Data Needs Analysis

Scoping Study

KY 10, Campbell County
From MP 4.57 to 4.61
Item No. 6-1077.00

Prepared by the KYTC
Division of Planning and
KYTC District 6

September 2012

KENTUCKY TRANSPORTATION CABINET

I. PRELIMINARY PROJECT INFORMATION

County:	Campbell	**Item No.:**	6-1077.00			
Route Number(s):	KY 10	**Road Name:**	Flagg Springs Pike			
Program No.:	8664301D	**UPN:**	FD52	19	10	004-005
Federal Project No.:	BRO 0603 228	**Type of Work:**	Bridge Replacement			

2012 **Highway Plan Project Description:**

Replace bridge on KY 10 over Twelve Mile Creek southeast of KY 1997

Beginning MP: 4.57 **Ending MP:** 4.61 **Project Length:** 0.04

Functional Class.: ☐ Urban ☑ Rural — Collector

State Class.: ☐ Primary ☑ Secondary

Route is on: ☐ NHS ☑ NN ☐ Ext Wt

MPO Area: Not Applicable

Truck Class.: A

In TIP: ☑ Yes ☐ No

% Trucks: 5.30%

ADT (current): 638 (2009)

Terrain: Rolling

Access Control: ☐ None ☑ Permit ☐ Fully Controlled ☐ Partial Spacing:

Median Type: ☑ Undivided ☐ Divided (Type):

Existing Bike Accommodations: None **Ped:** ☐ Sidewalk

Posted Speed: ☐ 35 mph ☐ 45 mph ☑ 55 mph ☐ Other (Specify):

KYTC Guidelines Preliminarily Based on : 45 **MPH Proposed Design Speed**

Roadway Data:	**EXISTING**	**COMMON GEOMETRIC PRACTICES***
No. of Lanes	2	Min. 2
Lane Width	9 ft	11 ft
Shoulder Width	3 ft	5 ft
Max. Superelevation**		6%
Minimum Radius**	700 ft	660 ft
Maximum Grade	2%	8%
Minimum Sight Dist.		360
Sidewalk Width(urban)	N/A	N/A
Clear-zone***	14 ft	8-14 ft

Existing Rdwy. Plans available? ☐ Yes ☑ No

Year of Plans:

☐ Traffic Forecast Requested

Date Requested:

☐ Mapping/Survey Requested

Date Requested:

Type:

Project Notes/Design Exceptions?:

*Based on proposed Design Speed, **AASHTO's A Policy on Geometric Design of Highways and Streets, ***AASHTO's Roadside Design Guide

Bridge No.*:	019B00006N	(Bridge #2)
Sufficiency Rating	15.1	
Total Length	158.14 ft	
Width, curb to curb	20 ft	
Span Lengths	50 ft	
Year Built	1935	
Posted Weight Limit	15 tons	
Structurally Deficient?	Yes	
Functionally Obsolete?	No	

Existing Geotech data available? ☐ Yes ☑ No

*If more than two bridges are located on the project, include additions sheets.

II. PROJECT PURPOSE AND NEED

A. Legislation

The following funding was listed in the 2012-2018 Six Year Plan.

Funding	*Phase*	*Year*	*Amount*
BRO	D	2013	$500,000
BRO	R	2015	$150,000
BRO	U	2015	$50,000
BRO	C	2017	$1,150,000

B. Project Status

The 2012-2018 Six-Year Highway Plan includes phases from Design through Construction. This project was identified through KYTC's bridge evaluation process and was not a legislative addition. No design work has been completed to date; design funds are expected to be authorized in Fiscal Year 2013.

C. System Linkage

KY 10 is a collector road which provides access primarily to residences and local roads. It also provides the most direct route from these residences to Alexandria, the county seat.

D. Modal Interrelationships

No significant freight traffic generators are known to rely on this section of KY 10.

E. Social Demands & Economic Development

This section of KY 10 primarily primarily provides access to local residences.

F. Transportation Demand

The last traffic count for this section of roadway was conducted in 2009 and showed an ADT of 638. The traffic count prior to this count showed an ADT of 672. Traffic has decreased slightly in recent years.

II. PROJECT PURPOSE AND NEED (cont.)

G. Capacity

The existing two-lane configuration provides adquate capacity to carry existing traffic volumes.

H. Safety

The critical rate factor for this stretch of road is 0.234. This factor is relatively low, indicating that safety is likely not a major concern.

I. Roadway Deficiencies

The major deficiencies in this area are associated with the bridge itself: The bridge is rated as being structurally deficient, the concrete bridge railings are deteriorating, and the bridge width is narrower than the width referenced in the Common Geometric Practices.

Draft Purpose and Need Statement:

Need: The bridge on KY 10 over Twelve Mile Creek has a Sufficiency Rating of 15.10 and is classified as structurally deficient as of September 2011. The girders are failing and have exposed reinforcing steel that has up to 100% section loss. The concrete abutments also have exposed reinforcing steel with up to 100% section loss.

Purpose: The purpose of this project is to improve the reliability and safety of the KY 10 corridor by addressing structural issues on the KY 10 bridge over Twelve Mile Creek.

III. PRELIMINARY ENVIRONMENTAL OVERVIEW

A. Air Quality

Project is in: ☐ Attainment area ☑ Nonattainment or Maintenance Area ☑ PM 2.5 County

STIP Pg.#: 15 (2013-2016, Draft) **TIP Pg.#:** 80

B. Archeology/Historic Resources

☐ Known Archeological or Historic Resources are present

It is expected that the construction will occur only on previously disturbed land.

