

# CORRIDOR STUDY

Fulton, Hickman, Carlisle, & Ballard Counties, KY

EXECUTIVE SUMMARY | JUNE 2025



PREPARED BY  
**TEAM KENTUCKY**  
TRANSPORTATION CABINET

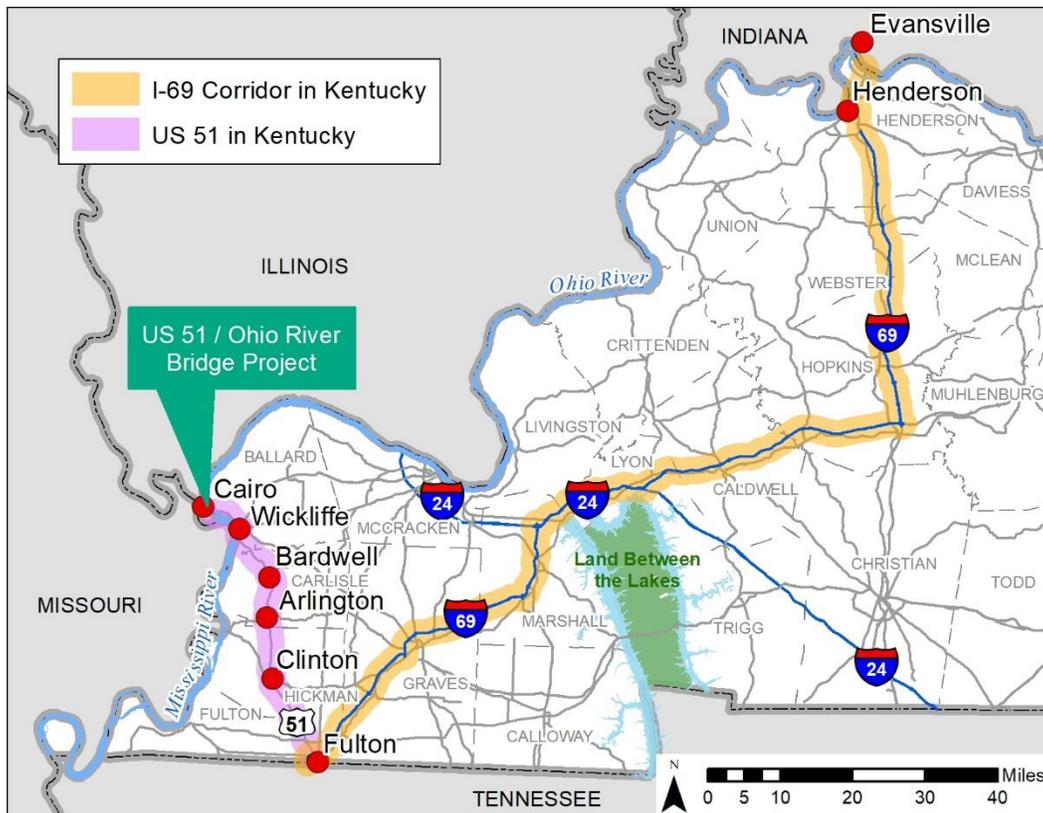
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## EXECUTIVE SUMMARY

The Kentucky Transportation Cabinet (KYTC) initiated this *US 51 Corridor Study* to analyze existing conditions and anticipated traffic to identify priority investments along US 51 between the cities of Fulton and Wickliffe, a distance of roughly 40 miles through Fulton, Hickman, Carlisle, and Ballard counties in Kentucky. Nearly \$45 million in projects for the US 51 corridor are shown in the biennium of the *FY 2024–FY 2030 Enacted Highway Plan*.<sup>1</sup> In light of projected funding, this study employs a programming approach to support prioritization of all previously identified projects along the route.

The study corridor (pink in **Figure ES-1**) forms an important north-south regional link for both passenger cars and freight. With the planned replacement of the aging US 51/Ohio River Bridge connecting Wickliffe, Kentucky to Cairo, Illinois and the conversion of the Julian M. Carroll Purchase Parkway to Interstate 69 (I-69), the importance of the corridor to regional transportation will continue to grow.



