

**MINUTES**  
**First Project Team Meeting**  
**KY 49 – Marion County – Item # 4-8707.00**  
KYTC District 4 Office  
Elizabethtown, Kentucky  
August 16, 2013  
10:00 AM Eastern

A project team meeting for the KY 49 Planning Study (Marion County) was held at 10:00 a.m. EST on Friday, August 16th, in Elizabethtown, Kentucky. The purpose of the meeting was to discuss the project purpose and history, the scope of work, the preliminary data collected, relevant project issues, and public input strategies. Participants in the meeting represented the Kentucky Transportation Cabinet (KYTC) District 4 and Central Offices, the Lincoln Trail Area Development District and the consultant firms, CDM Smith and HMB. Meeting attendees included the following persons:

Patty Dunaway	KYTC, District 4 Chief District Engineer
John Moore	KYTC, District 4 Project Development Branch Manager
Charlie Allen	KYTC, District 4 Planning
Kevin Young	KYTC, District 4 Planning
Brad Bottoms	KYTC, District 4 Design
Josh Hornbeck	KYTC, District 4 PD&P
Benjamin Warren	KYTC, District 4 PD&P
Joseph Ferguson	KYTC, District 4 Environmental
Steve Ross	KYTC, Central Office Planning
Sreenu Gutti	KYTC, Central Office Planning
Mikael Pelfrey	KYTC, Central Office Planning
Shane McKenzie	KYTC, Central Office Planning
Jonathan Reynolds*	KYTC, Central Office Planning
Brent Sweger	KYTC, Central Office Design
Aaron Hawkins	LTADD
Amanda Spencer	CDM Smith
Tim Sorenson	CDM Smith
Ashley Sells	CDM Smith
Rob Dowler	HMB

*\*Joined by video conference.*

A summary of the key discussion items and decisions from this meeting are provided below.

**Welcome and Introductions:** Charlie Allen, KYTC Project Manager, began the meeting, welcoming attendees and asking for formal introductions from all.

**Purpose of the Project:** Charlie Allen briefly outlined the purpose of the project and the project limits. He noted that the purpose of the project is to improve safety and explained that the planning study will identify long-term solutions as well as short-term spot improvements.

**Purpose of the Meeting:** Amanda Spencer, CDM Smith Project Manager explained that the purpose of the meeting was to discuss with the Project Team the project scope, schedule, preliminary existing conditions findings, and next steps for the planning study. Participants were provided with handout packets containing an agenda, relevant KYTC Project Information Forms (PIFs), Marion County Six Year Plan project information, a summary of preliminary existing conditions data, draft traffic, crash, and environmental mapping, a working draft purpose and need statement, and a project schedule.

**Project Schedule:** Amanda explained that the planning study will include three meetings of the project team, two meetings with local officials and stakeholders, and one with the general public. The planning study has a tight schedule with recommendations due to KYTC in December. Report writing will occur in early 2014.

**Project History:** Amanda provided an overview of the three KY 49 KYTC Project Information Forms (PIFs) that formally initiated KY 49 improvement efforts as well as the active Marion County Six Year Highway Plan projects. The current planning study evolved from Item No. 4-8707.00 and includes Item No. 4-8708. Item No. 4-8707 is currently shown as the reconstruction of KY 49 from MP 18.698 to MP 22.829 and Item No. 4-8708 is a safety improvement project from MP 27.000 to 27.540. Charlie Allen explained that the next six year highway plan will accurately reflect the current approach of studying and potentially improving KY 49 from MP 18.698 to 27.540.

**Study Corridor:** The project team discussed the project termini and there were no changes. However, it was decided that the project origin should be referenced as KY 84 “near Lebanon”, as opposed to “in Lebanon”.

**Existing Conditions:** Amanda provided an overview of the existing conditions findings for the study corridor, including HIS Data, Traffic Data, Crash Analysis, and Environmental Features. She explained that CDM Smith has completed the existing conditions task short of the level of service analysis and analyzing as-built plans to identify deficient curves. Both tasks will be complete in advance of the next project team meeting. Key related discussion items and decisions include:

- The project team suspects that the HIS lane width and shoulder data is inaccurate for the study corridor. The consultant team will field check.
- KYTC Central Office will soon provide a new traffic count and a traffic forecast. It was noted that the last classification count occurred when school was out of session and may not represent typical conditions.
- KYTC will advise if there is recent field-verified curve data for use on this project. If not, HMB has similar equipment and may be able take field measurements, if needed, to supplement the as-built analysis.
- It was noted that the two fatal crashes identified in the crash analysis each occurred within a “high crash spot” and the location of each is covered by the milepoints of one of the three PIFs (PIF for MP 24-25).
- CDM Smith will provide a more detailed crash cause summary for each of the high crash spots identified.
- CDM Smith will add the rock wall(s) to the environmental map.
- It was noted that both prime farmland and farmland of statewide significance exist in the 500’ study corridor buffer. The USDA defines farmlands of statewide importance generally as those that are nearly prime farmland and that economically produce high yields of crops when treated

and managed according to acceptable farming methods. Some may produce as high a yield as prime farmlands if conditions are favorable.

- After the meeting D-4's Environmental Coordinator, Joseph Ferguson, provided via email a species list for Marion County from USFWS. This information will be documented as part of this study.

**Next Steps:** The project team discussed the next steps for the project, particularly the first local officials meeting. The following discussion items and decisions resulted:

- CDM Smith will provide a one page meeting plan for the upcoming local officials meeting.
- A handout packet similar to the packet provided at this project team meeting (but more succinct) will be provided to local officials and stakeholders at the first meeting of that group. A large plot of the study area and environmental features map will be provided for an activity station that allows local officials and stakeholders to work together with project team members to identify sensitive areas to avoid and potential improvements.
- CDM Smith will prepare a bullet style draft purpose and need statement (and goals and objectives) for KYTC review and approval for use at the first local officials meeting.
- KYTC will work next week to identify when and where the local officials meeting will be held as well as who will be invited. The team hopes to hold the meeting during the week of September 16<sup>th</sup>. Once ready, Charlie Allen, will send Sreenu Gutti, KYTC Central Office Project Manager, contact information for the local officials. KYTC central office will send out the stakeholder meeting notice (usually sent 3 week prior to meeting date).
- CDM Smith will provide draft coordination letters, including environmental mapping, to KYTC for review and forwarding to the Division of Water and Fish & Wildlife.
- Aaron Hawkins, LTADD, has a rough draft of the Environmental Justice Report ready and will provide CDM Smith the draft prior to the next meeting. Aaron shared that there are some potentially sensitive areas, but no major concerns.
- Sreenu Gutti and Mikael Pelfrey will prompt KYTC Geotechnical Staff to provide a geotechnical overview for this project later this fall. It is expected that the report would be complete by the time of the final project team meeting.
- Brent Sweger suggested crash causation information for the entire corridor (not just the high crash spots) would be helpful.
- The project team recommended the following minor revisions to the handouts: 1) Remove the "proposed Lebanon Bypass" language from the PIF summary; 2) Remove the length column on the structures summary page; 3) Show the structures on the Existing Roadway Characteristics and Traffic map; and 4) Label the project termini on the maps.

With no further questions, the meeting was adjourned around 10:50 a.m. EST.

## MINUTES

### First Local Officials and Stakeholders Meeting

#### KY 49 – Marion County – Item # 4-8707.00

David R. Hourigan Government Center, 223 N. Spalding Ave., 3rd. Floor Conference Room

Lebanon, Kentucky

September 12<sup>th</sup>, 2013

4:00 PM Eastern

A local officials and stakeholders meeting for the KY 49 Planning Study (Marion County) was held at 4:00 p.m. EST on Thursday, September 12th, in Lebanon, Kentucky. The purpose of the meeting was to discuss findings to date and solicit local official and stakeholder input on issues, improvement options, and environmental features. Participants in the meeting represented local officials and stakeholders, the Kentucky Transportation Cabinet (KYTC) District 4 and Central Offices, the Lincoln Trail Area Development District and the consultant firms, CDM Smith and HMB. Meeting attendees included the following persons:

Patty Dunaway	KYTC, District 4 Chief District Engineer
John Moore	KYTC, District 4 Project Development Branch Manager
Charlie Allen	KYTC, District 4 Planning
Kevin Young	KYTC, District 4 Planning
Brad Bottoms	KYTC, District 4 Design
Scott Schurman	KYTC, Central Office Environmental
Steve Ross	KYTC, Central Office Planning
Sreenu Gutti	KYTC, Central Office Planning
Mikael Pelfrey	KYTC, Central Office Planning
Shane McKenzie	KYTC, Central Office Planning
Aaron Hawkins	LTADD
Amanda Spencer	CDM Smith
Rebecca Thompson	CDM Smith
Ashley Sells	CDM Smith
Rob Dowler	HMB

The following local officials were in attendance:

Senator Jimmy Higdon	Kentucky Legislature
Representative Terry Mills	Kentucky Legislature
Judge John G. Mattingly	Marion County, Judge Executive
Robbie Turner	Marion County EMS Director
Brian Mattingly	Maker's Mark
Steve Masterson	Marion County, Magistrate
Tom Lund	Executive Director, Marion County Industrial Foundation

A summary of the key discussion items and decisions from this meeting are provided below.

