Engineering Planning

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MEETING MINUTES

Project:	KY 52 Corridor Improvement Study Boyle & Garrard Counties Item No. 7-104
Purpose:	Project Team Meeting No. 1
Place:	Virtual Meeting
Meeting Date:	November 30, 2020 at 1:30 PM
Prepared By:	Qk4

Participants:

Rob Sprague	KYTC D7 Project Development
Casey Smith	KYTC D7 Planning
Joshua Samples	KYTC D7 Design
Steve De Witte	KYTC CO Planning
Matt Lawson	KYTC CO Planning
Mike Vaughn	KYTC HSIP
Nathan Ridgeway	KYTC HSIP
Natalie Flores-Esquivel	Bluegrass ADD
Rebecca Thompson	Qk4
Lindsay Hoskins	Qk4
Jeremy Lukat	Qk4

Rebecca Thompson opened the meeting, welcoming attendees. The purpose of the meeting is to review the existing conditions information for the planning study, which follows KY 52 between Danville and Lancaster. Similar content will be shared with local officials and stakeholders next week, seeking their input regarding on-the-ground safety needs. A concurrent HSIP project (Item No. 7-9021) examines low-cost solutions to address high crash trends for the same corridor.

Kentucky's current *FY2020-2026 Enacted Highway Plan* designates federal funds for this planning study, plus a few other ongoing projects in the vicinity: design funds for the east Danville Bypass (Item No. 7-80000), the west Lancaster Bypass (Item No. 7-196.2), and reconstructing US 27 (Item No. 7-196.3). Additionally, three CHAF[1] forms within the study limits were evaluated in the 2020 SHIFT[2] process. Each focuses on safety needs; the Boyle County portion (milepoints 1.586-3.773) was double boosted to elevate its prioritization.

[1] Continuous Highway Analysis Framework, KYTC's internal database to track identified transportation needs

[2] Strategic Highway Investment Formula for Tomorrow, KYTC's data-driven approach to compare capital improvement projects and prioritize limited transportation funds

Through the study limits, KY 52 has two 11-foot wide lanes with narrow shoulders. There are several sections with substandard grade and horizontal curves per modern design standards. The speed limit is 55 mph, dropping to 45 mph approaching Lancaster. Two bridges lie within the study limits—at Clarks Run and Dix River—with both in Fair condition per their latest inspections.

Traffic

Traffic data collected in 2020 shows 5,300-5,600 vehicles per day (vpd) using the corridor, compared to 3,900-4,300 vpd from historic counts. This equates to Level of Service (LOS) C-D for individual segments based on the existing geometry. The volume-to-capacity ratio (v/c) for each is 0.18-0.20, suggesting adequate capacity exists though driver comfort may be impacted by narrow lanes, driveways, limited passing opportunities, etc. Qk4 conducted turning movement counts at three intersections; each operates at LOS A-B today. Third-party travel time data coverage for the corridor is limited but shows 20th and 85th percentile speeds around 47-50 mph. GPS-based travel time runs this fall provide a finer level of detail, highlighting the periodic slow downs at cross-streets and driveways. These slow downs are exacerbated by sight distance limitations along the route.

- Did the 2020 traffic data collection include truck percentages?
  Data shows 3-5% truck traffic along KY 52 during the 12-hour analysis period. US 150 carries just over 7% truck traffic of its 4,200 vpd. With the Rumpke facility and quarry near the Dix River, there are a decent number of heavy trucks using KY 52 today but not many semi-trucks.

- Please revise the "55+ mph" entry on the travel time legend for clarity.
  Qk4 will revise the maps. The maximum speeds in either dataset were 56 mph.

Crashes

During the five-year analysis period, 245 crashes were reported along KY 52 within the study limits. This includes 3 fatalities and 64 injury collisions. By crash type, single vehicle crashes were most common (59%), followed by rear end (18%) and opposite direction sideswipes (10%). Detailed crash analyses will continue as part of the HSIP effort. Preliminary trends show 50% of single vehicle crashes occurred during wet or icy conditions and 35% occurred after dark. An estimated 33% of single vehicle crashes can be traced back to wet conditions (e.g., hydroplaning) and 27% were animal crashes.

Statistical crash analyses highlighted four preliminary locations along the corridor with elevated crash rates that may be candidates for spot improvements: the intersection with US 150, the horizontal curve just west of Pope Road, the crest between Hanging Fork and Paper Mill roads, plus the curves between Little Dixie Road and Martin Lane. The mayor mentioned the curve near Rumpke as a recurring safety concern.

- Are there typical countermeasures considered to minimize animal-based collisions?
  If there are concentrated sections where warning signage is appropriate, we sometimes consider it as a countermeasure. Otherwise, 12+ foot tall fencing to discourage deer crossing is generally impractical.

- How does superelevation get reversed?
  Settlement of the soil, poorly drained or poorly designed subgrades, or miscalibrations during repaving jobs can lead to incremental changes over time.

- Some of the GPS locations or manner of collision codes may need to be adjusted based on review of the detailed officer comments.

- In addition to statistics about wet weather and lighting status, it may be helpful to compare crashes occurring in both wet/icy and dark conditions. This could suggest improved striping as an effective countermeasure to improve visibility.

Of 144 single vehicle collisions, 23 (16%) occur in both dark and wet/icy conditions.

- A high EEC[3] indicates poor historic performance, suggesting these locations are mostly likely to be addressed via mitigation. However, not all high crash locations can be mitigated. Sometimes, crash trends are widely varied or do not indicate an underlying infrastructure-based solution.

Environmental

Lindsay Hoskins provided an overview of environmental red-flag data, which will be examined further as spot improvements are defined. The corridor is largely rural, with several potential historic properties and stone fences, particularly in the Boyle County portion of the route. There is one church along the route plus a handful of potential hazmat sites concentrated at the western study limits and near the Dix River. Streams and wetlands dissect the terrain. Soils near the river have a high potential for deeply buried archaeological deposits though there are no known sites within the study limits. The majority of soils are classified as prime farmlands or statewide important; an agricultural easement is located north and west of the KY 52/KY 1805 intersection. Federally protected species include three bats, two flowering plants, and five mussel species.

Geotechnical investigations identified several faults in the vicinity with a high potential for karst features for the bulk of the corridor. Several sinkholes have been identified in this area. The eastern portion has low to medium karst potential due to the larger presence of shale.

Bluegrass ADD will prepare a socioeconomic study over the next few months.

Community Involvement

Rebecca reviewed the proposed approach to engage with local officials, stakeholders, and the surrounding communities. A virtual meeting for local officials is scheduled for December 11. The outline will follow the same basic presentation as today's meeting. Qk4 will also launch a survey and GIS-based crowdsourcing app to collect public input on existing corridor needs. The public input period will extend into mid-January to allow extra time to capture comments through the holidays. Qk4 will provide a draft link for KYTC review later this week then work with the District 7 public information officer to publicize the effort.

With no further comments or discussion items, the meeting concluded at 3:30.

[3] Excess Expected Crashes (EEC) is a statistical function using empirical data to rank locations experiencing above-average crash concentrations.