**FIGURE ES-1: STUDY VICINITY**

<sup>1</sup> Online at <https://transportation.ky.gov/Program-Management/Pages/default.aspx>

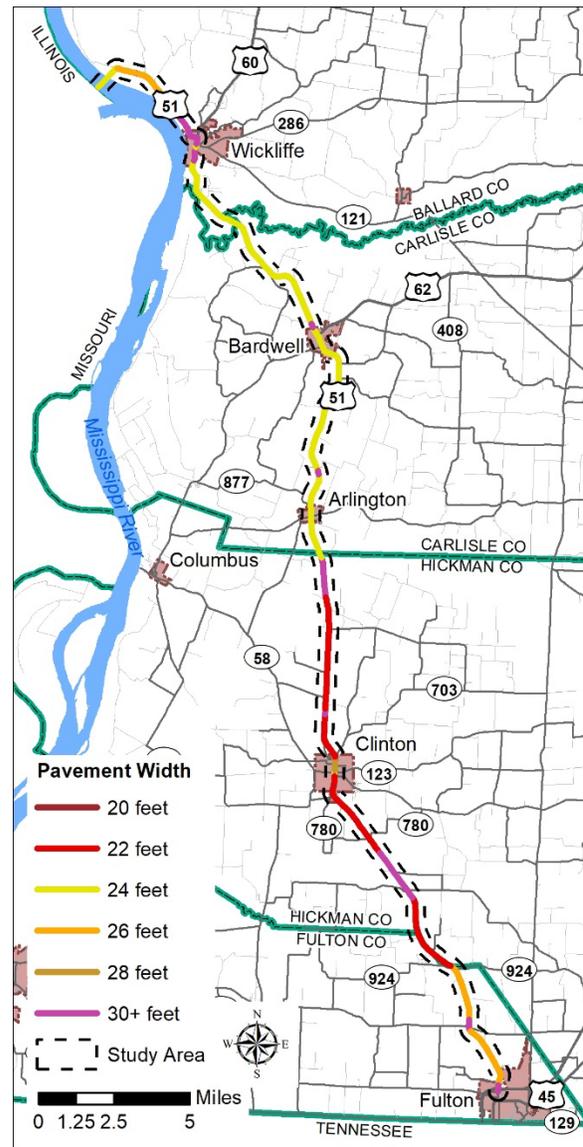
## Existing Conditions

The northernmost 4.6 miles of the corridor, from Illinois to its intersection with US 60, is part of the National Highway System and classified as a Principal Arterial. South of US 60, it is classified as a Minor Arterial. The entire length is a state-designated truck route.

US 51 features two lanes for most of its length, excepting a three-lane section south of Wickliffe. **Figure ES-2** maps total pavement width along the corridor. Rural sections of the route are 24 to 26 feet wide in Ballard, Carlisle, and Fulton counties, dropping to 20–22 feet through most of Hickman County. The posted speed limit is 55 mph, dropping to 25 to 35 mph within each town and 40 mph on the US 51 Ohio River Bridge.

