

MEETING MINUTES

Project: KY 177 Corridor Study
Pendleton County
Item No. 6-80258

Purpose: Project Team Meeting No. 1

Place: MSTeams

Meeting Date: October 11, 2023 at 10:00 AM

Prepared By: Qk4

Participants:

Bob Yeager	KYTC D6 CDE
Mike Bezold	KYTC D6
Dane Blackburn	KYTC D6
Maggie Enzweiler	KYTC D6
Sharon James	KYTC D6
Craig Walker	KYTC D6
Craig Moore	KYTC D6
Brian Donnelly	KYTC D6
Steve DeWitte	KYTC CO Planning
Catherine Davis	KYTC CO Planning
Jay Balaji	KYTC CO Planning
Dave Heil	KYTC CO Planning
Brent Sweger	KYTC CO Planning
Libbie Dockemeyer	KYTC CO Planning
Scott Schurman	KYTC DEA
Amanda Desmond	KYTC CO Design
Allen Rust	KYTC Railroad Coord.
Jeff Thelen	NKADD
Rebecca Thompson	Qk4
Albert Zimmerman	Qk4
Courtney Evans	Qk4

Catherine opened the meeting and attendees introduced themselves. The purpose of the meeting is to discuss the existing conditions for the study area, focusing on KY 177 in and around Butler. Two key features constrain corridor mobility: an aging truss bridge over the Licking River and a low-clearance tunnel beneath the railroad tracks. The corridor is one of the only east-west linkages in the area and the only Licking River crossing for 15 miles between Falmouth (along US 27 to KY 22) and Alexandria (via KY 536).

The team reviewed other area projects from the *FY 2022-2028 Enacted Highway Plan* and the Continuous Highway Analysis Framework (CHAF) database. Replacement of the Licking Ridge Bridge (Item No. 6-10047) and this Item

6-80258 study are the only funded projects nearby. Three CHAF concepts were sponsored for SHIFT 2024 but none have been boosted or identified as district priorities. The recent Northern KY Outer Loop study explored a regional east-west connection in the vicinity though no studied corridors passed through Butler.

Today, KY 177 is a rural major collector with 11-foot lanes and narrow shoulders. The speed limit varies throughout the study area. There are scattered steep grades and sharp curves, notably at the south end of the Licking River Bridge and approaching the KY 3185 intersection south of town. Sidewalk exists on the Licking River Bridge and on several residential streets in town.

- The closely spaced intersections of Mill and Matilda streets just south of the bridge result in an atypical configuration with a wide expanse of pavement.
- Matilda and South streets provide an at-grade crossing option but South Street is too narrow for more than one-way thru traffic. Only two vehicles were observed on this stretch during turning movement counts.
- What clearance will be required for a new structure? The area is prone to flooding but the Licking River is not considered navigable at this location.

The highway carries 1,300-2,800 vehicles per day (vpd) in 2023. Turning movement counts were collected at three study intersections in August 2023, with the busiest volumes observed at the signalized US 27/KY 177 intersection. All study area intersections operate at Level of Service (LOS) B or better during both peak hours. Both Pendleton County's population forecasts and historic counts along KY 177 demonstrate negative growth. Assuming no major improvements to the highway network, preliminary travel demand model runs suggest minimal growth (0.38%) through the 2045 horizon year.

- Origin destination data from the 2045 statewide model shows mostly east-west flows for bridge trips, spanning from I-71/I-75 into Mason County. By comparison, 2021 StreetLight data shows an even distribution between north-south US 27 trips and east-west flows using the existing Licking River Bridge. If the bridge and tunnel were improved and did not restrict mobility, more regional east-west traffic and trucks would likely use the corridor.
- Follow-up note: Strava heat maps (**Figure 1**) show a relatively high usage by recreational cyclists along the study corridor. StreetLight 2021 data shows no cyclists and a few (<10) pedestrians near Butler.

Per 2018-2022 crash data, there were 32 crashes along the study corridor, including no fatalities and six injury collisions. By type, most were single vehicle crashes (78%). The densest cluster of crashes occurred at the KY 177/KY 3185 intersection, where a downgrade in a horizontal curve ends at a stop sign.

