



Executive Summary

KY 8 Scoping Studies
Mary Ingles Highway Scoping Study



Prepared for:



Kentucky Transportation Cabinet
Central Office, Division of Planning
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Prepared by:



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Executive Summary

As a component of the KY 8 Scoping Studies in Kenton and Campbell County, Stantec was asked to examine the underlying geotechnical issues adversely affecting portions of the route in eastern Campbell County and to develop conceptual alternatives and cost estimates to address them. The KY 8 - Mary Ingles Highway study area includes the existing KY 8 corridor in Campbell County from Dodd Drive in Dayton (MP 3.266) to KY 445 in Fort Thomas (MP 7.902). The study portion, shown on **Figure ES-1**, is 4.6 miles in length.

Departing Newport, the Mary Ingles Highway carries approximately 1,400 vehicles per day as it travels along the Ohio River through Dayton and Fort Thomas in eastern Campbell County. Between Dayton and the I-275 underpass, KY 8 has been plagued with pavement and embankment slope failures as the roadway continually slides into the river. The roadway embankment slope on the east / Ohio River side of the roadway consists largely of alluvium materials of silt, clay, and gravel. The west side of the roadway is in a cut section, with the adjacent hillside consisting primarily of shale. The roadway is located at the interface of the shale and the Ohio River alluvium, resulting in unstable slopes. The weight of the roadway structure combined with drainage issues in both the shale materials and roadway result in embankment slope failures, roadway subgrade failures, and general movement of the pavement structure.

While maintenance activities have been undertaken to minimize damage to the roadway and inconvenience to drivers, KYTC District 6 is seeking alternatives to the on-going maintenance needs. KYTC District 6 Maintenance has spent, on average, about \$77,000 per year over the past five years in on-going maintenance in addition to costs that have been incurred when a pavement break has occurred that requires closing the roadway and addressing the failure. The Purpose and Need for the project is as follows:

*KY 8 (Mary Ingles Highway) travels along the Ohio River through Dayton and Fort Thomas in eastern Campbell County. Between Dayton and KY 445, KY 8 has been plagued with slippage issues as the roadway is sliding towards the river. While maintenance activities have repeatedly been undertaken to minimize damage to the roadway and to maintain a usable driving surface, **the purpose of the project is to provide a permanent solution to the underlying geotechnical issues.***

The project team examined the geotechnical conditions and other similar projects in northern Kentucky to develop conceptual improvement alternatives. North of the railroad underpass (i.e. KY 8 travels under the railroad bridge) at MP 5.0, two reconstruction options were developed, one that reconstructs the roadway on its existing alignment (alternative 1a), and one that realigns the roadway (alternative 1b) west of the rail line. South of the railroad underpass, a single improvement concept was developed (alternative 2) that improves the route within the existing corridor but shifts it slightly away from the rail line.

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MARY INGLES HIGHWAY SCOPING STUDY

