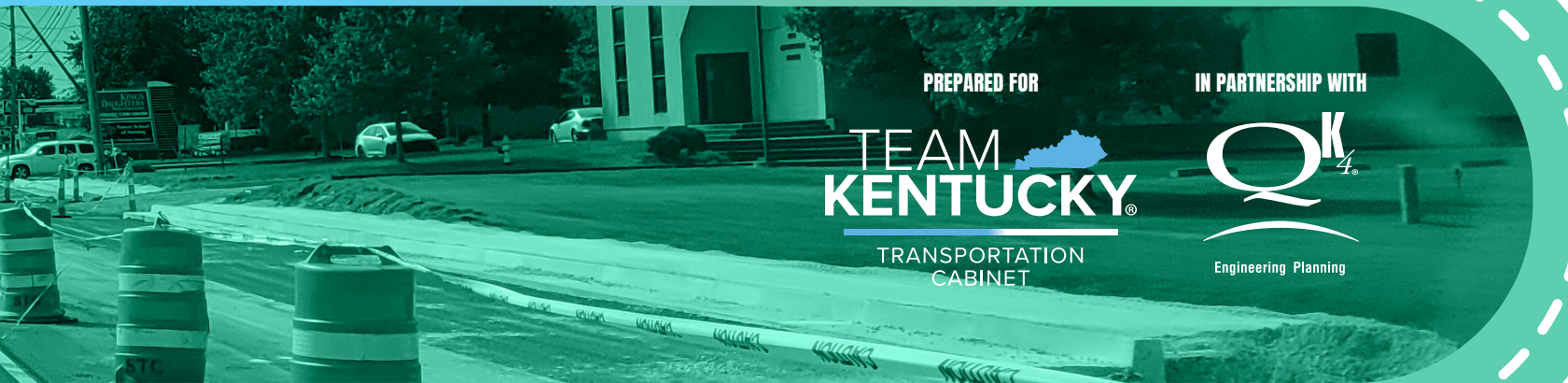
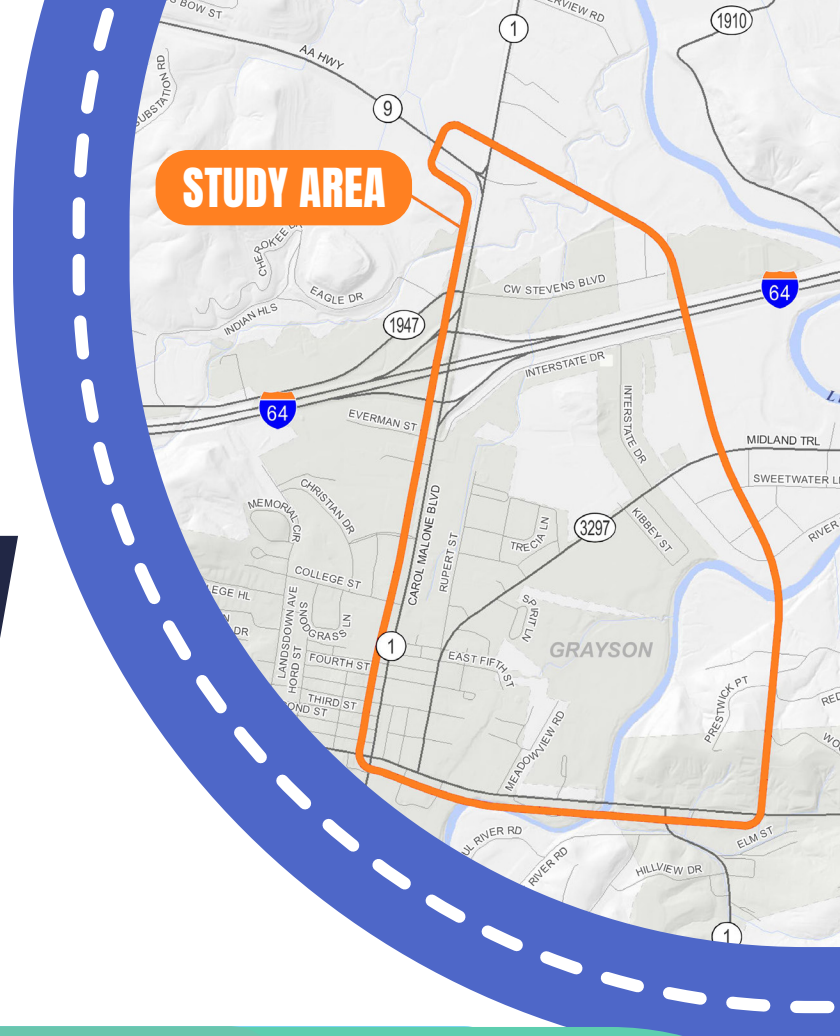