The team discussed the need for a kickoff meeting with local officials and stakeholders but agreed to hold a meeting later in the study process once build concepts are ready to share.



Figure 1: Strava heat map for cycling

Next steps:

- Planning-level environmental overview data is being collected to identify red flag constraints to consider.
- Qk4 will begin developing build concepts, scoped to include a range of small-scale spot improvements (e.g., intersection improvements) and larger scale corridor improvements.
- The next project team meeting is scoped to occur in January 2024.

End of Minutes

MEETING MINUTES

Project: KY 177 Corridor Study
Pendleton County
Item No. 6-80258

Purpose: Project Team Meeting No. 2

Place: MSTeams

Meeting Date: January 22, 2024 at 1:30 PM

Prepared By: Qk4

Participants:

Bob Yeager	KYTC D6 CDE
Mike Bezold	KYTC D6
Dane Blackburn	KYTC D6
Maggie Enzweiler	KYTC D6
Sharon James	KYTC D6
Craig Walker	KYTC D6
Craig Moore	KYTC D6
Brian Donnelly	KYTC D6
Steve DeWitte	KYTC CO Planning
Catherine Davis	KYTC CO Planning
Jay Balaji	KYTC CO Planning
Dave Heil	KYTC CO Planning
Brent Sweger	KYTC CO Planning
Allen Rust	KYTC Railroad Coord.
Jeff Thelen	NKADD
Rebecca Thompson	Qk4
Albert Zimmerman	Qk4
Steve Trevino	Qk4
Courtney Evans	Qk4

The purpose of the meeting is to discuss the range of Build concepts, focusing on KY 177 in and around Butler. Two key features constrain corridor mobility: a weight-posted truss bridge over the Licking River and a low-clearance tunnel beneath the railroad tracks.

Today, KY 177 is a rural major collector with 11-foot lanes and narrow shoulders. The speed limit varies; there are scattered steep grades and sharp curves. Sidewalk exists on the Licking River Bridge and on several residential streets in town. The highway carried 1,300-2,800 vehicles per day (vpd) in 2023. Per 2018-2022 crash data, there were 32 crashes along the study corridor, mostly single vehicle crashes (78%). The densest cluster of crashes occurred at the KY 177/KY 3185 intersection, where a downgrade in a horizontal curve ends at a stop sign.

Several environmental overviews were completed since the October meeting.

- The bridge and 4 buildings in town were noted as potential historic red flags. The tunnel is not recommended as NRHP eligible by itself, but evaluating it as part of a larger rail system is beyond the study's scope. No historic districts are recommended. One house overlooking town was previously surveyed but is not visible from public right-of-way.
- Three previous archaeological surveys were completed but no sites fall within the study area limits. Soil data suggests potential to encounter deeply buried deposits along floodplains and terraces.
- The Licking River is an outstanding state resource water and impaired. It provides habitat for protected bat and mussel species. There are several other water resources (e.g., streams, springs, wetlands, and floodplains) throughout the study boundary.
- Community resources are concentrated in town; mapping noted locations of churches, civic services, hazmats, a park, and more. The City Park is protected by Section 4(f) but did not receive any Section 6(f) funding.
- NKADD's socioeconomic profile showed concentrations of minority, low income, age 65+, and disabled populations in the vicinity based on Census estimates.

KYTC's Geotechnical Overview highlights significant concerns throughout the study area. The region is notorious for slope stability failures with eight observed landslide repairs within or adjacent to the study area boundary. The bedrock is poor quality, with groundwater movement, shales, and colluvium accumulations suggesting special attention will be needed during any future design phases. Cut slopes 2H:1V or flatter are recommended.

Year 2045 traffic projections were also discussed. Population and historic traffic counts are trending downward. The 2021 Northern KY Outer Loop study (Item No. 6-458) modeled corridors on either side of Butler, with extensive analyses to forecast employment growth along an improved "Cinci Eastern Bypass" connector. Daily traffic was estimated at 5,000-12,000 vehicles per day; these provide an upper limit comparison for the current Build concepts. Using the statewide model, a 0.5% annual growth rate is projected, with up to 3,400 vpd using KY 177 around Butler. If 6-80258 were part of a larger improved connector between US 27 and I-75, the model projects up to 4,500 vpd.