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MEETING MINUTES

Project:	KY 52 Corridor Improvement Study Boyle & Garrard Counties Item No. 7-104
Purpose:	Local Officials/Stakeholders Meeting No. 1
Place:	Virtual Meeting
Meeting Date:	December 11, 2020 at 9:00 AM
Prepared By:	Qk4

Participants:

Adam Rumpke	Rumpke Waste & Recycling
Ben Satterly	
Earl Coffey	Danville City Manager
Howard Hunt	Boyle County Judge Executive
Jamie Kendrick	
Kenneth Parsons	City of Lancaster
Lacresha Gibson	Boyle County PVA
Mike Perros	Danville Mayor
Stephen Johnson	Windstream
William Cole	
Casey Smith	KYTC D7 Planning
Joshua Samples	KYTC D7 Design
Jonathan Taylor	KYTC D7
Francis McDonnel	KYTC D7
Steve De Witte	KYTC CO Planning
Matt Lawson	KYTC CO Planning
Mike Vaughn	KYTC HSIP
Nathan Ridgeway	KYTC HSIP
Natalie Flores-Esquivel	Bluegrass ADD
Rebecca Thompson	Qk4
Lindsay Hoskins	Qk4
Tom Clouse	Qk4

Matt Lawson and Casey Smith opened the meeting, welcoming attendees. The purpose of the meeting is to review the existing conditions information for an ongoing planning study, which follows KY 52 between Danville and Lancaster. A concurrent Highway Safety Improvement Program (HSIP) project (Item No. 7-9021) examines low-cost solutions to address high crash trends for the same corridor.

Rebecca Thompson described the existing conditions along the corridor. Kentucky's current *FY2020-2026 Enacted Highway Plan* designates federal funds for this planning study, plus a few other ongoing projects in the

vicinity: design funds for the east Danville Bypass (Item No. 7-80000), the west Lancaster Bypass (Item No. 7-196.2), and reconstructing US 27 (Item No. 7-196.3). Additionally, three CHAF[1] forms within the study limits were evaluated in the 2020 SHIFT[2] process. Beyond the HSIP elements, no other funds have been identified to implement any recommended improvements from this study.

Through the study limits, KY 52 has two 11-foot-wide lanes with narrow shoulders. There are several sections with substandard grade and horizontal curves per modern design standards. The speed limit is 55 mph, dropping to 45 mph approaching Lancaster. Two bridges lie within the study limits—at Clarks Run and Dix River—with both in Fair condition per their latest inspections.

Traffic

Traffic data collected in 2020 shows 5,300-5,600 vehicles per day (vpd) using the corridor. This equates to Level of Service (LOS) C-D for individual segments based on the existing geometry, suggesting driver comfort may be impacted by narrow lanes, driveways, limited passing opportunities, etc. Qk4 conducted turning movement counts at three intersections; each operates at LOS A-B today. GPS-based travel time runs this fall highlight the periodic slowdowns at cross-streets and driveways. These slowdowns are exacerbated by sight distance limitations along the route.

Crashes

During the five-year analysis period, 245 crashes were reported along KY 52 within the study limits. This includes three fatalities and 64 injury collisions. By crash type, single vehicle crashes were most common (54%), followed by rear end (20%) and opposite direction sideswipes (12%). Detailed crash analyses will continue as part of the HSIP effort. Preliminary trends show 49% of single vehicle crashes occurred during wet or icy conditions and 36% occurred after dark. An estimated 33% of single vehicle crashes can be traced back to wet conditions (e.g., hydroplaning) and 27% were animal crashes.

The group discussed potential local safety concerns:

- The dog-leg intersection with KY 590 is a recurring problem as it sits in a blind curve. Realigning the curve or adding guardrail may help.

- Several areas have steep drop offs without guardrails. There is limited recovery area if your tires drop off the edge.

Statistical crash analyses highlighted four preliminary locations along the corridor with elevated crash rates that may be candidates for spot improvements: the intersection with US 150, the horizontal curve just west of Pope Road, the crest between Hanging Fork and Paper Mill roads, plus the curves between Little Dixie Road and Martin Lane.

- Local leaders get complaints about the US 150 intersection, primarily related to trucks and the hill/curve approaching from KY 52. It's hard to see cars waiting at the light until you are up on them. This intersection would likely be reconstructed as part of the east Danville Bypass, which KYTC anticipates advertising for design in February 2021 with engineering work beginning as early as May. A roundabout at this location could reduce crashes and delay.

[1] Continuous Highway Analysis Framework, KYTC's internal database to track identified transportation needs

[2] Strategic Highway Investment Formula for Tomorrow, KYTC's data-driven approach to compare capital improvement projects and prioritize limited transportation funds

- The crest between Hanging Fork and Paper Mill roads is a concern; consider reconstructing the entire section from KY 590 as a three-lane section.

- Sharp drop offs near Little Dixie Road are an issue.

Environmental

Lindsay Hoskins provided an overview of environmental red-flag data, which will be examined further as spot improvements are defined. The corridor is largely rural, with several potential historic properties and stone fences, particularly in the Boyle County portion of the route. There is one church along the route plus a handful of potential hazmat sites concentrated at the western study limits and near the Dix River. Streams and wetlands dissect the terrain. The majority of soils are classified as prime farmlands or statewide important; an agricultural easement is located north and west of the KY 52/KY 1805 intersection. Federally protected species include three bats, two flowering plants, and five mussel species.

Geotechnical investigations identified several faults in the vicinity with a high potential for karst features for the bulk of the corridor. Several sinkholes have been identified in this area. The eastern portion has low to medium karst potential due to the larger presence of shale.

Community Involvement

Rebecca shared links to an online survey (https://www.surveymonkey.com/r/96RYKHY) and GIS app (https://arcg.is/94aKH0) to collect public comments through January 15. KYTC District 7 will share the links via their website, Facebook, and Twitter feeds. Participants were also encouraged to share the links with their constituents. The project team will share a copy of the slides, a press release, and both links in a follow-up email. The next local officials meeting will occur around April 2021 to present the team's recommended spot improvements.

- Will there be an in-person meeting as part of the study?
  With uncertainties from COVID, only virtual engagement is planned. The survey and website are intended to capture public feedback we would normally request during a meeting.

- The study is valuable and will be appreciated by the public. Beyond immediate safety benefits, an improved regional link to I-75 provides regional value.

With no further comments or discussion items, the meeting concluded at 10:30.

CORRIDOR NEEDS SURVEY SUMMARY

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Project: KY 52 Danville to Lancaster Corridor Improvement Study
Boyle and Garrard Counties
Item No. 7-104

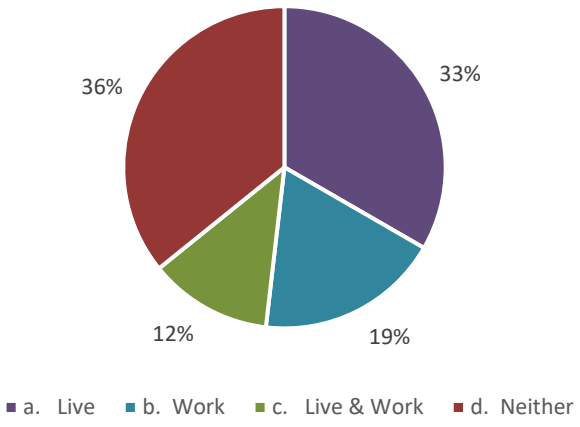
Purpose: Summary of Public Survey Responses
December 2020

A public survey was available online from December 14, 2020 through January 15, 2021 to collect input from local roadway users on existing needs along the highway. The survey was promoted via District 7 social media accounts and through a link posted on the project webpage. Stakeholders who attended the December 11, 2020 virtual meeting were also encouraged to promote the StoryMap (https://arcg.is/94aKH0) and survey through their distribution lists. Eighty-one (81) individuals submitted responses during the comment period. This document summarizes the input received.