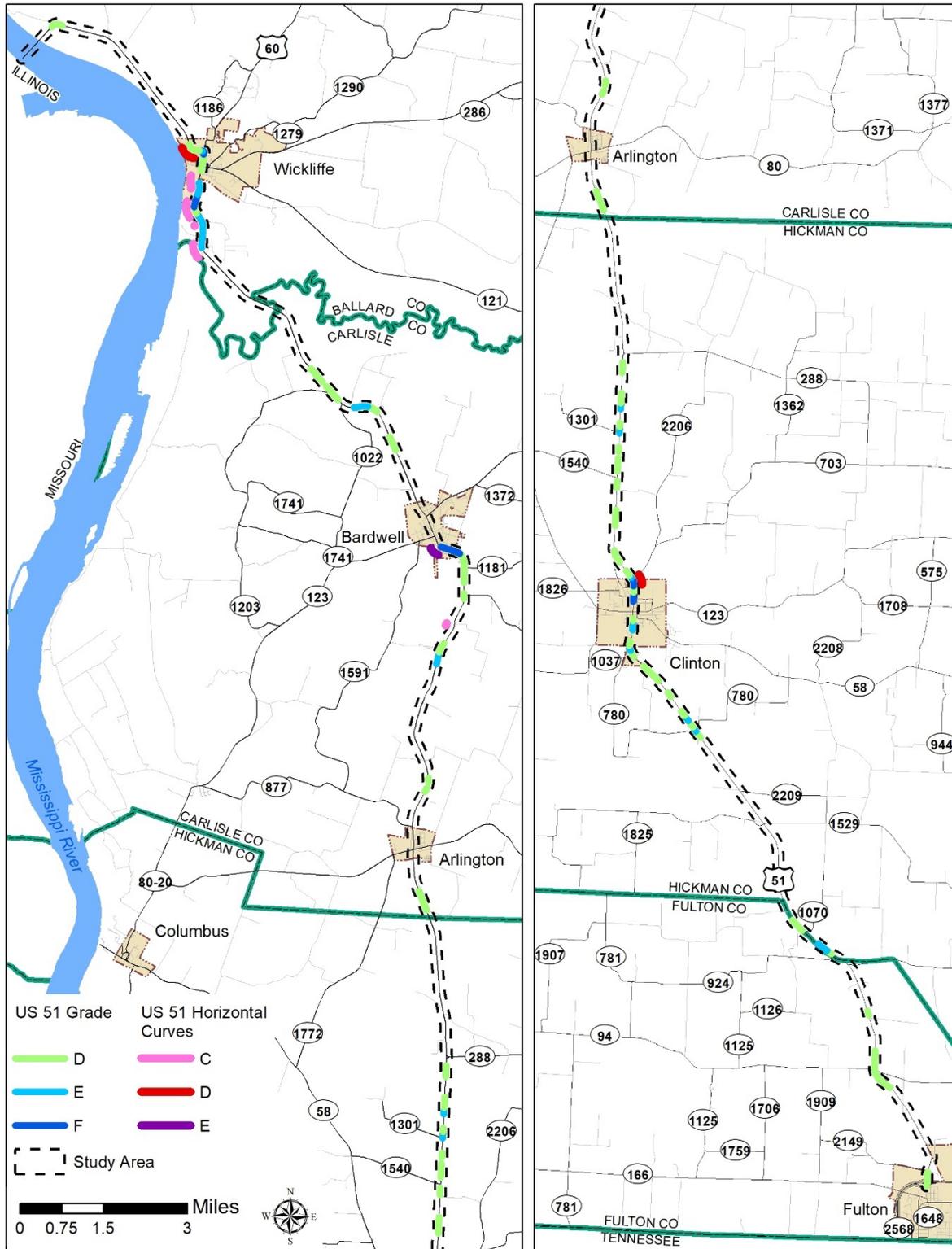
Much of the alignment satisfies KYTC's *Highway Design Manual* common practice guidelines; notable exceptions are discussed below and illustrated in **Figure ES-3**.

- The 1.3-mile stretch south of Wickliffe near Phoenix Paper (Ballard milepoint [MP] 1.8 to 3.1) exhibits eight steeper-than-recommended grades (up to 9%) and three Class C horizontal curves. Truck climbing lanes are provided in both directions: a half-mile northbound beginning at the truck entrance to Phoenix Paper and a quarter-mile southbound in front of Fort Jefferson Memorial Park.
- Approaching Bardwell's southern limits, a Class E curve at Front Street has warning flashers and advisory speed/curve signs. Continuing south, two Class F grades (up to 10%) may limit sight distance.



**FIGURE ES-2: PAVED WIDTH**

Other steep grades along the route are smaller but may limit visibility for motorists.



**FIGURE ES-3: STEEP HILLS AND SHARP CURVES**

There are 23 bridges along the corridor plus one overpass; two are in poor condition with potential funding to replace the poor-condition structure at Brush Creek as part of KYTC Item No. 1-10144.