**Welcome and Introductions:** Charlie Allen, KYTC Project Manager, began the meeting, welcoming attendees and asking for formal introductions from all.

**Purpose of the Project:** Charlie Allen briefly outlined the purpose of the project and the project limits.

**Purpose of the Meeting:** Amanda Spencer, CDM Smith Project Manager, explained that the purpose of the meeting was to discuss with the local officials and stakeholders the project schedule, preliminary existing conditions findings, project purpose and goals, and next steps for the planning study. And, to listen to their perspectives on: issues along the corridor, sensitive environmental features, and desired improvements. Participants were provided with handout packets containing an agenda, Marion County Six Year Plan project information, a summary of preliminary existing conditions data, draft roadway characteristics & traffic information, a map of crash data, a map showing geometrics that do not meet current design standards, environmental mapping, a working draft purpose and need statement, and a project schedule.

**Project Schedule:** Amanda explained that the project team is working to prepare a recommendation for KY 49 before the end of the year and the planning study will include three meetings of the project team, two meetings with local officials and stakeholders, and one with the general public. She advised that the project team would contact the group to schedule an early November second local officials and stakeholder meeting before presenting information to the public.

**Project History/Six Year Plan Projects:** Amanda provided an overview of the active Marion County Six Year Highway Plan projects and explained that the findings of the KY 49 Planning Study would be considered in the upcoming update to the Six Year Plan. Rob Dowler provided an overview of the ongoing KY 49 improvement project south of Lebanon. He shared that KY 49, currently in the right-of-way phase, is being improved to 11 foot lanes and 4 foot shoulders along that section.

**Project Issues:** Amanda provided an overview of the existing conditions findings for the study corridor, including traffic, crash, and geometric information. The group discussed the findings and issues along the corridor. Where appropriate, location specific issues are noted on the attached map. Key discussion items and decisions include:

- Some attendees asserted that the two areas in most need of improvement are generally:
  1. Toad Mattingly Road to Sam Browning Road (MP 20 - MP 22); and
  2. Just north of KY 327 to North of KY 52 (MP 23 to MP 25).
- The lack of clear zones and guard rail along the route contribute to the crash trends.
- In discussion of the two fatal crashes presented in the crash analysis, some attendees noted that the northernmost location (near MP 24.5 and High Crash Spot f) seems to be in more need of improvement than the southernmost fatality location. An EMS representative mentioned that guardrail may improve safety at this location, citing that the fatal crash involved an overturned vehicle.
- The group mentioned that there have been unreported crashes along the corridor, particularly at High Crash Spot f.
- The EMS representative shared that there may be as many as 20 rear end collisions per school year near West Marion Elementary, many of which are unreported. The group expressed a desire for a left turn lane at West Marion Elementary to relieve congestion during peak hours and improve safety around this location.
- The group indicated the high crash segment in Loretto along KY 49/52 appears to be due to open access (no access management), including drivers backing into the road and cutting through parking lots to avoid stopping.
- A 3 way stop at the mid intersection of KY 49/52 (MP 27) was suggested as a potential improvement.

- It was noted that water stands on the road at the following three locations: KY 49/Toad Mattingly, KY 49/Cowherd, and less often at KY 49/KY 327.
- One attendee mentioned that citizens often walk along the portion of KY 49/52 at the northern end of study area. There may be local interest in pursuing a Safe Routes to School project for the area.
- Makers Mark is expanding. Brian Mattingly mentioned that 45 semi-trucks come and go each day. And, this is expected to double in five years and double again in the following seven years.
- The majority of traffic to Makers Mark is thought to travel along the study portion of KY 49 from KY 84 near Lebanon to the southernmost intersection with KY 52 (St. Francis Highway). The section of KY 49 north of KY 52 (St. Francis Highway) serves mostly local trips.
- Attendees shared that most trucks currently avoid KY 49; but, traffic patterns may change with system improvements.
- One attendee asked about the traffic volume on the section of KY 49 that is being improved south of Lebanon. The project team did not have the information readily available. But, the team will share at the next local officials/stakeholder meeting that the traffic is approximately 1,400 vehicles per day (vpd) compared to 2,300-4,400 vpd from near Lebanon to Loretto.

**Purpose and Need:** Amanda presented the draft purpose and need statement. And, the group discussed the draft goals and objectives, shown here:

- Accommodate bicyclists and pedestrians in Loretto.
- Minimize impacts to residents, farmlands and the environment.
- Maintain the existing character of the route.
- Improve access to the area attractions to enhance tourism and economic development.
- Provide consistency with improved KY 49 (in progress) south of Lebanon.

The group felt that these goals were suitable to move forward for further project team consideration. And, they agreed that a goal to “improve operation, access, and safety at West Marion Elementary School” may be appropriate.

In discussion of the tourism and economic development related goal, it was noted that Makers Mark is part of the Bourbon Trail. Other distilleries on the Bourbon Trail have reportedly experienced substantial growth in visitor volumes since joining the system. This designation will be noted on the Community Resources Map.

**Environmental Maps:** Rebecca Thompson, CDM Smith, provided an overview of the information presented on the environmental maps. The following discussion items and decisions resulted:

- Judge Mattingly asked if the most recent (2011) floodplain information is being shown on all maps. CDM Smith will verify.
- It was noted that Makers Mark is on the National Register, but it is outside the study area.
- There are no certified agricultural districts in the area.

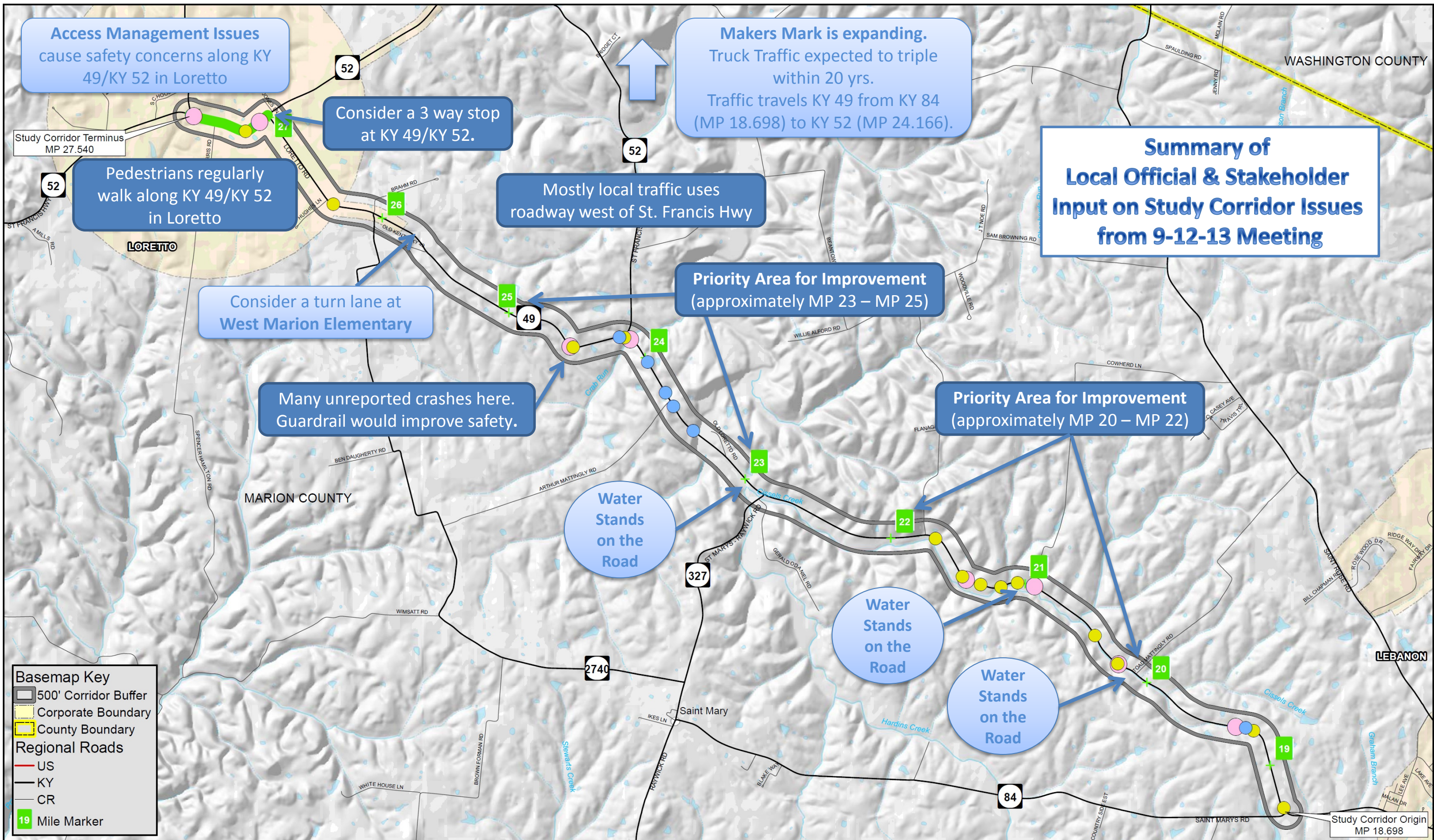
**Other Items:** KYTC will follow up on the following two related issues raised during the meeting:

- Representative Mills asked about a cracked barrier rail on the bridge over Hardins Creek. KYTC agreed to respond to the Representative about the last structural inspection and whether or not this crack was noted. *Update: KYTC does have the crack noted in their latest bridge inspection report, but will further investigate.*

- Representative Mills asked KYTC to look at the rumble strips around West Marion Elementary School to ensure there are no safety concerns caused by the rumble strips at this location. KYTC agreed to review and respond. *Update: Since the meeting, KYTC reviewed this issue and made plans to address the concern by adding a painted white edge line stripe at this location.*

And, KYTC and/or CDM Smith will reach out to Scott Spaulding with the Marion County Public Schools Transportation Division to gain insight on bus related issues.