Question 1: Do you live/work along the corridor?

As shown in **Figure 1**, the largest category of respondents (36%) neither live nor work along the KY 52 study corridor but still travel the route regularly. The next largest category of respondents (33%) live along the corridor.

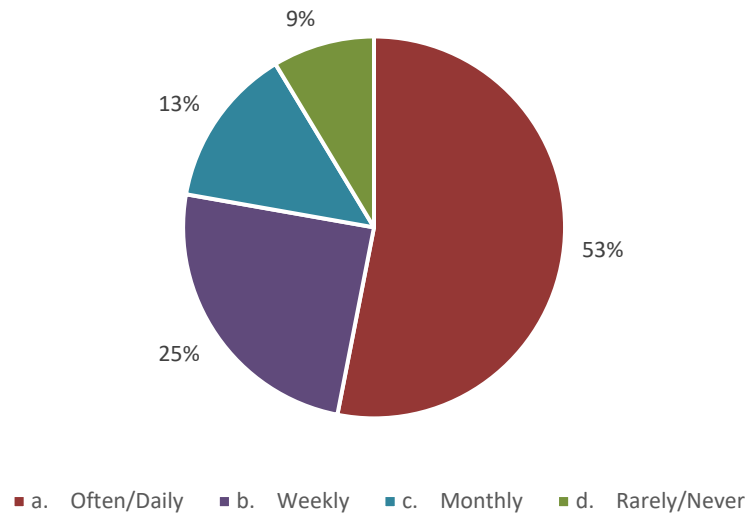
Figure 1: Do you live/work along the corridor?



Question 2: How often do you travel KY 52 in the study area?

Figure 2 shows over half (53%) of respondents travel the corridor daily/often. Another 25% travel at least weekly. Only 22% of respondents travel the corridor less frequently.

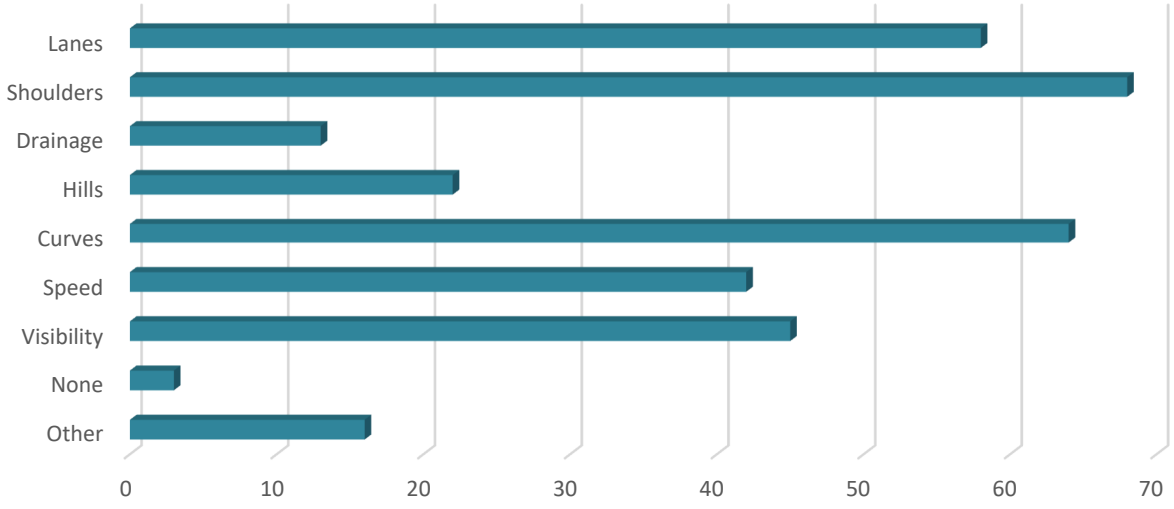
Figure 2: How often do you travel KY 52 in the study area?



Question 3: Choose as many of the items below that need to be improved on KY 52.

Participants were asked to select the existing conditions most needing improvement from a multiple choice list. The most frequently selected response was narrow shoulders, followed by sharp curves, narrow lanes, poor visibility, and speed as shown in **Figure 3**. Only three respondents indicated no improvements are needed.

Figure 3: Choose as many of the items below that need to be improved on KY 52.



Sixteen respondents added needs to the "Other" category, including:

- Pavement Condition
- Narrow bridge
- Brush/vegetation
- Accommodate farm machinery traffic

Question 4: Optional: If you would like to receive future updates on the study, please enter your email address to join the mailing list.

An email address was provided by 45 respondents to receive future updates on the study.

Question 5: To enter location-specific data about current traffic and safety issues within the study area, go to https://arcg.is/94aKH0. If you prefer, you may enter a written description of specific corridor or intersection needs below.

Respondents were given the opportunity to either write in or plot areas of concern on an online GIS portal. Via the GIS mapping tool, 43 points were plotted with an additional 22 written in comments.

Areas of concern identified by the public align with existing conditions previously identified by the project team and with the main themes throughout the corridor—narrow shoulders, poor visibility, and high crash areas. The four major areas identified during the existing conditions inventory—the intersection with US 150, the curve west of Pope Road, the area near Hanging Fork/Paper Mill Road, and the section from Little Dixie Road to Martin Lane—were echoed as areas of concern in the public comments. These four locations exhibit substandard grades and curves, have high critical crash rate factors, and excess expected crashes. Additional areas of concern identified through the public input include the intersection with KY 590, the intersection with Boones Creek Road, and the stretch of road between Martin Lane and Bettis Lane. Comments are summarized in **Figures 4-9** on the following pages.