C. Threatened and Endangered Species

Campbell County is listed as having several threatened and endangered species, including Indiana Bat, several mussles, and Running Buffalo Clover. The project site has Indiana Bat habitat located along the road. Tree cutting restrictions or payment to the Indiana Bat Conservation Fund will be utilized for mitigation measures. Twelve Mile Creek is not suitable for the listed mussle species. The area is not subject to partial sunlight and, therefore, is not suitable habitat for Running Buffalo Clover.

D. Hazardous Materials

☐ Potentially Contaminated Sites are present ☑ Potential Bridge or Structure Demolition

The project site is not located around potentially hazardous sites. The existing bridge will be demolished. The bridge will need to be inspected for asbestos containing materials.

E. Permitting

Check all that may apply: ☑ Waters of the US ☐ MS4 area ☑ Floodplain Impacts ☐ Navigable Waters of the US Impacts

Are 401/404 Permits likely to be required? ☐ Yes ☑ No Impacts to: ☑ Wetlands ☑ Stream/Lake/Pond

☐ ACE LON ☐ ACE NW ☐ ACE IP ☐ DOW IWQC ☐ Special Use Waters

F. Noise

Are existing or planned noise sensitive receptors adjacent to the proposed project? ☐ Yes ☑ No

Is this considered a "Type I Project" according to the KYTC Noise Analysis and Abatement Policy? ☐ Yes ☑ No

The project is considered a Type II Project, bridge reconstruction.

G. Socioeconomic

Check all that may apply: ☐ Low Income/Minority Populations affected ☐ Relocations ☐ Local Land Use Plan available

The bridge is expected to be reconstructed in place or next to the existing bridge. No homes are located within the projected limits of this project.

H. Section 4(f) or 6(f) Resources

The following are present on the project: ☐ Section 4(f) Resources ☐ Section 6(f) Resources

Anticipated Environmental Document: CE Level 1

IV. POSSIBLE ALTERNATIVES

A. Alternative 1: No Build

The no-build alternative does not meet the purpose and need of the project.

B. Alternative 2

Alternative 2 involves replacing the bridge at its existing location. KY 10 will need to be closed during construction and detoured to surrounding streets, most likely KY 9, which is approximately a 3.5 mile detour. This alternate is expected to be the most cost-effective of the build alternatives as it does not require major reconstruction of the approach roads. It does meet the project's purpose and need and should be considered in the next phase of design.

Planning Level Cost Estimate:

Phase	Estimate
Design	$500,000
R/W	$150,000
Utilities	$50,000
Const	$1,150,000
Total	**$1,850,000**

IV. POSSIBLE ALTERNATIVES (cont.)

B. Alternative #3

Alternative 3 involves constructing a new bridge adjacent to the existing bridge. This alternative would require the existing road to be realigned but would keep the existing bridge in use during construction, avoiding the need for a detour. Costs are expected to be significantly higher due to the cost of reconstructing the approaches, which would likely involve a residential relocation. Since the ADT is relatively low and the potential detour route would not be unreasonably long, this alternate is not expected to be cost-effective, but could be considered during future phases of project development.

Planning Level Cost Estimate:

Phase	Estimate
Design	$500,000
R/W	$300,000
Utilities	$100,000
Const	$1,800,000
Total	**$2,700,000**

V. Summary

This study is a Data Needs Analysis (DNA) of a bridge replacement project on KY 10 over Twelve Mile Creek, Item Number 6-1077.00. The bridge is to be replaced due to its structural condition. The likely alternatives include a no-build option, bridge replacement at the current location, and constructing a new bridge adjacent to the existing bridge. The current preferred alternative is Alternative 2 (replacement of the bridge at itse current location). This alternative appears to be the most cost-effective option and is not likely to significantly delay traffic.

Alt #	Description	D ($)(Fund)	R ($)(Fund)	U ($)(Fund)	C ($)(Fund)	Total ($mil)
1	No-Build	-	-	-	-	-
2	Replace in-place	500,000	150,000	50,000	1,150,000	1,850,000
3	Replace along new route	500,000	300,000	100,000	1,800,000	2,700,000
-	Current Hwy Plan Estimated Cost	500,000	150,000	50,000	1,150,000	1,850,000
-	Current Pre-Con Estimated Cost	500,000	150,000	50,000	1,150,000	1,850,000

VI. Tables and Exhibits

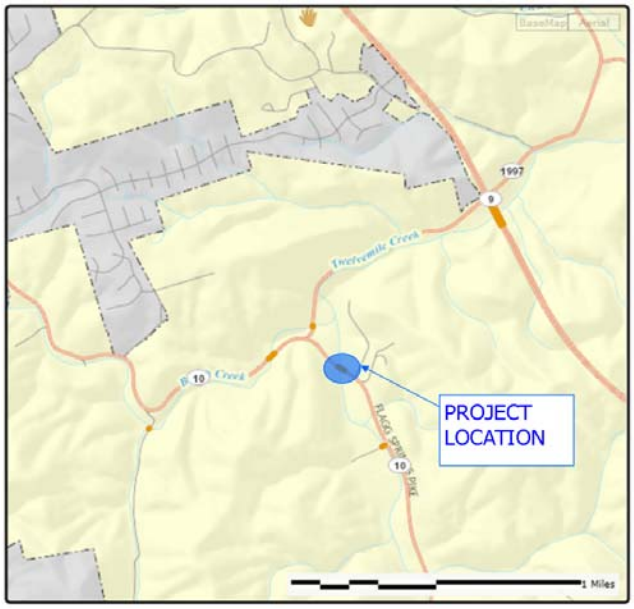

Exhibit 1: Project Location Map

Exhibit 2: View of bridge and approaches

VI. Tables and Exhibits (cont.)

Exhibit 3: View of bridge substructure