EXECUTIVE SUMMARY | MAY 2023

Grayson Mobility Study

CARTER COUNTY, KY



PREPARED FOR

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EXECUTIVE SUMMARY

Study Background

The Kentucky Transportation Cabinet (KYTC) initiated a corridor study in summer 2022 to identify mobility needs in and around the city of Grayson in Carter County. Grayson is in northeastern Kentucky, along the Little Sandy River, and accessible from Interstate 64 (I-64) at exit 172. KY 1/7 (Carol Malone Boulevard), the primary north-south highway through town, provides connections to KY 9 (AA Highway), I-64, and US 60 (Main Street). Downtown Grayson is located at the crossroads of US 60 and KY 1/7.

KYTC completed the *Grayson Small Urban Area (SUA)* Study for the city in 2018, identifying transportation improvement projects to address existing traffic and safety issues. A new eastern bypass between KY 9 and US 60 was one of the high priority projects identified in the SUA. Shown in **Figure ES-1**, the study area follows KY 1/7 from its intersection with US 60 at milepoint (MP) 10.646 north to its intersection with KY 9 (MP 12.000) and includes areas to the east near the initial bypass concept.

Study tasks include creating an inventory of existing conditions, defining goals for the study, coordinating with local officials and stakeholders, and forecasting existing and future traffic. The intent is to determine if the previously identified bypass concept merits further consideration in light of recent development and transportation changes in the city—including construction of the new Grayson Sports Park and ongoing widening efforts along KY 1/7 (Item No. 9-144). When

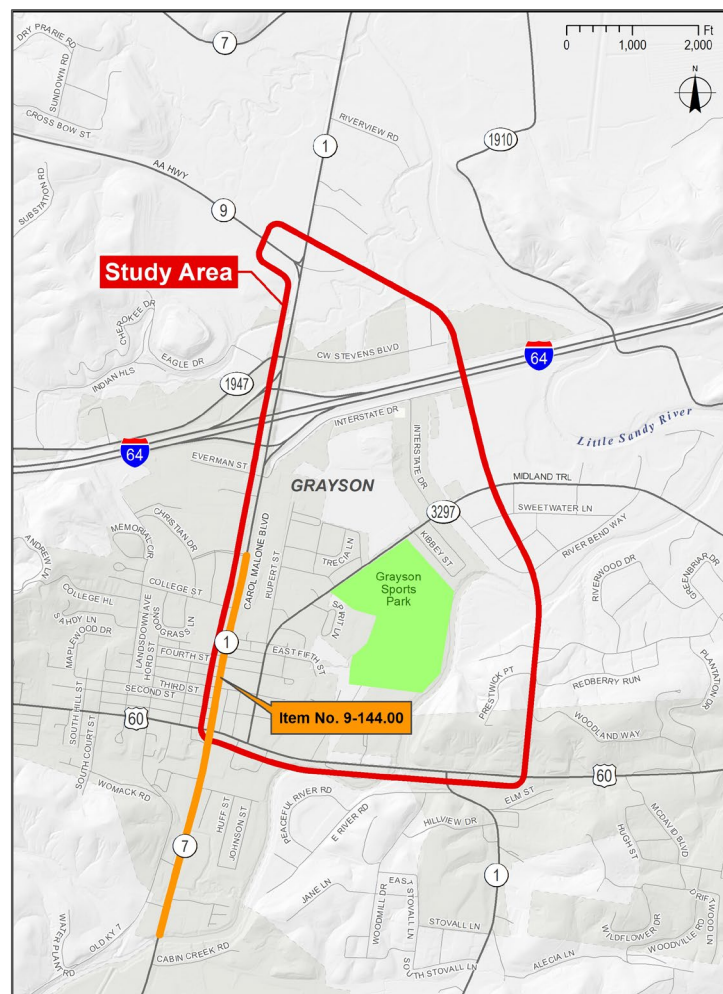


Figure ES-1: Study Area

complete, this portion of KY 1/7 will have a five-lane typical section with sidewalks plus dedicated turn lanes at key intersections.

Existing Conditions

KY 1/7 is classified as an urban principal arterial from the interchange with I-64 north to the AA Highway and classified as an urban minor arterial from the interchange south to US 60. It has four 12-foot-wide lanes with varying width shoulders. The posted speed limit is 35 mph south of the interchange with I-64.

During 2017-2021, 451 crashes occurred throughout the study area: 336 along KY 1/7 and the remainder associated with other highways. There were no fatalities but 13% resulted in injuries. By type, most are rear end crashes (34%), followed by angle crashes (29%), and same direction sideswipes (15%).