Figure 4: Public Comments KY 52 from US 150 to West of KY 1805

Sight distance from access road

Issues stopping on downhill slope at light in wet/ice conditions

New distillery going in; concerns for access and congestion

Bike and pedestrian traffic

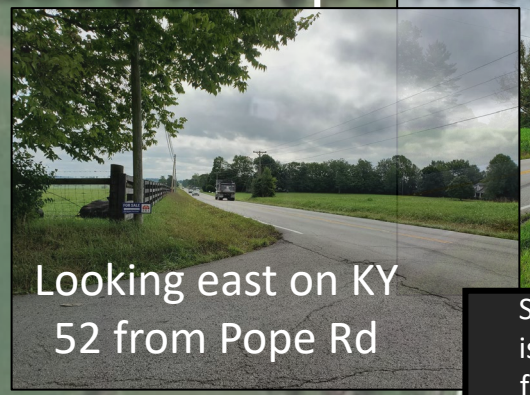
David Rd

Old Kentucky

52

150

Figure 5: Public Comments KY 52 from KY 1805 to Pope Road



Sight distance issues turning from Pope Rd

Sight distance issues turning from KY 1805

Wider road or shoulder needed going uphill

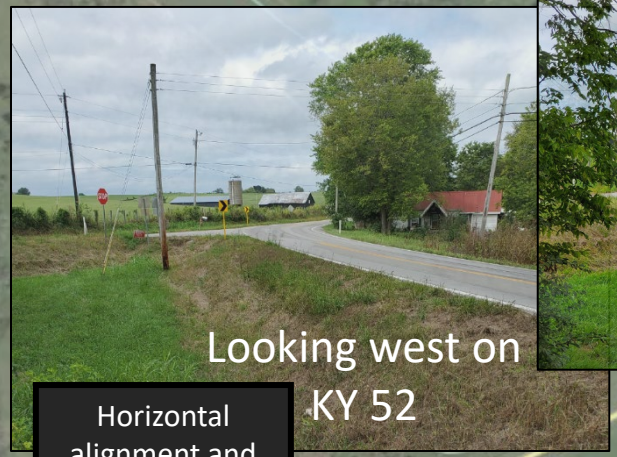
Protected turning lane requested

Stoplight requested

Cars run off the road in this area

Frequent roadway departure crashes

Figure 6: Public Comments KY 52 at KY 590 Intersection



Horizontal alignment and no shoulders

Crashes noted in this area

Lancaster Rd 52 590

Sight distance issues turning from KY 590

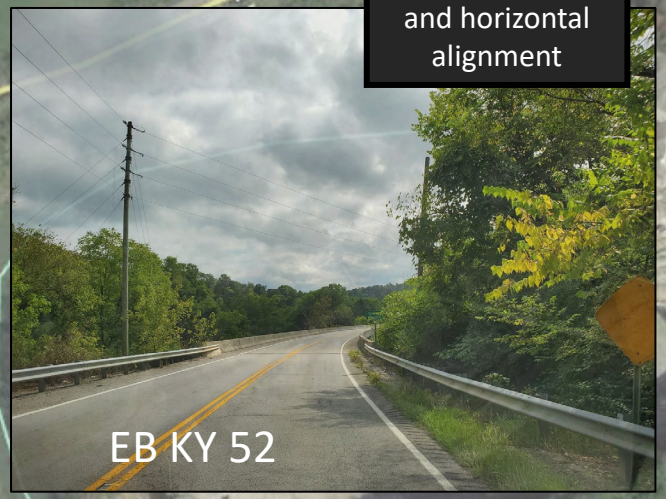
Intersection alignment is a safety concern

Figure 7: Public Comments KY 52 Between Rankine Road & Paper Mill Road

Looking east from Paper Mill Rd

Sight distance issues turning from Paper Mill Rd

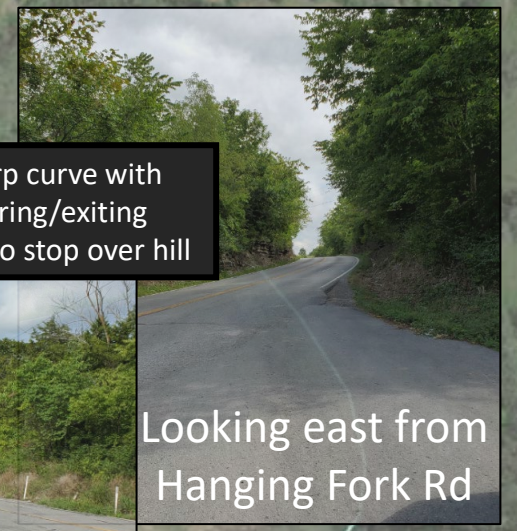
Narrow bridge and horizontal alignment



EB KY 52

Narrow/sharp curve with trucks entering/exiting Rumpke hard to stop over hill

Looking west from Hanging Fork Rd



Looking east from Hanging Fork Rd

Rankin Rd

Lancaster Rd

Danville Rd

52

Paper Mill Rd

Hanging Fork Rd

CR 1342

Figure 8: Public Comments KY 52 Between Paper Mill Road & Martin Lane

Narrow, no shoulders, drop-offs steep hill, horizontal alignment issues, wrecks

Looking east to Little Dixie Rd

Looking west, driveway west of Little Dixie Rd

Figure 9: Public Comments KY 52 Between Martin Lane & Bettis Lane

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MEETING MINUTES

Project:	KY 52 Corridor Improvement Study Boyle & Garrard Counties Item No. 7-104
Purpose:	Project Team Meeting No. 2
Place:	Virtual Meeting
Meeting Date:	March 15, 2021 at 2:00 PM
Prepared By:	Qk4

Participants:

Rob Sprague	KYTC D7 Project Development
Casey Smith	KYTC D7 Planning
Joshua Samples	KYTC D7 Design
Steve De Witte	KYTC CO Planning
Steve Ross	KYTC CO Planning
Matt Lawson	KYTC CO Planning
Scott Thomson	KYTC CO Planning
Jay Balaji	KYTC CO Planning
Mike Vaughn	KYTC HSIP
Nathan Ridgeway	KYTC HSIP
Tom Clouse	Qk4
Rebecca Thompson	Qk4
Lindsay Hoskins	Qk4
Theresa Owen	Qk4

Casey Smith opened the meeting, welcoming attendees. The purpose of the meeting is to briefly review the existing conditions information, followed by an informal conversation about the preliminary spot improvement concepts Qk4 has developed. A concurrent HSIP project (Item No. 7-9021) examines low-cost solutions to address high crash trends for the same corridor.

Existing Conditions

Through the study limits, KY 52 has two 10- to 11-foot-wide lanes with minimal shoulders. Traffic data for 2020 shows 5,300-5,600 vehicles per day (vpd) using the corridor, operating at Level of Service (LOS) C-D for individual segments with volume-to-capacity ratios (v/c) of 0.18-0.20. Modeled projections to 2045 anticipate 1% growth; capacity is not a major concern. GPS-based travel time runs highlight periodic slowdowns at cross-streets and driveways. During the five-year analysis period, 245 crashes were reported along KY 52 within the study limits. This includes 3 fatalities and 64 injury collisions. By type, single vehicle crashes were most common (59%).

A public crowdsourcing app gathered community input during December 2020 and January 2021. 81 surveys were completed, citing narrow shoulders, sharp curves, and lane widths as the top issues. Location-specific comments identified several recurring themes: concerns with the KY 1805 intersection, a curve near Pope Road, and the alignment near Martin Lane were most frequently listed.

Proposed Spot Improvements

Rebecca presented the preliminary planning spot improvements identified to date, pulling in the existing conditions data to identify the top needs along the corridor. Discussions about specific HSIP countermeasure recommendations will be occurring next month. Small-scale improvements at the Clarks Run Bridge and Pope Road curve are assumed to be handled via HSIP and not included as planning spots.

A. **Corridor Widening.** As a baseline for comparison, Qk4 will apply a given template to the existing alignment. While it is unlikely to be recommended for implementation as a standalone measure, the cost estimate provides valuable information to weigh other solutions. The team discussed the most appropriate template to assume. Rob noted that 11-foot lanes have become more common the past few years than 12-foot. Mike shared the latest standard drawings for rumble strips: 11-foot lanes with 2-foot paved shoulders provide adequate width for rumble strips, optimizing safety benefits versus costs.

B. **US 150 Intersection.** The location will likely be reconstructed as part of Danville's new connector project (Item No. 7-80000) but a handful of short-term fixes are suggested to address observed crash patterns: high visibility backplates for the signal, dynamic warning signage for the westbound curve, and access management along the adjacent commercial parking lot. Mike noted that dual red signal heads are not yet proven effective—crash modification factors (CMFs) show an increase in crashes.

C. **KY 1805 Intersection**. This T-intersection is just past a crest curve, limiting visibility. A short left-turn lane/refuge is proposed to pull those cars out of the driving lane. Preliminary design work to widen left versus right has not been completed yet but the stone wall on the north side was flagged as potentially historic.

   A long-term solution at this site could cut down the nearby vertical curves but maintenance of traffic would get expensive.

