbound). Scott Market (Southeast corner, access to US 431 immediately south of intersection, with gas pumps) is one of the businesses noted in the reports. Islands dividing right turning movements are located on Reservoir Street. One collision report sketch appeared to show a vehicle using the right turn lane from eastbound Reservoir Street to cross US 431 immediately south of the intersection to access Scott Market.*

*Suggest keeping team’s original recommendation for intersection improvements. As part of these improvements, consider constructing median to stop crossing movements into businesses from the right turn lanes off Reservoir Street. Consider northbound approach beacons at crest of hill south of intersection synchronized with traffic light.*

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*District Observer recalls that until recently, there was almost no all-red phase of the signal, which may have contributed to the crashes involving vehicles running the red. Long range solution would include lowering the vertical alignment just south of the signalized intersection, but this would involve multiple residential relocations.*

Spot 2-8, Muhlenberg County, MP 19.062 – 19.162 [Pendleton Street](#)

This spot located in Central City had a total of ~~six~~ crashes for a CRF of ~~4.075~~. All six crashes were “rear end, both vehicles moving” type crashes. Team members had no additional input on this location.

Preliminary Team Recommendation: Follow-up with further investigation as to spot conditions and possible crash causes. We may include this spot with others for a long term bypass solution that is outside the scope of this study.

*5 Total Crashes (1 injury, 4 PDO)  
5 Rear End (1 injury, 4 PDO)  
(3 southbound, 2 northbound)*

*Revised CRF: 0.896*

*This is the ~~signalized~~ intersection at Pendleton Street. All crashes occurred during daylight hours during clear conditions on a dry, straight and level road. These were all typical rear end type crashes in traffic caused by following too closely and inattention.*

*Suggest for short term: Intersection improvements (add turn lanes) Long term: Bypass.*

*This is not a signalized intersection. Pendleton Street is minor city street. Any widening along US 431 will have severe impacts to several residences which are close to roadway as well as utilities. There is a vertical crest just north of the intersection which interferes with sight distance, but the sight distance probably meets minimum standards for a 35-mph roadway.*

Spot 2-9, Muhlenberg County, MP 21.430 – 21.530 [Phillip Stone Way \(KY189\)](#)

This spot located in South Carrollton includes the intersection with KY 189. There were ~~five~~ total crashes for a CRF of ~~4.198~~. Two of the crashes were “sideswipe-same direction.” Team members noted that there may be left turn lanes on all approaches at this intersection.

Preliminary Team Recommendation: Assign Low priority for intersection improvements.

*4 Total Crashes (4 PDO)  
2 Sideswipe same direction  
(One trying to pass in emergency lane)*

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*1 angle  
(Tried to pass left turning vehicle)  
1 Single Vehicle  
(DUI)*

*Revised CRF: 0.958  
Intersection CRF: 0.56 (2000-2002)*

*There were only two crashes at this location during 2003-2004. One of these was a fatality. In that fatal crash, southbound unit one tried to pass and met northbound unit 2 head-on. This occurred at 2:06 PM in November. It was raining.*

*There are left turn lanes, full shoulders and one merge ramp. The intersection appears to be in good shape and collision reports don't indicate a problem the roadway.*

*Suggest remove from of list.*

*District Observer recalls that the fatal crash was actually not at the intersection but north of the intersection by approximately 1000 feet.*

*MP 22.0 to 24.347, Muhlenberg County*  
*Kentucky State Police Post 2 (Madisonville) identified this segment as worthy of consideration as a high crash site. This segment includes the Spots 2-10 through 2-12. Improvements to this segment will be addressed by the spot improvement recommendations that follow.*

*Spot 2-10, Muhlenberg County, MP 22.298 – 22.398*

*This spot located in South Carrollton includes the intersection with KY 81. There were 16 total crashes at this location for a CRF of 3.669. There were seven "rear end" crashes included in the total. Team members noted that HES project 2-976 begins just north of this spot (MP 22.4 – 22.7) and does not include the KY 81 intersection.*

**Preliminary Team Recommendation: Assign High priority for intersection improvements.**

*This location has several constraints: a railroad parallel to US 431 on the west (toe of embankment is only two to three feet from edge of roadway), a cemetery in the northeast quadrant with tombstones up to the right-of-way, a former gas station property with verified contaminated soil, and residences and a convenience store close to the right-of-way. The intersection also involves other streets: Hill Road, which comes directly into the intersection to form a fourth leg; E. Church Street, which intersects US 431 about 200 feet south of the intersection; and Carroll Street, which intersects KY 81 about 200 feet west of the intersection. These are low-ADT streets, but complicate the geometry of the main*

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*intersection. There is a sight distance problem for vehicles northbound US 431 vehicles turning left due to US 431 curving beyond an embankment just north of the intersection. At the minimum, cutting back this embankment would improve the situation, but the cemetery would be impacted by that simple maintenance fix.*

*A left turn lane at the intersection would provide another benefit, but widening in this area will have a severe impact on several residences and at least one business. Because of the congestion along the ¾-mile stretch of US 431 and the impact of widening for turn lanes within South Carrollton, the District Observer recommends a bypass to the west (Green River is on the east side of town) but recognizes the high cost of this alternate. Even so, there will be a high cost to any widening (right-of-way acquisition and utility relocation) within South Carrollton. A bypass to the west of South Carrollton with a southern terminus that ties into the Central City bypass (KY 189) at the north end of a long tangent section and a northern terminus that begins just north of the intersection with KY 81 would combine Spots 2-9, 2-10, and 2-11 into one project and eliminate the constraints (cemetery, contaminated soil, railroad, river, congestion) that exist with alignment options through town center. The length of the bypass would be approximately two miles and involve 6-8 relocations.*

Spot 2-11, Muhlenberg County, MP 22.398 – 22.498

This spot located in South Carrollton begins at the KY 81 intersection. There were ten total crashes for a CRF of 1.97. Four of the crashes were “single vehicle,” two were “angle” collisions and two were “rear end.” This spot is included in [HES project 2-976](#) for horizontal and vertical realignment, shoulder widening, and guard rail installation. This project does not include improvements to the intersection at KY 81.