Estimates show 7,000 to 19,200 vehicles per day (vpd) travel along KY 1/7, with the busiest segment between Interstate Drive (MP 11.391) and the I-64 eastbound ramps (MP 11.543). Seven study intersections operate at Level of Service (LOS) D or better during both peak hours. The one exception is the signalized KY 1/7 intersection with KY 1947 and C.W. Stevens Boulevard, which operates at LOS E during the PM peak hour. Traffic is a mix of passenger cars, school buses, semi-trucks, and other vehicle types. Heavy truck traffic is common near the interchange, accessing the adjacent truck stops. Pedestrian traffic is also common along KY 1/7, with up to 260 pedestrians per day estimated.

Future Traffic

The KYTC District 9 Area Travel Demand Model, along with recent mainline and turning movement counts, formed the basis of future year 2045 traffic projections. Overall, the 2045 No-Build model projects a 0.65% annual growth rate; along KY 1/7, this increases traffic to 8,100 to 22,100 vpd. With increased volumes, stop-controlled cross-streets at Everman Street and Academic Parkway exhibit LOS E-F during the 2045 PM peak hour.

Build Concepts

Improvement concepts were developed based on a combination of input from the project team, a review of previous planning efforts, traffic projections, stakeholder feedback, and field reconnaissance. Concept types (**Figure ES-2**) were organized into three basic categories, based on geography: a partial KY 1/7 bypass, an improved east-west linkage, and a new western interchange.

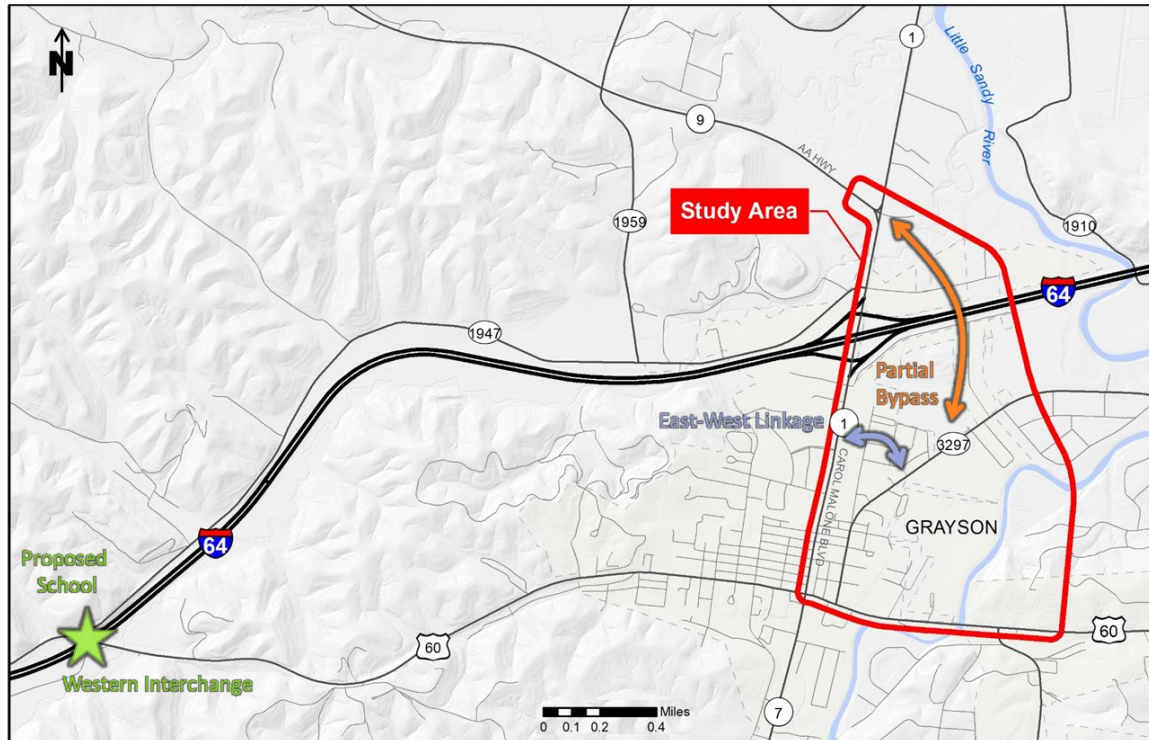


Figure ES-2: Build Concept Types

KY 1/7 Carol Malone Bypass. Initial concept development efforts examined the Grayson bypass concept identified in the 2018 SUA. The proposed bypass stretched from the KY 1/7/KY 9 (AA Highway) intersection to the US 60/KY 1 intersection east of town. The bypass was intended to reduce congestion along KY 1/7 and shift left turns away from its I-64 interchange. Each was identified as a long-term, high priority project at that time. However, economic and transportation changes around Grayson altered the city’s vision and priorities. These changes—including the new Grayson Sports Park, protected by federal Section 4(f) laws—have increased costs and impacts associated with the SUA bypass concept compared to the initial concept.