With no further questions, the meeting was adjourned around 5:10 p.m. EST.



**Summary of  
Local Official & Stakeholder  
Input on Study Corridor Issues  
from 9-12-13 Meeting**

**Basemap Key**

- 500' Corridor Buffer
- Corporate Boundary
- County Boundary
- Regional Roads**
- US
- KY
- CR
- Mile Marker

**Crash and Geometric Characteristics Not Meeting Current Standards Key**

- High Crash Spot
- Vertical Curve Not Meeting Current Standard
- Horizontal Curve Not Meeting Current Standard
- High Crash Segment
- MP 27.000-27.540



**KY 49 Planning Study**  
**KYTC Item No. 4-8707.00**  
**Local Official and Stakeholder**  
**Input on Issues**  
 (Shown Over Crash and Geometric Analysis)

3/11/2013





# United States Department of the Interior

FISH AND WILDLIFE SERVICE  
Kentucky Ecological Services Field Office  
330 West Broadway, Suite 265  
Frankfort, Kentucky 40601  
(502) 695-0468

September 16, 2013

Mr. Keith Dotson  
Kentucky Transportation Cabinet  
200 Mero Street  
Frankfort, KY 40622

Re: FWS 2013-B-0743; KYTC 4-8707.00; KY 49 Planning Study, KY 84 near Lebanon to KY 52 in Loretto; located in Marion County, Kentucky

Dear Mr. Dotson:

Thank you for the opportunity to provide comments on the above-referenced project. The U.S. Fish and Wildlife Service (Service) has reviewed this proposed project and offers the following comments in accordance with the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 *et seq.*). This is not a concurrence letter. Please read carefully, as further consultation with the Service may be required.

In accordance with the provisions of the Fish and Wildlife Coordination Act, the Service has reviewed the project with regards to the effects the proposed actions may have on wetlands and/or other jurisdictional waters. We recommend that project plans be developed to avoid impacting wetland areas and/or streams, and reserve the right to review any required federal or state permits at the time of public notice issuance. The U.S. Army Corps of Engineers should be contacted to assist you in determining if wetlands or other jurisdictional waters are present or if a permit is required.

In order to assist you in determining if the proposed project has the potential to impact protected species we have searched our records for occurrences of listed species within the vicinity of the proposed project. Based upon the information provided to us and according to our databases, we believe that the following federally listed species have the potential to occur within the project vicinity. The listed species are:

Group	Species	Common name	Legal* Status
Mammals	<i>Myotis sodalis</i>	Indiana bat	E
Mussels	<i>Epioblasma triquetra</i>	snuffbox	E

\* Key to notations: E = Endangered, T = Threatened, C = Candidate, CH = Critical Habitat

We must advise you that collection records available to the Service may not be all-inclusive. Our database is a compilation of collection records made available by various individuals and resource agencies. This information is seldom based on comprehensive surveys of all potential habitats and thus does not necessarily provide conclusive evidence that protected species are present or absent at a specific locality.

### **Indiana bat**

The proposed project site is located within habitat designated as “potential habitat” for the Indiana bat and we believe that: (1) forested areas in the vicinity of and on the project area may potentially provide suitable summer roosting and foraging habitat for the Indiana bat; and (2) caves, rockshelters, and abandoned underground mines in the vicinity of and on the project area may potentially provide suitable wintering habitat for the Indiana bat. Our belief that potentially suitable habitat may be present is based on the information provided in your correspondence, the fact that much of the project site and/or surrounding areas contain forested habitats that are within the natural range of this species, and our knowledge of the life history characteristics of the species.

The Indiana bat utilizes a wide array of forested habitats, including riparian forests, bottomlands, and uplands for both summer foraging and roosting habitat. Indiana bats typically roost under exfoliating bark, in cavities of dead and live trees, and in snags (*i.e.*, dead trees or dead portions of live trees). Trees in excess of 16 inches diameter at breast height (DBH) are considered optimal for maternity colony roosts, but trees in excess of 9 inches DBH appear to provide suitable maternity roosting habitat. Male Indiana bats have been observed roosting in trees as small as 5 inches DBH.

Prior to hibernation, Indiana bats utilize the forest habitat around the hibernacula (*i.e.* cave) to feed and roost until temperatures drop to a point that forces them into hibernation. This “swarming” period is dependent upon weather conditions and lasts from about September 15 to about November 15. This is a critical time for Indiana bats, since they are acquiring additional fat reserves and mating prior to hibernation. Research has shown that bats exhibiting this “swarming” behavior will range up to five miles from chosen hibernacula during this time. For hibernation, the Indiana bat prefers limestone caves, sandstone rockshelters, and abandoned underground mines with stable temperatures of 39 to 46 degrees F and humidity above 74 percent but below saturation.

Because we have concerns relating to the Indiana bat on this project and due to the lack of occurrence information available on this species relative to the proposed project area, we have the following recommendations relative to Indiana bats:

- The proposed project area is located in a region identified by the Kentucky Geological Survey’s 2002 *Karst Occurrence in Kentucky* map as an area “underlain by bedrock with moderate potential for karst development.” Karst features and abandoned underground mines could provide additional winter habitat for Indiana bats. Therefore, we would recommend that the project proponent survey the action area of the proposed project area for caves and underground mines, identify any such habitats that may exist on-site, and

evaluate potential impacts to those sites pending an analysis of their suitability as Indiana bat habitat by this office.

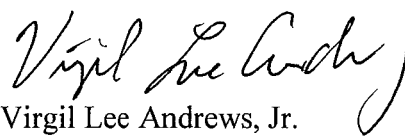
- KYTC should address the impacts to the Indiana bat through adherence to the September 6, 2012 Indiana bat Programmatic Agreement between KYTC, FHWA, and the Service.

**Snuffbox**

Freshwater mussels are one of the most imperiled groups of animals in North America. Reservoir construction, siltation, channelization, and water pollution are all factors that have contributed to the decline of our native mussel populations. The runoff from urban areas has degraded the quality of water and the substrate of many streams. As filter feeders, mussels are sensitive to contaminants and function as indicators of problems with water quality. There are known occurrences of snuffbox within Marion County. The potential of the proposed project to impact this species, either directly or indirectly as a result of siltation/sedimentation and contamination, should be addressed when evaluating the proposed project.

Thank you again for your request. Your concern for the protection of endangered and threatened species is greatly appreciated. If you have any questions regarding the information that we have provided, please contact Jessi Miller at (502) 695-0468 extension 104.

Sincerely,



Virgil Lee Andrews, Jr.  
Field Supervisor

**MINUTES**  
**2<sup>nd</sup> Project Team Meeting**  
**KY 49 – Marion County – Item # 4-8707.00**  
KYTC District 4 Office  
 Elizabethtown, Kentucky  
 October 16, 2013  
 1:30 PM Eastern

A second project team meeting for the KY 49 Planning Study (Marion County) was held at 1:30 p.m. EST on Wednesday, October 16th, in Elizabethtown, Kentucky. The purpose of the meeting was to discuss existing conditions information, local official and stakeholder input, draft spot improvements and alternates, and upcoming meetings. Participants in the meeting represented the Kentucky Transportation Cabinet (KYTC) District 4 and Central Offices, the Lincoln Trail Area Development District and the consultant firms, CDM Smith and HMB. Meeting attendees included the following persons:

Patty Dunaway	KYTC, District 4 Chief District Engineer
Charlie Allen	KYTC, District 4 Planning
Kevin Young	KYTC, District 4, Planning
Brad Bottoms	KYTC, District 4 Design
Benjamin Warren	KYTC, District 4 PD&P
Joseph Ferguson	KYTC, District 4, Environmental
Steve Ross	KYTC, Central Office Planning
Sreenu Gutti	KYTC, Central Office Planning
Mikael Pelfrey	KYTC, Central Office Planning
Brent Sweger	KYTC, Central Office Design
Aaron Hawkins	LTADD
Amanda Spencer	CDM Smith
Ashley Sells	CDM Smith
Rob Dowler	HMB
Troy Woodyard	HMB

A summary of the key discussion items and decisions from this meeting are provided below.