   Mike and Nathan described an "intersection conflict warning system" like installed at KY 169/Bethany Road/Vince Road in Jessamine County. A radar-based set of warning signs or "rear end warning system" are proposed for an intersection along KY 155 in Jefferson County as part of an ongoing HSIP effort. Similar setups show around a 20% reduction in crashes. Either could potentially serve as an interim solution; Qk4 will develop costs for both the signage and widening solutions for comparison.

D. **KY 590 Intersection**. This Y-intersection lies in a compound curve with visible wearing in the high friction pavement illustrating where familiar drivers "cheat" between curves. A wider section is proposed with a left turn pocket, pulling one side of the Y in tighter to improve visibility. Mike noted that many of these Y-intersections are being reconstructed throughout the state and recommended eliminating the angled northbound right turn lane shown in the preliminary figure. A standard right turn pocket is more effective; drivers struggle with the angled lanes unless there's a downstream acceleration lane to receive them.

E. **Realignment Near River.** The 2.9-mile stretch near the Dix River contains substandard horizontal curves, steep grades that limit visibility, and roadside drop-offs. The bridge is in a curve and follows a steep downgrade. These factors contributed to the high crash rates: 81 crashes including 27 injuries in

five years with nearly 70% single vehicle crashes. More crashes occur westbound since eastbound motorists are generally traveling slower after coming through the adjacent curves. Superelevation rates today are based on 45 mph though the corridor is posted at 55 mph.

Two preliminary alignments were drawn up, based on a 55 mph design speed with an 8% max grade:

- The North alignment crosses the river in a tangent, passing through mostly farmlands. It reduces the number of curves and creates a T-intersection to remove entrances to the quarry and transfer station off mainline KY 52.
- The South alignment puts the new crossing in a horizontal curve, less preferred, but still better than existing.
- Two alignments to fix the curve near Martin Lane are shown, either of which could be combined with either river crossing option.

The Dix River bridge is in decent shape and was constructed in 1986; Qk4 will develop a set of on-alignment spot improvements (primarily pavement widening) through Spot E as a lower-cost option to consider. These will be distributed to the team via email for any additional comments.

F. Boones Creek Road Intersection. As at Spot B, this represents a T-intersection just past a crest curve, which limits visibility. A short left-turn lane/refuge is proposed. Qk4 will also look at the intersection conflict warning system signage discussed above.

G. KY 1150 Intersection. The KY 1150 intersection forms the eastern boundary of the study area. It is another Y-intersection, located in the transition between rural and urban settings. The next few streets east provide access to a cluster of small neighborhoods and subdivisions. An 1,800-foot two-way left-turn lane is proposed, continuing east to the intersection with Lynnwood Drive.

Next Steps

Qk4 will continue to develop the spot improvements, including cost estimates. Once HSIP recommendations are identified in April, the planning team will engage with local officials and stakeholders again. Rebecca previewed a StoryMap to describe the existing conditions and proposed spot improvements; the draft will be circulated for project team review in the coming weeks.

With no further comments or discussion items, the meeting concluded at 3:10.

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MEETING MINUTES

Project:	HSIP KY 52 Roadway Departure Corridor Boyle & Garrard Counties Item No. 7-9021.00
Purpose:	Preliminary Report Review
Place:	KYTC District 7, Lexington In-Person and Virtual Meeting
Meeting Date:	August 5, 2021, at 1:00 PM EDT
Prepared By:	Qk4, Inc.

Participants:

Mike Vaughn	KYTC HSIP
Deanna Mills	KYTC HSIP
Rachael Cash	KYTC HSIP
David Durman	KYTC HSIP
Rob Sprague	KYTC D7 Project Development
Casey Smith	KYTC D7 Planning
Joshua Samples	KYTC D7 Design
Stephen DeWitte	KYTC CO Planning
Daniel Kucela	KYTC D7 Engineering Support
Francis McDonnell	KYTC D7 Planning
Natalia McMillan	KYTC D7 Traffic
Cecil Smith	KYTC D7 ROW
Jonathan Taylor	KYTC D7 Project Delivery Branch II
Shane Tucker	KYTC D7 HSIP Coordinator
Adam Ulrich	KYTC
Bradley Derickson	KYTC D7
Jeremy Boyle	KYTC D7 Section Engineer, Danville
Tom Clouse	Qk4
Rebecca Thompson	Qk4
Deanna Miller	Qk4
Theresa Owen	Qk4

Mike Vaughn opened the meeting, welcoming and introducing the attendees. The purpose of the first project team meeting is to review key findings and present possible improvement options to implement with $2.1 M in HSIP funding.

Existing Conditions & Crash Analysis

Tom Clouse reviewed existing conditions along the corridor. KY 52 is a rural two-lane roadway with 10-11 feet-wide lanes. Tom noted potential utility issues, particularly the eight gas transmission line crossings at various locations throughout corridor. Gas companies have been contacted; however, they request detailed plans be provided before weighing in on potential facility impacts. Typical utilities (water, sewer, electric, telecommunications) are found within the project corridor.

> *Deanna Mills asked about level of confidence in estimated utility costs associated with countermeasures. Qk4 believes estimates are conservative, treating all utilities as private. No gas transmission line impacts were assumed since the cost of impacting one of those lines would use a large portion of the budget. Therefore, should any of the selected countermeasures impact the gas transmission lines, the project team will need to decide how best to adjust countermeasures to remove the conflict. When contacted, gas companies said they are generally less concerned about placing embankment over their lines versus reducing cover over the lines but asked to see plans before a final decision on potential impacts would be assessed.*

Deanna Miller summarized crash data provided by KYTC over a five-year period from January 2015 through December 2019. Crash analyses revealed 230 total collisions consisting of 3 fatalities, 61 injuries, and 166 property damage only crashes during this period. Furthermore, 51% of total crashes were roadway departures, with 66% occurring in curve sections and 56% on wet pavement. Five high-crash areas (CCRF greater than 1.0) were identified; three in Boyle County and two sections covering the entirety KY 52 in Garrard County.

> *Mike Vaughn noted that due to the randomness of crashes, HSIP identifies projects to improve safety not only based on crash location history, but also on crash potential through a systemic safety management process. Combinations of proposed countermeasures affect most crashes, but funding is limited so we must prioritize potential improvement options.*

Proposed Countermeasures

Theresa Owen reviewed thirteen proposed countermeasures and explained information presented on individual countermeasure project sheets provided to group attendees.

Countermeasure discussion is detailed in the following sections.

a. Ditching & Shouldering

   Applied in areas of minimum to no shoulders with steep side slopes; mostly fills.

   This countermeasure has a 5-year return on investment (ROI) of 8.8.

b. Superelevation Improvements

   Mobile Lidar and TopoDot software (point cloud analysis) were utilized to detail pavement cross slopes every 10 feet along the corridor. This data was used to identify areas of proposed superelevation improvement based not only on rate of superelevation, but also the consistency in the superelevation through the curve.

High crash curves along the project were reviewed and include curves 6-11 (Pope/Goggin area), curve 15 (KY 590 intersection) with wearing high friction surface treatment (HFST), curve 20 (approach Dix from Boyle side in downgrade), curve 22 through 27 (just past bridge, Garrard side) with curve 27 having highest concentration of crashes. It was also noted that the speed limit changes from 55 to 45 in curve 33.