A range of representative build corridors were developed (**Figure 1**), assuming two 12-foot lanes with 8-foot shoulders (6-foot paved). Red and Blue, north of town, are the longest and tie to US 27. Purple, north of town, ties to KY 177. Green follows the existing River Road corridor but impacts to the floodplain, geotechnical concerns, and a lower design speed make it a less feasible option. Pink follows Matilda and South streets through town, using the existing at-grade railroad crossing. Yellow and Teal cross KY 177 just south of the tunnel, skirting through floodplains to reach KY 177 west of the school. Orange and White, south of town, eliminate the need for a bridge or rail crossing but are less direct for quarry traffic.

- Qk4 will look at a second Build option in town with a grade separated rail crossing.
- Structures over the railroad should span its entire right-of-way.

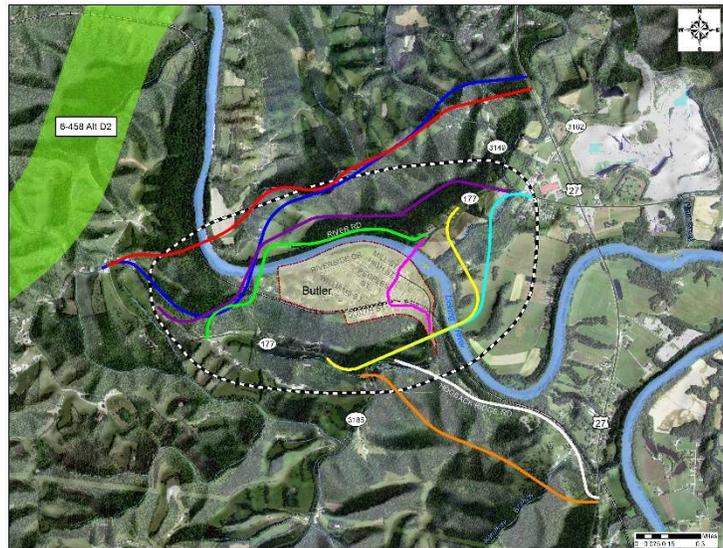


Figure 1: Range of Build Concepts Presented

- Qk4 will expand the environmental constraints map to include areas beyond the study limits near proposed corridors.
- A larger tunnel at the current location is not practical; rail traffic (≤ 5 trains per day) must be maintained and the current tunnel floods so lowering the elevation to increase clearance would not help.
- The study goals are to improve mobility by providing a route that avoids the tunnel and load posted bridge; intersection improvements do not address this goal.
- Red, Blue, Yellow, and the three spot improvements can be eliminated prior to meetings with local stakeholders. Green and White will also likely be eliminated but may be worth presenting first.

Unit cost assumptions were reviewed. Structures could be at least \$275/SF. Costs can be presented in current year dollars without escalation.

Qk4 will revise the range of Build concepts as discussed and provide KMZs to District 6 for right-of-way and utility cost estimates. The timeline for a local stakeholder meeting will be discussed once these updates are provided.

End of Minutes

MEETING MINUTES

Project: KY 177 Corridor Study
Pendleton County
Item No. 6-80258

Purpose: Local Officials & Stakeholders Meeting

Place: Pendleton County Fiscal Courtroom
233 Main Street, Falmouth

Meeting Date: June 26, 2024 at 12:00 PM

Prepared By: Qk4

Participants:

Shelley Funke-Frommeyer	State Senate
Mark Hart	State Representative
David Fields	Pendleton County Judge/Executive
Alan Whaley	Pendleton County Fiscal Court
Mason Taylor	Mayor of Butler
Alice Smith	Butler City Council
Ken Hale	Butler Police Chief
Mike Bezold	KYTC D6
Dane Blackburn	KYTC D6
Craig Walker	KYTC D6
Catherine Davis	KYTC CO Planning
Rebecca Thompson	Qk4
Courtney Evans	Qk4

The purpose of the meeting is to discuss KYTC’s corridor study along KY 177 near Butler. KY 177 is the only east/west link over a 15-mile gap in the highway network. Two key features constrain corridor mobility: a weight-posted truss bridge over the Licking River and a low-clearance tunnel beneath the railroad tracks. From a long-term perspective, improving this stretch of KY 177 could be the first piece in a larger regional freight corridor similar to the recent Northern Kentucky Outer Loop¹ concept.