Preliminary Team Recommendation: **Drop from list of recommended improvements for this study.**

Spot 2-12, Muhlenberg County, MP 24.250 – 24.350

This spot located in South Carrollton is just north of Power Plant Drive. There were 12 total crashes for a CRF of 2.533. 10 of the crashes were “single vehicle” type collisions. Muhlenberg County Judge Kirtley noted the curve near the Kentucky Utilities plant as a location to consider for improvements. Team members noted that **HES project 2-977** was originally two projects with the following limits: MP 23.9 – 24.1 and MP 24.3 – 24.5. These two projects were combined for horizontal and vertical realignment, shoulder widening, and guardrail installation. This spot will be addressed by this project.

Preliminary Team Recommendation: **Drop from list of recommended improvements for this study.**

MP 0.0 – 1.5 and MP 1.0 – 2.5 (overlap noted), McLean County

Kentucky State Police (Henderson) recommended a segment in McLean County from the levee at the Muhlenberg County line north to MP 1.5 for widening and

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shoulder upgrade; and from MP 1.0 to 2.5 for shoulder upgrades. The team looked at the crash data for the segment from 0.000 to 4.354 and noted 26 total crashes for a 0.341 CRF. This data included two fatalities over that 3 year period. Project team members noted that the roadway sits up high on a narrow fill with deep ditches on each side. HIS data show 2-foot shoulders. Shoulder upgrades would involve bringing in large amounts of additional fill material given the height of the existing fill and length of the segment.

Preliminary Team Recommendation: **Drop from list of recommended improvements for this study.** The study team considered recommending guard rails for this segment but decided against that recommendation. The reasoning was that there is a low CRF and the addition of guard rails on such a narrow segment of road would have a confining effect and could cause some drivers to “hug” the centerline, with the potential for head-on collisions and additional fatalities.

Spot 2-13, McLean County, MP 2.450 – 2.550

This spot located in Island includes the intersection with KY 85. There were five total crashes for a CRF of 0.976. Three of the crashes were “angle” collisions. Team members noted that this intersection is “old” KY 85 and not the bypass that was recently constructed. Kentucky State Police (Henderson) recommended adding turning lanes at the intersection with Main Street (old KY 85) in Island.

Preliminary Team Recommendation: Assign Low priority for intersection improvements.

*Intersection CRF: 0.44 (2000-2002)*

*Three of the five crashes involved vehicles pulling out from KY 85, failing to stop and/or yield.*

*2003-2004 crash data show 3 total crashes (1 fatal, 1 injury, 1 PDO)  
2 angle (1 injury, 1 PDO)  
1 single vehicle (fatal)*

*The fatal crash involved a northbound vehicle that ran off the road and overcorrected, rolling four times. Conditions were clear and dry, daylight (10:20 AM) and a straight segment of road.*

*Both of the 2003-2004 angle collisions involved drivers who pulled out into US 431 from KY 85. One driver stated he thought the intersection was a 4-way stop.*

*Suggest keeping original team recommendation for intersection improvements, possibly including signing improvements.*

*A vertical crest exists on US 431 just north of the intersection with Main Street (old KY 85) that contributes to poor sight distance for vehicles pulling out from old KY*



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*85. The higher speed of southbound vehicles just entering the city limits of Island at this vertical curve exacerbates the problem. Left turning lanes on US 431 are probably not warranted. Vertical realignment like was accomplished in the Hopkins County community of Beulah would be a good solution here.*

MP 5 – 11.6, McLean County

Kentucky State Police recommend shoulder upgrades on this segment of US 431. The team looked at crash data and noted no particularly high CRF's from segment analysis. However, Spots 2-14 through 2-18 are included within this segment's limits. **Improvements to this segment will be addressed by the spot improvement recommendations that follow.**

Spot 2-14, McLean County, MP 5.450 – 5.550

This spot in Livermore includes the Third Street intersection. There were six total crashes for a CRF of 1.035. Five of the six crashes at this spot were at the Third Street intersection. Four crashes were "rear end" collisions and two were "angle" collisions. Mayor Eaton noted in a response to our Resource Agency Coordination request for information that the intersection at the foot of the Green River Bridge is probably the most dangerous in the community. Livermore Mayor Eaton supports widening due to business prospects it would bring to Livermore. Team members noted that there is poor access control (continuous entrances from road to gas station and other businesses) at this location ~~and that there is no one particular intersection causing problems from the bridge north~~. This location was recently converted from 2-lane to 3-lane and team members suggested evaluating updated crash data that applies to this reconstructed section.

Preliminary Team Recommendation: Assign Medium priority for 3-lane curb and gutter improvements with access control. Evaluate updated crash data for the reconstructed section.

*Crashes north of the bridge are bunched at the Third Street intersection. This is a T-intersection (the stem is Third Street on the west side of US 431). Aerial photograph shows opposite Third Street, across US 431 on the east side, is a gas station (Sam's) with an extended parking lot with continuous access. The access along the east side of this intersection may no longer be the same depending on the reconstruction that has been done.*

*2003-2004 crash data show only 3 crashes at this location:*

*1 Angle (injury)  
2 Rear End (0 injury , 2 PDO)*

*2005 – No crashes have been recorded as of September 30.*

*Suggest that if reconstruction has addressed access problems at this intersection, then remove from list. Otherwise, keep original team recommendation for 3-lane curb and gutter with access control.*

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*The US 431 improvements (center turning lane, curb and gutter, realigning of KY 136 intersection) completed in 2004 begin one-half mile north of this location. (See Spot 2-15) Expanding that project south to the Green River Bridge would address access-related crashes. Because the intersection of Third Street is only a few hundred feet north of the bridge, adding a northbound left turn lane for US 431 at Third Street would be difficult to achieve without widening the bridge approach (for example, the J.R. Miller Blvd. at 3<sup>rd</sup> Street intersection in Owensboro where the Ohio River bridge approach had to be widened.)*

Spot 2-15, McLean County, MP 6.038 – 6.138

This spot in Livermore includes the intersection with KY 136. There were 13 total crashes for a CRF of 2.348. Six of the crashes were “rear end” collisions and four were “angle” collisions. This location is currently under construction to be completed in May or June of 2005 under **KYTC Item No. 2-9.00**.