Curves recommended for SE improved were curves 9-11 (Pope/Goggin area), 15 (KY 590 intersection), 32 (Garrard MP 3.35) and 35 (KY 1150 intersection). It was pointed out that while curve 15 had zero targeted crashes, it was still included as a systemic improvement due to its small radii and existing High Friction Surface Treatment (HFST).

This countermeasure has a 5-year ROI of 1.9.

Question was raised by Rob Sprague concerning superelevation, and reservation of reconstructing specific curves to full 8% superelevation when they are adjacent to another curve which may not have a full 8% superelevation. The objective of this countermeasure is not to bring curves up to the design superelevation, but rather to identify the curves where superelevation appears to be inconsistent and contributing to crashes. If selected, the consultant will evaluate consistency between consecutive curves when determining appropriate superelevation rates.

c. Clear Zone Improvement – Tree Removal

Trimming is focused on the downgrade approach to Dix River Bridge to improve visibility of upcoming curve and bridge. Also, a few large diameter trees adjacent to highway are subject to removal.

This countermeasure has a 5-year ROI of 6.6.

d. Guardrail Replacement

The 9-mile-long corridor contains 1.67 miles of guardrail, with almost all being substantially low and out of standard. Project guardrail discussion points include:

- Replace all existing guardrail, except one section in Garrard County that is close to standard and in good shape.
    - One guardrail location crosses a gas transmission line that would require coordination with the gas company.
- Clarks Run bridge doesn't currently have guardrail to protect the bridge ends. It was recommended to include guardrail on each bridge corner, especially since one fatality occurred at this location in analysis period.
- The pond near KY 590 intersection adjacent to the route has steep side slopes. Widening in this area would require cribbing and guardrail protection.
- Box culvert near Clifton Road by historic rock fencing presents environmental concerns. Options include extending culvert and impacting stonework or protecting with new guardrail.

This countermeasure has a 5-year ROI of 1.0.

e. Extend Existing Culvert Pipes/Safety Headwalls

Qk4 assumed a conservative crash reduction of 10%, applying it only to 5 crashes citing culverts as the primary object hit.

Note: Culvert pipe extensions often overlap with, and cost included with, countermeasures such as pavement widening or ditching and shouldering.

This countermeasure has a 5-year ROI of 0.3.

f. Pavement Repair

This countermeasure addresses 26 spots identified through TopoDot analysis. Meeting discussion primarily focused on pavement failures in curves 22 and 27 caused by embankment stability issues. Qk4 recommended that cribbing also be used to stabilize these two areas.

This countermeasure has a 5-year ROI of 0.8.

g. Cribbing

Cribbing was proposed in two locations of pavement failure resulting from sliding side slopes (Pavement Repair* is included at these two locations), and one location adjacent to a water hazard adjacent to curve 15.

* Note: the $87,000 cost referenced in the project sheet did not include the cost of pavement repair at these two locations. Including pavement repair in these two spots increases project cost to $104,000 and results in a 5-year ROI of 2.1 rather than 2.6 previously shown.

h. Widen 4" to 6" Center and Edge Line Striping

6" striping provides an excellent ROI and is therefore proposed in all schemes.

This countermeasure has a 5-year ROI of 251.9.

i. Fluorescent Signs

This countermeasure includes both upgrading existing and installing new signs. The corridor was analyzed for curve warning signs. Three existing curves are signed in Boyle County and none in Garrard County. Qk4 proposed five additional curves to be signed: one in Boyle and four in Garrard.

Natalia McMillan recommended that all signs, even those appearing to be new, be re-evaluated to meet spacing and sizing standards. It was suggested that perhaps an old HSIP project addressed signs only Boyle County may be the reason why Garrard has no existing curve warning signs.

This countermeasure has a 5- year ROI of 7.0.

j. Widen Shoulders

This countermeasure widens total pavement width to 25ft to allow for the addition of edge line and centerline rumble strips. Although this countermeasure provides an impressive ROI, the $4.955M* cost substantially exceeds project budget. The 60 feet of existing right-of-way (ROW) may also be restrictive in areas, as could natural gas transmission line conflicts. This countermeasure could be included with the ongoing current planning study.

* Note: the $5.1M cost referenced in the project sheet was inaccurately rounded – the correct cost for this countermeasure is $4,955,000, resulting in a 5-year ROI of 3.8.

k. Durable Pavement Edge

This countermeasure, proposed for approximately 2-miles of the corridor, addresses existing pavement edge drop-offs by milling a two-foot-wide strip along the pavement edge, followed by overlaying the milled area and constructing a 30-degree asphalt pavement wedge tied to existing ground. KYTC's constructability and durability concerns eliminated this for consideration as a standalone countermeasure.

This countermeasure has a 5-year ROI of 5.3

l. High Friction Surface Treatment (HFST)

HFST was proposed at curves 8, 15, 20, 21, 26, and 27. The existing HFST at curve 15 was recommended for replacement as a systemic improvement; and it was noted that curves 8 and 27 have most roadway departure crashes and are not addressed by superelevation improvements. KYTC questioned the constructability of reapplying HFST over an existing treatment.

This countermeasure has a 5-year ROI of 10.0.

m. Improve Horizontal Curves

Curves 8 through 11, an area identified by crash analysis and the district as a high crash area, were proposed to be improved by this countermeasure. This improvement consists of various countermeasures including pavement widening, superelevation improvements, rumble strips, clear zone improvement and horizontal curve realignment.

This countermeasure has a 5-year ROI of 4.1.

Countermeasure Summary

In total, nearly $7.8 M of countermeasure improvements were identified for the KY 52 corridor. To better meet funding restraints, three "schemes" were presented containing countermeasure combinations and locations that are more tailored to fit within the existing $2.1 M budget.

A. Scheme A – Horizontal Curve Realignment

Scheme A focuses on improving the reverse curves between Goggin Lane and Pope Road (curves 8-11). In that area the horizontal alignment would be improved to remove compound curvature, pavement widened, edge line and centerline rumble strips installed, culverts extended, superelevation improved, HFST applied to curve 8, ditching and shouldering throughout, trees removed, and utilities poles relocated. Additionally, superelevation improvements would also be made at curve 15 (KY 590 intersection), curve 32 (Garrard MP 3.35) and curve 35 (Garrard MP 4.20). Tree trimming would be performed in Garrard County (noted incorrectly in report) and the Boyle County downgrade approach to Dix River Bridge. Culvert pipe extensions would only include box culverts and pipes listed as "bad" condition. Pavement repairs would only address two locations of pavement failure; cribbing would also be included in those two spots as well as at the KY 590 intersection. HFST would be included only at curve 20 (Dix River Bridge), curve 21 (GMP 0.35), curve 26 (GMP 1.25) and curve 27 (GMP 1.42). Corridor-wide countermeasures include ditching and shouldering, guardrail, 6-inch permanent paint striping, and signs.

Cost: $2,174,00

B. Scheme B – Corridor Pavement Widening

Although pavement widening throughout the entire corridor exceeds the planned budget, scheme B was included to provide baseline cost since it does produce a positive ROI. With this scheme, only countermeasures necessary for pavement widening are shown and include guardrail, culvert pipe extensions, cribbing at KY 590 intersection, paint striping, and new signage. Due to the widening, the corridor will also receive the benefit of ditching and shouldering, as well as durable pavement edge.