The 2024-2030 Highway Plan budget includes two projects with design funding in the biennium:

- Item No. 6-80258 covers KY 177 from KY 3185 to KY 467
- Item No. 6-80310 covers KY 177 within Butler

Today, KY 177 is a rural major collector with 11-foot lanes and narrow shoulders. The speed limit varies; there are scattered steep grades and sharp curves. The highway carried up to 2,800 vehicles per day (vpd) in 2023. Per 2018-2022 crash data, there were 32 crashes along the study corridor, mostly single vehicle crashes (78%). The densest cluster of crashes occurred at the KY 177/KY 3185 intersection, where a downgrade in a horizontal curve ends at a stop sign.

¹ <https://transportation.ky.gov/NKYOuterLoop/Pages/Home.aspx>

The planning effort also considers how the environment could be impacted by a highway project: land use, community features, historic resources, population trends, streams, wetlands, habitats, and more. KYTC’s Geotechnical Overview highlights significant concerns throughout the study area. The region is notorious for slope stability failures; bedrock is poor quality, with groundwater movement and shales impacting durability. Aggressive terrain also contributes to the costs and feasible options considered.

Year 2045 traffic projections were also discussed. Population and historic traffic counts are trending downward. Using the statewide travel demand model, a 0.5% annual growth rate is projected, with up to 3,400 vpd using KY 177 around Butler. If part of a larger improved connector between US 27 and I-75, the model projects up to 4,500 vpd.

A range of representative build corridors were developed (**Figure 1**), assuming two lanes with the design speed and typical section varying based on location. Options represent high-level corridors, with more detailed design work needed should one or more be identified to advance. Key metrics are shown in **Table 1**. Group discussion followed.

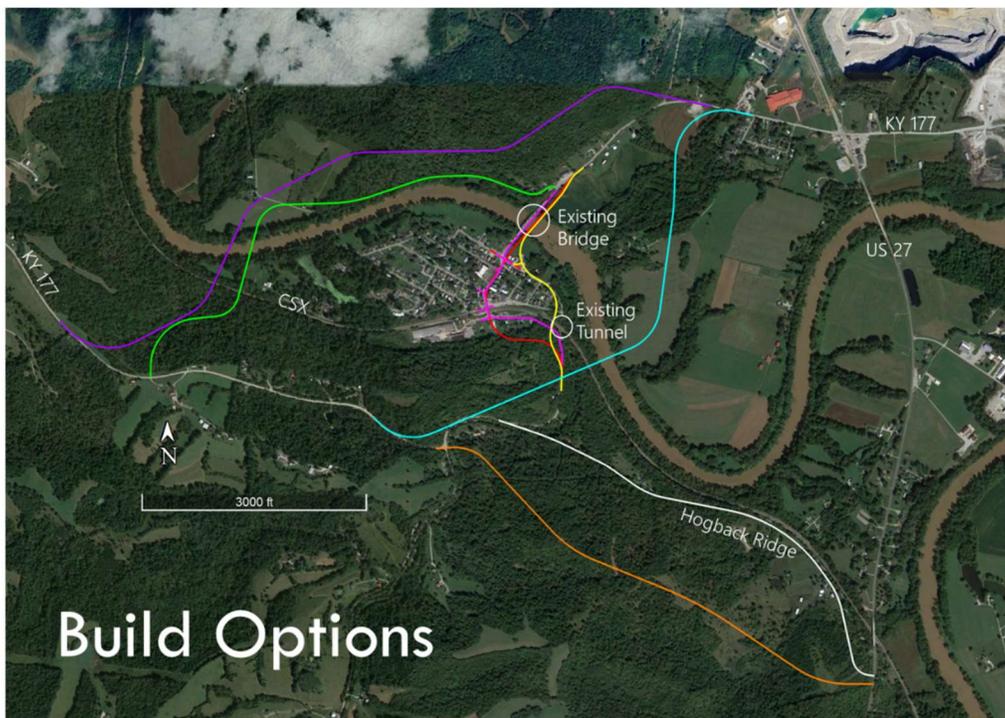


Figure 1: Build Options Considered

Table 1: Key Metrics for Build Concepts

Name	Length	Design Speed	Cost	Approx. Relocations	Earthwork
Purple	1.9	45-55	\$90 M	1	Most
Green	1.3	35	\$80 M	4	Medium
White	1.2	55	\$27 M	3	Low
Orange	1.3	55	\$85 M	0	High
Teal	1.5	45	\$48 M	0	Low
Pink	0.7	25	\$18 M	8-10	Least
Red	0.9	25	\$29 M	18	Low
Yellow	0.7	25	\$29 M	6	Low