**Welcome and Introductions:** Charlie Allen, KYTC Project Manager, began the meeting, welcoming attendees and asking for formal introductions from all.

**Purpose of the Meeting:** Amanda Spencer, CDM Smith Project Manager, explained that the purpose of the meeting was to discuss with the Project Team the key and new existing conditions findings, input from the local officials and stakeholders meeting, draft spot improvements and alternates, and next steps for the planning study.

**Project Schedule:** Amanda shared that the project is on schedule and thanked KYTC for their efforts in keeping to the tight schedule. She informed the group that the second local officials and stakeholders meeting and first public meeting would be on November 21, 2013. And, a third and final project team meeting will follow where the team will discuss study recommendations.

**Project Issues:** Amanda provided an overview of the existing conditions findings for the study corridor, including traffic, crash, and geometric information. The project team discussed the findings and issues along the corridor. Key discussion items and decisions include:

- KYTC provided the 2040 traffic forecast, which was derived by applying a 1% average annual growth rate to the existing traffic volumes. Future level of service was calculated by CDM Smith and found to be B or C. LOS C is considered acceptable in rural areas.
- The project team agreed that a three way stop at KY 49 & KY 52 (milepoint 27) does not seem warranted based on volume or crash history. This idea was suggested at the first local official and stakeholder meeting as a potential solution for the crash rate in this area. The team agreed that access management solutions (also suggested at the local official and stakeholder meeting) are the appropriate improvement proposal for this location.
- CDM Smith agreed to work with Charlie Allen on Judge Mattingly's recent question about floodplain information used in the study mapping. Judge Mattingly questioned if the team had the most recent information. CDM Smith confirmed they have used the most recent available to them, but will update the mapping if the Judge provides something more recent.
- LTADD and KYTC District 4 will coordinate on the Safe Routes to School grant application underway (for/by West Marion Elementary).
- A transportation representative with Marion County Schools called Charlie Allen and shared that there does not appear to be the need for a turn lane at West Marion Elementary as there are only minor backups for about 30 minutes during the morning and afternoon. His primary concerns were the horizontal curves to the south of Loretto.

**Purpose and Need:** Amanda presented the revised draft purpose and need statement. The project team agreed that the purpose statement should be revised to: "improve safety and addresses geometric deficiencies."

**Draft Spot Improvements and Alternates:** Amanda introduced the proposed draft spot improvements and alternates, referencing a large plot. Fourteen spot improvements (labeled A – N) were shown. An alternate to widen the existing alignment between spots and off alignment options at various locations were also proposed. HMB expanded on Amanda's introduction of the proposed improvement alternates and summarized likely typical section options within each segment. The following decisions resulted:

- Alternates should be shown as 200' corridors on future displays to more accurately reflect this planning level analysis.
- Alignments should be labeled as follows: Red Alternate, Yellow Alternate, and so on.
- The alternate map background should be softened so that the alternates stand out.
- The project team agreed with the segmentation of the corridor into four study segments for the purpose of displaying improvement alternates.
- No changes were recommended but the consultant team will revisit the proposed improvements before drafting materials for upcoming meetings. Any suggested enhancements will be submitted to KYTC for review and approval.

**Next Steps:** The project team discussed the next steps for the project, particularly the second local officials meeting and public meeting. The following discussion items and decisions resulted:

- In advance of the public meeting, in time for KYTC to review, CDM Smith will provide:
  - a public meeting plan;
  - a final map of proposed alternates;
  - display boards (proposed alternates by segment should include photographs);

- a project information sheet to be used as a handout;
  - a survey (color coded to coordinate with potential improvements);
  - an evaluation matrix, including cost estimates; and
  - a PowerPoint presentation (that will run on a loop at the meeting).
- The public meeting survey will be put online after the public meeting. KYTC to provide a link.
- Once ready, CDM Smith will provide KYTC with a PDF of the alternates for the geotechnical overview.
- The draft environmental justice report has been submitted for KYTC review by Aaron Hawkins with LTADD and any potential impacts will be quantified in the evaluation matrix. Note: Charlie Allen distributed the final environmental justice report after the meeting.

With no further questions, the meeting was adjourned around 2:30 p.m. EST.

## MINUTES

### Second Local Officials and Stakeholders Meeting

#### KY 49 – Marion County – Item # 4-8707.00

Center Square Convention Center, 239 N. Spalding Ave.

Lebanon, Kentucky

November 21, 2013

4:00 PM Eastern

A local officials and stakeholders meeting for the KY 49 Planning Study (Marion County) was held at 4:00 p.m. EST on Thursday, November 21st, in Lebanon, Kentucky. The purpose of the meeting was to discuss findings to date, proposed improvement options, and the public meeting to follow the meeting of this group. Participants in the meeting represented local officials and stakeholders, the Kentucky Transportation Cabinet (KYTC) District 4 and Central Offices, the Lincoln Trail Area Development District and the consultant firms, CDM Smith and HMB. Meeting attendees included the following persons:

Patty Dunaway	KYTC, District 4 Chief District Engineer
John Moore	KYTC, District 4 Project Development Branch Manager
Charlie Allen	KYTC, District 4 Planning
Kevin Young	KYTC, District 4 Planning
Brad Bottoms	KYTC, District 4 Design
Steve Ross	KYTC, Central Office Planning
Sreenu Gutti	KYTC, Central Office Planning
Mikael Pelfrey	KYTC, Central Office Planning
Charlie Spalding	KYTC, Central Office Planning
Aaron Hawkins	LTADD
Amanda Spencer	CDM Smith
Rebecca Thompson	CDM Smith
Ashley Sells	CDM Smith
Rob Dowler	HMB
Troy Woodyard	HMB

The following local officials were in attendance:

Senator Jimmy Higdon	Kentucky Legislature
Representative Terry Mills	Kentucky Legislature
Josh Ballard	Loretto Fire Department
Anthony Mann	Marion County EMS
Brian Mattingly	Maker's Mark
Scott Spalding	Marion County Board of Education
John Thomas	City of Lebanon

A summary of the key discussion items and decisions from this meeting are provided below.

**Welcome and Introductions:** Charlie Allen, KYTC Project Manager, began the meeting, welcoming attendees and asking for formal introductions from all.

**Purpose of the Project:** Charlie Allen briefly outlined the purpose of the project and the project limits.

**Purpose of the Meeting:** Amanda Spencer, CDM Smith Project Manager, explained that the purpose of the meeting was to refresh the local officials and stakeholders on the project schedule, preliminary existing conditions findings and project purpose and goals that were discussed at the first local officials and stakeholders meeting. Also, to share the potential improvement alternates that had been developed as a result of the study findings and local official and stakeholder input. Participants were provided with handout packets containing an agenda, project schedule, roadway characteristics and traffic information, a map of crash data, a map showing geometrics that do not meet current design standards, the purpose and need statement, and proposed improvement alternates. Each attendee also received a project questionnaire to be completed at the meeting or to be mailed back by December 6, 2013 in a postage paid envelope provided at the meeting.

**Project Schedule:** Amanda explained that the project team is working to prepare a recommendation for KY 49 before the end of the year and a report in early 2014. Local officials and stakeholders were invited to stay after this meeting for the first meeting with the public to share the same information.

**Project Issues:** Amanda provided an overview of the existing conditions findings for the study corridor. Specifically summarizing the following by referencing the meeting handout:

- Existing and Future Traffic and Level of Service
- Crash History, including 8 High Crash Spots and a High Crash Segment
- A total of 19 Horizontal and Vertical Curves that do not meet current design standards
- Issues, such as potential priority sections for improvement, identified during the first meeting of local officials and stakeholders.

**Purpose and Need:** Amanda presented the revised purpose and need statement – “to improve safety and address geometric deficiencies” and the project goals, as follows:

- Accommodate bicyclists and pedestrians in Loretto
- Improve operations, access, and safety at West Marion Elementary School
- Minimize impacts to residents, farmlands, and the environment
- Maintain the existing character of the route
- Improve access to area attractions to enhance tourism and economic development
- Provide consistency with improved KY 49 (in progress) south of Lebanon

**Proposed Improvement Alternates:** Amanda provided an overview of the improvement alternates for the groups consideration, including:

- Blue Alternate – Spot Improvements - relatively low cost improvements that address areas where geometrics do not meet current design standards or where other issues have been identified.
- Red + Blue Alternate – Address all spot improvements and widen the existing route (lanes and shoulders) between each.
- Green Alternate – Widen the existing route (lanes and shoulders), address spot improvements and construct new alignment as shown in green.
- Yellow Alternate – Widen the existing route (lanes and shoulders), address spot improvements and construct new alignment as shown in yellow.
- Pink Alternate – Widen the existing route (lanes and shoulders), address spot improvements and construct new alignment as shown in pink.
- No Build – No new construction, but maintenance will continue.