A range of Build concepts (**Figure ES-3**) were developed to illustrate the level of costs and impacts associated with a new cross-I-64 connection. Each assumes two 12-foot-wide travel lanes with 4-foot-wide paved shoulders and the option to add a 5-foot-wide sidewalk on one side. Grades pose a challenge as I-64 is higher in elevation than the parallel roads, with limited distance between to provide vertical clearance and tie back to ground level. Traffic forecasts show the bypass would carry an estimated 2,700 to 2,900 vpd if constructed north of KY 3297 (Midland Trail), diverting around 2,300 vpd from the congested KY 1/7 corridor. Planning-level costs by phase are presented in **Table ES-1**.

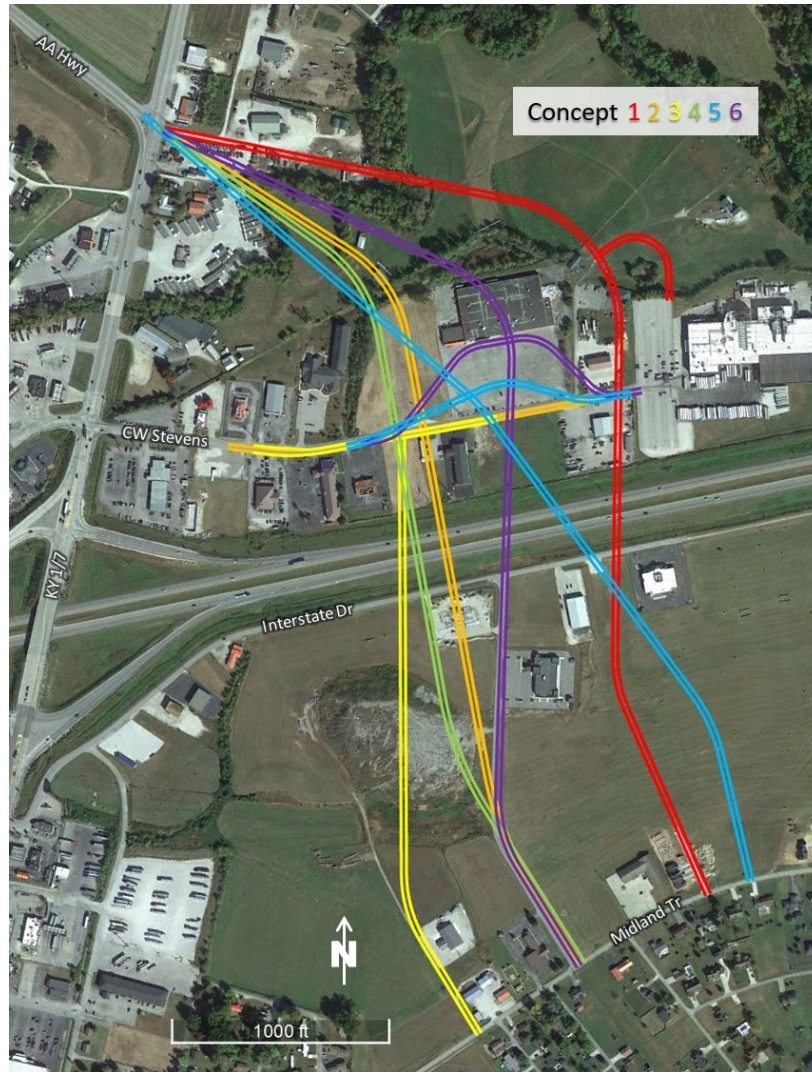


Figure ES-3: Range of Cross-I-64 Build Concepts

Table ES-1: Bypass Concept Cost Estimates (2022 Dollars)

Bypass Concept	Design	Right-of-Way	Utilities	Construction	Total
Concept 1 (Red)	\$4.5 M	\$7.0 M	\$7.1M	\$44.8 M	\$63.4 M
Concept 2 (Orange)	\$4.8 M	\$24.5 M	\$5.0 M	\$48.0 M	\$82.3 M
Concept 3 (Yellow)	\$3.3 M	\$17.9 M	\$7.8 M	\$33.4 M	\$62.4 M
Concept 4 (Green)	\$5.9 M	\$9.1 M	\$6.0 M	\$59.2 M	\$80.2 M
Concept 5 (Blue)	\$4.5 M	\$15.5 M	\$7.3 M	\$44.5 M	\$71.8 M
Concept 6 (Purple)	\$4.6 M	\$21.8 M	\$5.1 M	\$46.1 M	\$77.6 M

