

EXECUTIVE SUMMARY

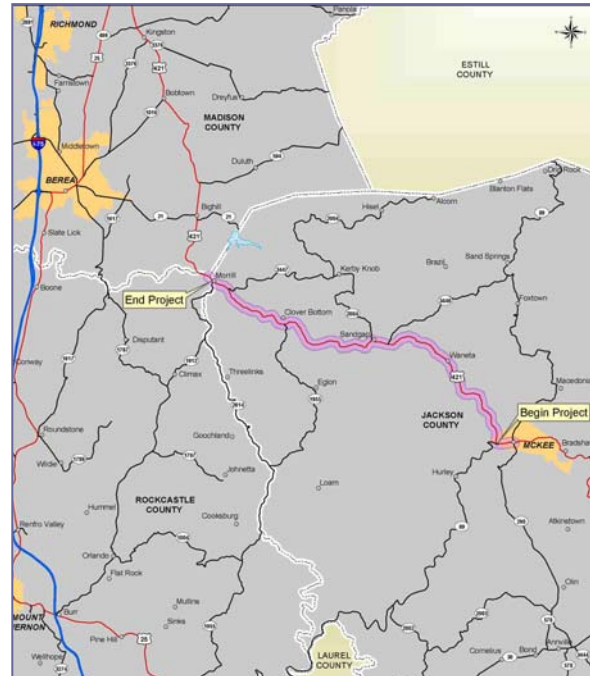
US 421 ALTERNATIVES STUDY, JACKSON COUNTY

Reconstruction of US 421 From KY 89 at the northern city limits of McKee to the recently improved section of US 421, just north of the Jackson-Rockcastle County line.

ITEM #11-113.00

The Kentucky Transportation Cabinet (KYTC) has undertaken this planning study to develop and evaluate alternatives for the possible reconstruction of US 421 from KY 89 at the northern city limits of McKee in Jackson County to the recently improved section of US 421 near Bighill in Rockcastle County, just north of the Jackson-Rockcastle County line. This project is identified in the Kentucky Transportation Cabinet's (KYTC) FY 2003-2008 Six Year Highway Plan as Item No. 11-113.00.

The existing US 421 corridor is a 2-lane roadway through rolling terrain with 9-foot travel lanes and 2-foot shoulders. The posted speed limit ranges from 35 mph to 55 mph.



Project Purpose and Need

The following summarizes the purpose and need established for this project:

- The proposed project is needed to provide improved regional access along an improved US 421 route that will:
 - Support economic development initiatives in Jackson County by opening up this low-income area.
 - Improve access to jobs, hospitals, services, shopping, and schools in Berea, Richmond, and Lexington.
- An improved highway is needed to help alleviate public concerns about safety and travel time along the existing US 421 corridor by providing improved roadway geometrics.

Traffic Considerations

The existing traffic volumes along US 421 in the study area range between 3,930 and 5,160 vehicles per day (vpd). Existing truck percentages are approximately 7.0% of the total traffic along the study route.

The study portion of US 421 in Rockcastle County (0.07 miles) currently operates at level of service (LOS) B, while the Jackson County study portion of US 421 (14.78 miles) operates at LOS D and E. All other study area routes operate at LOS C or better.



Assuming no transportation improvements, Year 2025 traffic was estimated using historic growth rates based on 23 years of travel data for Jackson County. Traffic along US 421

was forecast with a compounded annual growth rate of 2.28 percent through Year 2025, resulting in an increase of over 60 percent from 2003 to 2025, or an ADT range from 6,500 to 8,500 vpd.

With no improvement, the study portion of US 421 in Rockcastle County (0.07 miles) is expected to operate at LOS C in 2025, while the Jackson County segment of US 421 (14.78 miles) should continue to operate at LOS D and E.

Environmental Issues

A number of environmental factors and sensitive land uses were identified through the course of this study, including:

- Daniel Boone National Forest;
- Sheltopee Trace hiking/Off-Highway Vehicle (OHV) trail;
- Potential endangered, threatened or special concern species;
- Cemeteries and unmarked graves;
- Potential water quality issues related to Owsley Fork Reservoir and the Horse Lick Creek watershed and its tributaries;
- Environmental justice issues related to low-income populations;
- Impacts to family clusters residing along the corridor due to potential relocations;
- Impacts to farmsteads; and significant historic structures or archaeological sites, including the Cox Simpson House at the northern terminus.