Amanda explained that the study corridor has been divided into four segments for the purposes of displaying and analyzing alternates, and she shared that improvement alternates are mutually exclusive. For example, citizens may prefer the no build in one segment but the green in another and the yellow in another and so on.

**Public Meeting Prep:** After the cursory overview of proposed alternates, Amanda walked the group through the public meeting setup, including:

- Visiting the sign-in table and showing the handouts that each citizen would receive;
- Watching the narrated PowerPoint presentation that citizens would be asked to view; and
- Browsing the display boards which contained information about where we are in the study, traffic data, crash history, geometric conditions, and environment. The last boards contained detailed information about each study segment. These displays included the proposed alternates, cost and impact details, and the proposed typical section(s) for alternates in that segment.

**Questions:** The following summarizes the question and answers from the meeting:

- One attendee asked the maximum cost of the overall improvement From KY 84 to KY 52. Amanda shared that if the maximum-cost improvement alternate advanced in each segment, the planning level cost estimate exceeds \$28 million.
- Representative Mills asked about a cracked barrier rail on the bridge over Hardin's Creek, an issue he had raised at the last meeting of this group. Charlie Allen shared that KYTC had reviewed the bridge. *District 4 Bridge Section is putting together a project to repair the damaged rail; expected spring or summer of 2014.*
- Representative Mills asked if KYTC had examined the rumble strips around West Marion Elementary School to ensure there are no safety concerns, another issue he raised at the last local officials and stakeholders meeting. Charlie Allen shared that KYTC was reviewing this matter. *Current plans are to add edge striping in Spring 2014.*
- Senator Higdon commented that he had spoken with constituents about sidewalks in Loretto and many are in favor of this potential improvement.

With no further questions, the group began completing their surveys and discussing the project until the public meeting began.

**MINUTES**  
**Public Meeting**  
**KY 49 – Marion County – Item # 4-8707.00**  
Center Square Convention Center, 239 N. Spalding Ave.  
Lebanon, Kentucky  
November 21, 2013  
6:00 PM Eastern

A public meeting for the KY 49 Planning Study (Marion County) was held at 6:00 p.m. EST on Thursday, November 21st, in Lebanon, Kentucky. The purpose of the meeting was to present study findings to date and proposed improvement options. Project Team members from the Kentucky Transportation Cabinet (KYTC) District 4 and Central Offices, the Lincoln Trail Area Development District and the consultant firms, CDM Smith and HMB were on hand to direct citizens through the various project exhibits and to answer questions. Team members in attendance included:

Patty Dunaway	KYTC, District 4 Chief District Engineer
John Moore	KYTC, District 4 Project Development Branch Manager
Charlie Allen	KYTC, District 4 Planning
Kevin Young	KYTC, District 4 Planning
Brad Bottoms	KYTC, District 4 Design
Steve Ross	KYTC, Central Office Planning
Sreenu Gutti	KYTC, Central Office Planning
Mikael Pelfrey	KYTC, Central Office Planning
Charlie Spalding	KYTC, Central Office Planning
Aaron Hawkins	LTADD
Amanda Spencer	CDM Smith
Rebecca Thompson	CDM Smith
Ashley Sells	CDM Smith
Rob Dowler	HMB
Troy Woodyard	HMB

The meeting was an open house format; attendees were invited to visit a number of stations, as summarized below.

**Sign-in:** Citizens were greeted at the door and provided a project information handout that summarized study findings and proposed improvement alternates and a two page project questionnaire. Attendees were asked to return their questionnaire at the meeting or to mail it back by December 6, 2013 in a postage paid envelope provided at the sign-in table.

**Presentation:** From the sign-in table, attendees were directed to take a seat and watch a short narrated presentation that explained the purpose of the project, the purpose of the public meeting, and introduced the proposed improvement alternates, as follows:

- Blue Alternate – Spot Improvements - relatively low cost improvements that address areas where geometrics do not meet current design standards or where other issues have been identified.
- Red + Blue Alternate – Address all spot improvements and widen the existing route (lanes and shoulders) between each.
- Green Alternate – Widen the existing route (lanes and shoulders), address spot improvements and construct new alignment as shown in green.

- Yellow Alternate – Widen the existing route (lanes and shoulders), address spot improvements and construct new alignment as shown in yellow.
- Pink Alternate – Widen the existing route (lanes and shoulders), address spot improvements and construct new alignment as shown in pink.
- No Build – No new construction, but maintenance will continue.

The presentation ran on a loop, so attendees could watch as many times as they wished before moving onto the other exhibits.

**Display Boards:** The following large display boards were placed around the room:

- “We Are Here” Exhibit to demonstrate where a planning study falls on the project development lifecycle.
- Traffic Exhibit to display the average daily traffic volume, truck percentage and roadway characteristics for each study segment.
- Crash Exhibit to present the crash history over the last four years; 93 crashes including two fatal crashes, 8 “high crash spots” and one “high crash segment.”
- Exhibit displaying the 19 horizontal and vertical curves that do not meet current design standards.
- Environmental Exhibit to present the community resources, utilities, bridges and EPA Program sites along the study corridor.
- Exhibits displaying Segments 1-4, each with a map of the alternates in the segment, typical section that was proposed, spot improvement table that included crash history and cost estimate, and alternate evaluation matrix that summarized information about purpose and need, possible relocations, possible environmental impacts and cost.

Some project team members were stationed at exhibits and others floated around the room, all answering citizen questions.

**White Board Comments:** A white board was also displayed for citizens and project team members to record attendee’s questions or comments. The following two comments were recorded here:

- Follow old railroad track through Loretto
- Loretto Fire closes road – no alternative route

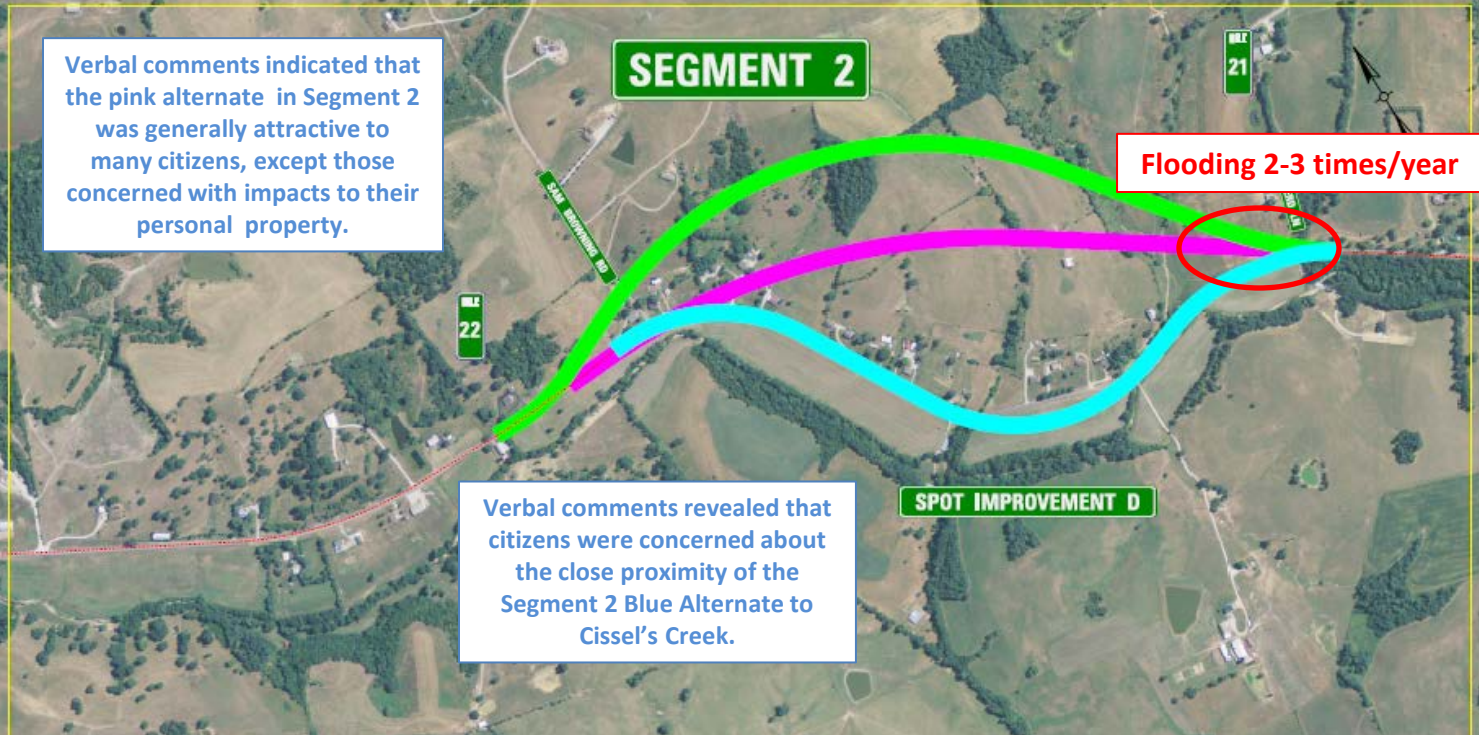
**Roll Plots:** Two large roll plots displaying the proposed improvement alternates were also provided. HMB designers Rob Dowler and Troy Woodyard were stationed at these locations to answer citizen’s questions about the proposed improvements. One of the roll plots was placed on easels and a second on a table allowing attendees to mark areas of concern or improvement ideas. The attached maps illustrate the comments citizens made on the roll plot and/or shared verbally.