Preliminary Team Recommendation: **Drop from list of recommended improvements for this study.**

Spot 2-16, McLean County, MP 8.265 – 8.365

This spot includes the intersection with KY 1080. There were nine total crashes for a CRF of 1.557. This spot is within the limits of **HES project, 2-972**, to cut back embankments to improve sight distance and add left turn lanes on US 431 at KY 1080.

Preliminary Team Recommendation: **Drop from list of recommended improvements for this study.**

Spot 2-17, McLean County, MP 9.300 – 9.400 [Congested area north of Barrett Hill Rd.](#)

This spot is located just north of the intersection of Barrett Hill Road. There were seven total crashes for a CRF of 1.211. Three of the crashes were “angle” collisions. Team members had no additional information immediately available on this spot.

Preliminary Team Recommendation: Assign Low priority for intersection improvements. Conduct more detailed analysis of crashes and reevaluate.

<i>7 Total Crashes</i>	<i>(3 injury, 4 PDO)</i>
<i>3 Angle</i>	<i>(1 injury, 2 PDO) one involved tire failure</i>
<i>2 Single Vehicle</i>	<i>(1 injury, 1 PDO) both hydroplaned</i>
<i>1 Rear End</i>	<i>(PDO)</i>
<i>1 Head On</i>	<i>(injury) avoiding rear end collision</i>

*CRF: 1.211*

*Police collision reports indicate this is not an intersection problem, but involves vehicles turning and/or stopped waiting to turn, at a short, busy segment of road with no less than eight driveways (four on each side of US 431) immediately north*



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*of the Barrett Hill Road intersection. Aerial photograph suggests heavy commercial, industrial or agricultural activity at this location.*

*Suggest access improvements. Also suggest investigating drainage/pavement improvements to address hydroplaning. Note further mention of hydroplane incidents in following descriptions.*

*There are a total of 13 access points within the half-mile section of commercial, industrial, and agricultural businesses. District Observer suggests two-way left turn lane.*

Spot 2-18, McLean County, MP 9.800 – 9.900 [KY 250](#)

This spot includes the intersection with KY 250. There were ~~seven~~ total crashes for a CRF of ~~1.272~~. Four of the crashes were “rear end” collisions. Team members noted that this is a residential area with Buck Creek Baptist Church and a business (ADS Pipe) located near the intersection. They also noted that many students take KY 250 west to high school in Calhoun via this intersection.

Preliminary Team Recommendation: Assign Low/Medium priority for intersection improvements. Conduct more detailed analysis of crashes and reevaluate.

*6 Total Crashes (3 injury, 3 PDO)*

<i>4 Rear End</i>	<i>(2 injury, 2 PDO)</i>
<i>1 Single Vehicle</i>	<i>(injury) hydroplane</i>
<i>1 Angle</i>	<i>(PDO) avoiding rear end collision</i>

*Revised CRF: 1.091*

*Intersection CRF: 0.60 (KY 250 only)(2000-2002)*

*This spot includes two T-intersections, offset: The south-most is the west leg, KY 250; the north-most is the east leg, Buck Creek Church Road. On the east side of US 431, across from KY 250 is a parking lot for Buck Creek Baptist Church.*

*Five of the six crashes involved stopped vehicles waiting to turn.*

*Suggest realigning intersection and adding turn lanes. Also suggest eliminating church parking access directly off US 431. Also suggest investigating drainage/pavement improvements to address hydroplaning. Note further mention of hydroplane incidents in following descriptions.*

*Sight distance problems exist at both intersections due to US 431 being in a reverse curve at this location. Realigning the approach roads would involve either relocating two houses on the west approach or a church on the east approach. As noted above, the majority of crashes involved vehicles stopped on US 431; therefore, adding a two-way left turn lane at this location would be a viable solution.*

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Spot 2-19, Daviess County, MP 2.599 – 2.699 [KY 140](#)

This spot in Utica includes the intersection with KY 140. There were ~~40~~ total crashes for a CRF of ~~1.408~~. ~~Three~~ of the crashes were “angle” collisions, three were “single vehicle,” two were “rear end,” ~~and two~~ were “head on.” There are flashing beacons at this intersection and a Citgo Station on one corner. Team members noted a sight distance problem when approaching from the ~~east~~ on KY 140, that it is necessary to pull up close to US 431 in order to see. It was also noted that there is a historical marker just north of this intersection at the site of a Civil War skirmish. According to the Environmental Overview prepared for this study, this site has not been assessed for National Register potential.

Preliminary Team Recommendation: Assign Medium priority for intersection improvements and turning lanes.

13 total crashes	(6 injury, 7 PDO)
7 Angle	(5 injury, 2 PDO)
3 Single Vehicle	(0 injury, 3 PDO) (2 hydroplane)
2 Rear End	(1 injury, 1 PDO)
1 Head On	(0 injury, 1 PDO)

Revised CRF: 1.441

Intersection CRF: 0.99 (2000 – 2002)

*This is the intersection with KY 140. The intersection has flashing beacons and there is a Citgo Station on the northeast corner. An embankment on the southwest corner obstructs views to the south from the west leg. There is also a slight skew to the intersection adding to the difficulty in getting a good view looking south from the west leg. Five of the crashes involved an eastbound vehicle pulling into the path of a northbound vehicle (One of these was listed as a single vehicle because the northbound driver ran off the road to avoid the collision. The other four were angle collisions. Two of these resulted in injuries).*

*Note the two hydroplane crashes and see write-up in the next segment for MP 2.599 – 4.968 regarding other hydroplane crashes in this area.*

*Suggest cut back embankment, realign intersection and add turn lanes.*

*District Observer agrees with suggestion and also notes that US 431 is in a horizontal curve at this intersection. Observer noted two large trees along US 431 just north of the intersection. The trees block the line of sight for vehicles on the west KY 140 approach. Due to the trees to the north and the embankment to the south, there is zero sight distance for vehicles in the west approach when stopped at the stop sign. Vehicles must move up several feet to gain any view. Also, the speed limit for US 431 does not drop through the community of Utica, so many vehicles are going 55+ mph. In fact, while making notes sitting in the parking area of Citgo, Observer witnessed a school bus pull out from the west approach into the path of another vehicle, causing the northbound driver to suddenly brake and*

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*sound horn. Utica Elementary School (slated to close soon) is located ¼ mile west of this intersection, therefore many busses use this intersection every day.*

*Of all the spot improvements that were visited for this report, it is the Observer's view that this intersection is one of the two worst, based on sight distance, speed, and number and type of vehicles using the intersection (also Spot 1-7a). Realigning US 431 around Utica would be a costly solution. Minor realignment of KY 140 to intersect US 431 just south of the existing intersection would be a less costly solution, involving one or two residential relocations. At the very minimum, the embankment in the southwest quadrant and the tress in the northwest quadrant should be removed. These are minor maintenance improvements that would drastically improve the safety of this intersection.*

Spot 2-19a, Daviess County, MP 2.599 – 4.968

Kentucky State Police (Henderson) recommend horizontal and vertical alignment and routine road repairs for this segment. While there were no high crash spots noted within these limits, team members noted the terrain is rolling and there can be problems trying to pass for vehicles that get stuck behind slow moving farm equipment.