Public Involvement

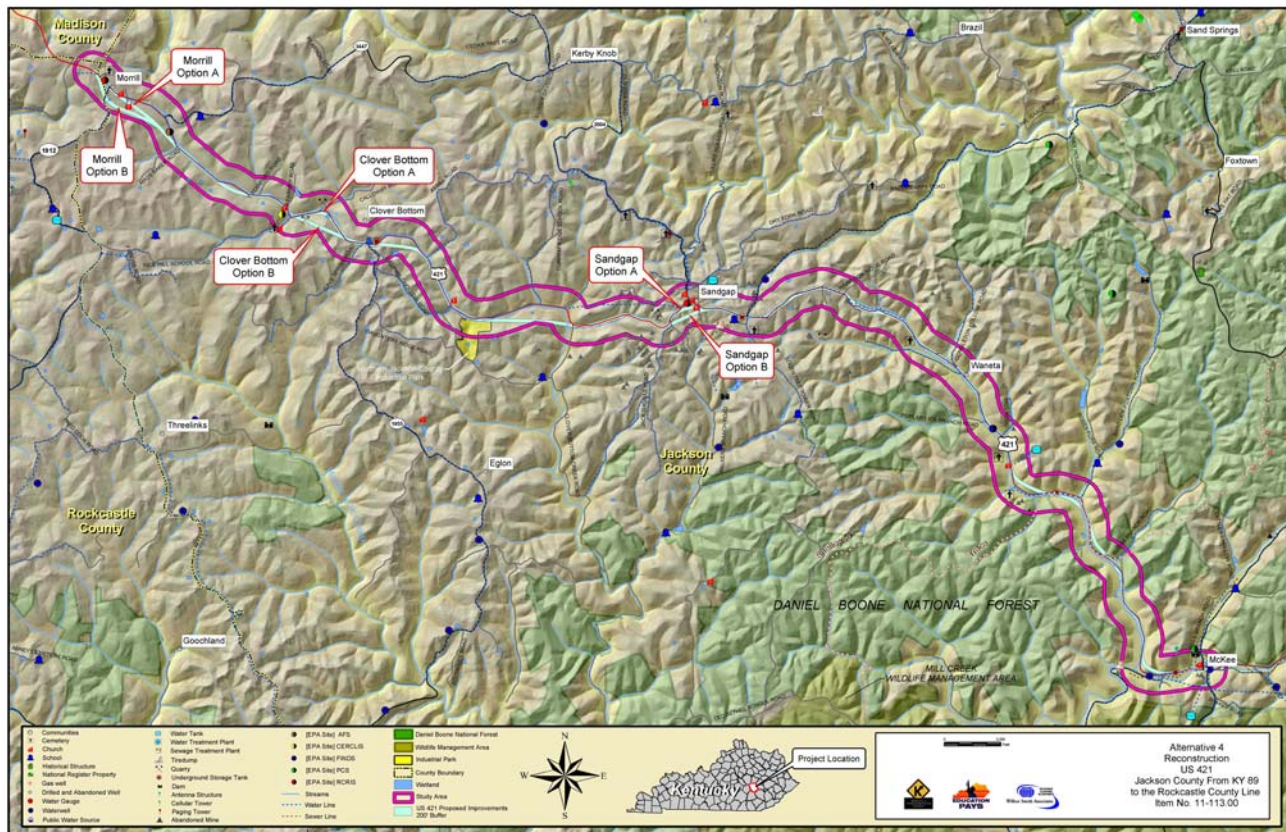
Throughout the study, local citizens, public officials and interest groups were given the opportunity to provide input. Comments and discussions from the local public indicate that there is overwhelming support for the reconstruction of US 421.