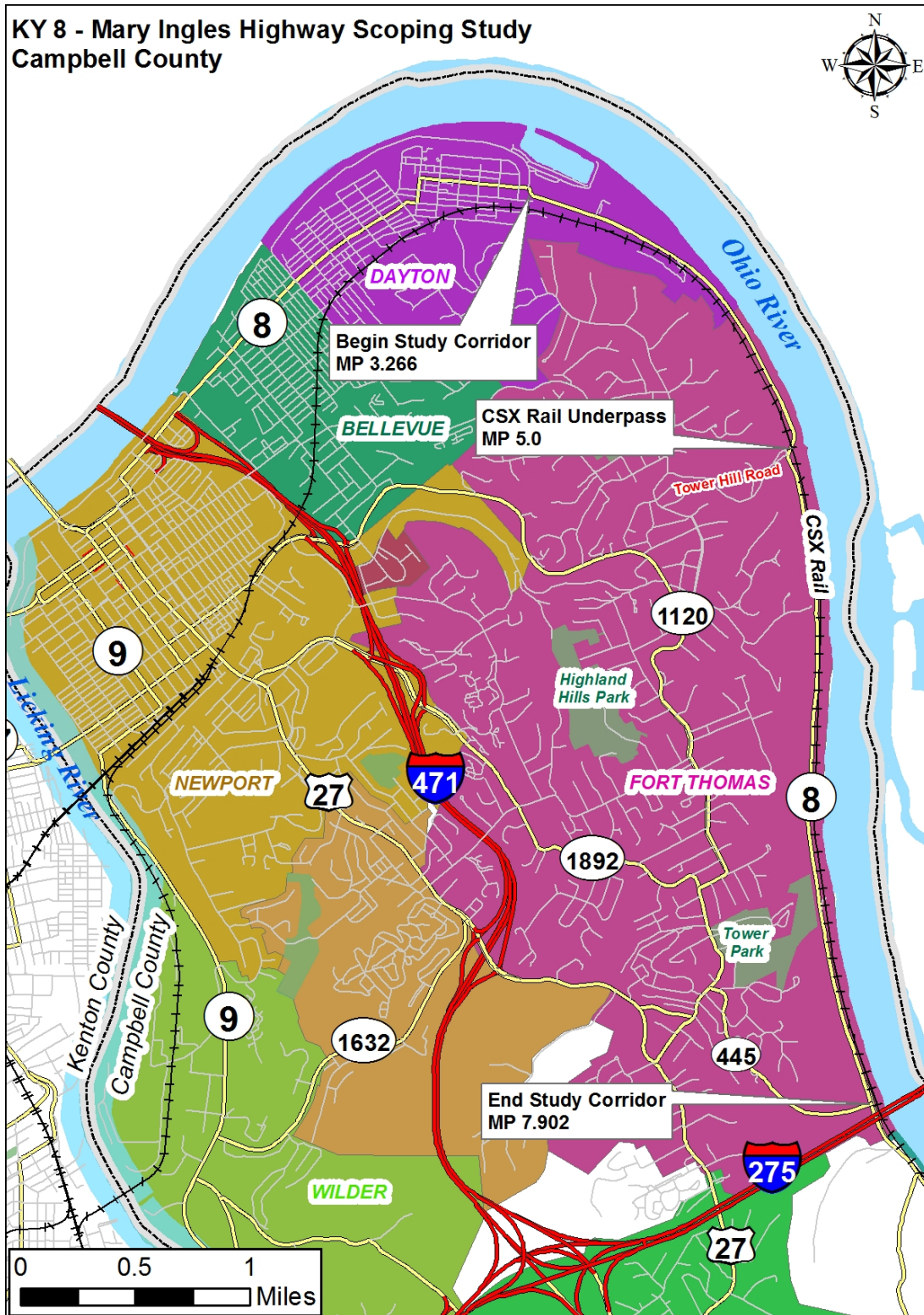


Figure ES-1: Study Area – KY 8 (Mary Ingles Highway) Scoping Study

**KY 8 SCOPING STUDIES
MARY INGLES HIGHWAY SCOPING STUDY**

While extensive geotechnical investigations, analyses, and designs would be required in future project development phases, these concepts were based on the best information available. Where the roadway is reconstructed in-place (alternative 1a and alternative 2), the existing pavement section and subgrade materials are removed and replaced with more suitable materials, and underdrains are included within the new subgrade to improve drainage. Tie-back walls are used to stabilize fill slopes. As an alternative to reconstruction in place, a realignment (alternative 1b) was considered to move KY 8 west off the railroad and away from the Ohio River north of MP 5.0. The construction cost estimates for these reconstruction alternatives, summarized in **Table ES-1**, range from \$62.3 to \$67 million.

A reconstruction project of this nature would likely take more than one year to build and maintaining traffic on the existing route would likely be infeasible given the location and magnitude of the work to be done. One business (Aquaramp Marina) would not have roadway access during construction. The acquisition of this business in addition to three home acquisitions would result in right-of-way costs of approximately \$4.5 million.

There are existing utilities that cross and run along the existing roadway that would need to be relocated as part of the reconstruction of KY 8. Northern Kentucky Sanitation District No. 1 has 3.3 miles of sanitary sewer force mains, gravity sewers, and manholes that run parallel to existing KY 8. Duke Energy has 4,000 feet of gas mains and the Northern Kentucky Water District has 4,000 feet of water lines running parallel to existing KY 8. The Northern Kentucky Water District also has two water intake facilities in the study corridor, which have 16-inch steel encasement waterlines that cross KY 8. In total, the utility relocation costs are estimated to be \$8.0 million.

Project	Description	Length	Design (\$ Millions)	Right-of-Way (\$ Millions)	Utility Relocation (\$ Millions)	Construction (\$ Millions)
1a. Slope Stabilization north of MP 5.0	Replace pavement section and stabilize fill slope using a tieback wall between Marina entrance at MP 4.0 and RR underpass at MP 5.0.	1.0 Miles	\$1.2	--	--	\$8.2
1b. Realign KY 8 north of MP 5.0	Realign KY 8 north of MP 5.0 to connect to 6th Avenue in Dayton.	1.6 Miles	\$1.8	--	--	\$12.9
2. Shift Alignment and Slope Stabilization south of MP 5.0	Shift KY 8 west from RR underpass at MP 5.0 to KY 445 at MP 7.9 and replace pavement section. Stabilize fill slope using a tieback wall.	2.9 Miles	\$7.8	--	--	\$54.1
SUBTOTAL - Project 1a and 2		3.9 Miles	\$9.0	\$4.5	\$8.0	\$62.3
SUBTOTAL - Project 1b and 2		4.5 Miles	\$9.6	\$4.5	\$8.0	\$67.0