Preliminary Team Recommendation: Assign Medium priority for passing lanes. Conduct more detailed analysis of crashes and reevaluate.

*54 total crashes including Spot 2-19. (1 fatal, 24 injury, 29 PDO)  
CRF: 0.695*

*41 total crashes excluding Spot 2-19 (1 fatal, 18 injury, 22 PDO)  
25 Single Vehicle (1 fatal, 12 injury, 12 PDO) (8 hydroplane)  
8 Rear End (2 injury, 6 PDO)  
4 Angle (3 injury, 1 PDO) (1 hydroplane)  
3 Sideswipe Opposite Direction (1 injury, 2 PDO)  
1 Sideswipe Same Direction (avoiding rear end collision), (0 injury, 1 PDO)  
CRF: 0.548*

*One fatal crash was noted: A single vehicle veered off the road on the right side and then overcorrected crossing back across both lanes off the left side of the road. This crash occurred during daylight hours (10:52 AM) on a clear day on a dry road. Sands Road intersects US 431 at the location where the vehicle first veered off the road. Sands Road runs north-south and has a sharp bend at the south end where it intersects US 431 at a right angle, in a curve on US 431. This was a 36 year old female driver with 1 male and 3 female passengers. The driver and one passenger resided in Owensboro. The other three passengers were from Evansville, IN, Utica, KY, and Dallas, TX. DUI was not suspected. The driver was the only fatality.*

*Only 2 crashes were associated with passing (One involved a garbage truck being passed, the other a tractor trailer was being passed.)*

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*The combination of driveway access and rolling terrain was noted as a factor when turning vehicles were rear ended after the vehicle approaching from behind topped the crest of a hill.*

*There were 9 hydroplane crashes noted including 2 within Spot 2-19 (plus 3 additional potential hydroplane crashes). These hydroplane crashes occurred throughout the corridor with 4 (plus one of the potential hydroplane crashes) concentrated around MP 3.5.*

*The CRF is well below one. Over half of the crashes were single vehicle and of these, almost one-third involved hydroplaning. Suggest drainage and/or pavement improvements.*

*District Observer is familiar with one location of ponding of water at roadway's edge within this segment. A wide gravel entrance for a roadside business is located at MP 4.09, and water gets trapped there at the edge of pavement. This segment also has several horizontal and vertical alignment deficiencies. As noted above, there are numerous private entrances and four approach road intersections in this segment, two of which (McFarland and Brown's Valley) have sight distance problems, and another (Sands Lane) intersects at an acute angle.*

*Widening for passing lanes would not be ideal as passing lanes could encourage faster speeds. Considering the alignment deficiencies and numerous entrances, faster speeds would exacerbate the sight distance problems. In addition, a cemetery is located adjacent to the roadway near the intersection with Sands Lane, which could be impacted by widening.*

*District Observer recommends this location for new alignment. Approximately 8,100 feet of realignment on the east side of the existing roadway would eliminate the existing alignment deficiencies.*

*Spots 2-20 through 2-24 are located in the general vicinity of the Mall on US 431 outside the Owensboro Bypass.*

Spot 2-20, Daviess County, MP 10.650 – 10.750

This spot had ~~14~~ total crashes for a CRF of ~~1.552~~. ~~Seven~~ of the crashes were "angle" collisions, ~~five~~ were "rear end" and ~~two~~ were "opposing left turn." Team members noted that the location of this spot could include the light at Applebee's. If so, then corrective action would probably have to be handled locally by petitioning the developer since the side streets are controlled by the property owners.

Preliminary Team Recommendation: Conduct a more detailed analysis of the crash data and reevaluate.

*South Mall/Wal-Mart Owensboro Center Entrance*

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15 Total crashes (3 injury, 12 PDO)  
6 Rear End (0 injury, 6 PDO)  
(2 southbound, 4 northbound)  
9 Angle (3 injury, 6 PDO)

Revised CRF: 1.663

*The Mall is located on the west side of US 431. There are two Mall entrances off of US 431 separated by approximately 0.12 miles. This spot includes the south Mall entrance which is signalized with left turn lanes. The entrance on the east side is for ~~Wal-Mart~~ and Owensboro Center. Typical rear end crashes in stopped traffic due to inattention were noted. Vehicles crossing US 431 were noted trying to beat the light getting from the Mall to ~~Wal-Mart~~ and vice versa. **Cannot access Wal-Mart from this intersection.***

*No suggested roadway improvements to correct inattention and impatience. Intersection is already signalized with turn lanes.*

*See also remarks below for Spot 2-21.*

*District Observer noted that the left turn lanes on US 431 are offset from the opposing through lanes by a curbed divider of approximately 3 – 5 feet in width. Observer has noted that opposing left turning vehicles block the line of sight of oncoming traffic during the permitted left turn phase. This could contribute to the nine angle crashes at this intersection. Eliminating the curbed divider would allow left turning vehicles to be positioned farther to the left for better visibility but could cause other safety concerns; however, the curbed dividers were recently removed at the two signalized intersections at the Bypass interchange (Spot 2-24) with no apparent negative safety ramifications.*

Spot 2-21, Daviess County, MP 10.800 – 10.900

This spot had 22 total crashes for a CRF of 2.439. 10 of the crashes were “rear end” collisions, four were “angle,” four were “opposing left turn,” three were sideswipe-same direction,” and one was “single vehicle.” Team members noted that this is probably the middle entrance at the mall. This middle entrance is unsignalized but located between two signalized intersections. Team members suggested there was a left turn problem for vehicles exiting from the mall.