## Traffic & Modal Users

US 51 carries 1,600–2,700 vehicles per day (vpd) along rural sections of the corridor, increasing in Clinton (4,600 vpd), Bardwell (3,600 vpd), and north of Wickliffe (6,600 vpd). Heavy trucks make up 15–45% of these volumes. Origin-destination flows suggest few thru trips travel the entire 40-



**FIGURE ES-4: WIDE-TURNING TRUCK**

mile corridor. Analyses indicated most roadway segments and intersections within the study area provide adequate capacity for existing traffic. The heaviest traffic volumes were observed at the US 51/US 60 intersection in Wickliffe; potentially restrictive geometry coupled with heavy truck volumes may influence operations as much as volume—as seen in **Figure ES-4**.

An annual 1.58% growth rate was applied to derive 2045 No-Build traffic volumes, increasing US 51 daily volumes to 2,200–9,200 vpd. Projected increases in traffic degrade operations with peak hour performance at Level of Service (LOS) E/F at three of six studied intersections.

The needs of all modal users are critical considerations.

- Many surrounding land uses represent agricultural fields, with slow-moving farm equipment relying on US 51 during key seasons. Oversize vehicles operating below the posted speed limit paired with limited passing opportunities appear to contribute to crash trends as motorists attempt to pass obstacles.
- Sidewalks are concentrated within towns and many of the walkways are disconnected, in potentially poor condition, or may not meet current Americans with Disabilities Act (ADA) requirements.
- Portions of the corridor link regional bicycle routes, but identified routes do not have dedicated, developed bicycle facilities, only scattered signage. Local leaders report very few cyclists travel the route.
- Bus service is limited to school buses, but several public entities provide demand-response transit services within the study counties.

## Crash Analyses

Five years of historical crash data (2019 – 2023) were evaluated for the study corridor, mapped in **Figure ES-5**. Three crashes (<1%) were fatalities, 39 (19%) resulted in injuries, and 160 (80%) resulted in property damage only (PDO). By type, most crashes involved a single vehicle (45%), and 20% represent head on or opposite direction sideswipes. Roadway departures represent 54% of crashes, which tend to be more severe than other crash types. Considering only crashes in rural stretches between towns, 79% of crashes were roadway departures.