Midland Trail East-West Linkage. Another group of concepts explored an improved connection between KY 1/7 and KY 3297 (Midland Trail), driven by two transportation objectives:

- Provide safe, efficient routing (ideally with protected left turn signal phase) from the I-64 interchange to the new sports park.
- Improve accessibility to developable areas east of KY 1/7, along Interstate Drive and Midland Trail.

Shown in **Figure ES-4**, a range of Build concepts was developed to illustrate the level of costs and impacts associated with a new east-west linkage between KY 1/7 and KY 3297.



Figure ES-4: Range of Build Concepts for Midland Trail Links

Each assumes two 11-foot-wide travel lanes with curb/gutter and 5-foot-wide sidewalk on one side (Concepts B-E) or 4-foot shoulders (Concept A). Access management along KY 1/7 is incorporated into each Build concept, though specifics would be worked out during future project development phases. The northernmost (Concept A) impacts truck parking, likely requiring mitigation, but has the fewest impacts on homes and businesses. The central three options (Concepts B-D) lead to property impacts within a likely environmental justice neighborhood. Planning-level costs by phase are presented in **Table ES-2**.

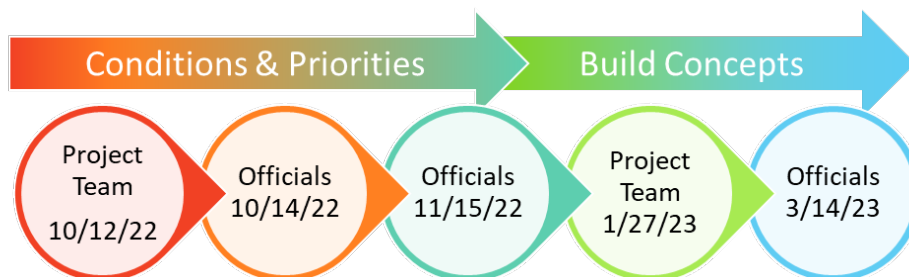
Table ES-2: East-West Concept Cost Estimates (2022 Dollars)

East-West Concept	Design	Right-of-Way	Utilities	Construction	Total
Concept A (McClave)	\$0.5 M	\$5.2 M	\$4.7 M	\$5.1 M	\$15.5 M
Concept B (Super 8)	\$0.5 M	\$3.0 M	\$2.1 M	\$5.0 M	\$10.6 M
Concept C (Academic)	\$0.3 M	\$3.3 M	\$1.6 M	\$2.8 M	\$8.0 M
Concept D (UTC)	\$0.2 M	\$3.1 M	\$0.5 M	\$2.3 M	\$6.1 M
Concept E (College)	\$0.2 M	\$4.3 M	\$0.5 M	\$1.6 M	\$6.6 M

New Western Interchange. While no Build concepts were developed for a new interchange, potential traffic impacts were modeled to help local officials and stakeholders determine whether future project development activities are warranted. Even with the new school drawing additional trips to the vicinity, all four ramps combined are projected to carry an estimated 2,800 vpd in 2045.

Meetings

Collaborative project team and local official/stakeholder (LO/S) coordination efforts occurred throughout the course of the study.



Recommendations

In light of anticipated 2045 traffic volumes, benefits (e.g., crash reductions, travel time savings, congestion reductions) would not outweigh costs for either the western interchange or cross-I-64 connector. Neither Build concept is recommended to advance at this time; however, each concept is included within the Continuous Highway Analysis Framework (CHAF) database should conditions or priorities change over time.

Likewise, the southernmost bypass segment (Item No. 9-80202) is not recommended to advance at this time. This is consistent with local officials' input expressed during fall 2022 coordination meetings, which noted concerns with impacts to area businesses and the newly constructed Grayson Sports Park.

A new East-West Linkage between KY 1/7 and Midland Trail is recommended to advance for additional project development efforts. Concept A (McClave) was preferred by LO/S and provides an opportunity to reduce conflict points near the interchange by incorporating more stringent access control measures in the vicinity. However, any of the five Build concepts serves a similar purpose and should be evaluated during preliminary engineering phases. Further funding will be necessary to advance any Build concept to the design phase. Coordination with local officials, key stakeholders, and the public will be critical considering the potential for impacts to nearby community resources.