Preliminary Team Recommendation: Assign High priority to close median and eliminate left turns at this mall entrance.

*North Mall/Wal-Mart Entrance*

16 Total crashes (6 injury, 10 PDO)  
9 Rear End (6 injury, 3 PDO)  
(5 southbound, 4 northbound)



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5 Angle (0 injury, 5 PDO)  
2 Sideswipe Same Direction (0 injury, 2 PDO)

Revised CRF: 1.774

*The Mall is located on the west side of US 431. There are two Mall entrances off of US 431 separated by approximately 0.12 miles. This spot includes the north Mall entrance which is unsignalized and has a median break with left turn lanes. The entrance on the east side is for Wal-mart. Typical rear end crashes in stopped traffic due to inattention were noted. Left turns to/from Wal-Mart and the Mall resulted in angle collisions – vehicles crossing multiple lanes – left turn versus vehicle continuing straight – failure to yield – in one case, view of oncoming traffic obstructed by vehicle sitting in turn lane.*

*Suggest keeping team recommendation to close median.*

*District Observer noted that, in this location, there are no access roads between major businesses on the same side of the road – for example, between Home Depot/Sam’s Club and the Mall on the west side and between Wal-Mart and Target and their respective strip developments on the east side. Though this may be out of the jurisdiction of the Department, access between these businesses (frontage or “backage” roads) would eliminate the need for traveling public to use US 431 when making trips to multiple businesses. The effect would be to reduce the number of vehicles using this intersection and the intersection described above (Spot 2-20). It is worth noting that “backage” roads appear to be planned behind Wal-Mart and Target on the east side and a frontage road was constructed on the west side with the recent Home Depot development, but it ended at the property line of the Mall, i.e. no connection, due to property owner dispute (according to Messenger Inquirer article).*

Spot 2-22, Daviess County, MP 10.950 – 11.050 [Southtown Blvd.](#)

This spot includes the intersection of Southtown Boulevard. There were 30 total crashes for a CRF of 1.703. 16 of the crashes were “rear end” collisions and another eight were “angle” collisions. Team members noted [that Southtown Boulevard is going to be widened to three outbound lanes, five lanes total, under project 2-221.00.](#) This state-funded project is just finishing up with the design phase.

Preliminary Team Recommendation: Drop from list of recommended improvements for this study.

Spot 2-23, Daviess County, MP 11.150 – 11.250 [Carlton Drive, Salem Dr./Goetz Rd.](#)

This spot includes the intersection with Carlton Drive. There were ~~33~~ total crashes for a CRF of ~~1.873~~. ~~17~~ of the crashes were “rear end” collisions, ~~nine~~ were “angle,” ~~five~~ were “opposing left turn,” and ~~two~~ were “backing.” Team

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members noted that this intersection is not signalized and the traffic backs up here. The backups could be due to the signal north of Carlton Drive.

Preliminary Team Recommendation: Conduct a more detailed analysis of the crash data and reevaluate.

*51 Total crashes (14 injury, 37 PDO)*  
*23 Rear End (5 injury, 18 PDO)*  
*(15 northbound, 8 southbound)*  
*25 Angle (9 injury, 16 PDO)*  
*10 at Carlton: crossing multiple lanes and failure to yield to oncoming traffic, views obstructed by other vehicles, vehicles stopping to let traffic exit from Carlton - waving them into traffic.*  
*13 at Salem/Goetz: primarily failure to yield, running red, trying to beat yellow*  
*2 other entrances (Gas Station and Steak-n-Shake)*  
*2 Sideswipe Same Direction (0 injury, 2 PDO)*  
*1 Backing (0 injury, 1 PDO)*

*Revised CRF 2.895:*

*Intersection CRF at Goetz (KY2699): 0.61(2000-2002)*

*This spot includes Carlton Drive and Salem Drive/Goetz Road. Carlton (MP 11.155) is unsignalized and located between two signalized intersections: Fulton Drive(MP 11.066) to the south, and Salem/Goetz (MP 11.215) to the north; separated from Carlton by 0.09 mile and 0.06 mile respectively. There is a break in the median to allow left turns into and out of Carlton. Traffic backs up from Salem/Goetz contributing to the higher number of northbound rear end collisions. At least four vehicles exiting Carlton to turn left onto US 431 were hit by northbound drivers. The acute intersection angle may affect view to south for drivers exiting Carlton. Also, northbound US 431 vehicles in outside lane letting traffic out of Carlton block the view from Carlton of vehicles in the inside northbound lane on US 431. Vehicles in the US 431 southbound left turn lane also block the view of left turning vehicles exiting Carlton. Tractor-trailers in the left turn lanes on US 431 obstructed views at the intersection at Salem/ Goetz.*

*Suggest realigning Carlton to right angle and closing median. No suggestion for Salem/Goetz which is already signalized with turn lanes and has an intersection CRF less than one.*

*District Observer noted that intersection angle of Carlton Drive is nearly perpendicular – maybe 15 degrees sharper than perpendicular, which is generally tolerated by our guidelines. Observer noted no sight distance problem due to intersection angle, but does concur with observation of stopped traffic blocking view of vehicles turning to and from Carlton Drive. Observer agrees with suggestion to close median, which would not be unreasonable considering the entrances for at least six other adjacent businesses between Fulton and Salem*

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*have only right-in/right-out access. Department could consider constructing median to allow left-turning vehicles from US 431 on to Carlton but not allowing left-turning vehicles from Carlton on to US 431, as is proposed on US 41A at the Hopkinsville Mall, but stopped traffic blocking view of turning vehicles would still be an issue.*

Spot 2-24, Daviess County, MP 11.267 – 11.367 [Bypass Interchange](#)

This spot includes the Owensboro Bypass interchange. There were ~~60~~ total crashes for a CRF of ~~2.684~~. ~~43~~ of these crashes were “rear end” collisions. Team members noted that both intersections for the ramps on each side of the bypass are signalized. Vehicles coming off the ramp and turning left to go southbound may be accelerating to make it through the light, but then reach the next light for the ramps south of the bypass unprepared to stop, resulting in the large number of “rear end” collisions.

Preliminary Team Recommendation: Conduct a more detailed analysis of the crash data and reevaluate.