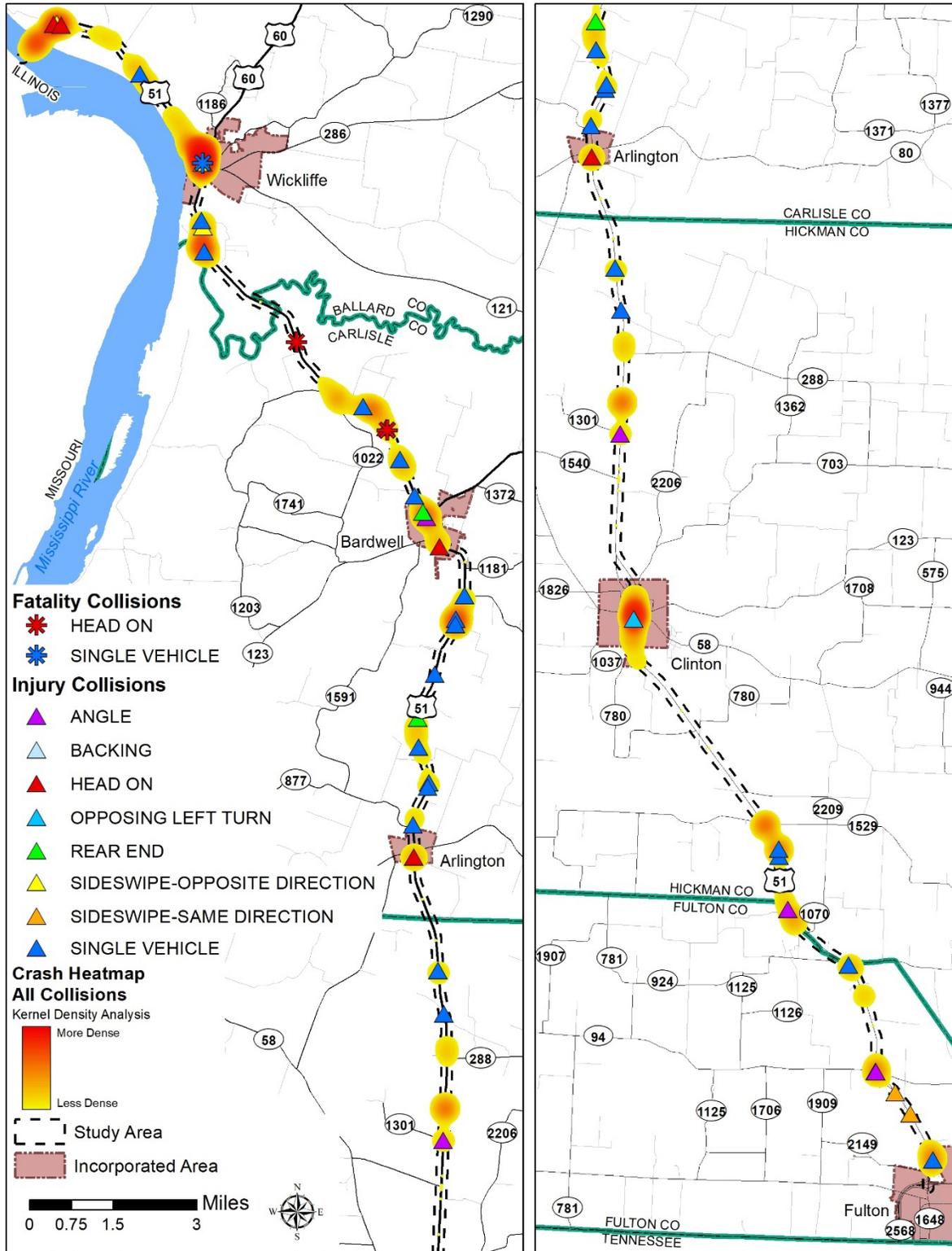
A broader look at ten years of crash records showed 11 fatalities and 27 severe injury crashes along US 51 over the past decade. These were concentrated in Carlisle County; single vehicle (55%) and head-on collisions (26%) were the most common types, which are often correlated with narrow pavement widths and higher severities.

Overall, 32% of reported 2019-2023 crashes involved commercial vehicles. Considering the importance of freight movements along US 51, analysts took a closer look: 65 commercial vehicle crashes were reported along US 51, with one resulting in a fatality and seven resulting in injuries. The highest truck volumes—and greatest number of truck crashes—occurred in Ballard County. Single vehicle (31%) and opposite direction sideswipes (29%) were most common along the 40-mile corridor. Roadway departures represent 67% of the dataset. About 27% occurred after dark and 19% were on wet/icy roadways.

## Coordination Meetings

The project team met at three key milestones throughout the study process and engaged with local officials and stakeholders (LO/S) twice.





**FIGURE ES-5: HEAT MAP WITH FATAL/INJURY CRASHES**

## Build Concepts

Build concepts were developed to address three primary goals:



**Improve safety, with a focus on higher-severity crash locations**



**Consider all users: trucks, farm equipment, pedestrians, etc.**



**Address both existing and future mobility needs**

Improvement concepts were developed in two categories: smaller scale safety improvements at intersections and in-town pedestrian facilities, and larger scale roadway realignment and widening options with higher costs and longer implementation timeframes. Smaller scale spot improvements are shown in the left panel of **Figure ES-6**. Larger scale concepts are shown in the middle panel of **Figure ES-6**; Concepts F and G reconstruct the route as a 2+1 and cover the entire study corridor outside of cities, divided into potential construction sections shown on the right.

Four additional Build concepts were added following heavy flooding in February 2025. Three low-lying areas in Hickman County were added, along with a fourth corridor widening option (Concept H) considering a Super-2 configuration.