**Summary:** Eighty-seven (87) people signed in at the meeting; this does not include the project team members or local officials who stayed for the public meeting after the earlier meeting of that group. Twelve (12) surveys were returned; this includes surveys from the public and local officials and stakeholders. Attendees who did not return their survey at the meeting were provided a postage paid envelope to return their survey by December 6, 2013. All surveys will be summarized and considered by the project team in developing a final recommendation for KY 49.

The public meeting concluded at 8pm.

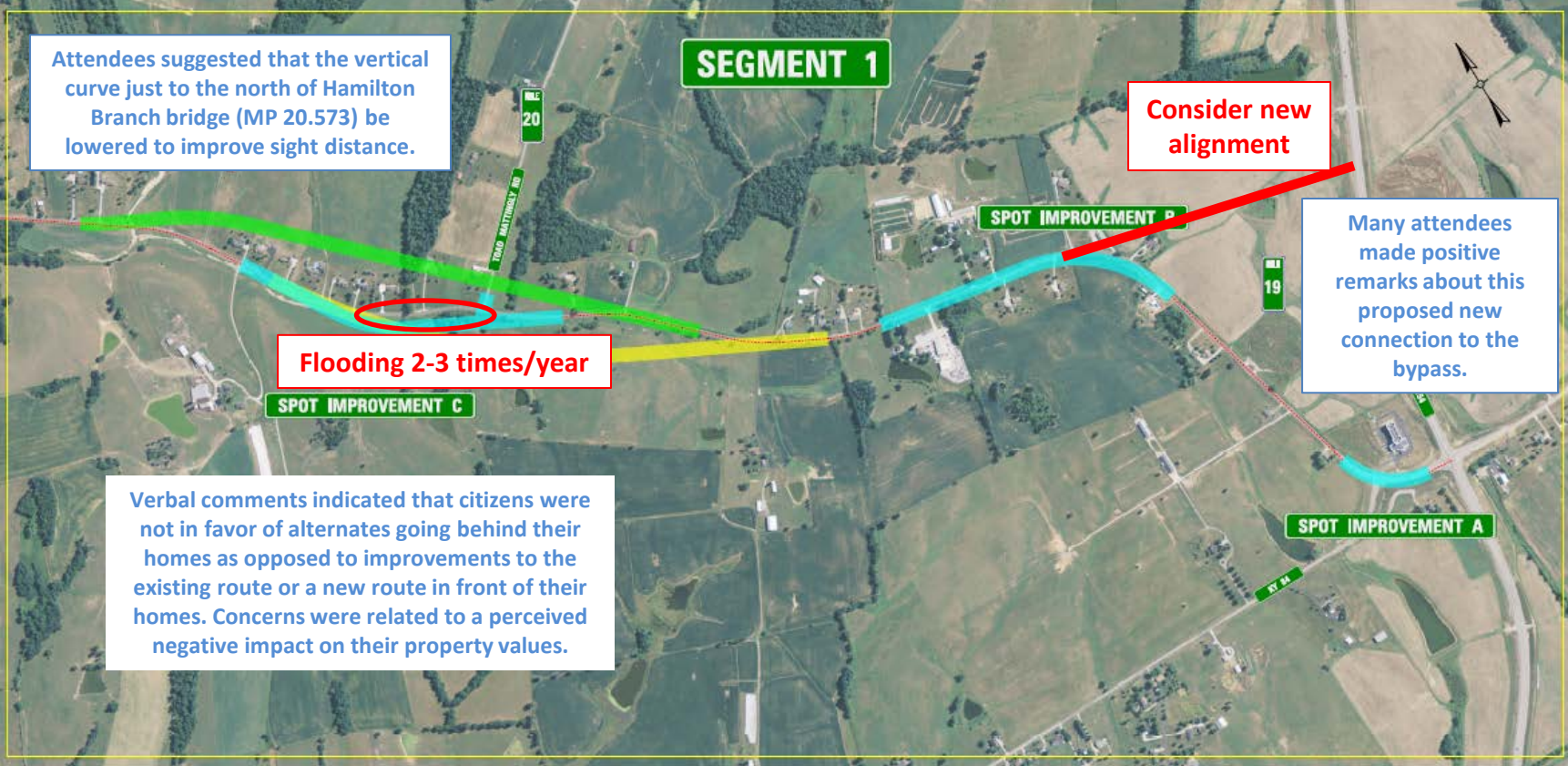
## KY 49 Planning Study

Summary of Public Comments noted by attendees on maps at November 21, 2013 Public Meeting (Verbal comments noted in blue)



Verbal comments indicated that the pink alternate in Segment 2 was generally attractive to many citizens, except those concerned with impacts to their personal property.

Verbal comments revealed that citizens were concerned about the close proximity of the Segment 2 Blue Alternate to Cissel's Creek.



Attendees suggested that the vertical curve just to the north of Hamilton Branch bridge (MP 20.573) be lowered to improve sight distance.

Flooding 2-3 times/year

Verbal comments indicated that citizens were not in favor of alternates going behind their homes as opposed to improvements to the existing route or a new route in front of their homes. Concerns were related to a perceived negative impact on their property values.

Consider new alignment

Many attendees made positive remarks about this proposed new connection to the bypass.

### SEGMENT 4

Verbal Comment:  
Incidents on KY  
49/KY 52 cause  
significant delays,  
there is no alternate  
route.

Verbal comments  
largely indicated  
that citizens were  
favorable of  
sidewalks in Loretto.

SPOT IMPROVEMENT F

Attendees cited  
frequent crashes  
at this location

### SEGMENT 3

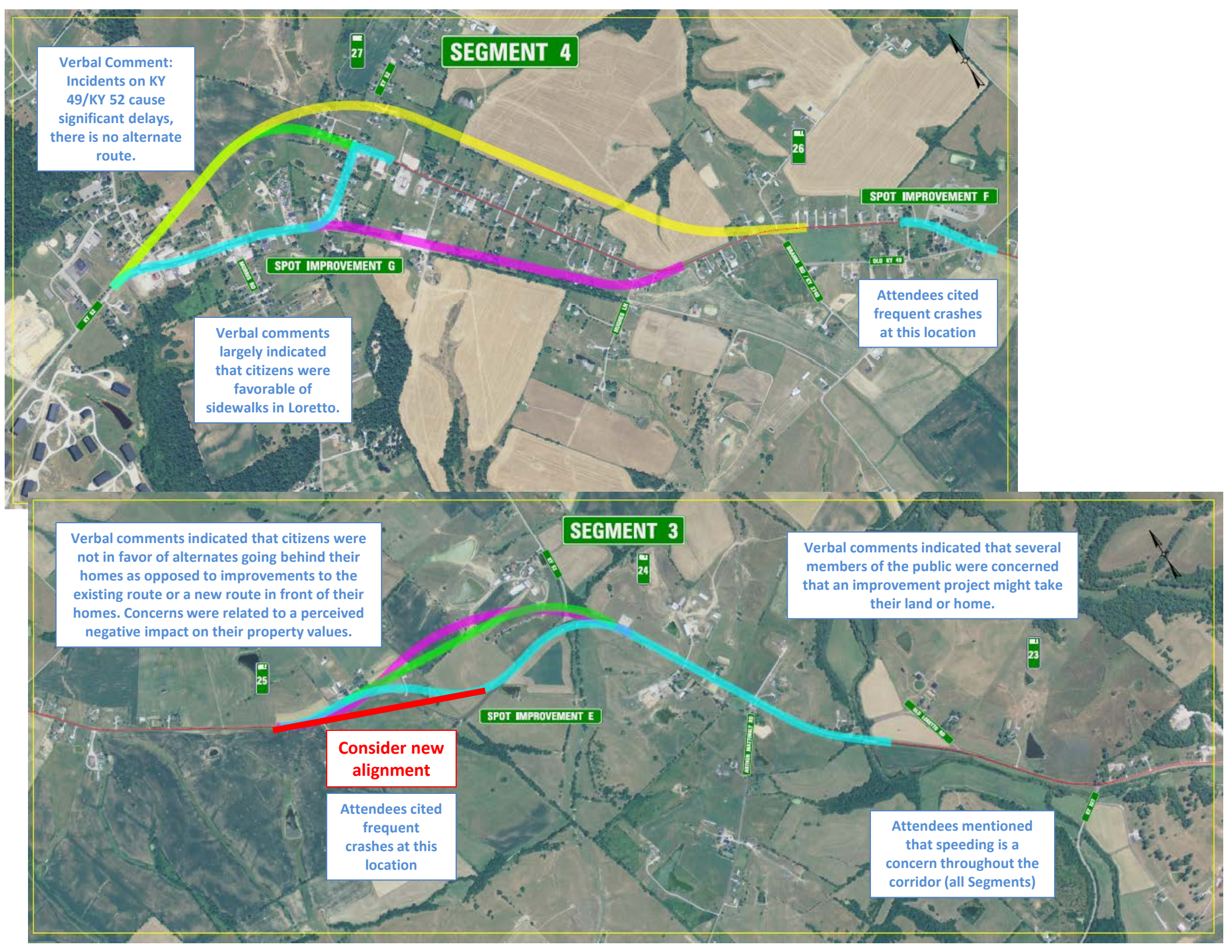
Verbal comments indicated that citizens were  
not in favor of alternates going behind their  
homes as opposed to improvements to the  
existing route or a new route in front of their  
homes. Concerns were related to a perceived  
negative impact on their property values.