*(Intersection south ramps: MP 11.322, Overpass: MP 11.367, Intersection north ramps: MP 11.471)*

**31 Total Crashes**

- 27 Rear End (6 injury, 21 PDO)  
(16 southbound, 9 northbound, 2 on ramps)*
- 4 Angle (0 injury, 4 PDO)  
(left turns to/from ramps, failure to yield)*

*Revised CRF: 1.385  
Intersection CRF: 0.96 (2000-2002)*

*The rear end crashes were predominantly due to inattention. Distractions such as radio, passengers in back seat, looking away, checking mirrors, etc. were noted. There was no specific mention of drivers accelerating southbound toward next signal from north set of ramps. Suggest that southbound traffic from bypass is more prone to backups due to traffic around Mall and Wal-Mart. Intersections for both sets of ramps are already signalized with turn lanes. Improvements to spots discussed above, south of this interchange, may help alleviate traffic backups here. No other suggestions for roadway improvements to address rear end crashes and driver inattention.*

*District Observer noted potential problem with ramp at southwestern quadrant of interchange. Vehicles exiting bypass going southbound on US 431 are instructed by sign to yield, yet the end of the ramp adds a lane for a southbound right turn lane into Goetz. The added lane may impress upon drivers that merging is allowed, which could cause rear-end crashes (the highest type of crashes noted) between this intersection and the intersection at Goetz. No suggestions for improvements considering the short distance between the two intersections.*



**US 431 Programming Study  
Item No. 02-8106.00  
Project Team Meeting 4  
KYTC District 4 Office, Elizabethtown  
August 15, 2007**

A project team meeting for the US 431 Programming Study was held at 10 a.m. EDT on Wednesday, August 15, 2007, in Elizabethtown, Kentucky. The purpose of the meeting was to review the updated crash data and discuss final team recommendations on spot improvements. The meeting agenda is attached.

Participants in the meeting came from the Kentucky Transportation Cabinet (KYTC) Central, District 2, and District 3 Offices, and Wilbur Smith Associates (WSA). Meeting attendees included the following:

Steve Ross	KYTC Central Office
Kevin McClearn	KYTC District 2
Joe Plunk	KYTC District 2
Jean Jones	KYTC District 2
Jeff Moore	KYTC District 3
Deneatra Hack	KYTC District 3
Misti Wilson	KYTC District 3
Carl Dixon	WSA
Bill Gulick	WSA
Brad Johnson	WSA
Rebecca Ramsey	WSA

**1. Welcome and Introduction**

Steve Ross opened the meeting, introducing the project team. The following session is intended as an informal discussion leading to recommendations to wrap up the US 431 study.

**2. Project History**

Steve Ross presented a brief history of the study process: begun as a planning study in 2003 or earlier, this project is intended to produce a list of safety improvements along the US 431 corridor from Tennessee to Indiana. While there has been some local interest in converting the route to a four lane section, continued discussions affirm that spot improvements are a more appropriate and cost effective recommendation given the existing conditions and needs along the corridor. WSA was included in the project in July 2007 to update the data, make recommendations, and create a report. Steve also noted that a secondary goal of the study was to improve access and connectivity.

**3. Purpose of Meeting**

Steve Ross explained that the purpose of the meeting was to review the updated crash information prepared by WSA. Additionally, a new set of recommendations for spot improvements and a prioritization scheme were developed for team approval.

**4. Overview of Tasks Completed to Date**

Rebecca Ramsey presented a brief overview of the US 431 study process to date and outlined the crash analysis methodology employed. "Segments" and 1/10-mile "spots"

are defined by the Kentucky Transportation Center and can be statistically analyzed to compare crash rates within the state. WSA further defined “locations” as a group of 1/10-mile spots clustered into a short length of roadway, reasoning similar factors may be leading to crashes in such close proximity.

The Critical Rate Factor (CRF) is a measure used to compare the frequency of crashes at one spot/segment with similar spots/segments throughout the state. There was some discussion during the meeting about whether a CRF of 1.0 implies that crashes are occurring at the average rate or that there is 99.5% likelihood that crashes are attributable to nonrandom events. **Steve Ross agreed to follow up on this topic.**

## **5. Crash Spot/Location Presentation and Discussion**

Brad Johnson led the discussion of the identified crash spots and locations by mentioning general trends observed during a field review.

- All or some of the corridor has been identified as a candidate for eventual 4-laning.
- Projects currently programmed with a construction phase in the Six Year Highway Plan have been identified along the route. Following discussion by the team, it was decided that projects with a programmed right-of-way phase would be included in the list of committed projects as well.
- Large volumes of heavy trucks travel the route, especially coal trucks in Muhlenberg County. A portion of the route south of Russellville has been designated part of the truck network.
- In communities along the route, the large number and excessive widths of driveways and other access points has a negative impact on level of service and safety. Applying forms of access control applications (e.g. limiting widths or consolidating entrances) would likely improve safety and operational performance.
- Roadside features should be incorporated into any improvements occurring along the roadway.

Brad Johnson outlined the five categories established to group spots/locations. These include:

- Category 1: KYTC and WSA agree to drop spot from further consideration because of a low CRF or another scheduled project that will address the area.
- Category 2: KYTC and WSA agree about the problem and solution at a particular site.
- Category 3: Site identified in KYTC (2000-2002) crash data that does not appear in WSA (2003-2006) crash data.
- Category 4: New sites that appeared based on WSA crash data which were not included in KYTC crash data.
- Category 5: KYTC and WSA agree about the problem at a particular site but differ on recommended solutions.

As the meeting progressed, another category was added to this list. Category 6 will be the designation for sites which are recommended for continuing consideration. In these cases, the problem leading to elevated crash rates is unclear or projects identified may not primarily impact safety but would still add value to the transportation system.