- There are concerns about maintenance for the existing tunnel; what happens if it fails when a school bus is driving through? Removing the tunnel from the state system would likely reduce traffic using it.
- Green and White are concerning with existing geotechnical issues. Are these truly feasible?
- Options that bypass Butler would have a detrimental impact on the city's economy. Each bypass option assumes a bridge at/near the existing crossing remains in place to serve town.
- With Orange and White farther south, would quarry traffic use these connectors or continue through town?
- Teal passes through the floodplain and impacts Willow Creek. Elevating the roadway out of the floodplain would be a design-level decision, later in the project development process. Modeling is required to weigh impacts of the roadway flooding compared to increasing flood elevations upstream.
- Flooding and access for the city and region has been a concern over the years as it is so close to the river.
- Improvements are needed at the KY 177/KY 3185 intersection, either as part of a Build concept or a standalone safety project.
- Pink improves access for the local pallet business but is less helpful for regional thru trips. This is the largest business in Butler, with an estimated \$16 million in annual revenues.
- Red and Yellow would route trips to the pallet business through town but would not provide direct access. The rail crossing is about 30 foot above ground level to get over the tracks.
- Yellow provides a good mix of benefits: local access for Butler without severing the heart of town. It could be paired with a safety improvement at KY 177/KY 3185 and/or elements from Teal to address regional trips.
- Generally, Yellow was favored by most attendees with some interest in Teal or Purple also providing value.
- The historic truss should be preserved and represents a unique opportunity for the city.
- The city's water tower is on the hillside above town, at the end of Pixie Lane.

MEETING MINUTES

Project: KY 177 Corridor Study
Pendleton County
Item No. 6-80258

Purpose: Project Team Meeting No. 3

Place: MSTeams

Meeting Date: August 7, 2024 at 1:30 PM

Prepared By: Qk4

Participants:

Mike Bezold	KYTC D6
Dane Blackburn	KYTC D6
Maggie Enzweiler	KYTC D6
Sharon James	KYTC D6
Nick Brown	KYTC D6
Craig Moore	KYTC D6
Brian Donnelly	KYTC D6
Catherine Davis	KYTC CO Planning
Libbie Lowe	KYTC CO Planning
Dave Heil	KYTC CO Planning
Brent Sweger	KYTC CO Planning
Allen Rust	KYTC Railroad Coord.
Amanda Desmond	KYTC Design
Rebecca Thompson	Qk4
Albert Zimmerman	Qk4
Courtney Evans	Qk4

The purpose of the meeting is to review the range of Build concepts and reach concurrence on recommendations. Two key features constrain local mobility: a weight-posted truss bridge over the Licking River and a low-clearance tunnel beneath the railroad tracks. Regionally, there are few east/west connectors—especially for freight. KY 177 could be the first step in establishing a larger east/west corridor, similar to the 2021 Outer Loop concept studied.¹

A range of representative build corridors were developed (**Figure 2**), assuming two 12-foot lanes with 8-foot shoulders (6-foot paved).

- Red and Blue were dismissed as they were the longest and most expensive with large quantities of earthwork contributing to geotechnical concerns. Purple offers similar features as a representative northern corridor.
- Green follows existing River Road along the existing topography, with a lower design speed but feasibility concerns in light of geotechnical characteristics.

¹ Online at <https://transportation.ky.gov/NKYOuterLoop/Pages/Home.aspx>

- Pink provides an at-grade railroad crossing in town; following the second project team meeting, the team added other grade-separated options in/near town.
- Lemon and Teal provide similar paths through low-lying floodplains. Teal advanced to share with local officials/stakeholders as a representative southern connector.
- Orange and White do not require a new Licking River crossing. White rebuilds a narrow existing street but Orange is on new alignment with substantial earthwork. Farther south, these routes may not provide a useful route for quarry traffic.