Proposed Improvement Alternatives

The following four (4) alternatives were developed for the potential reconstruction of US 421:

- Alternative 1 is the No-Build option, which recommends no improvements to existing US 421.
- Alternative 2 is a combination of 13 spot improvements along the route. Locations were selected based on safety concerns (crash history), horizontal alignment, vertical alignment, other geometric characteristics, and public input.
- Alternative 3 is a two-lane reconstruction, with turning and passing lanes, of the entire study length of US 421 along the existing alignment to the maximum extent possible.
- Alternative 4 is a total reconstruction, with turning and passing lanes, on and off the existing alignment as needed to improve horizontal curvature, with options to bypass Morrill, the rock quarries at Clover Bottom, and Sandgap (designated as Option B at each location). Partial control access should be used, where feasible.



Note: Archeological Sites are not shown due to the sensitive nature of the data.

Recommendations

Preferred Alternative

Improvement Alternative 4 via the bypass option (Option B) at Sandgap, Clover Bottom, and Morrill is the preferred improvement alternative. Based on the evaluation of the alternates, it was felt that none of the other alternates were as effective in meeting the overall purpose and need of the project. This improvement would give special attention to the crossing of Sheltoewe Trace trail.

Spot Improvements

While the team agreed on a recommendation for a long-term improvement, there were concerns that budget limitations might delay this improvement for many years. Therefore, the project team felt that some low-cost, short-term improvements were needed to address some of the more immediate needs, since funding might be more readily available for low-cost improvements.

The project team agreed that four (4) of the 13 spot improvements proposed as part of Improvement Alternative 2 be recommended for implementation, including three (3)

improvements in the areas bypassed by the preferred alternative, as follows:

- Spot Improvement 1: Straighten the curve north of KY 89 near McKee at the southern terminus of the project.
- Spot Improvement 6: Provide a left turn lane at KY 2004 in Sandgap.
- Spot Improvement 10: Reduce grade and horizontal curvature near rock quarries in Clover Bottom.
- Spot Improvement 13: Reduce the grade and add a left turn lane at KY 1912 in Morrill.



Alternates for Phase 1 Design

To prepare for the preliminary design and environmental assessment in the next phase of project development (Phase 1 Design), it was recommended that a minimum of three alternates, including the No-Build, be evaluated. Therefore, the project team recommends that Alternates 1, 3, and 4 be carried forward for further consideration in the next phase of project development.

Cost Estimates

As shown in the following table, the preferred alternative, Alternative 4 with the bypass option (Option B) at Sandgap, Clover Bottom, and Morrill is expected to cost approximately \$99.55 million. No funds are scheduled at this time for the design or construction of this project.

Phase	Anticipated Project Cost
Design	\$6,720,000
Right-of-Way	\$8,550,000
Utility Relocation	\$3,710,000
Construction	\$80,570,000
Total	\$99,550,000

Another \$4,990,000 is estimated to complete spot improvements 1, 6, 10, and 13, as recommended. Total cost estimates for each spot improvement are summarized below:

- Spot Improvement 1 – \$1,205,000
- Spot Improvement 6 – \$ 440,000
- Spot Improvement 10 – \$3,045,000
- Spot Improvement 13 – \$ 300,000

Construction Considerations

A number of issues were identified through the course of this study that should be considered as part of future construction phases, as follows:

- Careful consideration should be given to erosion control methods and to decreasing the amount of non-point source pollution that reaches surface and ground water.
- The construction of this project must not increase the flood hazard for any property within the project's corridor.

- Construction period air quality impacts will need to be evaluated to (1) expose the potential short-term effects of site preparation, demolition, materials storage and construction actions and (2) determine if any appropriate mitigation commitments are to be incorporated into the project plans.
- If deemed necessary, a more detailed study of karst topography within the study area should be considered as the project develops.
- Rock coring and a geologic evaluation will be required before specific cut slope recommendations can be presented.
- Special consideration may be required to mitigate problems associated with contour strip-mined or deep-mined areas, such as acid mine drainage and subsidence, if these areas can not be avoided.
- Groundwater seeps or springs should be expected in down dip cut areas, particularly those intersecting a coal seam. Special construction consideration will be required to collect and pipe groundwater in these areas.

Additional Information

Additional information regarding the US 421 Alternatives Study can be obtained from the following KYTC Division of Planning staff members:

- Annette Coffey, P.E., Director
- Daryl J. Greer, P.E., Branch Manager
- Jimmy C. Wilson, P.E., Team Leader
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