Cost: $4,955,000

C. Scheme C – Pavement Widening through Curves

Since the cost to widen the entire corridor exceeds the budget, this scheme was developed to apply widening and rumble strips to concentrated crash areas between Garrard County MP 0.10 and 1.70. This scheme includes ditching and shouldering and durable pavement edge throughout the rest of the corridor, superelevation improvements at curve 11 (Boyle MP 2.30), curve 15 (Boyle MP 3.78), curve 32 (Garrard MP 3.35) and curve 35 (Garrard MP 4.20). Tree removal at reverse curves 9-11 (Goggin Lane to Pope Road) are also be included. Pipes would be extended in areas of widening, and both box culverts would be extended. The two areas of pavement base failures would be addressed with cribbing. Six-inch permanent paint stripe and new signage would be included corridor wide. HFST would only be applied at the two highest crash curves, curve 8 (Boyle MP 2.05) and curve 27 (Garrard MP 1.42).

Cost: $2,141,000

Discussion Points

- A question was asked concerning the likelihood of 6-year plan project coming from the planning study. It was noted that with the high project costs, it could be years before a project emerged in the 6YP. SHIFT looked at three segments, but they had mediocre performance; however, it was further noted they could be boosted. Planning study improvement options primarily address intersections and curve areas around the Dix River.

- KYTC will pull 10 years of crash data to evaluate whether polishing is an issue or if HFST is the best treatment option. Also, existing friction data from the corridor is expected to be processed within the next few months. This could also provide insights on the actual pavement friction condition. Mike will share this data when available. Deanna Mills noted that the existing HFST must be milled off or the epoxy for the new HFST will not stick.

- KYTC had reservations about the practicability of the durable pavement edge as proposed. The consultant noted that resurfacing the 2.08 miles identified would be approximately $200,000 additional dollars, not including milling. Ultimately durable pavement edge as described was decided not to be included with any of the proposed schemes.

- KYTC noted that the consultant has a 20% contingency and 10% small project factor added to costs. While approximately 10% will be needed for construction inspection, the remainder adds an additional "factor of safety" when considering final project costs.

- MOT – question was asked if lane closures are permissible, or should lane closure times be restricted? The district said they would coordinate with local officials and let the consultant know. School impacts need to be fully vetted with school officials.

- Although there is a possibility this project could be let in 2022, construction likely won't take place until summer 2023.

- Environmental and utility coordination is critical to schedule. A trimmed KMZ file showing disturbed limits will be shared with the environmental team as soon as the consultant is confident of the impacts. The consultant pointed out the one box culvert with stone fences that tie to the headwall as an issue that needs to be resolved. The consultant needs to know whether this culvert can be extended, and fence replaced, or if new guardrail must be installed rather than extending this culvert.

- Mike asked the team what countermeasures the team deemed most favorable. The team identified ditching and shouldering as an alternative to the durable pavement edge. Additionally, Mike Vaughn stated pipe extensions aren't covered by any other program and therefore are a good countermeasure to include with HSIP projects.

KYTC noted that Scheme C addresses curves corridor wide, and it was decided that scheme C was the most desirable to advance to final design. Further it was noted that savings associated with eliminating durable pavement edge could be applied to other countermeasures. **The Project Team's recommendation is to advance Scheme C.**

Other Topics of Discussion

A final review meeting will be held in the future. Interim meetings may be necessary if issues arise that require addressing as a group.

Mike Vaughn agreed that it would be okay to discuss the preliminary HSIP concepts with the local officials and stakeholders at the upcoming planning meeting for the corridor

Meeting adjourned at 3:30 pm.

Engineering Planning

Groundbreaking by Design.

MEETING MINUTES

Project:	KY 52 Corridor Improvement Study Boyle & Garrard Counties Item No. 7-104
Purpose:	Local Officials/Stakeholders Meeting No. 2
Place:	Virtual Meeting
Meeting Date:	September 22, 2021 at 1:30 PM
Prepared By:	Qk4

Participants:

Josh Bray	State Representative
Howard Hunt III	Boyle County Judge/Executive
Duane Campbell	Boyle County Engineer
Josh Morgan	Danville City Engineer
Marshall Carrier	Danville Municipal Utilities
Will Fawns	Delta Gas
Tyler Rumpke	Rumpke Waste & Recycling
Preston McDowell	KYTC EIT I Construction
Karyn Leverenz	Bluegrass ADD
Rob Sprague	KYTC D7 Project Development
Casey Smith	KYTC D7 Planning
Joshua Samples	KYTC D7 Design
Francis McDonald	KYTC D7 Planning
Jonathan Taylor	KYTC D7 Project Delivery and Preservation
Daniel Kucela	KYTC D7 Engineering Support
Natalia McMillan	KYTC D7 Traffic
Steve De Witte	KYTC CO Planning
Mike Vaughn	KYTC HSIP
Deanna Mills	KYTC HSIP
Rachel Cash	KYTC HSIP
Clyde Newcomer	KYTC, Richmond Construction
Tom Clouse	Qk4
Rebecca Thompson	Qk4
Lindsay Hoskins	Qk4
Theresa Owen	Qk4

Casey Smith opened the meeting, welcoming attendees. The purpose of the meeting is to briefly review the existing conditions information, followed by a conversation about the spot improvement concepts Qk4 has developed. A concurrent HSIP project (Item No. 7-9021) examines low-cost solutions to address high crash trends for the same corridor. Content for the meeting is included in the project website, online at https://arcg.is/1qzTry.

Existing Conditions

Through the study limits, KY 52 has two 10- to 11-foot-wide lanes with minimal shoulders. Traffic data for 2020 shows 5,300-5,600 vehicles per day (vpd) using the corridor. Steep grades limit sight distance. During the five-year analysis period, 245 crashes were reported along KY 52 within the study limits. This includes 3 fatalities and 64 injury collisions. By type, single vehicle crashes were most common (59%).

A public crowdsourcing app gathered community input during December 2020 and January 2021. 81 surveys were completed, citing narrow shoulders, sharp curves, and lane widths as the top issues.

Proposed Spot Improvements

Rebecca presented the preliminary planning spot improvements identified to date, pulling in the existing conditions data to identify the top needs along the corridor. The HSIP effort identified a range of low cost, quick fix safety improvements: widening shoulders east of the county line, replacing signs, addressing steep drop-offs, replacing guardrail, removing select roadside obstacles, etc.

The following planning concepts were presented:

A. **Corridor Widening** assumes pavement is added on both sides to provide 25 feet, enough to install rumble strips. No alignment shifts are addressed. Utility impacts lead to high costs, with combined phase costs (design, right-of-way, utilities, and construction) estimated at $24 million.

B. **US 150 Intersection.** The location will likely be reconstructed as part of Danville's new connector project (Item No. 7-80000) but a handful of short-term fixes are suggested to address observed crash patterns: high visibility backplates for the signal, dynamic warning signage for the westbound curve, and access management along the adjacent commercial parking lot. Costs are estimated at $90,000 for all phases.

C. **KY 1805 Intersection**. This T-intersection is just past a crest curve, limiting visibility. A short left-turn lane/refuge is proposed to pull those cars out of the driving lane. A lower cost solution adds a dynamic signage system to warn eastbound motorists that a car is stopped ahead. Turn lane costs are estimated at $490,000 versus $80,000 for signing.

D. **KY 590 Intersection**. This Y-intersection lies in a compound curve with visible wearing in the high friction pavement illustrating where familiar drivers "cheat" between curves. A wider section is proposed with a left turn pocket, pulling one side of the Y in tighter to improve visibility. There were three crashes in five years, but this site received a lot of public feedback during the first round of surveys. Costs are estimated at $810,000.