**Table ES-1** provides additional information about proposed Build concepts: a brief description of each, estimated planning-level costs in 2024 dollars, 2019-2023 crashes within improvement limits, and a comparison of benefits and costs. It should be noted that larger scale concepts are less detailed and should be interpreted as order-of-magnitude level estimates.

While planning-level estimates aim to be conservative, larger projects having extended implementation timelines are likely to face significant cost increases.

A benefit-cost ratio (BCR) greater than 1.0 suggests the discounted present value of the benefits exceeds the discounted present value of the costs, suggesting the project may be worthwhile. As shown, many of the smaller scale safety improvements result in BCRs < 1.0, indicating monetized safety benefits outweigh capital costs. It should be noted that improved sidewalks provide additional benefits that are difficult to quantify at the planning stage—such as quality of life and



An initial Spot 4 was dismissed when adjusting traffic control at the US 51/US 62 intersection at Bardwell potentially addressed needs driving the larger Item No. 1-333 improvement.

**TABLE ES-1: BUILD CONCEPT OVERVIEW**

Concept	2024 Cost	Crashes	BCA	Priority
<b>Smaller Scale</b>				
1: US 51/US 60 Bypass Lane	\$530k	8	1.9	High
2: Safety Through Wickliffe	\$280k	20	46	High
3: Phoenix Drainage Improvements	\$1.2M	12	2.0	Med
5: Bardwell Sidewalks	\$9.8M	9	Qualitative	Med/Low
6: Bardwell Hill/Curve (Low Cost)	\$460k	2	3.1	High
7: US 51/KY 1301 Profile	\$1.9M	2	0.2	Low
8: 1-80203 Clinton Reconstruction	\$9.5M	20	Qualitative	In Design
9: Clinton Small-scale Safety Imp.	\$800k	20	3.7	High
10: US 51/KY 924 Signing	\$350k	3	1.3	Med
11: US 51/KY 94 Signing	\$460k	3	3.0	Med
12: US 51/Tom Looney Realignment	\$2.1M	7	1.4	High
<b>Larger Scale</b>				
A: 40-Foot-Wide North of Wickliffe	\$8M	7	<0.1	Combined
B: North Wickliffe Bypass	\$10-20M	21	0.2	Med
C: Curve at Railroad Overpass	\$6M	6	0.2	Med
D: Bardwell Hill Profile	\$10M	2	<0.1	Low
E: Cane Creek Curves	\$6M	7	0.4	Med
F: 2+1 Widening	\$250M	202	0.0-2.2	Dismiss
G: 2+1 Reconstruction	\$260M	202	0.1-2.1	Long-Term
H: Super-2 Widening	\$175M	202	0.1-2.3	Long-Term
X: Obion Creek Profile	\$22M	4	NA	Med
Y: Cane Creek Profile	\$3.0M	1	NA	Med
Z: Bayou de Chien Ditching	\$1.7M	1	NA	Med

In addition to monetary costs, effects on the human and natural environment were also considered. Some of the Build options are contained within existing pavement or within existing right-of-way and would result in minimal impacts. Others have a larger footprint and, therefore, the potential to impact the surrounding environment: water resources, managed conservation lands, historic resources, and more.

Details about each recommended improvement are shown on project sheets in **Section 8.1** (page 68). Concept F was dismissed in favor of Concept G, which addresses substandard alignment elements in addition to pavement width, resulting in similar costs and impacts as F. Concept H

also addresses pavement width and incorporates safe passing opportunities, but with fewer impacts and lower costs than either Concepts F or G. Therefore, Concept H is generally preferred over Concept G but both scenarios should be considered during any future design phases. Whichever template is selected, the same approach is expected to be applied along the entire corridor to create a consistent driver expectation rather than combining some sections of Super-2 and some 2+1.

Funding exists to advance improvements along some segments of the larger corridor. Some of the recommended improvements herein are low-cost actions requiring little advance preparation and could be implemented relatively quickly by KYTC maintenance forces. Others are higher-cost projects that must compete for funding and progress through the project development process.