### **5a. Recommendations**

### **Category 1 – Sites to Drop from Priority List**

The following sites were recommended to be dismissed from further consideration due to low CRF values or because a previously scheduled project is anticipated to address the issue:

- Location 1-B (Spot 1-1) at the KY 591 intersection
- Location 1-F (Spot 1-3) between KY 106 and KY 107
- Location 1-L (Spot 1-7a, 1-8) around Dead Man's Curve
- Location 1-N (Spot 1-9) between KY 2270 and KY 246
- Location 1-S (Spot 1-16) south of Old Sawmill Road
- Location 2-E (Spot 2-12) at Power Plant Drive in South Carrollton
- Location 2-H (Spot 2-15) at the KY 136 intersection
- Location 2-I (Spot 2-16) at the KY 1080 intersection

Spot 1-7a in Location 1-L was called out for specific discussion. This spot falls just south of the improved section at Dead Man's Curve. Maintenance improvements at Dead Man's Curve were completed in 2004; the segment was reconstructed in late 2006. Crash data for 2003-2006 shows a number of crashes occurring on the curve to the south. It was decided that Spot 1-7a should be included in Category 6; the site should be monitored to determine if realigning Dead Man's Curve will improve safety on the curve to the south as well.

The team agreed that the other locations should be dismissed from further consideration.

### **Category 2 – Sites with WSA/KYTC concurrence**

The following sites were identified in both KYTC (2000-2002) and WSA (2003-2006) crash data. The team agreed on the cause of the problem and the recommendation to address it.

- Location 1-G (Spot 1-4) at Hollow Bill is recommended for segment reconstruction.
- Location 1-J (Spot 1-6, 1-7) at the intersections with Belcher Lane and Penrod Cutoff Road and the Rocky Creek crossings is recommended to widen both bridges and reconstruct the mainline segment between structures.
- Location 1-O (Spot 1-10) at the KY 246 intersection is recommended to have the split lanes removed to form a single 3-leg intersection.
- Location 1-Q (Spot 1-12, 1-13) at the KY 70 intersection is recommended to have the split lanes removed to form a single 4-leg intersection.
- Location 1-R (Spot 1-14, 1-15) at the intersection with KY 176 is recommended for intersection improvements to increase turning radii, add turn lanes, and delineate entrances. The KY 2107 intersection at this location is recommended for realignment to form a T-intersection.
- Location 1-T (Spot 1-17) at the Cleaton Road intersection is recommended for turn lanes and removing sight distance obstacles.
- Location 2-A (Spot 2-2) north of the parkway interchange in Central City is recommended for a 3-lane section.
- Location 2-K (Spot 2-18) at the KY 250 intersection is recommended for turn lanes.

### **Category 3 – KYTC Spots not in WSA data**

The following locations do not appear to be priority safety issues based on the updated crash data gathered by WSA. Discussion of these sites is presented below.

- Location 2-G (Spot 2-14) at the Third Street intersection in Livermore does not appear as a safety issue with a revised CRF of 0.44. However, this 2-lane section is recommended for widening to a 3-lane section within Livermore to the base of the bridge approach. Identified by the Green River ADD as the top regional priority, this improvement would improve access/connectivity, the secondary goal of this study. For this reason, Location 2-G was moved to Category 6.

**Action Item:** Districts 2 and 3 will forward a copy of any other ADD priorities to WSA to ensure these preferences are accounted for in other locations as necessary.

- Location 2-J (Spot 2-17) north of the Barrett Hill Road intersection in McLean County has an updated CRF of 0.45 from the 2003-2006 crash data. Drainage improvements to address hydroplaning were initially recommended, but the problem seems to have been addressed based on recorded crashes. The team agreed to drop this spot from further consideration.
- Location 2-O (Spots 2-20 through 2-24) in south Owensboro was recommended to be dropped. Recent widening, access consolidation, and other improvements have well addressed safety issues in this area.

#### ***Category 4 – New spots/locations appearing in WSA (2003-2006) crash data***

Several new spots/locations appeared based on the analysis of the updated crash data. These were presented to the project team.

Jeff Moore brought up the routing issues occurring in Logan County. There has been some confusion when coding crash reports between US 431 and US 431X (Business) around Russellville. Many times, crashes showing up on US 431 have been inaccurately coded and are occurring on the other route. To address this, a recently approved order will rename US 431X as KY 3519.

**Action Item:** District 3 will access the detailed police reports for crashes as occurring at Locations 1-A, 1-C, 2-F, and 2-L to verify the coding of reported crashes.

**The crash maps prepared by WSA should be updated to show the correct routing of US 431 north of Russellville.**

Two narrow bridges in southern Logan County led to a discussion on functionally obsolete bridges. With the portion of US 431 south of Russellville designated as part of the truck network, these narrow structures may lead to increased incidents. The report for this project should address the narrow bridges.

- Location 1-A is a residential cluster ½ mile north of the TN state line. Coding errors may be responsible for a number of these crashes, actually occurring on US 431X. If District 3 verifies that this is the case, the team will drop this location from further consideration.
- Location 1-C at the northern limits of Adairville is another instance when incorrect coding may be locating crashes on US 431 instead of US 431X. District 3 will

follow up on this by checking police reports and the team will dismiss this spot from further consideration if this proves to be the case.

- Location 1-E at the Lewisburg-Edwards Road intersection has limited sight distance over a crest. The Lewisburg Bypass, currently in design phase now, should remove a significant portion of traffic from the mainline. The bypass will have a 4-lane cross section and drop to 2 lanes north of town to the county line. The team agreed to drop Location 1-E from further consideration.
- Location 1-K contains the intersections with Union Ridge Road and Hudson Lane. Notes from a District 2 observer on a previous field visit noted the Union Ridge intersection as one of the two worst along the route. The team recommends realigning the ½ mile segment at Location 1-K.
- Location 2-L at the McLean/Daviess County line contains several driveways and cross streets on a straight stretch of roadway. It was suggested that some of the crashes coded in this section were mislabeled;

Action Item: District 3 will include this location in the crash report investigation. Pending these results, District 2 will return with recommendations to the project team for this site.

- Location 2-M is the Mill Street intersection in Daviess County. The team agreed to recommend cutting back the embankment to the north to improve sight distances.

#### **Category 5 – Spots identified in both data sets with different recommendations**

Discussion continued for the remaining spots which appeared as problem sites in both data sets.

In light of a number of small, short term projects recommended along the route, the project team recommends undertaking a road safety audit along the length of the corridor to identify additional items to address.