Table ES-1: Preliminary Cost Estimates for Reconstruction of Mary Ingles Highway

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Given the extremely high cost of reconstructing the roadway within the study area compared to the relatively low demand for travel within the corridor, consideration was given to potential rerouting options where KY 8 would be re-designated to other existing roadways and the study portion of Mary Ingles Highway would be closed to through traffic. State-maintained roadways within Campbell County were considered under this analysis, with a goal of identifying options that provided similar or better roadway geometrics and traffic operation conditions compared to the existing KY 8. Six rerouting concepts were identified, with four that connect to KY 8 at the KY 445 (River Road) intersection and two that connect at the KY 1998 (Industrial Road) intersection. Each of these options, summarized in **Table ES-2**, can accommodate the additional traffic that would divert away from KY 8 at a relatively low cost, but further examination and discussion would be required before an option could be implemented.

Routing Options	Name	Description	Distance (miles)*	Approx. Travel Time (minutes)*	Traffic Signals*	Comments
Existing	KY 8	Existing Mary Ingles Highway	6.8	14	9	
KY 445 (River Road) Options	KY 1120 (Fort Thomas Ave.)	US 27 (York St.) to KY 1120 (10th St./ Fort Thomas Ave.) to KY 445	7	21	24	Passes through dense residential and commercial development.
	KY 1892 (Grand Ave.)	US 27 (York St.) to KY 1892 to KY 1120 to KY 445	5.7	17	23	Passes through dense residential and commercial development.
	I-471	I-471 to US 27 (exit 2) to KY 1120 to KY 445	5.3	9	5	Shortest distance and travel time.
	US 27 (Alexandria Pike)	US 27 (York St./ Alexandria Pike) to KY 1120 to KY 445	5.4	16	28	
KY 1998 (Poole's Creek Road/ Industrial Road)	US 27 (Alexandria Pike)	US 27 (York St./ Alexandria Pike) to KY 1998	9.9	26	40	KY 1998 suffers from underlying geotechnical issues and some areas with relatively poor geometry.
	KY 9 (Licking Pike)	KY 8 (4th St.) to KY 9 to KY 1998	11.2	24	20	KY 9 will be reconstructed through Newport (KYTC Item No. 6-8101.00)

*All measurements are from the I-471 interchange in Newport to the KY 445 intersection with KY 8 (KY 1998 options are measured to the KY 1998 intersection with KY 8.)

Table ES-2: Rerouting Concepts for KY 8 in Campbell County

If KY 8 were to be closed to through traffic, one business (Aquaramp Marina) and three homes would no longer have roadway access. Unless alternative access is provided, or a portion of KY 8 is maintained by an agency other than KYTC, these acquisitions would result in right-of-way costs of approximately \$4.5 million. Further, there is utility infrastructure in the KY 8 corridor that would require access for maintenance, including overhead power lines and water intake facilities for the Northern Kentucky Water District.

The study portion of KY 8 is also a popular corridor for bicycle enthusiasts and is designated by the Ohio-Kentucky-Indiana Regional Council of Governments (OKI) as a preferred bicycle route.



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If the roadway is closed to through traffic, either temporarily (during reconstruction activities) or permanently, coordination with OKI and bicycle advocacy groups will be necessary. While it may be considered desirable to maintain a shared-use facility in the KY 8 corridor should it be closed to vehicular traffic, the construction and on-going and long-term maintenance of such a facility would be the responsibility of an agency other than KYTC.

To better quantify the long-term costs for the alternatives under consideration, some effort was provided to estimating the future expenditures required. The three alternatives include doing nothing (the No-Build Scenario), reconstructing the existing alignment, and closing KY 8 to through traffic and rerouting it to other state-maintained facilities. The resulting expenditures (in year of expenditure dollars) are shown in **Table ES-3**.

Methodology	Initial Capital Expense	Right-of-Way Costs	Annual Maintenance Costs without reconstruction	Cost for Pavement Rehabilitation or Mill and Overlay in 2025	Inflation Rate	Expenditures Through 2030 (in Year of Expenditure dollars)
I. No-Build (Continue maintenance, as required)	\$0	\$0	\$350,000	\$6,200,000	2.40%	\$12,440,000
II. Reconstruct KY 8 (Note: capital costs assumed in year 2020 dollars)	\$68,500,000	\$4,500,000	\$350,000	\$1,000,000	2.40%	\$75,080,000
	\$73,700,000	\$4,500,000	\$350,000	\$1,000,000	2.40%	\$80,280,000
III. Reroute KY 8 to Other State Routes	\$1,000,000	\$4,500,000	\$350,000	\$0	2.40%	\$5,850,000

Table ES-3: Estimated Capital Expenditures through 2030 for KY 8 Alternatives

Based on these assumptions, the No Build alternative would result in expenditures of more than \$12.4 million over the next 15 years. The reconstruction alternatives would range from just over \$75 million to nearly \$80.3 million. The rerouting alternative would have the lowest overall cost at approximately \$5.85 million