Verbal comments indicated that several  
members of the public were concerned  
that an improvement project might take  
their land or home.

**Consider new  
alignment**

Attendees cited  
frequent  
crashes at this  
location

Attendees mentioned  
that speeding is a  
concern throughout the  
corridor (all Segments)



**MINUTES**  
**Third Project Team Meeting**  
**KY 49 – Marion County – Item # 4-8707.00**  
KYTC District 4 Office  
Elizabethtown, Kentucky  
December 16, 2013  
1:30 PM Eastern

A third project team meeting for the KY 49 Planning Study (Marion County) was held at 1:30 p.m. EST on Monday, December 16<sup>th</sup>, 2013, in Elizabethtown, Kentucky. The purpose of the meeting was to discuss public survey results, review study findings to date and to work together to establish study recommendations. Participants in the meeting represented the Kentucky Transportation Cabinet (KYTC) District 4 and Central Offices and the consultant firms, CDM Smith and HMB. Meeting attendees included the following persons:

Patty Dunaway	KYTC, District 4 Chief District Engineer
John Moore	KYTC, District 4 Project Development Branch Manager
Charlie Allen	KYTC, District 4 Planning
Kevin Young	KYTC, District 4 Planning
Katie Hornback	KYTC, District 4 Planning
Brad Bottoms	KYTC, District 4 Design
Josh Hornbeck	KYTC, District 4 PD & P
Benjamin Warren	KYTC, District 4 PD & P II
Joseph Ferguson	KYTC, District 4 Environmental
Sreenu Gutti	KYTC, Central Office Planning
Mikael Pelfrey	KYTC, Central Office Planning
Brent Sweger	KYTC, Central Office Design
Amanda Spencer	CDM Smith
Ashley Sells	CDM Smith
Rob Dowler	HMB
Troy Woodyard	HMB

A summary of the key discussion items and decisions from this meeting are provided below.

**Welcome and Introductions:** Charlie Allen, KYTC Project Manager, began the meeting and welcomed attendees.

**Purpose of the Meeting:** Amanda Spencer, CDM Smith Project Manager, explained that the purpose of the meeting was to review study findings to date, the project purpose and need, public survey results and to discuss the proposed alternates and spot improvements. Project team members were provided with handout packets containing an agenda, project schedule, the purpose and need statement, public meeting summary, proposed spot improvements map and evaluation matrix, proposed alternates map and evaluation matrix.

**Project Schedule:** Amanda explained that the project team is working to prepare a one page summary of study recommendations before the end of the year and a draft report in early 2014.

**Purpose and Need:** Amanda presented the purpose and need statement – to improve safety and address geometric deficiencies -- and the project goals, as follows:

- Accommodate bicyclists and pedestrians in Loretto
- Improve operations, access, and safety at West Marion Elementary School
- Minimize impacts to residents, farmlands, and the environment
- Maintain the existing character of the route
- Improve access to area attractions to enhance tourism and economic development
- Provide consistency with improved KY 49 (in progress) south of Lebanon

**Public Survey Summary:** Ashley Sells, CDM Smith, presented the public survey summary. Out of the eight-seven (87) people that attended the public meeting on November 21<sup>st</sup>, 2013, forty-eight (48) people returned surveys. Some highlights of the surveys include:

- 94% of respondents indicated the route should be improved
- Some of the top problems cited were sharp curves, narrow lanes & shoulders
- The red + blue alternate was selected as the most preferred in segments 1, 3 and 4. Pink was the most preferred chosen in segment 2
- Spots D, E and F were the favorite three spot improvement project preferences
- Over 50% of respondents indicated that they would like to have sidewalks and a center turn lane through Loretto
- Sensitive resources identified most often included homes/personal properties followed by schools and businesses/commercial property

**Spot Improvements:** Amanda provided an overview of the spot improvement projects, including information about crash history, geometrics, and preferences of local officials/stakeholders, and the public. It was decided by the project team that the spots would be categorized as high/medium/low in the study recommendations. Key evaluation metrics and project team recommendations that resulted from group discussion are shown in the attached spot improvement matrix. And, recommendations are also shown here:

- High: Spots D & E
- Medium/High: Spot G
- Medium: Spot F
- Low/Medium: Spots B & C
- Low: Spot A

Areas where flooding has been noted throughout the study should be examined further by the District; these include: near KY 49/Cowherd Lane, near KY 49/Toad Mattingly Road, and near KY 49/KY 327. Spot Improvement Projects C and D would address the concerns at KY 49/Cowherd Lane and KY 49/Toad Mattingly Road, respectively. At the request of John Moore, CDM Smith has noted on the attached spot improvement matrix the flooding concerns mentioned by citizens at spot improvement location C and D.

**Proposed Improvement Alternates:** Amanda led a group discussion of the improvement alternates including how well each met the project's purpose, potential impacts, and cost. The project team's recommendations are shown below and on the attached alternate evaluation matrix.

- In Segment One, the Red + Blue Alternate and Yellow Alternate are recommended for future consideration in the design phase.
- In Segment Two, the Pink and Red + Blue Alternates are recommended to move forward for future examination in the design phase.

- In Segment Three, the Red + Blue Alternate and the proposed Orange Alternate (a modification of the Blue Alternate suggested by a public meeting attendee) are recommended for future consideration in the design phase. *Note: the Orange Alternate was shown on the maps at the project team meeting in Red. The team decided it should be shown in and labeled as Orange in the future to avoid confusion.*
- In Segment Four, the Red + Blue Alternate and the Green Alternate are recommended for future consideration in the design phase. Both the two- and three-lane urban typical sections should also move forward. The project team prefers the three-lane, but impacts should be examined. It is also recommended that sidewalks be considered. Local acceptance of maintenance responsibility would be important to implementing this improvement.

The Blue Alternate (Spot Improvements) is recommended as a short-term solution in all study segments.

**Next Steps:** The project team discussed the next steps for the project, as summarized here:

- CDM Smith and HMB will work with KYTC to determine appropriate construction sections. Study segments 2 and 3 are high priorities (these include Spot Improvement D, E, and F).
- Patty Dunaway, District 4 Chief District Engineer, asked that construction sections be finalized, including costs, this week. Costs for Spots D and E should also be provided at this time.
- Brad Bottoms, District 4, commented that the bridge replacement project near MP 20 & 21 will improve a vertical curve deficiency in this area which has not been noted on project mapping to date. CDM Smith will add the vertical curve to project mapping and note that the ongoing KYTC bridge replacement project at this location should address this deficiency. This project may also improve the flooding that citizens have mentioned in the area.
- The geotechnical overview has been completed by KYTC and will be passed onto the project team for review. There are some potential concerns in the study area and further investigation will be necessary in future project phases.

With no further questions, the meeting was adjourned around 3:00 p.m. EST.