Initial concepts were refined to the eight options (**Figure 1**) shared with local officials/stakeholders during a June 26 meeting in Falmouth. Key concerns during that meeting were economic impacts of bypassing town, emergency access during floods, and safety at the KY 177/KY 3185 intersection. Generally attendees preferred Yellow as it balanced local access and impacts.

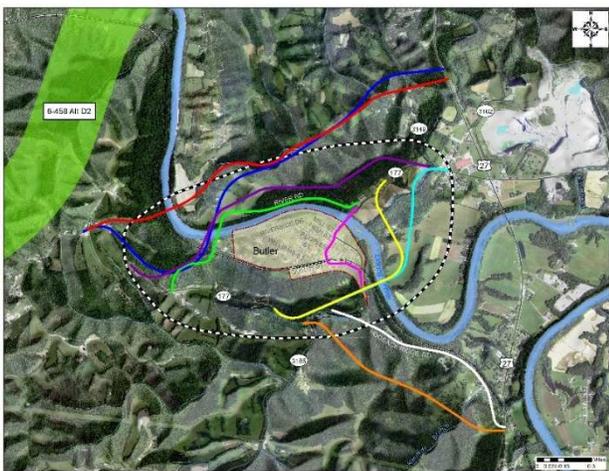


Figure 2: Build Concepts, Project Team



Figure 1: Build Concepts, Stakeholders

As a result, Qk4 presented three Yellow variations for project team consideration. Each two-lane corridor creates a grade-separated railroad crossing, preserves access to Butler, and includes a single Licking River crossing.

- Yellow Baseline matches the corridor presented to local officials, 0.7 miles long and totaling \$30 million. The river bridge mimics existing, which does not span the entire floodway. Yellow Baseline could be combined with a spot improvement at the KY 177/KY 3185 intersection to improve safety, adjusting the curve to make KY 177 the thru movement. This variation is intended to minimize costs/impacts.
- Yellow/Teal Hybrid includes the Teal corridor presented in June, paired with a spur into Butler along the Yellow corridor. Combined, the route is 1.9 miles long with a higher design speed (45 mph) and larger structure that spans the entire floodway at a higher elevation than other options considered. Costs are estimated at \$50 million.
- Yellow+Tail extends the original Yellow corridor west up the hill. It is 1.1 miles long and totals \$55 million. The river bridge mimics existing, which does not span the entire floodway.

Future environmental considerations include streams and floodplains, potential low-income relocations, and coordination with the railroad. Two potential historic concerns were noted nearby; one of the potential relocations in

each option includes a daycare. KYTC's Geotechnical Overview highlights significant concerns throughout the study area. The region is notorious for slope stability failures. The bedrock is poor quality, with groundwater movement, shales, and colluvium accumulations suggesting special attention will be needed during any future design phases.

Group discussion followed:

- All initial bypass concepts assumed the aging truss would be replaced to preserve a local connection to town. This is reflected in cost estimates.
- Why does the spur extend so far into Butler in the Yellow/Teal option? The distance is necessary to get clearance over the railroad then tie back to existing ground level. A 6% grade is assumed.
- Was a bridge further east considered to better fit the grades? This can be examined during preliminary design. Introducing a bridge to span the floodway on a skew to address the curve downtown would result in a much larger structure than other options considered.
- No Section 6(f) funding was used for the city park.
- In the Yellow/Teal Hybrid option, the aging truss bridge would not remain as part of the state's highway network. Old KY 177 could T into the new alignment to preserve access to properties, but the route would stop prior to the river. Details can be determined during preliminary design.
- What grade is shown in Yellow Baseline to access the existing street grid from the new KY 177 alignment? We're showing 9% currently but this could be refined during preliminary design. Flipping the curve as shown in Yellow+Tail adds length so the grade can be less steep.

The planning study effectively reduced the study area from the broad range shown in **Figure 2** to the smaller footprints shown today. The report will document the range of corridors considered and why some were eliminated. All three Yellow variations discussed today are recommended to advance for further investigation during future preliminary design efforts.

End of Minutes