- Location 1-D is the US 431 intersection with KY 79 (Nashville St with West 9<sup>th</sup> St) in Russellville. As mentioned previously, several routes within Russellville are being renumbered to eliminate confusion. US 431 will approach this intersection as the southern and western legs until the southern bypass is constructed. The eastern approach is KY 3519. The bypass is anticipated to remove a significant portion of truck traffic from this intersection and should be considered a higher priority than any improvements to the intersection itself. Right-of-way constraints in both southern quadrants make it challenging to improve tight turning radii. The eastern leg of the intersection leads to a historic neighborhood; eventually, this portion of roadway may be turned over to the city.
- Location 1-H (Spot 1-4a) includes the intersection of KY 1293 and several local roads near the Logan/Muhlenberg county line. The embankment at this location is included in the UPL to be cut but does not lie within state right-of-way. A crest on KY 1293 from Lake Malone should be addressed if a project occurs at this point. Location 1-I (Spot 1-5) includes the intersection with KY 973 less than a ½ mile north of 1-H. As a short term project, road signs obscuring sight distance at KY 973 are recommended for relocation. Locations 1-H and 1-I are recommended to be included in a bypass of Dunmor to the east, extending the newly improved section north from the Muhlenberg/Logan county line.

- Location 1-M (Spot 1-8a) at the KY 2270 intersection is recommended to have sight distance obstacles removed and/or relocated.
- Location 1-P at the Sylvania Street intersection is a wide, straight stretch of road just south of an elementary school which opened in January 2006. The team recommends no improvements at this location; however, it recommends moving this location to Category 6 for continued monitoring.
- Location 1-U (Spot 2-1) is just south of the parkway interchange at Central City. The team recommends extending the tapers south beyond the horizontal curve to allow a longer merging period for southbound vehicles. Converting the parkway interchange to a diamond configuration was identified as a long term goal on the UPL. Because the parkway is destined to be designated as I-66, reconfiguration of the ramps should be reconsidered as part of a future study for the interstate.
- Location 2-B includes several urban intersections in Central City. Widening US 62 west of US 431 to 3 lanes is a district priority and may impact the US 431/US 62 intersection. Flooding issues are common on low parts of the route near the railroad overpass. Trucks traveling through Central City are encouraged to take US 62 west to KY 189 and return to US 431 north of town. It was suggested that District 2 consider renumbering the routes to make this path a more obvious alternative for trucks.

Action Item: District 2 will review the details of the spots within Location 2-B and return with recommendations.

- Location 2-C (Spot 2-9) is the KY 189 intersection. This is where the truck route through Central City rejoins the mainline. This location is recommended for a number of improvements including raising grade, additional signing, and possibly rumble strips to alert the driver. It was noted that a fatality coded at this intersection occurred 1,000 feet north and may not have been coded correctly.
- Location 2-D (Spot 2-10, 2-11) at the KY 81 intersection has the highest CRFs in both data sets. Cemetery, homes, and a gas station with contaminated soils abut the existing alignment. Falling just south of safety improvements of project 02-976.00, this segment is recommended for reconstruction.
- Location 2-F (Spot 2-13) is the Main Street intersection in Island, just south of the improved KY 85 intersection. The team recommends realigning the grade to address sight distance deficiencies. Problems are still reported as occurring at the improved KY 85 intersection. *[Upon further review, the 2003-2006 crash data supports this report. The CRASH Database reports one (1) crash occurred at Main Street, while seven (7) were reported at the KY 85 intersection. Due to potential reporting inaccuracies, it is recommended these locations be further investigated by the District. This may impact the prioritization of this project.]*
- Location 2-N (Spot 2-19) is the KY 140 intersection at Utica. The embankment in the southwest quadrant is in the process of being cut back by maintenance forces. The team recommends adding/stripping for turn lanes at this intersection.

## 5b. Prioritization

Initially, spot improvement projects identified by KYTC were prioritized in order of CRF for each of the two phases. Since safety is the primary goal of this project, this was thought to be the best rationale for justification. Expanding on this idea, WSA proposed indexing each project as high/medium/low based on CRF, cost, and severity. This

process would provide a generalized cost/benefit weighting, encouraging low cost, high CRF projects to be completed as highest priorities, progressing down to high cost items with CRFs at or near 1.0 last. This would make the safety audit the top priority.

WSA will update the prioritized list based on comments from the project team meeting and submit an updated draft to each District for additional review and comment.

### **5c. Cost Estimates**

There was some discussion about the cost estimates. Recommended items carried forward from initial KYTC items have detailed costs for right-of-way, utilities, and construction. New or modified projects do not have associated costs yet. For the prioritization scheme, WSA divided items into 3 cost categories: Low (<\$500,000), Medium (\$500,000 - \$2 Million), and High (>\$2 Million). Keeping cost estimates in this general format would be adequate for prioritization but would require an extra step before becoming available for programming. With large cost variances year-to-year, this level of detail may be the most practical estimate available.

Action Item: Districts 2 and 3 will provide additional cost estimates for the new and updated projects suggested during the meeting.

### **6. Q&A**

No further questions were asked.

### **7. Next Steps**

Several action items were noted throughout the meeting and need to be acted on. Once this information is gathered, a prioritization of projects will be developed and emailed to the project team. Review, comment, and finalization of the project list and priority will be completed via phone and email correspondence. Following completion of this step, a draft report will be prepared.

The meeting was adjourned at 1:30 PM EDT.

## **AGENDA**

**US 431 Programming Study  
Project Team Meeting  
August 15, 2007  
KYTC District 4, Elizabethtown**

- |  |                         |
|--|-------------------------|
| <b>1. Welcome and Introductions</b>                                  | <b>KYTC</b>             |
| <b>2. Project History</b>  | <b>KYTC</b>             |
| <b>3. Purpose of Meeting</b>   | <b>KYTC/WSA</b>         |
| <b>4. Overview of Tasks Completed to Date</b>                        | <b>WSA</b>              |
| <b>5. Crash Spot/Location Presentation and Discussion Discussion</b> | <b>WSA/Group</b>        |
| <b>a. Recommendations by Spot/Location</b>                           |                         |
| <b>b. Prioritization of Spots</b>                                    |                         |
| <b>c. Development of Cost Estimates</b>                              |                         |
| <b>6. Q &amp; A</b>  | <b>Group Discussion</b> |
| <b>7. Next Steps</b>   | <b>WSA</b>              |
| <b>ADJOURN</b>   |                         |