**KY 49 Evaluation of Proposed Spot Improvements**

Spot Improvement Project ID	Begin MP - End MP	Length	Description	# of high crash spots/segments addressed	Critical Rate Factor for the segment	# crashes reported June 2009-June 2013	# fatal crashes reported June 2009- June 2013	# injury crashes reported June 2009- June 2013	Geometrics - Actual vs Current Standard	Local Official/ Stakeholder Preferences	Public Preferences	Estimated Construction Cost \$	Recommended Priority
A	18.63 - 18.71	0.08	Addresses one horizontal curve that does not meet current design standards.	0	0.00	0	0	0	HC: 503' vs 965' (Radius)	<b>7</b>	<b>7</b>	\$250,000	Low
B	19.10 - 19.53	0.43	Addresses one horizontal curve and one vertical curve that does not meet current design standards.	1 high crash spot	0.83	7	0	3	HC: 619' vs 965' (Radius) CVC: Potential SSD Issue based on field review	<b>5</b>	<b>6</b>	\$1,000,000	Low/Med
C	19.97 - 20.43	0.46	Addresses two horizontal curves that do not meet current design standards. Citizens also cited flooding concerns at this location.	1 high crash spot	0.57	5	0	1	HC: 909' vs 965' (Radius) HC: 785' vs 965' (Radius)	<b>4</b>	<b>4,5</b>	\$1,000,000	Low/Med
D	20.90 - 21.83	0.93	Addresses five horizontal curves that do not meet current design standards. Citizens also cited flooding concerns at this location.	2 high crash spots	1.32	19	0	3	HC: 725' vs 965' (Radius) HC: 881' vs 965' (Radius) HC: 630' vs 965' (Radius) HC: 322' vs 965' (Radius) HC: 716' vs 965' (Radius)	<b>2</b>	<b>1</b>	\$2,050,000	High
E	23.35 - 24.98	1.63	Addresses two horizontal curves and five vertical curves that do not meet current design standards.	2 high crash spots	0.77	17	2	1	SVC: 282' vs 495' (HSSD) CVC: 425' vs 495' (SSD) SVC: 309' vs 495' (HSSD) CVC: 455' vs 495' (SSD) HC: 716' vs 965' (Radius) SVC: 159' vs 495' (HSSD) HC: 313' vs 965' (Radius)	<b>1</b>	<b>2</b>	\$3,600,000	High
F	25.60 - 25.80	0.2	Addresses one horizontal curve that does not meet current design standards and provides turn lane(s) to West Marion Elementary	0	0.41	2	0	2	HC: 750' vs 965' (Radius)	<b>3</b>	<b>3</b>	\$500,000	Med
G	26.93 - 27.55	0.62	Access Management Improvements, Addresses a High Crash Segment and a Horizontal Curve Deficiency	2 high crash spots (and, high crash segment throughout)	1.00	16	0	2	HC: 337' vs 350' (Radius)	<b>6</b>	<b>4,5</b>	\$750,000	Medium High

**KY 49 Evaluation of Proposed Alternates**

**Segment 1**

Alternates	Spots Included	Purpose and Need	Possible Relocations	Potential Natural Environmental Impacts	Estimated Construction Cost	Recommended by Project Team for Future Consideration
No Build	-	Does Not Meet	0	None	\$0	No <sup>1</sup>
Blue Alternate	A, B, C	Somewhat Meets	0	Widening at 4 Existing Stream Channel Crossings, Potential Stream Channel Changes, Scattered Trees	\$2,250,000 Total Construction Cost for Spot Improvements A, B, and C	Yes (Short-term solution)
Red + Blue Alternate	A, B, C	Meets	0	Widening at 7 Existing Stream Channel Crossings, Potential Stream Channel Changes, Scattered Trees	\$5.2M Total Construction Cost (includes \$2,250,000 for Spots A, B, and C + \$2.6 Million Per Mile for widening the existing alignment)	Yes
Green Alternate	A, B	Meets	0-2 homes	Widening at 3 Existing Stream Channel Crossings, 2 New Crossings, Potential Stream Channel Change, Scattered Trees, Bisects Fields .15 acres wetlands (freshwater pond) within corridor boundary	\$6.2M Total Construction Cost (includes \$3,080,000 + \$1,250,000 for Spot Improvements A and B + \$2.6 Million Per Mile for widening the existing alignment)	No
Yellow Alternate	A, B	Meets	0	Widening at 4 Existing Stream Channel Crossings, 3 New Crossings, Potential Stream Channel Changes, Bisects Fields	\$6.1M Total Construction Cost (includes \$2,730,000 + \$1,250,000 for Spot Improvements A and B + \$2.6 Million Per Mile for widening the existing alignment)	Yes

**Segment 2**

Alternates	Spots Included	Purpose and Need	Possible Relocations	Potential Natural Environmental Impacts	Estimated Construction Cost	Recommended by Project Team for Future Consideration
No Build	-	Does Not Meet	0	None	\$0	No <sup>1</sup>
Blue Alternate	D	Somewhat Meets	0	Widening at 5 Existing Stream Channel Crossings, Possible Stream Channel Changes	\$2,050,000 Total Construction Cost for Spot Improvement D	Yes (Short-term solution)
Red + Blue Alternate	D	Meets	0	Widening at 9 Existing Stream Channel Crossings, Potential Stream Channel Changes	\$4.35M Total Construction Cost (includes \$2,050,000 for Spot Improvement D + \$2.6 Million Per Mile for widening the existing alignment)	Yes
Green Alternate	-	Meets	0	Widening at 4 Existing Stream Channel Crossings, 4 New Crossings, Prime/SI Farmland, Bisects Fields .08 acres wetlands (freshwater pond) within corridor boundary	\$5.70M Total Construction Cost (includes \$3,820,000 + \$2.6 Million Per Mile for widening the existing alignment)	No
Pink Alternate	-	Meets	0-2 homes	Widening at 5 Existing Stream Channel Crossings, 3 New Crossings, Prime/SI Farmland, Bisects Fields .18 acres wetland within corridor boundary	\$5.6M Total Construction Cost (includes \$3,400,000 + \$2.6 Million Per Mile for widening the existing alignment)	Yes

**Segment 3**

Alternates	Spots Included	Purpose and Need	Possible Relocations	Potential Natural Environmental Impacts	Estimated Construction Cost	Recommended by Project Team for Future Consideration
No Build	-	Does Not Meet	0	None	\$0	No <sup>1</sup>
Blue Alternate	E	Somewhat Meets	0	Widening at 3 Existing Stream Channel Crossings, Bisects Field .22 acres wetlands (freshwater pond) within corridor boundary	\$3,600,000 Total Construction Cost for Spot Improvement E	Yes (Short-term solution)
Red + Blue Alternate	E	Meets	0	Widening at 7 Existing Stream Channel Crossings, Bisects Field .38 acres wetlands (two freshwater ponds) within corridor boundary (red)	\$7.15M Total Construction Cost (includes \$3,600,000 for Spot Improvement E + \$2.6 Million Per Mile for widening the existing alignment)	Yes
Green Alternate	-	Meets	0-1 homes	Widening at 6 Existing Stream Channel Crossings, 1 New Crossing, Potential Stream Channel Change, Prime/SI Farmland, Bisects Fields	\$9.1M Total Construction Cost (includes \$5,110,000 + \$2.6 Million Per Mile for widening the existing alignment)	No
Pink Alternate	-	Meets	0	Widening at 6 Existing Stream Channel Crossings, 1 New Crossing, Potential Stream Channel Change, Prime/SI Farmland, Bisects Fields	\$9.25M Total Construction Cost (includes \$5,700,000 + \$2.6 Million Per Mile for widening the existing alignment)	No

The "Orange Alternate", identified by a citizen at the public meeting should also advance in Segment 3. It meets the purpose and need and property owners along this segment who attended the public meeting perceived that this modification (of the blue alternate) would result in less impacts to their farmland. Construction costs are estimated at \$4 million/mile.

**Segment 4**

Alternates	Spots Included	Purpose and Need	Possible Relocations	Potential Natural Environmental Impacts	Estimated Construction Cost	Recommended by Project Team for Future Consideration
No Build	-	Does Not Meet	0	None	\$0	No <sup>1</sup>
Blue Alternate	F, G	Somewhat Meets	0	Low	\$1,250,000 Total Construction Cost for Spot Improvement F and G	Yes (Short-term solution)
Red + Blue Alternate	F, G	Meets	0	Medium	\$4.25M Total Construction Cost (includes \$1,250,000 for Spot Improvement F and G + \$2.6 Million Per Mile for widening the existing alignment)	Yes
Green Alternate	F	Meets	1-4 homes + 1-2 business	Bisects Fields	\$5.95M Total Construction Cost (includes \$2,240,000 + \$500,000 for Spot Improvement F + \$2.6 Million Per Mile for widening the existing alignment)	Yes
Yellow Alternate	F	Meets	4-6 homes + 2-3 businesses	1 New Crossing, Prime/SI Farmland, Bisects Fields .37 acres wetlands (freshwater pond) within corridor boundary	\$6.9M Total Construction Cost (includes \$5,810,000 + \$500,000 for Spot Improvement F + \$2.6 Million Per Mile for widening the existing alignment)	No
Pink Alternate	F, G	Meets	1-2 homes + 1-2 businesses	Prime/SI Farmland, Bisects Fields .06 acres wetlands (fresh water pond) within corridor boundary	\$7.0M Total Construction Cost (includes \$3,360,000 + \$1,250,000 for Spot Improvements F and G + \$2.6 Million Per Mile for widening the existing alignment)	No

Both the two- and three-lane urban typical sections should move forward for further consideration in preliminary design. The project team prefers the three-lane, but impacts should be examined. It is also recommended that sidewalks be considered. Local acceptance of maintenance responsibility would be important to implementing this improvement.

<sup>1</sup> Although the KY 49 Project Team does not recommend the No Build Alternate as the preferred solution for this project, it should be considered in any future project development phases as a baseline for comparison.