Attendee comment: the shoulder/drop-off to the north side of the roadway should be widened. When a truck is coming at you, you tend to pull towards the outside. The property owner would likely be willing to have some fill added.

E. Realignment Near River. The 2.9-mile stretch near the Dix River contains substandard horizontal curves, steep grades that limit visibility, and roadside drop-offs. The bridge is in a curve and follows a steep downgrade. These factors contributed to the high crash rates: 81 crashes including 27 injuries in five years with nearly 70% single vehicle crashes. Three representative alignments were developed: one to the north, one to the south, and one following existing. Additional design work, environmental analyses, and community engagement would be needed to select the best option for future implementation. Costs range from $10 million to $24 million.

F. Boones Creek Road Intersection. As at Spot B, this represents a T-intersection just past a crest curve, which limits visibility. A short left-turn lane/refuge or dynamic signage is proposed. Costs are estimated at $80,000 for signing versus $850,000 for the turn lane.

G. KY 1150 Intersection. The KY 1150 intersection forms the eastern boundary of the study area. It is another Y-intersection, located in the transition between rural and urban settings, with a steep drop-off to the south. An 1,800-foot two-way left-turn lane is proposed, continuing east to the intersection with Lynnwood Drive. Costs are estimated at $1.4 million.

The team also discussed future public engagement efforts. A survey tab within the project website is intended to help collect community feedback on proposed concepts. Attendees were encouraged to help promote the survey. KYTC will provide a synopsis of the project and coordination point for easy sharing, including dates to submit comments.

One attendee noted in-person meetings have been well-received and helped build consensus on past highway projects. With current health concerns, an in-person meeting may not be feasible but certainly community engagement will occur as any concepts advance for future project development.

With no further questions/comments, the meeting adjourned at 2:15.

A comment from a stakeholder was received soon after the meeting concluded. Between the intersections of KY 1805 and KY 590, a comment was emailed which indicated a potential issue west of the intersection of KY 52 and Pope Road. It was stated that he section of roadway has a reverse curve and severe shoulder drop offs. It was pointed out that several roadway departures occur on the south side of the roadway. This may be something that could be addressed in the HSIP program.

Engineering Planning

Groundbreaking by Design.

MEETING MINUTES

Project:	KY 52 Corridor Improvement Study Boyle & Garrard Counties Item No. 7-104
Purpose:	Project Team Meeting No. 3
Place:	Virtual Meeting
Meeting Date:	December 9, 2021 at 9:00 AM

Participants:

Rob Sprague	KYTC D7 Project Development
Casey Smith	KYTC D7 Planning
Joshua Samples	KYTC D7 Design
Mike Vaughn	KYTC HSIP
Deanna Mills	KYTC HSIP
Rachel Cash	KYTC HSIP
David Durman	KYTC HSIP
Tom Clouse	Qk4
Rebecca Thompson	Qk4
Lindsay Hoskins	Qk4
Theresa Owen	Qk4

Casey Smith opened the meeting, welcoming attendees. The purpose of the meeting is to review the existing conditions information and spot improvement concepts to reach consensus about prioritization. A concurrent Highway Safety Improvement Program (HSIP) project—Item No. 7-9021—examines low-cost solutions to address high crash trends for the same corridor, likely being constructed in 2023.

Existing Conditions

Through the study limits, KY 52 has two 10- to 11-foot-wide lanes with minimal shoulders. Traffic data for 2020 shows 5,300-5,600 vehicles per day (vpd) using the corridor, operating at Level of Service (LOS) C-D for individual segments with volume-to-capacity ratios (v/c) of 0.18-0.20. Modeled projections to 2045 anticipate 1% growth; capacity is not a major concern. During the five-year analysis period, 245 crashes were reported along KY 52 within the study limits. This includes 3 fatalities and 64 injury collisions. By type, single vehicle crashes were most common (59%).

Proposed Spot Improvements

Rebecca described the recommended HSIP countermeasures alongside the planning improvement concepts.

A. Corridor Widening. This concept assumes a 25-foot typical section along the existing alignment—the minimum width required for rumble strips. Costs are estimated at $24 million, with the majority ($18 million) allocated to the utility phase. The resulting benefit-cost ratio (BCR) is 1.38 assuming a 3% discount rate.

- How conservative are the utility costs? District 7 developed the estimate. There are five gas line crossing locations (eight total lines); Qk4 has reached out to the gas companies to confirm if the potential widening will impact the lines. Costs are conservative but may be worth reevaluating or discussing further in the text. Casey will follow-up.

B. US 150 Intersection. The location will likely be reconstructed as part of Danville's connector project (Item No. 7-80000) but a handful of short-term fixes are suggested: high visibility backplates for the signal, dynamic warning signage for the westbound curve, and access management along the adjacent commercial parking lot. Costs are estimated at $90,000 but BCR are not calculated for short-term concepts, which are generally higher than longer term, higher cost measures.

C. KY 1805 Intersection. This T-intersection is just past a crest curve, limiting visibility. Two options were evaluated: a short left-turn lane/refuge or a "rear end warning system" with dynamic warning signs. Costs are estimated at $80,000 (signs) to $490,000 (turn lane). Ditching/shouldering under the HSIP program is included in the vicinity.

D. KY 590 Intersection. This Y-intersection lies in a compound curve worn high friction pavement illustrating where familiar drivers "cheat" between curves. A wider section is proposed with a left turn pocket, pulling one side of the Y in tighter to improve visibility. Costs are estimated at $810,000; ditching/shouldering and superelevation improvements will occur in the vicinity under HSIP.

E. Realignment Near River. The 2.9-mile stretch near the Dix River contains substandard horizontal curves, steep grades that limit visibility, and roadside drop-offs. Three representative options were evaluated: new alignments to the north or south and an existing option that adds wider pavement through the curve at Hanging Fork Road, softens the curves near Paper Mill and Little Dixie roads. Costs range from $10-24 million, with BCRs of 1.23-2.81. Current costs and benefits are based on the existing alignment and crash patterns—independent of HSIP improvements in this section.

F. Boones Creek Road Intersection. As at Spot B, this site represents a T-intersection just past a crest curve, which limits visibility. Dynamic warning signs or a short left-turn lane/refuge were considered, with costs estimated at $80,000 (signs) to $850,000 (turn lane). Ditching/shouldering under the HSIP program is included in the vicinity.

G. KY 1150 Intersection. The KY 1150 intersection forms the eastern boundary of the study area. It is another Y-intersection, located in the transition between rural and urban settings. A 2,000-foot two-way left-turn lane is proposed between Precision Court and Lynwood Drive with costs estimated at $1.5 million and a 1.2 BCR.

- In survey feedback at G, neither respondent who opposed the improvement provided a written comment explaining why.

Realigning a series of curves near Pope Road (Boyle County MP 2.0-2.4) was initially considered but dismissed

due to budget constraints. The team agreed to advance this section as Concept H although it may be a lower priority in light of other HSIP improvements in this stretch. High friction surface treatment at curve 8 will help reduce crashes but is not considered a long-term solution.

District 7 prefers not to prioritize projects beyond distinguishing long-term and short-term. The information contained in each project sheet is adequate to inform sponsorship for future SHIFT cycles.

Casey noted that he received a few phone calls following the Bluegrass ADD presentation. One was from a property owner looking for design-level answers; none of the queries would impact the study process or findings at this stage.

With no further comments or discussion items, the meeting concluded at 9:50.